

U.S.C.G. Merchant Marine Exam
Master Less than 100 Gross Registered Tons
Q349 Navigation General – Great Lakes and Inland
(Sample Examination)

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

1. Which is TRUE concerning compass error?
- A. Compass error is equal to deviation minus variation
 - B. Compass error is the sum of variation and deviation
 - C. Compass error is variation plus compass course
 - D. Compass error is the difference between true and magnetic heading

Correct answer: B

2. What causes variation in a compass?
- A. Lack of oil in the compass bearings
 - B. Worn gears in the compass housing
 - C. Magnetism from the earth's magnetic field
 - D. Magnetism within the vessel

Correct answer: C

3. Magnetic variation changes with a change in _____.
- A. seasons
 - B. sea conditions
 - C. the vessel's heading
 - D. the vessel's position

Correct answer: D

4. What is used to measure wind velocity?
- A. Psychrometer
 - B. Anemometer
 - C. Windsock
 - D. Barometer

Correct answer: B

5. What is the purpose of the "reference hand" on an aneroid barometer?
- A. To provide a correction for height above sea level
 - B. To indicate any change in the reading of the barometer
 - C. To adjust the barometer
 - D. To provide a correction for temperature changes

Correct answer: B

6. Which are associated with Cumulonimbus clouds?
- A. Clear skies with the approach of a cold front
 - B. Gusty winds, thunder, rain or hail, and lightning
 - C. Dense fog and high humidity
 - D. A rapid drop in barometric pressure followed by darkness

Correct answer: B

7. Fog generally clears when the _____.

- A. wind direction changes
- B. wind speed increases
- C. temperature increases
- D. All of the above

Correct answer: D

8. Brief, violent showers frequently accompanied by thunder and lightning are usually associated with _____.

- A. stationary high-pressure systems
- B. passage of a warm front
- C. winds shifting counterclockwise in the Northern Hemisphere
- D. passage of a cold front

Correct answer: D

9. What is the standard atmospheric pressure as measured in inches of mercury?

- A. 29.92
- B. 500.0
- C. 760.0
- D. 1013.2

Correct answer: A

10. How can you follow the approach of a dangerous cyclonic storm?

- A. By a newspaper, a weather map, a weather fax, or a weather forecast
- B. Review the Coast Pilot or Sailing Directions
- C. Utilizing the National Weather Service Observing Handbook No.1, Marine Surface Observations
- D. By monitoring the change in the sea temperature

Correct answer: A

11. Which time meridian is used when computing the velocity of the current for Pensacola Bay, Florida?

- A. 75°00'W
- B. 97°30'W
- C. 82°30'W
- D. 90°00'W

Correct answer: D

12. What is the proper name given to the movement of water away from the shore or downstream?

- A. A flood current
- B. A reversing current
- C. A slack current
- D. An ebb current

Correct answer: D

13. Which defines the height of tide?

- A. The difference between the depth of the water at high tide and the depth of the water at low tide
- B. The difference between the depth of the water and the high-water tidal level
- C. The difference between the depth of the water and the area's tidal datum
- D. The depth of water at a specific time due to tidal effect

Correct answer: C

14. On 9 November 2023 at 1630, you are inbound at Charleston Harbor Entrance Buoy "10" (ACT6611). What is the direction and velocity of the current you are encountering as you pass Buoy "10"? See illustration D058NG.

- A. 0.1kts at 104°T
- B. 0.1kts at 280°T
- C. 0.2kts at 335°T
- D. 0.2kts at 172°T

Correct answer: A

15. On 14 October 2023, you will be docking at the Southern Branch Elizabeth River, VA at the first low tide. The berth is located between NOAA reference tidal station #8638660 and subordinate station #8639348. What time (LST) will you be docking? See illustration D063NG.

