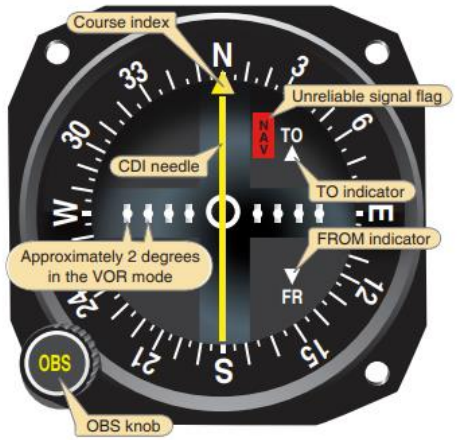

Intercepting & Tracking
THE BACKSEAT PILOT

Overview

- What
  - A VOR is a navigation and approach instrument
  - More in depth overview of the VOR, and tracking and intercepting radials
- Why
  - VORs are the backbone of the IFR airway system
  - Many airports use VOR approaches

Content

- Components
- VOR Tracking
- Intercepting a Course
- Intercepting & Maintaining a DME Arc



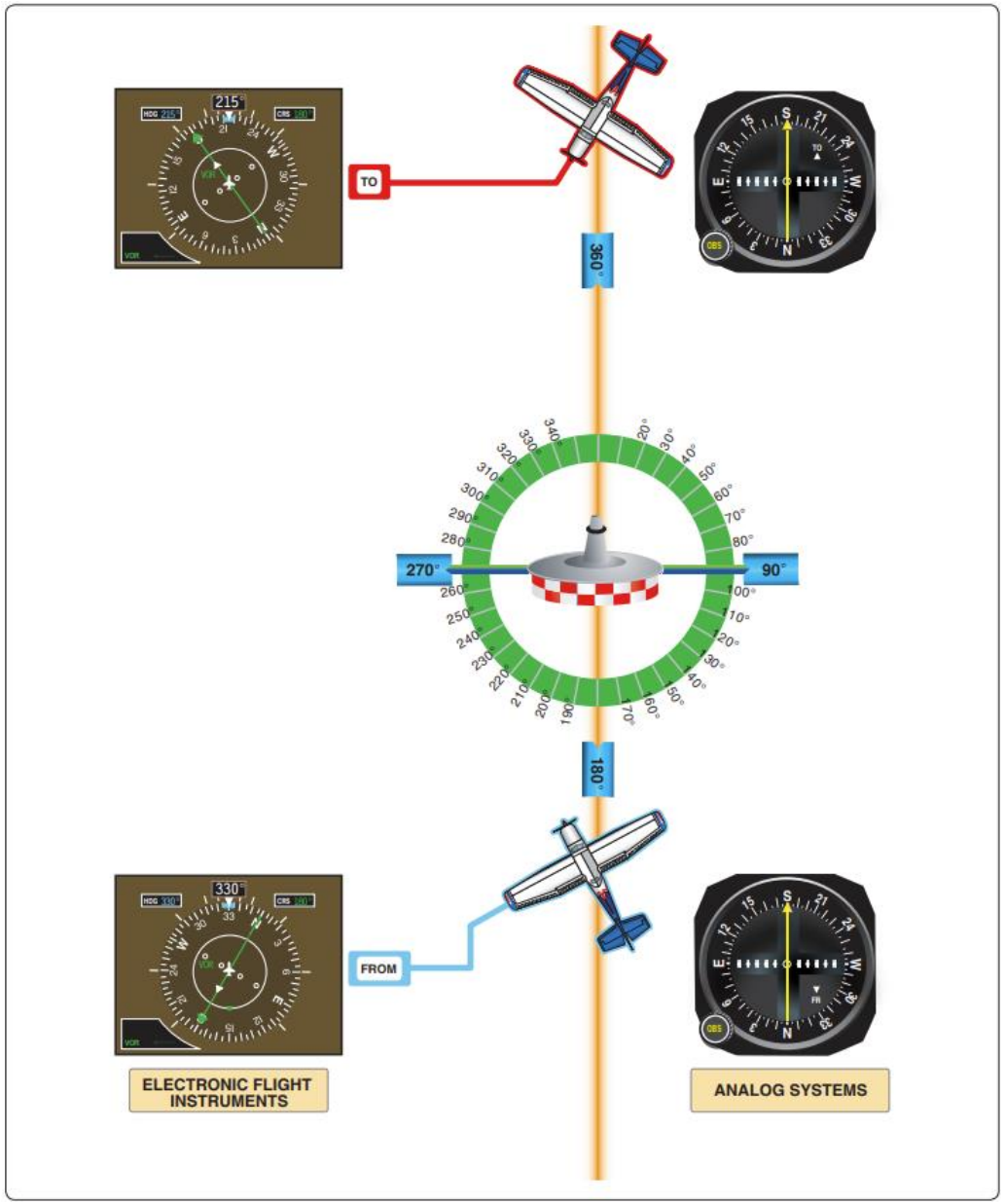
Source: Instrument Flying Handbook, FAA

VOR Components

- Ground Transmitter
  - Transmits on assigned frequency
  - Oriented to magnetic north
  - 360 radials
  - Various strengths and operating ranges
- Aircraft Receiver
  - Antenna: Receives signals from the ground transmitter
  - Tuning Device: Tune & identify the desired VOR frequency
  - VOR Instrument:
    - Course Selector, or OBS
    - Course Deviation Indicator
    - To / From Indicator

VOR Tracking

- TIM
  - Tune: Tune desired VOR frequency
  - Identify: Morse code of text identifier
  - Monitor: Ensure identifier remains active
- Tracking TO a Station
  - Center the OBS with a TO indication
    - Tail of the needle indicates the radial you are on
  - Turn to the heading on the OBS
  - Compensate for any crosswind
  - Passing the VOR, TO will change to FROM
- Reverse Sensing
  - Flying TO with a FROM indication, or vice versa
  - CDI indicates opposite
  - If right of course, CDI shows you left of course



