

U.S.C.G. Merchant Marine Exam

First Class Pilot

Q371 Navigation General

(Sample Examination)

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

1. You desire to make good a true course of 174° . The variation is 17°W , magnetic compass deviation is 4°W , and gyrocompass error is 4°E . A west-southwest wind produces a 4° leeway. What is the course to steer per standard magnetic compass to make the true course good?
- A. 195°psc
 - B. 203°psc
 - C. 197°psc
 - D. 199°psc

Correct answer: D

2. Which is TRUE of a shipborne Class A Automatic Identification System (AIS)?
- A. It has a power output of 12.5 watts
 - B. It has a power output of 5 watts
 - C. It has a power output of 2 watts
 - D. It has a power output of 1 watt

Correct answer: A

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

Correct answer: B

4. An ECDIS is required to display which information?
- A. Radar targets
 - B. Soundings
 - C. Waypoints
 - D. Meteorological data

Correct answer: B

5. Which is one of the advantages of a vessel utilizing a NAVTEX unit to receive MSI?
- A. They cover a broad spectrum of the radio band allowing reception on almost any type of receiver
 - B. Only an ordinary FM radio is necessary to receive these warnings
 - C. Information on a given topic is only broadcast at specified times
 - D. Ease of operation, knowledge of Morse code is not required

Correct answer: D

6. When using an echo sounder in deep water, it is NOT unusual to encounter which situation?
- A. Receiving a first return near the surface during the day, and a strong return at about 200 fathoms (366 meters) at night
 - B. Receiving false echoes at a constant depth day and night
 - C. Receiving a strong return at about 200 fathoms (366 meters) during the day, and one nearer the surface at night
 - D. To have to recalibrate every couple of days due to inaccurate readings

Correct answer: C

7. What is the function of a red triangular daymark?
- A. To mark the centerline of a navigable channel
 - B. To mark a prominent object of navigational interest
 - C. To mark an area of a channel where crossing is permitted
 - D. To indicate the starboard side of a channel

Correct answer: D

8. You wish to make good a course of $035^{\circ}T$ while turning for an engine speed of 12 knots. The set is $340^{\circ}T$, and the drift is 2 knots. What course should you steer?
- A. $027^{\circ}T$
 - B. $037^{\circ}T$
 - C. $044^{\circ}T$
 - D. $054^{\circ}T$

Correct answer: C

9. Which refers to the period at high or low tide during which there is no change in the height of the water?
- A. Plane of the tide
 - B. Range of the tide
 - C. Stand of the tide
 - D. Reversing of the tide

Correct answer: C

10. What are the colors of a mid-channel daymark?
- A. Green and red
 - B. Black and red
 - C. Green and white
 - D. Red and white

Correct answer: D

- 11.** You are standing the wheel watch on entering port and the Master gives you a rudder command which conflicts with a rudder command from the Pilot. What should you do?
- A. Bring the rudder to a position midway between the two conflicting positions.
 - B. Obey the Master.
 - C. Ask the Pilot if he relinquishes control.
 - D. Obey the Pilot.

Correct answer: B

- 12.** When utilizing a Pacific Coast chart, which is the reference plane of soundings?
- A. Mean lowest water
 - B. Lowest normal low water
 - C. Mean low water springs
 - D. Mean lower low water

Correct answer: D

- 13.** On 15 October 2023, you will be docking on the Southern Branch Elizabeth River, VA at the second 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

D063NG.jpg

- A. 2136
- B. 2132
- C. 2238
- D. 2140

Correct answer: A

- 14.** Charts should be corrected by using information published in which text?
- A. Light List
 - B. American Practical Navigator
 - C. Coast Pilot
 - D. Notice to Mariners

Correct answer: D

- 15.** When must a proper look-out be kept?
- A. Only when entering and leaving port
 - B. Only in fog
 - C. Only between the hours of sunset and sunrise
 - D. At all times

Correct answer: D

16. How can the accuracy of an azimuth circle be checked?

- A. Ensuring that the alignment marks on the inner face of the circle are in line with those on the repeater on relative bearings of 000° and 090°
- B. Sighting a terrestrial range in line and comparing the observed bearing against the charted bearing
- C. Comparing observed azimuths at different altitudes with computed values at the times of observation to see if the difference is constant
- D. Aligning the relative bearing markings so that 000° is on the lubber's line and the line of sight passes over the center of the compass

Correct answer: C

17. When a dual-purpose marking is used, how should the mariner following the Intracoastal Waterway be guided?

- A. By the color of the aid
- B. By the shape of the aid
- C. By the color of the top band
- D. By the shape of the yellow mark

