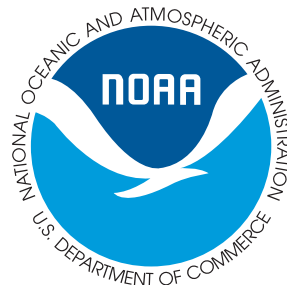


# Coast Pilot Manual

2010 (8th) Edition



**U.S. Department of Commerce**

Gary F. Locke, Secretary

**National Oceanic and Atmospheric Administration (NOAA)**

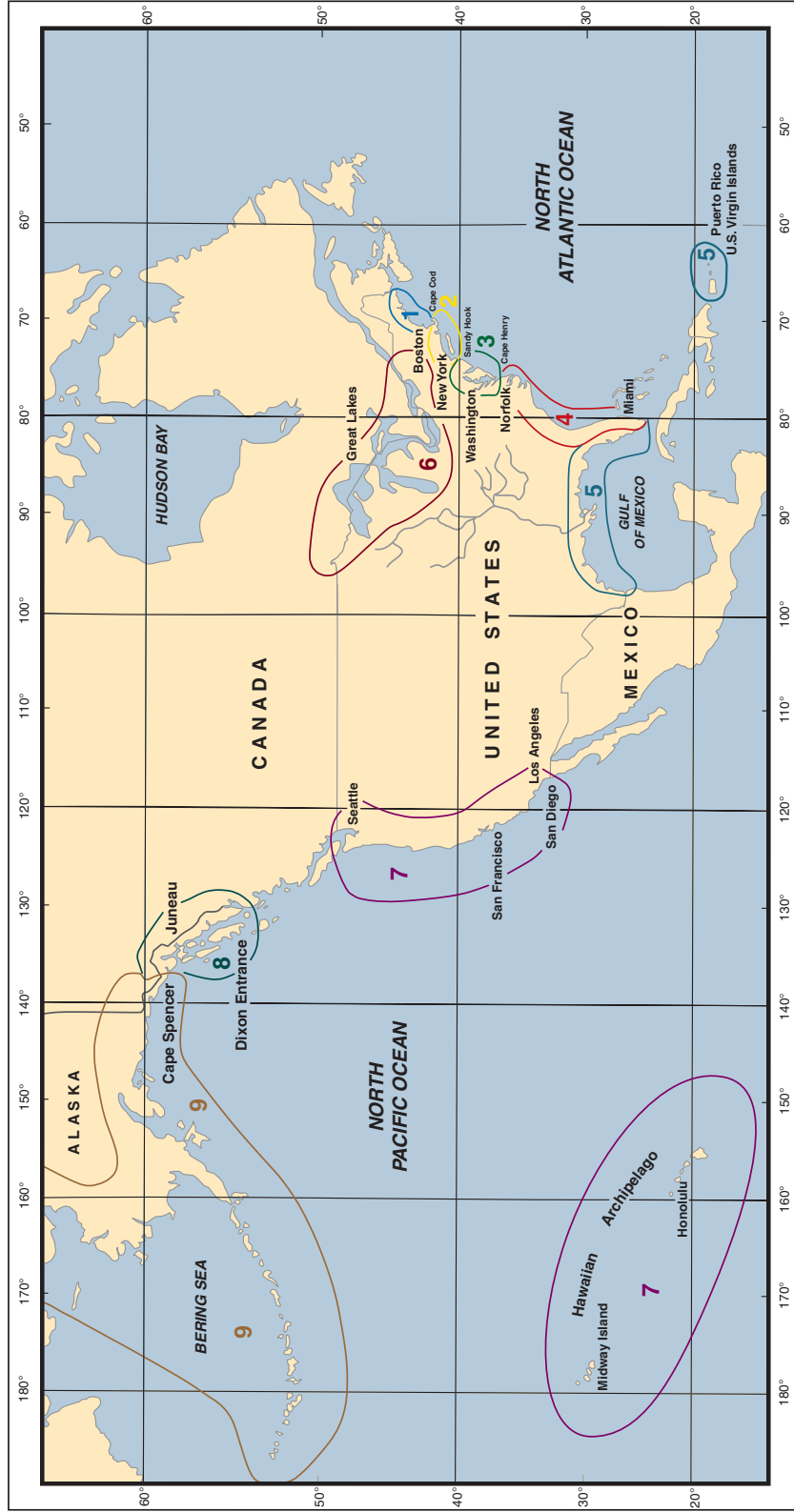
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# LIMITS OF UNITED STATES COAST PILOT

- 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
- Great Lakes**
- 6 The Great Lakes and their Connecting Waterways
- Pacific Coast**
- 7 California, Oregon, Washington, Hawaii and Pacific Islands
- 8 Alaska – Dixon Entrance to Cape Spencer
- 9 Alaska – Cape Spencer to Beaufort Sea



# Preface

**T**he Coast Pilot Manual is a working guide for Coast Pilot Branch office personnel to compile, write, and print the United States Coast Pilot. It is also a guide for National Ocean Service personnel, including hydrographic survey vessels, hydrographic and photogrammetric field parties, and others assigned to Coast Pilot field inspections, for making field observations and preparing reports to update the Coast Pilot.

This 2010 (8th) Edition of the Coast Pilot Manual supersedes the 2008 (7th) Edition.

The Coast Pilot Manual has been compiled by Marine Information Specialists of the Coast Pilot Branch, Navigation Services Division, Office of Coast Survey.

Suggestions for increasing the usefulness of the manual are solicited. Comments should be sent to:

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# Coast Pilot: Description and History

## Description

- (1) The United States Coast Pilot, published by the National Ocean Service (NOS) of the National Oceanic and Atmospheric Administration (NOAA), is a series of nine nautical books that cover a wide variety of information important to mariners in U.S. coastal and intracoastal waters and the Great Lakes. The topics in the Coast Pilot include 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 some Federal regulations.
- (2) The Coast Pilot is a supplement and narrative to navigational information shown on the nautical charts. The sources for updating the Coast Pilot include field inspections conducted by NOAA, information published in Notices to Mariners, reports from NOAA hydrographic vessels and field parties, and information from U.S. and other Government agencies, State and local governments, the Canadian Government, maritime and pilotage associations, port authorities, and other mariners and users.
- (3) The United States Coast Pilot is published 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).
- (4) There are currently nine volumes of the Coast Pilot: five for the Atlantic coast, one for the Great Lakes, and three for the Pacific coast. The series comprises Coast Pilot:
  - (5) 1, Atlantic Coast: Eastport to Cape Cod;
  - (6) 2, Atlantic Coast: Cape Cod to Sandy Hook;
  - (7) 3, Atlantic Coast: Sandy Hook to Cape Henry;
  - (8) 4, Atlantic Coast: Cape Henry to Key West;
  - (9) 5, Atlantic Coast: Gulf of Mexico, Puerto Rico, and Virgin Islands;
  - (10) 6, Great Lakes: Lakes Ontario, Erie, Huron, Michigan, and Superior and St. Lawrence River;
  - (11) 7, Pacific Coast: California, Oregon, Washington, and Hawaii;
  - (12) 8, Pacific Coast, Alaska: Dixon Entrance to Cape Spencer;

- (13) 9, Pacific and Arctic Coasts, Alaska: Cape Spencer to Beaufort Sea.
- (14) New editions of the Coast Pilot are published annually.

Following is a description of the type of information contained in each chapter of the Coast Pilot:

## Chapter 1. General Information

- (15) This chapter contains very useful standard information which includes but is not limited to the following: definitions of general and standard terms used throughout the book; information about Notices to Mariners; descriptions of the services provided to the mariners by various U.S. Government agencies; details on distress procedures and communications by both vessels and aircraft over water; marine weather forecast systems such as NOAA weather radio; Radio Broadcast Notice to Mariners system; radio time signals; chart datums; aids to navigation; traffic separation schemes; and vessel traffic services. Although there may be minor differences, the information in chapter 1 is essentially the same for each Coast Pilot volume.

## Chapter 2. Navigation Regulations

- (16) This chapter contains selected extracts from the **Code of Federal Regulations (CFR)** that affect mariners. The selected Parts and Sections from Title 33 include but are not limited to:
  - (17) Part 26, Vessel Bridge-to-Bridge Radiotelephone Regulations;
  - (18) Part 67, Aids to Navigation on Artificial Islands and Fixed Structures;
  - (19) Part 80, COLREGS Demarcation Lines;
  - (20) Part 110, Anchorage Regulations;
  - (21) Part 114, Bridges, general;
  - (22) Part 117, Drawbridge Operation Regulations;
  - (23) Part 147, Safety Zones;
  - (24) Part 150, Operations, Deep Water Ports;

- (25) Part 151, Vessels Carrying Oil, Noxious Liquid Substances, Garbage and Municipal or Commercial Waste;
- (26) Part 157, Rules for the Protection of the Marine Environment relating to Tank Vessels Carrying Oil in Bulk;
- (27) Part 160, Ports and Waterways Safety;
- (28) Part 161, Vessel Traffic Management;
- (29) Part 162, Inland Waterways Navigation Regulations;
- (30) Part 164, Navigation Safety Regulations;
- (31) Part 165, Regulated Navigation Areas and Limited Access Areas;
- (32) Part 166, Shipping Safety Fairways;
- (33) Part 167, Offshore Traffic Separation Schemes;
- (34) Part 169, Mandatory Ship Reporting Systems;
- (35) Part 207, Navigation Regulations;
- (36) Part 209, Administrative Procedure (shipping safety fairways); and
- (37) Part 334, Danger Zones and Restricted Area Regulations.
- (38) Except for Coast Pilot volumes 6 and 7, the other volumes contain additional extracts from CFR Title 50, Wildlife and Fisheries. Volume 1, 4, 5, and 7 contain extracts from CFR Title 15, Part 922, National Marine Sanctuary Program Regulations. All volumes, except 8 and 9, contain extracts from CFR Title 40, Protection of Environment. Coast Pilot volumes 1, 2, 3, 6, and 7 contain extracts from CFR Title 46, Shipping.

**Coast Pilot 6 contains additional extracts from Code of Federal Regulations:**

- (39) Title 21, Food and Drugs;
- (40) Title 36, Parks, Forests and Public Property;
- (41) Title 47, Telecommunication.
- (42) Coast Pilot 6 also contains selected Canadian regulations affecting navigation on the Great Lakes.

**Coast Pilot 8 contains extracts from Title 36, Part 13, National Park System Units in Alaska.**

## Chapter 3

- (43) This chapter contains general information that is peculiar to the region covered by a particular Coast Pilot volume. Topics such as harbors, anchorages, MPA's, routes, navigation, weather, principal ports, pilotage, towage, repairs, supplies, and small-craft facilities are discussed.
- (44) For example, a stranger would find navigation information, offshore currents and dangers, coastal aids to navigation, prominent landmarks, and the general character of the coast and depths helpful in approaching the region.

- (45) Also described are standard time zones, daylight saving time, and legal holidays observed locally.

## Chapter 4 and the remaining numbered chapters

- (46) In Chapter 4, the detailed description of the region begins. The first or introductory paragraph of each chapter briefly describes the area covered by the chapter, including the most important harbors and ports, the type of traffic using these harbors, the most important dangers, and any peculiarities of currents, depths, or land features. In these chapters, as much as possible, the coastal description is in geographic sequence, north to south on the east coast, east to west on the gulf coast, clockwise around each of the Great Lakes, and south to north on the west coast and Alaskan coast. Features are described as they appear on the largest scale chart, and the chart number is given special prominence in the text. Major ports are described using the format discussed in chapter 5 of this manual.

## Appendix A

- (47) This section of the book includes general information for the area covered by a particular volume. Information provided in Appendix A includes the following:
- (48) (1) Sales information for National Ocean Service publications and addresses of National Ocean Service Offices.
- (49) (2) Publications: A summary of U.S. Government publications of navigational value.
- (50) (3) U.S. Army Corps of Engineers: Limits of districts and addresses of district offices.
- (51) (4) Environmental Protection Agency: Limits and addresses of regional offices.
- (52) (5) Coast Guard: Limits of districts and addresses of district commanders; marine safety, inspection, and documentation offices and their addresses; captain of the port offices and their addresses; list of search and rescue stations; time and frequency of scheduled broadcasts by Coast Guard radiotelephone; voice distress, safety, and calling frequencies guarded by the Coast Guard.
- (53) (6) U.S. Customs and Border Protection: Customs districts, stations, and ports of entry.
- (54) (7) Public Health Service: Quarantine stations and their addresses; other ports where quarantine services are performed.
- (55) (8) Department of Agriculture: Animal and Plant Health Inspection Service offices, and Animal Import Center addresses.



- (56) (9) U.S. Citizenship and Immigration Services: Offices and addresses.
- (57) (10) Federal Communications Commission: Addresses of district field offices.
- (58) (11) Measured courses: Location including the chart number of measured courses.
- (62) General topics from chapters 1 and 3, as well as the appendices, are indexed, e.g., local magnetic disturbances, disposal sites, Marine Weather Service Charts, measured courses, ranges.
- (63) Various Parts of the regulations contained in chapter 2 are indexed, e.g., COLREGS Demarcation Lines, Anchorage Regulations, Safety Zones.
- (64) Charts published by the National Geospatial-Intelligence Agency (NGA) are indicated by an asterisk, except in Coast Pilot 6, where the asterisk indicates a Canadian Hydrographic Service chart.

## Appendix B

- (59) This section contains data in tabular form including, but not limited to, the following: climatological data for selected ports, windspeed by sea conditions, distances between ports, geographic range versus height of eye, conversion tables for points of the compass to degrees, and measurement and conversion factors.

## Appendix C

- (60) This section contains tables of all Marine Protected Areas (MPAs) of significance to mariners operating in areas covered by that book. This table is compiled and maintained by employees of the National MPA Center, Office of Ocean and Coastal Resources Management (NOAA).

## Index

- (61) Geographic names mentioned in the Coast Pilot are boldfaced and indexed. Some geographic names are indexed more than once when more than one place has the same geographic name. The number of the largest scale chart on which the entire feature appears is indexed with the name. When a substantial part of the area appears on a larger scale chart, that chart is also indexed.

## History

- (65) The history of the Coast Pilot, or Sailing Directions, goes back many centuries. One writer says that the Egyptians produced such a work between the sixth and fourth centuries B.C. In 1796, Edmund March Blunt (1770-1862) of Newburyport, Massachusetts, published the American Coast Pilot, which was not the first such book of American waters but was the first published in the United States. Blunt's Coast Pilot was in its 21st edition when the copyright was sold to the United States in 1867. The earliest Coast Pilot published by the Coast Survey, an early predecessor of today's National Ocean Service, was George Davidson's "Directory for the Pacific Coast of the United States" which was published as an appendix in the 1858 Coast Survey Report.
- (66) The content and format of the Coast Pilot have changed substantially over the years as charts of the U.S. coast became more complete, steam and motor vessels replaced sailing vessels, and compiling, editing, and printing methods have evolved and continue to evolve.

# Writing Requirements

## Accuracy

- (1) The first and most important requirement in compiling the Coast Pilot is accuracy. There can be no compromise on this standard. To eliminate errors, revisions to the Coast Pilot must be reviewed systematically and thoroughly. The content of the Coast Pilot often affects the safety of lives and property; errors can have serious consequences. The Coast Pilot is often used in litigation, so its accuracy must be very high.
- (2) Accuracy should not be used solely as justification for systematically omitting potentially important source information because of doubt in its validity; in some such cases, the information should be used and qualified as “reported”. The strictest accuracy requirement is applied to information which may directly affect safety to navigation.

## Brevity

- (3) The Coast Pilot should be as brief and to the point as possible, consistent with accuracy and clarity. However, material must not be condensed or abstracted so much as to alter the original meaning or to omit useful information. Detailed information takes more effort and increases the difficulty of keeping the material corrected, but it is often necessary. Reducing a body of specific and useful data to a general statement may result in a short but useless statement in the Coast Pilot. The Coast Pilot could be written in such a generalized manner that little or no corrections by Notice to Mariners releases would be required; however, the value of such a publication would be extremely doubtful.

## Clarity

- (4) The writer must take care to use correct grammar, sentence structure, and terminology. Writing should be at the level of ordinary conversation; the Coast Pilot is no place to demonstrate superior vocabulary or knowledge of nautical terminology by using complex wording and little-known nautical terms.

## Capitalization, compounding, and abbreviations

- (5) In general, the rules given in the GPO Style Manual for capitalization, compounding, and abbreviations are used by the Coast Pilot Branch, but in some cases dictionaries and other authorities must be consulted. Technical terms not included in any of the previously

mentioned publications must still conform with general usage. Consistency in capitalization, compounding, and abbreviations should be observed.

- (6) Chart No. 1 is also a source for abbreviations.

## Color and boldfacing

- (7) Chapter headings and chart numbers at the beginning of the subchapters are boldfaced in blue. Standard topic headings are boldfaced in black. Additionally, special text and paragraphs, like regulation numbers and cable ferries, are boldfaced in black for emphasis.

## Style, format, and phraseology

- (8) When preparing material for a new edition of a Coast Pilot volume, always use the GPO Style Manual and the latest Coast Pilot volume as a guide for color, style, format, and phraseology.

## Sources of Coast Pilot information

- (9) The information used in the preparation of the Coast Pilot comes from many sources. A primary source is the material collected by Coast Pilot field inspectors. Other NOAA staff components are consulted on hydrographic and meteorological matters affecting the Coast Pilot.

- (10) Additional sources of Coast Pilot information include Notices to Mariners from the U.S. Coast Guard, National Geospatial–Intelligence Agency (NGA), Canadian Coast Guard, and the St. Lawrence Seaway authorities (United States and Canadian); communications publications such as Radio Navigational Aids (Pub 117) from NGA and Selected Worldwide Marine Weather Broadcasts from the U.S. Navy and National Weather Service; marine publications such as the Port Series and Project Books from the U.S. Army Corps of Engineers, Mariners Weather Log from National Environmental Satellite, Data and Information Service, Tide Tables and Tidal Current Tables from the National Ocean Service, the Light Lists of the United States Coast Guard and the Canadian Coast Guard; marine organizations such as pilot associations, shipping companies, towboat companies, State/City authorities, local port authorities, marina operators, the U.S. Coast Guard Auxiliary, and the U.S. Power Squadrons; vessels such as NOAA survey ships, naval vessels, Coast Guard cutters, merchant ships, tugs, and small craft; other

Government agencies whose functions relate to mariners such as the U.S. Customs Service and the U.S. Public Health Service; the daily Federal Register for the latest changes to Federal regulations pertaining to navigation and/or other topics included in the Coast Pilot.

# General Topics

- (1) This chapter contains information about topics in the Coast Pilot which are written in a general context, using desired content and specified formats. The topics are discussed in alphabetical order.

## Addresses

- (2) In the text, give addresses of special importance to the mariner, e.g., harbor masters, pilots, port authorities, and where to get special permits. In the text and Appendix A, spell out “Street,” “Avenue,” “Boulevard,” “Building,” and “Room.” Place the room number after the building name; if there is no building name, place the room number after the street address. Use the two-letter postal abbreviation for States, e.g., MA, VA, etc. (See Appendix D). Do not use a comma before the zip code unless the zip code is preceded by a number. For example:
- (3) Federal Building, Room 206, Albany, NY 12207.  
 (4) Albany, NY: Federal Building, Room 206, 12207.  
 (5) Albany, NY: Federal Building, Room 206, 400 Wall Street 12207.  
 (6) Albany, NY: 400 Wall Street, Room 206, 12207.  
 (7) Albany, NY: Federal Building 12207.

## Aids to Navigation (ATON)

- (8) A generic description of aids to navigation appears in chapter 1 of the Coast Pilot. Generally, aids are not described in detail in the Coast Pilot, because they are frequently changed.
- (9) Describe aids marking navigation channels only in a general manner unless there is a reason for specific details. Give the types of aids and how well they mark the channel, e.g., “The channel is well marked by lights and buoys” or “The channel is partially marked by buoys.”
- (10) Describe aids to navigation maintained by someone other than the Coast Guard as **private**, e.g., “A private light marks the point.”
- (11) Except in Coast Pilot 6, seasonal aids must be mentioned as such, but the periods on station are normally not given. Lighted aids regularly replaced by unlighted ones are considered seasonal; aids removed only when endangered by ice are considered permanent. When possible, use a general statement for an entire waterway rather than mentioning each individual aid, e.g., “The lighted buoys marking the Hudson River channel

are replaced during the winter by smaller lighted ice buoys or unlighted buoys.”

- (12) Mention **aids** that mark described features such as isolated rocks or shoals, the outer limits of shoal areas around islands, jetties, and ruins. Also make specific mention of the outermost buoy marking the approach to a channel entrance (sea buoy). Do not describe the characteristics of aids to navigation, except in special circumstances. When mentioning an individual lighted buoy, or a group of lighted buoys, state “a lighted buoy (lighted buoys) marks (mark) the channel (shoal)”. Follow the same guideline for unlighted buoys. Obviously, there are locations where you should state “The channel is marked by lighted and unlighted buoys.” Also mention sound signals on aids. Mention aids that mark fish havens. Private **special purpose buoys** such as oceanographic buoys are rarely mentioned.
- (13) **Articulated lights** and **articulated daybeacons** are defined in Appendix C, this manual, and in the Coast Pilot, chapter 1.
- (14) Describe **large navigational buoys (LNBs)**, example: **Portland Lighted Horn Buoy P** (43°31'36"N., 70°05'30"W.) is a large navigational buoy (LNB) about 5.3 miles east-southeast of Cape Elizabeth Light. The buoy has red and white stripes and shows a flashing white passing light, and is equipped with a fog signal and a racon.
- (15) Bush stakes marking a channel should be mentioned without details.
- (16) **Major lights** (generally, lights with a nominal range of 10 miles or more) are described more completely, e.g., “**Point Reyes Light** (37°59'42"N., 123°01'24"W.), 265 feet above the water, is shown from a cylindrical structure on top of a square building; a fog signal is at the light.” Omit range of visibility, characteristics, and sectors, except in very unusual cases. Give brief or no mention about minor lights, or those with visibilities less than 10 miles, e.g., “Smith Point, on the Maryland side of the Potomac River, 62 miles above the mouth, is marked by a light.” Describe daymarks on major lights. The description should agree with the **Light List**, e.g., “triangular red, square green, red and white diamond-shaped.” Daymarks are always described in the singular sense even though the light structure may have more than one daymark.

- (17) In the Alaska Pilots, in areas where there are a scarcity of aids, even minor lights may be described in detail.
- (18) Geographic coordinates of lights should match those published in Local Notice to Mariners/Light List.
- (19) Marine obstruction lights on piers, wharves, sheer booms, and other structures that extend out into navigable waters are generally privately maintained. Do not mention these lights, except in special cases, such as in isolated areas of Alaska, where there are few aids.
- (20) **Aerolights** prominent from seaward and operated regularly at night should be mentioned. The term “aerolight” refers only to a rotating beacon, usually white and green, located at or near an airport.
- (21) The Federal Aviation Administration recommends that all structures extending 200 feet or more above the ground (other factors included) are marked with painted horizontal bands or checkerboard patterns of orange and white, and show flashing and fixed red, or strobe, aircraft obstruction lights. The lights and paint patterns are arranged in various ways, depending on the height and configuration of each structure. Charted obstruction lights are of great value to marine navigation, because without them most landmarks would not be visible at night. Obstruction lights are usually not mentioned in the Coast Pilot unless they mark good landmarks at night, or when the arrangement of the lights on a structure is helpful in identifying the landmark.
- (22) **Racons** are defined in chapter 1 of the Coast Pilot. In chapter 4 to Appendix A, racons on lights or buoys, and at locations independent of other aids to navigation, are normally mentioned. Examples: “The light is equipped with a fog signal and a racon.” or “A racon is 2.5 miles south of Icy Cape (70°17.3'N., 161° 54.5'W.). The racon, on a 200-foot-high tower, is maintained seasonally.”
- (23) **Ranges** are described as lighted or unlighted. **Directional lights**, marking a channel, are usually mentioned. Give the axis of a range or directional light as viewed from the vessel toward the aid(s). For example: “The entrance channel is marked by a **047°** lighted range, lights, and buoys.” The bearing of the axis should be given exactly as it appears in the Light List. Do not describe the range structures.
- (24) Natural ranges useful for safe navigation should be mentioned. Generally, the bearing of the natural range should not be given, but the features comprising the range should be described. Example: “Buoys and a natural range mark the channel . . . The front range marker is formed by Smith Mountain peak near the shore; the rear range marker is the conspicuous higher middle peak of the three mountain peaks in the background.”

## Anchorage

- (25) Anchorages generally fall into one of two categories: natural anchorages and Federally designated anchorages. Anchorages of the latter category are established and regulated by the U.S. Coast Guard. USCG-designated anchorages are shown on the nautical charts. Natural anchorages, though rarely charted, can be with Coast Guard approval.
- (26) Mention the best **harbors of refuge** in the region for both large vessels and small craft in chapter 3. In chapter 4 to Appendix A, give the best natural anchorages again for both large vessels and small craft. State the value of each natural anchorage in various weather conditions; give depth and type of bottom and state whether holding ground is good, fair, or poor. State whether the anchorage is subject to the effects of squalls, williwaws, or swell and describe necessary precautions. Mention if launch service is available to vessels at anchor and state how arrangements for launches are made.
- (27) U.S. Coast Guard designated anchorages are classified as special, general, naval, explosive, etc. Special anchorages are those in which vessels not more than 19.8 meters (65 feet) long are not required to display the anchorage lights or sound the fog signals prescribed by the Navigation Rules. (**33 CFR 110.1** applies.) Boldface the words “special anchorage,” “general anchorage,” etc., in the text, except where they appear within a boldfaced topic “Anchorages” paragraph. Reference and boldface the applicable Federal regulations given in chapter 2 of the Coast Pilot.
- (28) Mention **submarine cables** or **submerged pipelines** and other dangers within anchorage areas.
- (29) Avoid mentioning **mooring buoys** as much as possible. Mention if mooring buoys are used for laying off a wharf or for hauling off.

## Nonanchorages

- (30) In some areas, the U.S. Coast Guard has established nonanchorages by Federal regulation. Vessels are prohibited from anchoring within nonanchorage limits. USCG-designated nonanchorages are shown on the chart and mentioned in the Coast Pilot. Boldface the word nonanchorage where it appears in the text. Reference and boldface the applicable Federal Regulations given in chapter 2 of the Coast Pilot.

## Aquiculture (Aquaculture) site (pisciculture site)

- (31) If an aquiculture site (pisciculture site) is close to a track line of marine traffic and/or is marked by aids, it should be mentioned in the Coast Pilot, e.g., “An aquiculture site, marked by lighted private buoys, is off the north side of Miller Peninsula, just northwest of Rocky Point.”

### Areas to be avoided

- (32) The International Maritime Organization (IMO) has designated certain waters of the world as “areas to be avoided.” These areas are listed in Part D of the IMO publication “Ship’s Routing.” The ones in U.S. waters and/or contiguous to U.S. possessions are listed annually in National Geospatial–Intelligence Agency (NGA) Notice to Mariners Number 1, in the section describing Traffic Separation Schemes. These areas should be thoroughly discussed in the Coast Pilot.

### Automated Mutual-assistance Vessel Rescue System (AMVER)

- (33) The Coast Guard, in cooperation with coast radio stations of many nations, operates the Automated Mutual-assistance Vessel Rescue System (AMVER). AMVER is discussed in chapter 1 of the Coast Pilot. Details about this topic are in the AMVER Users Manual and the AMVER Bulletin. AMVER is also discussed in Radionavigational Aids, NGA Pub. 117.

### Bars

- (34) State the dangerous and favorable conditions for crossing a rough bar. State if the bar breaks in ordinary weather or only in heavy weather, and how far out the breakers extend. When there is no dredged channel, give the least depth at the best place for crossing the bar. Where the Coast Guard has furnished special advice for crossing a bar, date the information and give as much detail as necessary. For example, “In 2003, the Coast Guard provided the following information to assist the mariner in crossing the bar when outbound from the Merrimack River . . .”.

- (35) Describe **rough bar advisory signs** and their operation in detail; boldface “rough bar advisory sign” in the text where it is described. For example: “The Coast Guard has established a **rough bar advisory sign** to promote safety for small-boat operators. The sign is 34 feet above the water on the north end of the Coast Guard boathouse, and is visible from the channel looking seaward. The sign is diamond-shaped, painted white with an international orange border with the words “Rough Bar” in black letters, and is equipped with two alternately flashing amber lights. The lights are activated when seas exceed 4 feet in height and considered hazardous for small boats. Mariners are cautioned, if the lights are not flashing there is no guarantee that sea conditions are favorable.”

### Basins

- (36) Describe basins by type (dredged, anchorage, turning, etc.) and give a range of available depths. Depths of isolated shoals within a basin may be given separately, so as not to unnecessarily understate the range of

depths available. Depths at mooring slips are given if known. For example: “In July 2003, the turning basin at the head of the channel had depths of 12 to 15 feet, except for shoaling to 8 feet in the southeast corner. Depths in the boat slips on the west side of the basin were 4 to 10 feet.”

- (37) The controlling depth for a basin is often included with the controlling depth given for the approach channel. Example: “A dredged channel leads from the mouth of the river to a turning basin 2.1 miles upstream. In August 2003, the controlling depth was 10 feet in the channel with 8 to 12 feet in the basin.” Stating greater depths in the basin than in the approach channel is justified because a vessel that can only enter through the approach channel at high tide may have ample water in the basin at the lowest stage of the tide. Also, at locations with very shallow entrance channels, some boats may enter the basin from shore by a launching ramp or other method.

- (38) Give only the Federal project depths for channels and basins listed in chart tabulations.

### Bearings, courses, directions

- (39) Bearings and courses are given in degrees (true) clockwise from **000°** (north) to **359°**. Bearings and courses less than **100°** shall be preceded by a zero (**076°**, not **76°**). Give courses as the courses to be made good. Often, the course steered is different from the course made good. Give directions for the general location of objects by the nearest cardinal, intercardinal, or “three-name” point (such as **east-northeast**), as applicable. If a more accurate direction is necessary, use a true bearing in degrees. Bearings, courses, and directions are boldfaced in the Coast Pilot.

### Breakwaters and jetties

- (40) Mention breakwaters and/or jetties that protect river or channel entrances, harbors, or basins. Do not describe the type of construction unless it is unusual, such as a floating breakwater. If the structure is deteriorating and endangers navigation, give a general statement about its condition. Mention if the structure covers at any stage of the tide. Mention structures under construction. Describe aids to navigation that mark structures.

### Bridges

- (41) The nautical charts give bridge clearance information for bridges that cross waterways where hydrography is shown. The Coast Pilot provides information about these bridges, and in rare cases, some bridges above the limits of the charts. The bridge clearances given on the charts and in the Coast Pilot are approved by the U.S. Coast Guard, the agency responsible



for authorizing new bridges and changes to existing bridges over navigable waters. These approved clearances are obtained from the publication “**Bridges over Navigable Waters of the United States**” and the form “**Bridges over Navigable Waters of the United States Completion Report**”, each issued by the Coast Guard.

(42) Clearances of bridges given in the Coast Pilot should be compared with those shown on the chart and discrepancies resolved.

(43) In the Coast Pilot, bridges are normally described in the geographic sequence in which they are encountered, usually from the waterway entrance to the upstream navigational limit. Generally each bridge crossing a waterway is described individually, especially across deep-draft ship channels. However, for some smaller waterways with numerous bridges, it may not be necessary or advisable to mention each individual bridge. The location of the bridges, and the type and volume of waterway traffic must be considered when deciding how much information should be provided. For example, when several bridges are closely spaced along a waterway with no facilities between them, a single minimum vertical clearance can be given because vessels will presumably have to pass through each bridge in the group; or on small waterways having several bridges interspersed with marine facilities, a single minimum vertical clearance can be given if the bridges are of roughly the same dimensions. If the section of waterway to which the minimum clearance applies is very long, the distance should be given, e.g., “The 20-mile section of the river from Willamette Falls Canal to Newberg is crossed by fixed bridges with a minimum clearance of 68 feet and by drawbridges with a minimum clearance of 15 feet.” A minimum clearance for a group of bridges crossing a deep-draft ship channel is not normally given, except as general information preceding the discussion of the waterway.

(44) Within a major harbor, bridges are described in a paragraph or section entitled “**Bridges**” (see Port discussion, this chapter).

(45) Describe individual bridges by location (miles above the mouth, at a specific point or town, etc.), by the type of traffic (highway, railroad, pipeline, or foot), by type of bridge (fixed, suspension, bascule, swing, vertical lift, removable span, retractile, or pontoon), by horizontal clearance (if less than 50 feet), and by vertical clearance. For vertical lift bridges, give the vertical clearances for both the open and closed positions. Examples:

(46) “The Atlantic Beach (State Route 1182) highway bridge over Bogue Sound at Mile 206.7 has a swing span with a clearance of 13 feet.”

(47) “Main Street highway bridge at Hendricks Point has a vertical lift span with clearances of 40 feet down and 135 feet up.”

(48) “State Route 767 highway bridge connecting Bokeelia Island with Pine Island has a 28-foot fixed span with a vertical clearance of 10 feet.”

(49) The general term “drawbridge” (not “drawspan”) is used to denote any type of movable bridge.

(50) **Bascule bridges** are drawbridges that have one or two leaves that can be raised to a vertical position for the passage of vessel traffic. Occasionally, the bridge leaf or leaves will continue to overhang the edge(s) of the navigation channel even in the fully open position. Make a statement about this condition, e.g., “In the open position, the draws overhang the channel at a height of 55 feet.”

(51) **Pontoon bridges** are floating bridges generally operated by a system of cables or chains powered by machinery on the shore that move the structure out of the navigation channel to allow for the passage of vessels. These bridges are also occasionally operated by an internal propulsion system or by a small vessel that tows the bridge to its desired position. Give the exact operating procedures of pontoon bridges when chains or cables cross the navigation channel and present a hazard to vessels. Give adequate warning to mariners about when it is safe to pass through the draw of these bridges.

(52) For drawbridges, parenthetically reference the applicable regulations in chapter 2, e.g., “(See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)” or “(See **117.1 through 117.59 and 117.942**, chapter 2, for drawbridge regulations.)” Mention VHF-FM radiotelephone channels monitored and/or worked by drawbridge tenders and give the call sign of the bridge if known, e.g., “The bridgetender monitors VHF-FM channel 16; call sign KMZ-123,” or “The bridgetender monitors VHF-FM channel 13 and works on channel 10.”

#### Bridge vertical clearance

(53) In the Coast Pilot, when a bridge vertical clearance is 10 feet or less, the vertical clearance is given to the nearest ½ foot (rounded down). If the vertical clearance is greater than 10 feet, it is listed to the nearest whole foot (rounded down).

(54) **Clearances for bridges in Coast Pilot 7, chapter 7, Delta Region are listed in tables; however, in the rest of that chapter and book, bridges are described in text.**

(55) **A few bridges in Coast Pilot 6, Great Lakes, are described in text (as opposed to being listed in tables) with the previously mentioned guidelines.**

(56) **The majority of the bridges in Coast Pilot 6 are listed in tables. The Corps of Engineers Lake Survey,**

who published the Great Lakes Pilot until 1971, gave the vertical clearance in the bridge tables to the nearest whole foot. When **NOS Lake Survey Center** took over this book (first NOS publishing was 1971), the practice continued.

