

U.S.C.G. Merchant Marine Exam

Master or Mate Less than 200 Gross Registered Tons

Q152 Navigation General – Oceans or Near Coastal

(Sample Examination)

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

1. You depart LAT 49°45.0'N, LONG 06°35.0'W, and steam 3599 miles on course 246.5°T. What is the longitude of your arrival by Mercator sailing?
- A. LONG 77°02.8'W
 - B. LONG 78°14.0'W
 - C. LONG 78°22.6'W
 - D. LONG 76°36.2'W

Correct answer: A

2. On 14 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? See illustration D063NG.
- A. 0946
 - B. 0840
 - C. 0845
 - D. 0848

Correct answer: C

3. The buoy symbol printed on your chart is leaning to the northeast. What does this indicate?
- A. You should stay to the north or east of the buoy
 - B. Nothing special for navigational purposes
 - C. You should stay to the west or south of the buoy
 - D. The buoy is a major lighted buoy

Correct answer: B

4. How often is The Local Notice to Mariners updated?
- A. Usually weekly
 - B. Usually daily
 - C. Usually monthly
 - D. Usually semiannually

Correct answer: A

5. How is a chart with a natural scale of 1:160,000 classified?
- A. A sailing chart
 - B. A general chart
 - C. A coast chart
 - D. A harbor chart

Correct answer: B

6. Your vessel is on course 180°T speed 22 knots. The apparent wind is from 70° off the port bow, speed 20 knots. What are the true direction and speed of the wind?
- A. 45°T , 21.0 knots
 - B. 51°T , 24.0 knots
 - C. 58°T , 21.2 knots
 - D. 64°T , 26.0 knots

Correct answer: B

7. Which is the name given to the belt of light and variable winds between the westerly wind belt and the northeast trade winds?
- A. The polar frontal zone
 - B. The intertropical convergence zone
 - C. The doldrum belt
 - D. The subtropical high-pressure belt

Correct answer: D

8. 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 conical in shape and called nun buoys
 - C. They are triangular in shape to indicate that it may not be possible to pass on either side of the buoy
 - D. They may either be cylindrical or conical since the shape has no significance

Correct answer: B

9. While entering a harbor on a course of 225° per gyrocompass, you take a bearing on a pair of range lights and get 220° per gyrocompass. The bearing on the chart is 217°T . The variation for the area is 6°W , and deviation is 2°W . What course would you steer per gyrocompass to make good a true course of 232° ?
- A. 229°pgc
 - B. 231°pgc
 - C. 233°pgc
 - D. 235°pgc

Correct answer: D

10. The chart indicates the variation was $3^{\circ}45'\text{E}$ in 1988, and the annual change is increasing $6'$. If you use the chart in 1991 how much variation should you apply?
- A. $3^{\circ}27'\text{E}$
 - B. $3^{\circ}27'\text{W}$
 - C. $3^{\circ}45'\text{E}$
 - D. $4^{\circ}03'\text{E}$

Correct answer: D

11. What is the light phase characteristic of a lighted isolated-danger mark?

- A. Group flashing
- B. Interrupted quick flashing
- C. Very quick flashing
- D. Long flashing

Correct answer: A

12. Which is TRUE concerning Light Lists for coastal waters?

- A. They are accurate thru NM number on title page and must be corrected
- B. They are published every year and require no corrections
- C. They are published every five years and require no correction
- D. They are published every second year and must be corrected

Correct answer: A

13. The height of a light is measured from which reference plane?

- A. Geographical sea level
- B. Mean high water
- C. Average water level
- D. Mean low water

Correct answer: B

14. 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. 18 feet
- D. 12 feet

Correct answer: C

15. When operated over a muddy bottom, a fathometer may indicate which of the following?

- A. A shallow depth reading
- B. No depth reading
- C. A zero-depth reading
- D. Two depth readings

Correct answer: D

16. Quadrantal error in a gyrocompass has its GREATEST effect on which of the following?

- A. When the vessel is on intercardinal headings
- B. When the vessel is on north or south headings
- C. When the vessel is in high latitudes
- D. When the vessel is near the equator

