

Exercise 2. Marine Charts—or Finding Your Way Around

As pointed out in the text, a primary consideration in any type of marine research is accurate positioning of studies, samples, etc. We do not pretend to make navigators of our students; however, the exercise is designed to give them a feel for dead reckoning and positioning within sight of land. To do the exercise, the student will need a compass and two plastic triangles or a parallel ruler. Expect students' calculations of degree values to vary by $\sim 1-2^\circ$. Although much maritime navigation is now assisted by GPS and other instruments, stress to students that these basic methods remain a primary means of navigation.

1. a. Bergen, Norway.
 - b. $73.9667^\circ + 5.333^\circ = 79.30^\circ/15^\circ = 5$ hours, 17 minutes.
 - c. $157.833^\circ - 122.333^\circ = 35.5^\circ/15^\circ = 2$ hours 22 minutes (or ~ 2 hours).
 - d. $40.5^\circ - 25.75^\circ = 14.75^\circ$; $14.75^\circ \times 60$ nautical miles/degree = 885 nautical miles;
 885 nautical miles $\times 1.853$ km/ nautical miles = 1639.9 km.
 - e. Boston.
2. 35 knots = 40.25 statute miles/hr; 35 mph = 30.4 knots. The speedboat is faster.
3. a. See Station 1 location as shown in completed Figure 2.6 below. The depth at this location is ~ 13 feet.
 - b. The bearing from the Station 1 to the Flag Tower on Biloxi Beach is $\sim 38^\circ$ true. The instructor should decide if the students should use the 1984 magnetic deviation of $2^\circ 15'$ or correct for the annual decrease. If the 1984 value of $2^\circ 15'$ is used, then the value will be $\sim 36^\circ$. If this 1984 magnetic deviation is corrected to a 2000 magnetic deviation assuming a constant annual $9'$ decrease (*i.e.*, $2^\circ 24'$ decrease), then the value will $\sim 38^\circ$ magnetic, effective the same as true.
 - c. The bearing from Station 1 to the Intracoastal Waterway Buoy (Buoy A) is $\sim 111^\circ$ true and $\sim 109^\circ$ (1984) or $\sim 111^\circ$ (2000) magnetic.
 - d. Note that students should use the dot on top of the "I" in the larger font "Ship Island" as the location of the tower. Course made good is $\sim 159^\circ$ true and $\sim 161^\circ$ (1984) or $\sim 159^\circ$ (2000) magnetic. Distance from Station 1 to the tower on Ship Island is ~ 3 nautical miles.
 - e. No, the area ahead of the ship's present course is deeper than the 7 foot draft.
 - f. New course: 211° true and $\sim 213^\circ$ (1984) or $\sim 211^\circ$ magnetic. Distance to Buoy 12 is ~ 2.5 nautical miles.

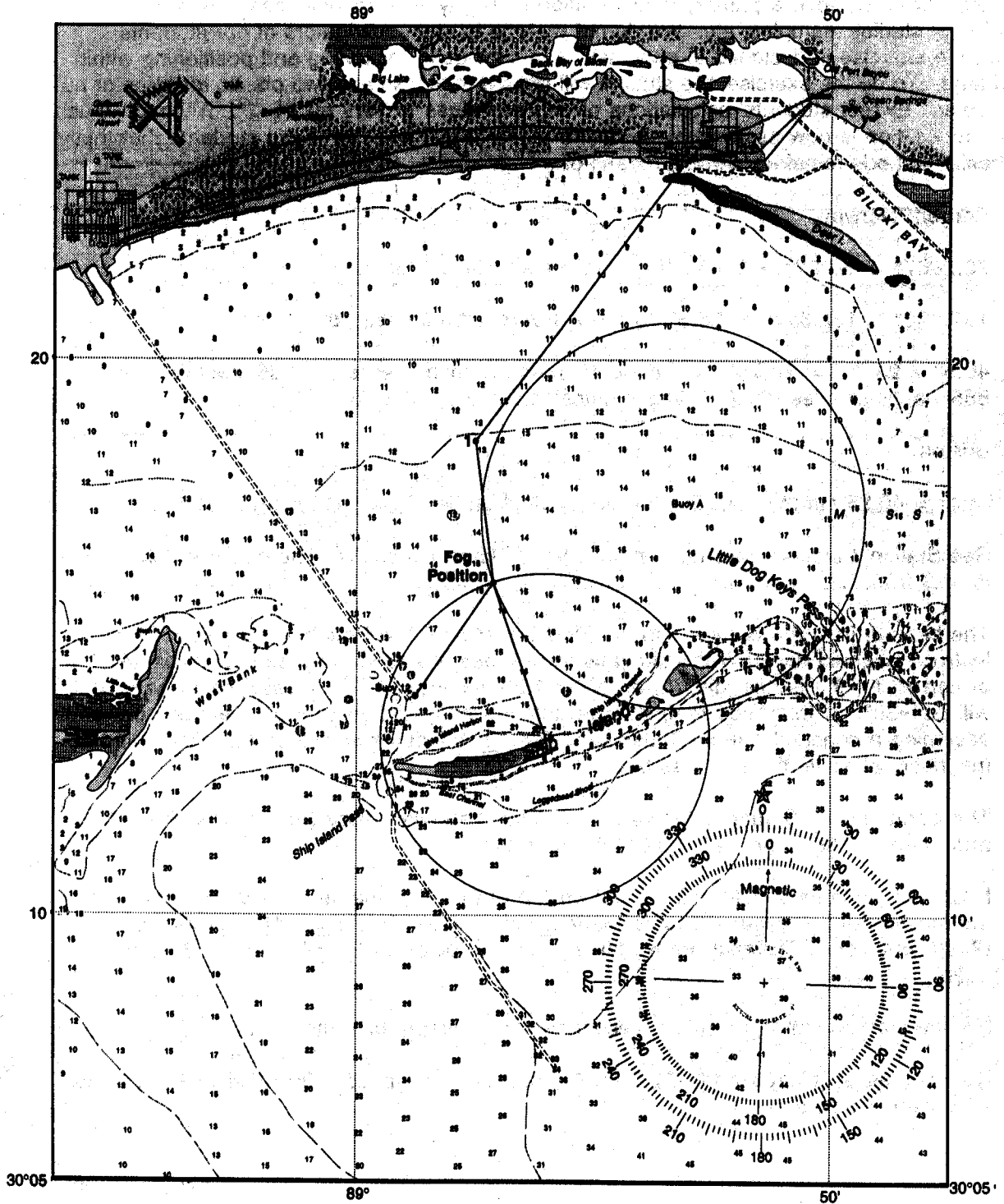


Figure 2-6