

U.S.C.G. Merchant Marine Exam
Second/Third Mate of Unlimited Tonnage
Q116 Navigation Problems – Near Coastal
(Sample Examination)

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

1. You are taking a time tick using the 1400 signal from Buenos Aires, Argentina. You hear a 0.4 second dash followed by a series of dots, noting that the 29th and the 56th to 59th dots are omitted. At the start of the following 0.4 second dash (which is followed by an 8 second pulse), the comparing watch reads 01h 59m 57s. When compared to the chronometer, the comparing watch reads 02h 00m 38s, and the chronometer reads 02h 01m 33s. What is the chronometer error?
- A. 1m 36s fast
 - B. 0m 4ls slow
 - C. 0m 52s fast
 - D. 0m 03s slow

Correct answer: C

2. On 10 November 2023 at 2030, 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. 0.4kts at 104°T
 - B. 2.1kts at 335°T
 - C. 0.4kts at 280°T
 - D. 2.1kts at 172°T

Correct answer: A

3. If the pitch of the propeller is 23.2 feet, and the revolutions per day are 94,910, calculate the day's run allowing 11% negative slip.
- A. 402.0 miles
 - B. 362.3 miles
 - C. 382.0 miles
 - D. 322.3 miles

Correct answer: A

4. On 3 October 2023, you will be docking at the Dundalk Marine terminals in Baltimore, MD at the second high tide. The berth is located between NOAA reference tidal station #8574680 and subordinate station #8574821. What time (LST) will you be docking? Illustration D056NG
- A. 2057
 - B. 2150
 - C. 2050
 - D. 1957

Correct answer: B

5. The propeller on a vessel has a diameter of 21.5 feet and a pitch of 24.5 feet. What would be the apparent slip if the vessel cruised 458 miles in a 23 hour day (observed distance) at an average RPM of 78?
- A. -12.3%
 - B. +12.3%
 - C. -5.6%
 - D. +5.6%

Correct answer: C

6. A vessel at LAT $32^{\circ}14.7'N$, LONG $66^{\circ}28.9'W$, heads for a destination at LAT $36^{\circ}58.7'N$, LONG $75^{\circ}42.2'W$. Determine the distance by Mercator sailing.
- A. 241.2 miles
 - B. 300.2 miles
 - C. 538.2 miles
 - D. 270.2 miles

Correct answer: C

7. On 28 November your vessel's 0652 DR position is LAT $37^{\circ}30'N$, LONG $124^{\circ}12'W$, 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 $16.3^{\circ}E$. The chronometer reads 02h 54m 18s and is 02m 06s fast. What is the deviation of the compass?
- A. $2.5^{\circ}W$
 - B. $3.0^{\circ}W$
 - C. $2.0^{\circ}E$
 - D. $3.0^{\circ}E$

Correct answer: A

8. On 21 April your 1542 zone time DR position is LAT $28^{\circ}54.0'S$, LONG $19^{\circ}07.0'W$.
At that time, you observe the Sun bearing $299^{\circ}psc$.
The chronometer reads 04h 44m 11s, and the chronometer error is 01m 54s fast.
The variation is $3^{\circ}E$.

What is the deviation of the standard compass?

- A. $0.3^{\circ}W$
- B. $0.4^{\circ}E$
- C. $2.7^{\circ}W$
- D. $2.7^{\circ}E$

Correct answer: A

9. You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°W. The variation is 8°W. Find the deviation on a magnetic compass heading of 210°.

NP-0113

HEADING	
PSC	PGC
030.5°	024°
061.5°	054°
092.0°	084°
122.5°	114°
152.0°	144°
181.0°	174°
210.0°	204°
239.5°	234°
269.0°	264°
298.0°	294°
327.5°	324°
358.5°	354°

