

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

Mate Less than 500-1600 Gross Registered Tons

Q329 Navigation General – Great Lakes and Inland

(Sample Examination)

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

1. To make sure of getting the full advantage of a favorable current, you should reach an entrance or strait at which time in relation to the predicted time of the favorable current?
- A. 30 minutes before flood, one hour after an ebb
  - B. At the predicted time
  - C. One hour after
  - D. 30 minutes before

Correct answer: D

2. You will be advised of any hazardous areas due to the fallout of a nuclear explosive by a message with which code word?
- A. NUCLEAR
  - B. MERWARN
  - C. FALLOUT
  - D. FALLWARN

Correct answer: B

3. You are in a channel inbound from sea. A daymark used to mark a channel junction, when the preferred channel is to port will have the shape indicated by what letter in illustration D045NG below?
- A. A
  - B. B
  - C. C
  - D. D

Correct answer: D

4. You have replaced the chart paper in the course recorder. Which statement is TRUE?
- A. Line the course pen up on 0-degree mark
  - B. Test the electrical gain to the thermograph pens
  - C. Set the zone pen to the far right of the paper
  - D. Adjust the chart paper to indicate GMT

Correct answer: D

5. In reading a weather map, what do closely spaced pressure gradient lines indicate?
- A. Fog or steady rain
  - B. High winds
  - C. A calm or light winds
  - D. High overcast clouds

Correct answer: B

6. Advection fog is most commonly caused by \_\_\_\_\_.
- A. air being warmed above the dew point
  - B. saturation of cold air by rain
  - C. warm moist air being blown over a colder surface
  - D. a rapid cooling of the air near the surface of the Earth at night

Correct answer: C

7. On 9 November 2023 at 0130, you are inbound at Charleston Harbor Entrance Buoy "10" (ACT6611). Your vessel will transit 15nm and make good 10.0 knots to a berth where the nearest tidal current station is ACT6706. What will be the direction and velocity of the current as you approach the dock? Illustration D058NG
- A. 0.6kts at 172°T
  - B. 0.2kts at 280°T
  - C. 0.6kts at 335°T
  - D. 0.2kts at 104°T

Correct answer: C

8. By what means are indications of the master gyrocompass sent to remote repeaters?
- A. by azimuth motor
  - B. by follow-up system
  - C. by transmitter
  - D. by phantom element

Correct answer: C

9. When a light is first seen on the horizon it will disappear again if the height of eye is immediately lowered several feet. When the eye is raised to its former height the light will again be visible. Which term is given to this process?
- A. Raising a light
  - B. Obscuring a light
  - C. Bobbing a light
  - D. Checking a light

Correct answer: C

10. Which radar control reduces weak echoes out to a limited distance from the ship?
- A. The fast time constant (differentiator)
  - B. The receiver gain control
  - C. The sensitivity time control (sea-clutter control)
  - D. The brilliance control

Correct answer: C

**11.** You desire to make good a true course of  $132^\circ$ . The variation is  $10^\circ\text{W}$ , magnetic compass deviation is  $5^\circ\text{E}$ , and gyrocompass error is  $5^\circ\text{W}$ . A northeast by east wind produces a  $5^\circ$  leeway. What is the course to steer per standard magnetic compass to make the true course good?

- A.  $135^\circ\text{psc}$
- B.  $132^\circ\text{psc}$
- C.  $137^\circ\text{psc}$
- D.  $142^\circ\text{psc}$

Correct answer: B

**12.** What does a white buoy with an open-faced orange diamond on it indicate?

- A. Operating restrictions are in effect
- B. Vessels are excluded from the area
- C. Danger
- D. The buoy is a mooring buoy

Correct answer: C

**13.** How are cumulonimbus clouds formed?

- A. By horizontal air movements
- B. By vertical air movements
- C. In heavy rainstorms
- D. By any movement of moist air

Correct answer: B

**14.** If the gyrocompass error is east, what describes the error and the correction to be made to gyrocompass headings to obtain true headings?

- A. The readings are too low (small numerically) and the amount of the error must be added to the compass to obtain true
- B. The readings are too low and the amount of the error must be subtracted from the compass to obtain true
- C. The readings are too high (large numerically) and the amount of the error must be added to the compass to obtain true
- D. The readings are too high and the amount of the error must be subtracted from the compass to obtain true

Correct answer: A

**15.** Which term is used to define the point where the vertical rise or fall of tide has stopped?

- A. The reverse of the tide
- B. The stand of the tide
- C. Slack water
- D. The rip tide

Correct answer: B

**16.** The direction in which a vessel should be steered between two points is known by which term?

- A. Bearing
- B. Course over the ground
- C. Course
- D. Heading

Correct answer: C

**17.** As your vessel is heading southward along the east coast of the United States, you encounter a buoy showing a red flashing light. How should you pass this buoy?