- A. 0225
- B. 0300
- C. 0325
- D. 0125

Correct answer: A

16. Your vessel is steering course 027° per standard magnetic compass (psc), variation for the area is 19°W, and deviation is 2°E. The wind is from the north-northwest, producing a 5° leeway. What true course are you making good?

- A. 005°T
- B. 049°T
- C. 015°T
- D. 044°T

Correct answer: C

17. You are steaming on course 126°T at 14.8 knots. At 1022 you sight a buoy bearing 128°T, at a range of 4.8 miles. If you change course at 1026, what true course will you steer to leave the buoy 0.5 mile abeam to port?

- A. 136°
- B. 133°
- C. 119°
- D. 122°

Correct answer: A

18. You wish to make good a course of 300°T while turning for an engine speed of 11 knots. The set is 350°T , and the drift is 2.1 knots. Which course should you steer?

- A. 278°T
- B. 288°T
- C. 292°T
- D. 308°T

Correct answer: C

19. While on a course of 138°T , a light bears 14° on the starboard bow at a distance of 8.6 miles. What course should you steer to pass 3 miles abeam of the light leaving it to starboard?

- A. 132°T
- B. 138°T
- C. 135°T
- D. 141°T

Correct answer: A

20. With respect to failure warnings and status indications, GPS receivers should provide, at a minimum, _____.

- A. an alarm if engine speed is suddenly reduced
- B. an indication of a change in satellite configuration
- C. a warning of loss of position
- D. a cross-track error alarm

Correct answer: C

21. Which term is given to a radar display which is oriented, so that north is always at the top of the screen?

- A. Stabilized display
- B. Relative display
- C. Unstabilized display
- D. Composite display

Correct answer: A

22. Which is TRUE of echo-sounders?

- A. They measure the average depth from waterline to hard bottom
- B. They measure the actual depth of water
- C. They measure the actual depth of water below keel
- D. They measure the average depth of water to soft bottom

Correct answer: C

23. What is NOT a characteristic of cardinal marks?

- A. Directional orientation to a hazard
- B. Yellow and black bands
- C. White lights
- D. Square or triangular topmarks

Correct answer: D

24. Under the IALA-B Buoyage System, when entering from seaward which lateral system buoy as shown in illustration D046NG below, should be left to port?

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

Correct answer: D

25. Which light signal indicates that you may approach the lock?

- A. Flashing amber
- B. Steady green
- C. Flashing red
- D. Steady amber

Correct answer: A

26. If your vessel must pass through a draw bridge during a scheduled closure period, what signal should you sound to request the opening of the draw?

- A. One prolonged blast followed by one short blast
- B. Five short blasts
- C. One prolonged blast followed by three short blasts
- D. Three short blasts

Correct answer: B

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

Correct answer: A

28. Which item in illustration D034NG below shows a Morse (A) light?

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

Correct answer: D

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

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

Correct answer: D

30. The Light List indicates that a light has a nominal range of 13 miles and is 36 feet high. If the visibility is 17 miles and your height of eye is 25 feet, at what approximate distance will you sight the light?

- A. 10.0 miles
- B. 12.9 miles
- C. 14.2 miles
- D. 17.0 miles

Correct answer: B

31. Which scale is considered a harbor chart?

- A. not more than 1:25,000
- B. not less than 1:500,000
- C. 1:35,000
- D. 1:150,000

Correct answer: C

32. Which information does the outer ring of a compass rose on a nautical chart provide?

- A. Magnetic directions
- B. True directions
- C. Annual rate of variation change
- D. Variation

Correct answer: B

33. Which defines the term charted depth?

- A. The average height of all low waters at a place
- B. The vertical distance from the chart sounding datum to the ocean bottom
- C. The average height of water over a specified period of time
- D. The vertical distance from the chart sounding datum to the ocean bottom, plus the height of tide

