

U.S.C.G. Merchant Marine Exam

Master Less than 500-1600 Gross Registered Tons

Q322 Navigation General – Great Lakes and Inland

(Sample Examination)

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

1. Which statement about gyrocompass error is TRUE?
- A. The sign (E or W) of the error will change with different headings of the ship.
 - B. The amount of the error and the sign will generally be the same on all headings.
 - C. Any error will remain constant unless the compass is stopped and restarted.
 - D. Any error shown by a gyro repeater will be the same as the error of the master compass.

Correct answer: B

2. White and orange buoys, if lighted, show which color light?
- A. Alternating yellow and white
 - B. White
 - C. Red
 - D. Orange

Correct answer: B

3. Your vessel is proceeding up a channel, and you see a pair of range lights that are in line ahead. The chart indicates that the direction of this pair of lights is $014^{\circ}T$, and the variation is $11^{\circ}E$. If the heading of your vessel at the time of the sighting is 009° per standard magnetic compass, what is the correct deviation?
- A. $5^{\circ}E$
 - B. $5^{\circ}W$
 - C. $6^{\circ}E$
 - D. $6^{\circ}W$

Correct answer: D

4. Yellow lights may appear on which buoys?
- A. Vertically-striped buoys
 - B. Spherical buoys
 - C. Horizontally-banded buoys
 - D. Special marks

Correct answer: D

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

Correct answer: A

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

Correct answer: D

7. What do the numbers on isobars indicate?
- A. Wind speed
 - B. Rain in inches
 - C. Temperature
 - D. Barometric pressure

Correct answer: D

8. Under the IALA Buoyage System, which topmark shown in illustration D023NG below will be displayed on a safe watermark?
- A. A
 - B. B
 - C. C
 - D. D

Correct answer: A

9. On 9 November 2023 at 1130, 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. 0.5kts at 172°T
 - B. 0.2kts at 280°T
 - C. 0.2kts at 104°T
 - D. 0.5kts at 335°T

Correct answer: D

10. With respect to a reversing current, when does slack water occur?
- A. When there is little or no horizontal motion of the water
 - B. When there is little or no vertical motion of the water
 - C. When winds cause water to back up in a river mouth
 - D. When a weak ebb or flood current exists

Correct answer: A

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

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

Correct answer: B

12. 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 left descending bank
- B. To indicate daymarks with no lateral significant
- C. To mark the right descending bank
- D. To indicate the preferred channel

Correct answer: A

13. The vessel's course is 116° psc, the variation for the locality is 25° W and the deviation is 6° W. What is the true course made good if a northerly wind produces 1° leeway?

- A. 148° T
- B. 086° T
- C. 085° T
- D. 084° T

Correct answer: B

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

Correct answer: A

15. Your vessel is on a course of 358° T at 19 knots.

At 0316 a light bears 024.5° T, and at 0334 the light bears 043° T.

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

- A. 0352, 5.7 miles
- B. 0355, 6.2 miles
- C. 0403, 8.0 miles
- D. 0359, 7.1 miles

Correct answer: A

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

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

Correct answer: A

17. When using GPS without Selective Availability, what can you expect your horizontal accuracy to be of the unit?

- A. 3 meters
- B. 20 meters
- C. 100 meters
- D. 200 meters

Correct answer: B

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

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

Correct answer: C

19. Entering a harbor, you take a bearing on a range and get 338° per gyrocompass (pgc). The true bearing from the chart is 340° T. Variation for the area is 14° E. Your course is 329° per standard magnetic compass (psc) and 338° pgc. What is the deviation on this heading?

- A. 3° E
- B. 3° W
- C. 5° E
- D. 5° W

Correct answer: B

20. Your radar indicates a target; however, there is no visible object at the point indicated. A large mountain, approximately 50 miles away on the same bearing as the target, is breaking the horizon. You should suspect the radar target is caused by _____.