- A. Leave it to your starboard
- B. Pass it about 50 yards off on either side
- C. Leave it to your port
- D. Pass it well clear on either side

Correct answer: A

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

- A. General charts
- B. Coastal charts
- C. Sailing charts
- D. Approach charts

Correct answer: A

**19.** Which is TRUE of an aneroid barometer?

- A. An instrument used to measure the speed of wind
- B. An instrument in which the pressure of the air is measured
- C. An instrument that is used to measure the height of waves
- D. An instrument that tells which direction a storm is coming from

Correct answer: B

**20.** In illustration D051NG below what is indicated by the position labeled "C"?

- A. Dead reckoning position
- B. Running fix
- C. Estimated position
- D. Fix

Correct answer: B

**21.** Which topmark shown in illustration D023NG below identifies an isolated danger?

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

Correct answer: B

- 22.** Under the U.S. Aids to Navigation System on the Western Rivers, which is TRUE of a daymark on the right descending bank?
- A. It will indicate the gage reading
  - B. It shall be green in color
  - C. Must contain yellow retro-reflective markings
  - D. It will have an odd number

Correct answer: B

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

Correct answer: B

- 24.** What publication has information on the climate, distances, navigation regulations, outstanding landmarks, channels and anchorages of Long Island Sound?
- A. Sailing Directions
  - B. Pilot Chart
  - C. Light List
  - D. Coast Pilot

Correct answer: D

- 25.** If your vessel were proceeding upriver (ascending), how is the port side of the channel marked according to the U. S. Aids to Navigation System on the Western Rivers?
- A. Red nun buoys
  - B. Green can buoys
  - C. Red can buoys
  - D. Green nun buoys

Correct answer: B

- 26.** Which of the following is associated with consistently high barometric pressure?
- A. The horse latitudes
  - B. The trade winds
  - C. The doldrums
  - D. The prevailing westerlies

Correct answer: A

**27.** Your vessel has changed course and is heading 285°T, you are on the charted range and it appears as in illustration D048NG below.

After several minutes the range appears as in illustration D047NG below and your heading is still 285°T. What does this indicate?

- A. A north-setting current
- B. Leeway caused by a NE'ly wind
- C. A course made good to the left of the DR track
- D. A south-setting current

Correct answer: A

**28.** Safe water buoys may show ONLY which type of light?

- A. flashing green lights
- B. flashing red lights
- C. yellow lights
- D. white lights

Correct answer: D

**29.** Which of the following describes the difference between true heading and magnetic heading?

- A. Variation
- B. Compass error
- C. Deviation
- D. Northerly error

Correct answer: A

**30.** What does a white buoy with an orange cross within a diamond marked on it indicate?

- A. Vessels are excluded from the area
- B. An anchorage area
- C. Danger
- D. Operating restrictions are in effect

Correct answer: A

**31.** When does a current perpendicular to a vessel's track have the greatest effect on the vessel's course made good?

- A. At high vessel speeds
- B. At low vessel speeds
- C. In shallow water
- D. In deep water

Correct answer: B

**32.** Your vessel is proceeding up a channel steering on a pair of range lights that are in line ahead. The chart indicates that the direction of this pair of lights is  $249^{\circ}T$ , and the variation is  $14^{\circ}E$ . If the heading of your vessel at the time of the sighting is  $226^{\circ}$  per standard magnetic compass, what is the correct deviation?

- A.  $5^{\circ}E$
- B.  $5^{\circ}W$
- C.  $9^{\circ}E$
- D.  $9^{\circ}W$

Correct answer: C

**33.** You are sailing south on the Intracoastal Waterway (ICW) when you sight a red nun buoy with a yellow triangle painted on it. Which statement is TRUE?

- A. The ICW and another waterway coincide in this geographical area.
- B. Geometric symbols such as squares and triangles replace letters and numbers on ICW aids to navigation.
- C. This is an information or regulatory buoy that also has lateral significance.
- D. The yellow triangle identifies a sharp turn (over  $60^{\circ}$ ) in the channel.

Correct answer: A

**34.** The luminous range of a light takes into account which factor?

- A. The observer's height of eye
- B. The glare from background lighting
- C. The existing visibility conditions
- D. The elevation of the light

Correct answer: C

**35.** The vertical distance from the tidal datum to the level of the water is known by which term?

- A. Actual water depth
- B. Range of tide
- C. Charted depth
- D. Height of tide

Correct answer: D

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

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

Correct answer: D

**37.** Magnets in the binnacles of magnetic compasses are used to reduce which effect?

- A. Variation
- B. Local attraction
- C. Deviation
- D. Static build-up

Correct answer: C

**38.** A buoy having red and green horizontal bands would have which light characteristic?

- A. Composite group flashing
- B. Morse (A)
- C. Interrupted quick flashing
- D. Quick flashing

Correct answer: A

**39.** Information about the pilotage available at Miami harbor may best be obtained from which publication?

- A. Sailing Directions
- B. United States Coast Pilot
- C. Pilot Chart
- D. World Port Index

Correct answer: B

**40.** You are approaching Chatham Strait from the south in foggy weather. You have Coronation Island and Hazy Islands on the radar. Suddenly the radar malfunctions. You then resort to using whistle echoes to determine your distance off Coronation Island. Your stopwatch reads 16.3 seconds for the echo to be heard. How far are you off Coronation Island?

- A. 1.0 mile
- B. 1.5 miles
- C. 2.0 miles
- D. 2.5 miles

Correct answer: B

**41.** You are approaching a multiple-span bridge at night. How is the main navigational channel span indicated?

- A. A quick flashing red or green aid to navigation
- B. Two flashing green lights in the center of the span
- C. 3 white lights in a vertical line in the center of the span
- D. A steady blue light in the center of the span

Correct answer: C

**42.** You are using a radar in which your own ship is shown at the center, and the heading flash always points to 0°. If bearings are measured in relation to the flash, what type of bearings are produced?