- (57) The **bridge tables in Coast Pilot 6** contain all overhead crossings, including cables. Coast Pilot 6 tables list the name, type, location, and vertical clearance(s) of overhead crossings; in addition, for bridges the horizontal clearance is included.
- (58) The tables must clearly indicate the order in which the crossings are listed, e.g., “Miles above West Breakwater Light”, “Miles above Lake Huron”. **Note that the chart legends which specify right (or left) draw (span) refer to proceeding downstream.**
- (59) When metrification is adopted by the National Ocean Service, and when converting a bridge description to metric in all Coast Pilot volumes, text and/or tabular, give the vertical clearance to the nearest 0.1 meter. After the Coast Pilot is metricated, a new bridge vertical height should be rounded down to the nearest 0.1 meter.
- (60) The **bridge tables in Coast Pilot 7 delta region** are similar to the tables in Coast Pilot 6, except for **datums and other geographical differences.**

#### Bridge horizontal clearance

- (61) Historically, in the Coast Pilot, the horizontal clearance of a bridge was given if the horizontal clearance was less than 50 feet. The exception is the bridge tables in Coast Pilot 6, Great Lakes, which always include the horizontal clearance. Now, for simplification and to give mariners complete information, **Coast Pilot 7 Delta Region** is using bridge tables instead of **textual descriptions**. When converting a horizontal bridge clearance in the Coast Pilot to metric, give it to the nearest 0.1 meter. After the Coast Pilot is metricated, for **new bridges**, the horizontal clearance in text (as opposed to tables) will be carried in the Coast Pilot only if it is less than 15 meters; and will be carried to the nearest 0.1 meter (rounded down).
- (62) Describe a **bridge under construction** according to date of commencement of construction, location, type of traffic to be carried, type of bridge, and design clearances. State if the bridge under construction will replace an existing bridge. Example: “In December 2003, a fixed highway bridge with a design clearance of 65 feet was under construction close south of the bascule bridge; upon completion, it will replace the bascule bridge.” or “In December 2003, a replacement fixed highway bridge with a design clearance of 65 feet was under construction just below the bascule bridge.”
- (63) Occasionally, a bridge is reconstructed to provide a greater vertical (or horizontal) clearance. Describe this

condition, e.g., “In 2003, the existing bridge was being reconstructed to provide a clearance of 22 feet.”

- (64) Describe the current condition of bridges that have been partially removed, e.g., “bascule span maintained in the open position,” “bascule span removed but piers remain,” “bridge deck removed but piles remain,” etc.
- (65) A bridge “under construction” for longer than three years shall be brought to the attention of the Chief, Nautical Data Branch, requesting an update of status.
- (66) Sometimes used interchangeably with bridge, a causeway generally has its deck (which carries the traffic) supported by solid fill across shallow water or marsh, as opposed to a bridge, which has its deck elevated across deeper water or other obstructions, supported only by abutments and/or piers.
- (67) Chapter 1 of each Coast Pilot volume should include statements to the following effect:

#### Bridges and cables

- (68) Vertical clearances of bridges and overhead cables are in feet above mean high water unless otherwise stated. **In Coast Pilot 6, vertical clearances are above Low Water Datum**, unless stated otherwise. In Coast Pilot 7 Delta Region, vertical clearances for bridges are above **Low water datum**, which is **mean lower low water at low river stage**; overhead cables are referenced to **high water datum**. 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 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), authorized (design values specified in the permit issued prior to construction), or reported. No differentiation is made in the Coast Pilot between as-built and authorized clearances, except when a bridge is under construction. See charts for horizontal clearances of bridges, because these are given in the Coast Pilot only when they are **less than 50 feet, except in the tables of Coast Pilot 6 and 7**. For bascule bridges whose spans do not open to a full vertical position, the available horizontal clearances are less than the charted clearances because of the inclination of the drawspans over the channel.
- (69) Vessels with masts, antennas, stacks or booms should allow sufficient clearance under power cables to avoid arcing. Frequently, a charted overhead cable clearance is for the lowest of a group of several adjacent cables; the minimum additional clearance which should be allowed by vessels in this case is based on the distance between adjacent cables of the group.



### Bridges and obstruction lighting

(70) The Coast Guard regulates the marking of bridges (also piers, wharves, sheer boom, etc.) with marine obstruction lights, and also the installation of clearance gages on bridges; the Federal Aviation Administration regulates aircraft obstruction lights on bridges. For complete details on bridge marking, see **33 CFR 118** (not carried in the Coast Pilot).

(71) Bridge lighting is not generally shown on charts or published in the Coast Pilot. A brief general explanation of the bridge marking system, similar to the following, is given in chapter 1 of the Coast Pilot.

### Lights and clearance gages on bridges

(72) 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.

(73) Bridge lights are fixed red or green, and are privately maintained; they are generally not charted or described in 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 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 multiple-span fixed bridges, the main-channel span may also be marked by three white lights in a vertical line above the green range lights.

(74) 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.

(75) Bridges and their lighting, construction, maintenance, and operation are set forth in **33 CFR 114 through 118** (only **33 CFR 117**, Drawbridge Operation Regulations, are published in chapter 2 of the Coast Pilot). Aircraft obstruction lights, prescribed by the Federal Aviation Administration, may operate at certain bridges.

### Cable ferries

(76) Cable ferries can present an unusual hazard to mariners, especially to small craft. Mention cable ferries in general terms in chapter 1 and at the beginning of the Intracoastal Waterway chapter in terms similar to the following: **“Cable ferries.**—Cable ferries are guided by, and sometimes propelled by, cables fastened to shore. Generally 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.**”

(77) In the text, describe the operating procedures in detail. At the conclusion of the description include the boldface statement **“DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY,”** unless the specific operating procedure of the ferry precludes the need for this statement.

### Cables, overhead

(78) Overhead cables are described by location (position, lat/long), referenced to a point or place or by mileage from a point or place), by type (power, telephone, television, etc.), and by authorized clearance. No overhead cable crossing navigable waters of the United States may be established or removed except by written permit from the Corps of Engineers, **33 CFR 322 and 325** apply (not in the Coast Pilot). Authorized clearances are obtained from U.S. Army Corps of Engineers permits, and are given to the nearest foot (rounded down).

(79) Decisions on which overhead cable is described and on whether it is described individually or in a group are made on the same basis as for bridges (see Bridges, this chapter).

(80) Cables are described in the order encountered along a waterway. In major harbors, discussion of overhead cables is included in the **“Bridges”** paragraph (see Port Discussion, this chapter). In Coast Pilot 6 and 7, overhead cables are listed in the appropriate tables for overhead crossings.

### Channels

(81) Several types of channels are described in the Coast Pilot. A channel described as a **“Federal project”** is a major channel, with limits of the channel and a tabulation of controlling depths shown on the chart. Channels which have limits shown, but do not have tabulated controlling depths, are described as a **“dredged channel”** (**Federally dredged**), **“State-maintained channel,”** or **“privately dredged channel”** as appropriate. Dredged channels may be described as such, even though the limits are not shown on the chart.

Occasionally, a channel is described as a “**natural channel**” to distinguish it from a dredged channel.

(82) For **deep-draft dredged channels with a tabulation** of controlling depths shown on the chart, give only the active Federal project depth. For channels which often have large differences between **controlling depths** and **project depths**, give the project depth and a cautionary statement. In every case in which the project depth is given, include a statement which refers the mariner to Notices to Mariners and latest editions of the charts for controlling depths. **Do not give both project depth and controlling depth.** Omit the project width and length, except in unusual cases. Give any available information on channel locations, and tendencies toward shoaling, except for normal shoaling along the edges. In a dredged ship channel, describe the composition and extent of areas with a hard bottom, since a greater allowance for draft must be made by vessels than for a soft bottom. State if channel depths are unusually unstable. Example:

(83) “A Federal project provides for a depth of 40 feet in Horn Island Pass Channel and 38 feet in the Sound and in Pascagoula and Bayou Casotte Channels to the 38-foot turning basins. (See Notice to Mariners and latest editions of charts for controlling depths.) The channel over the bar is usually reported shoalest during September. Later in the season the river cuts a deeper channel through the bar. Depths in the channels and basins may vary considerably between dredging. The channel across the bar is marked by a **041°** lighted range and lighted buoys, and the other channels are marked by lighted ranges, lighted and unlighted buoys, lights, and a daybeacon.”

(84) For dredged channels with no tabulation of controlling depths shown on the chart, give the latest controlling depth and the date of the survey or date of the reported information. If the source of the controlling depth is other than a Corps of Engineers or NOS survey, state the depth as reported. Where the survey shows greater depths than the project depth, give the project depth as the controlling depth. When no information is available about the controlling depth of a channel, other than charted soundings, give general depths from the charted soundings and give no date. Make all effort to date controlling depths. Give any available information on the location and tendencies for shoaling in channels, except for normal shoaling along the edges; this information is obtained during field inspections from Corps of Engineer district offices and as reported information from harbor masters and others. It is important to mention any areas of hard bottom in a dredged channel.

(85) Generally, the month and year of surveys should be given for controlling depths, but if the dates are more

than two years old, the year alone may be given. The controlling depths for channels often are the result of several surveys made over various parts of the channel at different times and are written as follow: “In November 2003, the controlling depth was 23 feet for a midwidth of 400 feet to Light 22, thence in June-July 2003, 19 feet for a midwidth of 100 feet to the entrance of Fox River, thence 20 feet to the Main Street bridge.”

(86) For relatively long channels, the controlling depths shown on the charts and published in the Notice to Mariners are usually broken down into a number of sections, regardless of the dates of the surveys covering a channel. Controlling depths given in the Coast Pilot are sometimes consolidated by giving one overall controlling depth from the channel entrance to the head of the Federal project or to the primary facilities the channel accesses. However, when the controlling depths in the entrance and lower sections of the channel are greater than the overall controlling depth, and when these lower sections have wharves or other facilities which may be the destination of some vessel traffic, do not use an overall controlling depth. Describe the channel in appropriate sections and give controlling depths accordingly. Similarly, when there are important wharves along a channel, the controlling depth for that channel should be given for the full project width (rather than midchannel depths) whenever possible.

(87) **The Coast Pilot does not give controlling depths for the Intracoastal Waterway.** Early in the Intracoastal Waterway chapter, mention the project depth for sections along the Intracoastal Waterway covered by that particular Coast Pilot volume, and include at the end of that statement another statement similar to the following: “(See Local Notice to Mariners and latest editions of charts for controlling depths.)”

(88) The unqualified term “controlling depth” is used in the Coast Pilot only for controlling depths which apply to the entire project width of a channel. “**Centerline controlling depth**” is rarely used and refers to the results of a reconnaissance survey consisting of only one to three lines of soundings on and near the channel centerline. Centerline controlling depths are only practical in waterways where **Centerline Ranges** are located, or where no other controlling depths are available. The term “**midchannel controlling depth**” should be used for controlling depths which apply to the middle half-width of channels. When the midchannel controlling depth is deeper than the full width controlling depth, both may be given if there is an appreciable difference e.g., “controlling depth of 9 feet (12 feet at midchannel).” When controlling depths given in the Coast Pilot apply to any other channel widths less than the full project width and other than the middle half-width or the centerline, they shall be stated as

follow: “12 feet for a midwidth of 40 feet,” “12 feet for a width of 40 feet,” or “12 feet in the east half of the channel with shoaling to 5 feet in the west half.” An explanation of the terms “**Federal project depth**,” “**controlling depth**,” “**centerline controlling depth**” and “**midchannel controlling depth**” should appear under “**Depths**” in chapter 1 of the Coast Pilot.

**Some examples of controlling depth statements follow**

- (89) “In 2003, there was a reported controlling depth of 15 feet from the entrance to the mooring basin, with reported depths of about 10 feet in the basin; the channel is marked by buoys and an **088°E** unlighted range.”
- (90) “In 2003, about 19 feet could be carried through the natural channel; it is well marked by buoys and lights.”
- (91) “In March 2003, the controlling depths (left outside quarter) were 10 feet in the entrance channel and 15 feet in the Navy Channel; depths of bare to 11 feet were available in the remaining sections of the channel. The easterly side of the entrance channel usually shoals; favor the westerly side of the left outside quarter.”
- (92) “In June 2003, the midchannel controlling depth in the creek from the mouth to the first highway bridge was 6 feet, thence 4 feet on the centerline to a point about 11 miles above the mouth. The channel is marked by buoys.”
- (93) “In February 2003, the marked channel connecting Thorofare Bay and Cedar Bay had a controlling depth of 5 feet for a midwidth of 40 feet.”
- (94) (See also **Depths** and **Basins**.)

**Chart datum**

- (95) Chart datum is the particular vertical reference plane from which soundings shown on a nautical chart are measured. For the Atlantic Coast, Gulf Coast, West Coast, Alaska, Pacific Islands and the Caribbean, chart datum is mean lower low water. In short, the chart datum for U.S. territorial waters on all salt water charts published by NOS is mean lower low water.
- (96) **Mean lower low water** is defined as the arithmetic mean or average of the lower low water height of each tidal day (24.84 hours) observed over the National Tidal Datum Epoch. **Mean low water** is defined as the arithmetic mean or average of all the low water heights 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.

(97) Chart datum in the Great Lakes System (the major Lakes and their connecting arteries, and the St. Lawrence River) is **low water datum (LWD)**. This datum varies by lake and in each case is a horizontal plane referenced to mean sea level at Rimouski, Quebec (See International Great Lakes Datum 1985 (IGLD 1985)). In the connecting rivers, LWD is a sloping surface between the reference planes of the bodies of water connected. In a connecting river which has locks, LWD between locks is the sloping surface between a reference plane just above a lock to a reference plane just below the next lock upstream. In the case of a section of river from a lock to a lake, LWD is the sloping surface between a reference plane just upstream of the lock and the reference plane of the lake further upstream. In some inland waters, local datums such as normal pool level are used.

(98) (See also **Datums**.)

(99) Heights of LWD of individual lakes of the Great Lakes based on IGLD 1985 are as shown in the accompanying table.

Heights of LWD		
Waterway	Feet	Meters
Lake Ontario	243.3	74.2
Lake Erie	569.2	173.5
Lake St. Clair	572.3	174.4
Lake Huron	577.5	176.0
Lake Michigan	577.5	176.0
Lake Superior	601.1	183.2

**Charts**

(100) The Coast Pilot text, except for chapters 1, 2, and the appendices, is organized geographically according to the chart coverage. Charts are given special prominence and are boldfaced in blue at the beginning of the paragraph where chart coverage changes. List all charts that cover the area being discussed.

**Chart symbols and abbreviations**

(101) The standard symbols and abbreviations approved for use on all regular nautical charts published by the National Oceanic and Atmospheric Administration, National Ocean Service, and the National Geospatial-Intelligence Agency (NGA) are contained in Chart No. 1, United States of America Nautical Chart Symbols and Abbreviations; reference should be made to this publication under “**Charts**” in chapter 1 of the Coast Pilot. Though symbols and abbreviations on foreign charts and on some foreign charts reproduced by

the United States may differ from U.S. approved standards, effort is being made to achieve uniformity on charts and in other maritime publications by means of agreements on hydrographic standards by the member nations of the International Hydrographic Office (IHO).

#### Coast Guard

- (102) Mention **marine safety offices, Captains of the Port, marine inspection offices**, and vessel documentation offices within the description of appropriate ports. Refer to the offices in boldface type under the heading “**Coast Guard.**” A marine safety office includes the Captain of the Port and marine inspection office. Use the Coast Guard Standard Distribution List as the authority. State the geographic location of each office if on or near the waterfront. State if the office is in the city, but do not repeat the street address, which is given in Appendix A. For **example**:

#### Coast Guard

- (103) The **Captain of the Port** maintains an office at the Coast Guard support center on Governors Island. A **marine inspection office** and a **vessel documentation office** are in New York City. (See Appendix A for addresses.) **or**
- (104) A **marine safety office** is in San Francisco. (See Appendix A for address.) **or**
- (105) A **marine safety office** is at the Coast Guard base. A **vessel documentation office** is in Boston. (See Appendix A for addresses.)
- (106) In ports having such offices, under the heading “**Coast Guard,**” also mention operational Coast Guard stations with search-and-rescue capability (including air stations). Give the proper name of the station and its location with reference to a prominent feature shown on the chart (not by latitude and longitude). In ports without Coast Guard offices, mention Coast Guard stations in the proper geographic sequence in the general text (without a “Coast Guard” heading) in boldface type. For **example**:
- (107) **Seattle Coast Guard Station** is on the south side of Lake Washington Ship Canal, 0.8 mile from the western entrance. **or**
- (108) **Port Nowhere Coast Guard Station** is 0.4 mile W of the town pier.

#### General Topics

- (109) In ports having such offices, also mention operational Coast Guard stations with search-and-rescue capability (including air stations) under the heading “Coast Guard.” Give the proper name of the station and its location with reference to a prominent feature shown on the chart (not by latitude and longitude). In

ports without Coast Guard offices, include mention of Coast Guard stations in the proper geographic sequence in the text in boldface type. For **example**:

#### Coast Guard

- (110) The **Captain of the Port** maintains an office at Pier 90 in Smith Cove. **Marine inspection** and **vessel documentation offices** are at Pier 36. (See Appendix A for addresses.) Seattle Coast Guard Station is on the south side of Lake Washington Ship Canal, 0.8 mile from the western entrance. **or**
- (111) **Port Nowhere Coast Guard Station** is 0.4 mile W of the town pier.

- (112) In **Appendix A**, list the limits of Coast Guard districts and sectors and the addresses of district and sector commanders. List the following offices with the address for each office: marine safety, Captain of the Port, marine inspection, and vessel documentation. Use the **Coast Guard Standard Distribution List** as the authority. List all **Coast Guard stations with search and rescue** capability, including **air stations**; give the name, latitude and longitude to the nearest tenth of a minute, and a brief description of the location. To ascertain SAR capability of a Coast Guard unit, consult **Operating Facilities of the Coast Guard (OPFAC)**.

- (113) Coast Guard is always initially capitalized. When referring to a Coast Guard station by other than its proper name, “station” is not capitalized, i.e., “a Coast Guard station.” However, when the name of the station is utilized, “station” is capitalized, e.g., “Cape May Coast Guard Station.”

#### COLREGS demarcation lines

- (114) Lines have been established to delineate those waters upon which mariners must comply with the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS), and those waters upon which mariners must comply with the Inland Navigational Rules Act of 1980 (Inland Rules). The waters inside of the lines are Inland Rules waters, and the waters outside of the lines are COLREGS waters.
- (115) The substance of the above shall be carried in chapter 3 of the Coast Pilot. In chapter 4 and the remaining numbered chapters, mention specific COLREGS demarcation lines and refer to the applicable section of 33 CFR 80 in chapter 2 of the Coast Pilot, e.g., “COLREGS Demarcation Lines. – The lines established for New York Harbor are described in 80.315, chapter 2.” COLREGS lines are shown on the nautical charts.

#### Communications

- (116) In remote areas (primarily Alaska), describe telephone, telegraph, and radiotelephone capabilities and



discuss rail, bus, and air service and highway connections. In isolated regions, give all information available about local vessel or launch service; include any seasonal variation in service.

### Continuity and Referencing

- (117) Continuity is maintained in the Coast Pilot by frequently referencing new objects, features or places, to previously described or located features (usually charted). Such objects, places or features might be bridges, confluence locations of waterways, prominent features, geographic places, aids to navigation, and similar references. In the detailed description of an area, avoid using a feature as a reference before it is boldfaced and identified by location. Do not refer a new feature to a reference point located off the chart. On small-scale charts, keep the distances between new points and reference points reasonably small, i.e., do not refer a new point near the top of the chart to a point near the bottom of the chart. When a chart is first listed, select a prominent feature such as a major light or prominent headland or point and use it as a reference point for locating other places to be described. Show coordinates of reference points selected, e.g., “**Cape Cod Light** (42°02.4'N., 70°03.7'W.)” Coordinates are given for large navigational buoys (LNBS), major lights, and prominent monuments, regardless of whether they are used as a reference point. Places on rivers and other waterways can be located by giving the miles above the mouth or other selected starting points such as the outer ends of jetties. The starting point must be clearly stated when using this method. Coordinates may also be given for piers and other structures when impracticable to locate them by direction and distance from a reference point.

### Miles above the Mouth

- (118) In certain rivers, and other waterways, prominent features, geographic places, towns, aids to navigation, and similar references, are mentioned as being “X miles above the mouth (the entrance; a zero point, with coordinates or references given, etc.)”. The “X miles” is an approximation and given close enough to bring the user to the general location on the chart. In situations like this (nautical or statute), the word “mile” has a capital “M” (see the **Examples** that follow), otherwise, mostly a lower case “m” is used. Notable examples of “Miles above the Mouth” usage are the Hudson River, Mississippi River, Potomac River, and the Intracoastal Waterway. A brief explanatory paragraph should accompany the “Miles above the Mouth” usage. The explanatory paragraph should read similar to the following: “It is to be understood that the mileages given are approximations. The values are not intended

to be precise. The intended degree of accuracy is only supposed to be enough to put the user of the chart into the general vicinity of the cited object, for the purpose of locating the object.”

### Examples:

## Chart 17404

- (119) **Kauda Point** (55°46.4'N., 133°15.5'W.), at the southern tip of Tuxekan Island and on the west side of Tuxekan Passage, is a small islet at high water and is conspicuous from the southwest and northeast.
- (120) **Kaguk Cove**, at the southern end of Tuxekan Passage, about 2 miles southwest of Kauda Point, affords a well-protected anchorage with depths of 4 to 8 fathoms and a gentle sloping bottom.
- (121) The **Dasani Islands** are in the southern entrance to Tuxekan Passage midway between Kauda Point and the entrance to Kaguk Cove.
- (122) **Mileages on Potomac River** in this chapter, such as Mile 13E, Mile 41W., and Mile 51N., are nautical miles above the midchannel entrance point which is 4.8 miles northwest of Smith Point on a line between Smith Point and Point Lookout; that point is 68.4 miles above the capes. The letters, N, S, E, or W following the mileage numbers denote by compass point for the side of the river where each feature is located. It is to be understood that the mileages given are approximations. The values are not intended to be precise. The intended degree of accuracy is only enough to put the user of the chart into the general vicinity of the cited object, for the purpose of locating the object.
- (123) **Yeocomico River**, Mile 10.2S, has depths of 19 to 12 feet to the forks 1.4 miles above the entrance.

### Currents

- (124) Include an overview description of the tidal, ocean, and wind currents within the area covered by a Coast Pilot Volume in chapter 3. Mention the general current movement including drift (speed) to be expected along the various reaches of the coast, and include locations and ranges of extraordinary current. Within the text, include information about the set and drift of currents at selected locations, such as entrances to harbors, inlets, and rivers and at points inside. Set is the direction to which the current flows and may be given in compass points or degrees as the situation dictates. Drift is stated in knots and tenths of a knot. Reports of observed current at variance with the Tidal Current Table should be forwarded to Information Products and Services Section, Coastal and Estuarine Oceanographic Branch, Office of Ocean and Earth Sciences, NOS,

Silver Spring, for review and comment before including the information in the Coast Pilot.

- (125) Discuss crosscurrents at bridges. The various Corps of Engineers Intracoastal Waterway Bulletins often contain such data. Describe reported counter currents.
- (126) Advise of extraordinary current phenomena such as the whirlpools generated by The Maelstrom in the Hudson River and the tremendous velocities of Hell Gate in the East River and The Race in eastern Long Island Sound.
- (127) Discuss the **river currents** of the connecting waters of the Great Lakes, i.e., St. Lawrence River, Niagara River, Detroit River, St. Clair River, and St. Marys River in their respective chapters of Coast Pilot 6. The source for such information is Chief, Great Lakes Hydraulics and Hydrology Branch, Corps of Engineers, Detroit. An additional source of river current information for the St. Lawrence River is the St. Lawrence Seaway Development Corporation.

### Dangers

- (128) Give what kind and extent of natural dangers; least depths over them; if they break, at what stage of the tide; and how much, if any, is bare at the chart datum. Do not list each individual danger in a group; a description of the most prominent, or the one nearest the channel, or the one farthest from shore is usually sufficient. Where regulated navigation areas, safety zones, security zones, or danger zones are established by Federal regulation, state general location and refer to the proper section in chapter 2.
- (129) Mention fish havens, fishtraps, and lobster pots when they affect navigation. For fish havens, state how they are marked and give the authorized minimum depth (as authorized by Corps of Engineers permit). For fishtraps and lobster pots, give the season, when known. Describe the general situation in the region in chapter 3 of the Coast Pilot. Limits of fishtrap areas in many localities are shown on the charts; refer to them when describing the region, but generalize and do not give exact boundaries.
- (130) When floating logs and obstructions are found in sufficient numbers to constitute a danger to navigation, the Coast Pilot should warn the navigator. State if the navigation of a channel or canal is affected by log rafts or if their presence as tows may be a danger during fog or poor visibility. Note where and when log booms (heavy moored logs enclosing rafted logs) exist. Describe the condition if of interest to navigation, i.e., if the booms restrict the natural width of a channel or if the booms enclose an area to the extent that navigation is affected.

(131) State if jetties, breakwaters, old pilings, or other structures cover and are dangerous; if so, give the estimated or reported stage of the tide at which they cover.

(132) Give location and limits of tide rips, and give conditions of tide, current, and sea that cause them or make them worse. Give warning if they are dangerous under certain conditions and define these conditions. If it is possible to avoid the dangers, explain.

(133) Care must be taken to use the proper terminology to describe natural hazards to navigation, especially ledges, shoals, reefs, and rocks and their relationship to the chart datum, i.e., submerged, bare, and awash. (See appendix C for definitions of terms.) Note that the term “shoal” applies only to unconsolidated (soft) elevations of the bottom, there is no such thing as a “rocky shoal.” The expression “uncovers 4 feet” is not applicable to a bare rock (which never covers), since this expression automatically implies that the rock covers at some tidal stage. The heights above mean high water should be included in the descriptions of bare rocks when known. The expressions “covered” and “uncovers” refer to the low water sounding datum, while “covers” refers to the high water datum (mean high water). Always refer heights and depths over rocks to the appropriate established datum, not to general and variable tidal stages. (See also Depths.)

(134) State to what extent marine growth, such as hydrilla, water hyacinths, kelp, tuckahoe, and tulips, affect navigation.

### Danger zones

(135) **Danger zones** are described as follows: “The danger zone of an aerial gunnery range is between Point Lookout and Cedar Point. (See 334.433, chapter 2, for limits and regulations.)”

### Datums (horizontal)

(136) See North American Datum of 1927 (NAD 27), North American Datum of 1983 (NAD 83), and World Geodetic System of 1984 (WGS 84).

### Datums (vertical)

(137) See Chart Datum, geodetic datum, National Geodetic Vertical Datum of 1929 (NGVD 29), National Geodetic Vertical Datum of 1988 (NGVD 88), International Great Lakes Datum 1985 (IGLD 1985), datum plane, sounding datum, tidal datum, vertical datum, and vertical control datum.

### Depths

(138) Depth is the vertical distance from the chart datum to the bottom and is expressed in the same units (feet, meters, or fathoms) as the soundings on the applicable chart. For the Atlantic Coast, Gulf Coast, West Coast,

Alaska, Pacific Islands and the Caribbean, chart datum is mean lower low water. In short, the chart datum for U.S. territorial waters on all salt-water charts published by NOS is **mean lower low water**.

(139) For the Great Lakes and their connecting waterways chart datum is **low water datum (IGLD 1985)**.

(140) Where chart datum is a special datum for a body of water, e.g., on Lake Champlain, NY/VT, and Columbia River, OR/WA, give as much detail as necessary to define the level of the datum and its relation to the "normal" chart datum. Specify where the datums change, and, if known, how the water levels vary from chart datum.

(141) 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 vessels with drafts less than that depth.

(142) The **centerline controlling depth** of a channel applies only to the channel centerline; lesser depths may exist in the remainder of the channel.

(143) The **midchannel controlling depth** of a channel is the controlling depth in only the middle half of the channel.

(144) **Federal project depth** is a design dredging depth authorized for a channel constructed by the U.S. Army Corps of Engineers or their authorized contractor; the project depth may or may not be the goal of maintenance dredging after completion of the original channel, and for this reason, project depth must not be confused with controlling depth.

(145) **Depths alongside wharves** are usually reported by owners and/or operators of waterfront facilities, and have not been verified by Government approved surveys. In the Coast Pilot, depths alongside wharves are usually **not dated**.

(146) The above terms are carried in **chapter 1 of the Coast Pilot**.

(147) Avoid expressions in the Coast Pilot which refer depths to datums other than the chart datums, such as "navigable at high tide," "covers at extreme high tides," etc. Low tide, high tide, extreme high tides, and the like, are not established datums, but vary from day to day (with different heights in a single day) for each locality. Such expressions should only be used in the Coast Pilot when no better information is available, when the chart carries such a note, or when such information is reported and cannot be checked against known data.

(148) On some charts that have depths in fathoms, depths under 11 fathoms are shown in fathoms and feet; the foot value appears as a subscript to the fathom value, as shown in the following table.

**Chart**

**(fathoms/feet)**

1<sub>3</sub>

1<sub>4</sub>

1<sub>3</sub>

1<sub>2</sub>

1<sub>1</sub>

(149) Historically, in the Coast Pilot, a sounding of less than 10 feet was given to the ½ foot (rounded down). Soundings 10 feet and greater were given to the whole foot (rounded down).

(150) When the text of Coast Pilot volumes, which presently contains depths in feet, is converted to metric values, the following rules apply:

**Foot range**

**Meter entry**

- |                           |  |
|---------------------------|--|
| (a) 0.5 through 68.8 feet | Convert to the nearest tenths of meters.               |
| (b) 68.9 through 100 feet | Convert to the nearest half meter (use 21.5 vice 21½). |
| (c) greater than 100 feet | Convert to the nearest whole meter.                    |

(151) When sounding information is received in metric units the following rules apply:

**Meter range**

**Meter entry**

- |                                |                                      |
|--------------------------------|--------------------------------------|
| (a) 0.1 through 20.97 meters   | Round to the nearest tenth of meter. |
| (b) 20.98 through 30.77 meters | Round to the nearest half-meter.     |
| (c) 30.78 meters and greater   | Round to the nearest whole meter.    |

(152) The break points are .07/.08 for rounding to tenths of meters. The break points are .77/.78 for rounding to whole meters.

(153) The decimal values .28 through .77 shall be rounded to a half-meter (.5).

(154) Examples of the rounding follow:

<b>To Meters and Tenths</b>	<b>To Half-Meters</b>	<b>To Whole Meters</b>
(0.1 through 20.97)	(20.98 through 30.77)	(30.78 meters and deeper)
15.37 = 15.3	26.27 = 26	35.77 = 35
15.38 = 15.4	26.28 = 26.5	35.78 = 36
	26.77 = 26.5	

To Meters and Tenths	To Half-Meters	To Whole Meters
-------------------------	----------------	-----------------

	26.78 = 27	
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- (155) When describing a channel and the actual depth is greater than the Federal project depth, the Federal project depth should be provided in the Coast Pilot as the controlling depth.

#### Distances (in miles)

- (156) Historically, in the Coast Pilot volumes, distances of “miles” are usually nautical miles. The notable exceptions are in the Mississippi River (Volume 5), the Intracoastal Waterway chapters (Volumes 3, 4 and 5), and in the Great Lakes region (Volume 6), where the “miles” are statute miles.

- (157) **Mileages** (whether in units of nautical miles or statute miles) are not only given in Coast Pilot text but also in tables. The tables containing mileages are the bridge tables of Coast Pilot 6 and 7, and the distance tables (in Appendix B) common to all Coast Pilot volumes. The distance tables of a specific Coast Pilot volume are applicable to that volume; occasionally, a distance table will be common to another volume. However, all the distance tables contained in the Coast Pilot volumes are contained in the NOS publication **Distances between US Ports**. Mileages in the bridge tables of Coast Pilot 6 are utilized to give the approximate location of the bridge (or other crossings of the waterway) in reference from the entrance/mouth of the waterway. Historically, the distance is in whole miles, and tenths of miles or hundredths of miles. The more precise measurement is used when two bridges are very close to each other.

- (158) The distance tables in the publication **Distances between U.S. Ports** are the same tables in the Coast Pilot volumes and contain distances to the nearest whole mile, sometimes in units of nautical mile and sometimes in units of statute mile.

- (159) The international standard for the mile is the nautical mile. No changes are necessary for tables currently using nautical miles. Only the tables in statute miles will have to be converted to nautical miles. See Appendix B in the back of the Coast Pilot and Distances Between United States Ports for Conversion Factors.

- (160) Historically, the rules for treating distances in text as opposed to tables are as follows:

- (161) Give distances greater than one mile as miles and tenths. For distances of whole miles, generally use the integral number, e.g., “Nantucket Sound is about 23 miles long.” vice “23.0 miles”. Where a more exact figure is required, use the decimal, e.g., “A wreck is 2.1 miles, 193° from the light.”

- (162) Where bridges are very close together, there are occasions when a “bridge’s distance above the entrance” should be given to the hundredth of a mile.

- (163) For distances less than one mile, use tenths of a mile, e.g., “A shoal is about 0.3 mile west of Tongue Point.”

- (164) When the text in a particular Coast Pilot volume contains distances in statute miles which need to be converted to nautical miles, the following rules apply:

- (165) (a) If the statute mile(s) value was carried to tenths, then the nautical mile(s) value should be carried to tenths.

- (166) (b) Where the statute mile(s) value was carried to a whole mile(s), if the degree of accuracy allows, then the nautical mile(s) should be carried to a whole value. If the degree of accuracy requires precision, then the nautical mile(s) value should be carried to tenths.

#### Distances other than Units of Miles

- (167) Historically, the distances carried in the Coast Pilot not in units of nautical miles or statute miles are in whole units of yards and feet.

- (168) The rules for treating distances not in miles in the text are as follows:

- (169) For distances less than, or equal to 500 yards (2,000 feet for the Great Lakes region), then the nearest 100 yards (feet) or 10 yards (feet) is used as appropriate, e.g., “The ledge extends about 120 yards north-northeast of East Overshoe Point,” or “The pier is 1,000 feet west of Lake Woebegone Light.”

- (170) When converting distances in units of yards to meters, go to the nearest whole meter.

- (171) When converting distances in units of feet to meters, go to the nearest whole meter when the degree of accuracy allows.

- (172) When the degree of accuracy requires precision, convert distances in feet to meters to the nearest tenth.

- (173) When statute miles are used on the charts, such as along the Intracoastal Waterway or in the Mississippi River, use statute miles in the Coast Pilot. A statement advising that statute miles are being used must be included at the beginning of the appropriate section of the Coast Pilot.

- (174) The term “**miles above the entrance**” is appropriate for use with waterways whose mouth is protected by breakwaters, jetties, and similar structures. The entrance point should be considered to be between the outermost ends of the protective structures if they are of equal or near-equal extent. Where they are unequal, the entrance point should be adjacent to the outermost end. The term “miles above the mouth” is appropriate for use with waterways whose natural mouth is unimproved. The point from which mileages are measured is



in midchannel on a line between the entrance points of the waterway.

### Dumping

- (175) Permits for dumping dredged material into waters of the United States, including the territorial sea, and in ocean waters are issued by the Corps of Engineers. Permits for dumping fill material into waters of the United States, including the territorial sea, are also issued by the Corps of Engineers. Permits for dumping other material into the territorial sea and in ocean waters are issued by the Environmental Protection Agency. Regulations for the Corps of Engineers are in **33 CFR 323 through 324**, and for the Environmental Protection Agency are in **40 CFR 220 through 229**.
- (176) **Disposal sites** are areas established by Federal regulation (**40 CFR 220 through 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. All other dumping is supervised by the Environmental Protection Agency (EPA).
- (177) **Dumping grounds** are also areas 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 new surveys are made.
- (178) Disposal sites and dumping grounds are rarely mentioned in the Coast Pilot, but are shown on nautical charts. Identify disposal sites and dumping grounds only when the grounds present a hazard to the normal tracklines of vessel traffic.
- (179) **Spoil areas** are for the purpose of depositing dredged material, usually near and parallel to dredged channels. Spoil areas are usually charted from surveys from the Corps of Engineers, though they may originate from private or other Government agency surveys. Spoil areas are tinted blue on the charts and labeled; all soundings and depth curves are omitted.
- (180) Describe **diked disposal areas** briefly as to location. Indicate if they are marked by aids to navigation. Refer to the applicable regulations in chapter 2 of the Coast Pilot.

### Electronic aids to navigation

- (181) The following electronic aids to navigation are described in chapter 1 of the Coast Pilot: loran, radar, emergency position indicating beacons (EPIRB), GPS, DGPS, and racons. Sometimes an overall statement about the coverage of loran appears in chapter 3 of the Coast Pilot. Racons are mentioned where encountered in chapters 4 to Appendix A.

### Emergency Position Indicating Radiobeacons

- (182) Emergency Position Indicating Radiobeacons (EPIRBs) are designed to alert search and rescue authorities and indicate the distressed vessel's location. EPIRBs are described in greater detail in chapter 1 of the Coast Pilot. Primary source of update for this topic is Marine Radio Policy Branch, USCG Headquarters; secondary source is the USCG LNM and NGA NM.

### Exclusive Economic Zone of the United States

- (183) 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 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 other state concerned in accordance with equitable principles.
- (184) 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.
- (185) 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.
- (186) This Proclamation does not change existing U.S. policies concerning the continental shelf, marine mammals and fisheries, including highly migratory species of tuna that are not subject to U.S. jurisdiction and require international agreements for effective management.