- A. sub-refraction
- B. ionospheric skip waves
- C. ducting
- D. a submerged submarine

Correct answer: C

21. Which agency publishes the Light Lists?

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

Correct answer: B

22. The Light List indicates that a dayboard is a type TR-SY. Which action should you take?

- A. Leave it to port when southbound on the Atlantic portions of the ICW
- B. Look for a dayboard of type TR-TY to form a range
- C. Pass it close aboard on either side
- D. Expect a daymark with no lateral significance

Correct answer: A

23. In the U.S. Aids to Navigation System on the Western Rivers, a preferred channel buoy to be left to port while proceeding downstream will _____.

- A. have the upper band red
- B. show a red light if lighted
- C. have a characteristic of composite group flashing if lighted
- D. All of the above

Correct answer: D

24. On a working copy of a weather map what color is the line that represents a stationary front?

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

Correct answer: B

25. The Coast Guard Captain of the Port has excluded all traffic from a section of a port, while a regatta is taking place. Which describes the buoys marking this exclusion area?

- A. A nun- or can-shaped to conform to the overall direction of navigation
- B. Marked with a spherical topmark
- C. A yellow can
- D. An orange and white can

Correct answer: D

26. Which of the following is the most useful factor for predicting weather?

- A. The previous reading of the barometer
- B. The difference in the barometric readings within the past 24 hours
- C. The rate and direction of change of barometric readings
- D. The present reading of the barometer

Correct answer: C

27. The velocity of a rotary tidal current will increase when the Moon is at which phase?

- A. Full
- B. New
- C. At perigee
- D. All of the above

Correct answer: D

28. What is published by the U.S. Coast Guard?

- A. Light List
- B. Nautical Charts
- C. U.S. Coast Pilot
- D. Tide Tables

Correct answer: A

29. The following types of vessels are awaiting lockage on the upper Mississippi. Which type of vessel is normally passed through the lock first?

- A. Commercial passenger vessels
- B. Commercial fishing vessels
- C. Pleasure craft
- D. Commercial towboats

Correct answer: A

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

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

Correct answer: C

31. You are running parallel to the coast and plotting running fixes using bearings of the same object. You are making more speed than assumed for the running fix. In relation to the position indicated by the fix you will be _____.

- A. farther from the coast
- B. closer to the coast
- C. on the track line ahead of the fix
- D. on the track line behind the fix

Correct answer: A

32. Which is TRUE when a high-pressure system is centered north of your vessel in the Northern Hemisphere?

- A. The winds should be from the southwest at your position
- B. The winds should be brisk
- C. The wind direction is generally easterly
- D. You should experience hot, moist, clear weather

Correct answer: C

33. You are planning to enter an unfamiliar U.S. port. Which publication provides information about channel depths, dangers, obstructions, anchorages, and marine facilities available in that port?

- A. American Practical Navigator
- B. Sailing Directions
- C. Notice to Mariners
- D. Coast Pilot

Correct answer: D

34. What is characteristic of an isophase light?

- A. 6 sec. flash, 3 sec. eclipse
- B. 1 sec. flash, 1 sec. eclipse
- C. 2 sec. flash, 5 sec. eclipse
- D. 4 sec. flash, 2 sec. eclipse, 3 sec. flash, 2 sec. eclipse

Correct answer: B

35. What is NOT a characteristic of cardinal marks?

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

Correct answer: A

36. You are steaming on a course of $084^{\circ}T$ at a speed of 13 knots. At 1919 a lighthouse bears $106.5^{\circ}T$. At 1957 the same lighthouse bears $129^{\circ}T$. What will be your distance off the lighthouse when abeam?

- A. 8.2 miles
- B. 7.1 miles
- C. 5.7 miles
- D. 4.3 miles

Correct answer: C

37. What feature(s) of a daymark is (are) used to identify the beacon upon which it is mounted?

- A. Signal characteristics
- B. Method of construction
- C. Color and shape
- D. Size

Correct answer: C

38. What is the difference between magnetic heading and compass heading called?

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

Correct answer: D

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

- A. 1551
- B. 1525
- C. 1544
- D. 1651

Correct answer: C

40. Which statement about the Flinders bar of the magnetic compass is CORRECT?

- A. It compensates for error caused by the heeling of a vessel in rough seas
- B. It compensates for quadrantal deviation in horizontal hard iron
- C. It is only needed in equatorial waters if the vessel is on a cardinal heading
- D. It compensates for the error caused by the vertical component of the Earth's magnetic field

Correct answer: D

41. You are entering port and have been instructed to anchor, as your berth is not yet available. You are on a SW'ly heading, preparing to drop anchor, when you observe the range lights as shown in illustration D047NG below, on your starboard beam. What action should you take?