- A. 0.0°
- B. 0.5°W
- C. 0.5°E
- D. 1.0°E

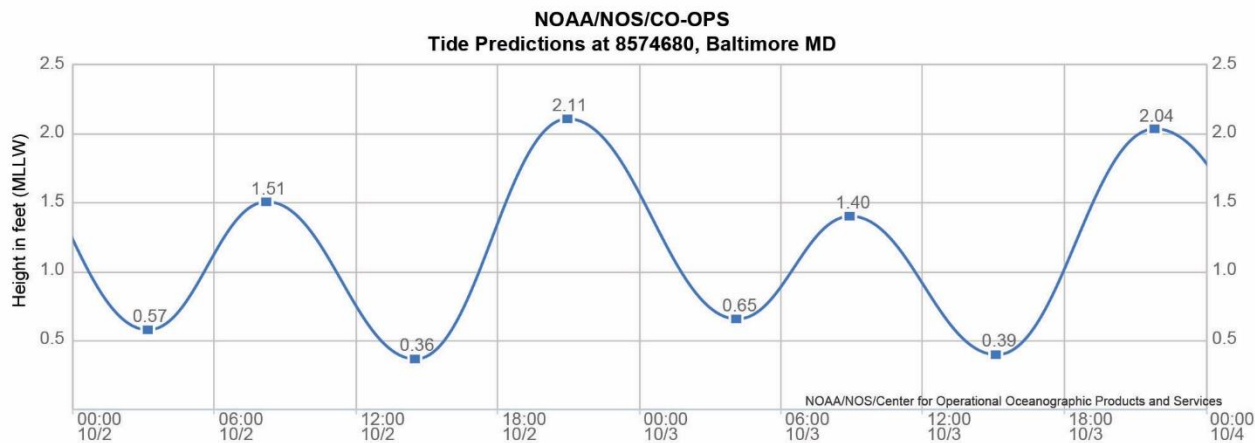
Correct answer: A

10. Your vessel departs Yokohama from position LAT 35°27.0'N, LONG 139°39.0'E (ZD -9), at 1330 ZT on 23 July, bound for Seattle at position LAT 47°36.0'N, LONG 122°22.0'W (ZD +8). The distance by great circle is 4,245 miles, and you estimate that you will average 13.6 knots. What is your estimated ZT of arrival?
- A. 0438, 4 August
 - B. 2038, 4 August
 - C. 0438, 5 August
 - D. 1238, 5 August

Correct answer: B



D056NG

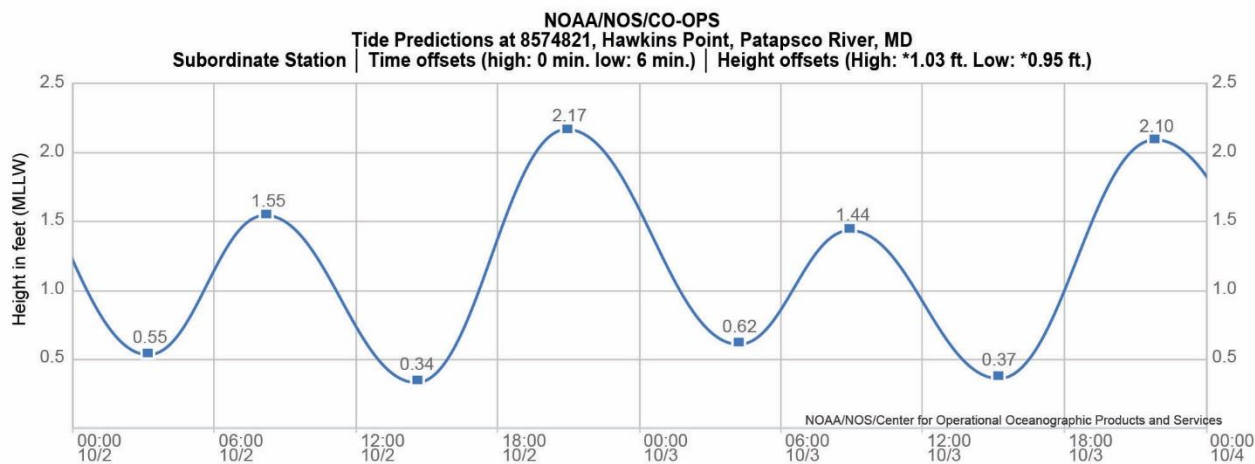


Station Name: Baltimore, MD
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/2 00:00
End Date & Time: 2023/10/3 23:59

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

High/Low Tide Prediction Data Listing

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/02	Mon	03:10	0.57 L	08:12	1.51 H	14:30	0.36 L	20:57	2.11 H
2023/10/03	Tue	04:08	0.65 L	08:56	1.40 H	15:08	0.39 L	21:50	2.04 H



Station Name: Hawkins Point, Patapsco River, MD
Action: Daily
Product: Tide Predictions
Start Date & Time: 2023/10/2 00:00
End Date & Time: 2023/10/3 23:59

