Electronic Navigation

1. (Refer to Figure 20.) What is your approximate position on low altitude airway Victor 1, southwest of Norfolk (area 1), if the VOR receiver indicates you are on the 340° radial of Elizabeth City VOR (area 3)?

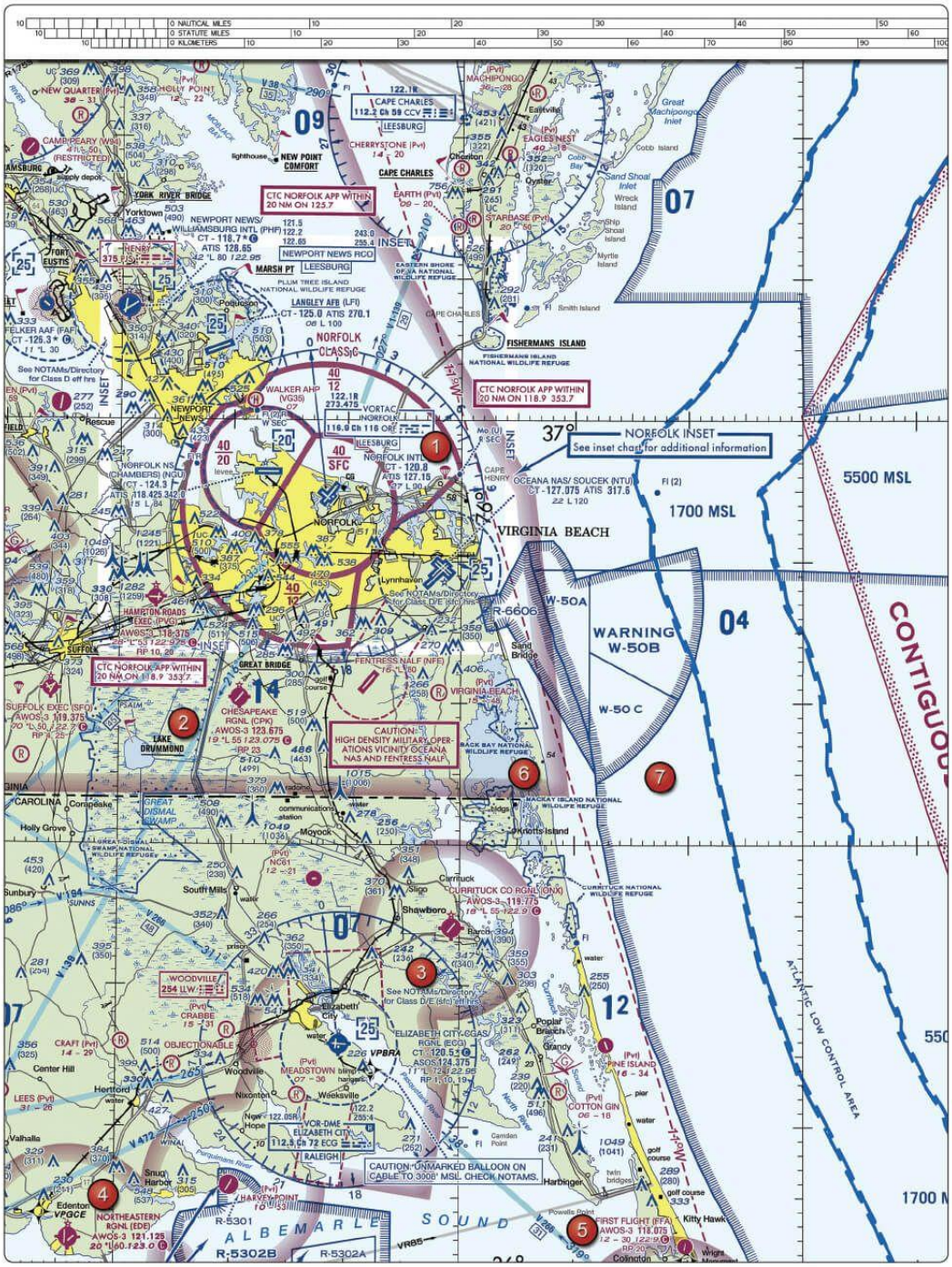

FIGURE 20.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- 15 nautical miles from Norfolk VORTAC.
- **18 nautical miles from Norfolk VORTAC.**
- 23 nautical miles from Norfolk VORTAC.

Note:
Drawing a line along the Elizabeth City 340° radial to V1 places the airplane southwest of Norfolk airport. Using the scale at the top of the chart, the airplane is 18 nautical miles from the Norfolk VORTAC.

2. (Refer to Figure 20, area 3; and Figure 28.) The VOR is tuned to Elizabeth City VOR, and the aircraft is positioned over Shawboro. Which VOR indication is correct?