Correct answer: D

18. Which class of tide prevails in the greatest number of important harbors on the Atlantic Coast?

- A. diurnal
- B. Mixed
- C. Interval
- D. Semidiurnal

Correct answer: D

19. When does a Doppler speed log indicate speed over ground?

- A. The unit can only sense speed over ground when there is no current
- B. At all times
- C. When the unit is in the volume reverberation mode
- D. When sensing the bottom in depths of less than 600 feet

Correct answer: D

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

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

Correct answer: C

21. Buoys are marked with reflective material to assist in their detection by searchlight. Which statement is TRUE?

- A. A preferred-channel buoy displays either red or green reflective material to agree with the top band of color.
- B. A safe-water buoy will display red and white vertical stripes of reflective material.
- C. A special-purpose mark will display either red or green reflective material to agree with its shape.
- D. All reflective material is white because it is the most visible at night.

Correct answer: A

22. You are sailing south on the Intracoastal Waterway (ICW) when you sight a red nun buoy with a yellow square painted on it. Which of the following is TRUE?

- A. You should leave the buoy on your port hand.
- B. The yellow square is in error and it should be a yellow triangle.
- C. The yellow is retro-reflective material used to assist in sighting the buoy at night.
- D. This buoy marks the end of the ICW in that geographic area.

Correct answer: A

23. Which of the following describes the principal purpose of magnetic compass adjustment?

- A. To reduce the magnetic dip as much as possible
- B. To allow the compass bowl to swing freely on its gimbals
- C. To reduce the variation as much as possible
- D. To reduce the deviation as much as possible

Correct answer: D

24. What daymark shape is used in the lateral system?

- A. Diamond
- B. Pentagon
- C. Triangle
- D. Semicircle

Correct answer: C

25. The nominal range of a light may be accurately defined as the maximum distance at which a light may be seen _____.

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

Correct answer: A

26. On 5 October 2023, you will be docking at the Redwood Marine Terminal in Eureka, CA at the first high tide. The berth is located between NOAA reference tidal station #9418767 and subordinate station #9418801. What time (LST) will you be docking? Illustration D062NG

D062NG.jpg

- A. 0508
- B. 0608
- C. 0452
- D. 0518

Correct answer: A

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

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

Correct answer: A

28. How may a spherical buoy be identified?

- A. It may be lettered
- B. It may be numbered
- C. It may be red
- D. It may be green

Correct answer: A

29. Automatic identification systems (AIS) are required to do which of the following?

- A. Provide safety-related information automatically to shore stations, other vessels and aircraft
- B. Receive safety-related information automatically from similarly equipped vessels
- C. Exchange safety-related information with shore-based facilities
- D. All of the above

Correct answer: D

30. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships fog horn 6 seconds after the signal was sounded. What is the distance to the shore?

- A. 900 yards
- B. 1100 yards
- C. 1000 yards
- D. 1200 yards

Correct answer: B

31. Which radar control shortens all echoes on the display and reduces clutter caused by rain or snow?

- A. The sensitivity time control (sea clutter control)
- B. The brilliance control
- C. The fast time constant (differentiator)
- D. The receiver gain control

Correct answer: C

32. You are steaming southward along the west coast of the United States when you encounter a buoy showing a flashing red light. Which is TRUE concerning the buoy?

- A. The buoy can remain on either side close aboard
- B. The buoy can be on either side well clear
- C. The buoy should be left on the vessel's port side
- D. The buoy should be left on the vessel's starboard side

Correct answer: C

33. What is the basic principle of the magnetic compass?

- A. Magnetic meridians connect points of equal magnetic variation.
- B. The Earth's magnetic lines of force are parallel to the surface of the Earth.
- C. Magnetic materials of the same polarity repel each other and those of opposite polarity attract.
- D. The compass needle(s) will, when properly compensated, lie parallel to the isogonic lines of the Earth.

Correct answer: C

34. Which term defines the difference between the heights of low and high tides?

- A. Tidal distance
- B. Tidal period
- C. Tidal range
- D. The depth of tide

Correct answer: C

35. In illustration D044NG below, what type of buoy is indicated by the letter A?

- A. Can
- B. Pillar
- C. Spar
- D. Nun

Correct answer: A

36. On 9 November 2023 at 0330, 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"? Illustration D058NG

- A. 0.1kts at 280°T
- B. 0.1kts at 104°T
- C. 0.3kts at 172°T
- D. 0.3kts at 335°T

Correct answer: A

37. What must change for the compass deviation to change?

- A. The longitude of the vessel
- B. The geographical position of the vessel
- C. The heading of the vessel
- D. The speed of the vessel

Correct answer: C

38. You have replaced the chart paper in the course recorder. Which statement is TRUE?

- A. Set the zone pen to the far right of the paper
- B. Test the electrical gain to the thermograph pens
- C. Line the course pen up on 0-degree mark
- D. Adjust the chart paper to indicate GMT

Correct answer: D

39. You are heading out to sea in a buoyed channel and see a quick flashing green light on a buoy ahead of you. In U.S. waters, how should you leave the buoy?

