



Navigation General

Charts And Publications

This Study Guide Generated Fo

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Which statement about a gnomonic chart is correct?

**Parallels, except the equator, appear as curved lines.**

**Illustrations:** GNOMONICPROJECTION, GNOMONICCHART

See REF1009

On a gnomonic chart, a great circle track between Los Angeles and Brisbane will appear as a \_\_\_\_\_.  
**straight line**

**Illustrations:** GNOMONICPROJECTION, GNOMONICCHART

See REF1009

Which conic projection chart features straight lines which closely approximate a great circle?

**Lambert conformal**

**Illustrations:** LAMBERTPROJECTION

See REF1011

When using a Lambert conformal chart in high latitudes, angles such as bearings are measured in reference to \_\_\_\_\_.

**the meridian through the ship's position**

**Illustrations:** LAMBERTPROJECTION

Which statement is TRUE concerning a Mercator projection?

**The length of the meridians is increased to provide for equal expansion in all directions.**

**Illustrations:** MERCATORPROJECTION

See REF1010

A Mercator chart is a \_\_\_\_\_.

**cylindrical projection**

**Illustrations:** MERCATORPROJECTION

See REF1010

You wish to measure the distance on a Mercator chart between a point in latitude 42°30'N and a point in latitude 40°30'N. To measure 30 miles at a time you should set the points of the dividers at \_\_\_\_\_.

**41°15' and 41°45'**

**Illustrations:** MERCATORPROJECTION

See REF1010

You wish to measure the distance on a Mercator chart between a point in latitude 43°30'N and a point in latitude 40°30'N. To measure 30 miles at a time, you should set the points of the dividers at \_\_\_\_\_.

**41°45' and 42°15'**

**Illustrations:** MERCATORPROJECTION

See REF1010

All straight lines represent great circle tracks on a chart based on a(n) \_\_\_\_\_.

**gnomonic projection**

**Illustrations:** GNOMONICPROJECTION

See REF1009

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**Illustrations:** GNOMONICPROJECTION, GNOMONICCHART

See REF1009

Which would be the subject of a NAVAREA warning?

**Off-air times of radio beacons when scheduled for routine maintenance**

**Illustrations:** NAVAREAS

See REF1002

Which statement about radio navigational warnings is TRUE?

**The topics for warnings included in HYDROLANTS, HYDROPACS, and NAVAREA warnings are the same**

**Illustrations:** NAVAREAS

See REF1003

What U.S. agency is responsible for NAVAREA warnings?

**National Geospatial-Intelligence Agency**

**Illustrations:** NAVAREAS

See REF1004

The world is divided into NAVAREAS for the dissemination of important marine information. Which NAVAREAS include the U.S. coasts?

**IV and XII**

**Illustrations:** NAVAREAS

See REF1002

If you were sailing in the North Pacific and were interested in the ice and iceberg limits, you could find this information in the \_\_\_\_\_.

**Pilot Chart**

**Illustrations:** PILOTCHART1, WIND\_ROSE\_PLOT

See REF992

Which of the buoy symbols shown in illustration D032NG below indicates a safe water mark? Illustration D032NG  
**D**

**Illustrations:** D032NG\_WM\_012914

What does the symbol shown in illustration D033NG below indicate on a chart?

**A safe water beacon**

**Illustrations:** D033NG\_WM\_090518

Which statement concerning the chartlet seen in illustration D010NG below is TRUE? (Soundings and heights are in meters)

***There is a dangerous eddy southeast of Beito Island.***

**Illustrations:** D010NG\_WM\_082918

On a nautical chart, the inner ring of a compass rose indicates \_\_\_\_\_.  
***magnetic directions***

**Illustrations:** INNER RING OF A COMPASS ROSE  
See REF995

The compass rose on a nautical chart indicates both variation and \_\_\_\_\_.  
***annual rate of variation change***

**Illustrations:** INNER RING OF A COMPASS ROSE

Which would you consult for information about the general current circulation in the North Atlantic Ocean?  
***Pilot chart***

**Illustrations:** PILOTCHART1, WINDROSE

The numeral in the center of a wind rose circle on a pilot chart indicates the \_\_\_\_\_.  
***percentage of calms***

**Illustrations:** PILOTCHART1, WINDROSE

How is the annual rate of change for magnetic variation shown on a pilot chart?  
***Gray lines on the uppermost inset chart***

**Illustrations:** PILOTCHART1, WINDROSE  
See REF992

All of the following can be found on a Pilot Chart EXCEPT information concerning the \_\_\_\_\_.  
***amounts of precipitation***

**Illustrations:** PILOTCHART1, WINDROSE  
See REF992

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If you were sailing in the North Pacific and were interested in the ice and iceberg limits, you could find this information in the \_\_\_\_\_.

**Pilot Chart**

**Illustrations:** PILOTCHART1, WIND\_ROSE\_PLOT  
See REF992

A large automated navigational buoy, such as those that have replaced some lightships, would be shown on a chart by which symbol? Illustration D015NG

**B**

**Illustrations:** D015NG\_WM\_082918

Some lights used as aids to marine navigation have a red sector to indicate a danger area. The limits of a colored sector of a light are listed in the Light List in which of the following manners?

**True bearings as observed from the ship toward the light**

**Illustrations:** LIGHTCHAR  
See REF977

You are proceeding under NCS (Naval Control of Shipping) when it becomes necessary to send a distress message. Which precedence would you assign this message?

**(IMMEDIATE)**

See REF993

The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the port side of a vessel \_\_\_\_\_.

**descending the river**

In which source could you find the number of a chart for a certain geographic area?

**Catalog of Charts**

See REF997

Sometimes foreign charts are reproduced by NGA. On such a chart, a wire-dragged, swept area may be shown in green or \_\_\_\_\_.

**purple**

What publication contains descriptions of the coast line, buoyage systems, weather conditions, port facilities, and navigation instructions for the United States and its possessions?

**Coast Pilots**

If within 500 yards (460m) of a Northern Right Whale you are lawfully obligated to \_\_\_\_\_.

**turn away from the whale and leave at slow speed**

See REF986

Civil twilight occurs at 0558 zone time on 30 December. Your DR position at that time is LAT 15°02'N, LONG 46°02'W. Which statement concerning the planets available for morning sights is TRUE?

**At 0558, Mars can be used for an ex-meridian observation.**

In the United States, short-range radio navigational warnings are broadcast by the \_\_\_\_\_.

**Coast Guard**

Information for updating nautical charts is primarily found in the \_\_\_\_\_.

**Notice to Mariners**

See REF957

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated FLASH will be delivered within \_\_\_\_\_.

**less than 10 minutes**

The Sailing Directions (Enroute) contain information on \_\_\_\_\_.

**coastal anchorages**

See REF994

A coastal chart could have a scale of \_\_\_\_\_.

**1:100,000**

See REF956

Distance along a track line is measured on a Mercator chart by using the \_\_\_\_\_.

**latitude scale near the middle of the track line**

You are proceeding under NCS (Naval Control of Shipping) and wish to send a message concerning an initial enemy contact. Which precedence would you assign this message?

**Z (FLASH)**

See REF993

Charts showing the coast of Mexico are produced by the United States \_\_\_\_\_.

**National Geospatial-Intelligence Agency**

The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the starboard side of a vessel \_\_\_\_\_.