- A. Compass
- B. True
- C. Magnetic
- D. Relative

Correct answer: D

- 43.** You are steering 257°T, and a light is picked up dead ahead at a distance of 13.3 miles at 2016. You change course to pass the light 4 miles off abeam to starboard. If you are making 18.5 knots, what is your ETA at the position 4 miles off the light?
- A. 2057
  - B. 2113
  - C. 2103
  - D. 2100

Correct answer: A

- 44.** The navigation regulations applicable to a U.S. inland waterway can be found in which publication?
- A. Coast Pilots
  - B. Notices to Mariners
  - C. Channel Reports
  - D. Sailing Directions

Correct answer: A

- 45.** In the U.S. Aids to Navigation System on the Western Rivers, the light characteristic of group flashing (2) is used for which purpose?
- A. To mark the right descending bank
  - B. To mark the left descending bank
  - C. To indicate daymarks with no lateral significant
  - D. To indicate the preferred channel

Correct answer: B

- 46.** 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 troposphere
  - B. The stratosphere
  - C. The stratopause
  - D. The tropopause

Correct answer: A

- 47.** The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean \_\_\_\_\_.
- A. high water
  - B. low water
  - C. tide level
  - D. lower low water

Correct answer: A

**48.** What does a Doppler log in the bottom return mode indicate?

- A. The bottom characteristics
- B. The speed over the ground
- C. The depth of the water
- D. The velocity of the current

Correct answer: B

**49.** Steam fog is most likely to occur on the Mississippi and Ohio Rivers in \_\_\_\_\_.

- A. summer, around early morning
- B. spring, around late evening
- C. spring, around early evening
- D. fall, around midday

Correct answer: A

**50.** Which type of GPS receiver has at least four channels to process information from several satellites simultaneously?

- A. Continuous
- B. Multiplex
- C. Sequential
- D. None of the above

Correct answer: A

**51.** What does the agonic line on an isomagnetic chart indicate?

- A. Points where there is no annual change in variation
- B. The magnetic longitude reference line
- C. Points where there is no variation
- D. The magnetic equator

Correct answer: C

**52.** On 15 October 2023, you will be docking on the Southern Branch Elizabeth River, VA at the first high tide. The berth is located between NOAA reference tidal station #8638660 and reference station #8639348. What time (LST) will you be docking? Illustration D063NG

- A. 0925
- B. 0917
- C. 1021
- D. 0922

Correct answer: D

**53.** Which light characteristic may be used on a special purpose mark?

- A. Equal interval
- B. Fixed
- C. Quick flashing
- D. Occulting

Correct answer: B

- 54.** Under the IALA cardinal system, what does a mark with a quick white light showing 6 flashes followed by one long flash indicate in relation to the location of the safest water?
- A. Safe water is on the east side of the mark
  - B. Safe water is on the north side of the mark
  - C. Safe water is on the south side of the mark
  - D. Safe water is on the west side of the mark

Correct answer: C

- 55.** Your vessel is proceeding down 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  $229^{\circ}T$ , and variation is  $6^{\circ}W$ . If the heading of your vessel at the time of the sighting is  $232^{\circ}$  per standard magnetic compass, what is the deviation?
- A.  $3^{\circ}E$
  - B.  $9^{\circ}E$
  - C.  $3^{\circ}W$
  - D.  $9^{\circ}W$

Correct answer: A

- 56.** The channel under a bridge is marked with lights of the lateral system. The centerline of the channel shall be marked on the bridge in which manner?
- A. An occulting white light
  - B. A yellow light
  - C. Three fixed white lights
  - D. A flashing blue light

Correct answer: A

- 57.** Which is TRUE of echo-sounders?
- A. They measure the actual depth of water
  - B. They measure the average depth of water to soft bottom
  - C. They measure the average depth from waterline to hard bottom
  - D. They measure the actual depth of water below keel

Correct answer: D

- 58.** You are steaming west in the South Atlantic in an extratropical cyclonic storm, and the wind is dead ahead. According to the law of Buys Ballot, where does the center of low pressure lie?
- A. To the south of you
  - B. To the north of you
  - C. Dead astern of you
  - D. Dead ahead of you

Correct answer: A

**59.** What is TRUE concerning new editions of Light Lists?

- A. Supplements to new editions are issued monthly by the U.S. Coast Guard.
- B. New editions are corrected through the date shown on the title page.
- C. New editions are published by the National Ocean Service.
- D. None of the above

Correct answer: B

**60.** Which characteristic and color will a preferred-channel buoy show?

- A. A group-occulting white light
- B. A white light whose characteristic is Morse (A)
- C. A composite group-flashing (2 + 1) white light
- D. A composite group-flashing (2 + 1) red or green light

Correct answer: D

**61.** Where can data relating to the direction and velocity of rotary tidal currents in a U.S. Atlantic Port be found?

- A. Mariner's Guide
- B. Nautical Almanac
- C. Tide Tables
- D. Tidal Current Tables

Correct answer: D

**62.** To find the specific phase characteristic of a lighthouse on a sound of the United States you would use which reference?

- A. Nautical Chart Catalog
- B. U.S. Coast Pilot
- C. American Practical Navigator
- D. Light List

Correct answer: D

**63.** If the current and wind are in the same direction, what does the sea surface represent concern the true wind speed?