Correct answer: B

34. The depth of water on a chart is indicated as 23 meters. What does that depth convert to?

- A. 11.5 fathoms
- B. 12.6 fathoms
- C. 69.0 feet
- D. 78.6 feet

Correct answer: B

35. The National Oceanic and Atmospheric Administration publishes which item?

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

Correct answer: C

36. Which agency publishes the Light Lists?

- A. Army Corps of Engineers
- B. United States Coast Guard
- C. Oceanographic Office
- D. National Ocean Service

Correct answer: B

37. Where can information for updating paper nautical charts primarily be found?

- A. Sailing Directions
- B. Notice to Mariners
- C. Coast Pilots
- D. Nautical chart catalogs

Correct answer: B

38. How is a safe water mark, that can be passed close aboard on either side, painted and lighted?

- A. Black and red stripes with a Morse (A) light
- B. Black and red stripes with an interrupted quick flashing light
- C. Red and white stripes with a Morse (A) light
- D. Black and white stripes with an interrupted quick flashing light

Correct answer: C

39. Which of the buoys listed below could be used to mark an anchorage?

- A. White buoy with a green top
- B. White buoy with orange bands
- C. Yellow buoy lettered "N"
- D. White buoy numbered "3"

Correct answer: C

40. In the IALA Buoyage System, preferred-channel-to-port or preferred-channel-to-starboard buoys, which is TRUE when fitted with lights?

- A. The light must be a long flashing light
- B. The light must be a composite group flashing (2 + 1) light
- C. The light shall be group flashing
- D. The light will be quick flashing light

Correct answer: B

41. Which is TRUE of a vertically-striped buoy?

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

Correct answer: D

42. Your vessel is leaving New York harbor in dense fog. As the vessel slowly proceeds toward sea, you sight a green can buoy on the starboard bow. Which action should you take?

- A. Stand on, leaving the buoy to your starboard.
- B. Stop and fix your position.
- C. Pass the buoy close to, leaving it to your port.
- D. Turn hard right to get back into the channel.

Correct answer: A

43. In the U.S. Aids to Navigation System, lateral aids as seen entering from seaward will display lights with which characteristic?

- A. Flashing
- B. Quick Flashing
- C. Occulting
- D. All of the above

Correct answer: D

44. In illustration D045NG below, what two shapes shown are used to indicate a preferred channel?

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

Correct answer: A

45. A daymark used to indicate the safe water in a channel will have which of the shapes shown in illustration D045NG below?

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

Correct answer: C

46. You are sailing south on the Intracoastal Waterway (ICW) when you sight a red nun buoy with a yellow square painted on it. Which statement is TRUE?
- A. The buoy is off station and should be ignored as a navigational mark.
 - B. The waterway in that area has shoaled and the available depth of water is less than the project depth.
 - C. You should leave the buoy to port.
 - D. ICW traffic should not proceed beyond the buoy unless the crossing waterway is clear of all traffic.

Correct answer: C

47. You are sailing south on the Intracoastal Waterway (ICW) when you sight a green can buoy with a yellow square painted on it. Which of the following is TRUE?
- A. You should pass the buoy close aboard on either side.
 - B. You should leave the buoy to port.
 - C. The yellow square is retro-reflective material used to assist in sighting the buoy at night.
 - D. The buoy marks the end of the ICW in that area.

Correct answer: B

48. You are steering 163°T , and a light is picked up dead ahead at a distance of 11 miles at 0142. You change course to pass the light 2 miles off abeam to starboard. If you are making 13 knots, what is your ETA at the position 2 miles off the light?
- A. 0229
 - B. 0232
 - C. 0226
 - D. 0235

Correct answer: B

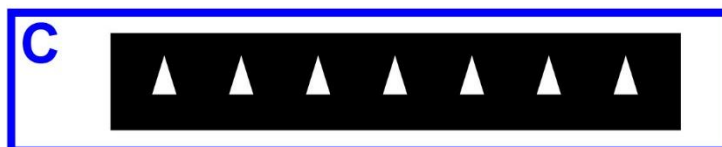
49. You are steaming on a course of 084°T at a speed of 13 knots. At 1919 a lighthouse bears 106.5°T . At 1957 the same lighthouse bears 129°T . What will be your distance off the lighthouse when abeam?
- A. 7.1 miles
 - B. 4.3 miles
 - C. 5.7 miles
 - D. 8.2 miles