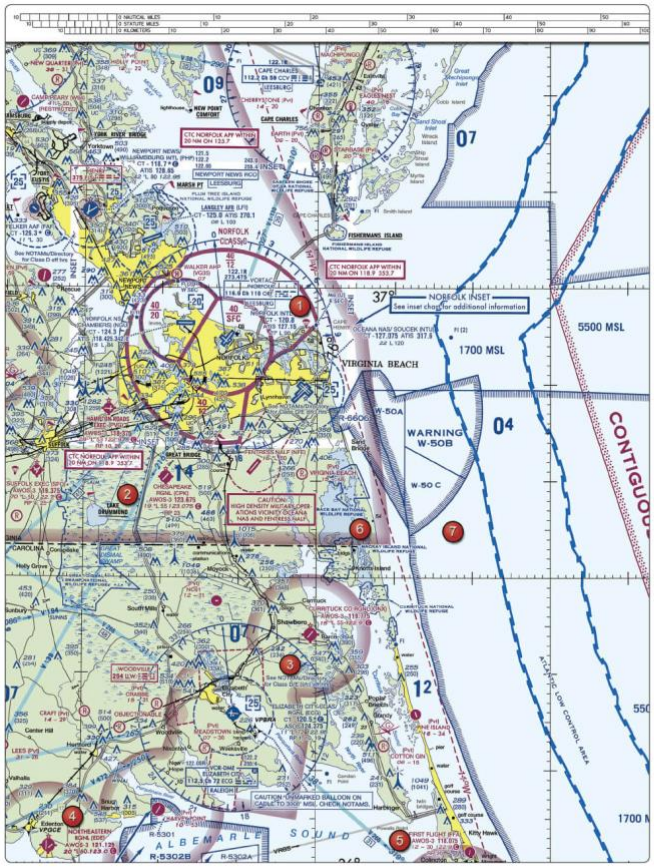

FIGURE 20.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

FIGURE 28.—VOR.

- **2.**
- 8.
- 9.

Note:
The town of Shawboro is located on the Elizabeth City 030° radial. The OBS on VOR 2 is set to the 030° radial and the CDI is centered but it is indicating TO. That would place the aircraft to the southwest of the VOR, not over Shawboro. VOR 9 indicates the airplane is on the 210° radial with a FROM indication, which is also incorrect for Shawboro. However, the OBS of VOR 2 is set to the 030° radial and is indicating FROM, which would be the case when over Shawboro.

3. (Refer to Figure 21.) What course should be selected on the omnibearing selector (OBS) to make a direct flight from Mercer County Regional Airport (area 3) to the Minot VORTAC (area 1) with a TO indication?