- A. It appears at the correct speed
- B. It appears less than actually exists
- C. The appearance of the sea surface does not change
- D. It appears higher than actually exists

Correct answer: B

**64.** Which is TRUE of a vertically-striped buoy?

- A. It may be lighted with a white light
- B. It may be striped black and green
- C. It may be striped black and yellow
- D. It may be lighted with a red light

Correct answer: A

**65.** You take a bearing of  $313^\circ$  and  $076^\circ$  of two objects. Which bearing of a third object will give the best fix?

- A.  $133^\circ$
- B.  $014^\circ$
- C.  $339^\circ$
- D.  $255^\circ$

Correct answer: B

**66.** The southeast trade winds actually blow in which direction?

- A. South
- B. Southeast
- C. East
- D. Northwest

Correct answer: D

**67.** On a chart, the characteristic of the light on a lighthouse is shown as flashing white with a red sector. Which is TRUE of the red sector?

- A. It is used to identify the characteristics of the light
- B. It indicates the limits of the navigable channel
- C. It serves no significant purpose
- D. It indicates a danger area

Correct answer: D

**68.** Your vessel is on a course of  $082^\circ\text{T}$  at 19 knots.

At 0255 a light bears  $059.5^\circ\text{T}$ , and at 0312 the light bears  $037^\circ\text{T}$ .

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

**69.** You are underway in a vessel with a draft of 6.0 feet. You are in an area where the charted depth of the water is 4 fathoms. You would expect the depth of water beneath your keel to be approximately \_\_\_\_\_.

- A. 30 feet
- B. 24 feet
- C. 12 feet
- D. 18 feet

Correct answer: D

Q329 Navigation General-Great Lakes and Inland  
U.S.C.G. Merchant Marine Exam  
Mate Less than 500-1600 Gross Registered Tons  
Illustrations: 7

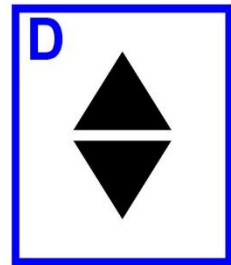
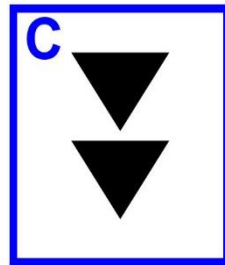
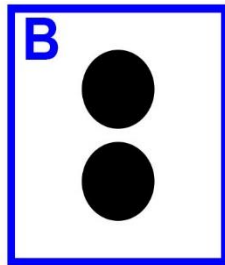
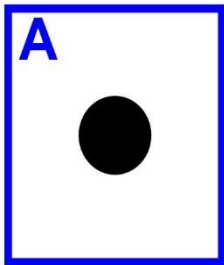
**70.** You are underway on course  $059^{\circ}\text{T}$  at a speed of 13.8 knots. You sight a light bearing  $064^{\circ}\text{T}$  at a radar range of 5.1 miles at 1839. If you change course at 1845, what is the course to steer to leave the light abeam to starboard at 1.0 mile?

- A.  $047^{\circ}\text{T}$
- B.  $050^{\circ}\text{T}$
- C.  $053^{\circ}\text{T}$
- D.  $058^{\circ}\text{T}$

Correct answer: B



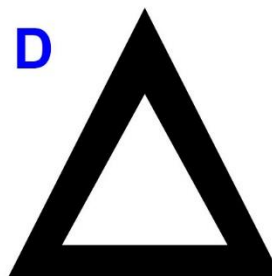
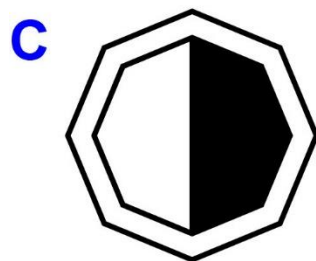
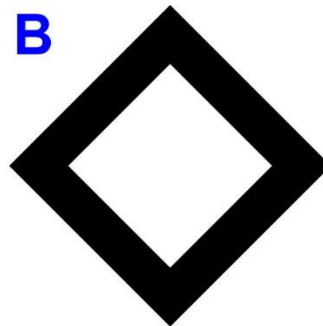
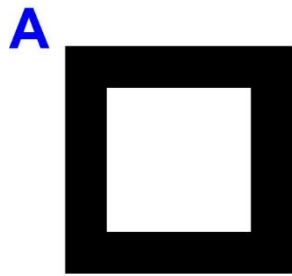
**D023NG**