- (187) The United States will exercise these sovereign rights and jurisdiction in accordance with the rules of international law.
- (188) 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.** (See **Fishery Conservation Zone**, this chapter, and **territorial sea, Appendix C**, this manual.)

#### Federal regulations

- (189) (See Regulations, and Navigation regulations, this chapter.)

#### Ferry service

- (190) Describe ferry service, stating whether passengers and/or vehicles are carried, whether the service is seasonal, and places where the service is available. Give the address where the ferry schedule is available.
- (191) See cable ferries.

#### Fish havens

- (192) Fish havens are defined in chapter 1 of the Coast Pilot. This includes mention of the Corps of Engineers being the authorizing entity.
- (193) Give a general statement about the existence of fish havens in chapter 3 of the Coast Pilot. Example: "Fish havens, some marked by private buoys, are numerous along the coast of the Gulf of Mexico."
- (194) In chapters 4 to Appendix A, mention fish havens when they affect navigation. Indicate how they are marked and give the authorized minimum depth (as authorized by Corps of Engineers permit).

#### Fishtraps

- (195) The Corps of Engineers has a "nationwide permit" program. A nationwide permit is a form of general permit that authorizes a category of activity throughout the nation provided that conditions specified by the Corps of Engineers are met. Authorized activities under this program include fish harvesting devices and activities such as pound nets, crab traps, eel pots, lobster traps, and clam and oyster digging. One of the aforementioned specified conditions is that the permitted activity will not cause an unacceptable interference with navigation. (See 33 CFR 330, Nationwide Permits.)

#### Fishery Conservation Zone (FCZ)

- (196) 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.

- (197) 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 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**.)

- (198) 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.

- (199) An article similar to the above is carried annually in NGA Notice to Mariners No. 1.

- (200) The seaward limit of the FCZ is shown on the nautical chart as a line interspersed periodically with a symbol of a fish. **The FCZ boundary is coincidental with that of the Exclusive Economic Zone.** (See **Exclusive Economic Zone**, this chapter, and **territorial sea, Appendix C**, this manual)

#### Freshets

- (201) Give season of occurrence and heights above normal water level; this is important in the upper reaches of rivers.

#### Geographic names

- (202) The spelling of geographic names in the Coast Pilot and on the chart should coincide. In case of conflict,

refer the matter to the Staff Geographer for reconciliation. In instances where a correction will appear in the Coast Pilot before the corrected chart will be available, show the correct name in the Coast Pilot followed by the former (charted) name in parentheses until the chart reflecting the correction is available. Do this only where the geographic place is boldfaced in the text. If the place is mentioned again, use only the correct name.

- (203) When the full name of a Coast Guard navigational aid is mentioned in the Coast Pilot, use the name as carried in the Light List. In case of conflict between the name of a Coast Guard aid and the chart, refer the matter to the Staff Geographer for reconciliation.

### Gulf Stream

- (204) The Gulf Stream is discussed in some detail in Coast Pilot 4 and 5 (identically). Included in the description of the Location of the Gulf Stream, are sources, broadcast media, and broadcast times of analysis of the Gulf Stream system. Primary sources of update for this topic are Office Products Branch, Office of Ocean and Earth Sciences, NOS, Camp Springs, MD, and Tropical Storm Analysis Center, National Weather Service, Coral Gables, FL. Any recommended changes received from other than the above offices shall be forwarded for clearance to the appropriate office before entry in the Coast Pilot.

### Glossary, English–Polynesian

- (205) A table appears early in the Hawai'i chapter of Coast Pilot 7, preceded by a statement similar to the following:
- (206) Following are the English meanings of Polynesian words that occur frequently in Hawai'ian geographic names.

### Glossary, English–Spanish

- (207) A table appears early in the Puerto Rico chapter of Coast Pilot 5, preceded by a statement similar to the following:
- (208) Spanish is the official language of Puerto Rico, although many of the native people are bilingual; most of the island's geographic features have Spanish names.

### Harbor regulations

- (209) If there are local regulations, state the enforcing agency or official and where a copy of the regulations may be obtained. Give only regulations that affect vessels while actually underway within the port, such as speed limits, traffic patterns, etc. Mention harbor-masters and/or wharfingers when applicable, and give the location of their offices. For large ports, mention the port authority and give the location of the port's

general offices. Where restrictions are established by Federal regulations, give general location and refer to the appropriate section in chapter 2 of the Coast Pilot.

### Heights (reference datum)

- (210) Heights of lights, rocks, bridges, cables, and other overhead crossings in the Coast Pilot are referred to the same plane as other heights, except topographic contours and summit elevations, on the applicable NOS chart. On charts of the east coast, Gulf Coast, west coast and Alaska this plane is normally mean high water. On charts of pooled rivers this plane is usually Normal Pool Level. On NOS charts of the Great Lakes this plane is low water datum (IGLD 1985).
- (211) In the text, do not refer heights explicitly to a datum unless the datum is not the normal mean high water (or low water datum in the Great Lakes region).
- (212) When giving the height of lights, landmarks, etc., the manner of writing should correctly indicate the datum from which the height is measured. For example, "Mile Rocks Light (37°7.6'N., 122°0.6'W.), 49 feet above the water, . . ." indicates that the height datum is the normal mean high water datum, while "A 500-foot loran tower . . ." means that the top of the tower is 500 feet above the ground.

### Heights (aids to navigation)

- (213) The USCG Light List, as of the date of this manual, gives the focal plane height of a light signal to the nearest foot. The heights of aids to navigation structures other than the light are also given in the Light List to the nearest foot.
- (214) In the Coast Pilot, when converting aids to navigation descriptions to metric, give the heights to the nearest 0.1-meter. After the Coast Pilot is metricated, when describing a new aid to navigation, give the new height to the nearest 0.1-meter.

### Heights (bridges)

- (215) Historically, in the Coast Pilot, when a bridge vertical clearance is 10 feet or less, the vertical clearance was given to the nearest ½ foot (rounded down). If the vertical clearance is greater than 10 feet, it is listed to the nearest whole foot (rounded down). A few bridges in Coast Pilot 6, Great Lakes, are described in text (as opposed to being listed in a table) with the guidelines just described. The majority of the bridges in Coast Pilot 6 are contained in tables. Historically, in the bridge tables of Coast Pilot 6, the vertical clearance is to the nearest whole foot.
- (216) In converting a bridge description to metric, in all Coast Pilot volumes, text and/or tabular, give the vertical clearance to the nearest 0.1-meter. When the Coast Pilot is converted to metric, for a new bridge give the

vertical height to the nearest 0.1-meter (rounded down).

#### Heights (cables)

- (217) Historically, in the Coast Pilot, the vertical clearance of overhead cables is given to the nearest whole foot. When converting a cable description to metric, give the vertical clearance to 0.1-meter. After the Coast Pilot is converted to metric, for a new cable, give the vertical height to the nearest 0.1-meter (rounded down).

#### Heights (overhead crossings other than bridges and cables)

- (218) See Heights (bridges); the guidance therein also applies to “overhead crossings other than bridges and cables”.

#### Heights (wharf deck height)

- (219) The height (deck height) of a deck on a pier or wharf is referred to the same datum as soundings on the chart. On all NOS “salt water” charts it is mean lower low water. On NOS charts of the Great Lakes it is low water datum (IGLD 1985). Historically, in the Coast Pilot the deck height is given to the nearest half foot. When converting a wharf or pier description to metric give the deck height to the nearest 0.1-meter. After the Coast Pilot is converted to metric, for a new wharf, give the deck height to the nearest 0.1-meter.

#### Heights (contour and summit elevations)

- (220) Contour and summit elevation values on NOS charts are referred to mean sea level. The source of the height of a mountain peak in the Coast Pilot has historically been the charted value. When converting the height of a mountain peak to metric give the height to the nearest 0.1-meter. Seldom will the Coast Pilot give a contour line elevation. If there is a contour line height given in the Coast Pilot, when converting it to metric round to the nearest whole meter. When converting a summit elevation value in the Coast Pilot round to the nearest 0.1-meter. After conversion to metric in the Coast Pilot, give summit elevation values to the nearest 0.1-meter.

#### Horizontal clearances (bridges)

- (221) Historically, in Coast Pilot text, the horizontal clearance of a bridge is given if less than 50 feet.
- (222) The exception is the bridge tables of Coast Pilot 6, Great Lakes, which always include the horizontal clearance.
- (223) When converting a horizontal bridge clearance in the Coast Pilot to metric, give it to the nearest 0.1-meter. After the Coast Pilot is converted to metric, for new

bridges, the horizontal clearance in text (as opposed to tables) should be carried if less than 15 meters; and should be rounded to the nearest 0.1-meter.

#### Horizontal clearances (width of a dredged channel)

- (224) Historically, in the Coast Pilot, the width of a dredged channel is given if 100 feet or less. When converting a channel width in the Coast Pilot to metric, give it to the nearest whole meter. For a new dredged channel, the channel width should be carried in the Coast Pilot if less than 30 meters; and should be rounded to the nearest 5 meters.

#### Horizontal clearances (hurricane barrier, tide gate, lock, and similar structures)

- (225) Historically, in the Coast Pilot, the horizontal clearances of hurricane barriers, tide gates, locks, and similar structures are given in feet or in feet and inches. When converting one of these dimensions to metric give it to the nearest 0.1-meter. For a new structure if the dimension is given in feet or feet and inches convert to the nearest 0.1-meter. If given in metric units carry it to the nearest 0.1-meter.

#### Horizontal Datum

- (226) Nautical charts are presently constructed based on one of a number of horizontal datums adopted to best represent individual regions around the world. Horizontal datum, horizontal geodetic datum, and horizontal control datum are synonymous.

- (227) The exact placement of lines of latitude and longitude on a nautical chart is dependent on the referenced horizontal datum. Charts of the United States are currently referenced to datums such as the North American Datum of 1927 (NAD 27), Puerto Rican Datum, Old Hawaiian Datum, and others. Through the use of satellites and other modern surveying techniques, it is now possible to establish global reference systems.

- (228) North American Datum of 1983 (NAD 83) is the new geodetic reference system (horizontal datum) for the United States and Canada. NAD 83 replaces the various datums used in the past on NOS charts, except charts of Hawaii, and other Pacific Ocean islands, which are compiled on World Geodetic System 1984 (WGS 84). WGS 84 is equivalent to the NAD 83 for charting purposes.

- (229) The parameters of the ellipsoid of reference used with NAD 83 are very close to those used for WGS 84. The ellipsoid used for NAD 83, Geodetic Reference System 1980 (GRS 80), is earth centered or geocentric as opposed to the nongeocentric ellipsoids previously employed. This means that the center of the ellipsoid coincides with the center of mass of the earth.



- (230) Many NOS charts have been converted to NAD 83. The NOS publication Dates of Latest Editions, published quarterly indicates, to date, which NOS charts have been published to NAD 83.
- (231) What does this change in datum mean to the mariner? It means that during the period of conversion, some charts will be referenced to the new NAD 83 datum, while others will still be referenced to the old former datum. Charted features will remain unaffected in their relationship with the surrounding area. Therefore, when comparing charts of the same area, referenced to different horizontal datums, no changes to charted features will be noticed since all features shift by approximately the same amount. The apparent difference will be the shift of the latitude and longitude grid in relation to the charted features. As a result, the geographic positions (latitude and longitude) of all charted features will change.
- (232) Each NOS chart that is published carries a standard horizontal datum note identifying the datum used on that chart.
- (233) **Case I.** In addition to the standard horizontal datum note, all charts that have been converted to NAD 83 will carry an additional Horizontal Datum Note. Similar to the one below, it will inform the mariner if any correction must be made to the latitude and longitude when transferring geographic positions from the previous charted datum to NAD 83.
- (234) **Sample, Horizontal Datum Note** (on chart 13272, Boston Inner Harbor):
- (235) "HORIZONTAL DATUM
- (236) The horizontal reference datum on this chart is North American Datum of 1983 (NAD 83), which for charting purpose is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.351" northward and 1.819" eastward to agree with this chart."
- (237) For example: One of the coordinates of the anchorage in 33 CFR 110.30(m), Boston Inner Harbor A, is a point at 42°21'31.62" N, 71°02'52.37"W. When this anchorage was originally laid out, chart 13272 was on horizontal datum of NAD 27. The current edition of chart 13272 is on NAD 83. Accordingly, to plot the above point on the current chart, first add 0.351" to the latitude and subtract 1.819" from the longitude.
- (238) **Case II.** When the magnitude of the shift between the existing chart datum and NAD 83 does not result in a significant plottable difference on a chart converted to NAD 1983, a note similar to the following appears on the chart:
- (239) "HORIZONTAL DATUM
- (240) The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to (name of the old datum) do not require conversion for plotting on this chart."
- (241) **Case III.** If a chart is not yet on NAD 83, and NOS re-publishes it without converting to NAD 83, a note similar to the following appears on the chart:
- (242) "HORIZONTAL DATUM
- (243) The horizontal reference datum of this chart is (name of the datum). Geographic positions on North American Datum of 1983 (NAD 83) must be applied, an average of "northward/southward and eastward/westward" to agree with this chart. For charting purposes, NAD 83 is considered equivalent to the World Geodetic System of 1984 (WGS 1984) datum."
- (244) Nautical chart changes by NOS involving latitude and longitude coordinates, published in Notices to Mariners, include the horizontal datum used for the coordinates.
- (245) Federal Regulations published by the Coast Guard (in **33 CFR**) involving geographic positions (latitude and longitude) include the horizontal datum used for the coordinates. For example, **33 CFR 110.238**, Apra Harbor, Guam, contains "Datum: (WGS 84)".
- (246) Federal Regulations published by the Corps of Engineers (in **33 CFR**) involving geographic positions (latitude and longitude) do not include the horizontal datum used for the coordinates.
- Ice**
- (247) Ice is discussed in the Coast Pilot in two aspects: (a) the natural phenomena of its accretion and characteristics and (b) winter navigation as maintained with the cooperation of interested maritime organizations and Federal agencies.
- (248) The natural phenomena of ice are discussed under the topic "Weather" in chapter 3 if applicable to the particular Coast Pilot volume. Chapters 4 to Appendix A should contain a combination of the natural phenomena and the winter navigation aspects as localized in the area covered by the chapter.
- (249) Northern Coast Guard Districts, notably the First, Fifth and Ninth Districts, publish their plans for maintaining winter navigation in the Local Notice to Mariners. They follow up by publishing ice forecasts, actual ice conditions, and status of the icebreaking. There is no need for the Coast Pilot to go into much detail, particularly because of the changeable nature of the ice and Coast Guard operations. However, in a general manner, the following should be addressed when describing a particular harbor or waterway: extent of ice interference with navigation and the approximate dates between which this condition usually exists; whether

channels are kept open by ice breakers; and to what extent aids to navigation are affected.

#### International Ice Patrol

- (250) The International Ice Patrol (IIP) was formed in 1914 to patrol the Grand Banks of Newfoundland, to detect icebergs, and to warn mariners of their location. The U.S. Coast Guard operates the IIP. The IIP is discussed in detail in Coast Pilot 1 and 2, chapter 3. One of the sources for this topic is Radionavigational Aids, NGA Pub. 117.

#### Immigration

- (251) Functions of the **Immigration and Naturalization Service (INS)** as relating to the maritime industry are discussed in chapter 1 of the Coast Pilot.
- (252) A statement similar to the following is carried in chapter 3:

#### “Vessel Arrival Inspections

- (253) Quarantine, customs, immigration, and agricultural quarantine officials are stationed in most major U.S. ports. (See Appendix A for addresses.) Vessels subject to such inspections generally make arrangements in advance through ships' agents. Unless otherwise directed, officials usually board vessels at their berths.”
- (254) If applicable, include the following in the description of a port: **Quarantine, customs, immigration, and agricultural quarantine.** (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)
- (255) Appendix A of the Coast Pilot carries a list of INS office addresses.

#### Intracoastal Waterway

- (256) An inside protected route extending from Manasquan Inlet, NJ to Cape May, NJ; Norfolk, VA to Key West, FL; across Florida from St. Lucie Inlet (Atlantic side) to Fort Myers, Charlotte Harbor, Tampa Bay, and Tarpon Springs; and from Carabelle, FL (Gulf side) to Brownsville, TX. The ICW is maintained by the Corps of Engineers.

#### Jetties

- (257) State if jetties cover and are dangerous. If so, state how much it covers against the sounding datum, e.g., “the breakwater covers 2 feet.” If this is not possible, give the estimated or reported stage of tide at which it covers, e.g., “It is reported that the breakwater covers at mean high water.”

#### Landing places

- (258) Landing places are of special importance on dangerous coasts. State location and peculiarities affecting

landings, stage of tide best for landing, and conditions under which landings are dangerous.

#### Locks

- (259) Describe navigation locks; give the length and width of each lock, depth over the sills, vertical lift, and the controlling clearance under any fixed overhead structures. Sometimes the controlling entity of a lock specifies the limits on the dimensions of the transiting vessel rather than the dimensions of the lock. In this instance publish the limits on the vessel rather than the size of the lock proper. An example: “The maximum permissible draft in the Seaway locks is 26 feet. The maximum overall length and extreme breadth authorized in the Seaway locks is 730 feet and 76 feet, respectively. The maximum height authorized in the Seaway is 116 feet above the water.”
- (260) If the lockmaster can be contacted on radiotelephone, give the channel or frequency monitored and the call sign. Mention traffic control devices such as traffic lights or semaphores. Where navigation is governed by Federal regulations, refer to the applicable regulation in chapter 2 of the Coast Pilot.

#### Language equivalents

- (261) Lists of English equivalents for some Spanish and Polynesian words frequently used in local geographic names are included in glossaries in Coast Pilots 5 and 7 for Puerto Rico and Hawaii, respectively.

#### Magnetic model

- (262) At 5-year intervals, the United States and United Kingdom jointly produce a spherical harmonic model of Earth's main magnetic field and its slow secular (temporal) change. The latest in a long succession of such models was completed in December 2005. It is the World Magnetic Model (WMM) for the 2005-2010 Epoch (WMM-05-10). Its purpose is to predict the value of the core-generated geomagnetic field parameters (e.g., variation, inclination, and total intensity) from the Earth's surface to an altitude of about 1,000 kilometers at any point around the globe at any time during the next five years. WMM-05-10 is the model utilized by NOS for the placement of magnetic information (e.g., variation) on nautical charts.

- (263) **Local magnetic disturbance**, which causes noticeable deflections of the compass, is a very common occurrence in shallow water and near mountain masses. Reports of local magnetic disturbances shall be forwarded to the **National Environmental Satellite, Data, and Information Service (NESDIS)**, National Geophysical Data Center, Solid Earth Geophysics Division, Boulder, CO, for approval prior to entry into the Coast Pilot. Anomalies are **described as follows**:

### Local magnetic disturbance

- (264) Differences of as much as 7° from normal variation have been observed in the vicinity of Carls Island.

### Marine Protected Areas (MPAs)

- (265) Marine Protected Areas (MPAs), such as National Marine Sanctuaries and State Parks, are along the coastal waters of the United States. Some MPAs may restrict certain activities of interest to the maritime community (e.g., anchoring, discharge, transit, fishing, etc.). In order to promote effective stewardship of the coastal habitats and the natural resources they contain, the Coast Pilot Branch, in partnership with NOAA's National Marine Protected Areas Center, has incorporated key information about existing coastal MPAs into the Coast Pilot books.
- (266) MPAs included in this project should be sites that are in navigable waters and have laws and regulations that may affect the mariner. A list of the MPAs Inventory of Sites can be found on the MPAs website [www.mpa.gov](http://www.mpa.gov). Each Coast Pilot chapter that mentions MPAs along the coast should give a reference to Appendix C (in all Coast Pilot volumes) for more details. Appendix C indicates the types of site-specific restrictions that are potentially of interest to mariners.
- (267) For Alaska, only Federally-designated MPAs are listed. State-designated MPAs will be included in later editions as data is collected.

### Measurements

- (268) (See Bearings, courses, directions; Depths; Distances; Heights; Horizontal clearances; Measured courses; and Numerals.)

### Measured courses

- (269) Historically, in the Coast Pilot:
- (270) (a) In the “salt water” volumes a “measured mile” is a nautical mile in length.
- (271) (b) In Coast Pilot 6, Great Lakes, a “measured mile” is a statute mile in length.
- (272) (c) In any Coast Pilot volume a “measured course” (other than a measured mile in length) may and does occur. The units are to the nearest whole foot.
- (273) In converting a measured mile/measured course to metric, no action is required for a **measured mile** in a “salt water” Coast Pilot volume (the mileages are nautical miles); the International metric mile is the nautical mile.
- (274) In converting a measured mile in Coast Pilot 6 and/or a measured course in any Coast Pilot volume convert feet to the nearest 0.5 meter.
- (275) After the Coast Pilot is converted to metric, if a new measured course/mile is received in English units,

convert them to metric units using the preceding guidance.

- (276) Examples: “A 000° 32' – 180° 32' **measured nautical mile** is eastward of Monroe Island. Ranges on orange slatted skeleton towers with black markers mark the ends of the course.”
- (277) “A 091° 10' – 271° 10' **measured course**, 5,946 feet (1,812 meters) long, is on the west side of Whaleboat Island. Ranges on orange slatted skeleton towers with black markers mark the ends of the course.”
- (278) In addition to carrying measured courses in the text of the Coast Pilot, list them in Appendix A, under the title **Measured Courses**, and with the chart number where they appear.

### Medical radio traffic

- (279) Free medical advice is furnished to seamen by radio through the cooperation of Governmental and commercial radio stations. Operators receive and relay messages from a ship at sea to the U.S. Coast Guard and/or directly to a hospital, and then radio the medical advice back to the ship. The shipmaster should prefix such traffic with RADIOMEDICAL.
- (280) An entry similar to the above is carried in chapter 1 of the Coast Pilot. Appendix A carries a list of public coast stations and U.S. Coast Guard stations that will accept and relay RADIOMEDICAL traffic. Radio stations, global wide, which will accept and relay RADIOMEDICAL traffic are published in NGA Pub. 117.

### Navigation Guidelines

- (281) Navigation Guidelines, safe navigational practices and procedures, have been developed by local maritime interests in certain ports for adherence by vessels of a specified size and greater. The guidelines are voluntary and developed by the U.S.C.G. Captain of the Ports, pilots, towboat operators, ship operators, port authorities, local U.S. Navy, etc. Navigation Guidelines have been established in Frenchman Bay, ME, Bay and River Delaware, Charleston, SC, Brunswick, GA, Jacksonville, FL, St. Andrews Bay, FL, Tampa Bay, FL, Calcasieu River, LA, and San Francisco. More deepwater ports are expected to follow. A Security Broadcast System is usually an integral part of the Navigation Guidelines System. See Security Broadcast System.

### NAVTEX Marine Information Broadcasts

- (282) NAVTEX is an international system used in the United States to broadcast printed copies of Coast Guard district notices to mariners, distress notices, weather forecasts and warnings, ice warnings, Gulf Stream location (where applicable), and radionavigation information to all types of ships. NAVTEX is discussed in greater detail in chapter 1 of the Coast Pilot.

Primary source of update for this topic is Marine Radio Policy Branch, USCG Headquarters; secondary is the USCG LNM and the NGA NM.

### Navigation regulations

- (283) Navigation regulations published in chapter 2 of the Coast Pilot are normally given verbatim as printed in the Federal Register. The only editorial changes made are to correct obvious misspellings or to realign long lists of geographic coordinates to make them more readable. Obvious errors in the regulations (such as incorrect coordinates or references to discontinued objects) should be reported to the originating agency.
- (284) Within the text of the Coast Pilot, regulations that apply to a described feature or area are referenced with a parenthetical statement such as “(See 117.955, chapter 2, for drawbridge regulations.)” or “(See 165.1 through 165.13 and 165.304, chapter 2, for limits and regulations.)”
- (285) Most drawbridges over navigable waters have regulations prescribed for their operation. Some bridges are covered by specific regulations, while other bridges are covered by general regulations that apply to several drawbridges. These regulations, both general and specific, are carried in chapter 2 of the Coast Pilot. Bridge descriptions in the Coast Pilot include a reference to the appropriate drawbridge regulations in chapter 2, both the general and specific regulations if appropriate.
- (286) In the Intracoastal Waterway chapters of the Coast Pilot, reference to the general drawbridge regulations may be omitted at individual bridge descriptions if a statement concerning the applicability of the general drawbridge regulations is given at the beginning of the chapter.
- (287) Occasionally, the Marine Chart Branch is notified that a drawbridge remains in the closed position, but a change is not made in the navigation regulations covering the bridge; the drawbridge is charted as a fixed bridge. Describe the bridge in the Coast Pilot as follows: “The railroad swing bridge 3.4 miles above the mouth of the slough is maintained in the closed position. (See 117.200, chapter 2, for drawbridge regulations.)” Continue to reference the regulation until a change is published in the Federal Register.
- (288) See the description of the Coast Pilot in chapter 1 of this manual for a list of regulations normally included in the Coast Pilot.
- (289) Based on authority granted by the Code of Federal Regulations, Coast Guard Captains of the Port occasionally issue orders affecting navigation that are not published in the Federal Register. The reasons for issuing such orders vary, but generally they are of a very temporary nature or cover circumstances that developed so quickly as to preclude normal administrative

procedures for publishing a regulation in the Federal Register. Orders issued in the latter case are often later replaced by Federal regulation. These orders, specified by year of issue and order number, should be mentioned in the Coast Pilot if of a long-term nature (generally 1 year or more).

### No-Discharge Zones (NDZs)

- (290) No-Discharge Zones are areas where State governments have prohibited the discharge of sewage from all vessels. NDZs are approved and administered by the U.S. Environmental Protection Agency. NDZs are noted and shown on the nautical charts. Each NDZ should be described in the text for the waters where it applies, it should be located in a sequential topic order under Port description. (See Port description, this manual.)
- (291) Example:  
**No-Discharge Zone**
- (292) The State of New Jersey, with the approval of the Environmental Protection Agency, has established a No-Discharge Zone (NDZ) in Barnegat Bay Complex and its navigable tributaries. Boundary lines or points should be described as set forth in the regulations.
- (293) NDZs are also mentioned in Chapters 1, and the regulations (40 CFR 140) are given in chapter 2 of the Coast Pilot.

### Notices to Mariners

- (294) Notices to Mariners are published by Federal agencies to give mariners marine information affecting safety of navigation.
- (295) Notice to Mariners (NM) is a publication from the **National Geospatial-Intelligence Agency (NGA)**, international in scope, prepared jointly with the National Ocean Service and the U.S. Coast Guard. It gives information on changes to aids to navigation, dangers to navigation, selected items from the Local Notice to Mariners, important new soundings, changes in channels, harbor construction, radionavigation information, new and revised charts and publications, special warnings and notices, pertinent Hydrolant, Hydropac, Navarea IV and XII messages, and in general, all such information that affects nautical charts, manuals, catalogs, sailing directions (pilots), etc. The Notice to Mariners should be used routinely for updating nautical charts and related publications.
- (296) Local Notice to Mariners (LNM) is published weekly by each Coast Guard District Commander. Each LNM gives information similar to that in the NGA notices, but only for the applicable district. The LNMs include information applicable to small craft not carried in the NGA notices. The Local Notice to Mariners should be used routinely for updating nautical charts



and related publications. The LNM may be obtained without cost on the internet.

(297) The NGA NM and the Coast Guard LNMs are important sources of information for updating the Coast Pilot. In turn, amendments to the Coast Pilot prepared by the Coast Pilot Branch are forwarded to the Director, NGA, and the applicable Coast Guard District Commander to be published in their respective Notices to Mariners.

(298) Notices of improved channel depths and other items affecting safety to navigation are published by the District Engineers, U.S. Army Corps of Engineers. Usually information contained in these notices affecting safety to navigation is republished in Coast Guard LNMs.

(299) Marine **Broadcast Notice to Mariners (BNM)** are made by the Coast Guard, through Coast Guard, Navy, and some commercial radio stations, to issue navigational warnings containing information affecting the safety of vessels, e.g., changes and/or defects in aids to navigation, derelicts, and position of ice. Typically, the radio station issues the BNM immediately upon receipt and, depending upon the degree of the warning, repeats it during the next several scheduled broadcasts. Some Coast Guard radio stations that issue BNMs also issue weather (WX) broadcasts. The WX, provided to the Coast Guard by National Weather Service, is issued either immediately following the BNM or at a separate time.

(300) The Coast Pilot lists U.S. marine radio stations that make BNM broadcasts. NGA Radio Navigational Aids, Publication 117, list the marine radio stations that make BNM broadcasts on an international scale. Appendix A of each Coast Pilot includes the scheduled times of NM type broadcasts; Publication 117 carries both the NM and WX broadcasts times.

#### **Notice to Mariners Releases—Amendments for the Coast Pilot published in Notices to Mariners**

(301) Amendments to the Coast Pilot on matters affecting safety of navigation and/or amending Federal navigation regulations are promulgated to the user through the NGA Notice to Mariners and Coast Guard Local Notices to Mariners.

#### **Title page entry**

(302) An entry similar to the following appears on the Title page of the Coast Pilot “The last published amendment to the previous edition (2004/26th) was amendment 25. Amendment 24 was published in National Geospatial–Intelligence Agency (NGA) Notice to Mariners 40 dated 10/3/05. Amendment 25 was published in Commander Eleventh Coast Guard District

Local Notice to Mariners 38 dated 9/15/05. Amendment 24 was published in Commander Thirteenth Coast Guard District Local Notice to Mariners 37 dated 9/8/05. Amendment 24 was published in Commander Fourteenth Coast Guard District Local Notice to Mariners 38 dated 9/8/05. Amendments 1 through 25 to the previous edition have been entered into this 2006 edition.

(303) An entry similar to the following appears early in chapter 1 of the Coast Pilot; “Notice. - Amendments are issued to this publication through U.S. Coast Guard Local Notices to Mariners. The Local Notice to Mariners is available on the internet. Consult the Coast Pilot Appendix A for the address. All amendments are also issued in NGA Notices to Mariners.

#### **Numerals**

(304) Use Arabic numerals for a number of 10 or greater. Spell out numbers less than 10, except for time, measurement, or money. For example, “The entrance buoy is 2 miles offshore,” but “The port has two oil wharves.” Rephrase a sentence to avoid beginning with a numeral, but spell the numeral out if the sentence cannot be phrased differently (See the GPO Style Manual). Use decimals on mileages, tidal ranges, current strengths, latitudes, and longitudes. Depending on the scale of the chart and the preciseness needed, carry coordinates to tenths of minutes or to whole seconds. Fractions may be used in unit modifiers in sentence fragments, such as “7½-million-bushel grain elevator,” or in other specific instances in the Coast Pilot.

#### **Oil pollution**

(305) The Federal Water Pollution Control Act, as amended, prohibits the discharge of a harmful quantity of oil or a hazardous substance into or upon U.S. 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).

(306) Hazardous quantities of oil have been defined by the Environmental Protection Agency as those that 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**).

(307) 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.

(308) 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.

(309) 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 the Coast Pilot Appendix A for the address.)

(310) An article similar to the above is carried in chapter 1 of the Coast Pilot. It is derived from Federal regulations issued by the U.S. Coast Guard, 33 CFR 151 and 153. It is also carried annually in NGA Notice to Mariners Number 1.

### Overlap of Coast Pilot volumes

(311) To some extent Provincetown is described in both Coast Pilot volumes 1 and 2. The same applies to the approaches to New York Harbor in Coast Pilot volumes 2 and 3. Much of Key West appears in both Coast Pilot volumes 4 and 5. The Appendices of Coast Pilot 8 and 9 (the Alaskan books) have been kept almost identical; a vessel can hardly enter the waters of the “northern book” without passing through the waters of the “southern book”. Overlap should be kept to a minimum.

### Parks

(312) Mention State or Federal parks on or near the waterfront if their locations or associated regulations affect the mariner. When applicable, regulations are carried in chapter 2 of the Coast Pilot; reference them when describing the park in the text. If the regulations

are not carried in chapter 2, give the address where they can be obtained.

(313) “Isle Royale and its surrounding islands form Isle Royale National Park. (See **36 CFR 2.2 and 7.38**, chapter 2, for limits and regulations.)”

### Photographs

(314) Photographs in the Coast Pilot should be TIF images with a target resolution of 300 dots per inch (dpi). Photographs with a lower resolution can be used but in no case should they be less than 150 dpi. New photographs acquired for the Coast Pilot should be color corrected and adjusted in a graphic editing application (e.g., Photoshop). The name of the body of water or port should be added to the bottom of the photo using a Clearface font in 16 point (or smaller depending on the size of the photograph) size type. A north arrow should be added, and the year the photo was taken should be placed in the corner of the photo using 10 point (or less depending on the size of the photograph) size type.

(315) The photograph should also include important features labeled to help orient the mariner. The following is a list of suggested features that should be considered: bodies of water, towns, important islands or prominent land features, bridges, landmarks, identifiable aids to navigation, deep-draft wharves, and Coast Guard stations. Consult the largest scale nautical chart when labeling features. Labels should be saved on a different level (or channel) than the photograph in the graphic editing application so the labels can be edited easily without affecting the photograph. The photo editor should take care not to clutter the photo with labels.

(316) Photographs in the Coast Pilot should be reviewed periodically against the nautical chart. The compiler should check the labels to see if any have changed. If so the label layer on the photograph should be revised. The compiler should check the shoreline for changes. If there have been significant changes, the photograph should be removed from the book and a new photograph should be obtained.

(317) Chapter 6 of the Coast Pilot Manual contains guidance for taking aerial photographs for use in the Coast Pilot.

### Pilotage

(318) Give the following information on pilotage for ports where pilotage is available. For each pilotage association servicing the port give the name of the association, mailing address, telephone number, FAX number, and cable address; the type of vessels served e.g., U.S. registered vessels, enrolled vessels, public vessels, foreign vessels; the location of the pilot station; what radio frequencies are monitored, what radio frequencies are worked, differentiate between pilot

station and office (if office is separate from pilot station); pilot boat description i.e., name, length, hull color, superstructure color, word PILOT (location on boat, if applicable), what radio frequencies are monitored, what radio frequencies are worked; location of the pilot boarding station and/or pilot boat cruising area; natural conditions that affect pilot operations; any special boarding instructions e.g., height of ladder above the water, speed of vessel; means of obtaining pilotage service (e.g., ship's agent and/or direct communication); and amount of advance notice required by pilots, including ETA updates.

(319) Where feasible, describe Pilotage in detail (as suggested above) at base locations, e.g., chapter 3 or at the beginning of the Narragansett Bay chapter and a few other locations. Then at a port serviced by that particular association, use “See Pilotage, chapter 3 (or Pilotage, Narragansett Bay) for details.” Limit local pilotage description to what is necessary to supplement the “base location” description.

(320) The term “pilot station,” as normally used in the Coast Pilot means the central office ashore, normally maintained by an association of pilots and manned by a dispatcher. “Pilot boarding station” means the point where pilots board inbound vessels. “Pilot boat station” or “pilot boat cruising area” means the area where a pilot boat cruises continuously.

(321) For a discussion of pilotage in the United States, see Appendix B of this manual.

### Port description

(322) Major ports are described in the Coast Pilot in a specific order. Any pertinent information should be given under the appropriate topics that follow:

- (323) Charts
- (324) Introduction
- (325) General Marine Ecological and Environmental Information
- (326) Prominent features
- (327) Major aids
- (328) Shipping Safety Fairways
- (329) COLREGS
- (330) Navigation Guidelines, Rules, and Regulations
- (331) Traffic Separation Scheme
- (332) Vessel Traffic Service
- (333) Routes (approach)
- (334) Channels
- (335) Anchorages
- (336) No-Discharge Zone
- (337) Dangers
- (338) Regulated navigation areas (e.g., security zones, safety zones)
- (339) Caution
- (340) Local magnetic disturbances

- (341) Bridges
- (342) Tides/Water levels
- (343) Currents
- (344) Weather/ice
- (345) Pilotage
- (346) Towage
- (347) Quarantine, customs, immigration, and agricultural quarantine
- (348) Coast Guard
- (349) Harbormaster/harbor regulations
- (350) Wharves
- (351) Supplies (deep-draft)
- (352) Repairs (deep-draft)
- (353) Small-craft facilities
- (354) Ferries
- (355) Communications (transportation)
- (356) Measured courses (or with the geographic feature)
- (357) The discussion of each of these topics is generally a separate paragraph(s) preceded by the boldfaced topic. For smaller ports, several topics may be discussed in one paragraph and the boldfacing omitted.

