

U.S.C.G. Merchant Marine Exam  
Master/Chief Mate of Unlimited Tonnage  
Q108 Navigation Problems – Near Coastal  
(Sample Examination)

**Choose the best answer to the following Multiple-Choice questions.**

1. If the speed necessary for reaching port at a designated time is 21.6 knots and the pitch of the propeller is 22.5 feet, how many revolutions per minute will the shaft have to turn, assuming a 2% positive slip?
- A. 95 RPM
  - B. 87 RPM
  - C. 99 RPM
  - D. 81 RPM

Correct answer: C

2. On 22 February your 2045 ZT position is LAT 33°19'N, LONG 52°06'W. You observe Polaris bearing 358.1°pgc. At the time of the observation the helmsman noted that he was heading 048°pgc and 065°psc. The variation is 19°W. What is the deviation for that heading?
- A. 1°E
  - B. 3°E
  - C. 1°W
  - D. 3°W

Correct answer: B

3. Your vessel is steering course 352°psc, variation for the area is 11°E, and deviation is 9°W. The wind is from the northeast, producing a 1° leeway. What true course are you making good?
- A. 353°T
  - B. 349°T
  - C. 351°T
  - D. 355°T

Correct answer: A

4. You have steamed 632 miles at 18.5 knots and consumed 197 tons of fuel. If you have 278 tons of usable fuel remaining, how far can you steam at 15.0 knots?
- A. 1100 miles
  - B. 892 miles
  - C. 1357 miles
  - D. 681 miles

Correct answer: C

5. You are taking a time tick using the 2000 signal from Kekaha-Kauai, Hawaii (WWVH). You hear a series of 1 second dashes followed by a 9 second silent period, then a long 1.3 second dash. At the beginning of the long dash, your comparing watch reads 08h 00m 08s. When compared to the chronometer, the comparing watch reads 08h 01m 15s, and the chronometer reads 07h 59m 55s. What is the chronometer error?
- A. 1m 07s fast
  - B. 0m 08s fast
  - C. 1m 12s slow
  - D. 1m 28s slow

Correct answer: C

6. 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"? Illustration D058NG

D058NG.jpg

- A. 0.3kts at 104°T
- B. 0.8kts at 172°T
- C. 0.3kts at 280°T
- D. 0.8kts at 335°T

Correct answer: C

7. A vessel at LAT 40°42.0'N, LONG 74°01.0'W, heads for a destination at LAT 14°41.0'N, LONG 17°26.0'W. Determine the true course and distance by Mercator sailing.

- A. 123°T, 3066.5 miles
- B. 118°T, 3365.0 miles
- C. 118°T, 3066.5 miles
- D. 123°T, 3065.6 miles

Correct answer: B

8. You are on a voyage from Boston, MA to the South Pass, LA. The distance is 1870 miles, and the speed of advance is 13.6 knots. You estimate 16.5 hours for bunkering enroute at Port Everglades, FL. If you sailed at 0836 hours (ZD +5), 26 February, what was your ETA (ZD +6) at the South Pass?

- A. 2336, 3 March
- B. 1136, 4 March
- C. 1236, 4 March
- D. 1736, 4 March

Correct answer: D

9. On 11 January your vessel's 0655 zone time DR position is LAT 24°30'N, LONG 122°02'W, when an amplitude of the Sun is observed. The Sun's center is on the celestial horizon and bears 101.0° per standard compass. Variation in the area is 11.6°E. The chronometer reads 02h 52m 48s and is 02m 12s slow. What is the deviation of the standard compass?

