
Q134 - Navigation Problems: Near Coastal

1. At 1423 you are on course 072°T at 12.2 knots, when you sight a rock awash bearing 070°T at a range of 3.6 miles. If you change course at 1427, what course would you steer to leave the rock 1.0 mile abeam to port?

- 049°
- 054°
- 086°
- **091°**

Note:
To avoid the rock 1.0 NM to port, steer a course of 091. This course creates a tangent from your position to a circle centered on the rock, ensuring the closest approach is 1.0 NM and the rock is on your port side.

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2. At 2221 your course is 222°pgc at a speed of 11.2 knots, when radar detects a buoy bearing 355° relative, at a range of 5.8 miles. The gyro error is 2°E. If you change course at 2226, what course should you steer to leave the buoy 1.0 mile abeam to port?

- 210°pgc
- **228°pgc**
- 231°pgc
- 206°pgc

Note:
Steering 228pgc results in a closest point of approach of 1.0 NM with the buoy exactly abeam to port, requiring true course correction accounting for gyro error and ship movement.

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3. How can the accuracy of an azimuth circle be checked?

- Ensuring that the alignment marks on the inner face of the circle are in line with those on the repeater on relative bearings of 000° and 090°
- Aligning the relative bearing markings so that 000° is on the lubber's line and the line of sight passes over the center of the compass
- Sighting a terrestrial range in line and comparing the observed bearing against the charted bearing
- **Comparing observed azimuths at different altitudes with computed values at the times of observation to see if the difference is constant**

Note:
The accuracy of an azimuth circle is verified by comparing observed azimuths of celestial bodies at different altitudes with computed true azimuths to determine if the resulting difference remains constant. This method isolates instrument error from compass or gyro error, ensuring the circle's scale and sight line are consistent.

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4. You are at anchor in the anchorage at the entrance to Delaware Bay. You weigh anchor at 1445 DST (ZD +4) on 24 July 1983 and proceed northbound enroute to Philadelphia at a speed of 10 knots. Which of the following should you expect to experience?

- a flood current from Ship John Shoal Lt. to Philadelphia
- an ebb current north of New Castle, DE
- a flood current the entire trip
- **a weak flood between Reedy Island and Edgemoor**

Note:
Based on the 1983 Tidal Current Tables for Delaware Bay, a northbound transit at 1445 DST with a speed of 10 knots will experience a weak flood current between Reedy Island and Edgemoor.

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5. The charted depth alongside the south face of Mystic Pier, Charlestown, MA, is 35 feet. Your maximum draft is 38 feet. You wish to have 2 feet under the bottom, on a rising tide, when you go alongside to discharge a heavy lift. What is the earliest time after 0900 EST (ZD +5), on 2 February 1983, that you can dock?

- 1020
- 1050
- 1127
- **1137**

Note:
The correct docking time is 1137 because that is the earliest time the tide reaches a height of 5 feet above chart datum, providing the necessary 40 feet of water depth for a 38-foot draft and 2 feet of under-keel clearance. This requires using tide tables and interpolation to determine the time on the rising tide.

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6. While on a course of 019°pgc, a light bears 14° on the port bow at a distance of 15.3 miles. What course should you steer to pass 1.5 miles abeam of the light, leaving it to port?

- 015°pgc
- **011°pgc**
- 013°pgc
- 006°pgc

Note:
To pass 1.5 nautical miles abeam of a light, steer a course that positions the light 5.6 degrees on the port bow. The light's true bearing is 005 degrees, so the required course is 011 degrees.

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7. While on a course of 066°pgc, a light bears 13° on the port bow at a distance of 12.3 miles. What course should you steer to pass 4 miles abeam of the light leaving it to port?

- 079°pgc
- 067°pgc
- **072°pgc**
- 085°pgc

Note:
To pass a fixed object at a specific distance, steer a course that makes a tangent to a circle centered on the object with a radius equal to the desired closest point of approach. The angle between your course and the object's bearing is calculated using the sine function: sin(A) = CPA / Range, where CPA is the closest point of approach and Range is the initial distance to the object.

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8. You are on course 079°T, speed 11.2 knots. At 0904 you see a daymark bearing 078°T at a range of 4.6. If you change course at 0910 to leave the daymark abeam to starboard at 0.5 mile, at what time will the daymark be abeam?

- **0928**
- 0935
- 0918
- 0923

Note:
The daymark will be abeam at 0928. After changing course, the distance to the abeam point is approximately 3.44 NM, which requires about 18.5 minutes at 11.2 knots.

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9. You are on course 086°T, speed 11.7 knots. At 1013 you see a buoy bearing 088°T at a range of 4.8 miles. If you change course at 1019 to leave the buoy abeam to port at 1.0 mile, at what time will the buoy be abeam?

- 1043
- 1052
- **1037**
- 1040

Note:
After altering course, the buoy will be abeam 18 minutes later, resulting in a time of 1037.

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10. While on a course of 097°pgc, a light bears 8° on the port bow at a distance of 11.7 miles. What course should you steer to pass 3 miles abeam of the light leaving it to port?

- **104°pgc**
- 082°pgc
- 091°pgc
- 112°pgc

Note:
To pass 3 miles abeam of the light on the port side, steer a course of 104pgc. This requires a 15 adjustment to starboard of the light's bearing, calculated using the sine function and ensuring the light remains on the port side.
