

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

Correct answer: A

2. Which publication contains information on Naval Cooperation and Guidance for Shipping (NCAGS) in time of emergency or war?
- A. Pub. 102, International Code of Signals
  - B. Appropriate volume of the Sailing Directions
  - C. Pub. 117, Radio Navigational Aids
  - D. Light List

Correct answer: C

3. You are steering 318°psc. A northeasterly wind causes 3° of leeway. The variation is 14°E and the deviation table is extracted below. What will be the true course made good?

DEVIATION TABLE

Magnetic Heading	Deviation
300°	2°E
315°	0
330°	2°W

- A. 301°T
- B. 303°T
- C. 329°T
- D. 327°T

Correct answer: C

4. What describes a flood current?
- A. Horizontal movement of the water toward the land after low tide
  - B. Horizontal movement of the water away from the land following high tide
  - C. Horizontal movement of the water toward the land after high tide
  - D. Horizontal movement of the water away from the land following low tide

Correct answer: A

5. You wish to check the deviation of your standard magnetic compass. You find a natural range that you steer for and note that the gyrocompass heading is  $034^\circ$ , and the heading by standard magnetic compass is  $026^\circ$ . The gyro error is  $1^\circ\text{W}$ . Variation is  $9^\circ\text{E}$ . What is the deviation for that heading?
- A.  $2^\circ\text{W}$
  - B.  $0^\circ$
  - C.  $2^\circ\text{E}$
  - D.  $9^\circ\text{E}$

Correct answer: A

6. Which describes the level of database information which cannot be removed from the ECDIS display and consists of information which is required at all times in all geographic areas and under all circumstances?
- A. Chart display information
  - B. System electronic nautical chart
  - C. Display base information
  - D. Standard display information

Correct answer: C

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

Correct answer: B

8. If a sound signal is emitted from the oscillator of a fathometer, and two seconds elapse before the returning signal is picked up, what depth of water is indicated?
- A. 1648 fathoms
  - B. 1048 fathoms
  - C. 1248 fathoms
  - D. 824 fathoms

Correct answer: D

9. 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

10. 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? See illustration D058NG.

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

Correct answer: B

11. The Light List indicates that a dayboard is a type KGW. You should take which action?

- A. Look for another daymark to form the range
- B. Leave it to port when southbound on the Atlantic Coast ICW
- C. Look for a green and white diamond
- D. Pass it close aboard on either side

Correct answer: A

12. The four standard light colors used for lighted aids to navigation are red, green, white, and \_\_\_\_\_.

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

Correct answer: C

13. When using an echo sounder in deep water, it is NOT unusual to encounter which situation?

- A. Receiving false echoes at a constant depth day and night
- B. Receiving a first return near the surface during the day, and a strong return at about 200 fathoms (366 meters) at night
- C. To have to recalibrate every couple of days due to inaccurate readings\
- D. Receiving a strong return at about 200 fathoms (366 meters) during the day, and one nearer the surface at night

Correct answer: D

14. Which of the following must the electronic chart of an ECDIS display, as required by IMO/IHO?

- A. Hydrography
- B. Regulatory boundaries
- C. Ferry routes
- D. All of the above

Correct answer: D

15. What is the color scheme of navigational marks used for informational or regulatory purposes?

- A. Green and red horizontally-banded
- B. Red and white vertically-striped
- C. Solid yellow
- D. White with orange geometric shapes

Correct answer: D

16. Which buoy may be odd numbered?

- A. An unlighted can buoy
- B. A spherical buoy
- C. A red buoy
- D. A yellow buoy

Correct answer: A

17. You are on a vessel using AIS code 57 for towing ahead. Your vessel's length overall is 200ft (61m) and the breadth is 54ft (16.5m). The barge is 210ft (64m) with a breadth of 59ft (18m). The GPS antenna is on the centerline centered fore and aft. What GPS antenna position dimension (ABCD) should you enter directly into your AIS?