Correct answer: A

17. You are steaming west in the North 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 North
- B. To the East
- C. To the West
- D. To the South

Correct answer: A

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

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

Correct answer: D

19. Under the Uniform State Waterway Marking System how is a mooring buoy painted?

- A. White with a green top
- B. Any color that does not conflict with the lateral system
- C. Yellow
- D. White with a blue band

Correct answer: D

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

- A. Coast Pilot
- B. Sailing Directions
- C. Notice to Mariners
- D. Pilot Rules for Inland Waters

Correct answer: A

21. The Light List indicates that a light has a nominal range of 18 miles and is 38 feet high. If the visibility is 6 miles and your height of eye is 15 feet, at which distance will you sight the light?

- A. 6.0nm
- B. 14.8nm
- C. 18.0nm
- D. 11.7nm

Correct answer: D

22. What does a steep barometric gradient indicate?

- A. Calms
- B. Strong winds
- C. Precipitation
- D. Light winds

Correct answer: B

23. On 28 November your vessel's 0652 DR position is LAT 37°30'N, LONG 124°12'W, when an amplitude of the Sun is observed. The Sun's center is on the visible horizon and bears 103° per standard magnetic compass. Variation in the area is 16.3°E. The chronometer reads 02h 54m 18s and is 02m 06s fast. What is the deviation of the compass?

- A. 2.5°W
- B. 3.0°W
- C. 2.0°E
- D. 3.0°E

Correct answer: A

24. Which is most commonly associated with fog?

- A. An anticyclone
- B. A low-pressure area
- C. A cold front in the spring
- D. A warm front at night

Correct answer: D

25. What is indicated when slanted letters are used to spell the name of a charted object?

- A. The object is always visible
- B. The object is underwater or floating
- C. The object is a hazard to vessels drawing 20 feet draft
- D. The position is approximate or doubtful

Correct answer: B

26. You take a bearing of 086° of a lighthouse. What bearing of another object would give the best fix?

- A. 000°
- B. 066°
- C. 112°
- D. 271°

Correct answer: A

27. While proceeding downriver (descending) you sight a red diamond-shaped panel with small, red reflector squares in each corner on the left bank. Under the U.S. Aids to Navigation System on the Western Rivers what does this daymark indicate?

- A. It is a passing daymark
- B. It is a special purpose signal
- C. It indicates a cable crossing
- D. It is a crossing daymark

Correct answer: D

28. In mid-ocean, the characteristics of a wave are determined by three factors. What is NOT one of these factors?

- A. Wind velocity
- B. Length of time a wind has been blowing
- C. Effect of the moon's gravity
- D. Fetch

Correct answer: C

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

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

Correct answer: A

30. Which term is given to a tornado that moves out over the water from land?

- A. A tornado
- B. A hurricane
- C. A cyclone
- D. A waterspout

Correct answer: D

31. When within 300 miles of a named tropical storm or hurricane, it is standard practice to send weather reports at which time interval?

- A. Every 3 hours
- B. Every hour
- C. Every 8 hours
- D. Every 6 hours

Correct answer: A

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

- A. In any Coast Pilot volume
- B. Only at the National Weather Service office
- C. In the publication entitled Radio Aids to Navigation
- D. In the back of Coast Pilot #5

Correct answer: D

33. 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? See illustration D058NG.

- A. 0.2kts at 280°T
- B. 0.2kts at 104°T
- C. 0.6kts at 335°T
- D. 0.6kts at 172°T

Correct answer: C

34. When using GPS, how many theoretical position lines are required for a three-dimensional fix?

- A. 1
- B. 2
- C. 3
- D. 4

Correct answer: D

35. A psychrometer has two thermometers that provide dry bulb and wet bulb temperatures. What can be determined by comparing these two temperature readings with a set of tables?