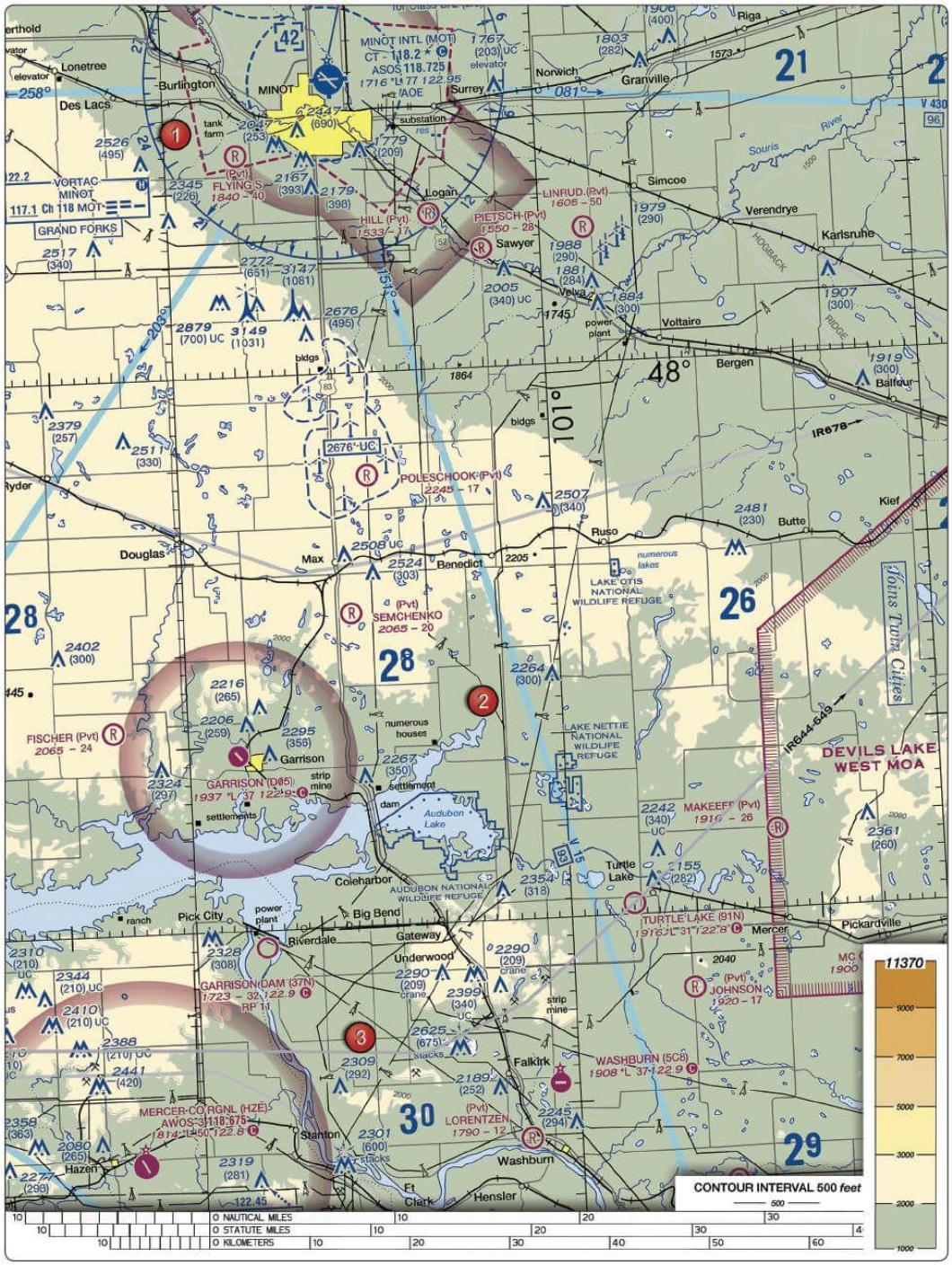

FIGURE 21.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- **359°.**
- 179°.
- 001°.

Note:
Use Fig. 21 to find the course (omnibearing selector with a "TO" indication) from Mercer County Regional Airport (lower left corner) to the Minot VORTAC (right of 1). Note the compass rose (based on magnetic courses) that indicates the Minot VORTAC. A straight line from Mercer to Minot Airport coincides the compass rose at 179°. Since the route is north TO Minot, not south from Minot, compute the reciprocal direction as 359° (179° + 180°).

4. (Refer to Figure 24.) What is the approximate position of the aircraft if the VOR receivers indicate the 320° radial of Savannah VORTAC (Area 3) and the 184° radial of Allendale VOR (Area 1)?

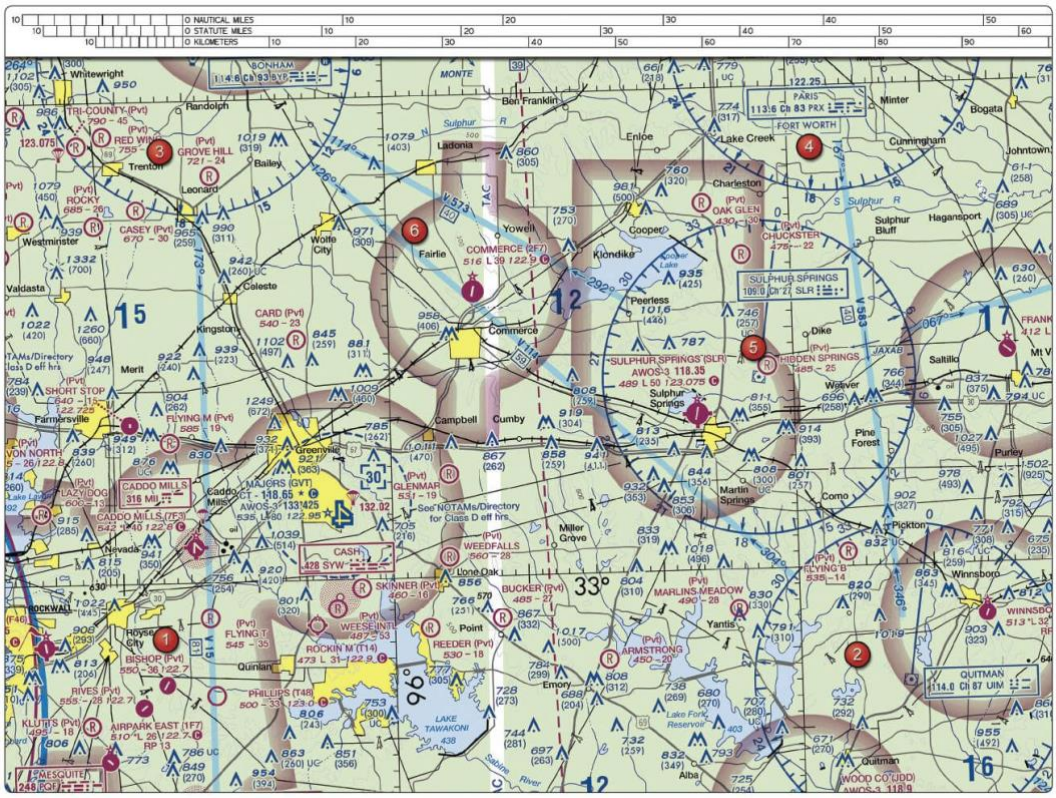

FIGURE 24.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- Town of Guyton.
- **Town of Springfield.**
- 3 miles east of Marlow.

