

## U.S.C.G. Merchant Marine Exam

Master Less than 500-1600 Gross Registered Tons

Q123 Navigation General – Near Coastal

(Sample Examination)

**Choose the best answer to the following Multiple-Choice questions.**

1. Which is TRUE concerning Spring tides?
- A. Spring Tides only occur in the spring of the year
  - B. Spring Tides are always unpredictable
  - C. Spring Tides have lows lower than normal and highs higher than normal
  - D. Spring Tides have lows higher than normal and highs lower than normal

Correct answer: C

2. You wish to make good a course of  $300^{\circ}\text{T}$  while turning for an engine speed of 11 knots. The set is  $350^{\circ}\text{T}$ , and the drift is 2.1 knots. Which course should you steer?
- A.  $278^{\circ}\text{T}$
  - B.  $288^{\circ}\text{T}$
  - C.  $292^{\circ}\text{T}$
  - D.  $308^{\circ}\text{T}$

Correct answer: C

3. Your vessel is on course  $093^{\circ}\text{T}$  at 15 knots. At 1835 a light bears  $136^{\circ}\text{T}$ , and at 1857 the same light bears  $170^{\circ}\text{T}$ . What was your distance off the light at 1857?
- A. 6.0 miles
  - B. 6.4 miles
  - C. 6.8 miles
  - D. 7.2 miles

Correct answer: C

4. Your vessel is proceeding up a channel, and you see a pair of range lights that are in line dead ahead. The chart indicates that the direction of this pair of lights is  $343^{\circ}\text{T}$ , and the variation is  $5^{\circ}$  west. If the heading of your vessel at the time of the sighting is  $344^{\circ}$  per standard magnetic compass, what is the correct deviation?
- A.  $1^{\circ}\text{E}$
  - B.  $1^{\circ}\text{W}$
  - C.  $4^{\circ}\text{E}$
  - D.  $4^{\circ}\text{W}$

Correct answer: C

5. Which would you expect to see on a lighted preferred-channel buoy?
- A. A Morse (A) white light
  - B. A composite group-flashing light
  - C. A yellow light
  - D. A fixed red light

Correct answer: B

6. Which statement is TRUE for an unlighted, red and green, horizontally-banded buoy with the topmost band red?
- A. They are cylindrical in shape and called can buoys
  - B. They are triangular in shape to indicate that it may not be possible to pass on either side of the buoy
  - C. They may either be cylindrical or conical since the shape has no significance
  - D. They are conical in shape and called nun buoys

Correct answer: D

7. When operated over a muddy bottom, a fathometer may indicate which of the following?
- A. Two depth readings
  - B. A zero-depth reading
  - C. A shallow depth reading
  - D. No depth reading

Correct answer: A

8. What kind of pressure systems travel in tropical waves?
- A. Terrastatic pressure
  - B. Subsurface pressure
  - C. High pressure
  - D. Low pressure

Correct answer: D

9. Swell is the rise and fall of the ocean's surface due to \_\_\_\_\_.
- A. the pull of the moon
  - B. fetch
  - C. local storms
  - D. distant winds

Correct answer: D

10. The depth of the water is indicated on a chart as 32 meters. What is this equal to?
- A. 11.50 fathoms
  - B. 12.62 fathoms
  - C. 17.50 fathoms
  - D. 104.99 fathoms

Correct answer: C

11. Ocean swells originating from a typhoon can move ahead of it at speeds near \_\_\_\_\_.
- A. 10 knots
  - B. 20 knots
  - C. 30 knots
  - D. 50 knots

Correct answer: D

**12.** Before a magnetic compass is adjusted certain correctors must be checked to ensure that they are free of permanent magnetism. Which are the correctors?