Correct answer: C

50. 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°T , and the variation is 5° west. If the heading of your vessel at the time of the sighting is 344° per standard magnetic compass, what is the correct deviation?
- A. 1°E
 - B. 1°W
 - C. 4°E
 - D. 4°W

Correct answer: C

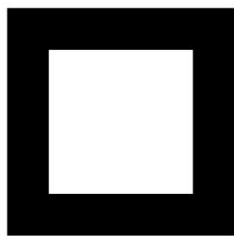
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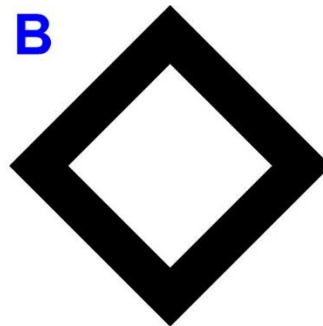
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Abbreviations and Terms, 10 edition
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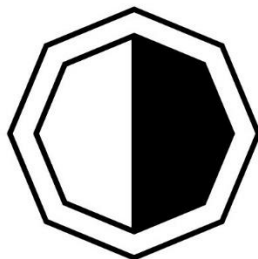
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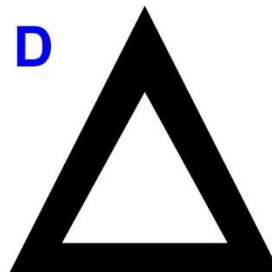
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C



D

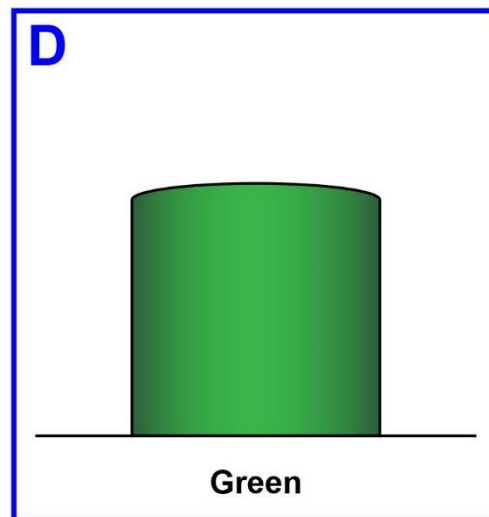
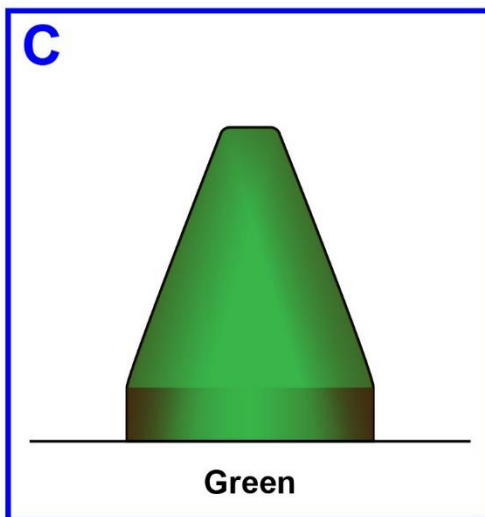
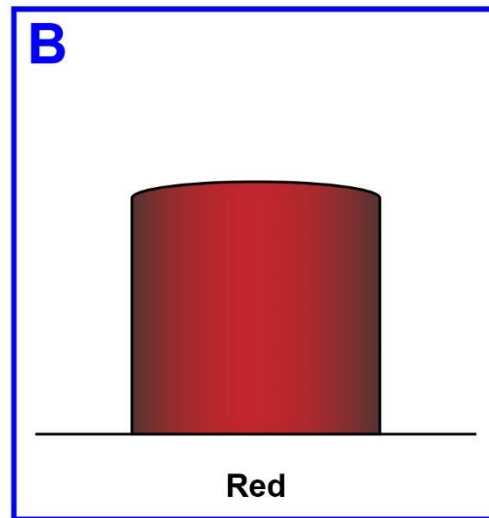
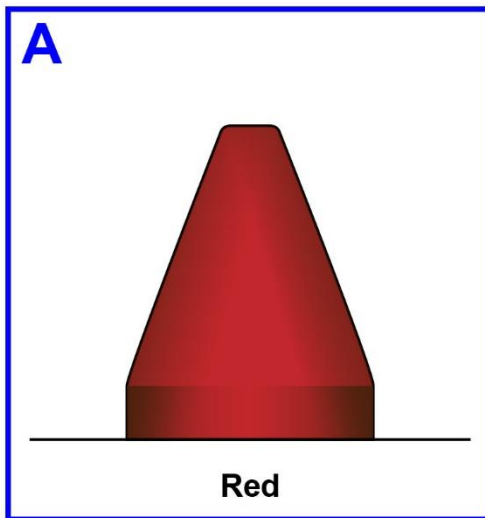