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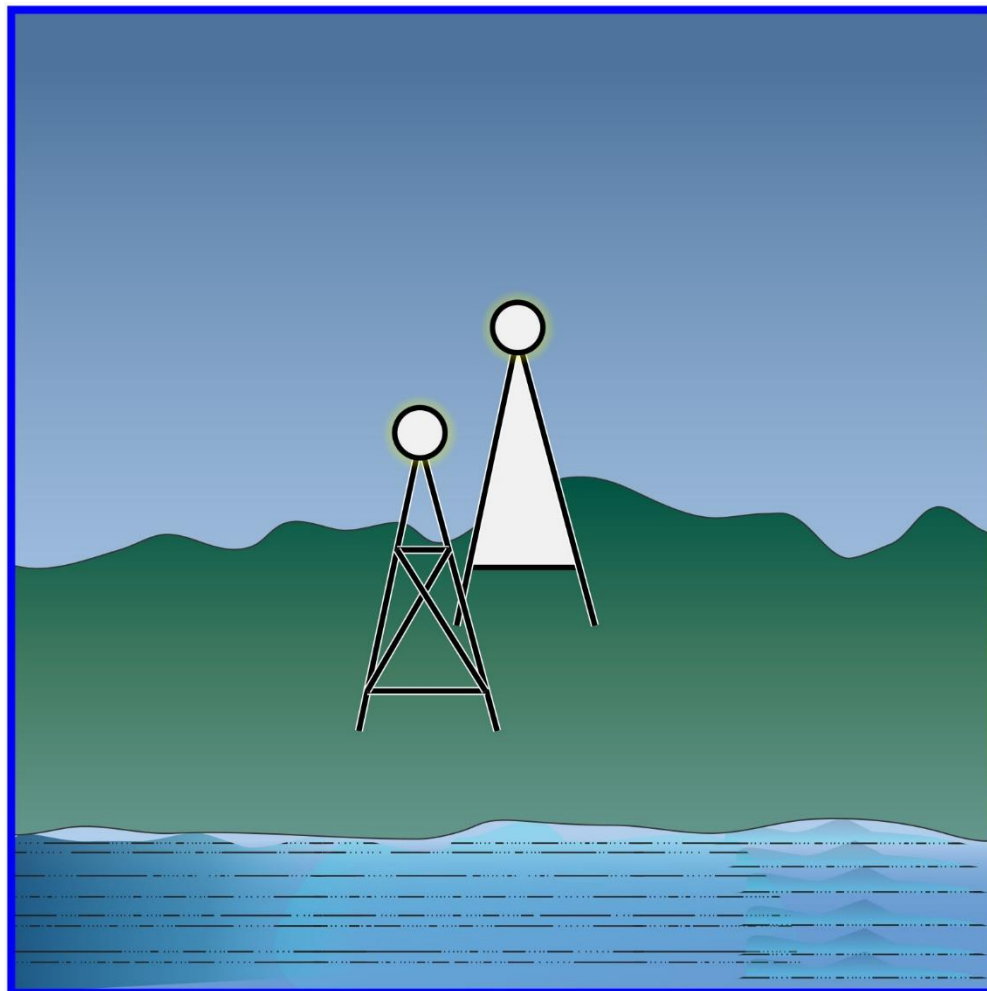