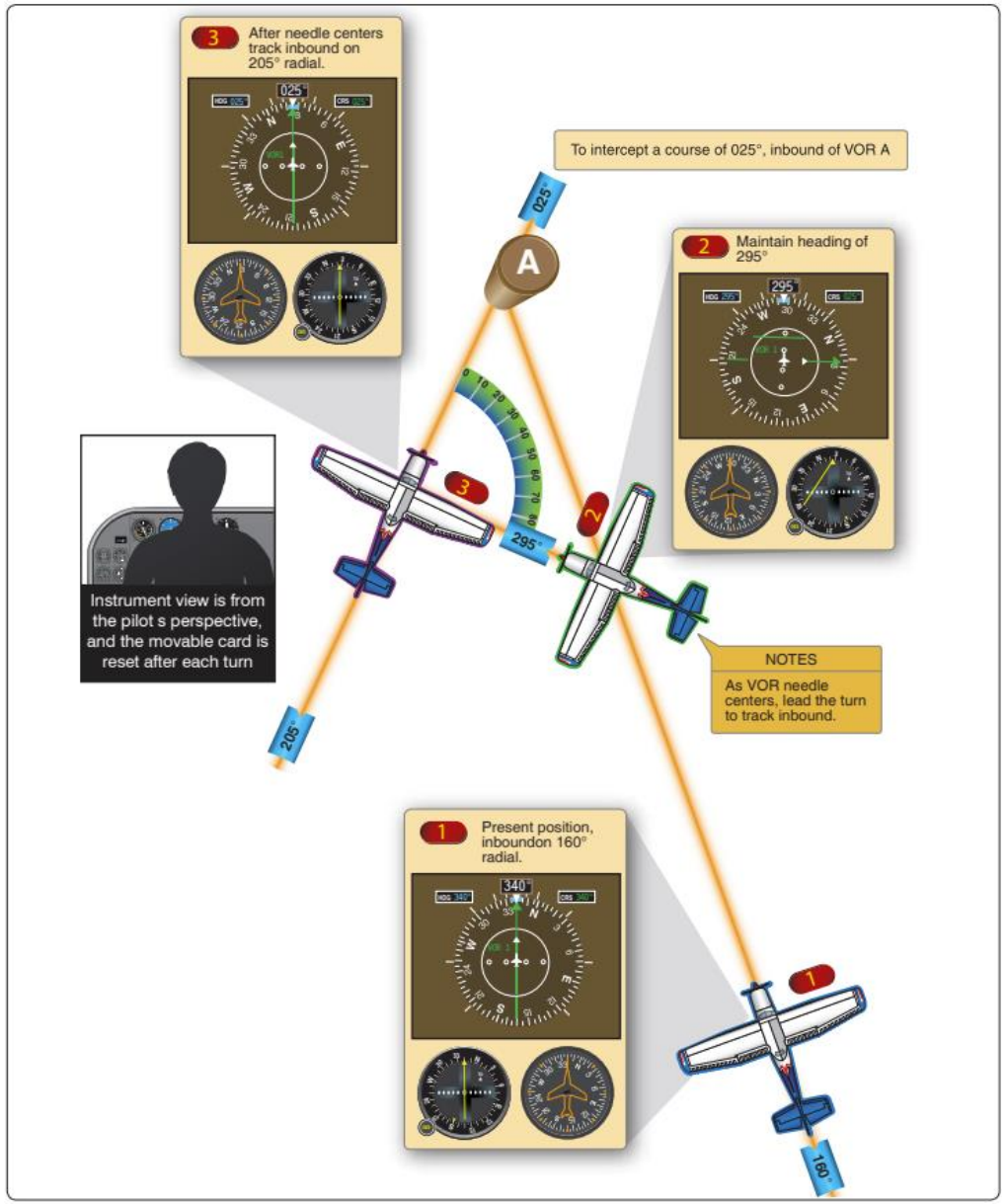
Source: Instrument Flying Handbook, FAA

VOR Tips and Techniques

- Always TIM
  - Tune, identify, monitor
- VORs are line-of-sight
- Avoid homing
  - Correct for wind-drift
  - Don’t continuously reset the course
- When flying to a station, always fly the selected course with a TO indication
- Flying from a station, always fly the selected course with a FROM indication