(358) In the introduction paragraph, describe the port's general location, relative importance, principal cargoes (export and import), historical background, etc.

(359) Include negative information about a port only when it is contrary to what would normally be expected. For example, such statements as “Repairs cannot be made here,” or “There are no facilities for bunkering oceangoing vessels here.”

(360) Do not give pilotage, dockage, and port charges. They change frequently and the latest information can be obtained from pilots, harbormasters, wharfingers, ships' agents, and other local port authorities.

### Potable water intakes (PWIs)

(361) **PWIs** locations are usually charted; it's where municipalities, public utility companies, and commerce draw for potable water. The following appears in chapter 3, Coast Pilot 6, Great Lakes. “Vessels operating on freshwater lakes or rivers, including the Great Lakes and connecting waters shall not discharge sewage, ballast, or bilge water, within the restricted areas adjacent to PWIs as are designated by the Surgeon General of the United States. (See **21 CFR 1250.93**, chapter 2.)” PWIs are not mentioned individually in the Coast Pilot.

(362) **Note:** This regulation, originally published under Title 42, Public Health, by the U.S. Public Health Service, is published in Title 21, Food and Drugs; cognizant agency, Food and Drug Administration.

### Prominent features

(363) Describe the best-charted landmarks for navigation, such as land formations, lights, tanks, stacks, towers, buildings, etc. Note the color, form, and height of

headlands and peaks. Streaks of color in bluffs may be useful in identifying features. If objects such as mountains, hills, cliffs, islets, or rocks are recommended as landmarks, give their measured or estimated heights. (See Heights.)

(364) State if prominent mountains are cloudcapped or snowcapped.

(365) Where uncharted landmarks are recommended as prominent features, determine if the uncharted landmarks are more prominent than the charted. If so, describe the appearance and location with reference to a charted feature, if applicable. Then, take steps to get the objects charted. Request the Chief, Source Data Section obtain information that will enable the landmarks to be charted e.g., photogrammetric data. If the uncharted features are less prominent than the charted, describe only the charted landmarks.

(366) In highly developed areas where there are numerous charted structures, the Coast Pilot supplements the charts in two important ways: by identifying the best landmarks and by describing the structures for positive identification. Give the height, color, and paint pattern of prominent structures if available. Describe the general shape of unusual objects. Mention aircraft warning lights on tall structures if their particular arrangement is helpful in identifying the structure. Major lights are considered prominent features.

(367) If islands or other features in an area are similar (rocky, grass-covered, etc.), make a general statement to that effect and omit reference to each, unless something significant is not shown on the chart. Detail is not required when a chart of 1:40,000 or greater scale covers the area being described.

### Quarantine

(368) Quarantine and **quarantine stations** are discussed in the Coast Pilot in three broad categories: **quarantine of people, quarantine of plants, and quarantine of animals.**

(369) Quarantine of people is a function of the U.S. Public Health Service, Department of Health and Human Services. An entry similar to the following is contained in chapter 1 of the Coast Pilot:

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

(371) 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 of 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.

(372) 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.

(373) "Ill person" means person who:

(374) 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

(375) 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.

(376) 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.

(377) 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 A for addresses of U.S. Public Health Service Quarantine Stations.)

(378) A list of quarantine stations where quarantine examinations of people are performed is contained in Appendix A of each Coast Pilot under the heading "Public Health Service Quarantine Stations."

(379) Quarantine of plants and animals is a function of Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture. An entry similar to the following is in chapter 1 of the Coast Pilot:

### **Animal and Plant Health Inspection Service, (APHIS), Department of Agriculture.**

(380) 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.

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

(382) A list of stations where inspectors are available to inspect plants, and a list of ports where animals may be imported are in Appendix A of each Coast Pilot volume under heading “Department of Agriculture, Animal and Plant Health Inspection Service Offices.”

(383) An entry similar to the following is in chapter 3 of each Coast Pilot volume:

#### **Vessel Arrival Inspections**

(384) Quarantine, customs, immigration, and agricultural quarantine officials are stationed in most major U.S. ports. (See Appendix A for addresses.) Vessels subject to such inspection generally make arrangements in advance through ships' agents. Unless otherwise directed, officials usually board vessels at their berths.

(385) For applicable ports in the text, the following entry is made:

#### **Quarantine, customs, immigration, and agricultural quarantine**

(386) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

#### **Radionavigation**

(387) See Electronic aids to navigation, this chapter.

#### **Radiotelephones**

(388) Mention the radiotelephone capability of drawbridges, locks, pilot boats, and pilot stations. For VHF-FM radiotelephone capabilities, give the channel monitored, the working channels, and the call sign. For medium and high frequency single side band radiotelephone equipment (SSB), give frequencies rather than channels.

(389) Appendix A of each Coast Pilot volume gives the frequencies and times of broadcast for USCG Broadcast Notices to Mariners, NOAA weather radio stations, and NWS radio stations (peculiar to the Alaska volumes).

#### **Regulations**

(390) Selected Federal, State and local regulations are carried in the Coast Pilot.

(391) Chapter 2 of each Coast Pilot volume contains selected extracts from the Code of Federal Regulations that affect navigation within the geographic range

covered by the particular book. A partial list of the regulations normally included in the Coast Pilot is in chapter 1 of this manual.

(392) Federal regulations, such as those for the Chesapeake and Delaware Canal and the Pribolof Islands, are sometimes included in the main text of the book under the feature being described rather than in chapter 2.

(393) Within the text of a Coast Pilot volume, the regulations contained in chapter 2 are parenthetically referenced following the related feature being described. Example: “A bascule highway bridge with a clearance of 15 feet is just above the mouth. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.)” For years, the Federal Regulations carried in the Coast Pilot were limited to 33 CFR (Title 33, Code of Federal Regulations, Navigation and Navigable Waters). As of the date of this manual, the Coast Pilot carries extracts from other Titles (See chapter 1, this manual).

(394) When chapter 2 is limited to extracts from Title 33, citations in the main text only refer to the Part number, and do not include the Title Number. E.G., (See **334.350** for limits and regulations.)

(395) When chapter 2 contains extracts from more Titles than just 33 CFR, the citation in the main text must include the Title for proper identification. E.G., (See **15 CFR 929**, chapter 2, for limits and regulations.); (See **33 CFR 165.1 through 165.13 and 165.901**, chapter 2, for limits and regulations.)

(396) The requirement to cite the Title in the main text is particularly applicable to Coast Pilot 6, Great Lakes.

(397) In the references given in the main text, the CFR part number and title number (if included) are bold-faced.

(398) State or local regulations that affect the mariner may be quoted in the text if they are not too lengthy. Longer regulations may be paraphrased and the address provided for obtaining a complete copy.

(399) The location of regulated speed areas and/or the buoy(s) marking them are given in the text.

#### **Repairs**

(400) For large ports, give repair facilities for small craft under “Small-craft facilities.” For small ports, describe small-craft repair facilities under “Repairs,” but if there are also repair facilities for large vessels, describe the two classes in separate paragraphs.

(401) Describe graving docks, floating drydocks, marine railways, grids, liftways, and mobile hoists. Use the term “mobile hoist,” not “Travelift” (a brand name).

(402) For graving docks, give the clear length and width, and the depth. For floating drydocks, give the clear width, length over the keel blocks, depth over the keel blocks, depth over the sill, and the lifting capacity in tons. For both graving docks and floating drydocks,

give the controlling depth in the approach to the dock if less than the depth in the dock.

- (403) Give the extreme length of small craft that can be hauled out by marine railways and the tonnage capabilities of mobile hoists or lifts. State the various types of repairs performed by small-craft repair plants, such as hull, engine and other machinery, electronic, propellers and shafts, etc. State if machine shops are available, and give an indication of the scope of work they can perform. When there are numerous repair plants available, usually only the largest of each type is described, and the other facilities are covered by a general statement; if the difference in capacity between the largest and other available facilities is small, several facilities may be described. The location shall be given for each facility described in detail. If salvage gear is available, give type and radius of operation.

#### Routes

- (404) Chapter 3 describes principal routes between ports within a particular Coast Pilot volume, and gives positions through which coastwise or transoceanic vessels can proceed on rhumb lines or great circles to major ports outside the geographic range of that volume. In the detailed descriptions in the main text of a specific volume describe briefly the port, harbor, river, or intracoastal routes that are not readily apparent on the charts. State precautions that may be necessary because of current or lack of turning room, on which side of an island to pass, and whether local knowledge is necessary. Avoid the use of the terms “port” and “starboard” as much as possible; give the directions of objects in cardinal or intercardinal points. When possible use a definite statement that is independent of the vessel’s heading.
- (405) Although many vessels use certain cutoffs or special routes that may save time, the Coast Pilot should recommend only safe routes. An able navigator, with local knowledge, can use many short cuts, but these should not be recommended to the general public.
- (406) Routes discussion may include information on traffic separation schemes, shipping safety fairways, and anchorages.

#### Safety zones

- (407) Safety zones are described as follows: A safety zone is in the vicinity of the LNG terminal. (See **165.1 through 165.7, 165.20 through 165.23, and 165.502**, chapter 2, for limits and regulations.)

#### St. Lawrence Seaway

- (408) The St. Lawrence Seaway includes the waters of the St. Lawrence River above Montreal, Lake Ontario, the Welland Canal, and Lake Erie as far W as Long Point.

The canals and locks of the Seaway overcome the rapids and water level differences in the St. Lawrence River between the ocean and Lake Ontario, and between Lake Ontario and Lake Erie, and enable deep-draft oceangoing vessels to travel from the Atlantic Ocean to Lake Superior. The development, operation, and maintenance of the Seaway are under the joint control of The Saint Lawrence Seaway Development Corporation, a corporate agency of the United States, and The St. Lawrence Seaway Authority of Canada. The Corporation headquarters is in Washington, DC, and the operational field headquarters is in Massena, NY. The Authority headquarters is in Ottawa, Ont., with field offices in Cornwall, St. Lambert, and St. Catharines.

- (409) The Seaway is described generally in chapter 3, Coast Pilot 6.
- (410) Saint is spelled out in the name of the United States corporation. Saint is abbreviated to “St.” in the name of the Canadian authority and in the name St. Lawrence Seaway.

#### Sanctuary—animal, bird, coral, marine

- (411) Local, State or Federal sanctuaries are mentioned in the Coast Pilot if their locations and/or associated regulations affect the mariner. When applicable, regulations are carried in chapter 2 of the Coast Pilot; the regulation is referenced when describing the sanctuary in the text. **“Key Largo Coral Reef Marine Sanctuary**, 20 miles long, extends seaward about 8 miles from the John Pennekamp Coral Reef State Park. The sanctuary has been established for the protection of the coral reef formation and its associated marine life. (See **15 CFR 929**, chapter 2, for limits and regulations.)”

#### Sedbed features

- (412) Describe the character of the bottom slope, especially when approaching the shore. State whether soundings can be depended on to warn of the approach to danger. Note any special bottom features, such as valleys and escarpments, that may be useful in depth curve navigation.

#### Security Broadcast System

- (413) The local U.S. Coast Guard, usually the Captain of the Port, occasionally establishes a voluntary system of radio broadcast/reporting procedures designed to give masters and pilots real-time information on local marine traffic. Security Broadcast Systems have been established in Portland, ME, Portsmouth, NH, Boston, MA, and Narragansett Bay. Other ports may follow.

#### Seaplane landing area

- (414) Literally, sometimes so indicated on the chart. Always mentioned in the Coast Pilot when its existence

and location are known. Shown on aeronautical sectionals as a SPB (presumably, meaning seaplane base).

### Shipping safety fairways

- (415) Shipping safety fairways are established by the U.S. Coast Guard to provide safe port approaches between offshore structures such as oil or gas rigs. Include applicable sections of 33 CFR 166, Shipping Safety Fairways, in chapter 2 of each Coast Pilot volume. Delete from the quoted regulation the geographic coordinates of fairways and fairway anchorages that already appear on the charts, and include a reference to the applicable chart(s). In chapter 3, include a general description of shipping safety fairways and fairway anchorages in the region covered by the specific Coast Pilot volume. In chapter 4 to Appendix A, mention specific fairways and fairway anchorages in the descriptions of harbor approaches (see Port discussion, this manual). Reference the applicable section of the regulation in chapter 2.

### Small-craft facilities

- (416) Small-craft facilities are marine facilities open to the public and provide services to all boaters. To be included in the Coast Pilot in the continental United States, at a minimum, they must offer the following goods and services: fuel (gasoline and/or diesel), pumpout facility (or access to a municipal facility), transient berths or moorings, and navigable depths (approach and alongside). Outside the continental United States, the inclusion of a facility in the Coast Pilot that doesn't meet this minimum requirement will be on a case by case basis.
- (417) In larger ports, small-craft facilities are discussed under the topic heading **Small-craft facilities** (see Port discussion, this manual). In small harbors, small-craft facilities, if any, are to be included in the general description of the harbor.
- (418) The information relating to a small-craft facility is generally described in the following order:
- (419) availability of transient berths or moorings
  - (420) electricity
  - (421) gasoline
  - (422) diesel fuel
  - (423) water
  - (424) ice
  - (425) marine supplies
  - (426) sewage pumpout
  - (427) launching ramp(s)
  - (428) lifts/hoists/marine railways
  - (429) winter storage
  - (430) repairs (specify, e.g., hull, machinery, electronic, above waterline hull repairs)
  - (431) depths, approach/alongside/in the basin
  - (432) State maximum capacities of lifts and hoists in tons; give marine railway lengths in feet.

- (433) It can be assumed that most towns have a freshwater system, gasoline stations, an oil distributor, and other stores, so the availability of gasoline, diesel fuel, lubricants, ice, water, etc. in the town need not be mentioned, unless there are no such supplies available on the waterfront. It is important that the locations on the waterfront of sources of marine supplies be specified. State if fuel is available from other than a pump on a wharf or pier, e.g., "Fuel is available by tank truck," or "Fuel is available by fuel drum."

- (434) For areas that have small-craft facilities tabulations on the charts, a general statement about the availability of services and general location of the majority of the facilities is sufficient. Include a statement similar to the following: (See small-craft facilities tabulation on chart 12316 for services and supplies available.)

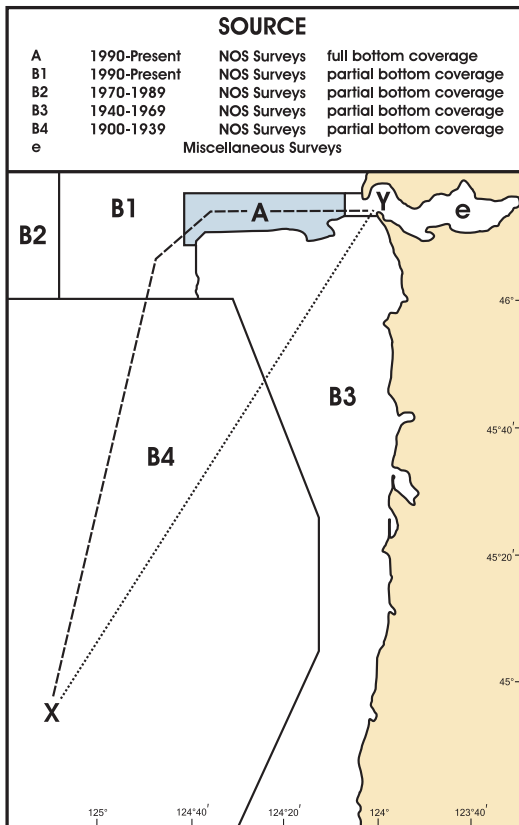
### Source diagrams

- (435) The Office of Coast 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 adequacy 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:
- (436) •Survey technology employed (sounding and navigation equipment).
  - (437) •Survey specifications in effect (prescribed survey line spacing and sounding interval).
  - (438) •Type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).
- (439) 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. Nearly half of all inshore hydrography was acquired by **leadline** (pre-1940) sounding technology.
- (440) The sounding information portrayed on NOAA nautical charts is considered accurate but may 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 single beam echo sounders**, which came into common use during the 1940's, collected continuous soundings along the path of

### Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, 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.

- Point X lies in an area surveyed by NOAA within the 1900-1939 time period. 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.
- The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected 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.



- The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may 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.

Referring again to the accompanying sample Source Diagram, and the previous 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.

- The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.
- The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.
- The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

- The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may 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.

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.



the survey vessel, but collected no information between survey lines. Airborne **light detection and ranging systems** (LIDAR), which NOAA began utilizing in the late 1990s, provide sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Starting in the 1990s, NOAA began using **multibeam** and **side scan** sonar systems to acquire overlapping swaths of high-resolution data throughout the survey area. This technology significantly increased object detection capabilities, and is referred to as “full bottom coverage.” Although “full bottom coverage” surveys are not feasible in all areas, this method is typically preferred over leadline, single beam echo sounder, and LIDAR technologies.

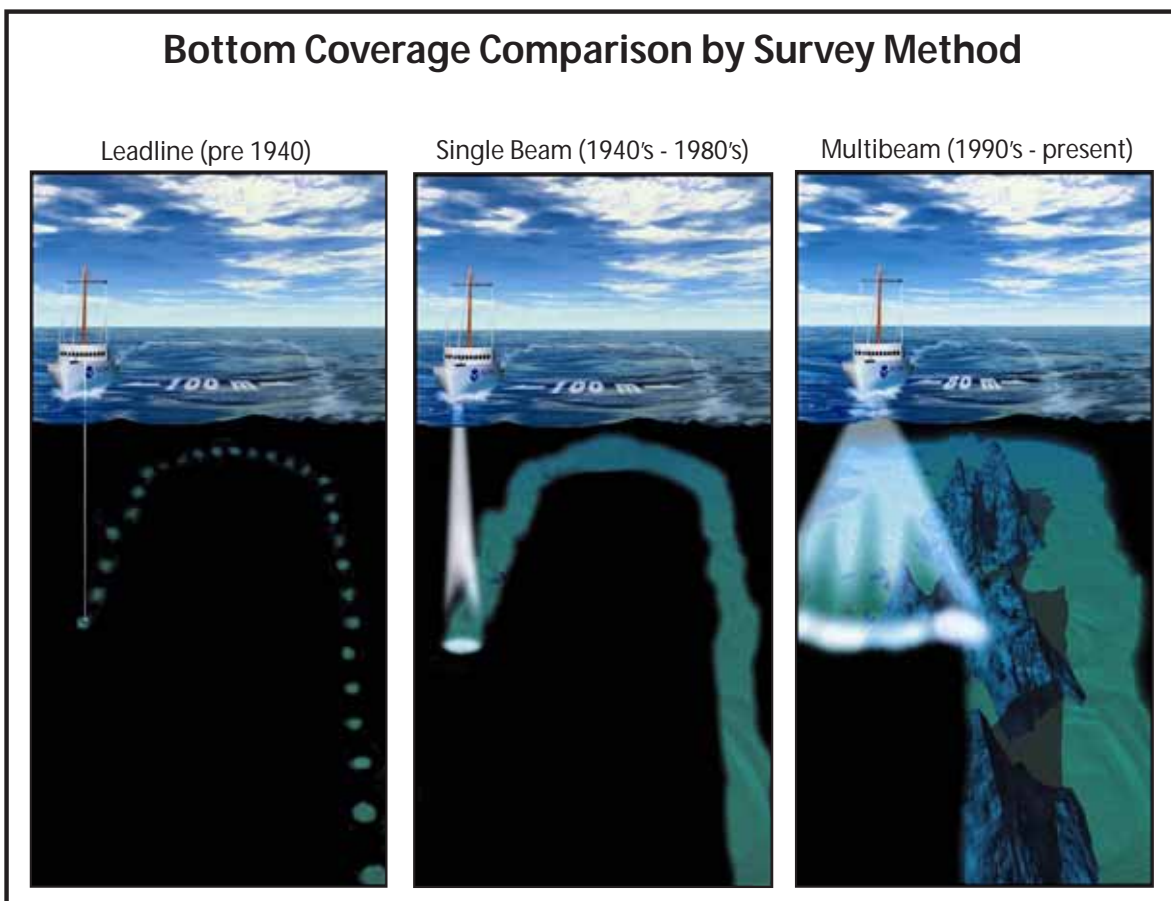
(441) The three primary types of bottom coverage (leadline, partial bottom coverage, full bottom coverage) are illustrated in the following graphic.

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

(443) 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 for near shore surveys.

(444) 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.

(445) 1940 to present - partial bottom coverage: This type of sounding data is typically acquired using continuous-recording single-beam echo sounders as stand-alone survey systems. This survey method originally yielded a graphic record of the entire sounding line from which soundings were recorded at regular intervals. Using this graphic record, features which fell between the recorded soundings could be inserted into the data set.



- (446) Since approximately 2001, single beam echo sounder data has been recorded digitally to automatically include all soundings in the data set. Although the sampling is continuous along the track of the sounding vessel, features such as discreet objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this era has progressed from horizontal sextant angles, through land-based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.
- (447) The spacing of sounding lines required to survey an area using a single beam echo sounder 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.
- (448) In the late 1990's, NOAA began utilizing airborne LIDAR systems for near shore bathymetric surveying. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered "full bottom coverage". Stand alone LIDAR surveys are depicted on the Source Diagram as "partial bottom coverage" areas.
- (449) 1990 to present - full bottom coverage: During this period, most surveys have been conducted using either multibeam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve "full bottom coverage". The term "full bottom coverage" refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multibeam bathymetry or side scan imagery, have been analyzed in an attempt to locate all hazards to navigation within the survey's limits. All position data has been determined using DGPS. Additionally, airborne LIDAR surveys in which significant anomalies have been further investigated using multibeam sonar are considered adequate for the "full bottom coverage" designation. Full bottom coverage surveys have a much better likelihood of detecting all navigationally significant features in a survey area than partial bottom coverage or leadline surveys.
- (450) Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a "full bottom coverage" survey area may appear to extend further inshore once depicted on the Source Diagram. Sounding data in water depths of approximately 4-6 meters (13-19½ feet) or less (8 meters (26 feet) or less in Alaskan waters) has typically been acquired using a "partial bottom coverage" method. Caution and prudent seamanship should be used when transiting these near shore areas.
- (451) 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.
- (452) An entry similar to the preceding is carried in chapter 1 of the Coast Pilot.
- ### Speed Limits
- (453) Avoid mentioning no-wake speed limits, except for local, state, or federally enforced speed limits, and other special circumstances.
- (454) **Submarine cables and submerged pipelines** cross many waterways used by large and small vessels, and not all of them are charted. For inland waters, they usually are buried beneath the seabed, and for offshore areas, they may lie on the ocean floor. Warning signs are often posted to warn mariners of their locations.
- (455) The Coast Pilot normally does not mention submarine cables, also submerged pipelines, except when they cross designated anchorages or other areas where anchorage would be likely. 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.
- (456) Agencies involved include the Corps of Engineers, U.S. Army; Minerals Management Service, Department of the Interior; and Research and Special Programs, Department of Transportation.
- (457) In view of the serious consequences resulting from damage to submarine cables and submerged pipelines, vessel operators should take special care when anchoring, fishing, or engaging in underwater operations near areas where these cables or pipelines 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 close to the vessel's draft.
- (458) Certain cables carry high voltage, while many pipelines carry natural gas under high pressure or petroleum products. Electrocutation, fire, or explosion with injury, loss of life, or a serious pollution incident could occur if they are broached. Vessels fouling a submarine cable or pipeline should attempt to clear without undue strain. Anchors or gear that cannot be cleared

should be slipped, no attempt should be made to cut a cable or pipeline.

- (459) The substance of the above shall be carried in chapter 1 of the Coast Pilot.
- (460) A copy of the permit for installation of submarine cables, also submerged pipelines, issued by Corps of Engineers, is required to be provided to NOS, in accordance with 33 CFR 209.310.
- (461) The Coast Pilot normally does not mention submarine cables and submerged pipelines except when they cross designated anchorages or other areas where anchorage would be likely.
- (462) In the event of an area of concentrated pipelines, e.g., northern Lake Erie, the Coast Pilot gives the general area of the concentration.
- (463) As of the date of this manual, the following Federal Regulations apply to Submarine Cables and/or Submerged Pipelines:
- (464) **30 CFR** Mineral Resources,
- (465) **30 CFR 250** Oil and Gas and Sulphur Operations in the Outer Continental Shelf,
- (466) **30 CFR 250.150 to 250.164** Pipelines and Pipeline Rights-of-way,
- (467) **33 CFR** Navigation and Navigable Waters,
- (468) **33 CFR 209** Administrative Procedure,
- (469) **33 CFR 320** General Regulatory Policies,
- (470) **49 CFR 190** Inspection and Burial of Offshore Gas and Hazardous Liquid Pipelines.

### Supplies

- (471) Mention specific information about fuel and oil for oceangoing vessels. Give general information about marine services, provisions, and marine supplies. Mention if supplies are limited in quantity. The smaller the port, the more detailed the information should be, if available.
- (472) State if fuel and water are available by other than pipeline on a pier or wharf. Example: Fuel is available by barge.
- (473) In Coast Pilot 6, describe small-craft supplies under “Small-craft facilities” in both large and small ports. In the other Pilot volumes, describe small-craft supplies under “Small-craft facilities” for large ports and as a separate non-topic paragraph for small ports.

### Temporary conditions

- (474) For purposes of the Coast Pilot, temporary conditions are those expected to exist, continue, or remain in effect for less than 1 year. Such conditions are not generally described in the Coast Pilot. However, conditions considered dangerous to navigation can be included in a Notice to Mariners release without being included in the succeeding edition of a specific Coast Pilot volume.

### Tides

- (475) Include an overview description of the tides in chapter 3 of each Coast Pilot volume. Mention the general range of tide to be expected along the various reaches of the coast, and include locations and ranges of extraordinary tides. Within the various chapters, include information about the range of tide at selected locations, such as entrances to harbors, inlets, and rivers, and at locations inside the entrances. Tide ranges, obtained from the Tide Tables, are in feet and tenths of a foot. Reports of observed tides contrary to the Tide Table should be forwarded to Information Products & Services Section, Coastal & Estuarine Oceanographic Branch, Office of Ocean and Earth Sciences, NOS, Silver Spring, for review and comment before including the information in the Coast Pilot.

### Time

- (476) Under the Standard Time Act of 1918, amended by the Uniform Time Act of 1966, the Secretary of Transportation has authority to issue regulations modifying boundaries between time zones in the United States. The regulations are contained in 49 CFR 71, Standard Time Zone Boundaries, and issued by the DOT Office of the General Counsel.
- (477) The following “standard times” are observed in the regions covered by that specific Coast Pilot volume:
- (478) East coast, eastern standard time (e.s.t., Zone Description (ZD)+5);
- (479) Puerto Rico and Virgin Islands, Atlantic standard time (A.s.t., ZD+4);
- (480) Gulf coast from Key West through Port St. Joe, FL, eastern standard time;
- (481) Gulf coast from west of Port St. Joe to the international boundary at the Rio Grande, central standard time (c.s.t., ZD+6);
- (482) West coast, Pacific standard time (P.s.t., ZD+8);
- (483) Alaska east of 169°30'W., Alaskan standard time (Ak.s.t., ZD+9);
- (484) All the Aleutian Islands west of 169°30'W., Hawaii-Aleutian standard time (H.A.s.t., ZD +10); and
- (485) Hawaii, Hawaii-Aleutian standard time.
- (486) The area covered by the Great Lakes Pilot is in two time zones, eastern standard time and central standard time. The boundary between e.s.t. and c.s.t. in the Great Lakes starts at the Lake Michigan shoreline intersection between the States of Michigan and Indiana, follows the northern boundary of Indiana (which is offshore in Lake Michigan) W to the W boundary of Michigan (offshore in Lake Michigan), thence N along the Wisconsin-Michigan boundary (about mid-lake of Lake Michigan) to a point in about 45°15.2'N., 86°15.1'W., thence W along the Michigan-Wisconsin offshore boundary, passing between Rock Island, WI, and St.

Martin Island, MI, into Green Bay, thence to the Michigan shoreline in about 45°32.0'N., 87°16.2'W. (about 10 miles N of the mouth of Cedar River), thence along political boundaries (counties) to the Lake Superior shore of Michigan at about longitude 89°50.4'W. (about 10.3 miles NE of the mouth of Black River.) The boundary now proceeds W along the Michigan shore with the lakeshore areas within the c.s.t. zone and the waters offshore within the e.s.t. zone to the Lake Superior shoreline intersection of the State boundary between Michigan and Wisconsin, thence about 024° following the offshore W boundary of the State of Michigan, crossing Lake Superior to the mouth of Pigeon River, the international boundary.

(487) E.s.t. is observed by the State of Michigan, except in the following areas: the areas E of Michigan, and the lakeshore areas of the Canadian Province of Ontario.

(488) C.s.t. is observed in the Lake Michigan lakeshore areas of Indiana, Illinois, Wisconsin, and the State of Michigan lakeshore areas on the W side of Lake Michigan to about 10 miles N of the mouth of Cedar River. On the Upper Peninsula of Michigan, c.s.t. is observed from about 10 miles NE of Black River W to and through the lakeshore areas of Wisconsin and Minnesota.

(489) In regions observing daylight saving time, the clock is advanced 1 hour on the first Sunday in April each year, and is set back 1 hour to standard time on the last Sunday in October. A region observing daylight saving time, in effect, observes the standard time of the next zone to the eastward, e.g., the east coast would observe Atlantic standard time (ZD+ 4). All regions covered by the Coast Pilot observe daylight saving time except Puerto Rico, Virgin Islands, and Hawaii.

(490) The standard time zones and the observance of daylight saving time for a region are defined in Chapter 3 of each Coast Pilot volume, an entry similar to the following:

#### Standard time

(491) Port St. Joe, FL, and the areas E observe eastern standard time (e.s.t.), which is 5 hours slow of Greenwich mean time. Example: when it is 1000 at Greenwich, it is 0500 at Tampa, FL. The area from Port St. Joe to the Rio Grande uses central standard time (c.s.t.), which is 6 hours slow of Greenwich mean time. Example: when it is 1000 at Greenwich, it is 0400 at Corpus Christi, Texas. Puerto Rico and the U.S. Virgin Islands observe Atlantic standard time (A.s.t), which is 4 hours slow of Greenwich mean time. Example: when it is 1000 at Greenwich, it is 0600 at San Juan, Puerto Rico, and Charlotte Amalie, U.S. Virgin Islands.

#### Daylight saving time

(492) In States covered by most Coast Pilot volumes, clocks are advanced one hour on the first Sunday in April, and are set back to standard time on the last Sunday in October. Puerto Rico, the U.S. Virgin Islands, and Hawaii, do not observe daylight saving time.

(493) The Federal regulations contained in chapter 2 of the Coast Pilot almost invariably use the 12-hour clock time suffixed with A.M. or P.M. In all the other chapters and the appendices, time is given in the 24-hour system.

#### Time signals

(494) The National Institute of Standards and Technology (NIST) broadcasts time signals continuously, day and night, from its radio stations WWV, near Fort Collins, Colorado, and WWVH, Kekaha, Kauai, Hawaii. 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.

(495) Time announcements are made every minute, at 15 seconds and 7 seconds before the minute, from WWVH and WWV, respectively. The transmissions from WWV, Fort Collins, CO (40°49'49"N., 105°02'27"W.) are on 2.5, 5, 10, and 15 MHz; from WWVH, Kekaha, Kauai, HI (21°59'26"N. 159°46'00"W.) on 2.5, 5, 10, and 15 MHz. The time given is in Coordinated Universal Time (UTC) and refers to the time at Greenwich, England, i.e., Greenwich mean time.

(496) An entry similar to the above is carried in chapter 1 of each Coast Pilot volume. In addition, Coast Pilot 6 mentions the time signals broadcast by the Canadian radio station CHU, Ottawa.

(497) The NGA publication Radionavigation Aids, Pub. 117, carries great detail on U.S. and International time signals. Other sources for the maintenance of the Time Signals article in the Coast Pilot are publications of the National Institute of Standards and Technology; particularly, the monthly Time and Frequency Bulletin.

#### Towage

(498) State the availability of commercial tugs in the harbor and give the highest horsepower available, e.g., "Towage.—Tugs to 3,200 hp are available," or "Towage.—Tugs to 3,600 hp are available from Houston."

#### Towage, Great Lakes

(499) The description of towage in Coast Pilot 6, Great Lakes, is much more detailed than in the other volumes. In Coast Pilot 6, give the following information for each port a tug(s) is homeported: Name of the



operator (company), radio frequencies (channels) monitored and/or worked by the tug, number of tugs (include horsepower) in the port, means of obtaining pilotage service (telephone number, FAX number, VHF-FM channel, cable address), and required leadtime for service. In description of a port where a tug is not homeported, and the commercial marine traffic warrants it, list the nearest port where a tug (include the horsepower) may be obtained.

### Tracklines

- (500) A track as used in navigation is the intended direction of movement with respect to the earth. The graphic path of a track on a chart is a trackline. The Lake Carriers' Association and the Canadian Shipowners Association have prescribed tracklines in the Great Lakes, for vessels enrolled in the associations. These tracklines are printed on the chart. The Coast Pilot describes the tracklines, under the title Routes.

### Traffic separation schemes

- (501) Traffic separation schemes are prescribed to aid in the prevention of collisions in the approaches to certain major harbors. Planned jointly by Federal agencies and local maritime authorities, the schemes consist of directed traffic areas and, usually, precautionary areas. The directed traffic areas consist of one-way traffic lanes separated by separation zones, and the precautionary areas are junction areas of the traffic lanes. Give the location of the center of the precautionary area(s), the radius or boundaries of the precautionary area(s), the centerline points of the separation zones to the nearest second or tenth of a minute of latitude and longitude, and the width of the directed traffic areas. Give the approximate geographic position of the entrance points of the directed traffic areas and the courses to follow in the traffic lanes.

### Tsunamis (seismic sea waves)

- (502) Describe tsunamis in chapter 1 of the Coast Pilot. In the Pacific volumes, i.e., Coast Pilot volumes 7, 8, and 9, more detailed information should be provided in other chapters.
- (503) Upon receipt of tsunamis information, promptly submit to Tsunamis Group, Solid Earth Geophysics Division, National Geophysical Data Center, National Environmental Satellite, Data, and Information Service (NESDIS), Boulder, CO, for review and editing prior to entry in the Coast Pilot. Periodically the tsunamis text is submitted to Tsunamis Group, for review and update.

### Tunnels, submarine

- (504) Describe a submarine tunnel by its name, waterway it passes under, type of traffic that uses it, and location in relation to charted objects. Location may be made with the name or other identification, the shores that it connects, and/or by "... X miles above the mouth." For example, "Fort McHenry Tunnel, a vehicular tunnel, crosses under the entrance to Northwest Harbor, extending from Lazaretto Point to a point about 0.2 mile westward of Fort McHenry."

### Vessel Traffic Management Systems

- (505) Vessel Traffic Management (VTM) Systems is a generic expression for systems which prescribe rules for vessel operation, in order to enhance safety of navigation. A VTM system may be mandatory or voluntary, as specified therein, and encompasses Traffic Separation Schemes, Vessel Traffic Services, Navigation Guidelines, Security Broadcast Systems, and systems entitled VTM System. VTM Systems (of that title) are in the Straits of Juan de Fuca, within the waters of the St. Lawrence Seaway, and in other Canadian waters of the Great Lakes.