**D045NG**





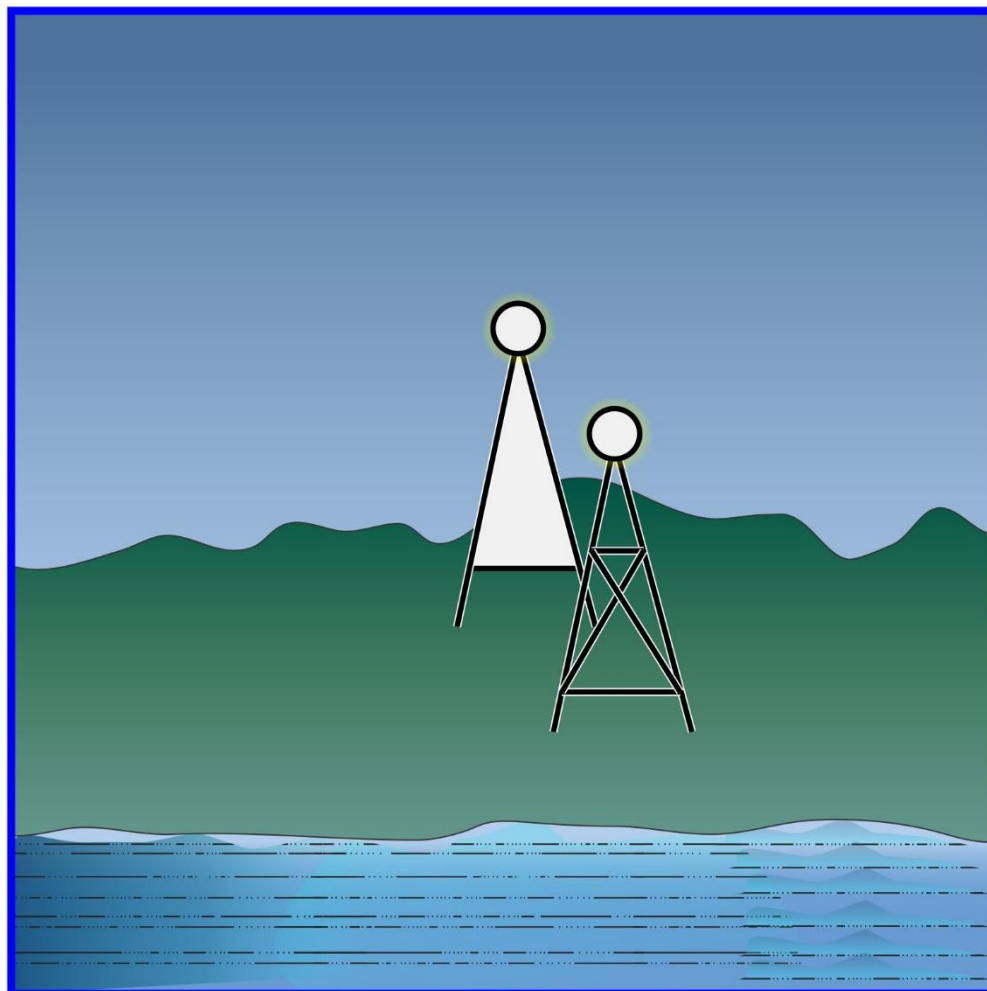
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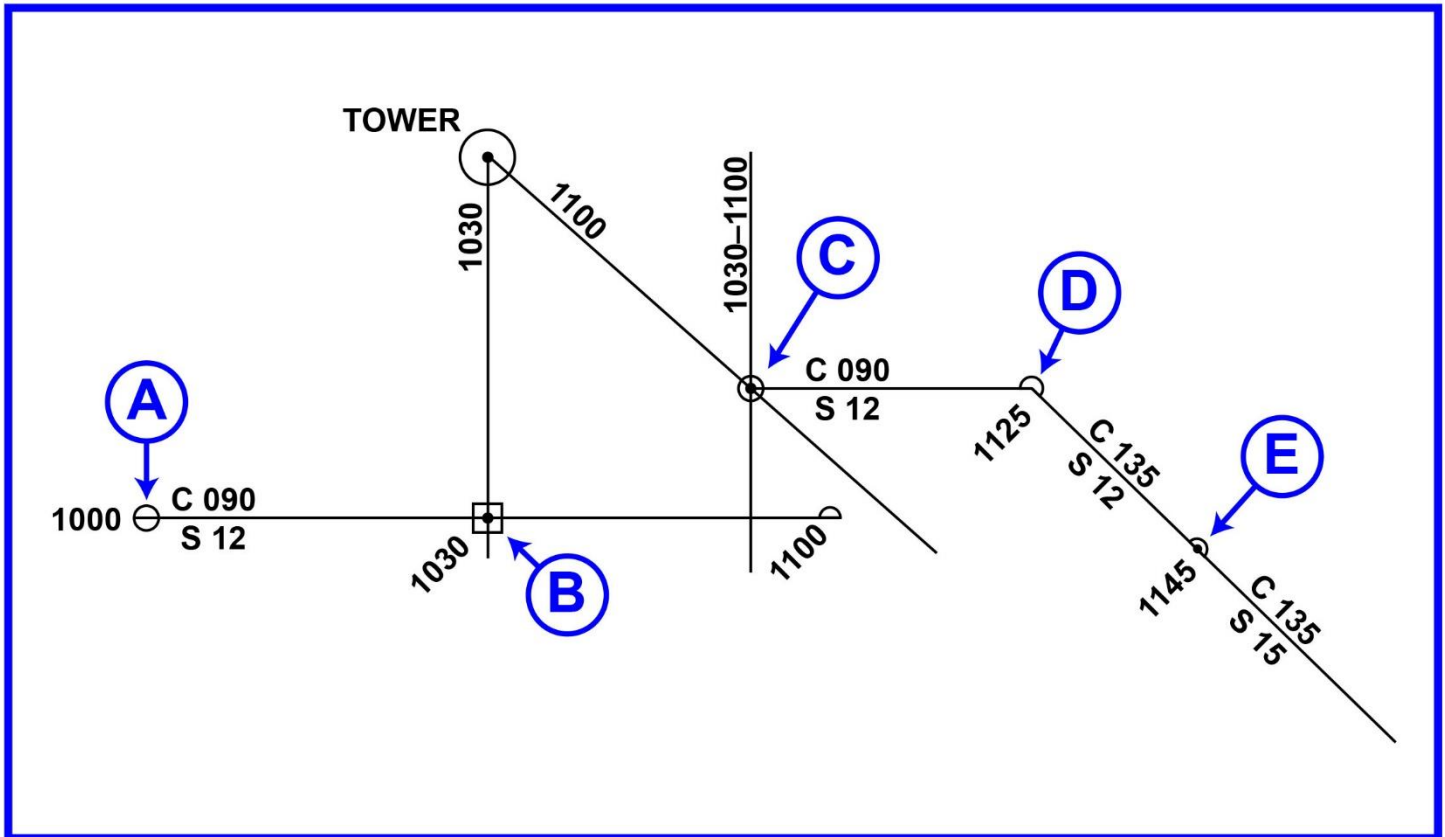