- A. 1.4°E
- B. 1.4°W
- C. 4.6°E
- D. 4.6°W

Correct answer: A

Q108 Navigation Problems-Near Coastal  
U.S.C.G. Merchant Marine Exam  
Master/Chief Mate of Unlimited Tonnage  
Illustrations: 2

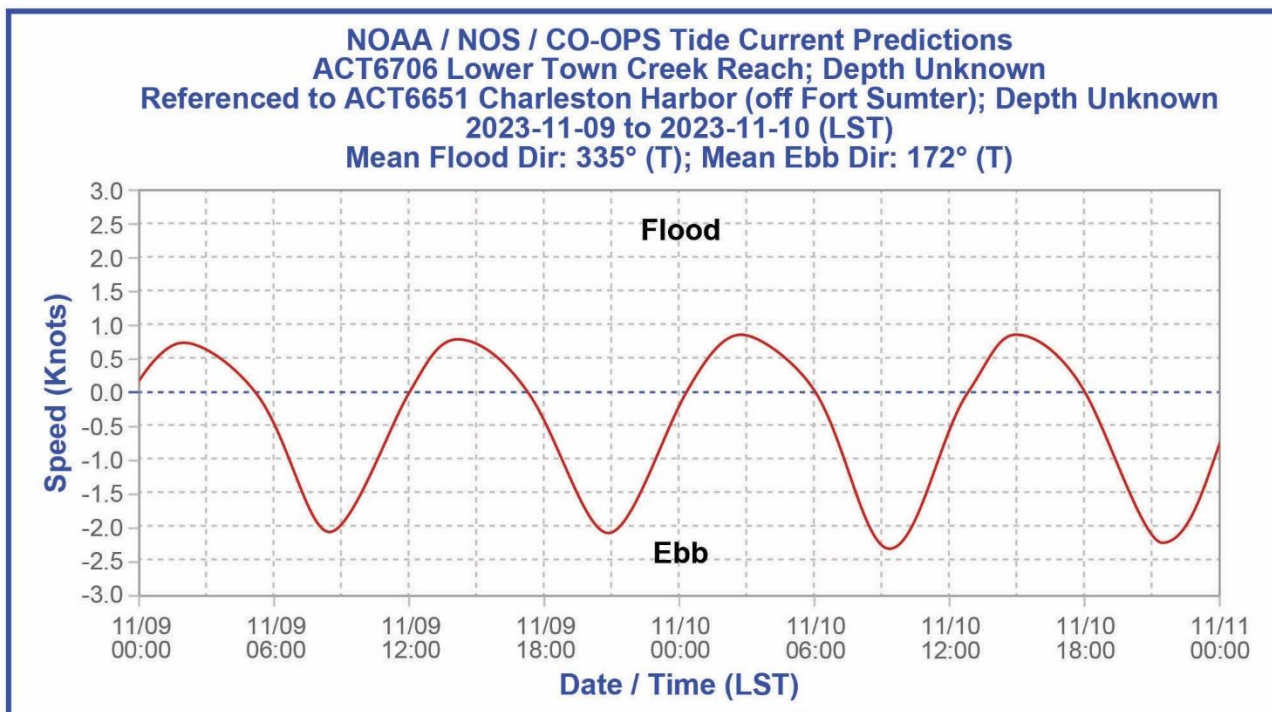
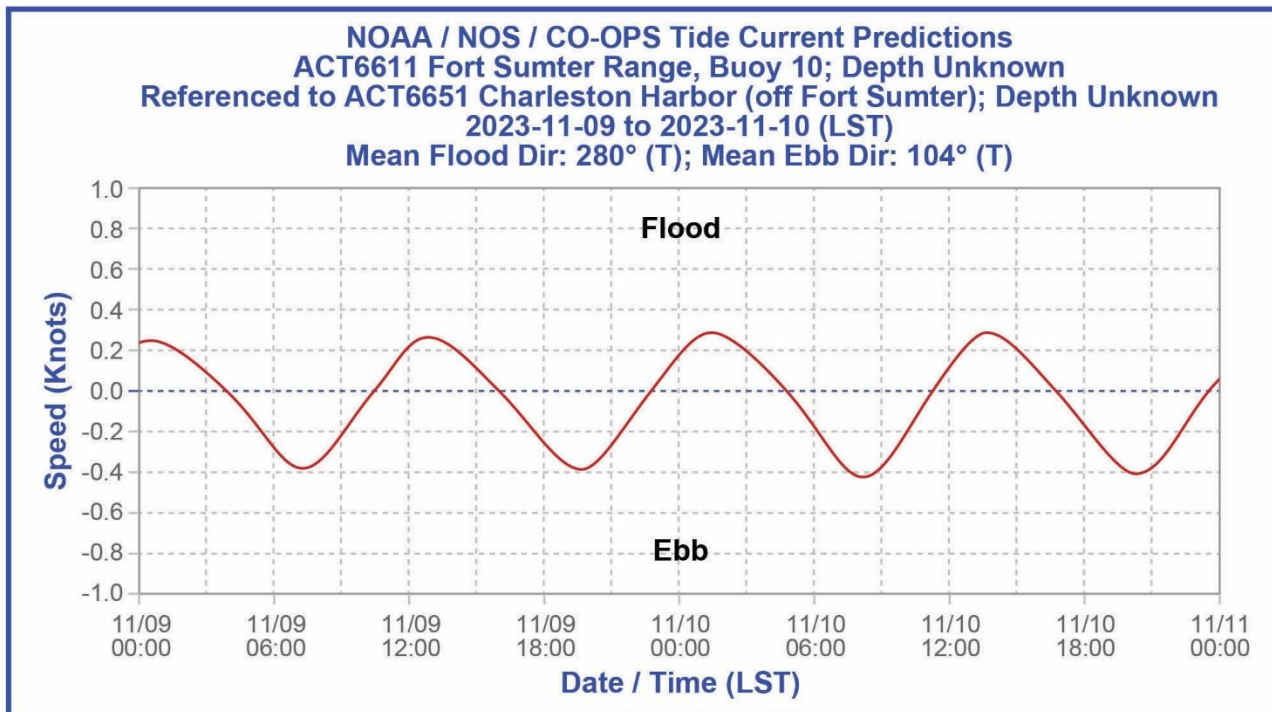
**10.** On 4 October 2023, you will be docking at the Redwood Marine Terminal in Eureka, CA at the first low tide. The berth is located between NOAA reference tidal station #9418767 and subordinate station #9418801. What time (LST) will you be docking? Illustration D062NG