### Vessel Traffic Services

- (506) Vessel Traffic Services (VTSs) are established by the Coast Guard to enhance safety of navigation in a specific port area. Mandatory VTSs are established by Federal regulation in 33 CFR 161. Voluntary VTSs are described in users' manuals published by the Commanding Officers of the individual VTSs. In general, the VTSs have a Vessel Traffic Center (VTC) equipped with VHF-FM radiotelephone equipment. Vessels within the VTS area report to the VTC at specified locations and exchange information about vessel intentions and other marine traffic in the area.
- (507) The Federal regulations for mandatory VTSs are carried in chapter 2 of the appropriate Coast Pilot volume. For these VTSs, a long discussion in the specific chapter of the Coast Pilot is unnecessary. A boldfaced heading "Vessel Traffic Service" followed by a general description of the area covered by the VTS and a reference to the regulations in chapter 2 is enough.
- (508) For voluntary VTSs, a more complete description within the specific chapter of the Coast Pilot is required. This description should include, but is not limited to a general statement about the purpose of the service, a boldfaced mention of a voluntary service, geographic limits of the VTS, limits of sectors within the VTS, voice call of the VTC, VHF-FM channel(s) used for contacting the VTC from each sector, reporting points for contacting the VTC, any special circumstances that may occur in the VTS that may require



additional reports, a statement that complete information on the VTS is contained in the users' manual, and the address for obtaining the users' manual. The description should also contain disclaimer statements similar to the following:

- (509) The mariner is cautioned that information provided by the Vessel Traffic Center is, to a large extent, generated from the reports of the participating vessels and reflects the accuracy of the reports received. Additionally, the Coast Guard may not have firsthand knowledge of hazardous circumstances existing in the VTS area. Unreported hazards may confront the mariner at any time.
- (510) This service is in no way intended to relieve any person from complying with the applicable Navigation Rules, Vessel Bridge-to-Bridge Radiotelephone Regulations, Federal Boating Safety Act of 1971, or any other laws or regulations.

### Wharves

- (511) In major ports, deep-draft facilities (depths alongside of 15 feet or more) are described individually under the boldface heading "**Wharves.**" Small-craft facilities are described under a separate heading (See Small-craft facilities, earlier this chapter). Barge facilities, fishing wharves, and Government installations are usually not individually described, but may be covered by a general statement.
- (512) The detailed wharf descriptions are preceded by a brief paragraph of generalized and explanatory information. Include mention of any distinctive cargo-handling capabilities in the port. Mention the capacity and location(s) of the largest cargo-handling crane(s) available in the port. Give the following statement: "The alongside depths given for each facility described are reported; for information on the latest depths, contact the Port of (name) or the private operator." If the port is covered by a volume of the Corps of Engineers Port Series, include the following statement: "Only the deep-draft facilities are described. (For a complete description of port facilities, refer to Port Series No. X, published and sold by the U.S. Army Corps of Engineers. See Appendix A for address.)" Include the following statement: All the facilities have water and shore-power connections, except as noted below.
- (513) The detailed description of wharves is in an abbreviated format (incomplete sentences) to save space. For each facility described, give the following information: name of the pier or wharf; precise location by geographic coordinates or distance and bearing from a charted object or a previously described pier; length of each usable face; actual amount of usable berthing space along each face (using dolphins, shore moorings, etc.) or length of largest vessel that can be docked;

depth alongside each usable face; deck height (see Heights); shore-based cargo-handling equipment available for loading or discharging the vessel (briefly mention the largest crane, conveyor or gravity loading systems, etc; do not mention forklifts or handling equipment used exclusively in storage areas at the terminal); "no water" and/or "no power" as appropriate; a brief list of commodities handled at the terminal (if available, differentiate between commodities shipped or received); the name of the operator if not included in, or apparent from, the name of the facility.

- (514) When describing pier or wharf locations, avoid mentioning long series of facilities where each is referenced to the previously described facility. It is best in a particular area of the harbor to use one reference point.
- (515) In small ports describe isolated wharves. All commercial wharves for barge traffic, fishing boats, and yachts should be described if of sufficient importance. If a wharf is presently mentioned in the Coast Pilot, and is now dilapidated or in ruins, mention that fact and give the date of observation; it is also important to note old pilings that may be a menace to navigation.

### Weather

- (516) Weather, overall, for the region covered by a particular Coast Pilot volume is discussed in chapter 3, of the Coast Pilot. Weather localized to individual chapters appears early in those chapters.
- (517) Annually, upon request from NOS, Coast Pilot Branch, National Oceanographic Data Center, National Environmental Satellite, Data, and Information Service (NESDIS) reviews and updates the weather information in an individual Coast Pilot volume. This includes the weather in chapter 3 through Appendix B.
- (518) Weather information received from other sources should be submitted to NESDIS for review before entry into the Coast Pilot.
- (519) **Climatological tables** for certain coastal towns/cities are carried in Appendix B. Reference a climatological table as follows: (See page xxx for Brownsville climatological table.)
- (520) Mention National Weather Service personnel locations and available services, e.g., "The National Weather Service is at Miami International Airport west of the city. Barometers can be compared at their office or by telephone."

### Winds

- (521) Wind direction is the true direction from which the wind blows; windspeed is given in knots. Omit reference to wind directions when it is obvious on the chart that an anchorage or harbor is exposed. Mention any local wind conditions that may be dangerous, such as winds resulting from local topography. Example: Strong

northwest winds draw through the low land between Nazan Bay and Korovin Bay.

- (522) Describe the winds effect on other conditions when relevant. For example, if wind makes tide rips worse, define the conditions and give warning.

### Wrecks

- (523) Describe dangerous wrecks in or near channels not maintained (not dredged) by the Corps of Engineers and along established routes or likely passages. Wrecks in dredged channels are required by the Corps of Engineers to be removed to the extent they are no longer a danger to navigation (**33 CFR 209.190**). Do not discuss wrecks lying well offshore unless they present a hazard in a normal coastal route or in the approach to a port (e.g., within a safety fairway). A wreck lying amid other described dangers should not be mentioned, nor

should those lying in shallows or other areas out of the way of normal navigation. If an area appears wreck-prone, attempt to determine cause by bringing it to the attention of a field inspector for future investigation. Federal regulations require the marking and removal (if feasible) of wrecks; they should not be mentioned until abandonment has been determined or they present an imminent hazard to navigation. Consult the local Corps of Engineers office regarding questionable wrecks.

- (524) A wreck or other object (in its normal state would float) covered at MLLW, is a sunken wreck (sunken “object”). A rock that covers is a submerged rock. Wrecks may be removed from the Coast Pilot, at a reviewer's discretion, when it appears on a printed edition of the chart.

# Coast Pilot Field Inspections

## Background

- (1) In the past, field inspections of areas covered by the U.S. Coast Pilot have been conducted by Coast Pilot office personnel, private contractors, NOAA ship personnel, pilot associations, and volunteers in the general public. Recently, Navigation Managers have been conducting Coast Pilot field inspections. Note: this chapter contains instructions for large regional inspections, and smaller, local inspections.
- (2) This section of the manual should be used as a guide. There are several types of Coast Pilot field inspections, they can be anywhere from a single day, to six months or longer, ranging from short investigations (mostly verifications) to long detailed inspections. The speed which technology advances also makes it difficult to write instructions that remain current for extra long periods of time. The inspector should use whatever tools and methods available to produce accurate and reliable information that meet the standards required for inclusion in the Coast Pilot and nautical chart.

## Purpose

- (3) The principal purposes of an inspection are to verify or revise information in the Coast Pilot, and to add new worthwhile information. In addition, local deficiencies on the nautical charts and suggestions for chart improvement are noted and reported to the appropriate office.
- (4) The field inspector also carries out a public affairs program for our agency.

## Preparation

- (5) The inspector is provided with a text file of the section of the Coast Pilot to be investigated. If no text file has been provided, the inspector shall request the file through the chief of the Coast Pilot Branch (coast.pilot@noaa.gov). This file will be updated by branch personnel to include all of the revisions made to this section since the book was last printed.
- (6) The inspector reviews this text file in conjunction with the latest largest scale nautical charts of the area being inspected. The inspector reviews source documents that affect the area of the field inspection (Army Corps of Engineers Port Series, Local Notice to Mariners, Light List, port authority magazines, waterway

guides, etc.), and records information that will be useful, such as addresses and locations of facilities to be visited. This review process points out to the inspector areas that may require particular attention during the inspection.

- (7) When available, previous project reports from previous inspection(s) of that Coast Pilot volume may also point out areas that require particular attention, general problems encountered in the field, and recommendations for future procedures.

## Itinerary

- (8) When conducting a large regional field inspection, about 90 days before departure, the inspector prepares a tentative schedule for the field inspection. Records from previous inspections will aid the inspector in determining how much time to allow for each location. The schedule is only tentative and will have to be adjusted to reflect conditions encountered in the field, and it aids both the inspector and office personnel in monitoring the progress of the inspection.

## Advance notification

- (9) About 30 days prior to the start of the field inspection, various organizations within the marine community are notified by letter, fax, or e-mail of the impending inspection. This notification indicates the name of the inspector, approximate dates of the inspection, areas to be inspected, assistance that may be needed by the inspector, and other pertinent information. These entities include, but are not limited to, the Coast Guard District Commanders, Corps of Engineers District Engineers, port directors, U.S. Power Squadron units, Coast Guard Auxiliary units, and pilot associations. In addition, the general public is advised of the inspection through the local news media.

## Equipment

- (10) The inspector carries positioning and plotting instruments (if necessary), binoculars, a hand-held Differential-capable GPS receiver, and a laptop computer.

## Charts of the area

- (11) The inspector should have a copy of the most recent digital charts that cover the area at the largest scale available. If a later edition of a chart is released

during the field inspection period, a copy should be acquired.

#### Publications

- (12) If possible, the inspector should have a copy of the following publications: applicable Light List(s), Port Series, Tide Tables and Tidal Current Tables (available on CD Rom), Chart No. 1, a dictionary, boating guides, and extra copies of NOS chart catalogs, and other publications as necessary. The chart catalog contains considerable information about NOAA products and their availability, and they should be distributed freely to contacts in the field.

#### Transportation (for large regional inspections)

- (13) A field inspection conducted from a ship specifically assigned to Coast Pilot duties is preferable, but not economically feasible in recent years; nor is such an inspection always practicable.
- (14) Except for Coast Pilot volumes 8 and 9, i.e., Alaska, and parts of volumes 5 and 7, the principal mode of transportation is by automobile. The inspector should arrange for a suitable Government vehicle at least 60 days prior to departure.
- (15) Where the principal travel is by automobile, there will be occasions when the use of a local launch will enhance the quality of the inspection. In the past, the Coast Guard has frequently provided water transportation for short periods of time. The Corps of Engineers at times has cooperated similarly.
- (16) Ferries and tour boats can be used to an advantage. Water transportation may also be obtained by tugs, coastwise ships, harbor patrol or police boats, and pilot boats. Most of these public agencies and private concerns will gladly cooperate, provided that proper arrangements are made in advance.

#### Public affairs (large regional inspections)

- (17) At least 60 days prior to departure the inspector should contact the National Ocean Service Public Affairs Office (PAO). The PAO needs time to adequately prepare the press release about the inspection for the early part of the trip. The inspector should obtain current photographs of himself/herself to accompany the PAO press releases.
- (18) The Coast Pilot Field Inspector will not only have to interview people involved in nautical publications, but should be prepared to give interviews to newspaper, television, and radio reporters as well.
- (19) The PAO prepares media releases about field inspections and forwards them to media offices, e.g., newspapers, television stations and radio stations, to arrive at an appropriate interval before the inspectors arrive in a particular area. Recipients of a media release

interested in talking to an inspector normally contact the Public Affairs Office, who contacts the Chief, Coast Pilot Branch, then the message is relayed to the field inspector. It is then the responsibility of the inspector to contact the reporter to schedule an interview.

#### Revising Digital Files Provided by Coast Pilot Branch (large and small inspections)

- (20) For smaller, local inspections, the Coast Pilot Branch provides text files in Rich Text Format (.rtf), for that portion of the Coast Pilot being inspected. These files are updated with changes that have been made since the last edition was published. The inspector should make a copy of this file and keep the original to be used as a reference or an emergency backup. This file should be revised using the following format:
- (21) New information - add in **red**
- (22) Text to be deleted - use strikethrough (~~strikethrough~~)
- (23) Text that has been inspected and confirmed as correct - change to **green text**
- (24) The remaining black text indicates that the inspector was not able to verify this information.

#### Field record book (large regional inspections)

- (25) A field record book is a notebook used by the inspector to record changes to the Coast Pilot, and to record notes, points of contact, suggestions for use by future inspectors, etc. As this book is primarily for the convenience of the inspector, the type used is left to his/her judgment. It is suggested that pages of the current Coast Pilot be separated from the covers, mounted on 82 x 11-inch paper, one column per page, and inserted in three-ring binders. Published amendments to the Pilot and other revision material affecting a given page can be made in the wide margin or mounted on blank paper and inserted as a facing page. With this arrangement the inspector may carry as many or as few pages as he/she needs for the day's work and leave the remainder at the base of operations.

#### General instructions (large and small inspections)

- (26) For large regional inspections the inspector should enter in the field record book all information used in revising the Coast Pilot. Handwritten corrections may be made in the wide margin, on the back of the preceding page, or placed on a separate sheet and inserted. The place in the text to which each entry refers should be clearly indicated by a leader, by an arrow, or in some other clear, unmistakable manner. Clarity and precision are of great importance. The field record book will become a reference document when it is necessary to clarify an item in the Field Inspection Report.
- (27) Every day of the inspection will have its unique problems; the following guidelines are offered from the

experience of previous inspectors. The general method of inspection is to follow the shoreline closely, stopping at every port, harbor, or inlet, noting new facilities or features while updating the Coast Pilot text. Each evening, record the names of those interviewed during the day in the daily journal. Plans for the next day should be made by reviewing the Pilot and the charts for the area to be covered. A list of questions should be compiled for each official scheduled to be visited. The geography and demography of the area to be inspected, as well as the distance to be traveled, should be considered in the planning.

- (28) For all Coast Pilot inspections, the size, type, and number of vessels using each waterway should be considered. The requirements, not only of the deep-draft navigator, but for yachtsmen and fishermen as well, should be considered. However, deep-draft and commercial vessel information should be given precedence. Allowance must also be made for thoroughness of the region surveys and charts. If the surveys of the area are incomplete, if the harbor charts scale is too small, or if the harbor has grown in importance, more detail will be required in the Coast Pilot.

### Sources

- (29) It is important for the inspector to contact a wide variety of locally knowledgeable people in each inspection area. The inspector should attempt to obtain names of reliable sources before arriving in the area, if possible. This may be from sources held in the Coast Pilot office or recommendations by people interviewed during the inspection. Information from any source should be verified by the inspector through actual inspection, where practicable. In the field notes to correct the Coast Pilot, the inspector should note whether reported information was verified by actual inspection. The source of the report should be listed so that the report's value may be weighed against possible conflicting information that may be received by the Nautical Data Branch. For large regional inspections, the following is a list of some principal organizations and officials that should be interviewed by the Coast Pilot inspector for local information:

- (30) (1) Coast Guard stations, light stations and other aids to navigation units, buoy tenders, other cutters, patrol craft, Coast Guard auxiliaries, and captain of the port offices;
- (31) (2) Corps of Engineers district offices;
- (32) (3) other Federal field offices such as Customs Service,
- (33) (4) pilot associations;
- (34) (5) port authorities, harbormasters, and harbor police;
- (35) (6) NOAA field parties operating in the area;

- (36) (7) operators of repair yards and marine service stations;
- (37) (8) captains of towboats, ferries, and coastwise vessels operating in the area;
- (38) (9) individuals very familiar with the area such as fishermen and longtime residents; and
- (39) (10) yacht clubs and power squadrons.

### Aids to navigation (large regional inspections)

- (40) The inspector should have the current editions of the nautical charts and the Light List. While in the field, inspectors should download the Local Notice to Mariners from the Internet. The inspector should keep his charts and Light List corrected. The inspector should report any observed aids to navigation discrepancies (extinguished lights, inoperative sound signals, off-station aids, missing aids, etc.) to the nearest Coast Guard unit. This includes private aids to navigation. Private aids observed in the field that are not listed in the Light List should be reported to the nearest Coast Guard unit. Every effort should be made to ensure that the Coast Pilot, the chart, and the Light List are in agreement with regards to aids to navigation.

### Anchorage

- (41) Field inspectors should make every effort to obtain information on anchorage areas. The adequacy and accuracy of anchorage information in the Coast Pilot should be checked and new reliable information should be obtained when possible. This is difficult information to obtain and check, since it must come from actual anchoring experience. Good judgment should be used by field personnel in obtaining such information. A particular location is not a good anchorage simply because someone has anchored in that area.

### Bridges

- (42) The inspector shall note bridges in the process of renovation; note changes in the type of bridge, vertical clearance, horizontal clearance, and other description normally mentioned in the Coast Pilot. Also, list newly constructed and/or removed bridges (in whole or in part).
- (43) Confirm proper and local names of bridges in the Coast Pilot or shown on the charts. Obtain new names as appropriate. Obtain voice calls and radiotelephone frequencies monitored. Obtain or confirm operating procedures for pontoon bridges.

### Channels

- (44) Verify correctness of charted depths for privately maintained dredged channels and basins, natural channels, and other navigable waters that are not Federal projects. If no formal surveys have been made,



obtain a reported controlling depth from a local authority, such as a harbormaster, marina operator, local fisherman, etc. If a recent survey has been made, obtain a copy of the survey sheet. Reported depths or survey drawings should be obtained for areas alongside important piers and wharves. Prints of survey sheets forwarded to Office of Coast Survey should note the type of control, the method of sounding, the sounding datum, the date of survey, the name of the organization that conducted the survey, and other pertinent data.

### Chart corrections

(45) While in the field, the inspector has an excellent opportunity to note necessary chart corrections and to obtain data for revisions. The inspector will not have time to accurately locate all features or do actual surveys, but useful information can be acquired. Even though time may not permit the inspector to accurately locate a feature, furnishing information about it can be useful in directing attention to the necessity for revision surveys.

(46) Many of the topics included in this chapter give the inspector guidance in obtaining information for chart corrections. Most information received by the Nautical Data Branch is registered as either a Blueprint or Chart Letter. Chart letters are letter size documents which are assigned a consecutive serial number with a suffix for the calendar year, e.g., CL 2100/05. All hard-copy documents larger than page size are classified as Blueprints, and are numbered consecutively (the numbering doesn't start over at the beginning of a new year).

(47) When the inspection is over, the inspector generally prepares chart corrections accumulated in the field in the form of chart letters. The correction is noted on a page sized printout of a chart section.

(48) If cramped for lettering space on the chart section, use numbers keyed to notes on an attached sheet. Show and label at least one line of latitude and one line of longitude on each section. Label sections as follow: Chart 13272-Section 1 of 8; etc. Chart 13272-Section 2 of 8, etc. Supporting permits, sketches, or other material that can be cut or folded to about 8 x 11-inch size should be attached to the chart sections; large maps and blueprints will be filed separately by the Nautical Data Branch when received in that office.

(49) New recommended prominent landmarks should have their geographic position given along with the method used to determine that position. Each landmark should be described and the correct name for charting stated. Charted landmarks recommended for deletion should be indicated by an "X" in a circle and the word "delete" shown; the reason for the recommendation should be given. Charted landmarks recommended for continuance should be indicated with a

check mark on the chart sections. When shoreline changes (including wharves and other structures) have been accurately located, show them on the chart sections as solid red lines; position data should be noted. When features are sketched approximately on the chart sections, dashed red lines should be used, and a note should be added stating that the location is approximate and not adequate for charting. When used on chart sections, reported information should be qualified with source and date.

(50) Avoid showing the same correction on more than one chart section; the Nautical Data Branch will handle application to overlapping or smaller scale charts.

### Dangers

(51) Check with local authorities the accuracy of charted rocks, shoals, reefs, wrecks, piles, snags, and other navigational hazards. Check the existence or location of charted doubtful objects. If charted visible dangers cannot be observed by the field inspector, recommend charting these objects as submerged dangers until a formal survey is available.

(52) If an uncharted hazard to navigation is discovered during a field inspection, report it immediately to the Coast Guard District Commander (Aids to Navigation Branch).

### Depths and sounding sheets

(53) It is of primary importance during a field inspection to obtain depth information about privately maintained dredged channels and basins, natural channels, depths alongside piers and wharves (inside the harbor lines), other navigable waters that are not Federal projects, and improved channels not recently surveyed by the Corps of Engineers. If a formal survey has been made recently, obtain a copy of the survey sheet. If a survey sheet is not available, obtain controlling depths (list as reported) from a local authority, such as a harbormaster, marina operator, local fisherman, etc. The inspector is not required to do extensive sounding, but when practicable, depths should be checked. When reported information is used, it should be qualified as such, giving the date and the source of information. Such depths are published in the Coast Pilot as follows: "In June 2006, the channel had a reported controlling depth of 3 feet."

### Ferries, cable ferries, and pontoon bridges

(54) Report locations of new ferry terminals, routes, and/or the abandonment of old terminals.

(55) Cable ferries and pontoon bridges are potential hazards to mariners. Obtain detailed information on their operation. Information regarding operational peculiarities of other moveable bridges is also important.

**Geographic names (large regional inspection)**

- (56) Prior to departure, contact NOS Staff Geographer to determine whether our office has any specific requests in the area to be inspected. Any changes, additions, or deletions of names submitted to the Staff Geographer should be researched as thoroughly as possible; attempt to obtain verification from the most reliable sources possible, e.g., pilots, harbormasters, port authorities, or long-term residents or users. For addition of names of features, specific areas, facilities, installations, etc., provide as much detail as possible to eliminate any doubt of exact location; geographic coordinates and precise description are essential. Support information such as plats, engineering drawings, dredging and construction permits, deeds of transfer, etc. are highly desirable. Try to obtain the most up-to-date official maps of the vicinity. Investigate any names appearing in the Coast Pilot but not shown on the nautical chart. Any names submitted as locally used should be verified with several long-term local residents or mariners.

**Landmarks**

- (57) Landmarks shall be inspected from seaward, if practicable, and positions should be determined by simple angles or distances to charted features, and also by using a hand-held Differential capable GPS receiver. Give the height, color, the placement of aircraft obstruction lights, and any other distinctive features that will aid in identification. Give the shape of objects that may not be generally recognized by the name alone, such as “the large white dish of the charted radiotelescope.” New useful landmarks should be marked and described on chart sections even if not accurately positioned in the field; the approximate positions will be referred by the Nautical Data Branch to the appropriate NOS component for closer determinations. Charted landmarks should be inspected and a recommendation for their continuance or deletion should be made on chart sections. When chart sections are submitted, landmarks to be charted or deleted should not be listed on Nonfloating Aids or Landmarks for Charts (NOAA Form 76-40).

**Locks, canals, and hurricane gates**

- (58) Operational peculiarities of locks, canals, hurricane gates, and other navigation projects should be noted. Information about traffic signals, radiotelephone frequencies, and voice calls are of special interest.

**Overhead cables**

- (59) The inspector should make note of overhead cables that are not charted and/or not mentioned in the Coast

Pilot. Attempt to ascertain the following information about the owner of a new cable: name of the company; address; telephone number; and name of a cognizant individual in the company. This information is necessary in order to obtain copies of the cable permits from the local District Engineer staff of the Corps of Engineers.

- (60) In the event overhead cables are charted and/or mentioned in the Coast Pilot are nonexistent, the inspector should attempt to ascertain the following information about the owners of former cables: name of the company; address; telephone number; and name of cognizant individual in the company.

**Major deep-draft ports**

- (61) The inspection of large deep-draft ports requires planning and effort. Though the detailed procedures should be worked out by the individual inspector, some general procedures recommended by previous field personnel may be helpful. The inspector should become familiar with the port by reviewing the Coast Pilot, Port Publications, and the Port Series before beginning the inspection. Appointments should be scheduled with staff members of large port authorities, pilots, and others who may be unavailable on short notice.

- (62) The public information (or public relations) department of the local port authority should be visited first. Request available copies of annual reports, harbor directory, brochures, maps, photographs, and other descriptive material. The material should be thoroughly reviewed and compared to the Coast Pilot and the Port Series for errors and/or new information; note any suspicious data, especially with regard to depths. Keep in mind that this material is prepared to present a favorable impression of the port.

- (63) After compiling a list of questions on apparent discrepancies and additional needed information, the inspector should visit the department of the port authority that has technical data for the port, usually the traffic, engineering, operations, or wharfing department. Contact the engineering department to request all available drawings, including soundings alongside the piers and wharves. If there is a harbormaster or port warden, that person should also be consulted. The inspector should request a tour of the port, personally inspecting as many terminals and other facilities as possible. Port literature should be forwarded to the Coast Pilot Branch, after the field notes have been prepared. If the port authority maintains a mailing list for periodic port publications, the inspector should request that the Coast Pilot Branch be placed on the list, if not already included.

(64) The local pilot association should be contacted next. Pilotage information must be thoroughly covered, because it is one of the most important topics in the Coast Pilot. (Refer to Pilotage, chapter 3 and Appendix B of this manual.) Pilots should be requested to read the pilotage section in the Coast Pilot and point out any errors and/or new information that should be added. Pilots will sometimes invite the inspector to ride the pilot boat to the boarding station, and, occasionally, to board an inbound ship. Ask the pilots the length and draft of the largest ship that entered the port during the year of the field inspection.

(65) Harbor police are usually very cooperative; they can provide considerable small-craft information and will sometimes arrange a tour of the port on a patrol boat. The customs, immigration, public health, and agriculture personnel at the port should be visited to determine the scope of their inspection processes, i.e., how arrangements for inspections are made, where vessels are boarded or anchored for quarantine, and whether inspections are made for any other U.S. Government agency. Information about repair facilities should be obtained from shipyards and boatyards. Local towboat companies are often a good source of information, not only regarding the size and type of tugs available, but for other information, such as local peculiarities of winds and currents, the routes followed by tugs and barges, etc.

#### Smaller deep-draft ports

(66) Small deep-draft ports do not have large port authority staffs. In these ports the inspector will usually contact the general manager. As there are fewer local authorities to consult, as much information as possible should be checked with the port manager. The inspector should have thoroughly reviewed the Coast Pilot, be familiar with the material, and prepare definite questions before contacting the port manager.

#### Small-craft harbors

(67) The inspection of small-craft harbors is relatively straightforward. The best marine authority is usually consulted first, e.g., the harbor master or harbor patrol personnel. Complete information is usually obtainable from them or from operators of boatyards and marinas. Local yachtsmen and fishermen should be consulted when available. If a patrol boat is maintained, the inspector should request a tour of the harbor by boat.

#### Radar and radio information

(68) Field inspectors should try to obtain all possible information on the best radar targets and the approximate maximum range they can be positively identified and used. Try to ascertain the VHF-FM radio channels

customarily used in the port areas for different types of communications between various private and public concerns. Where a radio watch is maintained by pilots, harbor masters, bridgetenders, lockmasters, and others important to the mariner, the calling and working frequencies, voice calls, and guarding schedules should be obtained.

#### Recommendations for new surveys and charts

(69) Make recommendations for surveys in areas that need surveying. Also make recommendations for new charts or changes to existing charts after consultation with interested local authorities. Obtain comments on the adequacy of the nautical charts and suggestions for their improvement. Any request for a change to the layout of the current charting scheme should be accompanied by justification for the change.

#### Shoreline changes

(70) Note condition, additions, and deletions of wharves, piers, and other waterfront structures. When a pier, or other structure projecting from shore, no longer exists, state whether piles or ruins remain to endanger navigation. Assume the existence of submerged ruins unless you acquire evidence to the contrary. Also report significant shoreline changes, whether caused by dredging and/or filling or by natural causes.

#### Wrecks

(71) Where numerous wrecks exist, the inspector should attempt to ascertain the causes from local sources. Suitable highlighting of the area should appear in the report.

#### Photography

(72) There is an ongoing requirement for sea level photography to supplement the Coast Pilot narrative. Photographs can aid in describing harbor approaches, channel entrances and turns, landfall aspects, major navigational aids, landmarks, and other views that would assist the mariner in location or orientation, especially on the first call at a harbor. Sea level photos taken by NOAA vessels or field parties are used to augment oblique aerial photos obtained from various sources. Photographs of rocks, wrecks, pinnacles, and other hazards that are a significant menace to marine navigation are also encouraged.

(73) Sea level photos should be taken from seaward, from as high a vantage point as possible and close enough so that principal landmarks can be identified. Photos taken successively from 2 miles out or less, i.e., upon entering or departing, would be useful in identifying the harbor approach or specific landmarks, depending on the distance. A frequent problem has

photos taken from too great a distance or photos that attempt to encompass too much. Sometimes a single photo will not adequately cover the view of a harbor with sufficient detail. In such cases, a panoramic series of photos is useful.

(74) Attach a sketch, annotated overlay, and/or annotated chart section to aid in the identification of the objects in the photograph. Indicate where the photograph was taken (with as much precision as possible), the direction the camera was pointing, the date and time when photo was taken, the stage of tide if known, and any additional information which may be of value to the mariner, and identify principal landmarks, navigational aids and headlands, capes, or points.

(75) Photographs should be taken with a digital camera with 5 megapixels or better. The image resolution should be set to at least 2400 x 1800 pixels. Shutter speed should be at least 1/50 second for wide angle photos, 1/100 second for regular photos, 1/200 second for a mild telephoto photograph, and 1/500 second for a strong telephoto photo. The aperture setting (which controls the depth of field) is generally not important for these photographs. The ISO should be set as low as possible (lower settings reduce “noise”), and the white balance should be set to automatic, unless the photographer is skilled at setting the white balance. The preferred graphic format for photographs submitted to the Coast Pilot Branch is TIFF (.tif) or JPEG (.jpg). If RAW format is used, use the camera's software to convert the photograph to a .tif (or .jpg) image and submit the photos in both formats.

(76) A digital zoom should never be used; optical zooms are acceptable. If possible, use a polarizing filter to reduce reflection and darken the sky.

(77) Digital images submitted to the Coast Pilot Branch should not be altered or enhanced (e.g., crop, color balance, saturation, contrast, sharpen) by graphic software before submission.

(78) Digital camera technology is evolving constantly. If there is a question about a feature, setting or graphic format that is not covered in these instructions, send it to [Coast.Pilot@noaa.gov](mailto:Coast.Pilot@noaa.gov).

#### Preparation and type of Reports (large regional inspections)

(79) The inspector should submit a report weekly to the Coast Pilot Branch by email. Written progress reports should be submitted monthly. A project report should be prepared upon completion of the inspection project.

(80) In the weekly report, the inspector should include the following information: number of miles driven; approximate nautical miles of shoreline inspected; accomplishments during the past week; any problems encountered; plans for the next week; address and

phone numbers (if known) for the next week; and dates of anticipated departure from the current inspection base and approximate arrival at the next base.

(81) Written progress reports should be submitted to the Chief, Coast Pilot Branch at the end of each month, or sooner if requested. The report should show the movement of the inspector (places visited and dates), the names and titles of persons interviewed, the general type of information obtained, and the dates of arrival and departure at each place where the inspector receives mail. In addition, the report should include a general indication of the inspector's opinion of the progress of the work, and any unusual problems encountered or unorthodox methods used. Any request for assistance or instructions from the Coast Pilot Branch should be included. Such requests can also be made by letter, e-mail, or telephone.

(82) Statistics required for the project report may be included in the monthly reports, such as approximate nautical miles of shoreline inspected; number of large deep-draft ports inspected; number of smaller deep-draft ports inspected; approximate number of small-craft harbors and large marinas inspected; number of chart sections and other data forwarded to Silver Spring; number of objects accurately located for charting; and number of statute miles driven by automobile. The final item required in the monthly report is a tentative itinerary for the following month, including mailing addresses and tentative dates at each address. It is generally necessary for field personnel to maintain a rough daily diary of times, dates, places, etc., for preparing monthly reports.

(83) A full project report should be written after the inspection is complete. The report include the following:

(84) total time required;

(85) methods of travel;

(86) description of the project, including general location;

(87) travel orders or other instructions;

(88) general chronology of the inspection, including beginning and ending points;

(89) dates and locations of side trips;

(90) method of inspection, including names, job titles, and affiliation of personnel interviewed;

(91) types of government agencies visited;

(92) year/edition of Coast Pilot used;

(93) type and frequency of reports made;

(94) general comparison of current Coast Pilot with present conditions, including systematic faults or differences;

(95) adequacy of description about aids to navigation;

(96) whether aids were inspected and on station;

(97) adequacy of chart coverage;

- (98) adequacy discrepancies about either charts or aids to navigation that were reported to appropriate authorities;
- (99) adequacy of planning and preparation; problems encountered, whether operational, transportational, etc.;
- (100) names and titles of contacts that gave special assistance or cooperation;
- (101) areas where cooperation was needed and whether received;
- (102) suggested areas where advance letters announced inspections are needed, with names and addresses, if available;
- (103) relative success and adequacy of inspection;
- (104) also include the cost data (mileage, per diem, total cost, number of actual work days, cost per day);
- (105) recommendations for areas requiring more inspection, new hydrographic surveys, or horizontal control;
- (106) and recommendations about liaison or improvements for future operations.
- (107) This report should be submitted to the Chief, Coast Pilot Branch. Mention any correspondence written thanking people for their cooperation.

### **Procedure for Handling the Final Coast Pilot Report**

- (108) Once the inspection is finished, a Coast Pilot Branch reviewer should proof the revised file for errors. When the final report is ready to be submitted to the Coast Pilot Branch, it can be attached to an email and sent to coast.pilot@noaa.gov. Coast Pilot Branch personnel will print out the report and submit it to the Nautical Data Branch, where it will be registered as a chart letter and returned to the Coast Pilot Branch.

### **Coast Pilot Branch Follow-up (Unused sources)**

- (109) Coast Pilot Branch personnel should inform the Navigation Manager, or other non-CPB inspector, if any of the Coast Pilot Report information submitted to the Coast Pilot office was not applied to the Coast Pilot, and explain why the information was not useful. This feedback can help the inspector in the future and also allows the inspector to alert anyone who was expecting this information to appear in the next edition that it will not be included.



# Aerial Photography for the Coast Pilot

- (1) Requirements for low-level oblique aerial photos vary with the individual harbor or port. The height of the camera should be as low as legally possible. Experience has shown that the most useful photos have been taken from altitudes of 1,000 to 2,500 feet. Oblique photos looking into a harbor or behind a point of land, etc. should show very little sky (at most, the sky should be 25% of the picture). With too much sky in a picture, the curvature of the earth and the low angle hide many features that need to be shown. More sky can be shown in photos of headlands, lighthouses, etc.; however, one needs to be fairly close to the object. Photos should be taken from an appropriate distance to adequately cover features required. If possible, do not take pictures through aircraft windows. Windows introduce distortion and add reflections, however if the picture must be taken through a window, hold the camera nearly perpendicular to the window and as close as possible without touching it. If possible, use a polarizing filter to reduce reflection and darken the sky.
- (2) Clarity and high contrast detail are of utmost importance. The best photographs are taken on clear, hazeless days with a quality camera. (Note that cloud shadows over the land areas usually adversely affect the quality of a photo.)
- (3) The camera should be handheld to minimize vibration. Do not let the hands or arms rest on any part of the aircraft. Vibration from the aircraft will be transmitted to the camera and result in a blurred photograph. A high shutter speed should be used. The sun should be behind the photographer. A wide angle lens with about a 60 degree field of view or greater is preferred, (for a 35 mm camera, a 20 to 35 mm focal length lens).
- (4) Attach a sketch, annotated overlay, and/or annotated chart section to aid in the identification of the objects in the photograph. Indicate where the photograph was taken (with as much precision as possible), the direction the camera was pointing, the date and time when photo was taken, the stage of tide if known, and any additional information which may be of value to the mariner, and identify principal landmarks, navigational aids and headlands, capes, or points.
- (5) Photographs should be taken with a digital camera with 5 megapixels or better. The image resolution should be set to at least 2400 x 1800 pixels. Shutter speed should be at least 1/50 second for wide angle photos, 1/100 second for regular photos, 1/200 second for a mild telephoto photograph, and 1/500 second for a strong telephoto photo. The aperture setting (which controls the depth of field) is generally not important for these photographs. The ISO should be set as low as possible (lower settings reduce "noise"), and the white balance should be set to automatic, unless the photographer is skilled at setting the white balance. The preferred graphic format for photographs submitted to the Coast Pilot Branch is TIFF (.tif) or JPEG (.jpg). RAW formats cannot be accepted; use the camera's software to convert the photograph to a .tif or .jpg image. Also, a digital zoom should never be used; optical zooms are acceptable. If possible, use a polarizing filter to reduce reflection and darken the sky.
- (6) Digital images submitted to the Coast Pilot Branch should not be altered or enhanced (e.g., crop, color balance, saturation, contrast, sharpen) by graphic software before submission.