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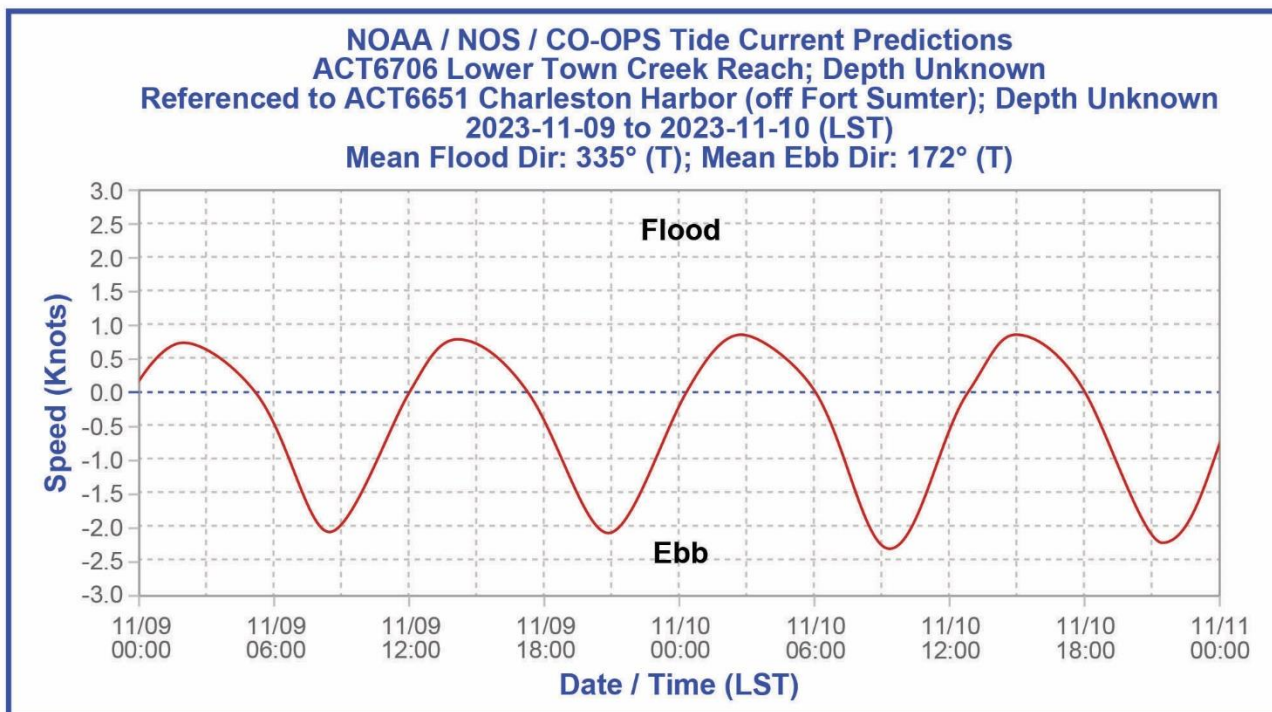
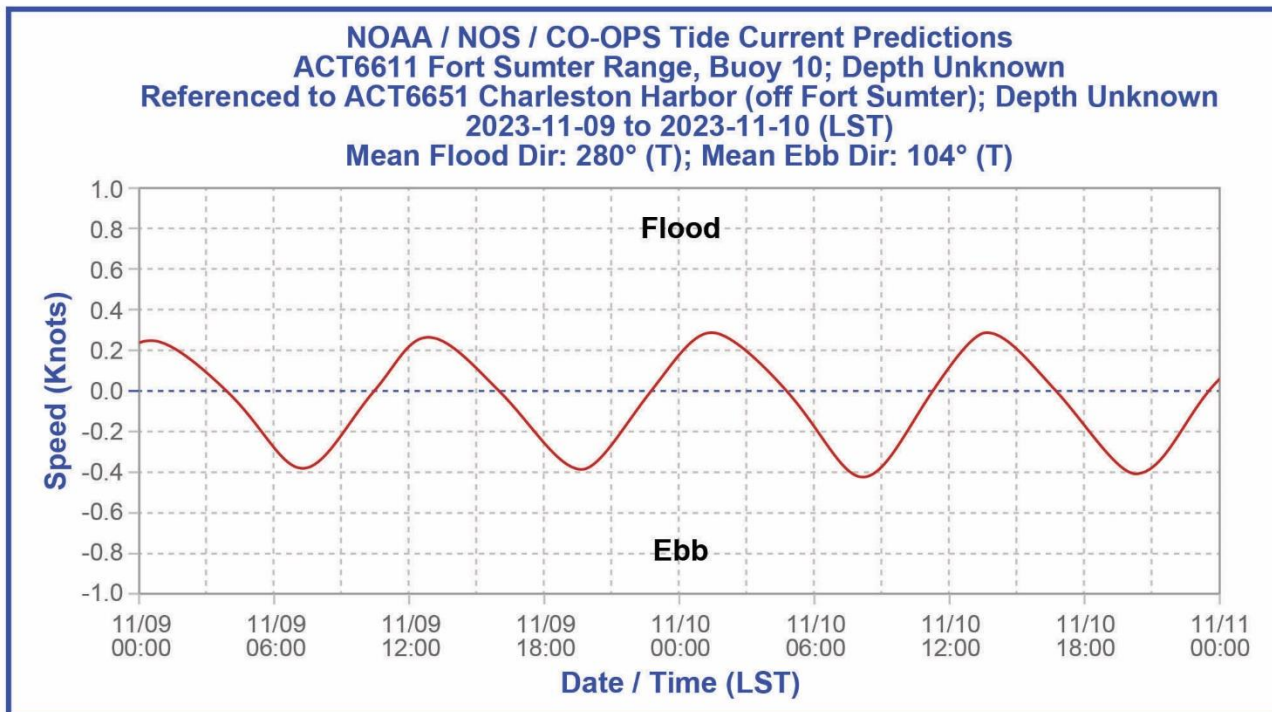