- A. A: 100ft B: 100ft C: 27ft D: 27ft
- B. A: 410ft B: 30.5ft C: 30ft D: 30ft
- C. A: 94.5m B: 30.5m C: 9m D: 9m
- D. A: 30.5m B: 30.5m C: 8.25m D: 8.25m

Correct answer: C

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

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

Correct answer: D

19. Which action should be taken prior to assuming the Deck Watch while the vessel is in port?

- A. Make a security call on VHF channel 16
- B. Ensure that the vessel's moorings are adequate
- C. Visually inspect and test operation of the blue mooring light
- D. Ensure that all crew members are onboard

Correct answer: B

20. 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

21. Which statement about radio navigational warnings is TRUE?

- A. NAVAREA warnings concern only coastal navigation and inland navigation in large bays or sounds such as Puget Sound.
- B. The topics for warnings included in HYDROLANTS, HYDROPACS, and NAVAREA warnings are the same.
- C. Long range radio navigational warnings are usually broadcast by radiotelephone, radiotelegraph, and radio-teletypewriter.
- D. The United States is responsible for NAVAREA warnings in the North Atlantic north of 7°N, and west of 15°W.

Correct answer: B

22. You are underway on course 160°T while turning for an engine speed of 10 knots. The current is 210°T at 0.9 knots. What is the speed being made good?

- A. 10.7 knots
- B. 11.0 knots
- C. 11.6 knots
- D. 12.3 knots

Correct answer: A

23. 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

24. On 5 October 2023, you will be docking at the Redwood Marine Terminal in Eureka, CA at the second low 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. 2303
- B. 2150
- C. 2250
- D. 2258

Correct answer: D

25. Which is TRUE of an occulting light?

- A. The period of light exceeds the period of darkness
- B. The periods of light and darkness are equal
- C. There is only a partial eclipse of the light
- D. The period of darkness exceeds the period of light

Correct answer: A

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

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

Correct answer: B

27. You are on watch at sea at night and a fire breaks out in #3 hold. What should be done IMMEDIATELY?

- A. Shut down the cargo hold ventilation.
- B. Flood the space with CO<sub>2</sub> from the fixed firefighting system.
- C. Proceed to the space and determine the extent of the fire.
- D. Cool the deck to contain the fire.

Correct answer: A

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

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

Correct answer: A

29. Which agency maintains federal aids to navigation?

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

Correct answer: C

30. Which defines the height of tide?

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

Correct answer: A

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

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

Correct answer: B

32. The nominal range of a light may be accurately defined as the maximum distance at which a light may be seen \_\_\_\_\_.

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

Correct answer: D

33. What is NOT a purpose of Automatic Identification Systems (AIS)?

- A. To assist tracking other vessels
- B. To help identify vessels
- C. To obtain collision avoidance solutions
- D. To assist in maintaining situational awareness

Correct answer: C

34. 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. The magnetic equator
- D. Points where there is no variation

Correct answer: D

35. 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. Bobbing a light
- C. Checking a light
- D. Obscuring a light

Correct answer: B

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

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

Correct answer: D



37. What publication has information on the climate, distances, navigation regulations, outstanding landmarks, channels and anchorages of Long Island Sound?

- A. Coast Pilot
- B. Light List
- C. Pilot Chart
- D. Sailing Directions

Correct answer: A

38. What causes compass deviation?

- A. Magnetism from the earth's magnetic field
- B. Magnetism within the vessel
- C. Misalignment of the compass
- D. A dirty compass housing

Correct answer: B

39. What is the function of a red triangular daymark?

- A. To mark an area of a channel where crossing is permitted
- B. To mark a prominent object of navigational interest
- C. To indicate the starboard side of a channel
- D. To mark the centerline of a navigable channel

Correct answer: C

40. When using the ARPA in heavy rain, which action should you take?

- A. Increase the range of the inner and outer guard rings.
- B. Increase the radar gain to pick up weak echoes through the rain.
- C. Increase the STC setting to reduce close-in spurious signals.
- D. Navigate as though the effective range of the radar has been reduced.