Intercepting a Course

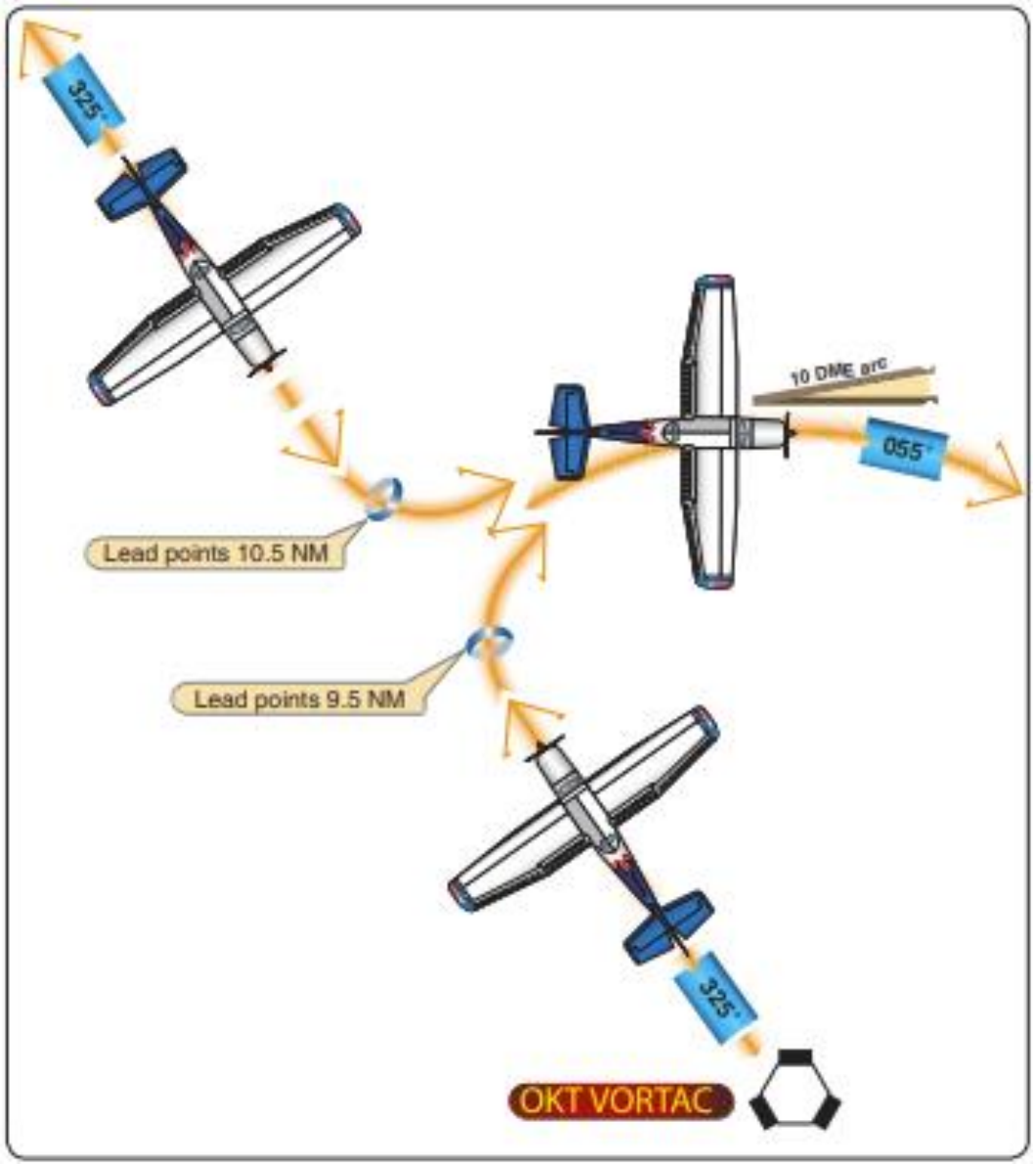
- What radial am I on?
- Where do I want to go?
  - What radial, inbound or outbound
  - What direction is the course from you
- How do I get there?
  - Difference between current & desired radial
  - Double the difference
  - Apply it to the desired radial
- Example
  - SE of a VOR on the 160° radial
  - Want to intercept 205° radial inbound
  - Difference = 45°, Doubled = 90°
  - Applied in direction of the radial = 295° intercept