**ascending the river**

Which statement concerning the chartlet in illustration D010NG below is true? (Soundings and heights are in meters)

**The sunken wreck southwest of Beito Island shows the hull or superstructure above the sounding datum.**

The visible range marked on charts for lights is the \_\_\_\_\_.

**maximum distance at which a light may be seen in clear weather with 10 miles visibility o**

Which government agency publishes the U.S. Coast Pilot?

**National Ocean Service**

See REF986

The population of northern right whales, an endangered species, numbers approximately \_\_\_\_\_.

**300**

When determining compass error by an azimuth of Polaris, you enter the Nautical Almanac with the \_\_\_\_\_.

**LHA Aries**

In addition to the National Weather Service, what agency provides plain-language radio weather advisories for the coastal waters of the United States?

**U.S. Coast Guard**

Which publication contains information on Naval Control of Shipping (NCS) in time of emergency or war?

**Pub. 117, Radio Navigational Aids**

See REF991

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated IMMEDIATE will be delivered within \_\_\_\_\_.

**30 minutes**

The Sailing Directions (Enroute) contain information on all of the following EXCEPT \_\_\_\_\_.

**ocean currents**

See REF994

A harbor chart could have a scale of \_\_\_\_\_.

**1:35,000**

See REF956

To measure distance on a Mercator chart between the parallels of LAT 34°30'N and LAT 31°30'N, which 30 mile scale should be used?

**32°45'N to 33°15'N**

You are proceeding under NCS (Naval Control of Shipping) when you wish to send a message concerning your ships diversion. Which precedence would you assign this message?

**P (PRIORITY)**

See REF993

The navigation regulations applicable to a U.S. inland waterway can be found in the \_\_\_\_\_.

**Coast Pilots**

The Light List shows a lighted aid to navigation on the right bank. This means that the light can be seen on the port side of a vessel \_\_\_\_\_.

**ascending the river**

The datum used for soundings on charts of the East Coast of the United States is \_\_\_\_\_.

**mean lower low water**

See REF987

Chart legends printed in capital letters show that the associated landmark is \_\_\_\_\_.

**conspicuous**

On U.S. charts, you can tell if a named feature such as a rock (i.e. Great Eastern Rock in Block Island Sound) is submerged by the \_\_\_\_\_.

**style of type used to print the name**

You are planning to enter an unfamiliar U.S. port. Which publication provides information about channel depths, dangers, obstructions, anchorages, and marine facilities available in that port?

**Coast Pilot**

See REF986

Information on northern right whales can be found in \_\_\_\_\_.

**the Coast Pilot**

See REF986

Civil twilight begins at 1910 zone time on 20 July. Your DR position at that time is LAT 22°16'N, LONG 150°06'W. Which statement concerning the planets available for evening sights is TRUE?

**Venus will have a westerly meridian angle.**

The maritime radio system consisting of a series of coast stations transmitting coastal warnings is called \_\_\_\_\_.

**NAVTEX**

See REF294

Your vessel's operators send a message that your vessel has been consigned to Voluntary Naval Control of Shipping. The message will refer you to \_\_\_\_\_.

**Radio Aids to Navigation (PUB 117)**

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated FLASH will be delivered within \_\_\_\_\_.

**10 minutes**

The Sailing Directions (Planning Guide) contain information on all of the following EXCEPT \_\_\_\_\_.

**coastal features**

See REF994

The scale on a chart is given as 1:5,000,000. This means that \_\_\_\_\_.

**1 inch is equal to 5,000,000 inches on the Earth's surface**

See REF956

Between the equator and the 46th parallel of latitude, there are 3099 meridional parts. How many degrees of equatorial longitude does 3099 meridional parts represent?

**51°39'00"**

A vessel sighting a northern right whale dead ahead should \_\_\_\_\_.

**alter course to give a wide clearance**

You are proceeding under NCS (Naval Control of Shipping) and wish to send a message by rapid transmission which does not require a higher precedence. Which precedence would you assign this message?

**R (ROUTINE)**

See REF993

On the Mississippi River, gage zero is the gage reading measured from the \_\_\_\_\_.

**National Geodetic Vertical Datum**

The Light List shows a lighted aid to navigation on the right bank. This means that the light can be seen on the starboard side of a vessel \_\_\_\_\_.

**descending the river**

When utilizing a Pacific Coast chart, the reference plane of soundings is \_\_\_\_\_.

**mean lower low water**

Chart legends which indicate a conspicuous landmark are printed in \_\_\_\_\_.

**capital letter**

Your chart indicates that there is an isolated rock and names the rock using vertical letters. This indicates the \_\_\_\_\_.

**rock is dry at high water**

What agency of the U.S. Government issues charts of U.S. waters and Coast Pilots?

**National Oceanic and Atmospheric Administration**

See REF986

What is published by the U.S. Coast Guard?

**Light List**



In the Nautical Almanac provided, when would Jupiter and Saturn be visible in temperate latitudes for both evening and morning stars?

**2014-03-27 00:00:00**

Which information is NOT provided in broadcasts by the National Institute of Standards and Technology?

**NAVAREA Warnings**

Which Naval Control of Shipping publication should be aboard your vessel?

**ATP-2 Vol. II - Allied Control of Shipping Manual**

See REF991

Allied Naval Control of Shipping (NCS) has been established. Which statement is TRUE?

**After Naval Control of Shipping has been established, permission to sail must come from local naval authorities or consular officers.**

See REF991

The Sailing Directions are published in the Enroute format and the \_\_\_\_\_.

**Planning Guide**

See REF994

Northern right whales can be identified by \_\_\_\_\_.

**whitish patches of skin on top of the head**

**no dorsal fin on the back**

**"V" shaped blow easily visible from ahead or behind**

**All of the above.**

See REF986

You are proceeding under NCS (Naval Control of Shipping) and wish to send a message concerning an initial enemy contact. Which precedence will you assign this message?

**Z (FLASH)**

See REF993

Normal pool elevation is the height in feet of the section of river above a dam. This height is measured from \_\_\_\_\_.

**mean sea level**

All aids to navigation listed in the Mississippi River System Light List are shown as miles from a reference point and on the \_\_\_\_\_.

**left or right descending bank**

Mean lower low water is the reference plane used for \_\_\_\_\_.

**soundings on the U.S. east and west coasts**

See REF998

On charts of U.S. waters, a magenta marking is NOT used for marking a \_\_\_\_\_.

**5-fathom curve**

When slanted letters are used to spell the name of a charted object you know the \_\_\_\_\_.

**object may cover and uncover with the tide**

Where would you expect to find climatological and meteorological tables for the Gulf Coast area?

**In the back of Coast Pilot #5**

The U.S. Coast Guard publishes \_\_\_\_\_.

**Light Lists**

Civil twilight starts at 1812 zone time on 26 August, Your DR position at that time is LAT 21°06'S, LONG 14°56'W. Which statement concerning the planets available for evening sights is TRUE?

**Venus may be identified from Saturn and Jupiter because it is the brightest.**

Complete information on weather broadcasts throughout the world is contained in \_\_\_\_\_.

**Selected Worldwide Marine Weather Broadcasts**

Which Naval Control of Shipping publication should be aboard your vessel?

**ATP-2, Volume II "Allied Control of Shipping Manual - Guide to Masters"**

See REF991

Under Naval Control of Shipping who is responsible for routing and diverting ships and convoys?