- A. atmospheric pressure
- B. wind speed
- C. relative humidity and dew point
- D. wind chill factor

Correct answer: C

36. Which cardinal quadrant is represented by the topmark in illustration D024NG below?

- A. Eastern
- B. Southern
- C. Western
- D. Northern

Correct answer: C

37. The Brazil Current flows in which general direction?

- A. Northwesterly
- B. Southwesterly
- C. Southeasterly
- D. Northerly

Correct answer: B

38. You desire to make good a true course of 279° . The variation is 8°W , magnetic compass deviation is 3°E , and gyrocompass error is 1°E . A north-northwesterly wind produces 3° leeway. What is the course to steer per standard magnetic compass (psc) to make the true course good?

- A. 284°psc
- B. 281°psc
- C. 287°psc
- D. 290°psc

Correct answer: C

39. 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 temperature changes
- C. To adjust the barometer
- D. To provide a correction for height above sea level

Correct answer: A

40. Which is TRUE concerning privately maintained aids to navigation included in the Light List?

- A. They must conform to the standards of the U.S. Aids to Navigation System
- B. They are painted white and must use a white light if lighted
- C. Not permitted in or along first-class waterways and may be authorized for second- and third-class waterways
- D. They must be conspicuously marked by a signboard with the words "PRIVATE AID"

Correct answer: A

41. On 14 January your 0746 zone time DR position is LAT $26^\circ37.0'\text{N}$, LONG $153^\circ19.0'\text{W}$.

At that time, you observe the Sun bearing 123°psc .

The chronometer reads 05h 49m 16s, and the chronometer error is 02m 29s fast.

The variation is 3°W .

What is the deviation of the standard magnetic compass?

- A. 1.4°W
- B. 1.6°E
- C. 3.4°E
- D. 4.4°W

Correct answer: A

42. In both regions of the IALA buoyage system, which topmark shown in illustration D022NG below is used on a special mark?

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

Correct answer: D

43. Which term defines the paths of intended travel between three or more points?

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

Correct answer: A

44. The vertical distance from the tidal datum to the level of the water is the _____.

- A. range of tide
- B. height of tide
- C. actual water depth
- D. charted depth

Correct answer: B

45. What natural feature is responsible for the rather even climate found on the Florida peninsula throughout the year?

- A. The Gulf Stream
- B. The Bermuda high
- C. The cool waters of the Sargasso Sea
- D. Strong masses of continental air

Correct answer: A

46. At the magnetic equator there is no induced magnetism in the vertical soft iron because _____.

- A. there is no vertical component of the Earth's magnetic field
- B. the quadrantal error is 0°
- C. the lines of force cross the equator on a 0°-180° alignment
- D. the intercardinal headings have less than 1° error

Correct answer: A

47. Which buoy may be odd numbered?

- A. Mid-channel buoy
- B. Lighted green buoy
- C. Unlighted nun buoy
- D. All of the above

Correct answer: B

48. Your vessel is steering 283°T at 10 knots. At 0538 a light bears 350°T, and at 0552 the same light bears 002°T. What will be your distance off abeam?

- A. 10.3 miles
- B. 10.7 miles
- C. 9.6 miles
- D. 11.3 miles

Correct answer: A

49. What is the gyrocompass error resulting from your vessel's movement in OTHER than an east-west direction?

- A. Damping error
- B. Ballistic deflection
- C. Speed error
- D. Quadrantal error

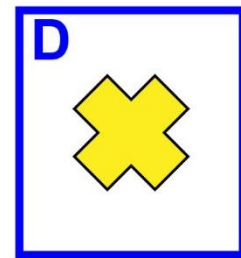
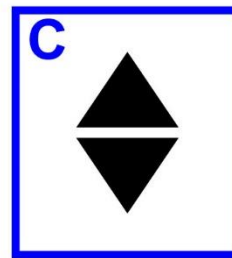
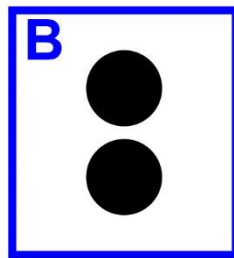
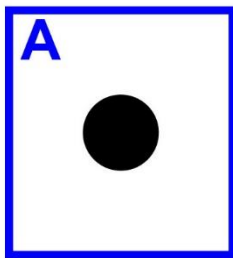
Correct answer: C

50. The velocity of the apparent wind can be more than the true wind, and come from the same direction, if certain conditions are present. One condition is that the _____.