- A. Fore-and-aft and athwartships magnets
- B. Flinders bar and quadrantal spheres
- C. Heeling magnet and Flinders bar
- D. Dip needle and heeling magnet

Correct answer: B

**13.** Which is TRUE of Raster-scan chart data?

- A. It is organized into many separate files
- B. It is composed of files that are smaller than vector files
- C. It is a digitized "picture" of a chart in one format and one layer
- D. It is the only format recognized by IMO/IHO

Correct answer: C

**14.** Aneroid barometers are usually calibrated to indicate atmospheric pressure in which units?

- A. Inches of mercury and millimeters
- B. Feet of mercury and millibars
- C. Inches of mercury and millibars
- D. Inches of mercury and centimeters

Correct answer: C

**15.** By what means are indications of the master gyrocompass sent to remote repeaters?

- A. by phantom element
- B. by transmitter
- C. by azimuth motor
- D. by follow-up system

Correct answer: B

**16.** How are aids to navigation marking the intracoastal waterway (ICW) identified?

- A. The light characteristic and color for lighted aids
- B. White retro-reflective material
- C. The letters ICW after the aid's number or letter
- D. Yellow bands, squares, or triangles marked on them

Correct answer: D

**17.** Information about currents around Pacific Coast ports of the U.S. can be obtained in which publication?

- A. Tide Tables
- B. Ocean Current Tables
- C. Nautical Almanac
- D. Tidal Current Tables

Correct answer: D

**18.** A safe water daymark has what shape?

- A. Diamond
- B. Octagonal
- C. Circular
- D. Triangular

Correct answer: B

**19.** Your vessel is steering course 299°psc, variation for the area is 7°W, and deviation is 4°W. The wind is from the southwest, producing a 3° leeway. What true course are you making good?

- A. 313°T
- B. 296°T
- C. 299°T
- D. 291°T

Correct answer: D

**20.** In which months will the North Equatorial Countercurrent be strongest?

- A. January and February
- B. April and May
- C. October and November
- D. July and August

Correct answer: D

**21.** Which is TRUE for the directive force acting on a gyrocompass?

- A. The force increases as the latitude increases, being maximum at the geographic poles
- B. The force remains the same at all latitudes
- C. The force increases as the latitude decreases, being maximum at the geographic equator
- D. The force is greatest when a vessel is near the Earth's magnetic equator

Correct answer: C

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

- A. A sunken vessel marked by a buoy
- B. A safe water beacon
- C. A red and white can buoy
- D. A can buoy with a rotating white light

Correct answer: B

**23.** Temperature and moisture characteristics are modified in a warm or cold air mass due to which factor?

- A. Movement of the air mass
- B. Upper-level atmospheric changes
- C. The heterogeneous nature of the air mass
- D. Pressure changes in the air mass

Correct answer: A

**24.** Which statement about a gnomonic chart is correct?

- A. Meridians appear as curved lines converging toward the nearer pole.
- B. Distance is measured at the mid-latitude of the track line.
- C. Parallels, except the equator, appear as curved lines.
- D. A rhumb line appears as a straight line.

Correct answer: C

**25.** In the North Sea area, you sight a buoy with a quick light showing 3 flashes every 10 seconds. Which topmark in illustration D030NG below would be fitted to this buoy under the IALA Buoyage Systems?

- A. A
- B. B
- C. C
- D. D

Correct answer: D

**26.** 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?

- A. 33°00'N to 33°30'N
- B. 32°15'N to 32°45'N
- C. 32°45'N to 33°15'N
- D. 32°30'N to 33°00'N

Correct answer: C

**27.** What is the purpose of the "reference hand" on an aneroid barometer?

- A. To indicate any change in the reading of the barometer
- B. To provide a correction for height above sea level
- C. To provide a correction for temperature changes
- D. To adjust the barometer

Correct answer: A

**28.** How is an occluded front represented on a weather map?

- A. A dashed blue line
- B. A purple line
- C. An alternate red and blue line
- D. A blue line

Correct answer: B

**29.** Mean lower low water is the reference plane used for which measurements?

- A. The water depths on the U.S. east coast only
- B. The heights above water for lights, mountains, etc.
- C. The soundings on the U.S. east and west coasts
- D. All vertical measurements

Correct answer: C

30. You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°W. The variation is 8°W. Find the deviation on a gyro heading of 039°.