- A. NOT drop the anchor until the lights are in line
- B. Drop the anchor immediately as a change in the position of the range lights will be an indication of dragging anchor
- C. Drop the anchor immediately as the range lights mark an area free of obstructions
- D. Ensure your ship will NOT block the channel or obstruct the range while at anchor

Correct answer: D

42. Sometimes foreign charts are reproduced by NGA. On such a chart a wire dragged (swept) area may be shown in purple or which other color?

- A. Yellow
- B. Magenta
- C. Green
- D. Red

Correct answer: C

43. How are buoys which mark isolated dangers painted?

- A. Alternating green and white bands
- B. Alternating green and black bands
- C. Alternating red and white stripes
- D. Alternating red and black bands

Correct answer: D

44. Which handheld instrument is used to measure distances between objects and the ship?

- A. A psychrometer
- B. A Vernier
- C. A stadimeter
- D. A hygrometer

Correct answer: C

45. What is a system of reservoirs and connecting tubes in a gyro compass called?

- A. The spider element
- B. The rotor
- C. The mercury ballistics
- D. The gyrotron

Correct answer: C

46. How often is The Local Notice to Mariners updated?

- A. Usually semiannually
- B. Usually monthly
- C. Usually weekly
- D. Usually daily

Correct answer: C

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

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

Correct answer: D

48. 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 actual depth of water below keel
- D. They measure the average depth from waterline to hard bottom

Correct answer: C

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

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

Correct answer: B

50. Which describes a line of position derived by radar range from an identified point on a coast?

- A. Straight line
- B. Arc
- C. A line parallel to the coast
- D. Parabola

Correct answer: B

51. While upbound through Memphis, the weather report on TV news indicates that a warm front is stationary over Kentucky - Missouri - Tennessee areas. What weather conditions should you expect?

- A. Strong, gusting winds from the northwest with thundershowers
- B. Southerly winds with steady rain; fog or overcast
- C. A "blue norther"
- D. Light winds from the northeast with clear skies

Correct answer: B

52. The greater the pressure difference between a high and a low-pressure center, the _____.

- A. greater the force of the wind will be
- B. warmer the temperature will be
- C. dryer the air mass will be
- D. cooler the temperature will be

Correct answer: A

53. If several navigational lights are visible at the same time, each one may be positively identified by checking all of the following EXCEPT what against the Light List?

- A. Rhythm
- B. Color
- C. Period
- D. Intensity

Correct answer: D

54. The velocity of a rotary tidal current will be decreased when the Moon is at which phase?

- A. Full
- B. New
- C. Apogee
- D. Perigee

Correct answer: C

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

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

Correct answer: D

56. A green buoy has a yellow triangle on it. What type of buoy is this?

- A. This is an information or regulatory buoy that has lateral significance
- B. It is a buoy that was set in error and will be replaced with a red nun buoy
- C. This buoy that is off-station and is marked to warn mariners of its wrong position
- D. It is a dual-purpose marker used where the ICW and other waterways coincide

Correct answer: D

57. 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. FALLWARN
- C. FALLOUT
- D. MERWARN

Correct answer: D

58. What do clear skies, with the exception of a few cumulus clouds indicate?

- A. Fog setting in
- B. Fair weather
- C. Hurricane weather
- D. Rain expected

Correct answer: B

59. Under the IALA-B Buoyage System, which is TRUE of a conical buoy?

- A. The buoy should be left to port when entering from seaward
- B. The buoy is red in color
- C. The buoy is numbered with an odd number
- D. All of the above

Correct answer: B

60. The direction in which a vessel is steered is the course. The path actually followed is the _____.

- A. track
- B. route
- C. heading
- D. course over the ground

Correct answer: D

61. The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean _____.

- A. low water
- B. high water
- C. lower low water
- D. tide level

Correct answer: B

62. You are steering 154° pgc. The wind is southwest causing 4° leeway. The gyro error is 3° E, variation is 11° W and deviation is 7° E. What is the true course made good?