- A. 0841
- B. 0828
- C. 2150
- D. 0836

Correct answer: D



## D058NG

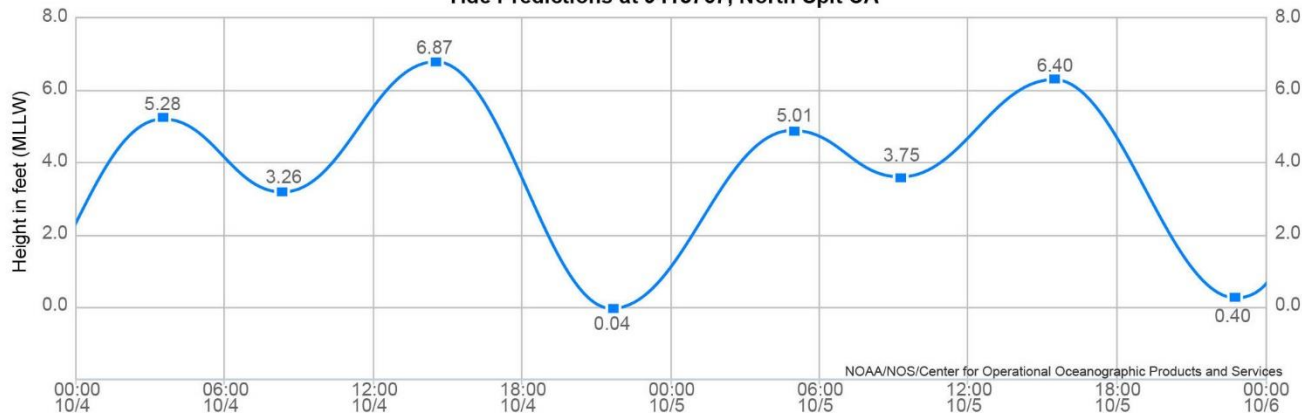


Adapted for testing purposes only from National Oceanic and Atmospheric Administration  
 (NOAA) Current Predictions,  
<https://www.tidesandcurrents.noaa.gov>  
 Further reproduction prohibited without permission



## 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.

**Adapted for testing purposes only from National Oceanic and Atmospheric Administration  
(NOAA) Tide Predictions,**

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

**Further reproduction prohibited without permission**