**NP-0108**

HEADING	
PSC	PGC
030.5°	- 024°
061.5°	- 054°
092.0°	- 084°
122.5°	- 114°
152.0°	- 144°
181.0°	- 174°
210.0°	- 204°
239.5°	- 234°
269.0°	- 264°
298.0°	- 294°
327.5°	- 324°
358.5°	- 354°

- A. 0.8°E
- B. 0.0°
- C. 0.5°W
- D. 1.0°W

Correct answer: D

31. The nominal range of a light may be accurately defined as the maximum distance at which a light may be seen \_\_\_\_\_.

- A. under existing visibility conditions
- B. with ten miles visibility
- C. under perfect visibility
- D. with fifteen miles visibility

Correct answer: B

32. Which item in illustration D034NG below shows a fixed and flashing light?

- A. A
- B. B
- C. C
- D. D

Correct answer: A

- 33.** The navigable semicircle of a tropical storm in the South Indian Ocean is located on which side of the storm's track?
- A. Right
  - B. Front
  - C. Left
  - D. Rear

Correct answer: A

- 34.** Which is TRUE of a dead reckoning (DR) plot?
- A. A dead reckoning (DR) plot should be started each time the vessel's position is fixed
  - B. A dead reckoning (DR) plot must take set and drift into account
  - C. A dead reckoning (DR) plot must utilize magnetic courses
  - D. A dead reckoning (DR) plot should be replotted hourly

Correct answer: A

- 35.** Which current is responsible for the movement of large quantities of ice into the North Atlantic shipping lanes?
- A. Baffin Current
  - B. Iceland Current
  - C. Labrador Current
  - D. Baltic Current

Correct answer: C

- 36.** Steam fog will occur when which conditions exists?
- A. Extremely cold air from shore passes over warmer water
  - B. Cold ocean water evaporates into warm air
  - C. Warm dry air from shore passes over cooler water
  - D. Cool rain passes through a warm air mass

Correct answer: A

- 37.** You are plotting a running fix in an area where there is a determinable current. How should this current be treated in determining the position?
- A. The set should be applied to the second bearing.
  - B. The course and speed made good should be determined and used to advance the LOP.
  - C. The drift should be added to the ship's speed.
  - D. The current should be ignored.

Correct answer: B

- 38.** Where can information for updating paper nautical charts primarily be found?
- A. Sailing Directions
  - B. Notice to Mariners
  - C. Nautical chart catalogs
  - D. Coast Pilots

Correct answer: B

**39.** Which is the main factor that causes the deflection of the southeast trade winds?

- A. The change of seasons
- B. The equatorial current
- C. The humidity
- D. The rotation of the earth

Correct answer: D

**40.** The National Oceanic and Atmospheric Administration publishes which item?

- A. Pilot charts
- B. Sailing Directions
- C. Coast Pilots
- D. Light Lists

Correct answer: C

**41.** Which clouds are described as high clouds, composed of small white flakes or scaly globular masses, and often banded together to form a "mackerel sky"?

- A. Cumulonimbus
- B. Cirrus
- C. Altostratus
- D. Cirrocumulus

Correct answer: D

**42.** Which type of cloud is hail most likely to fall from?

- A. Nimbostratus
- B. Altocumulus
- C. Cumulus
- D. Cumulonimbus

Correct answer: D

**43.** Which term is given to the mechanical lifting of air by the upslope slant of the terrain?

- A. Topographic lifting
- B. Advective lifting
- C. Vertical lifting
- D. Convective lifting

Correct answer: A

**44.** What do the numbers on isobars indicate?

- A. Barometric pressure
- B. Temperature
- C. Wind speed
- D. Rain in inches

Correct answer: A

**45.** On a working copy of a weather map, a cold front is represented by what color line?

- A. Red
- B. Blue
- C. Alternating red and blue
- D. Purple

Correct answer: B

**46.** You are enroute to assist vessel A. Vessel A is underway at 4.5 knots on course 233°T, and bears 264°T, 68 miles from you. What is the time to intercept if you make 13 knots?