- A. 153° T
- B. 164° T
- C. 161° T
- D. 158° T

Correct answer: A

63. Red lights may appear on which buoys?

- A. Yellow buoys
- B. Spherical buoys
- C. Vertically striped buoys
- D. Horizontally banded buoys

Correct answer: D

64. What is the primary source of the earth's weather?

- A. The moon
- B. The oceans
- C. The sun
- D. The solar system

Correct answer: C

65. The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the starboard side of a vessel under which circumstances?

- A. The vessel is descending the river
- B. The vessel is proceeding towards sea
- C. The vessel is crossing the river
- D. The vessel is ascending the river

Correct answer: D

66. Which defines a light's luminous range?

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

Correct answer: A

67. The following boats are approaching a lock. Which has priority for locking?

- A. A pleasure yacht
- B. A passenger vessel
- C. An integrated chemical tow
- D. Corps of Engineer towboat running empty-headed

Correct answer: D

68. At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position and it is 0.5 mile east of your DR. Which statement is TRUE?

- A. The current cannot be determined.
- B. The current is westerly at 0.5 knot.
- C. You must increase speed to compensate for the current.
- D. The drift is 0.25 knot.

Correct answer: D

69. Which is TRUE when using the radar for navigation?

- A. The best fix is obtained by using a tangent bearing and a range.
- B. When using ranges, the most rapidly changing range should be measured first.
- C. When crossing a radar range of one object with the visual bearing of a second object, the two objects should be 80° to 110° apart.
- D. When using two radar ranges for a fix, the objects of the ranges should be close to reciprocal bearings.

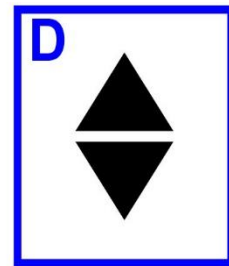
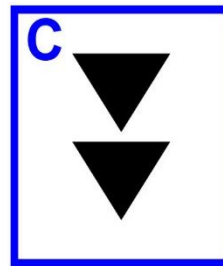
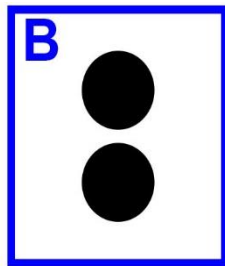
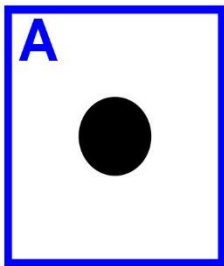
Correct answer: B

70. Which is TRUE concerning Hot air?

- A. Hot air retains the same amount of moisture as cold air
- B. The moisture content of air is independent of air temperature
- C. Hot air holds less moisture than cold air
- D. Hot air holds more moisture than cold air