**The Operational Control Authority**

See REF991

Information on search and rescue procedures and special, local communications used in Mexican waters will be found in the \_\_\_\_\_.

**Sailing Directions (Planning Guides)**

On a Mercator chart, 1 nautical mile is equal to \_\_\_\_\_.

**1 minute of latitude**

You are proceeding under NCS (Naval Control of Shipping) when you wish to send a message concerning your ships diversion. Which precedence would you assign this message?

**P (PRIORITY)**

See REF993

At McAlpine L & D, normal upper pool elevation is 420.0 feet MSL, equal to 12.0 feet on the upper gage. The vertical clearance at the Clark Memorial Highway bridge is 72.6 feet above normal pool. What is the clearance if the gage reads 27.2 feet?

**57.4 feet**

What volume of the Coast Guard Light List is used for the Mississippi River system?

**V**

The reference datum used in determining the heights of land features on most charts is \_\_\_\_\_.

**mean high water**

Which aid is NOT marked on a chart with a magenta circle?

**Aero light**

If you are sailing from the East Coast of the United States to the Caribbean Sea, which publication would contain information on weather, currents, and storms?

**Pilot Charts of the North Atlantic**

Which table is NOT found in the U.S. Coast Pilots?

**Luminous range table**

See REF986

Which agency publishes the Light Lists?

**United States Coast Guard**

The values of the Greenwich hour angle and declination, tabulated in all almanacs, are for the \_\_\_\_\_.

**centers of the various celestial bodies**

Chart correction information is NOT disseminated through the \_\_\_\_\_.  
**Chart Correction Card**

Naval Control of Shipping (NCS) publications should be \_\_\_\_\_.  
**in the Master's custody**  
**safely stowed**  
**turned over to the relieving Master**  
**All of the above.**  
See REF991

Your ship is in a neutral port when full Naval Control of Shipping is established. You may expect to be boarded and instructed by a(n) \_\_\_\_\_.  
**allied Naval Control of Shipping Officer**  
**Consular Shipping Advisors (CONSA)**  
**U.S. Naval Control of Shipping Officer**  
**Any of the above.**

The Sailing Directions contain information on \_\_\_\_\_.  
**currents in various locations**  
See REF994

What area of the earth cannot be shown on a standard Mercator chart?  
**North and South Poles**

NGA (NIMA) charts are adopting the metric system. In order to change a charted depth in meters to feet you may use the conversion table found \_\_\_\_\_.  
**in the Light List**  
**on the chart**  
**in Bowditch**  
**All of the above.**  
See REF987

You are planning a voyage from New York to Norway via the English Channel. Which publication contains information on the dangers to navigation in the English Channel?  
**Sailing Directions (Enroute)**  
See REF994

At McAlpine L & D, normal upper pool elevation is 420.0 feet (130.8 meters) MSL, equal to 12.0 feet (3.7 meters) on the upper gage. The vertical clearance at the Clark Memorial Highway bridge is 72.6 feet (22.1 meters) above normal pool. What is the clearance if the gage reads 10.6 feet (3.2 meters)?  
**74.0 feet (22.6 meters)**

In which source could you find the vertical clearance of a bridge on the Ohio River?  
**Light List of the Mississippi River System**

Mean high water is the reference datum used to measure \_\_\_\_\_.  
**heights of topographical features in the United States**  
See REF998

Entering from sea, a daymark on the port side of the channel would be indicated on a chart by a \_\_\_\_\_.  
**green square with the letter G**  
See REF932

Which publication should you check for complete information on Puget Sound weather conditions?

**Coast Pilot**

See REF986

The refraction correction table given in the Nautical Almanac is based on a standard or average atmospheric density with a temperature of 50°F (10°C) and atmospheric pressure of \_\_\_\_\_.

**29.83 inches (1010 millibars)**

The Daily Memorandum contains information on \_\_\_\_\_.

**the latest navigational warnings**

See REF957

After inventorying the Naval Control of Shipping publications you find there is no copy of ATP-2, Volume II "Allied Control of Shipping Manual - Bridge Supplement". You should ask for a replacement from the \_\_\_\_\_.

**Maritime Administration**

In time of war Naval Control of Shipping Authorities may give orders concerning the \_\_\_\_\_.

**ship's route**

See REF991

Where would you obtain data on currents for areas of the world not covered by the U.S. National Ocean Service?

**In the Sailing Directions**

See REF1007

A HYDROLANT warning would normally be sent for all of the following EXCEPT \_\_\_\_\_.

**extinguishment of Robbins Reef Light in New York City's Upper Bay**

See REF988

You are planning a voyage from San Francisco to Japan. Which publication contains information on the ocean routes?

**Sailing Directions (Planning Guide)**

See REF994

Who should be consulted for changing conditions of controlling depths in major channels?

**U.S. Army Corps of Engineers**

The revision date of a chart is printed on which area of the chart?

**Lower-left corner**

Charted depth is the \_\_\_\_\_.

**vertical distance from the chart sounding datum to the ocean bottom**

The buoy symbol printed on your chart is leaning to the northeast. This indicates \_\_\_\_\_.

**nothing special for navigational purposes**

The National Ocean Service publishes the \_\_\_\_\_.

**Coast Pilots**

See REF986

When a buoy is in position only during a certain period of the year, where may the dates when the buoy is in position be found?

**Light List**

See REF1000

What is the major limitation in using the Sight Reduction Tables for Air Navigation Volume I (Pub. No. 249) for star sights?

**Only certain stars are included and sights must be limited to those stars.**

Which publication indicates the HYDROLANTS or HYDROPACS issued since the previous working day?

**Daily Memorandum**

See REF1005

Naval authorities would NOT give orders about which of the following, when the vessel is under control of the Naval Control of Shipping Organization?

**Schedules for loading cargo**

See REF991

At the outbreak of war your ship is caught in an enemy port. Which statement is FALSE?

**You should resist boarding by local officials.**

Which publication requires infrequent corrections?

**Sailing Directions (Planning Guide)**

See REF994

In very high latitudes, the most practical chart projection is the \_\_\_\_\_.

**Lambert conformal**

A NAVAREA warning carries the following number; 1986/87 (11). Which statement is TRUE

**This is warning number 1986 issued in 1987, and it affects sub-region 11.**

See REF989

On an isomagnetic chart, the line of zero variation is the \_\_\_\_\_.

**agonic line**

Information about major breakdowns, repairs, or other emergency operations with regard to weirs and (or) wicket dams, on the western rivers, may be obtained by consulting the \_\_\_\_\_.

**Broadcast Notice to Mariners**

A revised print of a chart is made \_\_\_\_\_.

**when a low-stock situation occurs and minor corrections are made**

The datum from which the predicted heights of tides are reckoned in the tide tables is \_\_\_\_\_.

**the same as that used for the charts of the locality**

See REF987

The symbol which appears beside a light on a chart reads "Gp FI R (2) 10 sec 160 ft 19M". Which characteristic describes the light?

**None of the above**

A pilot chart does NOT contain information about \_\_\_\_\_.

**tidal currents**

Which publication contains information on navigation regulations, landmarks, channels, anchorages, tides, currents, and clearances of bridges for Chesapeake Bay?

**Coast Pilot**

See REF986

The Light List Does NOT contain information on \_\_\_\_\_.

**aeronautical lights useful for marine navigation**

The principal advantage of NAVTEX radio warnings is that \_\_\_\_\_.