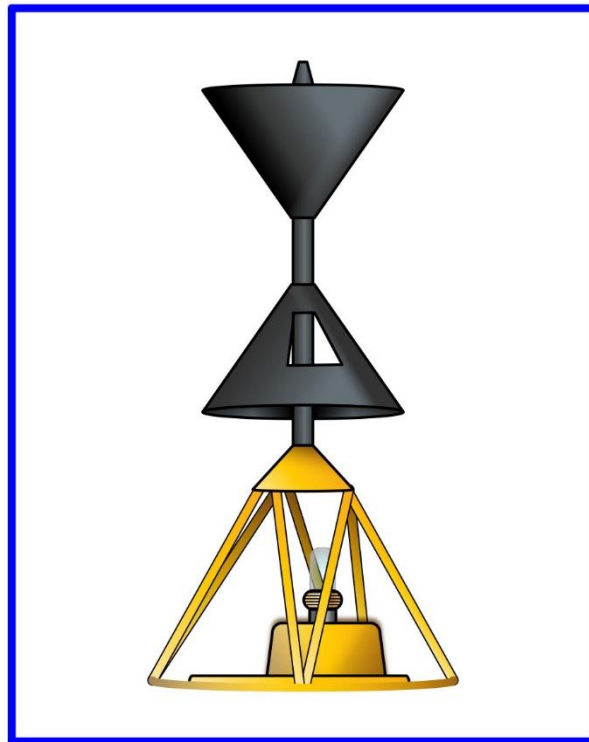
- A. true wind velocity must be faster than the ship's speed
- B. true wind must be from dead astern
- C. true wind must be from dead ahead
- D. ship's speed must be less than the true wind velocity