- A. About 50 yards off on either side
- B. To starboard
- C. To port
- D. Well clear on either side

Correct answer: B

40. Under the IALA Buoyage Systems, which is TRUE of the topmark of a red and white vertically-striped buoy?

- A. It shall be two black spheres
- B. It shall be a single red sphere
- C. It shall be X-shaped
- D. It shall be a single red cone

Correct answer: B

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

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

Correct answer: C

42. Vessels should maintain a sharp lookout, especially during December through March, when navigating the Northern Right Whale's only known calving grounds. Where are the calving grounds located?

- A. Maine and Massachusetts
- B. California and Mexico
- C. Georgia and NE Florida
- D. Nova Scotia

Correct answer: C

43. Which agency maintains federal aids to navigation?

- A. Coast Guard
- B. Maritime Administration
- C. Corps of Engineers
- D. National Ocean Service

Correct answer: A

44. What publication contains information about the port facilities in Cadiz, Spain?

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

Correct answer: B

45. Which level of accuracy can be obtained utilizing the U.S. Coast Guard's Maritime Differential GPS in an established coverage area?

- A. 10 meters
- B. 20 meters
- C. 50 meters
- D. 92 meters

Correct answer: A

46. Your vessel is steering 143°T at 16 knots. At 2147 a light bears 106°T and at 2206 the same light bears 078°T. What will be your distance off when abeam?

- A. 5.1 miles
- B. 5.4 miles
- C. 5.9 miles
- D. 6.5 miles

Correct answer: C

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

- A. ATP-1, Volume II "Allied Tactical Signals"
- B. NWP-14, "Amphibious Operations"
- C. ATP-2, Volume II "Allied Control of Shipping Manual - Guide to Masters"
- D. PUB 102, "International Code of Signals"

Correct answer: C

48. Which is a characteristic of a port side daymark?

- A. Octagonal
- B. Numbered
- C. Of any shape
- D. Black and white

Correct answer: B

- 49.** 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

- 50.** While on a course of 152°T , a light bears 9° on the port bow at a distance of 11.6 miles. What course should you steer to pass 3 miles abeam of the light leaving it to port?
- A. 153°
 - B. 158°
 - C. 163°
 - D. 167°

Correct answer: B

- 51.** 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. The buoy is a major lighted buoy
 - D. You should stay to the west or south of the buoy

Correct answer: B

- 52.** Vessels required to have an Automatic Radar Plotting Aid must have a device to indicate which of the following?
- A. The vessel's current position
 - B. Speed of the vessel over the ground or through the water
 - C. An ECDIS generated trackline
 - D. AIS information of vessels in the vicinity

Correct answer: B

- 53.** When entering from seaward, what does a buoy displaying a composite group (2+1) flashing red light indicate?
- A. A junction with the preferred channel to the left
 - B. A sharp turn in the preferred channel to the right
 - C. The starboard side of the secondary channel
 - D. A wreck to be left on the vessel's port side

Correct answer: A

- 54.** 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 under which condition?
- A. The vessel is ascending the river
 - B. The vessel is proceeding from seaward
 - C. The vessel is descending the river
 - D. The vessel is crossing the river

Correct answer: C

- 55.** Under the U.S. Aids to Navigation System, what does a lighted buoy with a spherical topmark indicate?
- A. The port side of the channel
 - B. A hazard to navigation
 - C. Safe water
 - D. The position of underwater cables

Correct answer: C

- 56.** The speed of sound through ocean water is nearly always _____.
- A. faster than the speed of calibration for the fathometer
 - B. the same speed as the speed of calibration for the fathometer
 - C. faster than the speed of calibration for the fathometer, unless the water is very warm
 - D. slower than the speed of calibration for the fathometer

Correct answer: A

- 57.** 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. 133°
 - B. 119°
 - C. 122°
 - D. 136°

Correct answer: D

- 58.** In the illustration, on an ECDIS S-57 compliant ENC, which symbol represents a Zone of Confidence (ZOC) A2? Illustration D054NG

D054NG.jpg

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

Correct answer: B

59. What is a characteristic of cardinal marks?

- A. Number-letter combinations for identification
- B. Square or triangular topmarks
- C. Vertical stripes
- D. Light rhythms indicating directional orientation

Correct answer: D

60. You are underway on course 241°T at a speed of 18.2 knots. You sight a daymark bearing 241°T at a radar range of 3.9 miles at 1006. If you change course at 1009, what is the course to steer to leave the daymark abeam to starboard at 1.0 mile?