Note:
Drawing a line along the 320° radial of Savannah VORTAC and a line along the 184° radial of Allendale VOR results in the lines intersecting over the town of Springfield, which is the position of the aircraft.

5. (Refer to Figure 23.) On what course should the VOR receiver (OBS) be set to navigate direct from Hampton Varnville Airport (area 1) to Savannah VORTAC (area 3)?

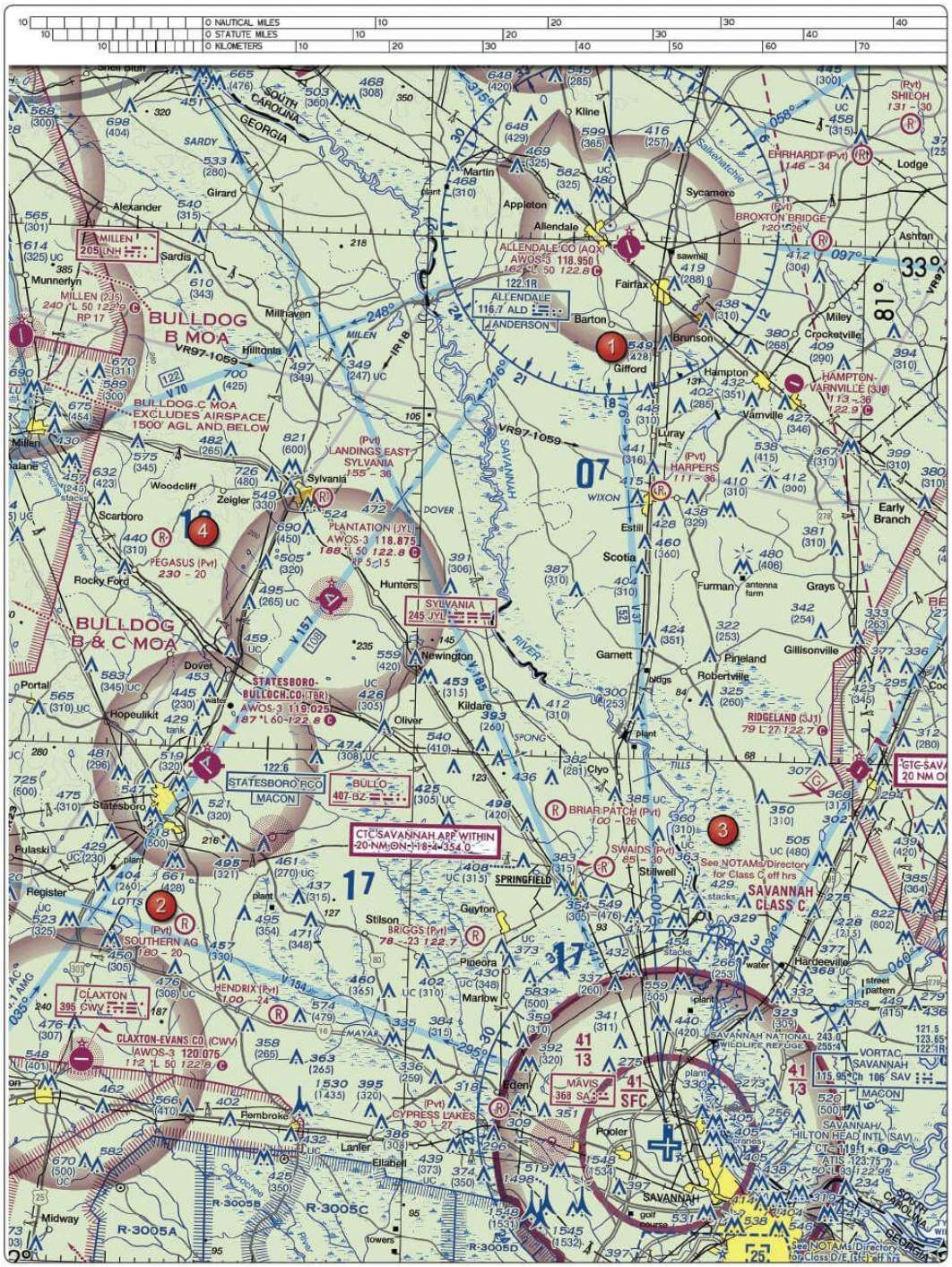

FIGURE 23.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- 016°.
- **195°.**
- 200°.