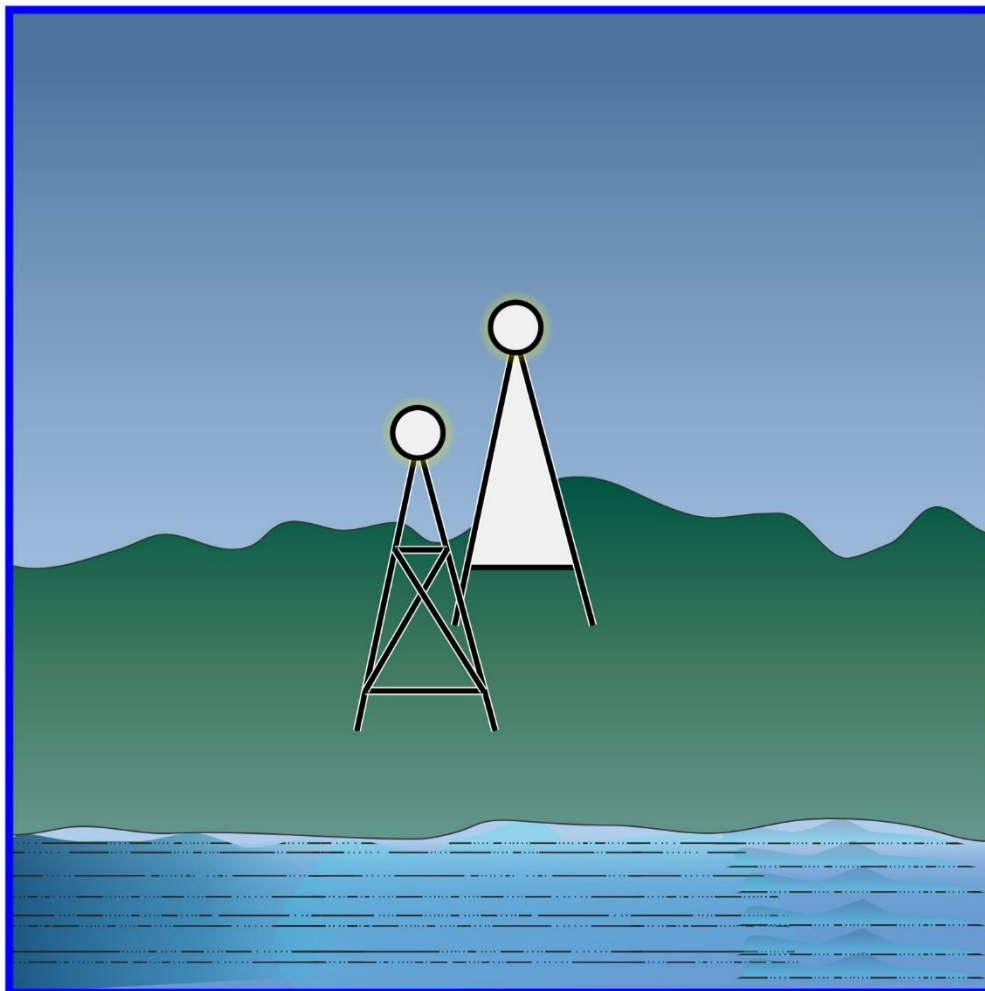
Correct answer: D

D023NG



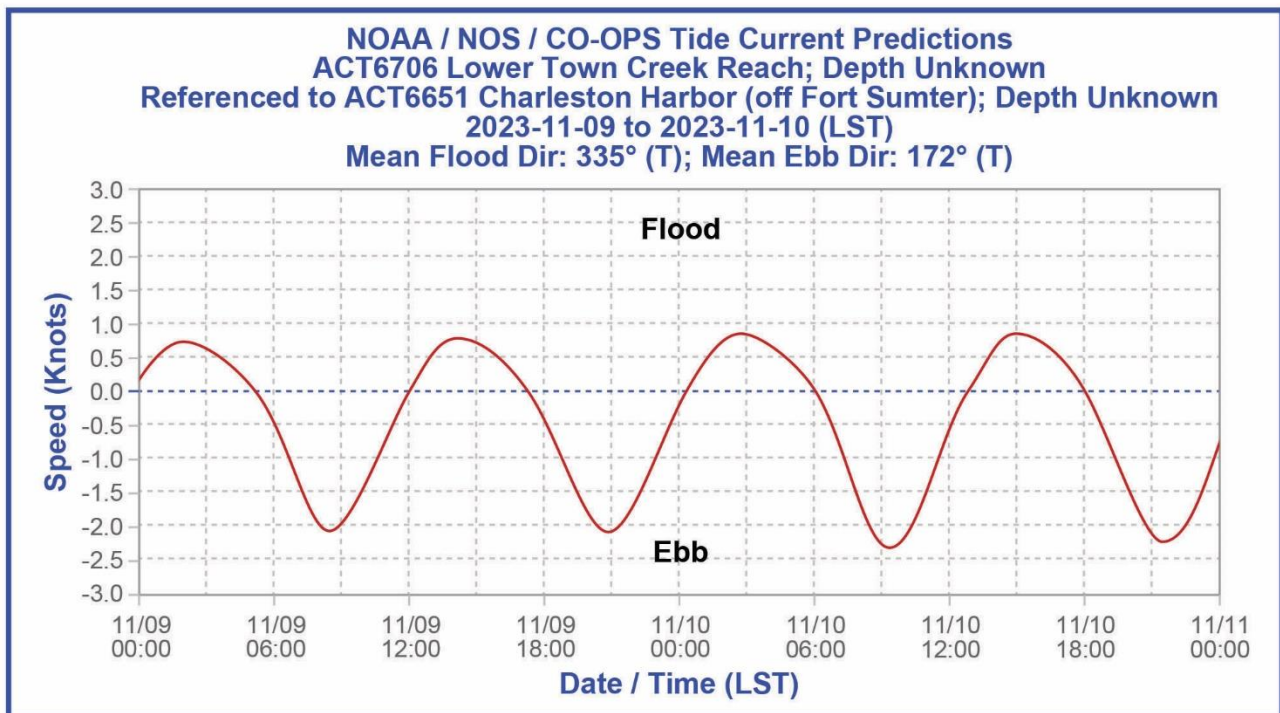