- A. 257°T
- B. 218°T
- C. 260°T
- D. 222°T

Correct answer: D

61. While on a course of 349°T , a light bears 13° on your starboard bow at a distance of 10.8 miles. What course should you steer to pass 2.5 miles abeam of the light, leaving it to starboard?

- A. 002°
- B. 323°
- C. 349°
- D. 336°

Correct answer: C

62. On an Army Corps of Engineers navigation map, how is each mile A.H.P. on the Lower Mississippi River marked?

- A. A dashed red line
- B. A black dot
- C. A navigation light
- D. A number showing mileage only

Correct answer: B

63. The true course between two points is 312° . Your gyrocompass has an error of 3°W . You make an allowance of 4° leeway for a west by south wind. What gyro course should be steered to make the true course good?

- A. 315°pgc
- B. 305°pgc
- C. 318°pgc
- D. 311°pgc

Correct answer: D

64. How should a look-out, in the merchant service, report sightings?

- A. Magnetic bearings
- B. True bearings
- C. Gyro bearings
- D. Relative bearings

Correct answer: D

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

Correct answer: D

66. You are underway on course 215°T at 12 knots. The current is 000°T at 2.3 knots. What is the course made good?

- A. 209°T
- B. 217°T
- C. 222°T
- D. 232°T

Correct answer: C

67. Which defines a light's luminous range?

- A. The maximum distance at which a light may be seen considering the height of the light and the height of the observer
- B. The maximum distance at which a light may be seen under existing visibility conditions
- C. The maximum distance at which a light may be seen in clear weather
- D. The average distance of visibility of the light

Correct answer: B

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

69. The four standard light colors used for lighted aids to navigation are red, green, white, and _____.

- A. orange
- B. yellow
- C. blue
- D. purple

Correct answer: B

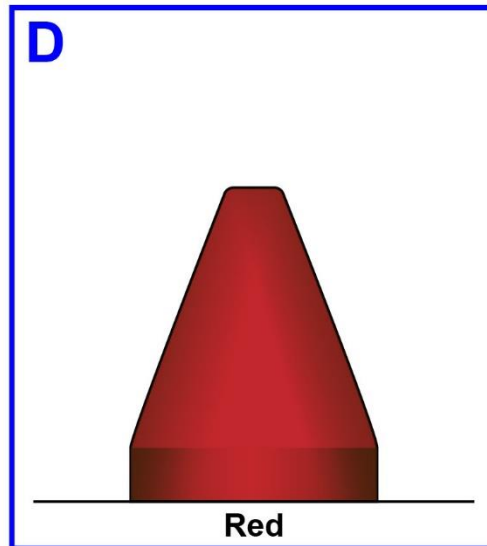
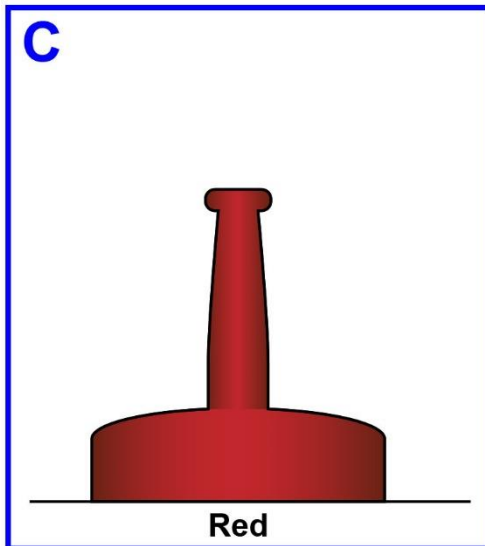
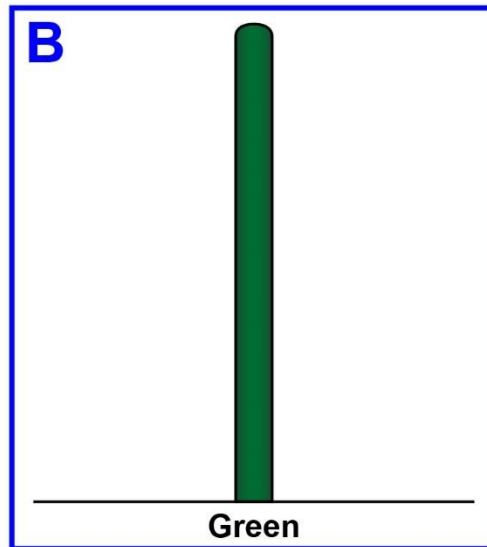
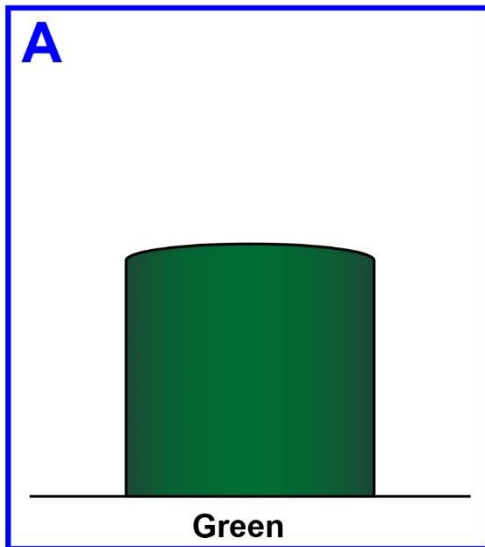
70. On 10 November 2023 at 0630, you are inbound at Charleston Harbor Entrance Buoy "10" (ACT6611). Your vessel will transit 15nm and make good 12.5 knots to a berth where the nearest tidal current station is ACT6706. What will be the direction and velocity of the current as you approach the dock? Illustration D058NG

