
Q414 - Navigation Problems: Chart Plot

1. What is the approximate geographic range of Assateague Light, VA, if your height of eye is 52 feet (15.8 meters)? Refer to "Reprints from the LIGHT LISTS AND COAST PILOTS".

- 14.1 nm
- 21.8 nm
- **23.0 nm**
- 50.2 nm

Note:
The geographic range of Assateague Light, VA, with a 52-foot height of eye, is approximately 23.0 nautical miles. This is calculated by summing the horizon distances of the light and the observer, considering the heights of both and using the standard formula or referencing the Geographic Range of Lights table.

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2. The following questions are to be answered using Chart 12221TR, Chesapeake Bay Entrance, and supporting publications. You are southbound along the coast on a course of 180°T and the engine speed is 14 knots. Your draft is 16 feet. Gyro error is 2°W. Use 10°W variation where required At 2000 Hog Island Lighted Bell Buoy "12" bears 199°T and Buoy "GM" bears 249°T. What is your position?

- 37°35.0'N, 75°32.2'W
- 37°03.5'N, 75°02.2'W
- **37°23.5'N, 75°32.2'W**
- 37°03.5'N, 75°32.2'W

Note:
Plot reciprocal bearings from each buoy and determine the intersection to find your position: 3723.5'N, 7532.2'W.

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3. From your 2000 position you change course to 206°T. What time would you expect to be abeam of Hog Island Buoy "12"?

- 2031
- **2026**
- 2021
- 2040

Note:
The correct time to be abeam of Hog Island Buoy "12" is 2026. This is determined by measuring the distance along the 206T course from the 2000 position to the abeam point, which corresponds to approximately 26 minutes of travel time at the vessel's speed.

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4. You should expect to pass how far off buoy "12"?

- **0.8 mile**
- 2.1 miles
- 1.7 miles
- 1.2 miles

Note:
The correct answer is 0.8 mile, representing the perpendicular distance from the planned track to buoy "12" measured on the chart's latitude scale. This distance is determined by drawing a line from the buoy to the track at a 90-degree angle and measuring the length of that line using the latitude scale (left or right edge of the chart) in nautical miles.

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5. At 2030 you take the following bearings: Sand Shoal Inlet South Light: 275°T Cape Charles Light: 235°T What is the set and drift from 2000 to 2030?

- 088° at 0.7 knot
- 268° at 0.7 knot
- 088° at 1.4 knots
- **268° at 1.4 knots**

Note:
The set and drift from 2000 to 2030 is determined by the bearing of the line from the 2000 DR position to the 2030 fix, which is 268T, and the distance traveled along that line divided by the time interval, resulting in a drift of 1.4 knots. Therefore, the set is 268 at a drift of 1.4 knots.

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6. From your 2030 fix you change course to 195°T, and leave the engine speed at 14 knots. At 2045, your position is Lat 37°13.50'N Long 075°38.05'W Which statement is TRUE?

- **Cape Charles Light bears 050° relative.**
- Your fathometer reading is approximately 40 fathoms.
- Chesapeake Light bears 190° relative.
- Your vessel is located in a restricted area.

Note:
Cape Charles Light bears 050 relative.

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7. You continue to steer 195°T. You pass Cape Charles Lighted Bell Buoy "14", 0.9 miles abeam to starboard at 2111. What is your speed made good from 2045 to 2111?

- 13.7 knots
- 14.5 knots
- 14.1 knots
- **14.8 knots**

Note:
The speed made good from 2045 to 2111 is calculated by dividing the distance traveled along the 195T track (approximately 6.4 nautical miles) by the elapsed time (26 minutes, or approximately 0.433 hours), resulting in a speed of 14.8 knots.

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8. What is your course made good from 2045 to 2111?

- 187°T
- 190°T
- **193°T**
- 196°T

Note:
The course made good from 2045 to 2111 is 193T, which is the true bearing of the line connecting the fixes on the chart.

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9. If you are going to head directly for Chesapeake Light from your 2111 fix, what is the course to make good?

- 199°T
- **190°T**
- 196°T
- 193°T

Note:
The course to make good from a 2111 fix to Chesapeake Light is 190T. This is determined by drawing a line from the fix to the light and reading the true bearing from the chart's compass rose.

10. At 2200, you alter course to 204°T, at 14 knots. You expect a current on this leg of the trip, setting 325° at 1.5 knots. Which course should you steer per gyrocompass to make good the true course?

- **201°pgc**
- 194°pgc
- 190°pgc
- 184°pgc

Note:
To maintain a true course of 204 while accounting for a current setting 325 at 1.5 knots, steer 201 per gyrocompass. The current's effect requires a 5 correction to port, resulting in a true course of 199, which converts to 201pgc with a 2E gyro error.