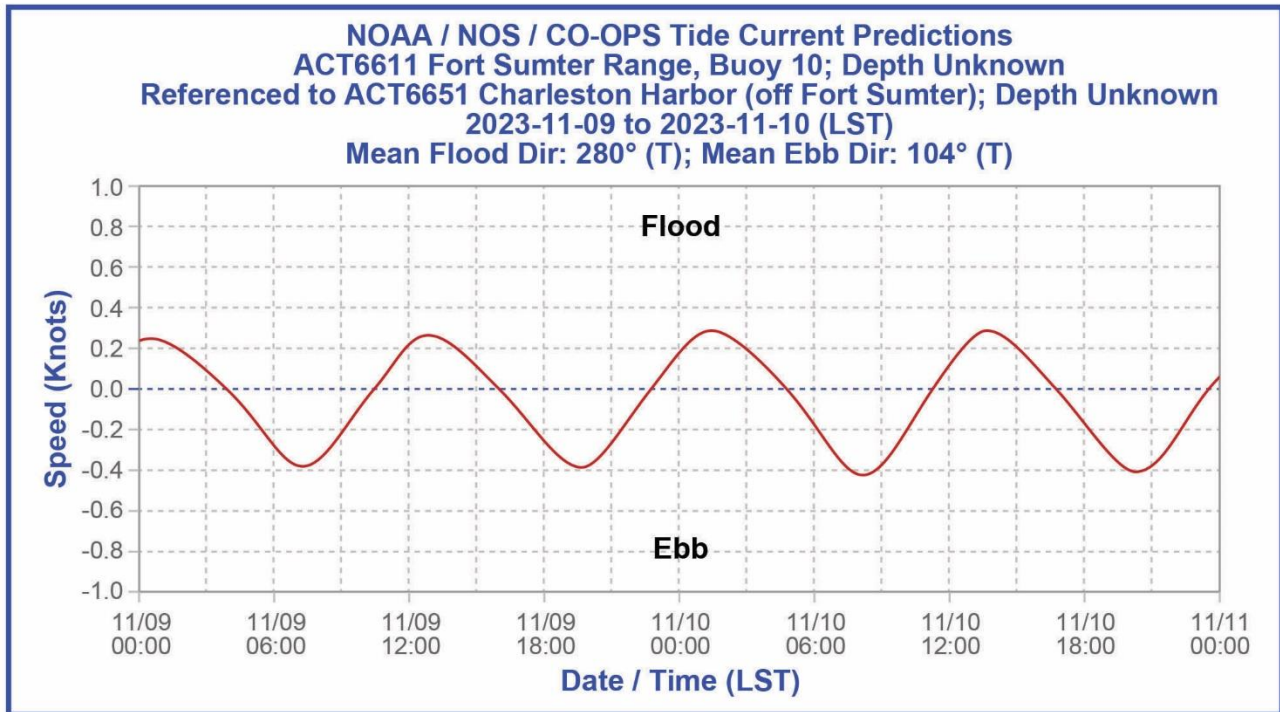
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D058NG