- A. 1.3kts at 335°T
- B. 1.3kts at 172°T
- C. 0.4kts at 104°T
- D. 1.8kts at 172°T

Correct answer: B

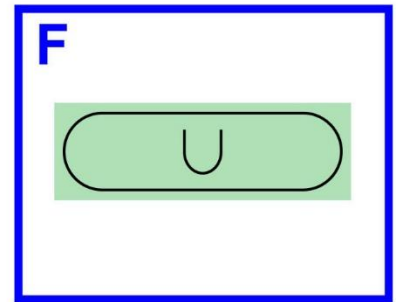
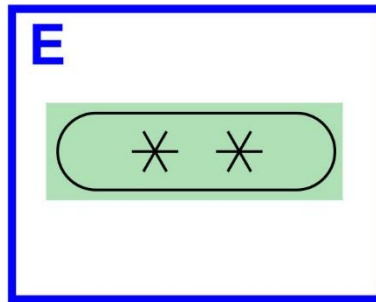
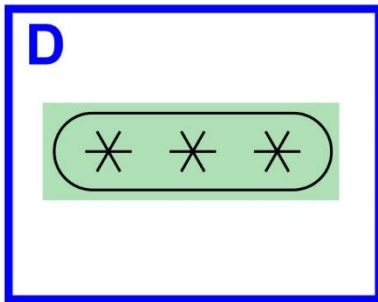
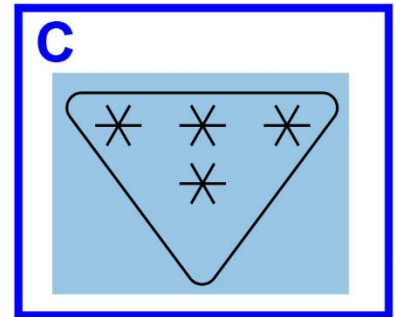
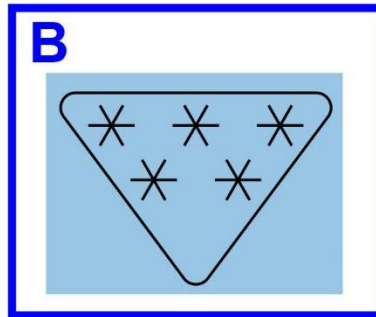
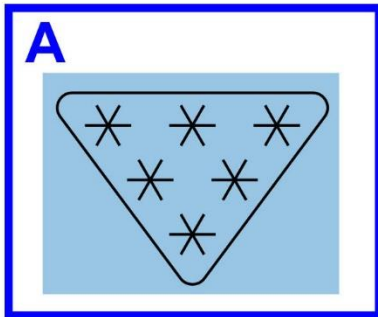