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

High/Low Tide Prediction Data Listing

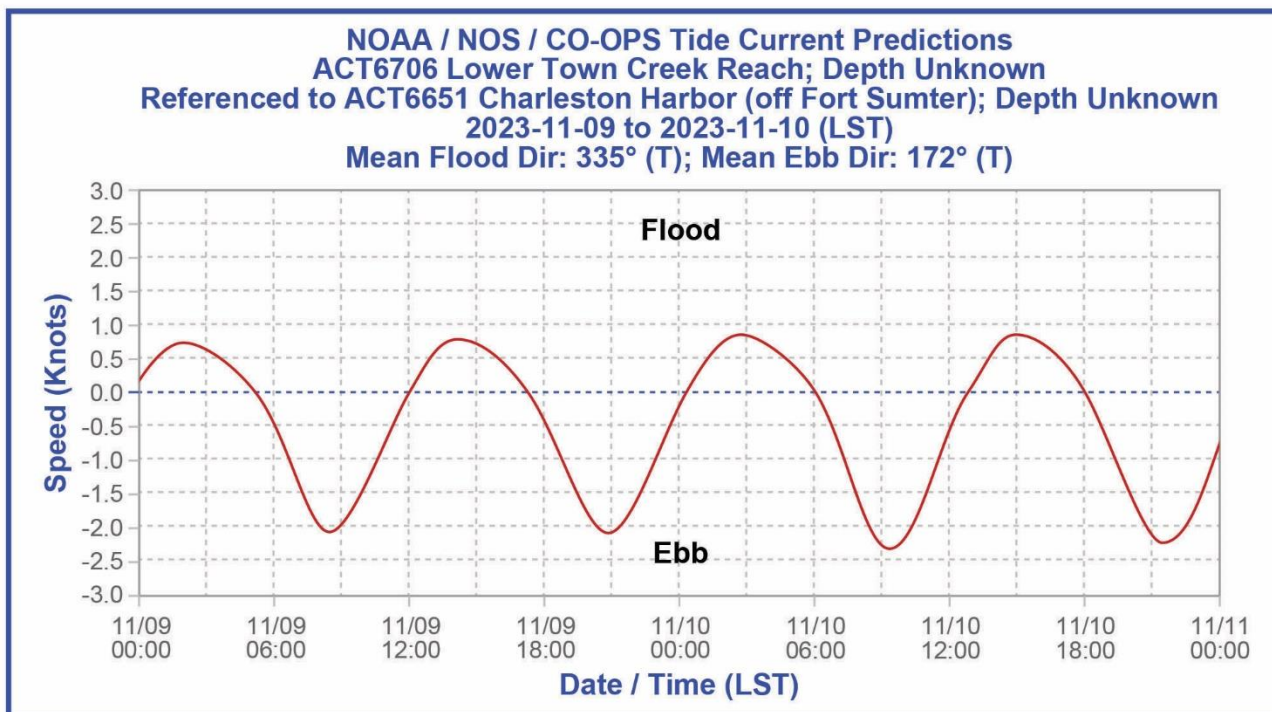
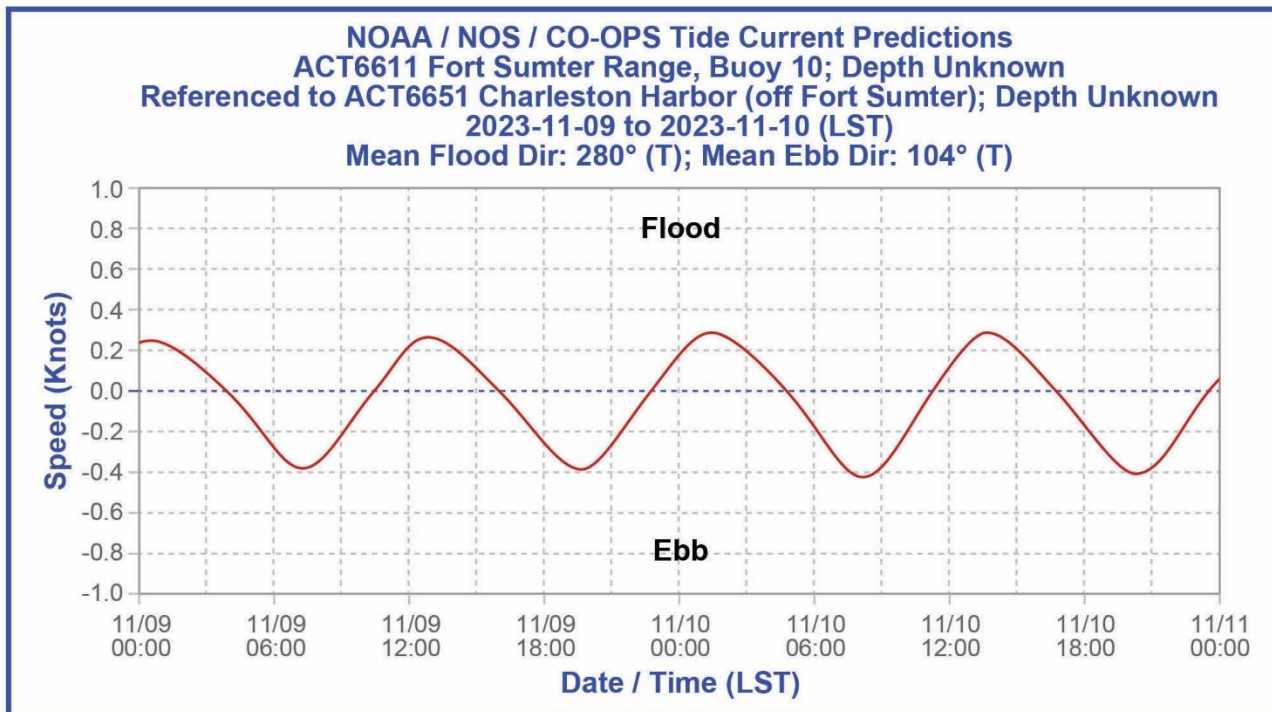
Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2023/10/02	Mon	03:16	0.55 L	08:12	1.55 H	14:36	0.34 L	20:57	2.17 H
2023/10/03	Tue	04:14	0.62 L	08:56	1.44 H	15:14	0.37 L	21:50	2.10 H

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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