Note:

1. Plot the course direct from Hampton Varnville Airport to the Savannah VORTAC. 2. Note the radial (magnetic course from Savannah) on which the plotted course lies (015°). 3. Determine the course TO the VORTAC by finding the reciprocal: TO = FROM + 180° TO = 015° + 180° TO = 195°

6. (Refer to Figure 24.) What is the approximate position of the aircraft if the VOR receivers indicate the 245° radial of Sulphur Springs VOR-DME (area 5) and the 145° radial of Bonham VORTAC (area 3)?

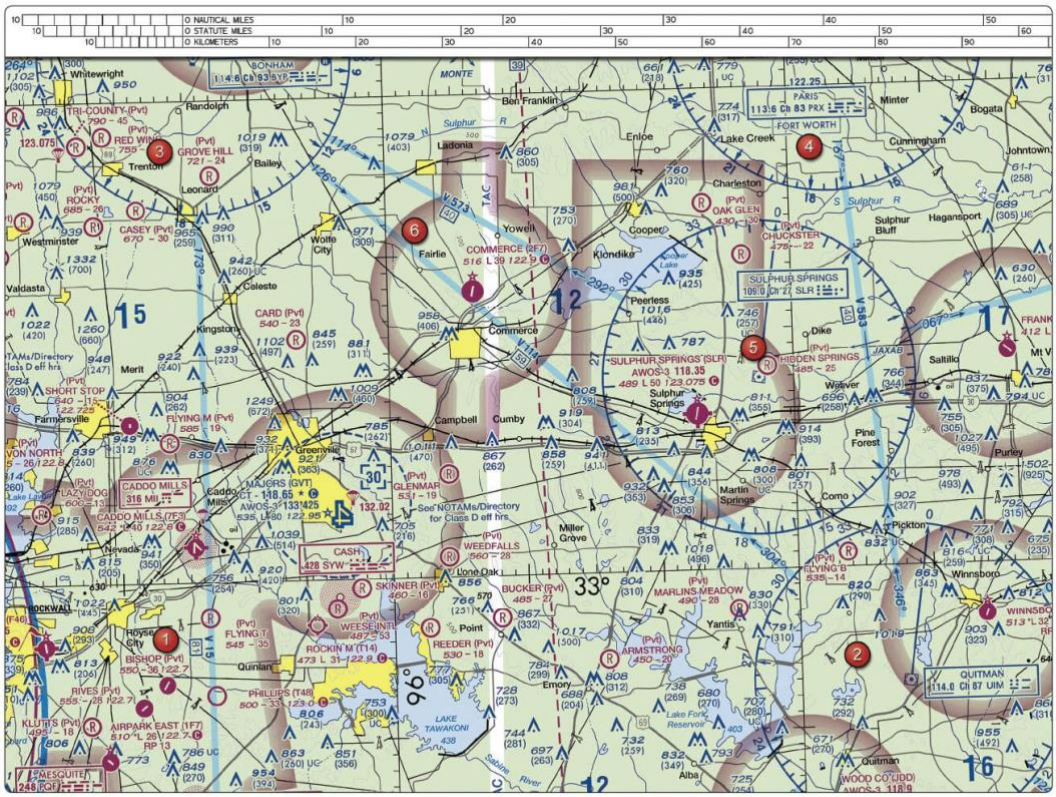

FIGURE 24.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- Meadowview Airport.
- **Glenmar Airport.**
- Majors Airport.

Note:
Drawing a line along the 245° radial of the Sulphur Springs VOR-DME and a line along the 145° radial of Bonham VORTAC results in the lines intersecting over Glenmar airport, which is the position of the aircraft.

7. (Refer to Figure 24.) On what course should the VOR receiver (OBS) be set in order to navigate direct from Majors Airport (area 1) to Quitman VORTAC (area 2)?