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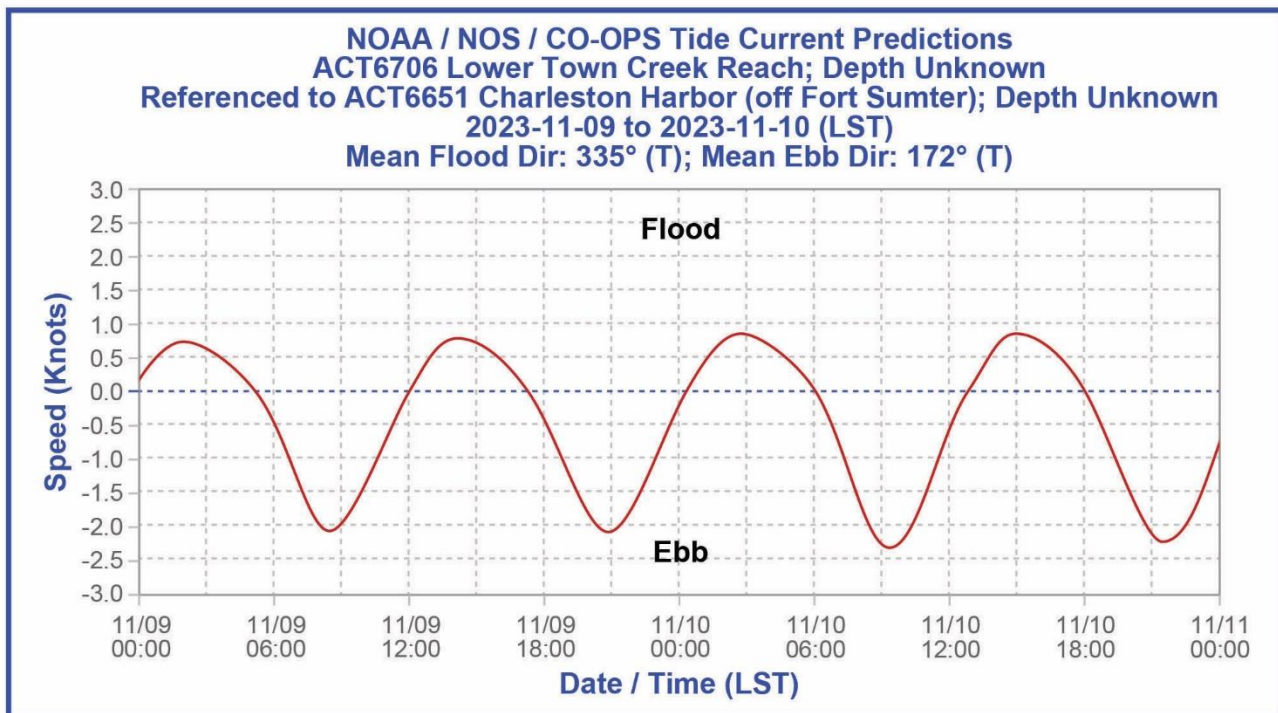