Source: Instrument Flying Handbook, FAA

Intercepting a DME Arc

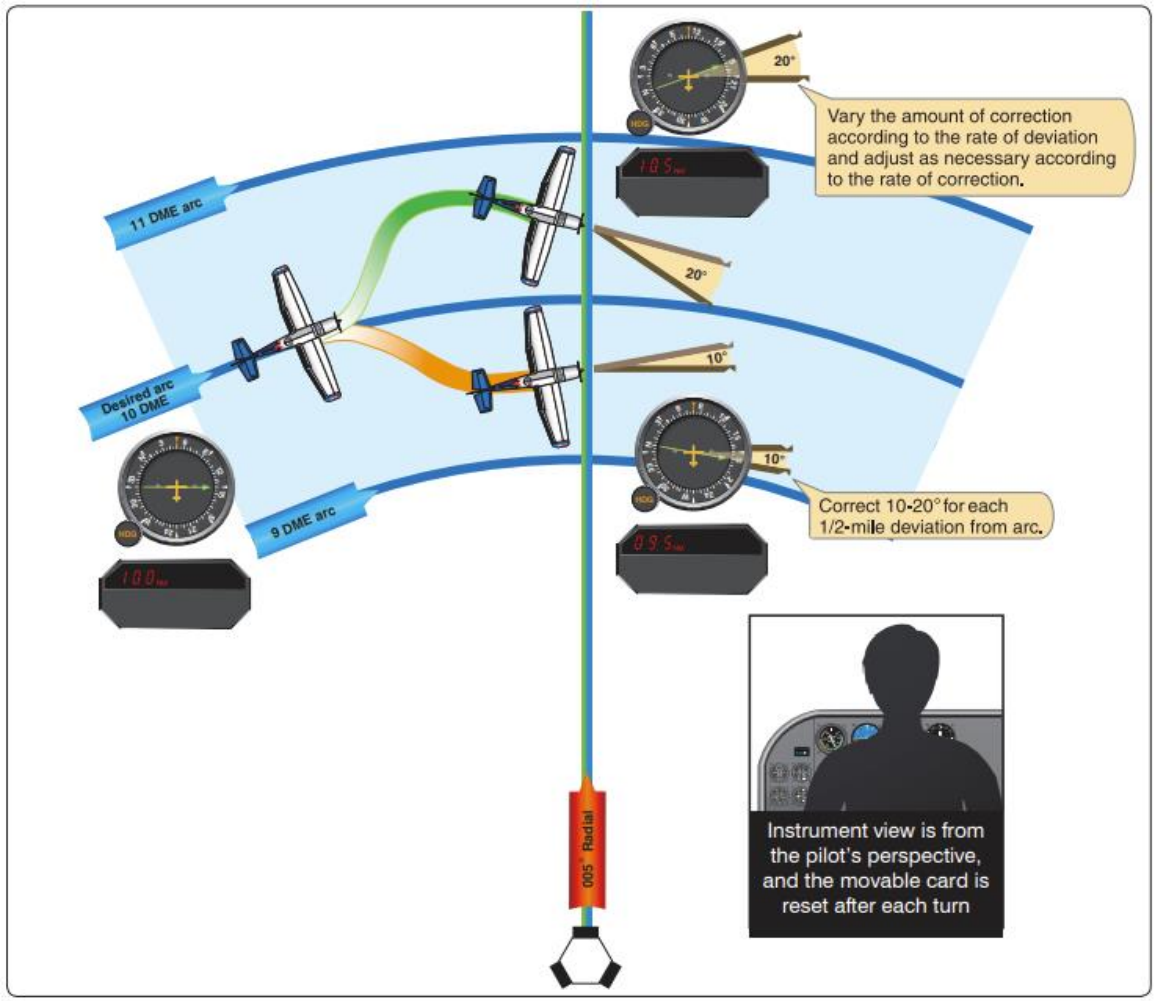
- A track that is a constant distance from the VOR
  - Used in many IAPs
- Intercept the lead-in radial on the approach
- Lead the turn to the arc by ½ mile
  - Make a 90º turn
  - Roll out & rotate the OBS 10º in the direction of turn
- When the OBS centers
  - 3 second standard rate turn (approximately 10º)
  - Rotate the OBS another 10º
  - Repeat until approximately 10º from inbound course
- Turn to intercept the inbound course



Source: Instrument Flying Handbook, FAA

Correcting a DME Arc

- Adjust the amount of turn when the DME distance is too high or low
- Inside the Arc (DME is too low)
  - When the CDI centers, rotate the OBS 10º, and
  - Reduce or eliminate the turn
    - Ex. Rotate the OBS, but maintain heading
- Outside the Arc (high DME)
  - When the CDI centers, rotate the OBS 10º, and
  - Increase the amount of turn
    - Ex. Rotate the OBS and turn 15º
- GPS?
  - Load the approach, follow the magenta line!



Source: Instrument Flying Handbook, FAA

Questions?