**they can be used by mariners who do not know Morse code**

The Local Notice to Mariners is usually published \_\_\_\_\_.  
**weekly**

When a merchant vessel is under the Naval Control of Shipping Organization in wartime, naval authorities may give orders pertaining to \_\_\_\_\_.  
**regulations about darkening ship**  
See REF991

Defense plans may cause the operation of electronic aids to navigation to be suspended with \_\_\_\_\_.  
**no notice**

What publication contains information about the port facilities in Cadiz, Spain?  
**World Port Index**

When navigating in high latitudes and using a chart based on a Lambert conformal projection, \_\_\_\_\_.  
**a straight line drawn on the chart approximates a great circle**

A major advantage of the NAVTEX system when compared to other systems is that \_\_\_\_\_.  
**warnings are printed out for reading when convenient**  
See REF990

Magnetic information on a chart may be \_\_\_\_\_.  
**indicated by isogonic lines**  
**found in a note on the chart**  
**found in the center(s) of the compass rose(s)**  
**All of the above.**

Navigation charts of the Upper Mississippi River are published by \_\_\_\_\_.  
**Corps of Engineers, U.S. Army**

A chart has extensive corrections to be made to it. When these are made and the chart is again printed, the chart issue is a \_\_\_\_\_.  
**new edition**

The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean \_\_\_\_\_.  
**high water**  
See REF987

The symbol which appears beside a light on a chart reads "Gp FI R (2) 10 sec 160 ft 19M". Which characteristic does the light possess?  
**It has a red light.**

Information about the pilotage available at Miami harbor may best be obtained from which publication?  
**United States Coast Pilot**  
See REF986

How is the intensity of a light expressed in the Light Lists?  
**Nominal range**

Your ship received a HYDROLANT advising of a special warning to mariners from the Department of State for ships in the Persian Gulf. You are 400 miles south of, and bound for, the Persian Gulf. What action should you take?  
**Send an AMVER report and acknowledge receipt of the warning.**  
See REF1001

Mariners are FIRST warned of serious defects or important changes to aids to navigation by means of \_\_\_\_\_.

**marine broadcast Notice to Mariners**

See REF957

Which statement about Naval Control of Shipping in wartime is TRUE?

**It is mandatory in wartime.**

See REF991

Under defense plans, operation of electronic aids may be temporarily suspended with \_\_\_\_\_.

**no notice**

General information about the location, characteristics, facilities, and services for U.S. and foreign ports may be obtained from which publication?

**World Port Index**

See REF1008

On a transpacific voyage, you receive a message from your vessel's operators saying that your vessel has been consigned to Naval Control of Shipping. Further information is contained in \_\_\_\_\_.

**Radio Aids to Navigation (PUB 117)**

See REF991

Lines on a chart which connect points of equal magnetic variation are called \_\_\_\_\_.

**isogonic lines**

Who publishes the navigation charts of the Upper Mississippi River?

**Corps of Engineers, U.S. Army**

What information is found in the chart title?

**Information on the sounding datum**

The shoreline on charts generally represents the mean \_\_\_\_\_.

**high water line**

See REF987

The depth of water on a chart is indicated as 23 meters. This is equal to \_\_\_\_\_.

**12.6 fathoms**

See REF999

Which publication would describe the explosive anchorages in the ports on the east coast of the United States?

**Coast Pilot**

See REF986

To find the specific phase characteristic of a lighthouse on a sound of the United States you would use the \_\_\_\_\_.

**Light List**

What is a "Special Warning"?

**A broadcast disseminating an official government proclamation affecting shipping**

Information about temporary, short term changes affecting the safety of navigation in U.S. waters is distributed to navigational interests by the \_\_\_\_\_.

**Local Notice to Mariners**

See REF957

Which publication is NOT carried on board U.S. merchant vessels operating under Naval Control of Shipping?

**Tactical Control and Routing of Merchant Vessels**



See REF991

At the establishment of Naval Control of Shipping (NCS), ships at sea will \_\_\_\_\_.  
**continue voyages unless in danger areas defined in the advisory or supplemental message**

See REF991

Which nautical charts are intended for coastwise navigation outside of outlying reefs and shoals?

**General charts**

See REF956

On a transpacific voyage, you receive a message from your vessel's operators saying that your vessel has been consigned to Naval Control of Shipping. Further information is contained in \_\_\_\_\_.

**Radio Aids to Navigation (PUB 117)**

See REF991

The agonic line on an isomagnetic chart indicates the \_\_\_\_\_.

**points where there is no variation**

How is a navigation light identified on an Army Corps of Engineers navigation map?

**Name and miles from a reference point**

Which information is found in the chart title?

**Survey information**

Mean high water is used \_\_\_\_\_.

**to indicate the shoreline where there is a large tidal fluctuation coast of the U.S.**

See REF998

Sometimes foreign charts are reproduced by NGA. On such a chart a wire dragged (swept) area may be shown in purple or \_\_\_\_\_.

**green**

Solid green arrows on the main body of a pilot chart indicate \_\_\_\_\_.

**prevailing ocean current directions**

What publication has information on the climate, distances, navigation regulations, outstanding landmarks, channels and anchorages of Long Island Sound?

**Coast Pilot**

See REF986

Light Lists for coastal waters are \_\_\_\_\_.

**accurate thru NM number on title page and must be corrected**

Which is a weekly publication advising mariners of important matters affecting navigational safety?

**Notice to Mariners**

See REF957

Your vessel's operators send a message that your vessel has been consigned to Naval Control of Shipping. The message will refer you to \_\_\_\_\_.

**Radio Aids to Navigation (PUB 117)**

Which form of navigation may be suspended without notice under defense planning?

**electronic**



A chart with a natural scale of 1:160,000 is classified as a \_\_\_\_\_.

**general chart**

See REF956

On a transpacific voyage, you receive a message from your vessel's operators saying that your vessel has been consigned to Naval Control of Shipping. Further information is contained in \_\_\_\_\_.

**Radio Navigational Aids (PUB 117)**

See REF991

Isogonic lines are lines on a chart indicating \_\_\_\_\_.

**points of equal variation**

The National Geospatial-Intelligence Agency (formerly the National Imagery and Mapping Agency) would produce a chart of the coast of \_\_\_\_\_.

**Canada**

The survey information upon which a chart is based is found \_\_\_\_\_.

**near the chart title**

Mean high water is the reference plane used for \_\_\_\_\_.

**heights above water of land features such as lights**

See REF998

The depth of the water is indicated on a chart as 32 meters. This is equal to \_\_\_\_\_.

**17.50 fathoms**

See REF999

You are required to enter a lock on your voyage. Information on the lock regulations, signals, and radio communications can be found in \_\_\_\_\_.

**Coast Pilot**

What is TRUE concerning new editions of Light Lists?

**New editions are corrected through the date shown on the title page.**

The Coast Guard broadcasts urgent marine storm warning messages on which of the following frequencies?

**157.10 MHz (VHF-FM Ch. 22A)**

You are informed of defects or changes in aids to navigation by \_\_\_\_\_.

**Weekly Notice to Mariners**

**marine broadcasts**

**Local Notice to Mariners**

**All of the above.**

See REF957

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated ROUTINE will be delivered within \_\_\_\_\_.

**6 hours**

You will be advised of any hazardous areas due to the fallout of a nuclear explosive by a message with the code word \_\_\_\_\_.