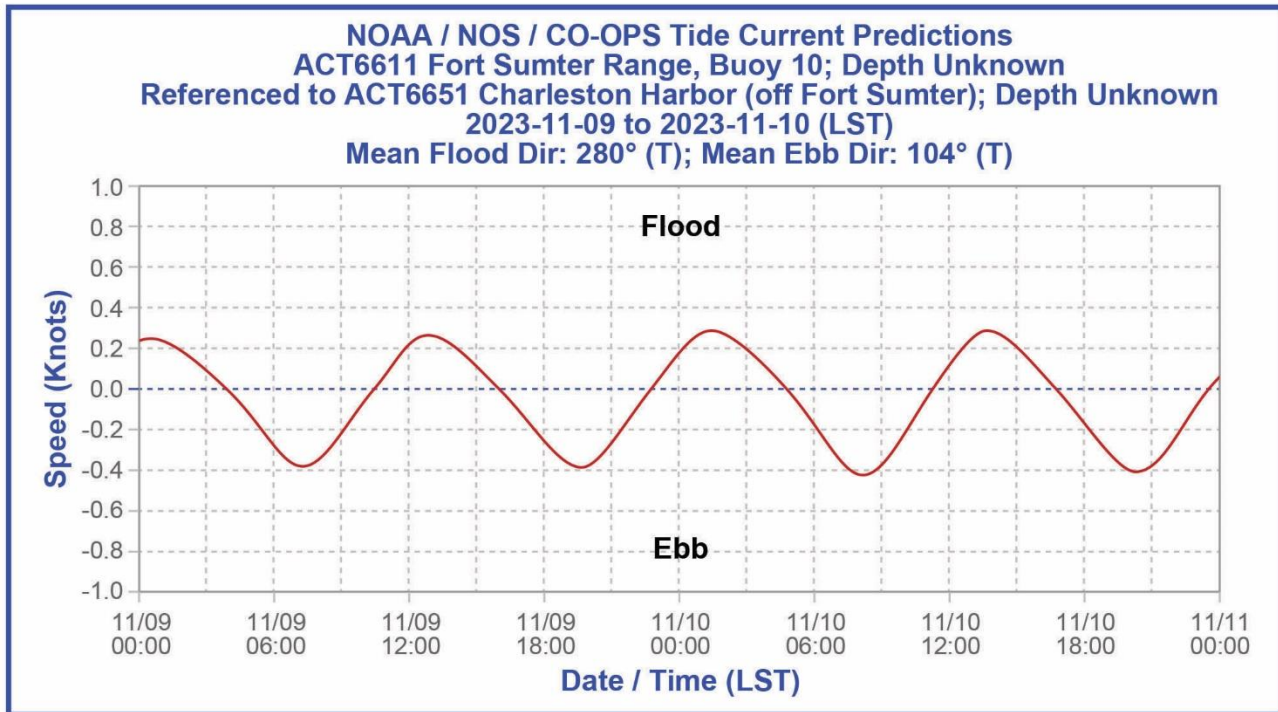
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D046NG



