VOR Tracking

Pilots Handbook of Aeronautical Knowledge Chapter 16

VOR NAVIGATION: Now we will talk about navigating with the VOR. There are a few simple rules I will give you in order to make this a little easier for you. This flight we are going to go to the south practice area. Once we are at altitude, we will do a little VOR work enroute to the practice area. We will go over several different items related to the VOR:

POSITION: The first thing we want to do is be able to find out where we are in relation to different VOR's. This is simple to do.

1: TUNE: The first thing we want to do is tune in the proper frequency in the navigation side of the radio. We do this the same as we would on the communication side of the NAV/ COM.

2: IDENTIFY: If we want to know where we are in relation to a specific VOR we need to make sure we are tuned in to the correct navigation aid. To do this, dial the frequency into the navigation side of the radio, make sure the correct frequency is on the active side of the display. Once the frequency is in, turn the NAV side on to IDENT. This is a little button or switch on the navigation receiver. Make sure the volume is up and listen for the Morse code for the navaid. Make sure this is the same Morse code that is on the map or you may have the wrong frequency.

3: TWIST: Twist the OBS until you have a FROM sign in the window.

Once the FROM sign is in the window, continue to turn the OBS until the CDI is centered. Now you are on that radial FROM the station. For example, if the CDI is centered and the OBS reading at the top is 280, the aircraft is on the 280 degree radial FROM the VOR. If you look on your map, draw a line from the center of the VOR and through the 280 Degree mark, and continue on. You are on that line or you could say you are on the 280-degree radial FROM the station.

The problem now is the question," where on this line am I". In order to find this out we simply do this with another VOR. After you draw two lines on your map, there will be a spot where the two intersect. You are at this spot. You should use two VOR's that are Perpendicular to each other.

FLYING TO A STATION: When you want to fly to a station the first thing you want to do is find the radial you are on. Once this is done, turn the OBS 180 degrees on the opposite reading. There should be a to sign in the window. If you look at the OBS and the directional gyro, the radial on the top of the OBS should match the heading on the DG. If these two are not close, you have a problem. If they are close, then you will have to fly that heading in order to stay on that radial of the VOR. If the needle starts to move, then you will have to begin correcting for the wind. If the needle moves to the right, you will have to fly to the right of the radial dialed in the top. For example, if you are tracking the 180-degree radial to the station and you are heading 180 degrees you know you are on the right track. If the needle begins to move to the right, then you will have to fly to the right of 180 to correct for the wind. One way to find the exact wind correction is the same as you would find it on the traffic pattern.

If you are flying downwind and the wind is blowing you to the right, you will need to fly to the left in order to fly on the desired ground track. Once you have corrected the right amount, the movement toward the runway will stop, but you will still be off course. So you have to over correct in order to get back on the desired ground track, and once you are on it then you will have to go to the original correction. Now the same is true for tracking the VOR. You do not want to continuously go back and fourth. The first thing you want to do is find the correction angle. In order to do this you just turn the aircraft to the right until the needle stops moving to the right. So perhaps you have corrected 10 degrees. To get exactly on that radial, over correct until the needle is centered, and then go back to

the ten-degree correction. This will put you on the correct course, and if you think about it, you will be able to find where the wind is coming from. (Brain teaser)

FLYING FROM A STATION: When we want to fly from a station we will turn the OBS until there is a **FROM** flag in the window. Once you have this, center the needle. When the needle is centered, you want to note the radial on the top of the OBS. Once you have identified the radial you are on, you want to turn to that heading. This will put you on the same heading as the radial. Now you have to wait and see if the needle moves in either direction. If the needle moves, we will have to make a correction for the wind. In order to correct for the wind you will need to turn toward the needle. If the needle still moves away from the center of the OBS, you will have to correct more toward the needle. Once the needle becomes centered, you will have to correct back in the original direction in order to avoid the needle moving across the center.

REVERSE SENSING: Reverse sensing is one thing that you definitely want to avoid. This is when you think you are on the right track, but you are not. If you have the OBS dialed in opposite of the heading you are flying, you will find that if you fly toward the needle it will move farther away from the center. This is because you are flying away from the desired ground track. This is pretty simple to figure out but here is a simple tip:

After you have dialed your radial on and turned your heading, you only need to quick look at two things to see if you are on the right track or not;

1: Look at your radial that you have dialed in at the top of the OBS;

2: Now look at the heading and just draw an imaginary line between 3 O'clock and 9 O'clock. If you can see the OBS heading you have dialed in above your imaginary line then you are on track. If your OBS heading is Below the line you are reverse sensing. I know this is pretty simple but a lot of people don't pick this up.

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