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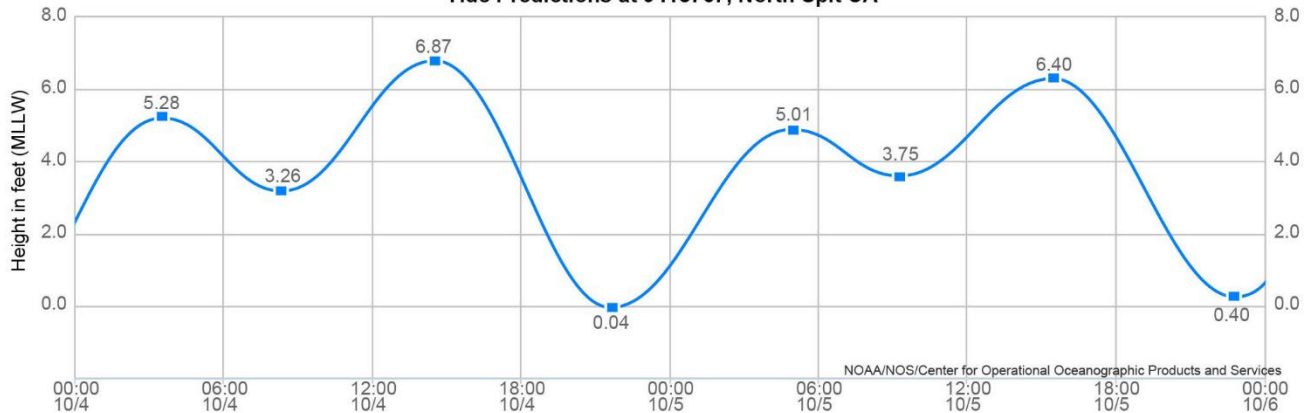
<https://www.tidesandcurrents.noaa.gov>

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D062NG

NOAA/NOS/CO-OPS

Tide Predictions at 9418767, North Spit CA



High/Low Tide Prediction Data Listing

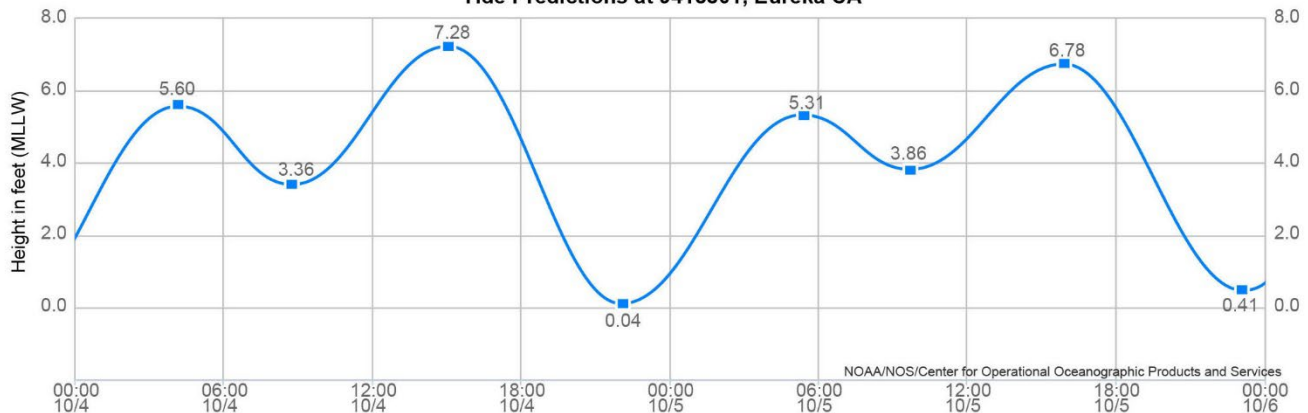
Station Name: North Spit, CA
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/4 00:00
End Date & Time: 2023/10/5 23:59

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



High/Low Tide Prediction Data Listing

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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Tide Predictions,

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