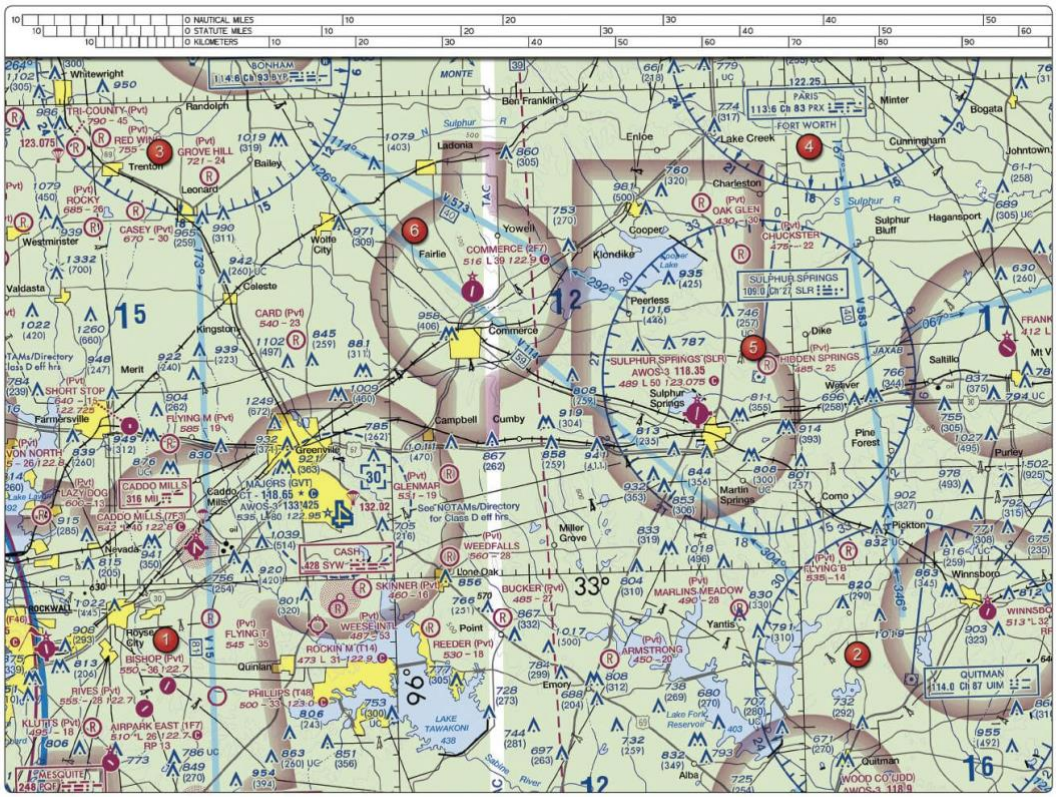

FIGURE 24.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- **101°.**
- 108°.
- 281°.

Note:
To navigate directly from Majors Airport (area 1) to Quitman VORTAC (area 2) using a VOR receiver, follow these steps:

Locate both points on the sectional chart:
- Majors Airport (GVT) is at the bottom left of the map.
- Quitman VORTAC (QUM) is near the bottom right.

Draw a line connecting both points:
- This line represents the desired course.

Determine the course direction:
- Using the compass rose around the Quitman VORTAC, determine the radial that aligns with the line connecting the two points.
- The line roughly aligns with the 101° radial from Quitman VORTAC.

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8. (Refer to Figures 24 and 28.) The VOR is tuned to Bonham VORTAC (area 3), and the aircraft is positioned over the town of Sulphur Springs (area 5). Which VOR indication is correct?