- A. 6h 31m
- B. 6h 47m
- C. 7h 03m
- D. 7h 37m

Correct answer: D

**47.** Which statement is TRUE concerning apogean tides?

- A. They cause diurnal tides to become mixed.
- B. They have a decreased range from normal.
- C. They occur when the Moon is nearest the Earth.
- D. They occur only at quadrature.

Correct answer: B

**48.** Your vessel is proceeding up a channel, and you see a pair of range lights that are in line dead ahead. The chart indicates that the direction of this pair of lights is 283°T, and the variation is 13°E. If the heading of your vessel at the time of the sighting is 278° per standard compass, what is the deviation?

- A. 5°E
- B. 5°W
- C. 8°E
- D. 8°W

Correct answer: D

**49.** You will be transiting a traffic lane with a wreck having a charted depth of 40 feet. The Zone of Confidence (ZOC) for that area of the chart is ZOC B. Which of the following statements is true? Illustration D055NG

- A. There is not enough information to determine depth accuracy.
- B. The actual depth of the wreck may be between 36 and 44 feet, anywhere within a 164 feet radius.
- C. The actual depth of the wreck may be between 36 and 44 feet, anywhere within a 66 feet radius.
- D. The actual depth of the wreck may be between 33 and 47 feet, anywhere within a 1640 feet radius.

Correct answer: B

**50.** Which of the following is associated with consistently high barometric pressure?

- A. The prevailing westerlies
- B. The horse latitudes
- C. The trade winds
- D. The doldrums

Correct answer: B

**51.** Which corrector will compensate for the deviation which is maximum on intercardinal compass headings?

- A. Transverse magnets
- B. Flinders bar
- C. Quadrantal spheres
- D. Fore-and-aft magnets

Correct answer: C

**52.** You are underway on course 050°T and your maximum speed is 12 knots. The eye of a hurricane bears 080°T, 100 miles from your position. The hurricane is moving towards 265°T at 22 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?

- A. 63 miles
- B. 56 miles
- C. 69 miles
- D. 76 miles

Correct answer: A

**53.** How are altocumulus clouds defined?

- A. Low clouds
- B. Vertical development clouds
- C. High clouds
- D. Middle clouds

Correct answer: D

**54.** Which defines the term relative humidity?

- A. The relation of the moisture content of the air to barometric pressure
- B. The maximum vapor content the air is capable of holding
- C. The ratio of the actual vapor content at the current temperature to the air's vapor holding capability
- D. The maximum vapor content the air is capable of holding at 70 degrees

Correct answer: C

**55.** Your vessel is on a course of 082°T at 19 knots.

At 0255 a light bears 059.5°T, and at 0312 the light bears 037°T.

At what time and distance off will your vessel be when abeam of the light?

- A. 0333, 5.1 miles
- B. 0321, 4.7 miles
- C. 0327, 4.3 miles
- D. 0324, 3.8 miles

Correct answer: D

**56.** While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's foghorn 4 seconds after the signal was sounded. What is the distance to the shore?

- A. 209 yards
- B. 363 yards
- C. 480 yards
- D. 730 yards

Correct answer: D

**57.** You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033°T, and bears 284°T, 43 miles from you. What is the time to intercept if you make 16 knots?

- A. 2h 16m
- B. 2h 22m
- C. 2h 32m
- D. 2h 42m

Correct answer: C

**58.** You are outbound in a channel marked by a range astern. The range line is 273°T. You are steering 090°T and have the range in sight as shown in illustration D047NG below. What action should you take?

- A. Come right to 093°T.
- B. Come left until the range comes in line then alter course to 087°T.
- C. Come right to close the range then when on the range steer 093°T.
- D. Come left until the range comes in line then alter course to 093°T.