**MERWARN**

See REF1006

A chart with a scale of 1:80,000 would fall into the category of a \_\_\_\_\_.

**coastal chart**

See REF956

How is variation indicated on a small-scale nautical chart?

**Isogonic lines**

On the Corps of Engineer's Navigation Maps, the channel is \_\_\_\_\_.

**indicated by a broken line**

What information is NOT found in the chart title?

**Date of first edition**

The description "Racon" beside an illustration on a chart would mean a \_\_\_\_\_.

**radar transponder beaco**

Which symbol represents a 20-fathom curve?

**-.....-**

You are required to enter a lock on your voyage. Information on the lock regulations, signals, and radio communications can be found in \_\_\_\_\_.

**Coast Pilot**

Which publication lists Class I and II private aids to navigation in or along navigable waters of the United States?

**Light List**

Charts should be corrected by using information published in the \_\_\_\_\_.

**Notice to Mariners**

See REF957

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated PRIORITY will be delivered within \_\_\_\_\_.

**3 hours**

General information on enroute weather and climate is found in \_\_\_\_\_.

**the Sailing Directions and the Coast Pilot**

A chart with a scale of 1:45,000 is a \_\_\_\_\_.

**harbor chart**

See REF956

The only cylindrical chart projection widely used for navigation is the \_\_\_\_\_.

**Mercator**

The annual change in variation for an area can be found in \_\_\_\_\_.

**the center of the compass rose on a chart of the area**

On an Army Corps of Engineers navigation map, each mile A.H.P. on the Lower Mississippi River is marked by a \_\_\_\_\_.

**black dot**

The value of sixty nautical miles per degree of geodetic latitude is most correct at \_\_\_\_\_.

**latitude 45°**

Which symbol represents a 10-fathom curve?

**— . — . — . —**

It is unlawful to approach within how many yards of a northern right whale?  
**500**

Which describes privately maintained aids to navigation included in the Light List?  
**must conform to the standards of the U.S. Aids to Navigation System**

What is the most important source of information to be used in correcting charts and keeping them up to date?  
**Notice to Mariners**

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated IMMEDIATE will be delivered within \_\_\_\_\_.  
**30 minutes to 1 hour**

You are preparing to take a tow from San Diego to Portland, OR. Good seamanship would require that you have on board, available for reference and use, all of the following EXCEPT the \_\_\_\_\_.  
**Sailing Directions (Enroute)**

A general chart could have a scale of \_\_\_\_\_.  
**1:200,000**  
See REF956

You are proceeding under NCS (Naval Control of Shipping) and wish to send a message warning of a hurricane. Which precedence would you assign this message?  
**(IMMEDIATE)**  
See REF993

Which information does the outer ring of a compass rose on a nautical chart provide?  
**True directions**

What is NOT found in the Mississippi River System Light List?  
**Distance that a lighted aid to navigation can be seen at night**

What is the length of a nautical mile?  
**6,076 feet**  
See REF996

Which symbol represents a 2-fathom curve?  
.....

Vessels should maintain a sharp lookout, especially during December through March, when navigating the right whale's only known calving grounds which lie off the coasts of \_\_\_\_\_.  
**Georgia and NE Florida**

Which agency maintains federal aids to navigation?  
**Coast Guard**

Coast Pilots and navigational charts are kept corrected and up-to-date by using the \_\_\_\_\_.  
**Notices to Mariners**

In a national emergency, when communicating via the Navy, messages are sent by precedence. A message designated PRIORITY will be delivered within \_\_\_\_\_.  
**3 hours**

Which publication would NOT be used on a voyage from Houston to New York?

***Sailing Directions (Enroute)***

A sailing chart could have a scale of \_\_\_\_\_.

***1:700,000***

See REF956

SeaSources.net

REF1000

Reference: Light List, Introduction, Other Short Range Aids to Navigation, page XV. "Seasonal aids to navigation are placed into service or changed at specific times of the year."

REF1001

Reference: Pub 117 section 810E This section states that if the vessel is in an area as defined in either the SPECIAL WARNING TO MARINERS or the MARAD ADVISORY that the master immediately file an updated AMVER message report. HYDROLANT. A radio message disseminated by the National Imagery and Mapping Agency and restricted to important marine incidents or navigational changes which affect navigational safety. The HYDROLANT broadcast covers those water areas outside and eastward of NAVAREA IV in the Atlantic Ocean. HYDROLANTS constitute part of the U.S. long range radio navigational warning system. The text of HYDROLANTS issued during a week which are in effect are available through NAVINFONET and are printed in the weekly Notice to Mariners.

REF1002

NAVAREAs are the maritime geographic areas in which various governments are responsible for navigation and weather warnings.

REF1003

NIMA Radio Navigational Aids (Pub. 117) This publication is a selected list of worldwide radio stations which perform services to the mariner. Topics covered include radio direction finder and radar stations, radio time signals, radio navigation warnings, distress and safety communications, medical advice via radio, long-range navigation aids, the AMVER system, and interim procedures for U.S. vessels in the event of an outbreak of hostilities. Pub. 117 is corrected via the Notice to Mariners and is updated periodically with a new edition. Though Pub. 117 is essentially a list of radio stations providing vital maritime communication and navigation services, it also contains information which explains the capabilities and limitations of the various systems. HYDROPAC. A radio message disseminated by the National Imagery and Mapping Agency and restricted to important marine incidents or navigational changes which affect navigational safety. The HYDROPAC broadcast covers those water areas outside of NAVAREA II in the Pacific Ocean. HYDROPACS constitute part of the U.S. long range radio navigational warning system. The text of HYDROPACS issued during a week which is in effect are available through NAVINFONET and are printed in the weekly Notice to Mariners.

REF1004

Reference: Pub. 117, Radio Navigational Aids, 2005, page 3-3. The National Geospatial-Intelligence Agency is the area coordinator for both NAVAREA IV and XII. As the area coordinator, it assimilates information from the U.S. Coast Guard, who acts as the U.S. national coordinator.

REF1005

In support of the Global Maritime Distress and Safety System (GMDSS), Broadcast Warnings are promulgated by the Worldwide Navigational Warnings Service (WWNWS) to provide rapid dissemination of information critical to navigation and the safety of life at sea. Navigational Warnings are issued regularly and contain information about persons in distress, or objects and events that pose an immediate hazard to navigation. The five types of Navigation Warnings: NAVAREA IV, HYDROLANT, HYDROARC, NAVAREA XII, and HYROPAC are categorized by their location. As of 26 January 2017, maritime security alerts and advisories are issued by the US Maritime Advisory System, replacing Special Warnings and MARAD Advisories.

REF1006

Nuclear Biological and Chemical (NBC) Warnings to Merchant Ships a. Warning and Reporting. The process by which reports of NBC attacks are forwarded through the military chain of command and units are warned of the resulting hazards. The process is coordinated by a hierarchical structure of NBC centres. b. The MERWARN Message System (MERWARN). A simplified system for broadcasting warnings of NBC hazards and events that might endanger merchant shipping at sea. These warnings will originate from naval authorities using the appropriate Navigation Warning of the World Wide Navigation Warning Service. MERWARN messages will be originated by NATO naval authorities.

REF1007

Sailing Directions Sailing Directions are written directions that describe the routes to be taken by boats and ships during coastal navigation and port approaches. There are also products known as Sailing Directions, which are books written by various Hydrographic Offices throughout the world.