Correct answer: D

41. You are underway on course 215°T while turning for an engine speed of 12 knots. The current is 000°T at 2.3 knots. What is the speed being made good?

- A. 8.5 knots
- B. 10.2 knots
- C. 10.9 knots
- D. 11.2 knots

Correct answer: B

42. The distance between the surface of the water and the tidal datum is the \_\_\_\_\_.

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

Correct answer: A

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

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

Correct answer: C

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

Correct answer: A

45. Which daymark has no lateral significance?

- A. Square; top half green and bottom half red
- B. Black and white diamond
- C. Green square
- D. Red triangle

Correct answer: B

46. Where will you find information about the duration of slack water?

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

Correct answer: B

47. Which is TRUE of a preferred-channel buoy?

- A. They are spherical
- B. They show a white light
- C. They may be lettered
- D. All of the above

Correct answer: C

48. Your vessel is steering  $238^{\circ}T$  at 11 knots. At 2304 a light bears  $176^{\circ}T$ , and at 2323 the same light bears  $155^{\circ}T$ . What will be your distance off abeam?

- A. 8.0 miles
- B. 9.0 miles
- C. 8.5 miles
- D. 7.5 miles

Correct answer: C

49. Who should be consulted for changing conditions of controlling depths in major channels?

- A. National Ocean Service
- B. National Geospatial-Intelligence Agency
- C. U.S. Army Corps of Engineers
- D. U.S. Coast Guard

Correct answer: C

50. Where can the annual change in variation for an area be found?

- A. The handbook for Magnetic Compass Adjustment, Pub 226
- B. The compass deviation table
- C. Variation does not change.
- D. The center of the compass rose on a chart of the area

Correct answer: D

51. Which is TRUE if the compass error of a magnetic compass has no deviation?

- A. The compass error is eliminated by adjusting the compass
- B. The compass error is equal to variation
- C. The compass error equals zero
- D. The compass error is constant at any geographical location

Correct answer: B

52. Which of the following is the most accurate method of determining gyrocompass error while underway?

- A. It cannot be determined accurately at sea due to drift of unknown currents.
- B. Comparing the gyro heading with the magnetic compass heading
- C. Determining from the chart the course made good between celestial fixes
- D. Comparing the gyro azimuth of a celestial body with the computed azimuth of the body

Correct answer: D

53. When steering a vessel, which of the following will an effective helmsman do?

- A. Apply rudder to move the compass card towards the lubbers line when off course
- B. Use as much rudder as possible to keep the vessel on course
- C. Repeat back to the watch officer any rudder commands before executing them
- D. Keep the rudder amidships except when changing course

Correct answer: C

54. How are you informed of defects or changes in aids to navigation?

- A. Local Notice to Mariners
- B. Marine Safety Information Website
- C. Weekly Notice to Mariners
- D. All of the above

Correct answer: D

55. Your vessel is steering course 243°psc. Variation for the area is 5°E, and deviation is 2°W. The wind is from the south-southeast, producing a 2° leeway. What true course are you making good?

- A. 242°T
- B. 244°T
- C. 246°T
- D. 248°T

Correct answer: D

56. Which device maintains a continuous graphic record of the heading of the vessel?

- A. The fathometer
- B. The AIS system
- C. The course recorder
- D. The auto pilot

Correct answer: C

57. 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

58. Radar makes the most accurate determination of the \_\_\_\_\_.

- A. direction of a target
- B. distance to a target
- C. size of a target
- D. shape of a target

Correct answer: B

59. Where can information about the direction and velocity of rotary tidal currents be found?

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

Correct answer: D

60. 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. 1651
- B. 1551
- C. 1544
- D. 1525

Correct answer: C

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

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

Correct answer: D

62. You are underway on course 017°T at a speed of 14.2 knots. You sight a buoy bearing 025°T at a radar range of 3.7 miles at 1947. If you change course at 1953, what is the course to steer to leave the buoy abeam to starboard at 0.1 mile?