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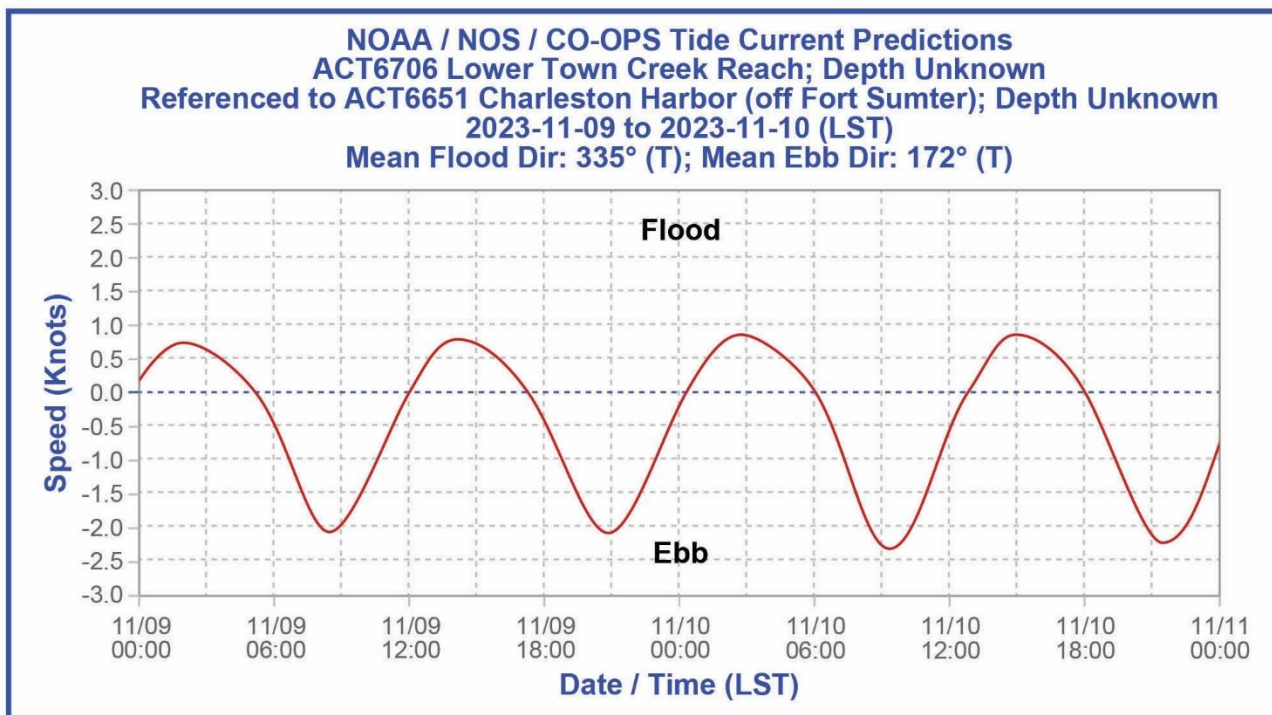
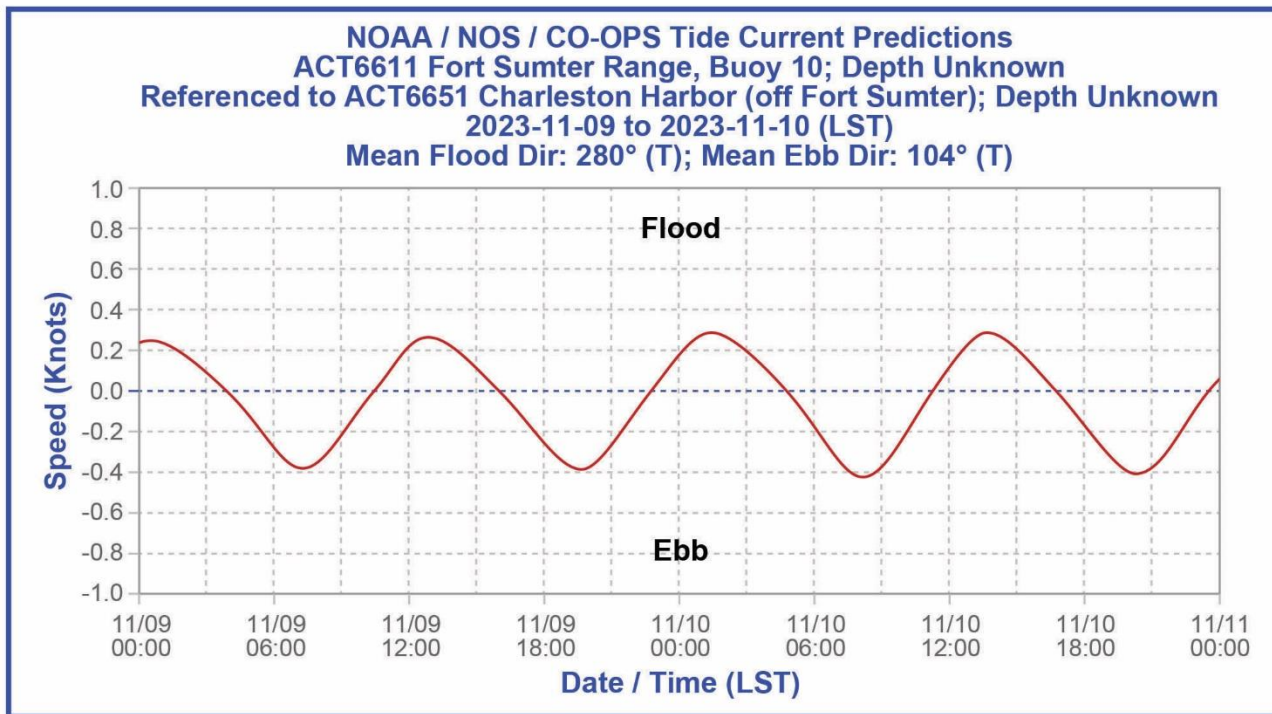