# Coast Pilot Production System (CPPS)

## CPPS—BETWEEN EDITIONS

### Source Document

- (1) All additions, revisions, and deletions to the information in the Coast Pilot must come from a registered or otherwise authoritative source document. Most source documents are received, registered and tracked by the Nautical Data Branch (NDB), Marine Chart Division. Some authoritative source documents that do not get registered by NDB include but are not limited to the USACE Port Series, Notices to Mariners, Local Notice to Mariners, the Federal Register, and the Code of Federal Regulations.
- (2) The source documents described above are sent to CPB automatically, and/or published on the Internet. There are cases, however, where the compiler becomes aware of a possible deficiency in the Coast Pilot and must search for new information. This may involve searching the Internet, calling or emailing an authoritative source, or searching in trade journals. When useful information is found, the compiler makes a copy of the information (or writes a memo, if the information is provided verbally) and sends it to NDB to be registered as a source document. Once registered, the source document is sent back to CPB for processing.

### Processing the Source Document

- (3) When a source document is received, the compiler compares the information in the document with the information currently in the Coast Pilot and determines if a revision is needed. Before making the decision, the compiler should make sure the information in the source document is later than the information in the Coast Pilot. Thus, the age of the information in the source document, or the date it was effective, is crucial.
- (4) If the compiler determines that the information in the source document contains no revisions, the document is closed out by entering it in an appropriate tracking database (D-REG or internal database).
- (5) If a revision is required, the compiler writes new language using the proper CPB format, makes a copy of the relevant parts of the source document (if necessary), annotates the copy for the reviewer, and puts the

package in the Review Folder that corresponds to the Coast Pilot volume affected. (See also chapter 2, this manual.)

### Reviewing the Source Document

- (6) The Senior Reviewer is responsible for assigning revisions to the reviewers. To review a revision, the reviewer compares the information in the source document to the information in the Coast Pilot, determines if the new information supersedes the old information, insures the new text is accurate, clear, and conforms to the Coast Pilot style. If there are any significant disputes, the reviewer must resolve them with the compiler. Once the new revision is correct, the reviewer determines whether the revision is critical or non-critical, marks “NMR” (**Notice to Mariners Release (Amendments)**) on the revision if it is critical or “Edit” if it is non-critical, and puts the revision package in the Revisions Inbox maintained by the Senior Compiler, who enters it into a Change Folder. (See Amendments to the Coast Pilot published in Notices to Mariners, this manual.)

### Change Folders

- (7) The Senior Compiler monitors the Revisions Inbox daily. When there are a sufficient number of critical revisions (NMR items) for a single Coast Pilot book (volume) to fill a single typed page, the Senior Compiler will put the critical revision packages together (pages, paragraph, and line order) and insert them in the right-hand pocket of a two-pocket folder called a change folder. If there are any non-critical revisions (Edits) for that volume, they should be inserted in the left-hand pocket of the folder.
- (8) NMR items should not stay in the Revisions Inbox for more than 15 calendar days. If, after 15 calendar days there are not enough NMR items for a particular book to fill a typed page, the Senior Compiler should prepare a change folder for that book even if there is only one NMR item.
- (9) Once the change folder has been prepared, it should be given a **Tracking Number** as follows: Coast Pilot volume number, dash (-), last two digits of the

book's edition year, dash (-), the next sequential number starting with 001 (change folders that contain only Edit changes have their own numbering system starting with 101). The sequential number assigned the folder will become the **Change Number**. The **Change Folder Number** is then entered into the **NMR Tracking Database**, and placed in the inbox of the editor, who has been assigned by the Senior Editor to type the Change.

(10) The editor types the NMR items in the order in which they appear in the Coast Pilot. When completed, the typed page(s) is combined with other individual NMR items with the typed page(s) number on top. This packet is placed in the right pocket of the change folder. Edits, if any, are also typed in the order they appear in the Coast Pilot and combined with other individual Edits in the same manner as the NMR items, and placed in the left pocket of the change folder.

(11) After the typing is finished, the change folder goes to a compiler for review, then to a second compiler for a second review. If errors are found, the correction is shown in red, and a red arrow pointing to the line with the correction is placed in the margin. The second reviewer returns the folder to the editor who did the typing. The editor corrects the errors (if necessary) and prints a new page (if necessary). The folder is then given to a reviewer for a final check (if corrections were made, both the original and the new pages should be included).

(12) After the typing has been fully reviewed and corrected, the **digital file** containing the Change (NMRs only) is sent to National Geospatial-Intelligence Agency (NGA), and to the appropriate Coast Guard District(s) for inclusion in the weekly Notice to Mariners and Local Notice to Mariners publications. The file to the Coast Guard District is attached to an email sent to that District's headquarters. The file sent to NGA is sent using a proprietary secure application provided by NGA. An editor is responsible for monitoring the NGA and Coast Guard notices to insure the Change is, in fact, published.

#### Critical Corrections Website

(13) Immediately after the Change file has been sent to NGA and the Coast Guard, the Change (NMRs only) must be posted on Coast Pilot's Critical Correction Website by the editor assigned this task.

#### Update Master Book

(14) Once the Change has been posted on the Internet, the editor prints the change folder files (both NMRs and Edits) and inserts the revisions to the affected Coast Pilot volume Master Book. The Master Book is a hardcopy of the current edition of a particular volume

printed on individual single pages. This is kept in a set of three-ring binders, broken down by chapters.

(15) To update the Master Book, the individual revisions are cut apart and each one taped to the blank page facing the paragraph(s) being revised. The revision is taped at the top of the blank page, or below the last previous revision. To the left of the taped revision, a letter of the alphabet is added, starting with "A" on each page. The editor initials and dates the taped revision.

(16) Next, on the facing page of printed text, the exact text being revised is outlined in pencil. This box should be drawn precisely. The revision is completed by writing the letter just assigned to the revision next to the box.

(17) When all of the revisions from the change folder have been added to the Master Book, the Master Book and the change folder are given to the compiler responsible for that volume for review.

#### Update Digital Master Files

(18) The change folder and Master Book are assigned to an editor who adds each individual revision (NMRs and Edits) to the Digital Master File for the affected Coast Pilot volume. The digital master files are Corel Ventura files (.vp) and are kept on the Coast Pilot server. After each revision is been made, the affected page(s) is printed. When all of the revisions have been made to the Digital Master File, the pages and the change folder are given to the compiler responsible for that book for review.

#### Collateral Activities

(19) Upon completing most of the activities listed above, an entry must be made into a tracking database.

### CPPS—PREPARING A NEW EDITION

(20) A new edition of each Coast Pilot book (volume) is printed annually. The new editions are scheduled months ahead of time on a **Coast Pilot Print Schedule**. This schedule shows dates, time periods, and deadlines for various jobs necessary in creating a new edition. Each new edition is assigned to an editor. That editor is responsible for insuring deadlines on the print schedule are met.

#### Final Formatting, include Graphics

(21) One of the important dates when preparing a new edition is the deadline for updating the book's Digital Master File. Prior to this date all revisions shown in the hardcopy Master Book should be made to the Digital Master File. Also, all new **photographs**, **tables**, **line drawings**, and **chapter maps** should be added to the file.

After all revisions have been made to the Digital Master File, the editor makes a final check on each page for formatting errors. When the Digital Master File for the new edition is complete, the editor prints a hardcopy for the compiler responsible for that book (volume) to proof.

#### Preparing Output Files for the Printer

- (22) After the book has been reviewed and proofed, an **Adobe Acrobat PDF file** is generated from that book's Digital Master File. The PDF file is used to create the negatives from which the book will be printed, so it is imperative that this file be checked closely for errors, page by page. At a minimum, the Branch Chief and the compiler responsible for that book should review the file. Common errors that have occurred in the past are page numbers on the wrong side of the page (the left-hand pages have even page numbers, the right-hand pages have odd numbers), blank pages where there should be text, missing blank pages, and chapters starting on the wrong page (Chapters and appendices start on right-hand pages. Chapter maps should be on the left page facing the beginning of a chapter).
- (23) If errors are found, the Digital Master File must be updated and a new PDF file must be generated. This new PDF file must be proofed again, a page at a time.
- (24) When the PDF file is deemed error-free, the file is placed on a **FAA server** so the Reproduction Branch can download it and make negatives. This is done by using FTP to send the digital file. The Branch Chief has the username and password to access the server.
- (25) When the PDF file has been placed on the FAA server, the Branch Chief calls the Reproduction Branch and lets them know the file is on the server. The Branch Chief then checks the website of the contractor who

prepares the book's cover, to insure the cover's digital file is posted and available for download by the printer.

#### Final Stages of the New Edition

- (26) Coast Pilot negatives are created from the PDF file by **FAA's Reproduction Branch**. It takes about a week to create, proof, and collate the negatives. The Reproduction Branch sends the negatives directly to the printer.
- (27) The printer puts the negatives together in sets of 16 or 32 pages at a time, called signatures. Once all the pages in the book are set, the printer makes a copy of the signatures, cuts them into single pages and sends them overnight to CPB for review. These are commonly called "**blue-lines**," named for the color of the image on the page. These are checked closely by the compiler responsible for a particular book (volume), errors are marked and annotated, and sent back to the printer by an overnight service. The printer makes changes (if any) to the printing plates and prints the books. Once printed, a few copies are sent overnight to CPB. These are checked for major flaws by the branch chief and the compiler responsible for that volume. If a major flaw is found, the **FAA representative** must be notified immediately. The FAA representative will make the decision whether to have the book reprinted, or accept the book as printed. If no flaws are found, notify the FAA representative, who will tell the printer to ship the books to the FAA warehouse.
- #### Collateral Activities
- (28) Upon completing most of the activities listed above, an entry must be made into a tracking database. Also, there is a list of actions that must be taken at various stages of this process (See **Table 1** that follows in this manual).





# International Hydrographic Organization

- (1) The **International Hydrographic Organization (IHO)** was founded in 1921 as the International Hydrographic Bureau. Headquartered in Monte Carlo, Monaco, this organization works for the good of seafarers of all nations by setting forth hydrographic standards agreed upon by member nations. All maritime countries are urged and encouraged to follow these standards in their surveys, nautical charts, and publications. As compliance with these standards is attained, the products of the world's hydrographic offices will become uniform, except for unavoidable differences in language. Today, this uniformity is not yet complete, but much has been done since the Bureau was founded.
- (2) The principal objectives of the Organization as stated in the statutes are: (1) to establish a close and permanent association between the hydrographic offices of its members; (2) to encourage coordination of the hydrographic work of these offices with a view to rendering navigation easier and safer throughout the world; (3) to endeavor to obtain uniformity as far as is possible in charts and hydrographic documents; (4) to encourage the adoption of reliable and efficient methods of carrying out hydrographic surveys; (5) to encourage development of the theory and improvement in the practice of the science of hydrography; (6) to encourage coordination of hydrographic surveys with relevant oceanographic activities and to provide for close cooperation between the IHO and existing international organizations in the field of oceanography, particularly the United Nations Intergovernmental Oceanographic Commission (IOC); and (7) to extend and to facilitate the application of oceanographic knowledge for the benefit of navigators.
- (3) Through the efforts of the Organization, every new development in hydrography, both in surveying and in chart construction and production, has been reported in detail to all member states and is made available to all other maritime nations. The works of the Organization are published in both French and English and are distributed through various media.
- (4) In order that the work of the Organization may be reviewed and future plans developed, regular conferences, held at 5-year intervals, are attended by the delegates from each of the 50 member nations. These delegations are usually headed by the hydrographer of each country. Various nations that are not members of the IHO (e.g., Greenland), and interested international scientific organizations, are generally represented at each conference by observers.
- (5) The resolutions of the IHO are published and are distributed to the proper government agencies of all member nations. Procedures used in the U.S. Coast Pilot conform to these resolutions when practicable; the resolutions are reviewed on a regular basis so that new procedures may be incorporated as necessary.

# Pilotage

- (1) State **pilotage** laws have existed since 1766. Though the Constitution provides that the regulation of commerce and jurisdiction over pilotage is within control of the Federal Government, the respective States have historically retained the power to regulate pilotage of foreign and American registered vessels within State harbors. The commerce clause of the Constitution could have abolished the State pilotage system, but the Congress, through legislation, has preserved the system without relinquishing the right of Federal control of pilotage.
- (2) Though Federal regulation of pilotage had previously been exercised (laws permitting the master of a ship in waters situated between two States to employ a pilot of either State, Federal licensing of pilots of steamboats carrying passengers, and prohibiting discrimination in rate fixing by the States), the Congress on July 25, 1866, passed an important act which made the State pilotage acts inapplicable to American seagoing vessels and virtually abolished compulsory State pilotage on these vessels: "That all vessels navigating the bays, inlets, rivers, harbors, and other waters of the United States, except vessels subject to the jurisdiction of a foreign power and engaged in foreign trade and not owned in whole or in part by a citizen of the United States, shall be subject to the navigation laws of the United States; . . . And every seagoing steam vessel now subject or hereby made subject to the navigation laws of the United States, and to the rules and regulations aforesaid, shall, when underway, except upon the high seas, be under the control and direction of pilots licensed by the inspectors of steam vessels; vessels of other countries and public vessels of the United States only excepted." The opponents of the 1866 act claimed that the Federal act was a poor substitute for the State pilotage acts; the State pilotage had worked well in practice and the means for implementing the Federal act were inadequate. After more than six months of bitter debate, Congress amended the 1866 act by adding: "Provided, however, That nothing in this act shall be construed to annul or affect any regulation established by the laws of any State requiring vessels entering or leaving a port in any such State, other than coastwise steam-vessels, to take a pilot duly licensed, or authorized by the laws of such State, or of a State situated upon the waters of such State." Thus the existing State laws respecting port pilotage for American vessels under registry again became operative, but Federal authority was firmly planted. It required all coastwise (enrolled and licensed) vessels "when underway, except upon the high seas" to be under the control of a Federally licensed pilot.
- (3) In 1871, a bill was drafted by the Steamboat Inspection Service which required Federal pilots on all American vessels and State pilots on all foreign vessels. Somewhere between the drafting of the bill and enactment, Federal pilotage was again limited to coastwise vessels, excluding American vessels sailing under registry. The law was enacted on February 28, 1871, and is still in effect: "That all coastwise sea-going vessels, and vessels navigating the Great Lakes, shall be subject to the navigation laws of the United States, when navigating within the jurisdiction thereof; . . . and every coastwise seagoing steam-vessel subject to the navigation laws of the United States, and to the rules and regulations aforesaid, not sailing under register, shall, when underway, except on the high seas, be under the control and direction of pilots licensed by the inspectors of steamboats. And no State or municipal government shall impose upon pilots of steam-vessels herein provided for any obligation to procure a State or other license in addition to that issued by the United States, nor other regulation which will impede such pilots in the performance of their duties, as required by this act; nor shall any pilot charges be levied by any such authority upon any steamer piloted as herein provided, and in no case shall the fees charged for the pilotage of any steam-vessel exceed the customary or legally established rates in the State where the same is performed: Provided, however, that nothing in this act shall be construed to annul or affect any regulation established by the laws of any State requiring vessels entering or leaving a port in any such State, other than coastwise steam-vessels, to take a pilot duly licensed, or authorized by the laws of such State, or of a State situated upon the waters of such State." This act repealed the pilotage section of the 1866 act. The functions of the Steamboat Inspection Service are now performed by the U.S. Coast Guard.

**American vessels are of four classes:**

- (4) **Numbered vessels** are generally pleasure craft and other motorboats, usually 15 gross tons or less; pilotage is normally not applicable to these vessels.
- (5) **Public vessels** are those owned by local, State, or Federal governments; these are excluded from all pilotage laws.
- (6) **Registered vessels** are authorized to engage in trade with foreign nations.
- (7) **Enrolled and licensed vessels** are authorized to engage only in the coastal or home trade; they cannot engage in foreign commerce.
- (8) Enrolled and licensed vessels and vessels under registry are known as documented vessels; the documentation of vessels is performed by the Coast Guard.
- (9) The distinction between enrolled and licensed vessels and vessels under registry has been consistently adhered to in legislation by Congress and has been upheld by many court decisions; this was recognized by the Supreme Court in a 1901 decision: "The general object of these provisions seems to be to license pilots upon steam vessels engaged in the coastwise or interior commerce of the country, and at the same time, to leave to the States the regulation of pilots upon all vessels engaged in foreign commerce." The reason for the difference in requirements for the two types of documentation is that the officers of registered vessels, making extended trips to foreign ports, lack up-to-date knowledge, while the officers of coastwise vessels under enrollment and license, engaged in the home trade, are adequately familiar with changing local conditions within the ports being navigated.

(10) Up until about 1880, pilotage competition was intense and there was no restriction on the number of State pilots permitted for any port. Pilot boats jointly owned by groups of pilots cruised far out to sea to be the first to speak to an inbound vessel and offer service. Competition resulted in the pilots exposing themselves to unnecessary dangers, and the rendering of unprofitable, unsafe, and inefficient service. The pilots eventually realized this and took steps toward forming associations. These associations were organized in the manner of guilds, and are still, in effect, closed corporations. Since these associations of State pilots have been formed, pilot stations have been established at the major ports convenient to incoming and outgoing traffic. A vessel can be assured of finding a qualified pilot.

(11) About 90 percent of the local **State pilot** associations are members of a national association, the American Pilots Association, which was formed in 1884. This organization conducts negotiations among member groups and attempts to effect uniformity and to protect the employment and livelihood of the pilots. In many

States the restrictions imposed on pilots are by State laws and by the local pilotage commissioners or authorities. These authorities oversee the pilot associations to make certain that the State gets service at a high standard in return for permitting the pilots to enjoy monopoly rights. As a rule the pilots are also licensed by these overseeing authorities.

(12) The qualifications and training of pilots vary from State to State; however, the primary qualification is actual experience in piloting and ship handling. Generally, on the west coast, new members are almost always ex-shipmasters who, having been found acceptable, buy into the associations. On the east and gulf coasts, the practice is to recruit new members through an apprentice system. The apprenticeship usually consists of a period of service on board the pilot boats and pilot launches and as an observer with a senior pilot. After the pilot has completed training, consisting of from 2 to 6 years, is licensed by the State for the lowest grade of pilotage. As he gains experience, his grade is increased until he can pilot any deep-draft vessel. Prior to licensing, the apprentice must undergo an examination to test proficiency in rules of the road, lights, fog signals, aids to navigation, courses, depth of water, shoals, tides, currents, seamanship, shiphandling, and other allied subjects. In many instances, a prerequisite to State licensing requires the pilot to hold a Federal pilot license for the waters involved. In effect this means that many State pilots are also Federal pilots.

(13) **Federal pilots** are often organized into groups or working organizations who offer their services to vessels that are not required to obtain compulsory State pilotage. These groups fulfill the Federal pilot requirements for such places as the Cape Cod Canal and along the coast and inland waters. If a vessel is enrolled and licensed (engaged in the domestic trade), it can engage a Federal pilot, but most steamship companies require that the masters of such vessels have Federal pilot endorsements for all U.S. ports at which their vessels call, thereby avoiding pilotage charges. Federal pilot groups are not organized in the manner that the State pilot associations are except for the method of maintaining a central office; they have no monopoly rights. They seldom maintain pilot boats and their services are usually contracted for in advance.

**To summarize present pilotage laws:**

(14) All foreign vessels and all American vessels under registry, bound for a port having compulsory State pilotage, must take a State pilot to enter the port; Federal pilots are not authorized to pilot such vessels into the port. Coastwise vessels are exempt from compulsory State pilotage if under the control of a ship's officer having a Federal pilot endorsement for the waters

involved, or if the vessel obtains the services of a professional Federal pilot; such vessels must be controlled by a Federally licensed pilot at all times when within inland waters. Public vessels are exempt from all pilotage requirements, but may take a Federal or a State pilot. It is emphasized that, regarding vessels under registry, it is the documentation that determines the pilotage requirements for the vessel, not the points between which the vessel sails, i.e., a vessel under registry must take a State pilot to enter a port having compulsory State pilotage, regardless of whether or not the vessel has touched at a foreign port.

(15) It is interesting to note that, in inland waters of the United States, enrolled and licensed vessels must at all times be under the direction of a Federally licensed pilot, while foreign vessels and American vessels under registry in the same waters (except when inside a port having compulsory State pilotage) are not required to

have a pilot. This discrimination is somewhat offset by the fact that the enrolled and licensed vessel does not have to take a State pilot when entering a State port, provided the master has the proper pilotage endorsement.

(16) The master or commanding officer-pilot relationship while in pilotage waters is unique. Court decisions have consistently held, in effect, that the master is in command and at all times ultimately responsible for the vessel's safety. The master does not relinquish command by employing a pilot, and therefore, should not blindly rely on the pilot, but should reject the pilot's advice when such action is deemed necessary for the safety of the vessel. The point at which the master should reject a pilot's advice is often difficult to ascertain and each incident has to be judged on its own merit.

# Glossary

- (1) This glossary of useful nautical terms was derived, to the extent possible, from authoritative reference sources. Those few terms with no universally or generally recognized definition have been defined to reflect their usage in the Coast Pilot. References include “Duttons Navigation Piloting”; “Knights Modern Seamanship”; “Chapmans Piloting, Seamanship, and Small Boat Handling”; Rene de Kerchove’s “International Maritime Dictionary”; the NOS “Nautical Chart Manual”; the “American Practical Navigator (Bowditch)”; and “Webster’s Dictionary.”
- (2) **admeasurement.** The process of measuring the various dimensions and capacities of a ship for documentation, performed by the U.S. Coast Guard. (See documentation of vessels, marine documents, and tonnage certificate.)
- (3) **aerolights.** Aeronautical beacons which are aids to air navigation and normally have rotating white and green characteristics; they usually have a greater range of visibility than marine lights and are charted when near the coast.
- (4) **apron.** The portion of a wharf, pier, or quay lying between the waterfront edge and the shed. The portion of a wharf carried on piles beyond the solid fill.
- (5) **aquiculture.** The cultivation of the natural produce of water.
- (6) **area to be avoided.** A routing measure comprising an area within defined limits where navigation is particularly hazardous or exceptionally important to avoid casualties, and should be avoided by all ships or certain classes of ship.
- (7) **Area to be avoided, Traffic Separation Scheme (TSS) component.** A specified, so labelled, segment in some TSSs; where the TSS is IMO recognized.
- (8) **Area to be avoided, other than a Traffic Separation Scheme Component.** As of the date of this Coast Pilot Manual, there are three Areas to be Avoided in waters charted by NOS. One is in Georges Banks, one is in the far Pacific, and one in the Gulf. The first two are in the Coast Pilot; the last one is interspersed with Shipping Safety Fairways and not mentioned. They are IMO recognized and listed in the IMO publication Routeing Measures. They are also listed in NGA’s Notice to Mariners 1.
- (9) **articulated light.** 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 sea floor. 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.
- (10) **articulated daybeacon.** An articulated daybeacon is a vertical pipe structure supported by a submerged buoyancy chamber and attached by a universal coupling to a weighted sinker on the sea floor. The daybeacon, 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.
- (11) **atoll.** A ring-shaped coral reef, often with low sandy islands, nearly or entirely surrounding a central lagoon.
- (12) **attenuation.** A lessening in amount, particularly the reduction of the amplitude of a wave with distance from the origin.
- (13) **awash.** Situated such that the top is intermittently washed (covered) by waves or tidal action. The term applies both to fixed objects such as rocks, and to floating objects with their tops flush with or slightly above the surface of the water. (See rock awash.)
- (14) **bale cargo.** Generic term for various manufactured goods wrapped in burlap or similar material for oversea transportation. Some raw materials such as cotton and wool are also made up in bale form. Also called baled goods.
- (15) **bank.** A submerged plateau over which the water is relatively shallow, but sufficient for safe navigation, and over which there is no island projecting above the surface of the water. However, it may serve as a support for a secondary formation, such as a shoal, which is a danger to navigation. The boundary between a bank and a shoal (or reef) is sometimes considered to be 10 fathoms, i.e., banks have depths greater than 10 fathoms. (See ledge, reef, and shoal.)
- (16) **bar.** A ridge or mound of sand, gravel, or other unconsolidated material below the high water level, especially at the mouth of a river or estuary, or lying a short



- distance from and usually parallel to the beach, and which may obstruct navigation.
- (17) **bare rock.** A rock extending above the datum of mean high water. On NOS charts, bare rock symbols are used for rocks extending more than 1 foot above mean high water on the Atlantic coast or more than 2 feet above mean high water on the Pacific coast. (See rock, rock awash, and submerged rock.)
- (18) **basin.** An area of water of greater depths than the water adjacent, usually created or enlarged by excavation, large enough to receive one or more vessels for a specific purpose.
- (19) **bayou.** Generally, a minor, sluggish waterway or estuarial creek, tidal or with a slow or imperceptible current, and with its course through lowlands or swamps tributary to, or connecting with, other bodies of water. Also called slough.
- (20) **beach.** The area between the extreme high-water and extreme low-water lines.
- (21) **Beaufort scale.** A numerical scale for indicating windspeed on the open sea, named after Admiral Sir Francis Beaufort who devised it in 1806.
- (22) **boat.** (See small craft.)
- (23) **bonded warehouse.** A public or privately owned warehouse where dutiable goods are stored pending payment of duty or removal under bond. The storage and delivery of goods are under the supervision of customs officers, and if the warehouse is privately owned, the owner must post a bond on the goods deposited, which may not be delivered without a release from customs.
- (24) **bore.** A very rapid rise of the tide in which the advancing water presents an abrupt front of considerable height. Bores generally occur in shallow estuaries where the range of tide is large. In Turnagain Arm, Alaska, the bore is said to be 4 to 6 feet high at times and is very dangerous for small craft.
- (25) **boulder.** Any detached and rounded mass of rock, usually more than 10 inches and as much as 10 feet or more in diameter.
- (26) **Bowditch.** The common name for the National Geospatial-Intelligence Agency publication "American Practical Navigator." In 1802 the first edition of the "New American Practical Navigator" by Nathaniel Bowditch (1773-1838) was published by Edmund March Blunt. The book was in its 35th edition in 1867 when the copyrights were sold to the U.S. Navy.
- (27) **break bulk.** To destroy the entirety of a ship's cargo considered as a unit by commencing to unload; the unloading point is called the "breakbulk point."
- (28) **breakbulk cargo.** Generally considered to be unpalleted, nonhomogeneous general cargo; such a cargo is usually composed of several smaller lots of goods of different characteristics and with different final destinations.
- (29) **breakwater.** A breakwater is a structure protecting a shore area, harbor, anchorage, or basin from waves. A floating breakwater is a contrivance consisting of floating materials connected by mooring chains or cables attached to anchors or stone blocks in such a manner as to form a basin within which vessels may be protected from the violence of the waves. A breakwater may be attached to or separated from the shore. (See jetty.)
- (30) **Bridges over the Navigable Waters of the United States.** A publication published by the U.S. Coast Guard. Among the types of data included for each bridge are the location, owner, and navigational clearances. The publication is in four parts: Part 1, Atlantic Coast; Part 2, Gulf and Mississippi River System; Part 3, Great Lakes; and Part 4, Pacific Coast. In 1967 the U.S. Coast Guard assumed jurisdiction of bridges over navigable waters.
- (31) **broadcast station.** (radio) broadcast station. A radio station which merely transmits; it does not also receive radio messages. A broadcast station in the marine environment is typified by a USCG radio station which issues Broadcast Notice to Mariners and/or weather; NOAA Weather Radio Stations; and certain private radio stations (called public coast stations).
- (32) **bulk cargo.** Usually a homogeneous cargo stowed in bulk, i.e., loose in the hold and not enclosed in any container such as boxes, bales, bags, etc. Bulk cargos may be free-flowing articles (such as oil, grain, or ore) which can be pumped or run through a chute or handled by dumping, or articles that require mechanical handling (such as coke, bricks, or pig iron).
- (33) **bulkhead.** A structure or partition to retain or prevent sliding of the land. A secondary purpose is to protect the upland against damage from wave action.
- (34) **bulkhead lines.** (See harbor lines.)
- (35) **bulkhead wharf.** A wharf flush with the general adjacent shoreline and of solid construction (usually a backfilled masonry wall), as opposed to the open pile type of construction. Also called a quay. (See pier and wharf.)
- (36) **Bunker C.** Generally, a fuel oil used by steamships, but some large diesel engines can also burn this fuel if it is preheated. (See fuel oil and diesel oil.)
- (37) **bush (or brush) stakes.** Stakes, usually consisting of cut bushes or tree branches, put up by local people to mark channels. It is often impossible for strangers to know on which side of bush stakes to pass in order to carry the best water.
- (38) **cable.** A British and/or Canadian unit of length. A cable length equals 0.1 nautical mile, or 100 fathoms.

- (39) **calling-in-point (CIP).** A point where a vessel call in to the U.S. Coast Guard (USCG), or other regulatory entity, to inform them of its presence.
- (40) **campground.** A line item under Small-craft facility as discussed in the Coast Pilot.
- (41) **Canadian Government Agencies.** This topic appears in Coast Pilot volumes where the range is contiguous with Canadian waters/shoreline e.g., Coast Pilot volumes 1, 2, 6 and 7. Canadian Government agencies affecting the marine industry are listed with a brief description in chapter 1. The agencies are also listed in Appendix A with their address. See Canadian Government Agencies.
- (42) **canal.** An artificial watercourse cut through a land area for such uses as navigation and irrigation.
- (43) **cardinal point.** Any of the four principal directions: north, east, south, or west. The intercardinal points are northeast, southeast, southwest, and northwest.
- (44) **causeway.** Sometimes used interchangeably with bridges, a causeway generally has its deck (which carries the traffic) supported by solid fill across shallow water or marsh, as opposed to a bridge, which has its deck elevated across water or other obstructions and is supported only by abutments and/or piers.
- (45) **cay.** A low, coastal key or islet of sand or coral. Cay is the usual spelling, and “key” the usual pronunciation, in the West Indies.
- (46) **centerline controlling depth.** The controlling depth of a waterway which applies only to the center of the waterway; it is usually the result of a reconnaissance-type survey consisting of only a few lines of soundings which do not provide adequate coverage to determine the controlling depth of the entire waterway width.
- (47) **chart datum.** The particular reference plane from which soundings on a nautical chart are measured. (See chart datum in chapter 3.)
- (48) **Chart No. 1.** A joint publication of the National Geospatial–Intelligence Agency and NOS, which contains the standard symbols and abbreviations that have been approved for use on nautical charts published by the United States.
- (49) **chimney.** A relatively small, upright structure projecting above a building for the conveyance of smoke; in charting landmarks, it is important to distinguish between chimneys and stacks.
- (50) **cliff.** A high, steep face of rock.
- (51) **coast.** In general, this term refers to a strip of land of indefinite width bordering the sea.
- (52) **coastal warning display station (CWD station).** Formerly, a system where stations specifically authorized by the National Weather Service would display visual signals (flags by day, lights at night) to indicate various degrees of weather, i.e., Small-craft Advisory, Gale Warning, Storm Warning, Hurricane Warning. This system is no longer recognized or supported by the NWS. The only CWD stations formerly mentioned in the Coast Pilot were those listed by the NWS; now the Coast Pilot does not list any.
- (53) **coaster.** A vessel specially designed, equipped, manned, and licensed to engage regularly in the coasting trade, whether plying coastwise or making short sea passages within certain specified geographic limits.
- (54) **coasting.** Proceeding approximately parallel to a coastline and near enough to be in pilot waters most of the time.
- (55) **coasting trade.** A term applied in a general sense to the trade carried on between ports of the same country, as distinguished from that carried on with foreign ports. Such vessels are subject to different laws and regulations than overseas traders, and their masters must keep their books showing that their cargoes come strictly within the definition of coasting trade. (See **documentation of vessels.**)
- (56) **coastwise voyage.** A voyage on which a vessel in the usual course of employment proceeds from one port or place in the United States or her possessions to another port or place in the United States or her possessions, and passes outside the line dividing inland waters from the high seas. (U.S. customs regulations.)
- (57) **collision regulations.** 1972 International Regulations for Preventing Collisions at Sea (72 COLREGS). Published in the Coast Guard publication Navigation Rules, International-Inland (COMDTINST M16672.2 (series)). See **COLREGS demarcation lines.**
- (58) **Columbia River Datum.** A special charting datum for the Columbia River on the west coast of the United States, defined in general terms as mean lower low water during lowest river stages.
- (59) **container freight station.** An area at a container terminal in which the goods are removed from the containers and made up into lots for subsequent shipment to their respective final destinations.
- (60) **containerized cargo.** Cargo which is carried in sealed, specially constructed containers. In roll-on/roll-off container operations, truck trailers, complete with chassis and wheels, are rolled on to and off of special types of ships or barges by means of ramps. In lift-on/lift-off operations, containers are loaded and unloaded by means of high-speed shipboard or shore-based cranes. The containers are usually constructed of aluminum, and, in the United States, are usually 8x8x20 feet or 8x8x40 feet. Container ships are generally specially built or converted for the purpose. Containers are carried by both truck and rail to and from marine terminals, and a continuing effort is being made to standardize the configuration of the containers

- so that they are suitable for efficient interchanging among the three types of carriers.
- (61) **contiguous zone.** “Contiguous Zone” means the belt of high seas, 12 nautical miles wide, the seaward edge is also the same limit as the territorial sea of the United States and was declared in Presidential Proclamation 5928, December 27, 1988.
- (62) **controlling depth.** The least depth in a channel (dredged or natural); it restricts use of the channel to vessel drafts less than that depth.
- (63) **Course, recommended.** A charted line that has been specially examined to ensure that its path is free of dangers, and vessels are advised to navigate; also called a recommended track.
- (64) The Coast Pilot describes the foregoing **tracklines** i.e., **charted tracklines**. In addition, however, there is often a description about how to enter a small harbor, or less than a harbor e.g., a cove. The description might include “. . . steer on the east side of Point Overshoe lined up with Silver Rock until West Overshoe Point bears approximately XXX degrees, then steer YYY degrees . . .”.
- (65) **cupola.** A smaller turret or dome-shaped tower that rises from a building.
- (66) **customs station.** A place, other than a port of entry, where a customs officer or employee is stationed or sent to accept entries of merchandise, collect duties, and enforce the various provisions of customs and navigation laws; to be entered or cleared at a customs station, a vessel must notify in advance the district director of customs (who authorize the entry or clearance) of the vessel's arrival time, and must reimburse the Government for the salary and expenses for the customs officer's time required to perform the work. (See port of entry.)
- (67) **cutoff.** A straight channel dredged through a bend in a winding waterway (usually a river), straightening and shortening the route when navigating the waterway; navigation through the original bend of the waterway may or may not be possible after construction of the cutoff.
- (68) **dan buoy.** A buoy or float carrying a staff which supports a flag or a light.
- (69) **danger area.** A danger area is a specified area when potential danger from military, civil, natural or man-made sources may exist; categories of danger areas include Prohibited Area, Exercise Area, Firing Area, and Areas to be Avoided.
- (70) **datum.** A reference point, line, or plane used as a basis for measurements in surveying and mapping. (See chart datum.)
- (71) **datum plane.** A curved level surface (not actually a plane) used as a reference from which heights or depths are reckoned. The plane is called a tidal datum when referring to a phase of the tide, e.g., mean high tide.
- (72) **daybeacon.** An unlighted fixed structure equipped with a daymark for daytime identification.
- (73) **daylight saving time.** Using the standard time of the standard time zone to the eastward of the zone you are actually occupying. (See standard time.) **Note:** Clocks are advanced 1 hour on the first Sunday in April and are set back to standard time on the last Sunday in October.
- (74) **deadhead.** A log or spar floating on end (vertically) and mostly submerged. Also called a sinker.
- (75) **deadweight tonnage.** The lifting capacity of a vessel (cargo, fuel, stores and crew), expressed in long tons, when the vessel is loaded to her salt water, summer load line.
- (76) **deck cargo.** All goods carried on the weather decks of a vessel; does not refer to cargo carried in covered deck spaces, such as bridges, poops, etc. Also called deck load.
- (77) **deck officer.** As distinguished from engineering officer, refers to all officers who assist the master in navigating the vessel when at sea and in supervising the working of cargo when in port.
- (78) **deep-draft.** A very general term used to qualify, as “**deep-draft vessel**,” “**deep-draft port**,” “**deep-draft channel**,” etc.; it refers to the draft of a ship, which for commercial ships, is usually 25 feet or more. (See **ship**, **small boat**, and **small craft**.)
- (79) **Defensive Sea Areas.** Areas established by Executive Order for security purposes, as in the vicinity of naval establishments.
- (80) **degauss.** An area for determining magnetic signatures of ships and other marine craft. Such signatures are used to determine required degaussing coil current settings and other required corrective action. Sensing instruments and cables are installed on the sea bed in the range, and there are cables leading from the degaussing range to a control position ashore. The range is usually marked by aids to navigation.
- (81) **deratization certificate.** The International Sanitary Convention of Paris, 1926, requires that all vessels except certain coastal vessels shall be furnished with a deratization certificate or a deratization exemption certificate, which will remain valid for 6 months. Also called fumigation certificate. (See **fumigation**.)
- (82) **diesel fuel.** Fuel used in small diesel engines, as in yachts and other boats, generally pumped from automotive-type pumps on wharves, piers, or floats.
- (83) **diesel oil.** A term which refers specifically to petroleum distillate of 20 to 30 degrees Baume, on which the majority of diesel-engined ships operate. Some of the large marine diesel engines are operated on Bunker C

oil of 10 to 18 degrees Baume, with the oil heated to the flash point. (See fuel oil.)