- A. 024°T
- B. 027°T
- C. 021°T
- D. 030°T

Correct answer: B

63. How are aids to navigation marking the intracoastal waterway identified?

- A. The light characteristic and color for lighted aids
- B. White retro-reflective material
- C. The letters ICW after the aid's number or letter
- D. Yellow stripes, squares, or triangles marked on them

Correct answer: D

64. You sight an isolated danger buoy with a white flashing light showing a group of two flashes. The buoy indicates you should take which action?

- A. You must pass the buoy close to starboard
- B. You should pass well clear on either side of the buoy
- C. You must pass south of the buoy
- D. You must pass north of the buoy

Correct answer: B

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

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

Correct answer: A

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

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

Correct answer: B

67. On 10 November 2023 at 0130, 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. 0.8kts at 172°T
- B. 0.3kts at 104°T
- C. 0.3kts at 280°T
- D. 0.8kts at 335°T

Correct answer: C

68. You are steering a course of 316°T, and a light bears 34° on the port bow at 2053.

At 2126 the same light bears 68° on the port bow, and you have run 5 miles since the first bearing.

What is the ETA when the lighthouse is abeam?

- A. 2159
- B. 2139
- C. 2143
- D. 2149

Correct answer: B

69. You are steaming on a course of 208°T at 21 knots. At 2019 you observe a lighthouse bearing 129°T. At 2030 the lighthouse bears 103°T. What is your distance off at the second bearing?

- A. 8.6 miles
- B. 8.2 miles
- C. 9.3 miles
- D. 8.9 miles

Correct answer: A

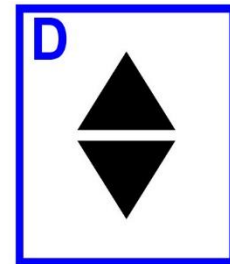
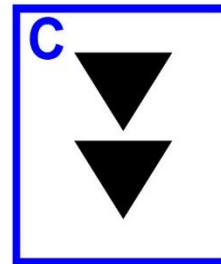
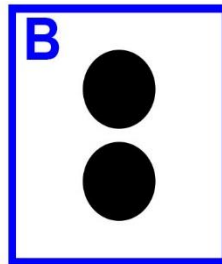
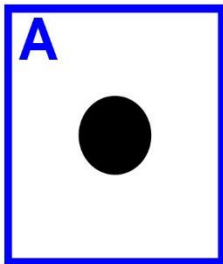
Q371 Navigation General  
U.S.C.G. Merchant Marine Exam  
First Class Pilot  
Illustrations: 4