D058NG



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 Current Predictions,

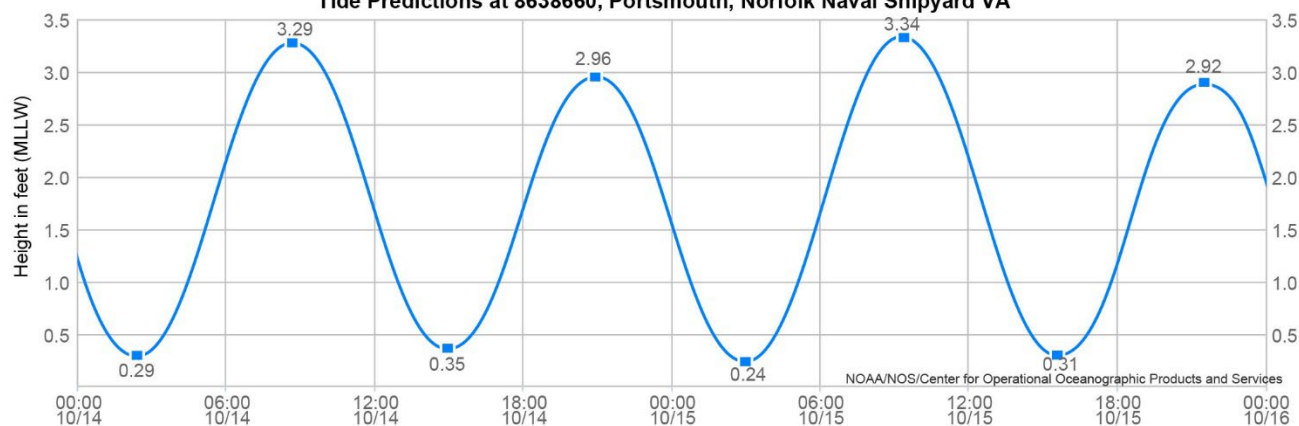
<https://www.tidesandcurrents.noaa.gov>

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D063NG

NOAA/NOS/CO-OPS

Tide Predictions at 8638660, Portsmouth, Norfolk Naval Shipyard VA



High/Low Tide Prediction Data Listing

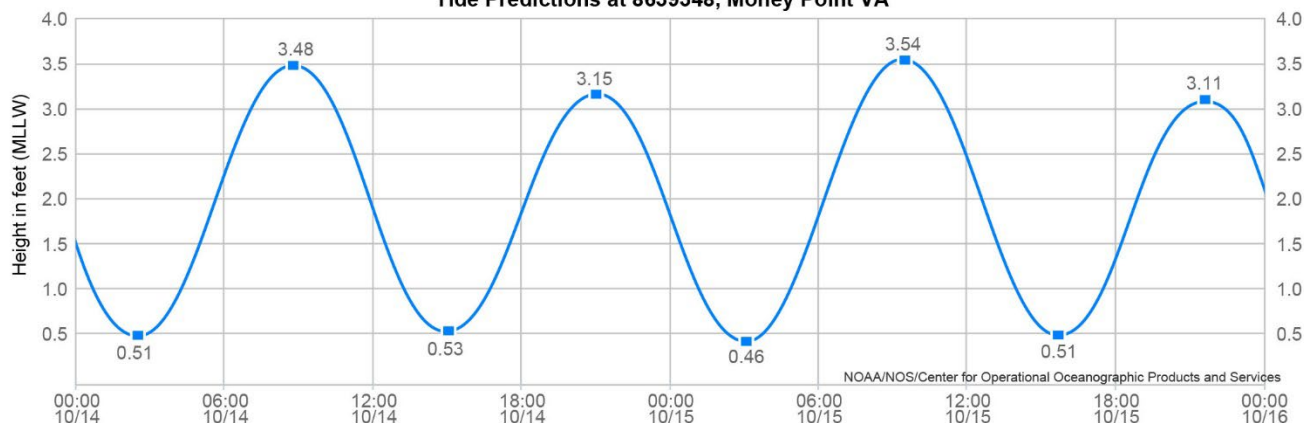
Station Name: Portsmouth, Norfolk Naval Shipyard, VA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/14 00:00
End Date & Time: 2023/10/15 23:59

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.

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Tide Predictions,

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