Correct answer: C

**59.** If the current and wind are in opposite directions, what does the sea surface indicate?

- A. The surface indicates a greatly reduced wind speed
- B. The surface indicates a higher wind speed than what really exists
- C. The surface does not change, each cancels the other
- D. The surface indicates a lower wind speed than what really exists

Correct answer: B

- 60.** Which is the region containing 3/4 of the mass of the atmosphere and to which are confined such phenomena as clouds, storms, precipitation and changing weather conditions?
- A. The stratopause
  - B. The tropopause
  - C. The troposphere
  - D. The stratosphere

Correct answer: C

- 61.** A pilot chart does NOT contain information about which item?
- A. Tidal currents
  - B. Average wind conditions
  - C. Average limits of field ice
  - D. Magnetic variation

Correct answer: A

- 62.** The path that a vessel is expected to follow, represented on a chart by a line drawn from the point of departure to the point of arrival, is known by which term?
- A. Track line
  - B. Heading
  - C. Estimated course
  - D. DR plot

Correct answer: A

- 63.** Yesterday your chronometer read 02h 59m 58s at the 1500 GMT time tick. Today the chronometer reads 03h 00m 02s at the 1500 GMT time tick. What is the chronometer error?
- A. +3s
  - B. -3s
  - C. 03h 00m 02s fast
  - D. 02s fast

Correct answer: D

- 64.** You take a bearing of 264° of a lighthouse. Which bearing of another object would give the best fix?
- A. 182°
  - B. 059°
  - C. 239°
  - D. 291°

Correct answer: A

**65.** You will find daily information about the duration of slack water in a port on the Atlantic Coast in which publication?

- A. Tide Tables
- B. Tidal Current Tables
- C. American Practical Navigator
- D. Sailing Directions

Correct answer: B

**66.** What does a barometer showing falling pressure indicate?

- A. A low dew point
- B. The approach of a high-pressure system
- C. A high dew point
- D. The approach of a low-pressure system

Correct answer: D

**67.** Your vessel is participating in the Voluntary Observing Ship Program, you are preparing WS Form B-80 as seen in illustration D041NG below. You are hove to in a hurricane on a heading of 328°T. The wind is from 030° true at 119 knots. How should this be encoded on the weather report form?

- A. 80312
- B. 83011
- C. 83099
- D. 80399

Correct answer: D

**68.** Pressure gradient is a measure of \_\_\_\_\_.

- A. pressure difference over time
- B. pressure difference over horizontal distance
- C. vertical pressure variation
- D. a high-pressure area

Correct answer: B

**69.** If you were sailing in the North Pacific and were interested in the ice and iceberg limits, where could you find this information?

- A. Notice to Mariners
- B. Coast Pilot
- C. Pilot Chart
- D. None of the above

Correct answer: C

Q123-Navigation General-Near Coastal  
U.S.C.G. Merchant Marine Exam  
Master Less than 500-1600 Gross Registered Tons  
Illustrations: 6

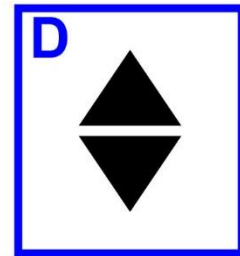
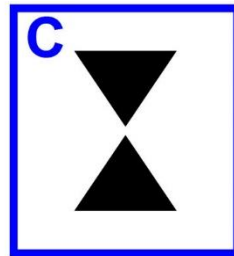
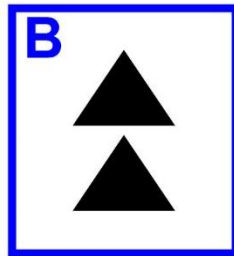
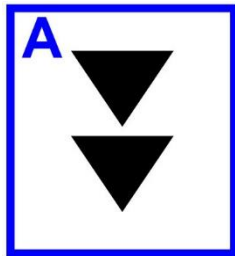
**70.** Your vessel is entering port and you have steadied up on a range, dead ahead, in line with your keel. After a few minutes the range, still dead ahead, appears as shown in illustration D047NG below. Which action should you take?