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

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

Correct answer: B

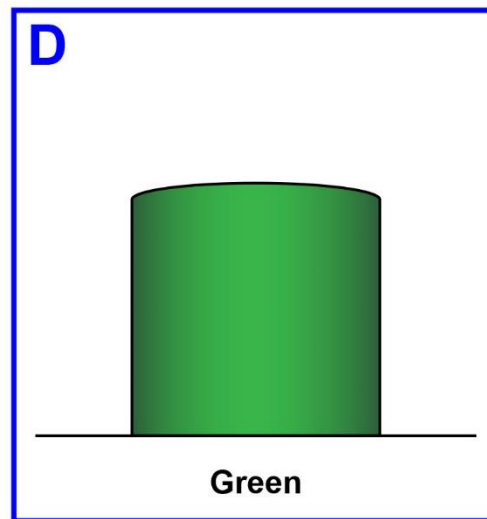
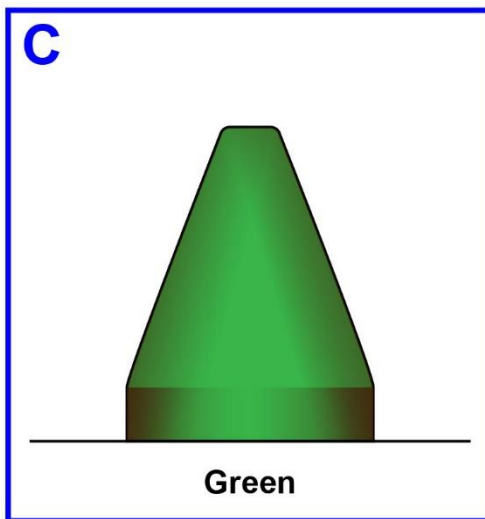
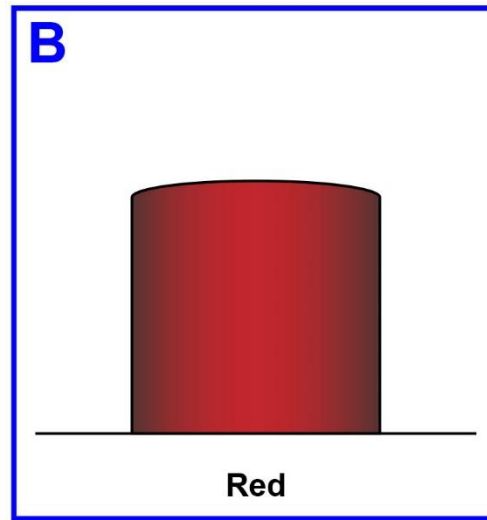
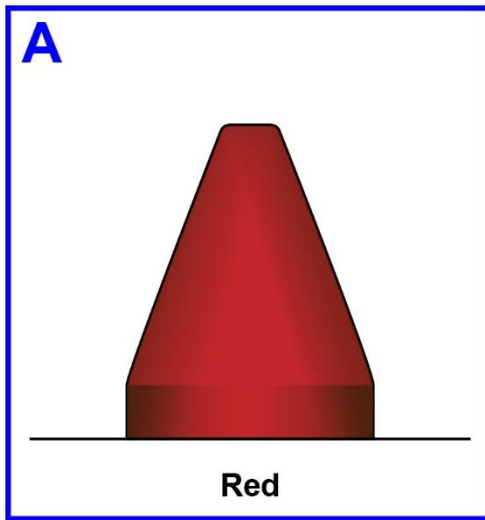
## D023NG