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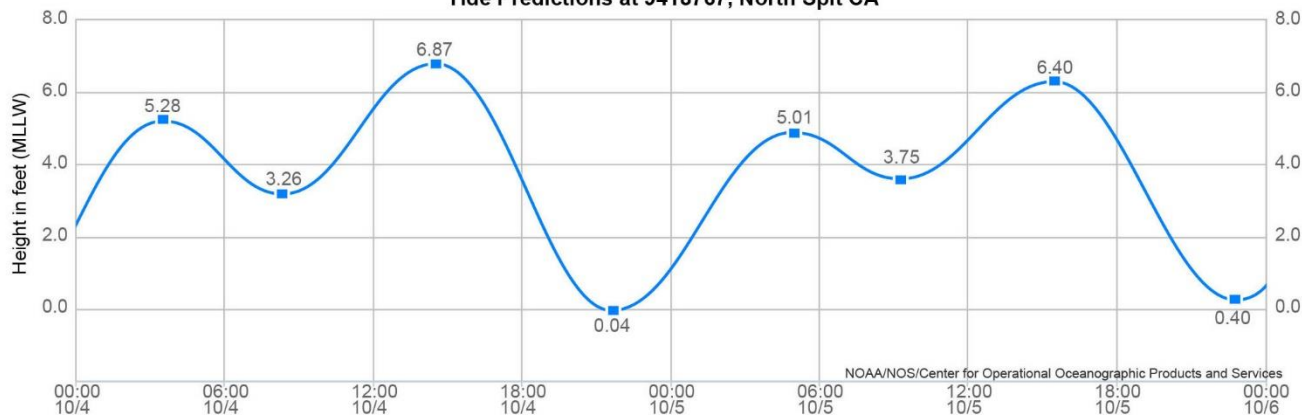


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 (NOAA) Current Predictions,
<https://www.tidesandcurrents.noaa.gov>
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D062NG

NOAA/NOS/CO-OPS Tide Predictions at 9418767, North Spit CA

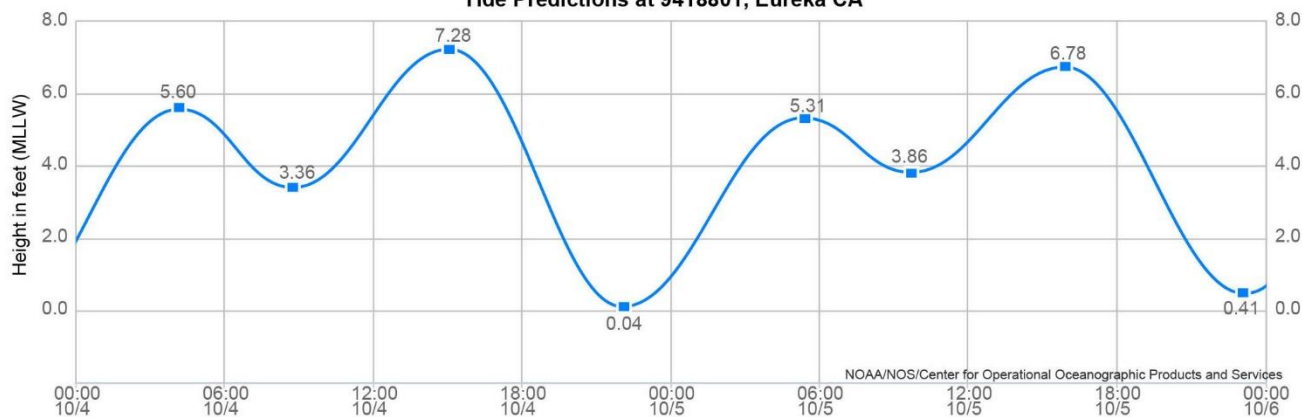


Station Name: North Spit, CA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/4 00:00
End Date & Time: 2023/10/5 23:59

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
2023/10/04	Wed	03:38	5.28 H	08:28	3.26 L	14:33	6.87 H	21:47	0.04 L
2023/10/05	Thu	04:52	5.01 H	09:24	3.75 L	15:25	6.40 H	22:50	0.40 L