D051NG





## D058NG



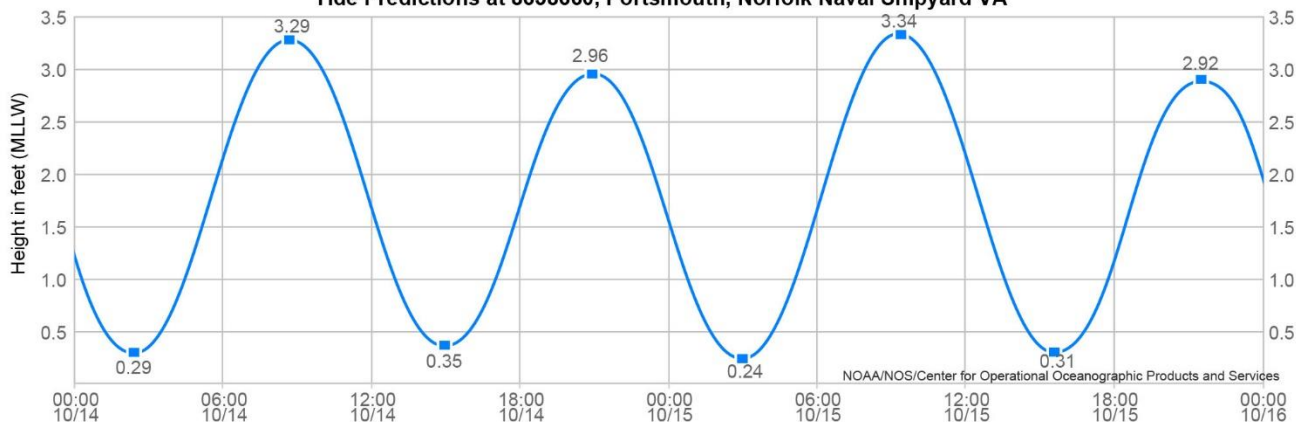
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 (NOAA) Current Predictions,  
<https://www.tidesandcurrents.noaa.gov>  
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## D063NG

NOAA/NOS/CO-OPS

### Tide Predictions at 8638660, Portsmouth, Norfolk Naval Shipyard VA



High/Low Tide Prediction Data Listing

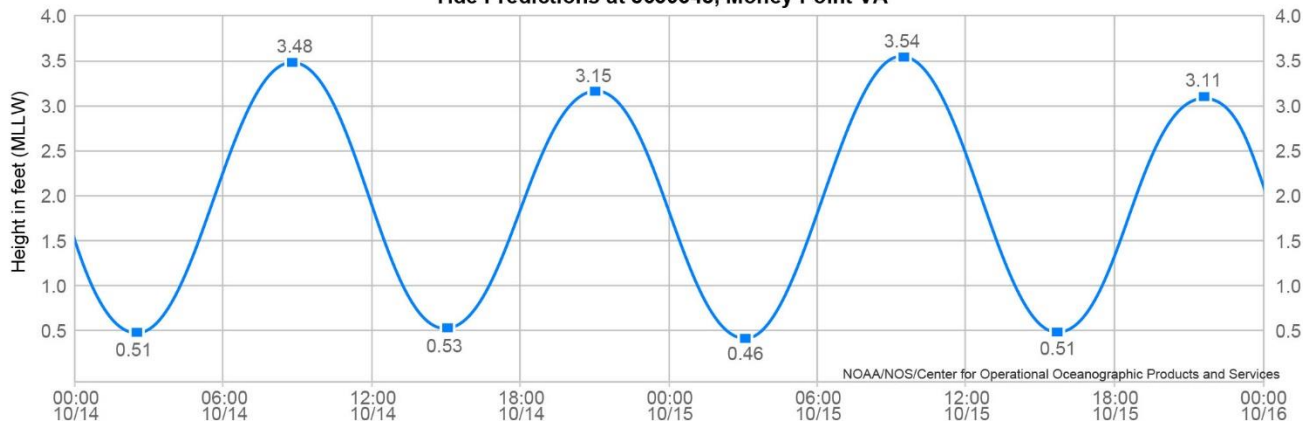
Station Name: Portsmouth, Norfolk Naval Shipyard, VA  
Action: Daily  
Product: Tide Predictions  
Start Date & Time: 2023/10/14 00:00  
End Date & Time: 2023/10/15 23:59

Source: NOAA/NOS/CO-OPS  
Prediction Type: Harmonic  
Datum: MLLW  
Height Units: Feet  
Time Zone: LST

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/14	Sat	02:25	0.29 L	08:40	3.29 H	14:58	0.35 L	20:53	2.96 H
2023/10/15	Sun	03:00	0.24 L	09:17	3.34 H	15:37	0.31 L	21:32	2.92 H

NOAA/NOS/CO-OPS

### Tide Predictions at 8639348, Money Point VA



High/Low Tide Prediction Data Listing

Station Name: Money Point, VA  
Action: Daily  
Product: Tide Predictions  
Start Date & Time: 2023/10/14 00:00  
End Date & Time: 2023/10/15 23:59

Source: NOAA/NOS/CO-OPS  
Prediction Type: Harmonic  
Datum: MLLW  
Height Units: Feet  
Time Zone: LST

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/14	Sat	02:25	0.51 L	08:48	3.48 H	15:00	0.53 L	21:02	3.15 H
2023/10/15	Sun	03:01	0.46 L	09:25	3.54 H	15:40	0.51 L	21:40	3.11 H

Note: The interval is High/Low, the solid blue line depicts a curve fit between the high and low values and approximates the segments between.  
Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

Adapted for testing purposes only from National Oceanic and Atmospheric Administration  
(NOAA) Tide Predictions,

<https://www.tidesandcurrents.noaa.gov>

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