- (84) **dike.** A bank of earth or stone used to form a barrier, frequently and confusingly interchanged with Levee. A dike restrains water within an area that is normally flooded.
- (85) **displacement.** The weight in long tons of the water displaced by a vessel afloat at a specific draft (35 cubic feet of salt water or 35.9 cubic feet of fresh water equaling 1 long ton). Light displacement is the displacement when the vessel is unloaded of cargo, stores, potable water, and most of the fuel. Loaded displacement is the displacement when the vessel is fully loaded with cargo, fuel, water, stores, etc. The difference between light displacement and loaded displacement is deadweight. Displacement at any draft may be determined from the displacement curve for the vessel. Displacement is sometimes called displacement tonnage, which is really somewhat of a misnomer, since “tonnage” in ship work is usually associated with volume measurements.
- (86) **disposal site.** Area established by Federal regulation in which dumping of dredged and fill material and other nonbuoyant objects is allowed with the issuance of a permit. Disposal sites are shown on nautical charts. See also disposal area, dumping ground, spoil area (chapter 3, this manual).
- (87) **diurnal range.** Short for great diurnal range, which is the difference between mean higher high water and mean lower low water.
- (88) **diurnal tide.** A type of tide having only one high water and one low water during a tidal day. (See semidiurnal tide and mixed tide.)
- (89) **dock.** The slip (water space) where vessels moor between two piers. Often improperly used in reference to a pier or wharf.
- (90) **documentation of vessels.** A duty imposed on shipowners in order to secure for their vessels the privileges of ships of the nation to which they belong. Documentation is handled by the Coast Guard at the port chosen. It includes name of the ship, name of the owners, tonnage, build, description of the vessel, particulars of its origin, name of the master, and the name of the one entitled to the custody of the certificate issued. The vessel is considered to belong to the port at which it is documented. Three terms are used in the United States to denote the documentation of vessels, according to their trade and tonnage: vessels in foreign trade are registered; vessels in the coasting and Great Lakes trade are enrolled; and vessels under 20 gross tons (coasting trade and fishing vessels) are licensed. All are referred to as documented vessels. Also called registry of vessels. (See admeasurement, marine documents, tonnage certificate, and undocumented vessels.)
- (91) **dolphin.** A dolphin is a very substantial post, group of posts or structure used for mooring or hauling off vessels or for the protection of other ships or constructions. It is usually located in the water. (See **piling**.)
- (92) **dome.** A large hemispherical cupola, or a roof that is actually rounded or many sided.
- (93) **drift.** The speed of flow of a current.
- (94) **drydock.** A general term which refers to any device which hauls the hull of a ship clear of the water for maintenance and repairs, other than those devices which depend upon the tidal cycle. Usually refers to a floating drydock or a graving dock.
- (95) **dumping ground.** Although shown on nautical charts as dumping grounds in United States waters, the Federal regulations for these areas have been revoked and their use for dumping 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. See also **Disposal Site, Spoil Area, Disposal area** (chapter 3, this manual).
- (96) **ebb current.** The movement of a tidal current away from shore or down a tidal stream.
- (97) **face of a wharf (or pier).** The extreme seaward side, usually more or less parallel to the shore. On a wharf, the face is the longest side, at which vessels moor. On a pier, it is the shortest side and is perpendicular to the longitudinal axis of the pier. For a pier, it is also called the pierhead or head of pier.
- (98) **fairway.** That part of a river, harbor, and so on, where the main navigable channel for vessels of larger size lies. The usual course followed by vessels entering or leaving harbor. Also called ship channel. The word “fairway” has been generally interpreted to include any navigable water on which vessels of commerce habitually move, and, therefore, embraces the water inside channel buoys where light-draft vessels frequently navigate and not merely the ship channel itself.
- (99) **Federal project depth.** The design dredging depth for a channel constructed by the U.S. Army Corps of Engineers, as authorized by an Act of Congress upon recommendation by the Chief of Engineers. The project depth may or may not be the goal of maintenance dredging subsequent to the completion of the channel. An attempt is usually made to maintain important channels at their project depths, but minor channels may be maintained to some depth less than the project depth, or may not be maintained at all. In general, without additional information, no relationship may be assumed between the Federal project depth and the controlling depth of a channel.
- (100) **feel the bottom.** The action of a vessel in shoal water, when its speed is reduced and it sometimes becomes hard to steer. Also called smell the bottom.



- (101) **finger pier.** A small pier which extends from a larger, main pier.
- (102) **fiord (or fjord).** A long, deep, narrow arm of the sea between high banks or rocks, as on the coast of Alaska. Somes Sound, in Maine, also is sometimes referred to as a fiord.
- (103) **fish haven.** An artificial fishing reef established in U.S. coastal waters to simulate natural reefs and wrecks that attract fish. The havens are constructed by private interests by dumping assorted junk, ranging from old Liberty ships to scrap building material, in areas which may be of very small extent or may stretch several miles along a depth curve; old automobile bodies are a common material used. The U.S. Army Corps of Engineers must issue a permit, specifying the location and minimum depth over the reef, prior to construction. However, the reef-builder's adherence to permit specifications can only be checked with a wire drag. Navigators should be cautious about passing over these artificial obstructions or anchoring in their vicinity.
- (104) **flagpole.** A single staff or pole rising from the ground (not attached to a building) from which flags or other signals are displayed.
- (105) **flagstaff.** A staff or pole rising from a building from which flags or other signals are displayed.
- (106) **floating breakwater.** A floating breakwater is a contrivance consisting of floating materials connected by mooring chains or cables attached to anchors or stone blocks in such a manner as to form a basin within which vessels may be protected from the violence of the waves.
- (107) **floating drydock.** A floating structure that can be submerged to receive a vessel and then pumped out to expose the vessel's bottom.
- (108) **flocculation.** A jellied material which is deposited in the lower part of the Mississippi River during low-river stages. It consists of suspended material which, after being carried downriver by the current, comes into contact with the relatively still salt water which backs into the passes. The material remains where deposited until flushed out during high stages of the river. This muck has been observed to be as much as 10 to 15 feet deep, but deep-draft vessels, although slowed down by it, are able to plow through.
- (109) **flood current.** The movement of a tidal current toward the shore or up a tidal stream.
- (110) **force majeure.** Superior or irresistible force.
- (111) **freshet.** A great rise or overflowing of a stream caused by heavy rains or melted snow.
- (112) **fuel oil.** A term for the heaviest grades of residual fuel used for the boilers of steamships. At a temperature of about 100 Fahrenheit, it flows freely and is easily handled by pumps. Fuel oil is preheated before combustion by a steam heater installed between the fuel oil service pump and the burners in the boilers. Grade C fuel oil is popularly known as Bunker C, and Bunker C is often used in reference to all fuel oils; also called boiler oil.
- (113) **fumigation.** The disinfection of various compartments in a vessel by filling them with a gaseous agent such as hydrocyanic acid gas or sulfur dioxide in order to destroy rats, mice, mosquitoes, fleas, lice, and other pests which act as germ carriers. In the United States, fumigation is supervised by the Public Health Service and is required for all vessels bringing passengers into the United States and all vessels trading to the United States from foreign ports. (See deratization certificate.)
- (114) **general cargo.** A cargo composed of miscellaneous goods carried in units or small quantities which vary in weight, size, condition, nature, and class. They are commodities for which no rates of freight are specifically named but are usually well above the average.
- (115) **geodetic datum.** A set of constants specifying the coordinate system used for geodetic control, i.e., for calculating coordinates of points on the Earth. (See **National Geodetic Vertical Datum, North American Datum of 1927, and North American Datum of 1983.**)
- (116) **Government Agencies, U.S.** U.S. Government agencies affecting mariners are listed in chapter 1 of the Coast Pilot with brief descriptions. They are listed in Appendix A with their addresses. See **Canadian Government Agencies.**
- (117) **graving dock.** A fixed, enclosed basin into which ships are taken for below-the-waterline cleaning, painting, and repairing. It is fitted with watertight entrance gates which, when closed, permit the dock to be pumped dry.
- (118) **gridiron.** A framework foundation with a cradle built just above the low-water level. A vessel is floated upon it at high water, and while left exposed at low water, work is done on the bottom. Also called careening grid, tidal grid, or grid.
- (119) **groin.** A structure projecting from shore and designed to break the current, thereby checking erosion or shoaling.
- (120) **gross tonnage.** (See registered tonnage.)
- (121) **Gulf Coast low water datum.** The tidal datum used as the chart datum for the coastal waters of the gulf coast of the United States until 1980 when it was replaced by mean lower low water.
- (122) **Gulf Stream.** For the greater part, a warm, well-defined, swift, relatively narrow ocean current which originates where the Florida Current and the Antilles Current meet north of Grand Bahama Island. It gains its impetus from the large volume of water that flows through the Straits of Florida, an amount estimated to be more than 20 times greater per hour than all the



fresh water entering the oceans from all sources such as rivers, runoff, and thawing glaciers. Near the edge of the Grand Banks of Newfoundland extensions of the Gulf Stream and the Labrador Current continue as the North Atlantic Current, which fans outward and widens in a northeastward to eastward flow across the ocean. The Florida Current, the Gulf Stream, and the North Atlantic Current together form the Gulf Stream System. Sometimes the entire system is referred to as the Gulf Stream. The Gulf Stream forms the western and northwestern part of the general clockwise oceanic circulation of the North Atlantic Ocean.

- (123) **harbor lines.** Lines prescribed by the U.S. Army Corps of Engineers which limit the length of piers and other structures projecting into navigable channels; the construction of structures channelward of this line is not permitted unless the harbor lines are modified. Navigation improvements and surveys by the Government do not extend inside (shoreward of) the harbor lines. Harbor lines are of two types, pierhead lines and bulkhead lines. Bulkhead lines are prescribed where the waterfront construction is of a solid nature, such as marginal wharves, backfilled seawalls and bulkhead wharves; the water areas inside bulkhead lines normally may be filled in by private concerns upon proper application to the Corps of Engineers. Pierhead lines are associated with open-type construction, such as open pile piers, and no such structure may extend channelward of these lines. For waterfronts where both types of construction occur, both lines will be prescribed. Harbor lines are usually straight line segments crossing the outermost pierheads and/or bulkhead facilities, and are marked with accurately located, permanent monuments.
- (124) **harbormaster.** A local official who has charge of mooring and berthing of vessels, collecting harbor fees, and other duties.
- (125) **high seas.** All parts of the sea that are not included in the territorial sea or in the internal waters of a country. (See inland waters and territorial sea.)
- (126) **hogged fuel.** A common barge cargo in lumbering areas comprising sawdust which may or may not be impregnated with fuel oil; it is used as a boiler fuel in some plants, usually power plants.
- (127) **holding ground.** A term used in describing an anchorage area according to whether or not the material of which the bottom is composed will prevent a ship's anchor from dragging. Clay is considered the best, then mud, then sand.
- (128) **Horizontal datum.** See North American Datum of 1983 (NAD 83).
- (129) **Hudson River datum.** A special sounding datum used on the Hudson River of the northeastern United States. It is approximately the mean low water of the summer months when the river is usually at its lowest stages.
- (130) **hulk.** Generally, an unrigged hull condemned as unfit for the risks of the sea and used as a floating depot or crane platform in a harbor or roadstead.
- (131) **hummock.** A natural elevation of the Earth's surface resembling a hillock, but smaller and lower.
- (132) **hurricane.** A severe tropical cyclone with winds of force 12 or more on the Beaufort scale (above 63 knots). The entire Caribbean area, the Gulf of Mexico, the coastal regions bordering these bodies of water, and the North Atlantic coast are in danger of these disturbances during the hurricane season, which generally begins in June and closes with November; the months of greatest frequency and likely severity are August, September, and October.
- (133) **hydrography.** The science which deals with the measurement and description of the physical features of bodies of water and their marginal land areas; special emphasis is usually placed on the elements that affect safe navigation. Also the publication of such information in a suitable form for use by navigators.
- (134) **Hydrolant.** An urgent notice of changes in aids to navigation or of dangers to navigation in the Atlantic, originated by the National Geospatial-Intelligence Agency (NGA) and disseminated for the immediate safeguarding of shipping.
- (135) **Hydropac.** An urgent notice of changes in aids to navigation or of dangers to navigation in the Pacific, originated by the National Geospatial-Intelligence Agency (NGA) and disseminated for the immediate safeguarding of shipping.
- (136) **inertial navigation.** Dead reckoning performed automatically by a device which gives a continuous indication of position by double integration of accelerations since leaving a known starting point.
- (137) **inland waters.** The inland or internal waters include all bodies of water within the land territory, such as rivers and lakes, as well as bodies of water which open on the coast and fall within the category of true bays. Along a generally straight coast, without major indentations, it would also include the area subject to the flux and reflux of the tide, that is, between high-water mark and low-water mark.
- (138) This physiographic concept of the limits of inland waters should not be confused with the lines established by the U.S. Coast Guard to separate those areas where the Inland Navigation Rules and the International Navigation Rules apply. The latter lines have been held to have no application other than the specific purpose of determining what rules of navigation are to be followed.

- (139) **intercoastal.** Refers to seaborne trade or navigation between domestic ports situated on noncontiguous sea coasts.
- (140) **International Great Lakes Datum 1955 (IGLD 1955).** It was a vertical control datum with its zero horizontal plane at mean sea level at Pointe-au-Pere (48°31'09"N., 68°28'25"W.), Quebec, as determined from measurements at Pointe-au-Pere over the period 1941-1956. It has been superseded by International Great Lakes Datum 1985 (IGLD 1985). (See International Great Lakes Datum 1985 (IGLD 1985).)
- (141) **International Great Lakes Datum 1985 (IGLD 1985).** It is a vertical control datum with its zero horizontal plane at mean sea level at Rimouski (48°28.73'N., 68°30.92'W.), Quebec, as determined from measurements at Rimouski/Pointe-au-Pere over the period 1982-1988. IGLD 1985 was implemented, effective January 1992.
- (142) It is used primarily for the definition of the chart datum, Low Water Datum, in each of the Great Lakes, their connecting waterways, and the St. Lawrence River, and for hydraulic studies of same.
- (143) **International nautical mile.** The nautical mile is a special unit employed for marine and aerial navigation to express distance. The International nautical mile is exactly 1,852 meters in length. The preceding value was adopted by the First International Extraordinary Hydrographic Conference, Monaco, 1929, under the name "International nautical mile". The nautical mile is a unit authorized for use with the International System of Units (SI); where SI is the official name of the metric system of units. 1,852 meters = 6,076.11549 U.S. feet.
- (144) **international radio distress frequencies.** (See **radio frequency.**)
- (145) **intracoastal.** Refers to waterborne trade or navigation inside the coast, i.e., in inland waters, or between domestic ports along the same sea coast.
- (146) **jetty.** A manmade structure consisting of stone, earth, or timber embankments projecting into the water on one or both sides of a channel. Its primary purpose is to prevent the accumulation of current-borne silt in channels, but it may also act to some degree as a breakwater. Jetties are often built on both sides of the entrance channel to the mouth of a river or to a tidal harbor to concentrate and restrict the direction of the current, thus tending to increase the depth of water over the bar.
- (147) **kelp.** A large seaweed that grows on rocky bottom. Dead, detached kelp floats on the water in masses, while live kelp attached to rocks streams away level with the surface. Live kelp is nearly always an indication of depths less than 10 fathoms.
- (148) **key.** A low island or reef, as one of the coral islets off the coast of Florida.
- (149) **kona weather.** The term "kona" is of Polynesian origin and means "south." It refers to the southerly winds and accompanying weather on the normally leeward slopes of the principle Hawaiian Islands. During these storms, heavy rainfall can be expected on the lee sides of coasts and slopes which normally have almost no rain.
- (150) **land breeze.** A breeze blowing from the land to the sea. It usually blows by night, when the sea is warmer than the land, and alternates with a sea breeze, which blows in the opposite direction by day. (See offshore wind.)
- (151) **ledge.** A rocky formation continuous with and fringing the shore. (See reef and shoal.)
- (152) **lee shore.** The shore on the lee side of a vessel, i.e., the shore toward which the wind is blowing the vessel.
- (153) **load line marks.** Markings stamped and painted amidships on the side of a vessel to indicate the minimum permissible freeboard, and indirectly, the maximum draft in various waters. The load lines prescribed by international convention are the summer load line (marked "S"), the winter load line (marked "W"), the winter North Atlantic load line (marked "WNA"), the tropical load line (marked "T"), and the freshwater load line (marked "F"). Called Plimsoll mark in British terminology.
- (154) **local mean sea level.** The mean level of the sea at a place; should not be confused with a sea level datum. A sea level datum is an adjusted datum arrived at by holding sea level fixed as observed (over a period of at least 19 years) at a selected number of tide stations, whereas local mean sea level is derived entirely from observations made at the local tide station; the difference between the two may be quite significant for some local areas. The geodetic leveling of NOS is based on the "**North American Vertical Datum of 1988 (NAVD 88)**." Since elevations of the interior of the United States are referred to a sea level datum, mean sea level (commonly shortened to sea level) in the interior refers to the sea level datum; mean sea level (or sea level) in this case does not necessarily equal local mean sea level at any particular coastal point.
- (155) **log boom.** Heavy logs chained or lashed together and moored or anchored so as to enclose and contain rafted logs.
- (156) **lookout tower.** Any tower surmounted by a small house in which a watch is habitually kept.
- (157) **LOOP.** Louisiana Offshore Oil Port, a deepwater offshore port.
- (158) **loran.** A family of electronic navigational systems by which hyperbolic lines of position are determined by measuring the difference in the time of reception of

synchronized pulse signals from two fixed transmitters. The name “loran” is derived from the words “**long range navigation.**”

(159) **Loran-C.** A long range, low frequency (90-110 kHz) radionavigation system by which a hyperbolic line of position of high accuracy is obtained by measuring the difference in the times of arrival of pulse signals radiated by a pair of synchronized transmitters (master station and secondary station) which are separated by several hundred miles. Signal reception ranges of 800 to 1,200 nautical miles are obtainable when using the groundwave, depending upon transmitter power, signal-to-noise ratio in the service area, receiver sensitivity, and losses over the signal path.

(160) Loran-C was developed to provide military users with a radionavigation capability having much greater accuracy than Loran-A. It was subsequently selected as the U.S. Government-provided radionavigation system for civil marine use in the U.S. coastal areas, including the Great Lakes region.

(161) **Low water datum (LWD).** The specific water level used as the chart datum in each of the Great Lakes and their connecting waters, each defined by a height referred to International Great Lakes Datum 1985 (IGLD 1985). Heights of LWD of the major lakes of the Great Lakes based on IGLD 1985 are as follows:

Water	Meters	Feet
Lake Ontario	74.2	243.3
Lake Eric	173.5	569.2
Lake St. Clair	174.4	572.3
Lake Huron	176.0	577.5
Lake Michigan	176.0	577.5
Lake Superior	183.2	601.1

(162) Heights of LWD of certain connecting waterways are as follows: Low Water Datum of the **St. Lawrence River below Snell Lock** is referred to the sloping surface of the river when the gauge at **Summerstown, Ont.**, 6.5 miles below **Cornwall Island**, reads 46.24 meters (151.6 feet), and the gauge at **Pollys Gut**, just below Snell Lock, reads 46.61 meter (152.9 feet).

(163) Low Water Datum of the **St. Lawrence River between Eisenhower Lock and Iroquois Lock** is referred to the sloping surface of the river, when the gauge above Eisenhower Lock reads 72.50 meters (237.9 feet) and the gauge below Iroquois Lock reads 73.18 meters (240.1 feet).

(164) Low Water Datum of the **St. Lawrence River above Iroquois Lock** is referred to the sloping surface of the

river when the gauge above Iroquois Lock reads 73.24 meters (240.3 feet) and Lake Ontario is at Low Water Datum, elevation 74.2 meters (243.3 feet).

(165) Low Water Datum of the **Detroit River** is the sloping surface of the river when **Lake Erie is at Low Water Datum and Lake St. Clair is at Low Water Datum.**

(166) Low Water Datum of the **St. Clair River** is the sloping surface of the river when Lake St. Clair is at Low Water Datum and Lake Huron is at Low Water Datum.

(167) Low Water Datum of the **St. Marys River** is the sloping surface of the river below the U.S. locks, when the gauge below the locks reads 176.3 meters (578.4 feet) and **Lake Huron is at Low Water Datum.**

(168) **magnetic disturbance.** A local magnetic disturbance is an abnormal or irregular variation of the Earth's magnetic field extending over a relatively small area, due to local magnetic influences.

(169) **magnetic model.** At 5-year intervals, the U.S. Naval Oceanographic Office and the British Geological Survey jointly produce a spherical harmonic model of Earth's main magnetic field and its slow secular (temporal) change. The latest in a long succession of such models, was completed in June 1990. It is the World Magnetic Model (WMM) for the 1990 Epoch (WMM-90). Its purpose is to predict the value of the core-generated geomagnetic field parameters (e.g., variation, inclination, and total intensity) from the Earth's surface to an altitude of about 1,000 kilometers at any point around the globe at any time during the next five years. WMM-90 is the model utilized by NOS for the placement of magnetic information (e.g., variation) on nautical charts.

(170) **marginal wharf.** A wharf flush with the general adjacent shoreline and normally of concrete or asphalt decking atop open pile supports. This is the predominate type of modern general cargo wharf. (See pier and wharf.)

(171) **marine documents.** Certificates of registry, enrollment, and licensing issued by the Coast Guard for documented vessels. (See **documentation of vessels.**)

(172) **marine exchange.** An organization in most large U.S. ports, usually a private firm, which compiles and reports the movements of vessels (positions, times of arrival and departure from various points, etc.) and other marine information to subscribers for a fee. Marine exchanges usually have their own lookout station and radio communication system (usually VHF-FM radiotelephone) for contacting vessels, pilots, drawbridges, and others in the port areas; some exchanges have a shore radar station.

(173) **marine railway.** An inclined plane on the bank of a river or harbor, equipped with tracks, cradles, and winding machinery, on which small- to medium-size vessels are hauled out for bottom maintenance or

- repairs. They may be built so that vessels are hauled out sideways or end-on, usually the latter. The slopes of marine railway tracks generally range from 1/15 to 1/25. Their capacities are rated on the basis of hauling power (the tons of pull exerted by the winding machinery) or on the overall length and/or displacement of the largest vessel which can be handled.
- (174) **mean sea level datum.** (See **local mean sea level.**)
- (175) **mean tide level.** The level half way between **mean high water and mean (lower) low water.** It should not be confused with mean sea level. Also called **half-tide level.**
- (176) **midchannel controlling depth.** General depth or controlling depth for the middle half of a channel (Coast Pilot usage).
- (177) **mixed tide.** A type of tide having both diurnal and semidiurnal oscillations and characterized by an appreciable inequality in the two high water heights, in the two low water heights, or in both; this difference is called diurnal inequality.
- (178) **mobile hoist.** A device for hauling out small craft and moving them over land to cradles or to the place at which their hulls and underwater appendages are cleaned, painted, or repaired. It consists of a self-powered steel frame on rubber tires, with two slings suspended from electric hoists. The lift is run out onto a trackway extending over the water, the slings are lowered beneath the water, and the boat is positioned over the slings; the hoists then raise the slings (and the boat) above the trackway and ground, and the lift backs off the trackway.
- (179) **mud berth.** A berth in a tidal harbor where the vessel lies on soft bottom at low water.
- (180) **National Geodetic Vertical Datum (NGVD).** Fixed reference adopted as a standard geodetic datum for heights (not soundings). The datum was derived for land surveys from a general adjustment of the first-order level nets of both the United States and Canada. In the adjustment, 21 tide stations in the United States and 5 in Canada were held as fixed. The geodetic datum now in use in the United States is the National Geodetic Vertical Datum of 1988 (NAVD 1988). The year indicates the time of the last general adjustment.
- (181) The **geodetic datum** is fixed and does not take into account the changing stands of sea level. Because there are many variables affecting sea level, and because the geodetic datum represents a best fit over a broad area, the relationship between the geodetic datum and local mean sea level is not consistent from one location to another in either time or space. For this reason, the National Geodetic Vertical Datum should not be confused with mean sea level.
- (182) **Navigation Rules.** 1972 International Regulations for Preventing Collisions at Sea (72 COLREGS). Published in the **Coast Guard publication Navigation Rules** (COMDTINST M16672.2 (series)).
- (183) **net tonnage.** (See **registered tonnage.**)
- (184) **North American Datum of 1927.** The horizontal control datum which is defined by the following location and azimuth on the Clarke spheroid of 1866; the origin is at Meades Ranch: geographic coordinates of Meades Ranch 39°13'29.686"N., 98°32'30.506"W.; azimuth from Meades Ranch to Waldo 075°28'09.64". Geoidal height at Meades Ranch is assumed to be zero (000). Geodetic positions on the North American Datum of 1927 were derived from the above location and azimuth through a readjustment of the triangulation of the entire network in which Laplace azimuths were introduced, and the Bowie method was used.
- (185) **North American Datum of 1983 (NAD 83).** NAD 83 is the current geodetic reference system for the United States, Canada, Mexico, and Central America. It was implemented in 1985, replacing the North American Datum of 1927. NAD 83 is based on the adjustment of 250,000 points, including 600 satellite Doppler stations which constrain the system to a geocentric origin. The reference figure for the datum is GRS80, with semi-major axis of 6,378,137 meters and flattening of 1/298,257.
- (186) **norther.** A strong, cold wind from a northern quarter, especially in the Gulf of Mexico. Northers occur mostly from November to February and sometimes attain storm (whole gale) force.
- (187) **Notice to Mariners.** A publication of the National Geospatial-Intelligence Agency prepared jointly with National Ocean Service and the U.S. Coast Guard and contains corrections to charts and publications for both foreign and domestic waters. Each Coast Guard District Commander publishes a Local Notice to Mariners covering changes in aids to navigation and other important marine information. Notice to Mariners items (as well as storm warning and other information) of an urgent nature are broadcast by U.S. Coast Guard and Navy radio stations.
- (188) **offshore current.** A current flowing some distance from the shore. An inshore current flows near the shore.
- (189) **offshore wharf.** A wharf, usually of open pile construction, which is well offshore and connected to the shore only by one or more approach trestles. (See pier and wharf.)
- (190) **offshore wind.** A wind blowing from the land toward the sea. (See land breeze.)
- (191) **Omega.** A worldwide, continuous, radionavigation system of medium accuracy which provides hyperbolic lines of position through phase comparisons of very low frequency (10-14 kHz) continuous wave signals transmitted on a common frequency on a time-shared



basis. The fully implemented system comprises only eight transmitting stations. The Omega system has been developed and is being implemented by the Department of the Navy, with the assistance of the U.S. Coast Guard and with the participation of several partner nations. The Coast Guard has the U.S. responsibilities for the operation of the system. In addition, other countries are participating in a signal monitoring effort to assist in verifying system accuracy. The purpose of Omega is to provide an all-weather, nearly worldwide position determination aid to navigation for civil and military air and marine users.

- (192) **onshore wind.** A wind blowing from the sea toward the land. (See **sea breeze**.)
- (193) **open pile construction.** A type of construction of wharves and piers whereby the decking of the structure is supported by piles driven into the bottom, as opposed to solid construction where the deck and supports are integral, being built up continuously from the bottom (no open space beneath the structure), such as earth or rock-fill and solid reinforced concrete structures.
- (194) **palisade.** An extended line of bold cliffs along the coast or forming the bank of a river.
- (195) **pier.** A structure extending from shore into the water for the mooring of vessels; its longest dimension is approximately perpendicular to the shore and vessels usually moor on both sides (and sometimes at the offshore end or pierhead). (See **finger pier**.)
- (196) **pierhead.** (See **face of a wharf**.)
- (197) **pierhead lines.** (See **harbor lines**.)
- (198) **pile.** A long, heavy timber or section of steel, concrete, etc., forced into the Earth to serve as a support, as for a pier, or to resist lateral pressure.
- (199) **piling.** Piles collectively; a structure of piles. (See **dolphin**.)
- (200) **pilotage.** The requirements and procedures for vessels to avail themselves of the services of local pilots, usually referring to a compulsory State pilotage system. Also (except in the Coast Pilot), the charges for these services.
- (201) **pilot boarding station.** The point at which inbound vessels are boarded by local pilots.
- (202) **pilot boat cruising area.** The area cruised continuously by a pilot boat to meet inbound vessels, usually an area about two to five miles in diameter. Also called pilot boat (vessel) cruising station or pilot boat (vessel) station.
- (203) **pilot station.** The central office ashore maintained by a pilot association. Pilot stations usually are manned by dispatchers and have facilities for radio communication between the station, pilot boats, and ships; some stations, particularly on the west coast, are equipped with radar.
- (204) **pisciculture.** Fish breeding and rearing by artificial means.
- (205) **Plimsoll mark.** (See **load line marks**.)
- (206) **POL.** Department of Defense acronym for petroleum, oil, and lubricants.
- (207) **port.** A port is a place for the loading and unloading of vessels, recognized and supervised for maritime purposes by public authorities. The term includes a city or borough for the reception of mariners and merchants and therefore denotes something more than a harbor. A port may possess a harbor but a harbor is not necessarily a port. Any natural creek or inlet on the seashore with adequate depth of water and sufficient shelter for ships fulfills the essential conditions of a harbor. To make it a port, in the accepted sense of the word, there must be accommodations and facilities for landing passengers and goods and some amount of overseas trade.
- (208) **port of entry.** A place designated by due authority at which a customs officer is assigned with authority to accept entries of merchandise, to collect duties, and to enforce the various provisions of the customs and navigation laws.
- (209) **Port Series.** A series of reports published by the U.S. Army Corps of Engineers which describe in detail the facilities and services available to shipping at selected U.S. seaports.
- (210) **port services department.** The department headed by the port services officer of a U.S. naval station. The port services officer is responsible for all services to vessels within the naval station, such as the assignment of berths and anchorages; the use of piers, landing sites, pilots, etc.; and the arrangements for repairs, supplies, fuels, medical services, etc.
- (211) **port warden.** A port official responsible for safeguarding of vessels' seaworthiness, as by proper stowage; for surveys on vessels or on cargo ashore; and for the enforcement of local harbor regulations. He may also have jurisdiction over channels, anchorages, and berths of the port. Similar to harbormaster.
- (212) **pratique.** Permission granted by the quarantine authorities (U.S. Public Health Service) to a vessel, which has arrived from a foreign port, to communicate with the shore; pratique is normally granted only after inspection and release. Pratique may be granted by radio without inspection to some of the larger passenger vessels entering certain specified U.S. ports; a request for such radio pratique must be made by radio, giving all particulars regarding sanitary conditions aboard, from 12 to 24 hours before the time of arrival at the port.
- (213) **quarantinable diseases.** Those under which a vessel or its occupants may be detained by the quarantine authorities of the port on arrival. They include: anthrax; cholera; leprosy; bubonic plague; psittacosis; smallpox; typhus; and yellow fever.



- (214) **quarantine station.** A (Public Health Service) medical control center located ashore where patients with contagious diseases from vessels in quarantine are taken. It is also used for passengers and crews of vessels arriving from suspected ports while fumigation or any other disinfection is carried out on board the ship.
- (215) **quay.** (See **bulkhead wharf.**)
- (216) **racon.** A radar beacon which produces a coded response, or radar paint, when triggered by a radar signal. The name RACON is derived from RADar beaCON.
- (217) **radio frequency.** The number of cycles per second of radio waves. Frequencies are usually given in kilohertz (kHz), thousands of cycles per second, or in megahertz (MHz) millions of cycles per second. The international radio distress frequencies are 500 kHz for radiotelegraphy and 2182 kHz for radiotelephony. In U.S. waters, the VHF-FM frequency 156.80 MHz (channel 16) is for safety and calling only.
- (218) **radionavigation.** (1) The determination of position, or the obtaining of information relating to position, for the purposes of navigation by means of the propagation properties of radio waves. (2) As defined by the International Telecommunication Union (ITU), radiodetermination used for the purposes of navigation, including obstruction warning.
- (219) **radiotelephone communications.** Communications by radio by voice as opposed to CW (continuous wave, i.e., Morse code) communications. Examples of radiotelephone communications contained in the Coast Pilot are the Broadcast Notice to Mariners using VHF-FM channels and NOAA Weather Radio.
- (220) **reef.** A relatively extensive rocky or coral elevation of the sea bottom at or near enough to the surface to be a danger to surface vessels. A barrier reef roughly parallels land but is some distance offshore with deeper water intervening. A general guideline sometimes used is that a reef (or shoal) is covered less than 10 fathoms. (See ledge and shoal.)
- (221) **registered tonnage.** The official volumetric tonnage as shown on the certificate of registry (documentation); the total volume of the spaces included in the admeasurement in cubic feet, divided by 100. The factor 100 is derived from the rather arbitrary provision that 100 cubic feet equals one ton (weight) of general cargo. Registered tonnage is usually expressed in two forms, gross registered tonnage (usually called gross tonnage) and net registered tonnage (usually called net tonnage). Gross tonnage is all spaces below the upper continuous deck, as well as permanently closed-in spaces on that deck; net tonnage is gross tonnage less certain excluded spaces, supposed not to be available for carrying cargo. Registered tonnage is always simply cubical contents divided by 100 and has no bearing whatsoever upon the weight (displacement) of the vessel and cargo. Also, registered tonnage does not accurately indicate the carrying capacity of a vessel; it is primarily a means of obtaining a fair estimate for the payment of port charges and taxes, and for this reason only commercial vessels use it. (See **tonnage certificate** and **documentation of vessels.**)
- (222) **reported depths and other information.** A qualification used on charts and in other Government publications to denote information that has not been verified by Government surveys or inspections.
- (223) **right bank.** The right bank (left bank) of a river is meaningless unless direction (ascending or descending) is included. In the Western Rivers (Mississippi River System), the right bank (left bank) is the right bank (left bank) when descending the river. The USCG Light List, Mississippi River System, lists aids as right (or left) with this convention of direction i.e., descending.
- (224) **river currents.** The currents in rivers, channels, straits are generated by the differential pressure head developed due to differences in levels along the distance. These currents, which are also called hydraulic currents, are developed through narrow or shallow entrances to bays and harbors. River currents are essentially a balance between the pressure head and the bottom friction which opposes the flow. Strong river currents often develop strong vortices and eddies. River currents can also be classified as tidal or non-tidal depending upon whether developed due to gravitational interactions between the sun, moon, and earth, or to meteorological phenomena.
- (225) **river discharge.** (also called river outflow, river runoff). The rate of flow of water past a point in a stream, expressed as volume per unit time (e.g., cubic feet per second, cfs).
- (226) **roadstead.** An area near the shore where vessels can anchor in safety, usually a wide indentation in the coast, affording less protection than a harbor. One with relatively little protection may be called an **open roadstead**. Also called **road**.
- (227) **rock.** An isolated rocky formation or a single large stone, usually one constituting a danger to navigation. A pinnacle rock is a sharp-pointed rock rising from the bottom. (See bare rock, rock awash, and submerged rock.)
- (228) **rock awash.** A rock which is exposed at any stage of the tide between mean high water and the low-water chart datum. On National Ocean Service charts, there are two categories of rocks awash: a rock awash in general, which has its peak between 1 foot above chart datum and 1 foot above mean high water for the Atlantic coast or between 2 feet above chart datum and 2 feet above mean high water for the Pacific coast; and a rock awash at chart datum, which has its peak between 1

foot below and less than 1 foot above chart datum for the Atlantic coast or between 2 feet below and less than 2 feet above chart datum for the Pacific coast. (See **rock**, **bare rock**, and **submerged rock** in this glossary and **chart datum** in chapter 3.)