REF1008

NIMA World Port Index (Pub. 150) The World Port Index contains a tabular listing of thousands of ports throughout the world, describing their locations, characteristics, facilities, and services available. Information is arranged geographically; the index is arranged alphabetically. Coded information is presented in columns and rows. This information supplements information in the Sailing Directions. The applicable volume of Sailing Directions and the number of the harbor chart are given in the World Port Index. The Notice to Mariners corrects this book. Pub. 150. World Port Index. A publication of the Defense Mapping Agency Hydrographic/Topographic Center listing the location, characteristics, known facilities, and available services of ports, shipping facilities and oil terminals throughout the world. The applicable chart and Sailing Direction volume is given for each place listed. A code indicates certain types of information.

REF1009

[[A source for these charts can be found at this link if anyone is interested. <http://www.landfallnavigation.com/ngamisc.html>]] A gnomonic map projection displays all great circles as straight lines. Thus the shortest route between two locations in reality corresponds to that on the map. This is achieved by projecting, with respect to the center of the Earth (hence perpendicular to the surface), the Earth's surface onto a tangent plane. The least distortion occurs at the tangent point. Less than half of the sphere can be projected onto a finite map. As a corollary, a rectilinear photographic lens cannot encompass more than 180 degrees for the same reason. Since meridians (loci of constant longitude) and the equator are great circles, they are always shown as straight lines. If the tangent point is one of the poles then the meridians are radial and equally spaced. The equator is at infinity in all directions. Other parallels (loci of constant latitude) are depicted as concentric circles. If the tangent point is not on a pole or the equator, then the meridians are radially outward straight lines from a Pole, but not equally spaced. The equator is a straight line that is perpendicular to only one meridian (which again demonstrates that the projection is not conformal). If the tangent point is on the equator then the meridians are parallel but not equally spaced. The equator is a straight line perpendicular to the meridians. Other parallels are depicted as hyperbolae.

REF1010

Mercator map projection. A conformal cylindrical map projection in which the surface of a sphere or spheroid, such as the earth, is developed on a cylinder tangent along the equator. Meridians appear as equally spaced vertical lines and parallels as horizontal lines drawn farther apart as the latitude increases, such that the correct relationship between latitude and longitude scales at any point is maintained. The expansion at any point is equal to the secant of the latitude of that point, with a small correction for the ellipticity of the earth. The Mercator is not a perspective projection. Since rhumb lines appear as straight lines and directions can be measured directly, this projection is widely used in navigation. If the cylinder is tangent along a meridian, a transverse Mercator map projection results; if the cylinder is tangent along an oblique great circle, an oblique Mercator map projection results.

REF1011

Lambert conformal map projection. A conformal map projection of the conic type, on which all geographic meridians are represented by straight lines which meet in a common point outside the limits of the map, and the geographic parallels are represented by a series of arcs of circles having this common point for a center. Meridians and parallels intersect at right angles, and angles on the earth are correctly represented on the projection. This projection may have one standard parallel along which the scale is held exact; or there may be two such standard parallels, both maintaining exact scale. At any point on the map, the scale is the same in every direction. The scale changes along the meridians and is constant along each parallel. Where there are two standard parallels, the scale between those parallels is too small; beyond them, too large.

REF294

NAVTEX. A medium frequency radio communications system intended for the broadcast of navigational information up to 200 miles at sea, which uses narrow band direct printing technology to print out MSI and safety messages aboard vessels, without operator monitoring.

REF932

Generally, lateral aids to navigation indicate on which side of a vessel an aid to navigation should be passed when the vessel is proceeding in the conventional direction of buoyage. Normally, the conventional direction of buoyage is the direction in which a vessel enters navigable channels from seaward and proceeds towards the head of navigation. In the absence of a route leading from seaward, the conventional direction of buoyage generally follows a clockwise direction around land masses. For example, proceeding southerly along the Atlantic Coast, from Florida to Texas along the Gulf Coast, and northerly along the Pacific Coast are considered as proceeding in the conventional direction of buoyage. In some instances, this direction must be arbitrarily assigned. Where doubt exists, the mariner should consult charts and other nautical publications. Virtually all U.S. lateral marks are located in IALA Region B and follow the traditional 3R rule of



red, right, returning. A summary of the port and starboard hand lateral mark characteristics is contained in the following table.

Characteristic	Port Hand	Starboard
Color	Green	Red
Shape (buoys)	Cylindrical (can) or pillar	Conical (nun) or pillar
Dayboard	Green square	Red triangle
Topmark (if fitted)	Cylinder	Cone, point up
Light Color (if fitted)	Green	Red
Reflector Color	Green	Red
Number	Odd	Even

U.S. lateral aids to navigation at certain Pacific Islands are located within IALA Region A and thus exhibit opposite color significance. Port hand marks are red with square or cylindrical shapes while starboard hand marks are green with triangular or conical shapes.

#### REF956

Chart Classification by Scale Charts are constructed on many different scales, ranging from about 1:2,500 to 1:14,000,000. Small-scale charts covering large areas are used for route planning and for offshore navigation. Charts of larger scale, covering smaller areas, are used as the vessel approaches land. Several methods of classifying charts according to scale are used in various nations. The following classifications of nautical charts are used by the National Ocean Service. Sailing charts are the smallest scale charts used for planning, fixing position at sea, and for plotting the dead reckoning while proceeding on a long voyage. The scale is generally smaller than 1:600,000. The shoreline and topography are generalized and only offshore soundings, the principal navigational lights, outer buoys, and landmarks visible at considerable distances are shown. General charts are intended for coastwise navigation outside of outlying reefs and shoals. The scales range from about 1:150,000 to 1:600,000. Coastal charts are intended for inshore coastwise navigation, for entering or leaving bays and harbors of considerable width, and for navigating large inland waterways. The scales range from about 1:50,000 to 1:150,000. Harbor charts are intended for navigation and anchorage in harbors and small waterways. The scale is generally larger than 1:50,000. In the classification system used by NIMA, the sailing charts are incorporated in the general charts classification (smaller than about 1:150,000); those coast charts especially useful for approaching more confined waters (bays, harbors) are classified as approach charts. There is considerable overlap in these designations, and the classification of a chart is best determined by its use and by its relationship to other charts of the area. The use of insets complicates the placement of charts into rigid classifications.

#### REF957

Notice to Mariners. A weekly publication of the Defense Mapping Agency Hydrographic/Topographic Center prepared jointly with the National Ocean Survey and the U.S. Coast Guard giving information on changes in aids to navigation, dangers to navigation, selected items from the Local Notice to Mariners, important new soundings, changes in channels, harbor construction, radio navigation information, new and revised charts and publications, special warnings and notices, pertinent HYDROLANT, HYDROPAC, NAVAREA IV and II messages and corrections to charts, manuals, catalogs, sailing directions (pilots), etc. The Notice to Mariners should be used routinely for updating the latest editions of nautical charts and related publications.