NOAA/NOS/CO-OPS Tide Predictions at 9418801, Eureka CA



Station Name: Eureka, CA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/4 00:00
End Date & Time: 2023/10/5 23:59

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

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/04	Wed	04:04	5.60 H	08:41	3.36 L	14:59	7.28 H	22:00	0.04 L
2023/10/05	Thu	05:18	5.31 H	09:37	3.86 L	15:51	6.78 H	23:03	0.41 L

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

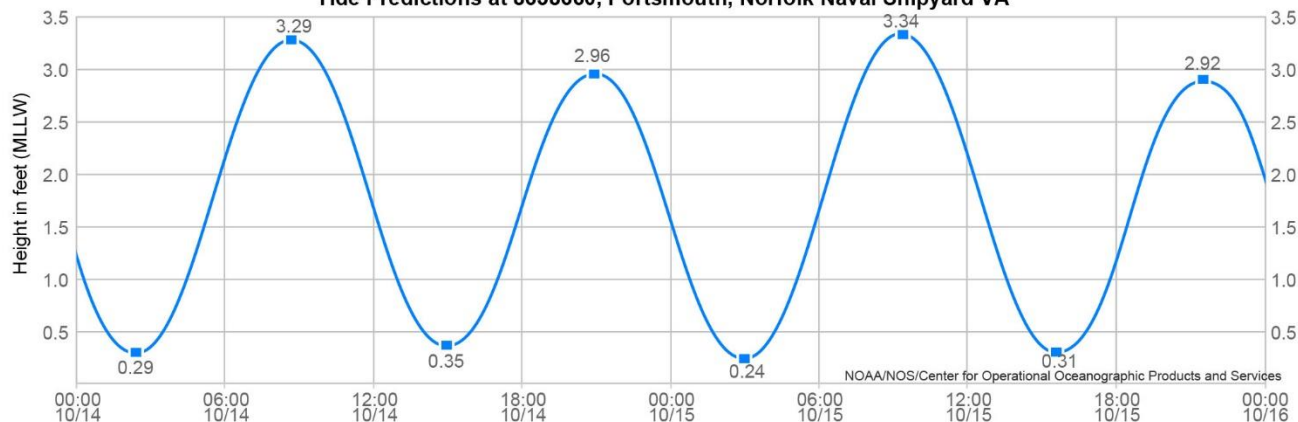
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D063NG

NOAA/NOS/CO-OPS

Tide Predictions at 8638660, Portsmouth, Norfolk Naval Shipyard VA



High/Low Tide Prediction Data Listing

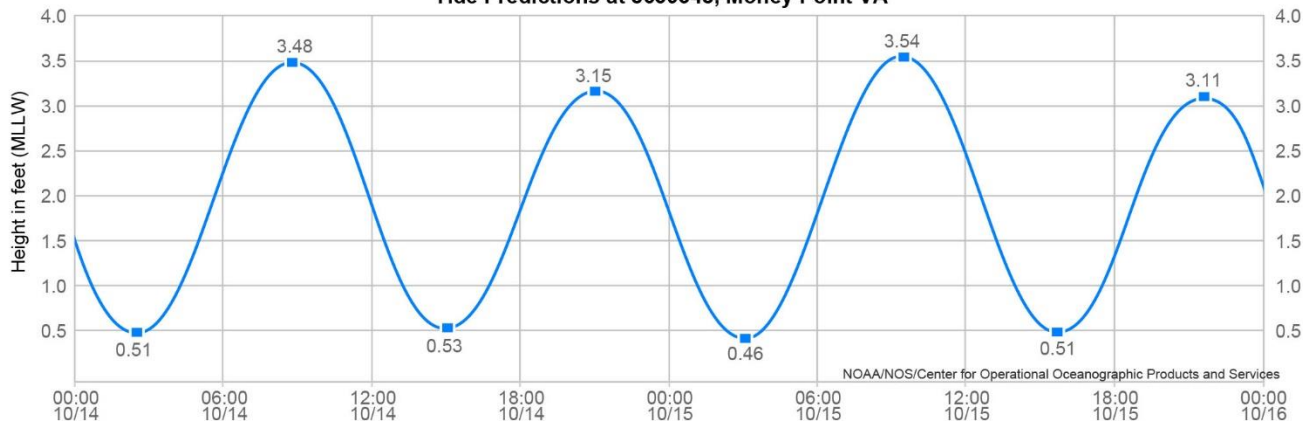
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Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/14 00:00
End Date & Time: 2023/10/15 23:59

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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(NOAA) Tide Predictions,

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

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