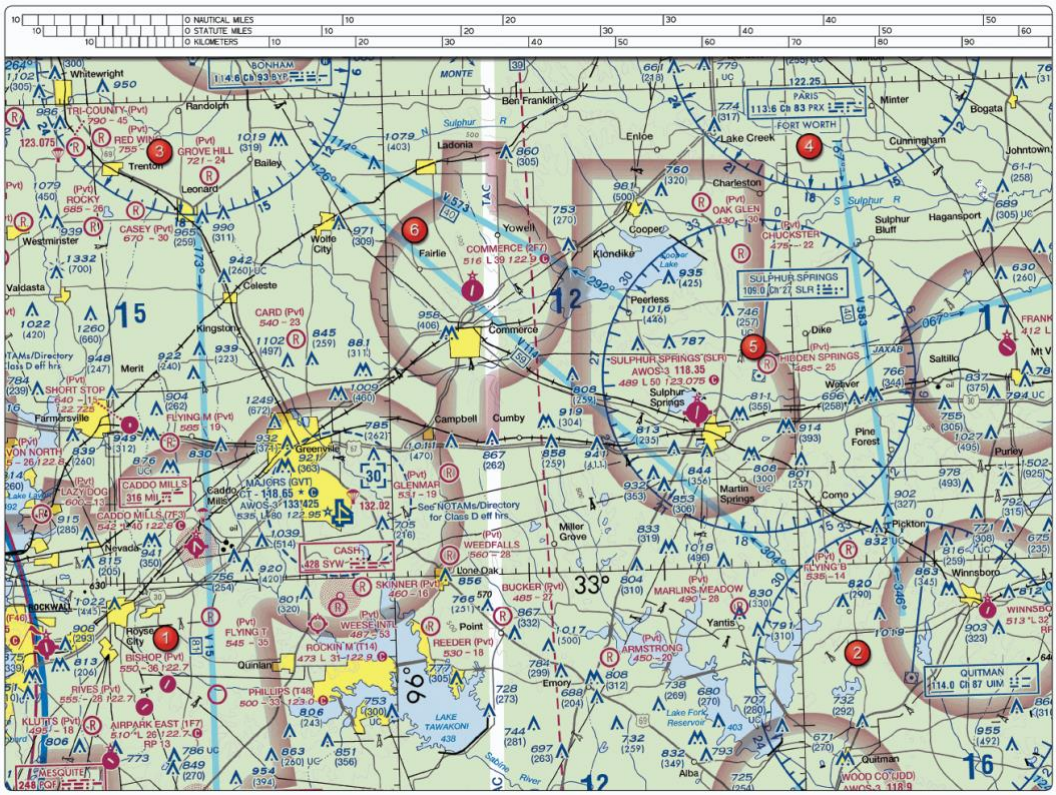

FIGURE 24.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

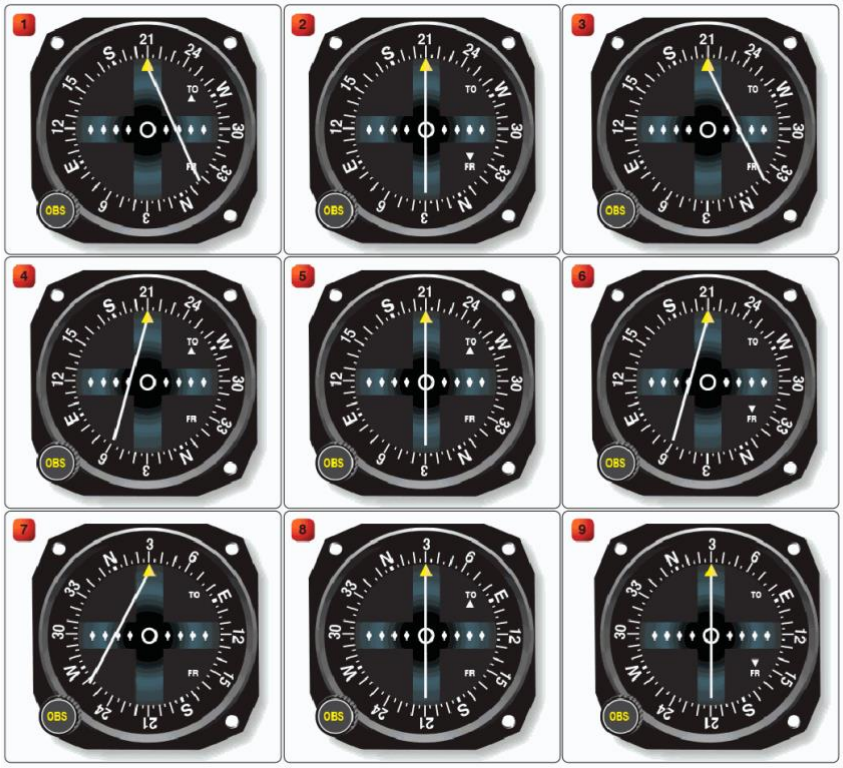

FIGURE 28.—VOR.

- 1.
- **7.**
- 8.

Note:

1. Locate and draw the magnetic course from Bonham VORTAC to Sulphur Springs (120?).

2. Notice that the OBS selections of all the dials in FAA Figure 28 are 030? or 210?, both of which are at 90? with respect to the 120? radial. Therefore, when over Sulphur Springs, the flag should indicate neither TO nor FROM and the course needle should have a full deflection either side.

3. Both dials 3 and 7 of FAA Figure 28 are at 90 degrees from the correct radial of 120 degrees. However, only dial 7 is a valid answer option.

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9. (Refer to Figure 25, area 5.) The VOR is tuned to the Dallas/Fort Worth VORTAC. The omnibearing selector (OBS) is set on 253°, with a TO indication, and a right course deviation indicator (CDI) deflection. What is the aircraft's position from the VORTAC?