#### REF977

Sectors of colored glass are placed in the lanterns of some lights in order to produce a system of light sectors of different colors. In general, red sectors are used to mark shoals or to warn the mariner of other obstructions to navigation or of nearby land. Such lights provide approximate bearing information, since observers may note the change of color as they cross the boundary between sectors. These boundaries are indicated in the Light List (Col. 8) and by dotted lines on charts. These bearings, as all bearings referring to lights, are given in true degrees from 000° to 359°, as observed from a vessel toward the light. Altering course on the changing sectors of a light or using the boundaries between light sectors to determine the bearing for any purpose is not recommended. Be guided instead by the correct compass bearing to the light and do not rely on being able to accurately observe the point at which the color changes. This is difficult to determine because the edges of a colored sector cannot be cut off sharply. On either side of the line of demarcation between white, red, or green sectors, there is always a small arc of uncertain color. Moreover, when haze or smoke are present in the intervening atmosphere, a white sector might have a reddish hue. The area in which a light can be observed is normally an arc with the light as the center and the range of visibility as the radius. However, on some bearings, the range may be reduced by obstructions. In such cases, the obstructed arc might differ with height of eye and distance. When adjoining land cuts off a light and the arc of visibility is given, the bearing on which the light disappears may vary with the distance of the vessel from which observed and with the height of eye. When the light is cut off by a sloping hill or point of land, the

light may be seen over a wider arc by a vessel farther away than by one closer to the light. The arc drawn on charts around a light is not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights, which do not show equally in all directions, the bearings between which the variation of visibility or obstruction of the light occurs.

**REF986**

**Coast Pilots** The National Ocean Service publishes nine United States Coast Pilots to supplement nautical charts of U.S. waters. Information comes from field inspections, survey vessels, and various harbor authorities. Maritime officials and pilotage associations provide additional information. Coast Pilots provide more detailed information than Sailing Directions because Sailing Directions are intended exclusively for the oceangoing mariner. The Notice to Mariners updates Coast Pilots. Each volume contains comprehensive sections on local operational considerations and navigation regulations. Following chapters contain detailed discussions of coastal navigation. An appendix provides information on obtaining additional weather information, communications services, and other data. An index and additional tables complete the volume.

**REF987**

**Depths and Datums** Depths are indicated by soundings or explanatory notes. Only a small percentage of the soundings obtained in a hydrographic survey can be shown on a nautical chart. The least depths are generally selected first, and a pattern built around them to provide a representative indication of bottom relief. In shallow water, soundings may be spaced 0.2 to 0.4 inch apart. The spacing is gradually increased as water deepens, until a spacing of 0.8 to 1.0 inch is reached in deeper waters offshore. Where a sufficient number of soundings are available to permit adequate interpretation, depth curves are drawn in at selected intervals. All depths indicated on charts are reckoned from a selected level of the water, called the sounding datum, (sometimes referred to as the reference plane to distinguish this term from the geodetic datum). On charts produced from U.S. surveys, the sounding datum is selected with regard to the tides of the region. Depths shown are the least depths to be expected under average conditions. On charts compiled from foreign charts and surveys the sounding datum is that of the original authority. When it is known, the sounding datum used is stated on the chart. In some cases where the chart is based upon old surveys, particularly in areas where the range of tide is not great, the sounding datum may not be known. For most National Ocean Service charts of the United States and Puerto Rico, the sounding datum is mean lower low water. Most NIMA charts are based upon mean low water, mean lower low water, or mean low water springs. The sounding datum for charts published by other countries varies greatly, but is usually lower than mean low water. On charts of the Baltic Sea, Black Sea, the Great Lakes, and other areas where tidal effects are small or without significance, the sounding datum adopted is an arbitrary height approximating the mean water level. The sounding datum of the largest scale chart of an area is generally the same as the reference level from which height of tide is tabulated in the tide tables. The chart datum is usually only an approximation of the actual mean value, because determination of the actual mean height usually requires a longer series of tidal observations than is usually available to the cartographer. In addition, the heights of the tide vary over time. Since the chart datum is generally a computed mean or average height at some state of the tide, the depth of water at any particular moment may be less than shown on the chart. For examples, if the chart datum is mean lower low water, the depth of water at lower low water will be less than the charted depth about as often as it is greater. A lower depth is indicated in the tide tables by a minus sign (-). **Heights** The shoreline shown on charts is generally mean high water. A light's height is usually reckoned from mean sea level. The heights of overhanging obstructions (bridges, power cables, etc.) are usually reckoned from mean high water. A high water reference gives the mariner the minimum clearance expected. Since heights are usually reckoned from high water and depths from some form of low water, the reference levels are seldom the same. Except where the range of tide is very large, this is of little practical significance.

**REF988**

**HYDROLANT.** A radio message disseminated by the National Imagery and Mapping Agency and restricted to important marine incidents or navigational changes which affect navigational safety. The HYDROLANT broadcast covers those water areas outside and eastward of NAVAREA IV in the Atlantic Ocean. HYDROLANTS constitute part of the U.S. long range radio navigational warning system. The text of HYDROLANTS issued during a week which are in effect are available through NAVINFONET and are printed in the weekly Notice to Mariners.

**REF989**

**NAVAREA Warnings.** Broadcast messages containing information which may affect the safety of navigation on the high seas. In accordance with international obligations, the Defense Mapping Agency Hydrographic/Topographic Center is responsible for disseminating navigation information for ocean areas designated as NAVAREAS IV and II of the World Wide Navigational Warning Service. NAVAREA IV broadcasts cover the waters contiguous to North America from the Atlantic coast eastward to 35°W and between latitudes 7°N and 67°N. NAVAREA II broadcasts cover the waters



contiguous to North America extending westward to the International Date Line and from 67°N to the equator east of 120°W, south to 3°25'S, thence east to the coast. Other countries are responsible for disseminating navigational information for the remaining NAVAREAS. NAVAREA Warnings may be superseded by a numbered paragraph in Notice to Mariners. The text of effective warnings for NAVAREAS IV and II is available through NAVINFONET and is printed in the weekly Notice to Mariners.

REF990

NAVTE. A medium frequency radio communications system intended for the broadcast of navigational information up to 200 miles at sea, which uses narrow band direct printing technology to print out MSI and safety messages aboard vessels, without operator monitoring.

REF991

From Pub 117, Radio Navigation Aids: "In periods of crisis, conflict, national emergency, or war, naval authorities may direct the movement of merchant ships (including routing and diversion) so that they may be better protected from hostilities and not interfere with possible naval and/or joint military operations."

REF992

pilot chart. A chart of a major ocean area which presents in graphic form averages obtained from weather, wave, ice, and other marine data gathered over many years in meteorology and oceanography to aid the navigator in selecting the quickest and safest routes; published by the Defense Mapping Agency Hydrographic/Topographic Center from data provided by the U.S. Naval Oceanographic Office and the Environmental Data and Information Service of the National Oceanic and Atmospheric Administration.