Correct answer: C

D022NG

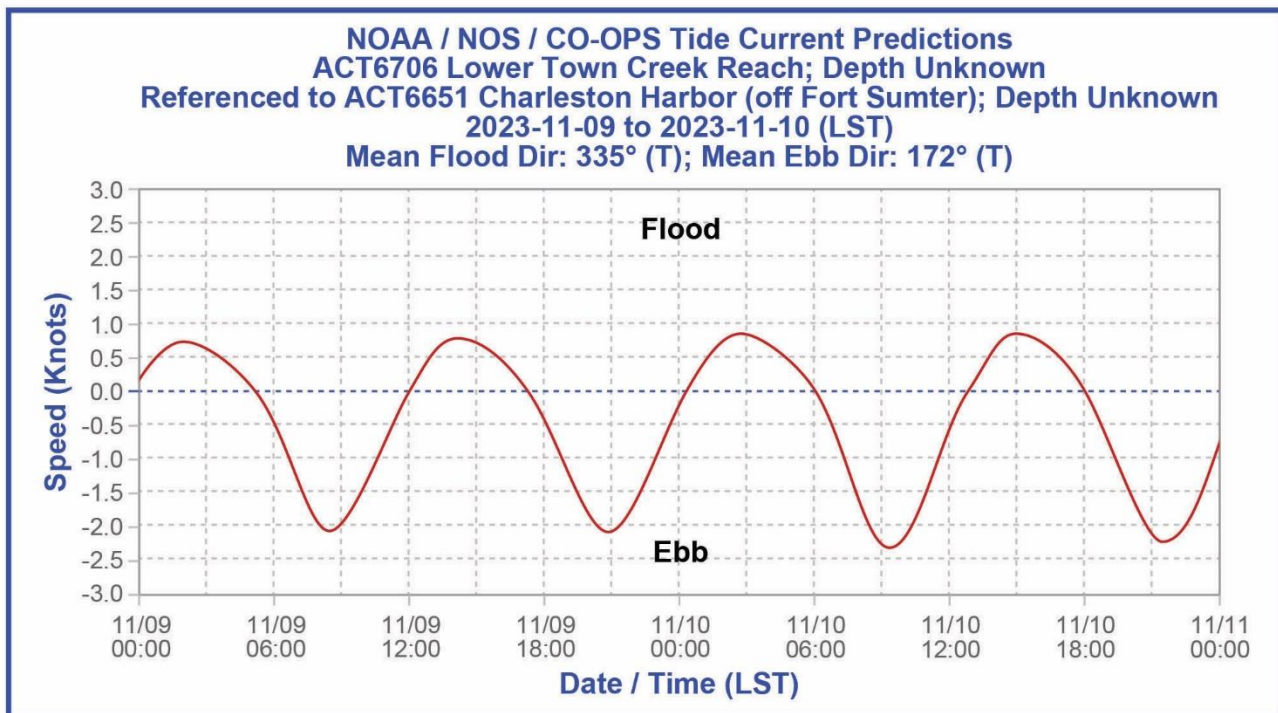
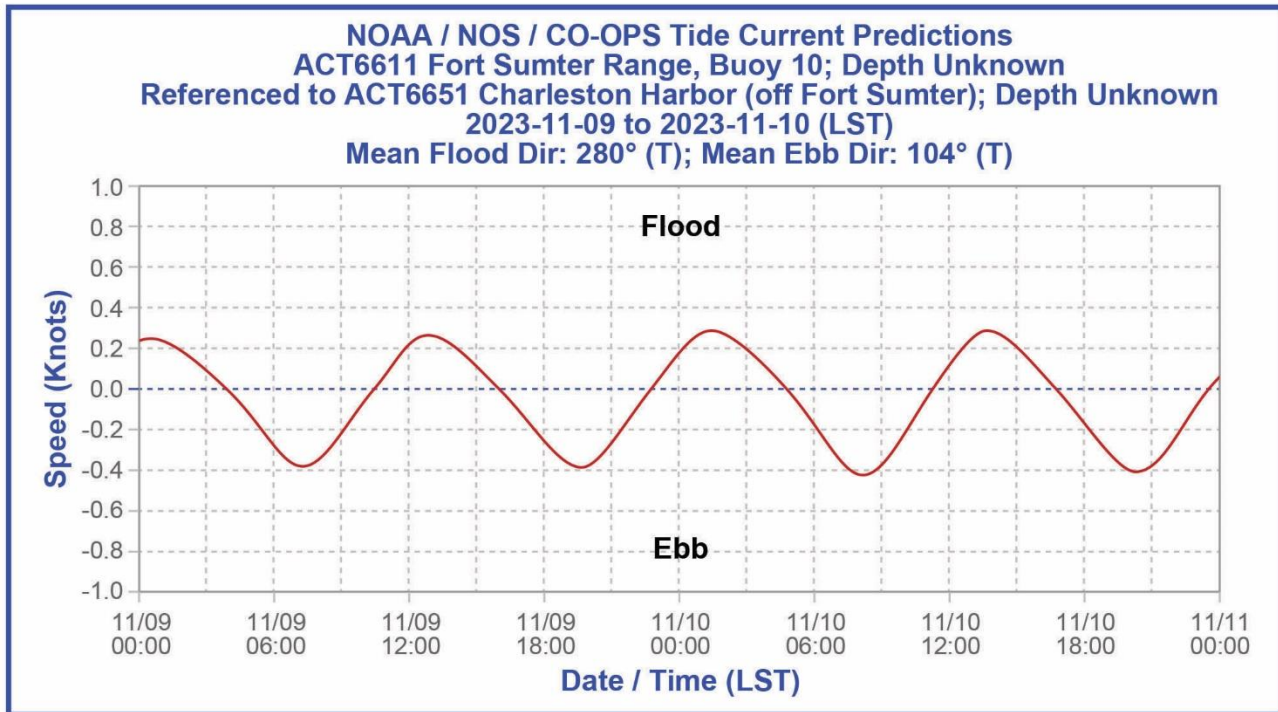