- A. Increase speed
- B. Alter heading to the right
- C. Alter heading to the left
- D. Maintain heading, keeping the range dead ahead

Correct answer: C



**D030NG**



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**D033NG**



**RW**  
**“A”**



**D034NG**



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# United States Coast Guard National Maritime Center



## D041NG

WS FORM B-80 (5-94) PRES. BY WMO DIRECTIVES		<b>WEATHER REPORT FOR IMMEDIATE TRANSMISSION</b>				<b>U.S. DEPARTMENT OF COMMERCE</b> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE
NO.	SHIP NAME	DATE SENT (UTC)	TIME SENT (UTC)	STA. CALLED	FREQUENCY	
<b>ADDRESSES</b>						
U.S. Coast Guard: No address needed, start with BBXX indicator and ship's call sign.						
<b>INMARSAT</b> Standard A: Select—Coast Earth Station (CES), routine priority, duplex telex channel, and initiate call. When GA + is received, select 41 +. Upon receipt of answerback, NWS OBS MHTS, send the weather report starting with the BBXX indicator and ship's call sign. End the report with 5 periods. Try to limit INMARSAT call time to 30 seconds. Standard C: To establish special access code 41, see manufacturers recommended instructions for set-up, or the Mariners Weather Log Summer, 1994, or later editions.						
U.S. commercial and foreign radio stations: To: OBS METEO _____ (get address from "Radio Stations Accepting. . . ."). Start with BBXX indicator and ship's call sign and combine the remaining numbers into 10-character groups.						
INDICATOR	CALL SIGN	YYGGi <sub>w</sub>	99L <sub>a</sub> L <sub>a</sub> L <sub>a</sub>	Q <sub>c</sub> L <sub>o</sub> L <sub>o</sub> L <sub>o</sub> L <sub>o</sub>	i <sub>R</sub> i <sub>x</sub> hVV	Nddff
<b>BBXX</b>			<b>99</b>		<b>4</b>	
00fff	1s <sub>n</sub> TTT	2s <sub>n</sub> T <sub>d</sub> T <sub>d</sub> T <sub>d</sub>	4PPPP	5appp	7wwW <sub>1</sub> W <sub>2</sub>	8N <sub>h</sub> C <sub>L</sub> C <sub>M</sub> C <sub>H</sub>
222D <sub>s</sub> v <sub>s</sub>	0s <sub>t</sub> T <sub>w</sub> T <sub>w</sub> T <sub>w</sub>	2P <sub>w</sub> P <sub>w</sub> H <sub>w</sub> H <sub>w</sub>	3d <sub>w1</sub> d <sub>w1</sub> d <sub>w2</sub> d <sub>w2</sub>	4P <sub>w1</sub> P <sub>w1</sub> H <sub>w1</sub> H <sub>w1</sub>	5P <sub>w2</sub> P <sub>w2</sub> H <sub>w2</sub> H <sub>w2</sub>	6I <sub>s</sub> E <sub>s</sub> E <sub>s</sub> R <sub>s</sub>
8S <sub>w</sub> T <sub>b</sub> T <sub>b</sub> T <sub>b</sub>	ICE	c <sub>i</sub> S <sub>i</sub> b <sub>i</sub> D <sub>i</sub> z <sub>i</sub>	PLAIN LANGUAGE			TRANSMITTED BY
No Government Administration, or Company or person employed in the forwarding and delivery of this message shall be liable for any loss or damage arising from failure to transmit or to deliver the said message or from any neglect, delay, error or omission in the transmission thereof.						