REF993

PRECEDENCE ASSIGNMENT a. Assignment of the precedence to a message is the originators responsibility; however, the subject matter and time factor involved determine the precedence. Precedence designations indicate the relative order in which a message is handled with respect to all other precedence designators, as follows: (1) To the originator - required speed of delivery to the addressee. (2) To communication personnel - relative order of handling and delivery. (3) To the addressee - relative order in which he should note the message. b. The precedence assigned to multiple address messages having both action and information addressees may be assigned a single precedence, which indicates the precedence is for all addressees, or two precedence's, one precedence for all action addressees and a lower precedence for all information addressees. The higher precedence will always be placed first in the preamble. c. Precedence's available include: (1) FLASH (Z): FLASH precedence is reserved for initial enemy contact messages or operational combat messages of extreme urgency. Brevity is mandatory. FLASH messages will be hand carried, processed, transmitted and delivered in the order received and ahead of all other messages. Messages of lower precedence will be interrupted on all circuits involved until handling of the FLASH message is completed. (2) IMMEDIATE (O): IMMEDIATE is the precedence reserved for very urgent messages relating to situations which gravely affect the security of national forces or populace. IMMEDIATE precedence may be used on messages concerning the amplification of initial enemy contacts, logistical support when essential to sustain operations, widespread civil disturbance, warning of grave natural disaster (earthquake, flood, storm, etc.), and distress assistance. IMMEDIATE messages are processed, transmitted and delivered in the order received and ahead of all messages of lower precedence. Messages of lower precedence will be interrupted on all circuits involved until the handling of the IMMEDIATE message is completed. This is the highest precedence level expected to be handled on MARS circuits. (3) PRIORITY (P): PRIORITY is the precedence reserved for messages concerning the conduct of operations in progress and for other important and urgent matters when ROUTINE precedence will not suffice. This is the highest precedence which normally may be assigned to administrative or personal messages. PRIORITY messages will be processed, transmitted, and delivered in the order received and ahead of all messages of ROUTINE precedence. Routine messages being transmitted should not be interrupted unless they are extra long and a very substantial portion remains to be transmitted. (4) ROUTINE (R): ROUTINE is the precedence to be used for all types of messages which justify transmission by rapid means but are not of sufficient urgency and importance to require a higher precedence. ROUTINE messages will be processed, transmitted and delivered in the order received and after all messages of a higher precedence. SPEED OF SERVICE OBJECTIVES a. The established goal of these objectives is to ensure the fastest communications support possible. Regardless of the objectives established, within the Military Auxiliary Radio System (MARS) message traffic will be handled as rapidly as possible consistent with security (when required) and accuracy. The objectives apply to the total elapsed handling time between writer and reader (time of file to time of delivery). b. The following guidelines apply:

Precedence	Prosigns	Objective
FLASH	Z	As fast as humanly possible with an

		objective of less than 10 minutes.
IMMEDIATE	O	30 minutes - 3 hours
PRIORITY	P	18 - 24 hours
ROUTINE	R	24 - 48 hours

REF994

sailing directions. A descriptive book for the use of mariners, containing detailed information of coastal waters, harbor facilities, etc. of an area. For waters of the United States and its possessions, they are published by the National Ocean Survey and are called UNITED STATES COAST PILOTS. Sailing directions, as well as light lists, provide the information that cannot be shown graphically on the nautical chart and that is not readily available elsewhere.

REF995

All charts have a compass rose, which shows the directions of true north and magnetic north for that particular chart. The outer circle of the compass rose shows true north and the inner circle shows magnetic north, and the variation between the two is shown in the center of the rose.

REF996

A nautical mile is based on the circumference of the earth, and is equal to one minute of latitude. It is slightly more than a statute (land measured) mile (1 nautical mile = 1.1508 statute miles). Nautical miles are used for charting and navigating. A knot is one nautical mile per hour (1 knot = 1.15 miles per hour). The term knot dates from the 17th century, when sailors measured the speed of their ship by using a device called a "common log." This device was a coil of rope with uniformly spaced knots, attached to a piece of wood shaped like a slice of pie. The piece of wood was lowered from the back of the ship and allowed to float behind it. The line was allowed to pay out freely from the coil as the piece of wood fell behind the ship for a specific amount of time. When the specified time had passed, the line was pulled in and the number of knots on the rope between the ship and the wood were counted. The speed of the ship was said to be the number of knots counted (Bowditch, 1984).

REF997

Catalogs A chart catalog is a valuable reference to the navigator for voyage planning, inventory control, and ordering. The catalog is used by military and civilian customers. The navigator will see the NIMA nautical chart catalog as part of a larger suite of catalogs including aeronautical (Part 1), hydrographic (Part 2), and topographic (Part 3) products. Each Part consists of one or more volumes. Unclassified NIMA nautical charts are listed in Part 2, Volume 1. This catalog contains comprehensive ordering instructions and information about the products listed. Also listed are addresses of all Map Support Offices, information on crisis support, and other special situations. The catalog is organized by geographic region corresponding to the chart regions 1 through 9. A special section of miscellaneous charts and publications is included. This section also lists products produced by NOS, the U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Naval Oceanographic Office, and some foreign publications from the United Kingdom and Canada. The civilian navigator should also refer to catalogs produced by the National Ocean Service. For U.S. waters, NOS charts are listed in a series of large sheet "charts" showing a major region of the U.S. with individual chart graphics depicted. These catalogs also list charts showing titles and scales. They also list sales agents from whom the charts may be purchased. NIMA products for the civilian navigator are listed by NOS in a series of regionalized catalogs similar to Part 2 Volume 1. These catalogs are also available through authorized NOS chart agents.

REF998

A chart datum is the water level that depths displayed on a nautical chart are measured from. A chart datum is generally derived from some phase of the tide. Common chart datums are lowest astronomical tide and mean lower low water. In non-tidal areas, e.g. the Baltic Sea, mean sea level (MSL) is used. Lowest astronomical tide Lowest Astronomical Tide (LAT) is defined as the lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.[3] Many national charting agencies, including the United Kingdom Hydrographic Office and the Australian Hydrographic Service, use the LAT to define chart datums. One advantage of using LAT for chart datums is that all predicted tidal heights must then be positive (or zero) avoiding possible ambiguity and the need to explicitly state sign. Calculation of the LAT only allows for gravitational effects so lower tides may occur in practice due to other factors (e.g. meteorological effects such as high pressure systems). Mean lower low water The United States' National Oceanic and Atmospheric Administration uses mean lower low water (MLLW), which is the average height of the lowest tide recorded at a tide station each day during a 19-year recording period, known as the National Tidal Datum Epoch. MLLW is only a mean, so some tidal levels may be negative relative to MLLW; see also

mean low water spring. The 19-year recording period is the nearest full year count to the 18.6-year cycle of the lunar node regression, which has an effect on tides. Mean higher high water Similarly, the mean higher high water (MHHW), is the average height of the highest tide recorded at a tide station each day during the recording period. It is used, among other things as a datum from which to measure the navigational clearance, or air draft, under bridges. A chart datum is a vertical datum and must not be confused with the horizontal datum for the chart.

REF999

**CONVERSION TABLE Conversion of Metric to U.S. Customary/Imperial Units**

Metric Measure (approx.)	U.S. Customary/Imperial Measure
1000 Meters (M) .....	3280.8 ft.
500 M.....	1640.4 ft.
200 M.....	656.2 ft.
150 M.....	492.1 ft.
100 M.....	328.1 ft.
75 M.....	246.1 ft.
60 M.....	196.8 ft.
50 M.....	164.0 ft.
25 M.....	82.0 ft.
20 M.....	65.6 ft.
12 M.....	39.4 ft.
10 M.....	32.8 ft.
8 M.....	26.2 ft.
7 M.....	23.0 ft.
6 M.....	19.7 ft.
5 M.....	16.4 ft.
4.5 M.....	14.8 ft.
4.0 M.....	13.1 ft.
3.5 M.....	11.5 ft.
2.5 M.....	8.2 ft.
2.0 M.....	6.6 ft.
1.5 M.....	4.9 ft.
1 M.....	3.3 ft.
.9 M.....	35.4 in.
.6 M.....	23.6 in.
.5 M.....	19.7 in.
300 Millimeters (mm).....	11.8 in.
200 mm.....	7.9 in.