D024NG



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D058NG



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 Current Predictions,

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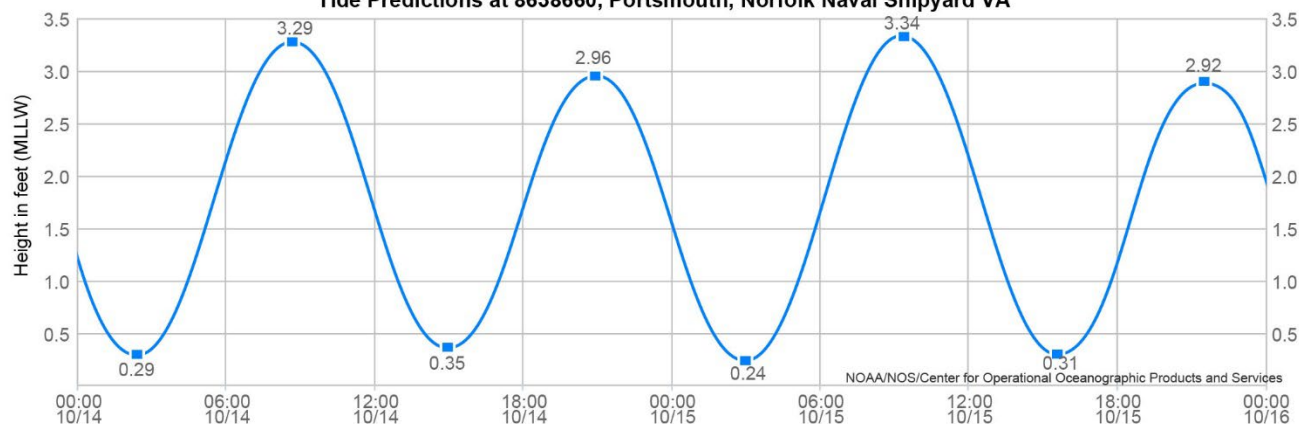
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D063NG

NOAA/NOS/CO-OPS

Tide Predictions at 8638660, Portsmouth, Norfolk Naval Shipyard VA



High/Low Tide Prediction Data Listing

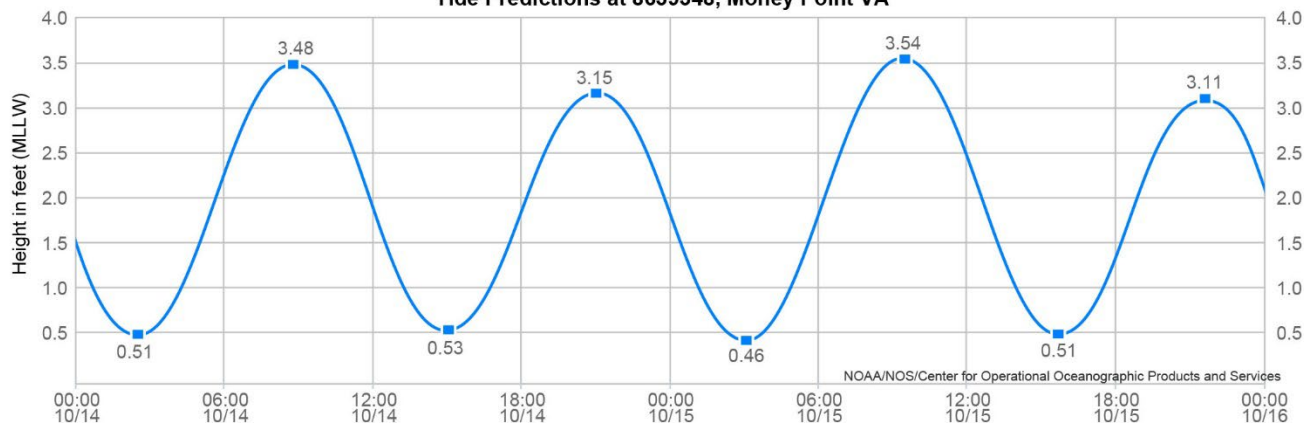
Station Name: Portsmouth, Norfolk Naval Shipyard, VA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/14 00:00
End Date & Time: 2023/10/15 23:59

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,

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

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