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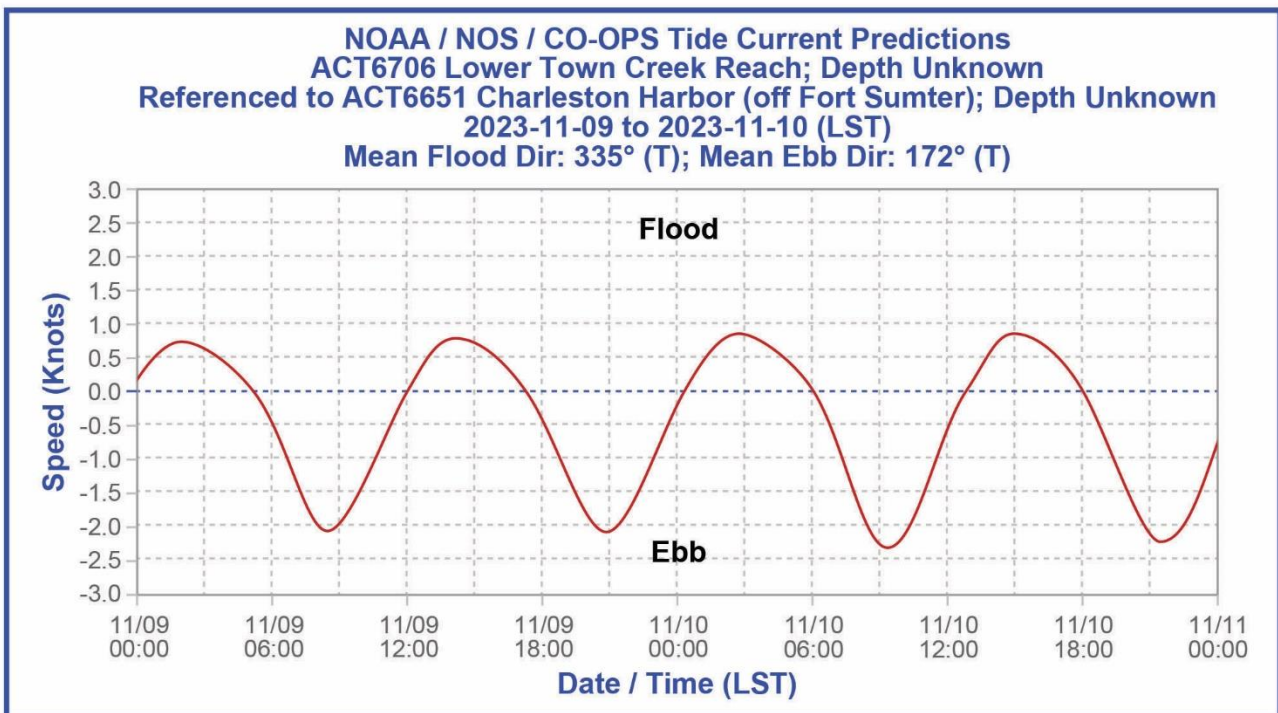
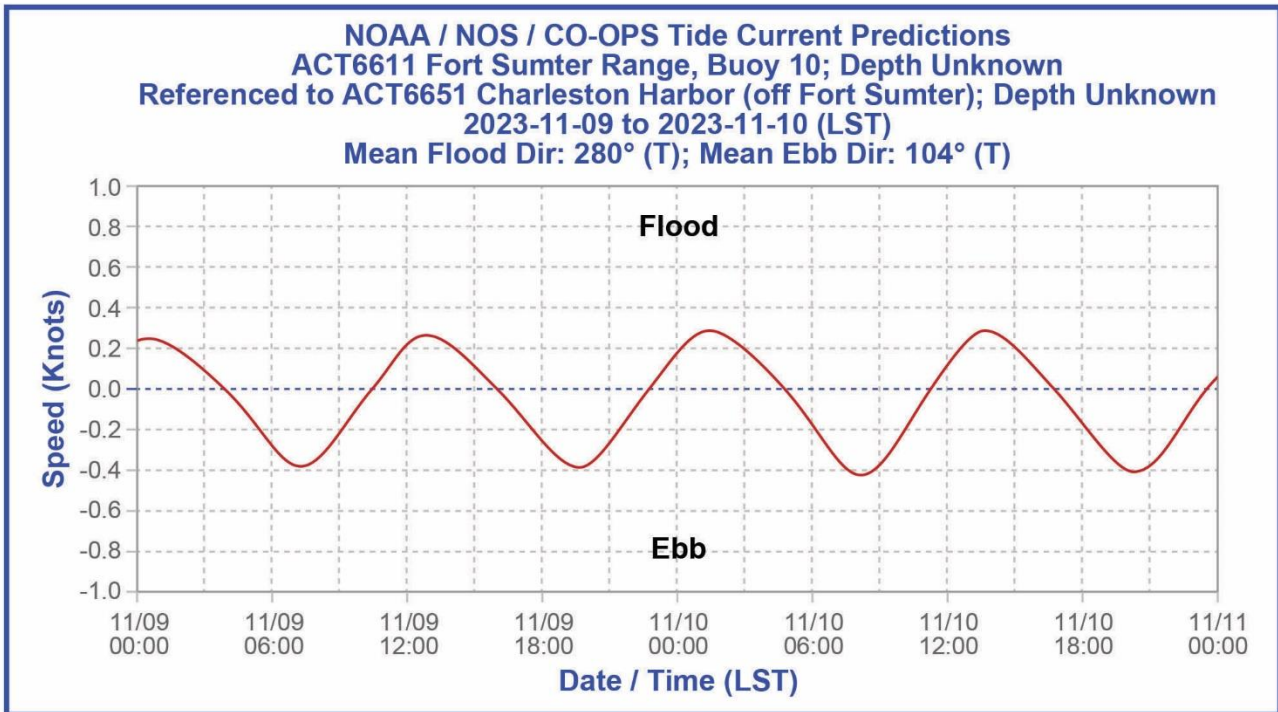