- (229) **sag**. That form of longitudinal deformation of a ship under stress in which the middle part of the ship's structure sinks below the extremities; the converse of hogging.
- (230) **Santa Ana**. An offshore desert wind usually occurring in or near San Pedro Bay, California. While infrequent, it may be violent. These winds are most apt to occur in late autumn or winter and at times may reach a speed of 52 knots.
- (231) **Sargasso Sea**. The central region of the North Atlantic Ocean, roughly between about latitudes 25 and 30 north and longitudes 30 and 70 west, characterized by the absence of ocean currents and the presence of large quantities of seaweed.
- (232) **scuba**. Self-contained underwater breathing apparatus.
- (233) **sea breeze**. A breeze blowing from the sea to adjacent land. It usually blows by day, when the land is warmer than the sea, and alternates with a land breeze, which blows in the opposite direction by night. (See **onshore wind**.)
- (234) **seamount**. A term used in submarine topography and applied to an isolated submarine mountain rising more than 500 fathoms above the general sea floor.
- (235) **seaplane anchorage**. An anchorage wherein only seaplanes anchor. Shown on an sectional (aviation map) as a SPB; presumably meaning seaplane base.
- (236) **seiche**. A stationary vertical wave oscillation with a period varying from a few minutes to an hour or more. It is usually attributed to external forces such as strong winds or changes in atmospheric pressure 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.
- (237) **seismic sea wave**. (See **tsunami**.)
- (238) **semidiurnal tide**. The predominate type of tide throughout the world, having two nearly equal high waters and two nearly equal low waters in a tidal day.
- (239) **set**. The direction toward which a current is flowing.
- (240) **shingle**. Small, rounded, waterworn stones. Shingle is similar to gravel, but with the average size of stone generally larger.
- (241) **ship**. A large self-powered, ocean-going vessel which is usually operated on the high seas for commercial transportation of cargo or passengers, the national defense, or scientific purposes; in short, all vessels capable of making extended ocean passages except yachts and other vessels used primarily for recreation, racing, etc. (which are usually referred to as small craft). A deep-draft vessel. In maritime law, the word "ship" is equivalent to "vessel," and it is not the form, the construction, the rig, the equipment, or the means of propulsion that makes a ship, but the purpose and business of the craft as an instrument of marine transportation. (See **deep-draft** and **small craft**.)
- (242) **shoal**. An elevation of the bottom, composed of unconsolidated (soft) material (i.e., any material other than rock or coral) which constitutes a danger to surface vessels; as a guideline, they may be considered to be covered less than 10 fathoms. (See **ledge**, **reef**, and **rock**.)
- (243) **shore**. That part of the land in immediate contact with a body of water, including the area between high- and low-water lines.
- (244) **sinker**. (See **deadhead**.)
- (245) **skieg**. A wood or metal fin that extends beneath the keel at the stern of small craft to increase the stability of the craft with respect to yawing; it may extend abaft the keel and protect the propeller from the ground.
- (246) **slip**. The area of water between two piers.
- (247) **slough**. (See **bayou**.)
- (248) **small craft**. A general term referring to yachts, coastal fishing boats, and other types of smaller vessels which are not capable of, or do not generally make, ocean passages. Very small open boats, such as runabouts, skiffs, and the like, may be referred to as small boats.
- (249) **sounding datum**. The horizontal plane or tidal datum to which the soundings on a hydrographic survey are reduced. Also called **datum for sounding reduction**.
- (250) **source diagrams**. See **Source Diagrams**, indexed, chapter 3.
- (251) **spire**. A slender pointed structure surmounting a building such as a church. Use of the term steeple for such a structure should be avoided.
- (252) **spit**. A low tongue of land, or a relatively long, narrow shoal, extending from the shore.
- (253) **spring tides**. The tides occurring near the times of full moon and new moon, when the range of tide tends to increase. Tides occurring near the times of first and last quarter, when the range tends to decrease, are called "**neap tides**."
- (254) **SS**. Popularly, the abbreviation for steamship. Diesel-powered vessels are abbreviated "**MV**" (motor vessel). Historically, SS was the abbreviation for "screw steamer," a steam vessel driven by a propeller.
- (255) **stack**. Any tall smokestack or chimney, regardless of color, shape, or material, if the stack is more prominent as a landmark than any building in connection with it. The use of the term "**chimney**" for such a structure is incorrect.

- (256) **standard time.** Standard time is reckoned from Greenwich, England, recognized as the Prime Meridian of Longitude. The earth is divided into 24 zones, each of 15 degrees of arc, or one hour in time apart. The Greenwich meridian (0 degrees) extends through the center of the initial zone, and the zones to the east are numbered from one to 12 with the prefix “minus” to indicating the number of hours to be subtracted to obtain Greenwich Time. Each zone extends 7 1/2 degrees on either side of its central meridian.
- (257) Westward zones are similarly numbered, but prefixed “plus” showing the number of hours that must be added to get Greenwich Time. While these zones apply generally to sea areas, it should be noted that the Standard Time maintained in many countries does not coincide with zone time.
- (258) The United States and its possessions are divided into Standard Time zones, as set forth by the Standard Time Act of 1918, as amended by the Uniform Time Act of 1966. Each zone is approximately 15 degrees of longitude in width. These time zones are designated as Atlantic (Puerto Rico), Eastern (east coast), Central, Mountain, Pacific, and Alaska-Hawaii. The time in these zones is basically reckoned from the 60th, 75th, 90th, 105th, 120th, and 150th meridian respectively. The borders of the time zones wander to conform to local conditions e.g., geographic factors, political boundaries. (See **Time**, chapter 2; see **daylight saving time**, this glossary.)
- (259) **standpipe.** A tall cylindrical structure in a waterworks system, whose height is several times greater than its diameter, and which extends from the ground, not supported by a skeleton-type framework.
- (260) **strength of current.** The phase of a tidal current in which the speed is maximum; also the speed at this time. This may be classified as flood strength or ebb strength, depending upon which current is involved.
- (261) **Style Manual.** A manual issued by the Government Printing Office containing rules of that office for the preparation of manuscript and the correction of proof.
- (262) **submerged rock.** A rock covered at the chart datum. On NOS charts, a submerged rock symbol is used when the rock is covered more than 1 foot at chart datum for the Atlantic coast or covered more than 2 feet at chart datum for the Pacific coast. (See **rock**, **bare rock**, and **rock awash** in this glossary and **chart datum** in chapter 3.)
- (263) **swash channel.** A channel through a sandbar created by wave and current action; such a channel is constantly changing.
- (264) **tank.** A tank, usually for holding water, elevated high above the ground by a tall skeleton framework.
- (265) **tank, gas or oil.** The compound name is used on charted landmarks; such tanks usually have a base resting on the ground or other foundation, and the height is not much greater than the diameter.
- (266) **tariff.** The official document of a port authority which gives the rates, rules, and regulations for the public facilities of the port. Tariffs usually give additional information on the port, such as a brief description of the wharves and other facilities, a port telephone directory, pilotage and towage rates. etc.
- (267) **territorial sea.** The 12 nautical mile territorial sea was established by Presidential Proclamation 5928, December 27, 1988, and is also the outer limit of the **U.S. contiguous zone** for the application of domestic law. **The 3 nautical mile line (charted), previously identified as the outer limit of the territorial sea, is retained because the proclamation states that it does not alter existing State or Federal law. The 9 nautical mile natural resources boundary** off Texas, the Gulf coast of Florida, and Puerto Rico, and the 3 nautical mile line elsewhere remain the inner boundary of the Federal fisheries jurisdiction and limit of states' jurisdiction under the Submerged Lands Act (P.L. 83-31; 67 Stat. 29, March 22, 1953). These maritime limits are subject to modification, as represented on future charts. The lines shown on the most recent chart edition take precedence.
- (268) **tidal wave.** (See **tsunami**.)
- (269) **tidal datum.** A datum plane defined by a certain phase of the tide or an average of observed tidal heights, such as mean sea level, mean high water, or mean low water. Tidal datums are local datums and should not be extended into areas which have differing topographic features without substantiating measurements. (In general, these local datums are valid only in the general vicinity of the tide station recording the observations from which the datums were determined.)
- (270) **tide rips.** Small waves formed on the surface of water by the meeting of opposing tidal currents or by a tidal current crossing an irregular bottom. Vertical oscillation, rather than progressive waves, is characteristic of tide rips.
- (271) **tonnage.** May mean the size of a vessel, the amount of a ship's cargo, or the cargo capacity of a vessel; may refer to a quantity expressed in any of numerous units, and the units may be of weight or of volume. The term has little meaning unless the type of tonnage is specified. (See **deadweight tonnage**, **displacement**, and **registered tonnage**.)
- (272) **tonnage certificate.** A Coast Guard-issued document stating a vessel's name and nationality, port of documentation, principal dimensions; all particulars of the under-deck tonnage, including the items included in the gross tonnage and those items which have been deducted in order to obtain the net tonnage; and

particulars of all spaces which have been exempted from admeasurement. (See **registered tonnage**.)

- (273) **tower.** A structure very high in proportion to its horizontal size, rising from the ground or a building.
- (274) **transit shed.** A building on a wharf or pier for the temporary storage of goods in transit between ship and railhead or warehouse.
- (275) **tsunami (seismic sea wave).** A wave set up by a submarine earthquake, landslide, or volcanic action. Many such seismic disturbances do not produce sea waves and often those produced are small, but the occasional large wave can be very damaging to shore installations and dangerous to ships in harbors. The destructive wave is commonly referred to as a tidal wave, a term which is technically incorrect as the wave is not the result of tide-producing forces.
- (276) **undocumented vessel.** Every undocumented vessel propelled by machinery of more than 10 horsepower, whether or not such machinery is the principal source of propulsion, must be numbered either by the Coast Guard or by a State having an approved numbering system. (See **documentation of vessels**.)
- (277) **United States.** The 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the territories and possessions; Alaska became the 49th State on January 3, 1959, and Hawaii became the 50th on August 21, 1959. The conterminous United States is the 48 pre-1959 States and the District of Columbia. The continental United States is the 49 States, including Alaska and the District of Columbia, on the North American Continent.
- (278) **vertical control datum.** Any level surface (e.g., mean sea level) used as a reference from which to reckon elevations. Also called datum level, reference level, reference plane, levelling datum, or datum for heights.
- (279) **vertical datum.** For marine applications, a base elevation used as a reference from which to reckon heights or depths. It is called a **tidal datum** when defined by a certain stage of the tide.
- (280) Topographic mapping of the conterminous United States and Alaska is based on the **National Geodetic Vertical Datum of 1988 (NGVD 88)**. Various vertical datums are used in Hawaii, the oceanic islands, and other offshore areas not accessible for connecting to NGVD 88; each is based on mean sea level at a specified tide station and at a specific epoch. The basic vertical datum for the Great Lakes and connecting waterways is a level datum, designated the **International Great Lakes Datum 1985 (IGLD 1985)**.
- (281) **vessel.** A very general term for all craft capable of floating on water.
- (282) **vigia.** A rock or shoal, the existence or position of which is doubtful, or a warning note to this effect on a chart. Doubtful navigation and strong currents account for a large proportion of the vigias that encumber or have encumbered the charts of the Pacific Ocean. Phosphorescence, seaweed scum, and schools of fish often resemble reefs and breakers so closely as to deceive even the most experienced. Many vigias have been disproved by extensive investigation, but many others are still on the charts and remain a source of annoyance to the navigator.
- (283) **water tower.** A decorative structure enclosing a tank or standpipe, when by its appearance it would not be recognized as such. (rare)
- (284) **wave.** The height of a wave is the elevation of each crest above the succeeding trough. The length is the distance from one crest to the next. The period is the length of time required for two succeeding crests to pass a stationary point.
- (285) **weather shore.** The shore on the windward side of a vessel; that is, the shore lying in the direction from which the wind is blowing.
- (286) **wharf.** A structure at which vessels moor; the longest dimension is approximately parallel to the shore, and the primary moorage for vessels is only at one side, the offshore side, called the face. (See **bulkhead wharf**, **marginal wharf**, **offshore wharf**, and **pier**.)
- (287) **wharfinger.** The official at some ports responsible for the berthing of vessels. Same as harbor master. On the Pacific coast of the United States, the term wharfinger is generally used by the large port authorities and the term harbor master is used for the official in charge of small-craft harbors.
- (288) **williwaw.** A violent wind which frequently occurs on the leeward side of the mountains of the Aleutian Islands. The williwaw is an especially dangerous wind due to the suddenness of its occurrence, violence, and extreme gustiness; it occurs when the air dams up in great quantity on the windward side of a mountain and then spills over suddenly as an overwhelming surge.
- (289) **World Port Index.** Published by the National Geospatial-Intelligence Agency.
- (290) **zone time.** See **standard time**.

# Spelling, Capitalization, and Compounding

- (1) This appendix provides a list of examples of spelling, capitalization, and compounding approved for Coast Pilot usage. Obviously, such a list is not complete, but the proper usage of terms that are not included may often be determined by analogy.
- (2) aerolight; Molokai Aerolight
- (3) airbase; airmail; airport
- (4) alignment
- (5) all time; alltime (adj.)
- (6) anticollision; anticyclone; antitorpedo
- (7) antenna(s)
- (8) as built; as-built (adj.)
- (9) blueprint (BP)
- (10) boatbuilding; boatyard; boatowner
- (11) boat ramp
- (12) boldface
- (13) breakbulk cargo
- (14) breakup
- (15) breakwater
- (16) bridge; Pennsylvania Railroad Bridge
- (17) bridgetender
- (18) building; Whitehall Building
- (19) buoy; Chesapeake Bay Entrance Lighted Whistle  
Buoy 2CB
- (20) bypass
- (21) campsite
- (22) cannery wharf; cannery dock; Salmon Cannery  
Wharf (Dock)
- (23) Captain of the Port (COTP)
- (24) centerline
- (25) chain; Aleutian Chain
- (26) city dock; city float; city front; Portland City Dock  
(Float); city of Washington
- (27) close aboard; close to; close-to (adverb)
- (28) clubhouse
- (29) coast; Atlantic coast
- (30) Coast Guard station; Cape May Coast Guard Station
- (31) coastline; coastwise
- (32) cone shaped; cone-shaped (adj.)
- (33) cooperate
- (34) counterclockwise
- (35) courthouse
- (36) crosscurrent
- (37) customhouse; Charleston Customhouse
- (38) cut off (v.); cutoff (n., adj.)
- (39) danger-free
- (40) daybeacon; daymark; daytime
- (41) deep draft; deep-draft (adj.)
- (42) deep water; deepwater (adj.)
- (43) diesel fuel; diesel oil
- (44) dinghy, dinghies (pl.)
- (45) dock; National Docks
- (46) dockmaster
- (47) downriver; downstream
- (48) drawbridge; drawspan
- (49) drier (adj.)
- (50) driftwood
- (51) drydock
- (52) east side
- (53) eastbound
- (54) en route
- (55) extraordinary
- (56) factory; Commonwealth Shoe Factory
- (57) ferryboat; ferry slip
- (58) Federal project
- (59) fish camp; fishhouse
- (60) fishmeal; fishpond; fishtrap; fish weir; fishwife;  
fishmonger
- (61) flagpole
- (62) flatland
- (63) flood tide
- (64) fog signal; Manana Island Fog Signal Station
- (65) fogbound
- (66) foghorn
- (67) footbridge
- (68) foothill
- (69) forklift
- (70) freezeup (n., adj.)
- (71) fresh water; freshwater (adj.)
- (72) front end; front-end (adj.)
- (73) gage, gauge
- (74) gale force; gale-force (adj.)
- (75) grass covered; grass-covered (adj.)
- (76) gray (not grey)
- (77) group; Shumagin Group



(78)	halfway	(130)	oceangoing
(79)	harbormaster	(131)	offloading; off-lying; offshore
(80)	heave-to	(132)	one-half
(81)	high water; high-water (adj.)	(133)	outer end; outermost
(82)	hotel; Statler Hotel	(134)	outlying; outpatient
(83)	houseboat	(135)	overnight
(84)	hp (horsepower; no abbreviation points)	(136)	oysterbed
(85)	icebreaker	(137)	papermill
(86)	inbound; ingoing; inshore	(138)	patrol; patrolled
(87)	International Code flag	(139)	payed out (rope)
(88)	irregularly shaped; irregularly-shaped (adj.)	(140)	penciled
(89)	judgment	(141)	pier; Commonwealth Pier; pierhead
(90)	keelblock	(142)	pilothouse; pilot vessel
(91)	kHz (kilohertz)	(143)	pipeline
(92)	knots (40 knots; 70-knot gusts)	(144)	portside
(93)	lakeward	(145)	post office; Rockville Post Office
(94)	land cut	(146)	powerboat
(95)	landfall	(147)	power plant
(96)	landlocked	(148)	prorate; pro rata
(97)	headline	(149)	pulpmill
(98)	lee shore; leeward	(150)	pulpwood
(99)	Liberty-type ship	(151)	pump-out station
(100)	lifeboat; lifejacket; lifesaving	(152)	racon; ramark
(101)	light; Cape Henry Light	(153)	radiobeacon; radio direction finder; radiotelephone; radiotelegraph
(102)	lighthouse; abandoned Barnegat Lighthouse	(154)	range line
(103)	lightship; Nantucket Lightship	(155)	realigning
(104)	loading rate (50-ton-per-hour loading rate; loading rate, 50 tons per hour)	(156)	riverbank; riverfront
(105)	lobster pot	(157)	riprap; riptide
(106)	lockmaster	(158)	roll-on/roll-off
(107)	logjam	(159)	sailboat
(108)	long time; longtime (adj.)	(160)	St. Lawrence Seaway
(109)	looseleaf (adj.)	(161)	St. Lawrence Seaway Authority
(110)	loran	(162)	Saint Lawrence Seaway Development Corporation
(111)	low water; low-water (adj.)	(163)	sandbank; sandbar; sandspit
(112)	lumberyard; lumbermill	(164)	seaboard; seabottom; sea buoy; seacoast; seafood; seagoing; seawall; sea bird; sea-bird (adj.); sea level; sea-level (adj.); seabed
(113)	mainline; main-line (adj.)	(165)	searchlight
(114)	masthead	(166)	self-propelled
(115)	medium-sized	(167)	shipboard; shipbuilder; shipmaster; shipyard; Law- ley Shipyard
(116)	MHz (megahertz)	(168)	shear-leg crane
(117)	mid-April; mid-1964; mid-Pacific; midbay; midchannel; midpoint; midriver; midstream; midway	(169)	side scan
(118)	milldam	(170)	single scan
(119)	mobile hoist	(171)	small-craft basin
(120)	mph (miles per hour, no abbreviation points)	(172)	stiff-leg crane
(121)	motorboat	(173)	shoreline; shoreside
(122)	mountaintop; mountainside	(174)	shortwave (radio)
(123)	multibeam	(175)	silt-laden
(124)	naval shipyard; Charleston Naval Shipyard	(176)	sizeable
(125)	nearby	(177)	skindiver; skin diving
(126)	nighttime	(178)	slack water
(127)	noncommercial; nontidal	(179)	slipway (boatslip)
(128)	northbound		
(129)	north-northwest		

(180)	slowgoing		MN	Minnesota	CZ	Canal Zone
(181)	slow, no-wake speed; 5-mph, no-wake speed limit		MS	Mississippi	DC	District of Columbia
(182)	small craft; small-craft (adj.)		MO	Missouri	GU	Guam
(183)	snowcapped; snow covered; snow-covered (adj.); snowline		MT	Montana	PR	Puerto Rico
(184)	southbound; south side		NE	Nebraska	VI	Virgin Islands
(185)	speedup (n., adj.)		NV	Nevada		
(186)	State (one of the United States); state (foreign country)					
(187)	State abbreviations		(188)	sugarcane		
	AL Alabama	NH New Hampshire	(189)	sulfur		
	AK Alaska	NJ New Jersey	(190)	surfboat		
	AZ Arizona	NM New Mexico	(191)	swing span		
	AR Arkansas	NY New York	(192)	tableland		
	CA California	NC North Carolina	(193)	third class; third-class (adj.)		
	CO Colorado	ND North Dakota	(194)	thorofare		
	CT Connecticut	OH Ohio	(195)	tide pools; tidewater		
	DE Delaware	OK Oklahoma	(196)	tie up; tie-up (adj.)		
	FL Florida	OR Oregon	(197)	towboat		
	GA Georgia	PA Pennsylvania	(198)	transatlantic; transpacific; trans-Canadian		
	HI Hawaii	RI Rhode Island	(199)	transiting		
	ID Idaho	SC South Carolina	(200)	traveled, traveling		
	IL Illinois	SD South Dakota	(201)	trunkline		
	IN Indiana	TN Tennessee	(202)	turnout		
	IA Iowa	TX Texas	(203)	tying (not tying)		
	KS Kansas	UT Utah	(204)	U.S. commissioner; U.S. marshal		
	KY Kentucky	VT Vermont	(205)	undercurrent; underwater; underway		
	LA Louisiana	VA Virginia	(206)	upcoast; upriver; upstream; upturned; upwind		
	ME Maine	WA Washington	(207)	water boat; waterborne; watercraft; waterfall; wa- terfront; waterline; water tank		
	MD Maryland	WV West Virginia	(208)	weatherbound; weather shore		
	MA Massachusetts	WI Wisconsin	(209)	weekend		
	MI Michigan	WY Wyoming	(210)	well-defined (adj.); well-marked (adj.)		
			(211)	westbound; west end; west-end (adj.)		
			(212)	wharf; Tillson Wharf		
			(213)	windspeed; windswept; windward		
			(214)	wing dam		
			(215)	wire drag; wire-drag (adj.)		
			(216)	worldwide		
			(217)	yearlong (adj.)		
			(218)	year round; year-round (adj.)		

# Coast Pilot Sources

- (1) This appendix shows sources of information used to update Coast Pilot publications. Prior to January 1991, the Coast Pilot Unit, would receive source material for updating the Coast Pilot publications directly. After working the source data (paper media), it was retained by Coast Pilot Unit and approximately annually was converted to microfilm for archival purposes. In January 1992, the Source Data Unit (SDU) was charged with not only being the central receiving point for source data affecting the nautical chart, but for all products compiled and produced by Mapping and Charting Branch. At that time, SDU commenced to receive and register nearly all source data affecting the Coast Pilot publications. The source data identification codes of SDU commenced appearing on the sources for Coast Pilot material, replacing the Coast Pilot Unit codes. Because the “Coast Pilot Unit codes” have been in use for many years, and hence show on microfilm records, in order to assist a user of the microfilm, the Coast Pilot Unit codes are still shown. Sources have been divided into the following categories: Notices to Mariners; U.S. Coast Guard; U.S. Army Corps of Engineers; National Ocean Service; National Geospatial–Intelligence Agency; other Federal agencies; Canadian Government publications; and miscellaneous. This source list is not comprehensive.

## Notices to Mariners

Canadian Notice to Mariners, number, year	(CNM 3/04)
Canadian Notice to Mariners Annual Edition, year	(CNM Ann/04)
Canadian Notice to Shipping, date, serial number	(CNS 11/17/04, C-4315)
Local Notice to Mariners, number, year, district	(8/04 CG9)
Local Notice to Mariners (with no serial number)	(LNM dtd 2/22/04 CG9)
Local Notice to Mariners (Annual Special), year, district	(Spec. LNM/04 CG1)
Notice to Mariners (NGA), number, year	(NM 14/04)
Seaway Notice, Saint Lawrence Seaway Development Corporation (U.S.), number, year	(SLSN 27/04)
Seaway Notice, St. Lawrence Seaway Authority (Canadian), number, year	(CSLSN 3/04)

## Coast Guard

Coast Guard Standard Distribution List, month, year	(CGSDL 4/04)
Light List, year	(LL/04)
Navigation Rules, International-Inland (COMDTINST M16672.2, latest revision)	(NR11)

## U.S. Army Corps of Engineers

Alabama River, River Charts, year	(ARRC/83)
Apalachicola, Chattahoochee and Flint Rivers Navigation Charts, year	(ACFRNC/78)
Black Warrior-Tombigbee Rivers, River Charts, year	(BWTRRC/78)
Charts of the Illinois Waterway, year	(IL WW/78)
Corps of Engineers Activities (telephone/address book) month, year	(CEA 5/04)
Flood Control & Navigation Maps of the Mississippi River, year	(FCNMMR/83)
Intracoastal Waterway Bulletin, district (NORV, WILM, CHAS, SAV, JAX), year	(CE-ICW-NORV/84)
Pearl River Navigation Charts, year	(PRNC/68)
Port Series, Corps of Engineers, number, year	(PS 8/99)

Project Maps, district, year	(CEM-Buffalo/01)
Upper Mississippi River Navigation Charts, year	(UMRNC/82)
Other than above, year	(CE/01)*
<b>National Ocean Service</b>	
Aeronautical Charts Catalogue	(ACC/89-90)
Blueprint, number	(BP 123456) and/or (BPs 123501-03)
Cartographic Order, number, year	(CO 030/00)
Center for Operational Oceanographic Products and Services, year	(CO-OPS/09)
Chart, number	(NOS 12345)
Chart, drawing aid proof, number	(NOS 12345, Dwg# 19)
Chart Letter, number, year	(CL 123/05)
Coast Pilot Manual, page, year	(CPM 25/06)
Dates of Latest Edition, month, year	(Dole 4/2005)
Field Inspection, Coast Pilot, year	(CP7 FI/04)
Field Inspection of Virgin Islands, Coast Pilot, year	(CP5 FI/82 VI)
Field Examination, number, year	(FE 3/04)
Hydrographic Manual, chapter, page, year	(HM-4-13/76)
Hydrographic Sheet & Descriptive Report, number	(H 1234)
Hydrographic Sheet & Descriptive Report, Wire Drag	(H 0000 WD)
National Ocean Service (other), year (Reserved for rewording and/or typo correction.)	(NOS/05)
Nautical Chart Manual, chapter, year	(NCM 06/87)
Sectional Aeronautical Chart, identifying name, date	(SECT, Seward, 12/23/86)
Text of a pilot as a guide, volume, page, year	(TXT 3-180/81)
Tidal Current Tables, year	(TCT/04)
Tide Tables, year	(TT/04)
Topographic sheet/shoreline manuscript, number	(T 9623)
Workbook source, Coast Pilot, applicable page, year	(CP 6-23/05)
<b>National Geospatial-Intelligence Agency (NGA)</b>	
Catalog of NGA Hydrographic Products	(NGA Cat. Vol X)
Chart, number	(NGA 56789)
Fleet Guide Atlantic, chapter, page, year	(FGA 8-18/86)
Fleet Guide Pacific, chapter, page, year	(FGP 8-19/86)
Pilot Chart (published quarterly), quarter, year	(Pilot Chart 4/85)
Radio Navigational Aids, year	(PUB 117A/84)
International Code of Signals, page, year	(ICS 9/05)
Sailing Directions, number, year	(SD 147/91)
<b>Other Federal Agencies</b>	
Customs Service, year	(CS/05)*
Department of Agriculture, year	(AGR/05)*

Directory of VHF-FM Public Coast Stations, FCC, month, year	(FCC PCS-3/05)
Environmental Protection Agency, year	(EPA/05)*
Federal Communications Commission, month, year	(FCC 1/85)
Federal Register, date	(FR 7/7/05)
Federal Regulation in current volume of CFR	(33 CFR 117.650)
Food and Drug Administration, year	(FDA/84)*
Geological Survey quadrangle map, name, size, year	(USGS Marina. CA 7.5' Quad 1983)
Government Printing Office, Style Manual, year	(GPO SM/84)
Immigration & Naturalization Service, year	(INS/84)*
Data Base, number, source type	(DB 9782 coast)
Digital Data, number	(DD 6350)
Marine Weather Service Chart (NWS), serial, year	(MSC 2/84)
National Bureau of Standards, Special Publication 432, year	(NBS 432/79)
National Bureau of Standards (other), year	(NBS/84)*
National Environmental Satellite, Data, and Information Service, year	(NESDIS/84)
National Institute of Standards & Technology, Special Publication 432, year	(NIST 432/93)
National Institute of Standards & Technology, Special Publication 432, year	(NIST/93)*
National Telecommunications & Information Administration, Interdept. Radio Advisory Committee, year	(NTIA/84)*
National Weather Service, year	(NWS/05)*
Public Health Service, year	(PHS/05)*
Seaway Handbook, year	(SWHB/83)
Selected Worldwide Marine Weather Broadcasts, NWS, year	(SWMWB/84)
<b>Canadian Government Publications</b>	
British Columbia Small Craft Guide, Canadian Vol. II, page, year	(CSD-II-BCSCG-40/84)
Canadian Hydrographic Service chart, number	(CHS 2222)
Canadian Hydrographic Service Catalog, number, year	(CHS Cat. 1/84)
Canadian Radio Aids to Marine Navigation, Atlantic and Great Lakes, date	(CRA-AGL, 9/1/84)
Canadian Radio Aids to Marine Navigation, Pacific, date	(CRA-P, 9/1/84)
Canadian Sailing Directions, Pacific, number, page, year	(CSD-PAC206-10/96)
Canadian Sailing Directions, Great Lakes-Central, number, page, year	(CSD-CEN300-44/96)
Canadian Sailing Directions, Atlantic, number, page, year	(CSD-ATL106-25/96)
List of Lights, year	(CLL/84)
Rideau Waterway and Ottawa River Small Craft Guide, page, year	(CSD-RW-23/84)
Trent-Severn Waterway Small Craft Guide, page, year	(CSD-TSW-35/83)
<b>Miscellaneous</b>	
Alaska Place Names, Dictionary of, year	(APN/67)
American Pilots Association Inc., year	(APAI/85)
Boating Almanac, volume, page, year	(BA-6-20/84)
Great Lakes Cruising Club Port Pilot & Log Book, page, year of page	(GLCCPP-E3/83)



Handy Railroad Atlas of the United States, year	(HRA/82)
Pacific Boating Almanac, year	(PBA/84)
Radio Technical Commission for Maritime Services/year	(RTCM/92)
Rand McNally Road Atlas	(RMRA/08)
Waterway Guide, year	(WWG/84)

\*Cite month (or month/day) as necessary to differentiate between lists issued in the same calendar year

# Measurement and Conversion Factors

Conversion Factors			
	Known Value	Multiply By	Unknown Value
Linear	inches	25.40	millimeters
		2.540	centimeters
	centimeters	0.032808	feet
	feet	30.48	centimeters
		0.3048	meters
		0.00016458	nautical miles
	yard	0.9144	meters
	meters	3.2808	feet
		1.094	yards
		0.0005399	nautical miles
	statute miles	0.86897	nautical miles
		1.6093	kilometers
1,609.3		meters	
nautical miles	1.151	statute miles	
Area	square feet	0.0929	square meters
		0.00002296	acres
	square meters	10.764	square feet
		0.0002471	acres
	acres	4,046.9	square meters
		43,560	square feet
	hectare	0.404685	hectare
2.471054		acres	
10,000		square meters	
	1.07639x10 <sup>5</sup>	square feet	
Depths	fathoms	1.8288	meters
	meters	0.54681	fathoms
		3.2808	feet
feet	0.3048	meters	
Rate	feet per second	0.5925	knots
		0.6818	miles per hour
		30.48	centimeters per second
	statute miles per hour	0.8689	knots
		1.467	feet per second
		0.447	meters per second
	knots	1.151	miles per hour
		0.5144	meters per second
1.6878		feet per second	
centimeters per second	0.01944	knots	
	0.02237	miles per hour	
	0.032808	feet per second	
Mass	grams	0.035275	ounces
		0.002205	pounds
	ounces	28.349	grams
	pounds	0.45359	kilograms
	short tons	2,000	pounds
		0.89286	long tons
	0.9072	metric tons	

Mass	long tons	2,240	pounds
		1.12	short tons
		1.016	metric tons
metric tons	metric tons	1,000	kilograms
		0.9842	long tons
		1.1023	short tons
		2,204.6	pounds
Volume	barrels (petroleum)	42	gallons (US)
		158.99	liters
	barrels (liquid, US)	31.5	gallons (US)
		26.229	gallons (British)
		119.24	liters
	gallons (US)	0.02381	barrels (petroleum)
		3.7854	liters
	liters	0.26417	gallons (US)

Measurements and Equivalencies	
Unit	Equivalency
nautical mile	1,852 meters 6,076.12 feet
statute mile	5,280 feet 1,609.3 meters 1.6093 kilometers
cable	0.1 nautical mile (CN) 720 feet (US)
fathom	6 feet 1.8288 meters
foot	0.3048 meter
inch	2.54 centimeters
meter	39.37 inches 3.281 feet 1.0936 yards
kilometer	1,000 meters
knot	1.6877 feet per second 0.5144 meters per second
miles per hour (statute)	1.466 feet per second 0.44704 meters per second
acre	43,560 square feet 4,046.82 square meters
pound (avoirdupois)	453.59 gram
gram	0.0022046 pound (avoirdupois) 0.035274 ounce
short ton	2,000 pounds
long ton	2,240 pounds
metric ton	2,204.6 pounds
kilogram	2.2 pounds
liter	1.0567 quarts
barrel (petroleum)	42 gallons (US)

## METRIC STYLE GUIDE

**Prefixes:** Some of the metric units listed include prefixes such as kilo, centi, and milli. Prefixes, added to a unit name, create larger or smaller units by factors that are powers of 10. For example, add the prefix kilo, which means a thousand, to the unit gram to indicate 1000 grams; thus 1000 grams become 1 kilogram. The more common prefixes follow.

Factor		Prefix	Symbol
1 000 000	$10^6$	mega	M
1 000	$10^3$	kilo	k
1/100	$10^{-2}$	centi	c
1/1000	$10^{-3}$	milli	m
1/1 000 000	$10^{-6}$	micro	$\mu$

**Spelling:** All units and prefixes should be spelled as shown in this guide.

**Conversions:** Conversions should follow a rule of reason; do not include figures that imply more accuracy than justified by the original data. For example, 36 inches should be converted to 91 centimeters, not 91.44 centimeters (36 inches x 2.54 centimeters per inch = 91.44 centimeters), and 40.1 inches converts to 101.9 centimeters, not 101.854.

**Capitalization of Units:** The names of all units start with a lower case letter except, of course, at the beginning of the sentence. There is one exception: in "degree Celsius" (symbol °C) the unit "degree" is lower case but the modifier "Celsius" is capitalized. Thus body temperature is written as 37 degrees Celsius.

**Capitalization of Symbols:** Unit symbols are written in lower case letters except for liter and those units derived from the name of a person (m for meter, but W for Watt, Pa for Pascal, etc.).

**Capitalization of Prefixes:** Symbols of prefixes that mean a million or more are capitalized and those less than a million are lower case (M for mega (millions), m for milli (thousandths)).

**Pluralizations of Units:** Names of units are made plural only when the numerical value that precedes them is more than 1. For example, 0.25 liter or 1/4 liter, but 250 milliliters. Zero degrees Celsius is an exception to this rule.

**Pluralization of Symbols:** Symbols for units are never pluralized (250 mm=250 millimeters).

**Incorrect Terms:** The prefix "kilo" stands for one thousand of the named unit. It is not a stand-alone term in the metric system. The most common misuse of this is the use of "kilo" for a "kilogram" of something. The word "micron" is an obsolete term for the quantity "micrometer." Also "degree centigrade" is no longer the correct unit term for temperature in the metric system; it has been replaced by degree Celsius.

**Spacing:** A space is used between the number and the symbol to which it refers. For example: 7 m, 31.4 kg, 37° C.

When a metric value is used as a one-thought modifier before a noun, hyphenating the quantity is not necessary. However, if a hyphen is used, write out the name of the metric quantity with the hyphen between the numeral and the quantity. For example:

a 2-liter bottle, not a 2-L bottle;  
a 100-meter relay, not a 100-m relay;  
35-millimeter film, not 35-mm film.

In names or symbols for units having prefixes, there is no space between letters making up the symbol or name. Examples: milligram, mg; kilometer, km.

Spaces (not commas) are used in writing metric values containing five or more digits. Examples 1 234 567 km, 0.123 456 mm. For values with four digits, either a space or no space is acceptable.

**Period:** Do not use a period with metric unit names and symbols except at the end of a sentence.

**Decimal Point:** The dot or period is used as the decimal point within numbers. In numbers less than one, zero should be written before the decimal point. Examples: 7.038 g; 0.038 g.





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