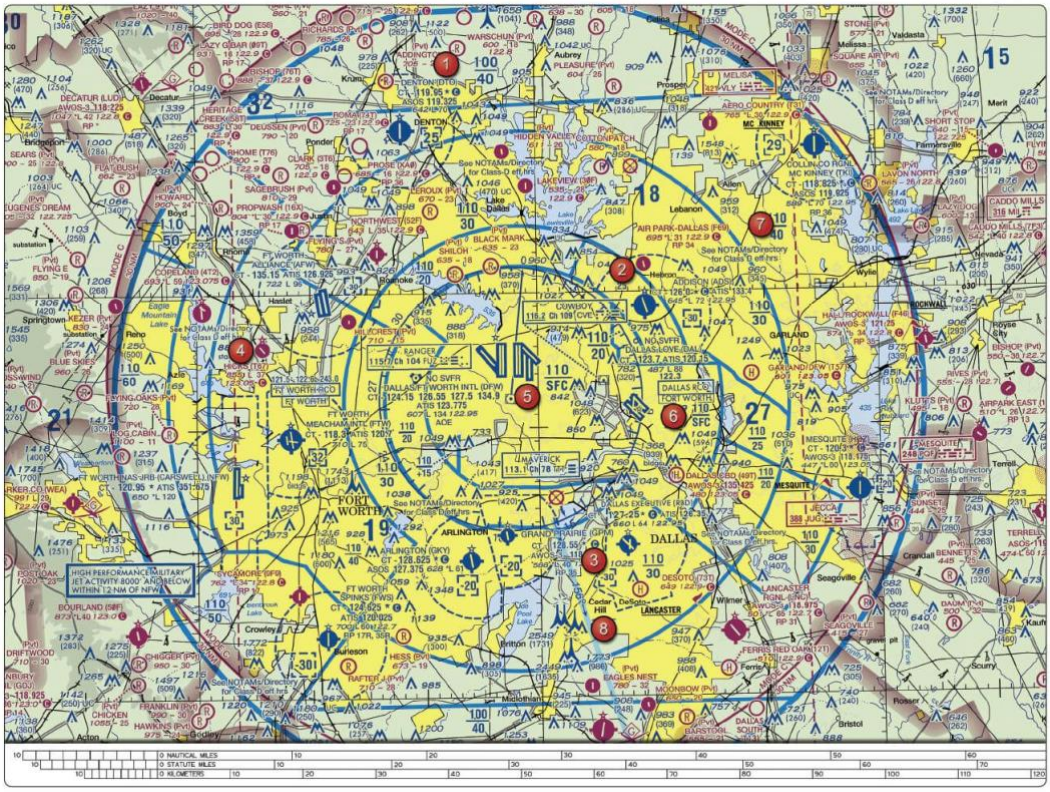

FIGURE 25.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

- **East-northeast.**
- North-northeast.
- West-southwest.

Note:

The OBS is set to 253° with a TO indication and a right CDI deflection, which means the airplane is left of course (an OBS setting greater than 253°). The reciprocal of 253° is 073°, but since the airplane is left of course, the actual radial the airplane is on is greater than 073°, or closer to east. Therefore, the airplane is east-northeast of the VOR.

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10. (Refer to Figure 26, areas 4 and 2; and Figure 28.) The VOR is tuned to Jamestown VOR, and the aircraft is positioned over the town of Cooperstown. Which VOR indication is correct?

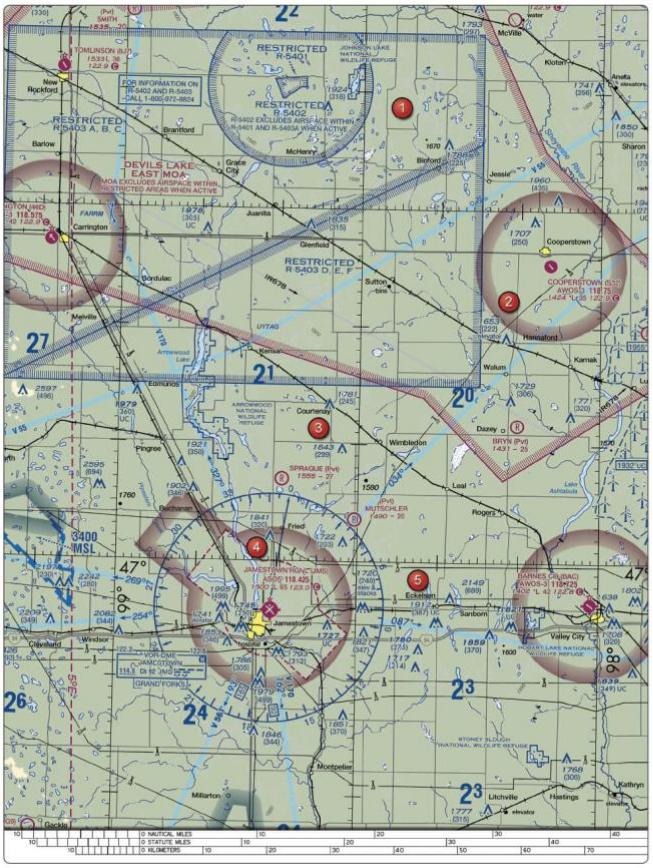

FIGURE 26.—Sectional Chart Excerpt.
NOTE: Chart is not to scale and should not be used for navigation. Use associated scale.

FIGURE 28.—VOR.

- **5.**
- 1.
- 4.

Note:
1. Locate the Cooperstown Airport and the Jamestown VOR in FAA Figure 26. Draw the radial (magnetic course FROM) of the Jamestown VOR which Cooperstown Airport lies (030).

2. When over Cooperstown Airport on the 030 radial, the CDI have a 030 FROM indication or a 210 TO indication (the reciprocal). Dial 5 satisfies these conditions.