## D046NG



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## D058NG



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Current Predictions,

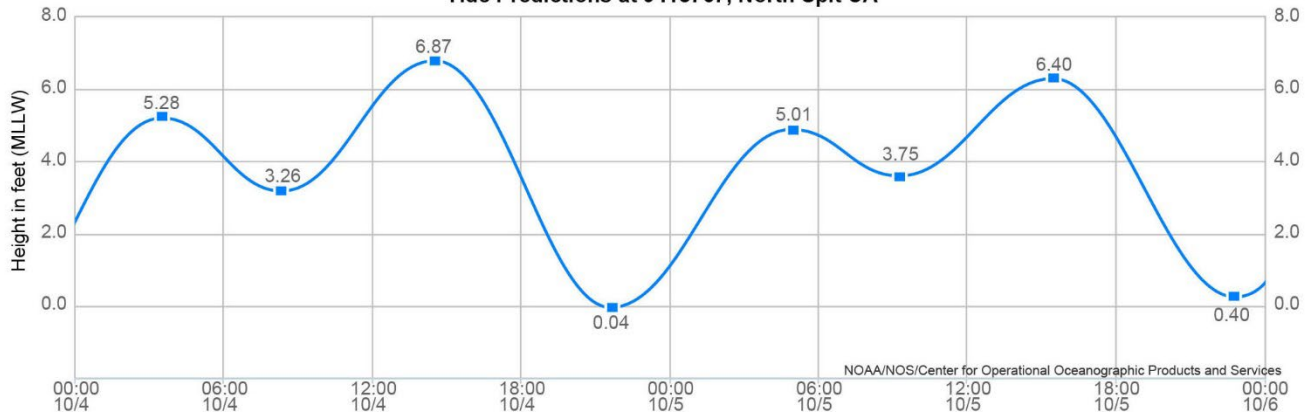
<https://www.tidesandcurrents.noaa.gov>

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## D062NG

NOAA/NOS/CO-OPS

Tide Predictions at 9418767, North Spit CA



High/Low Tide Prediction Data Listing

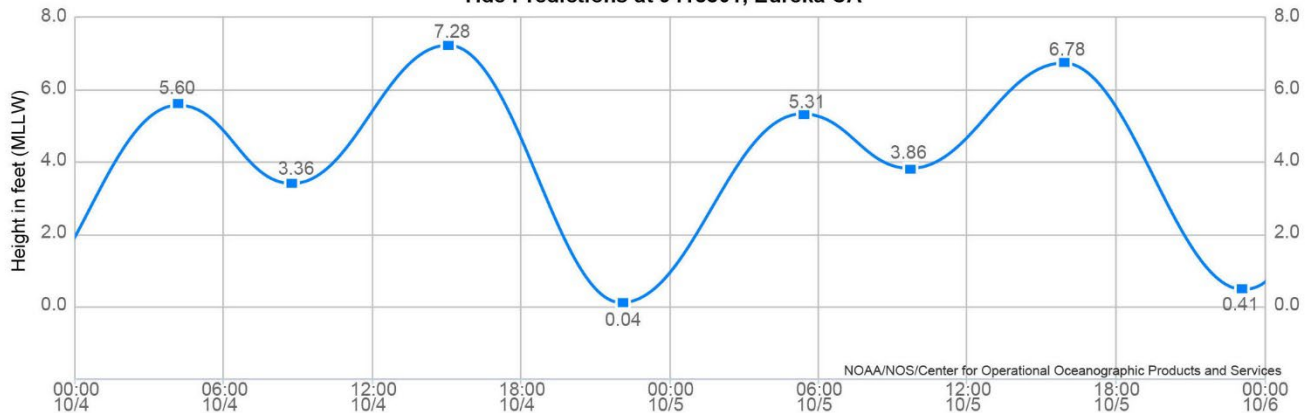
Station Name: North Spit, CA  
Action: Daily  
Product: Tide Predictions  
Start Date & Time: 2023/10/4 00:00  
End Date & Time: 2023/10/5 23:59

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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(NOAA) Tide Predictions,

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

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