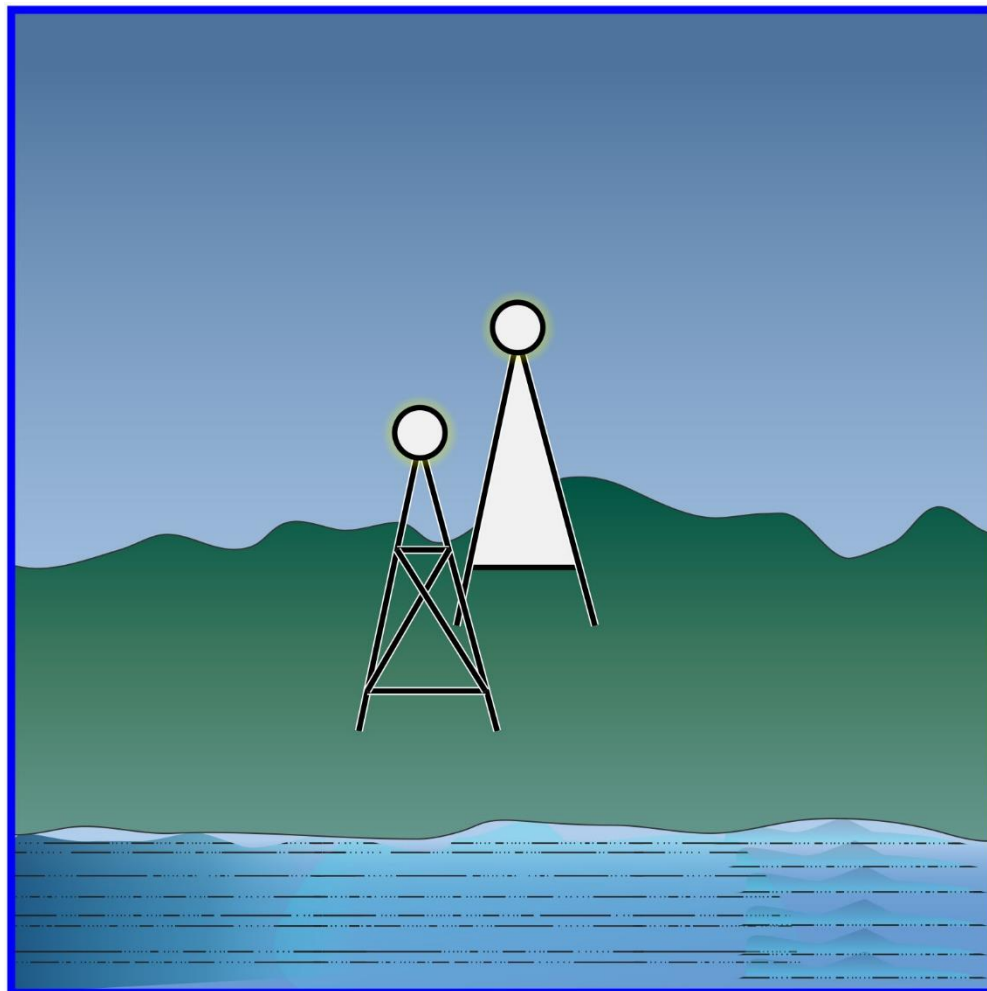
Supersedes NOAA Form 72-4A (1-82) which should be destroyed.

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**D047NG**



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## D055NG

### ZOC CATEGORIES

ZOC	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	± 5 m + 5% depth ± 16.4 ft + 5% depth	= 0.50 m +1% d = 1.6 ft +1% d = 0.3 fm +1% d	All significant seafloor features detected.
A2	± 20 m ± 65.6 ft	= 1.00 m +2% d = 3.3 ft +2% d = 0.6 fm +2% d	All significant seafloor features detected.
B	± 50 m ± 164.0 ft	= 1.00 m +2% d = 3.3 ft +2% d = 0.6 fm +2% d	Uncharted features hazardous to surface navigation are not expected but may exist.
C	± 500 m ± 1640.4 ft	= 2.00 m +2% d = 6.6 ft +2% d = 1.1 fm +2% d	Depth anomalies may be expected.
D	Worse than ZOC C	Worse than ZOC C	Large depth anomalies may be expected.
U	Unassessed - The quality of the bathymetric data has yet to be assessed.		

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