Attention

You want to fly from the Atlanta area to Nashville. You do not want to hit a building, tower, or a mountain on the way.

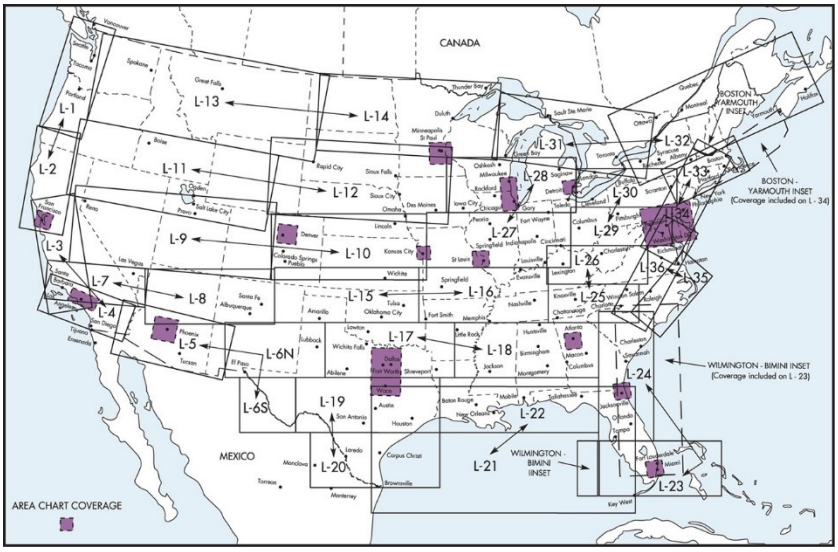
Objective

To gain knowledge of all the FAA regulations pertaining to instrument flying.

Schedule

Ground instruction – 30 minutes

Reference Material



I took screen shots from chart L-18

Material

<u>Minimum Altitudes</u>

Indicated altitude - The altitude that the pilot is able to read at the altimeter.
True altitude - The expressed altitude in terms above the sea level.
Height - The altitude in terms of distance above a certain point.

Minimum En-route Altitude (MEA) is the altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications complies with the airspace structure and provides the required obstacle clearance.

MEA will assure:
Proper reception of navigation aids.

Two-way communication with ATC.
Safe clearance or margin from obstacles.
Adherence to ATC or local procedures

Minimum Obstacle Clearance Altitude (MOCA) is the minimum altitude for a defined segment that provides the required obstacle clearance. The MOCA is always related with one MEA. The MOCA may put an aircraft below ATC radar coverage (MRVA) and/or below the minimum reception altitude (MRA).

MOCA will assure:
Minimum vertical separation of 1000ft (300m) from the ground or landmarks.
22NM VOR reception range.

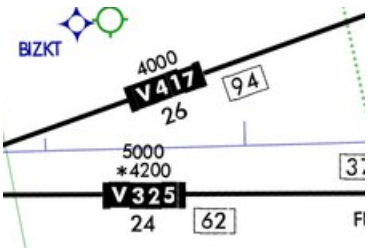


Figure 1 MEA and MOCA

In Figure 1, on V325 the MOCA is 4200 ft and the MEA is 5000. On V417 the MEA is 4000.

The minimum off route altitude (MORA) is an altitude which provides 2,000 feet of terrain clearance in mountainous areas and 1,000 feet in non-mountainous regions; at the same time it provides a reference point of clearance of 10 nm from the route centerline.

The GRID MORA provides terrain and man-made structure clearance within the section outlined by latitude and longitude lines. The Grid MORA value clears all terrain and man-made structures by 1000ft in areas where the highest elevations are 5000ft MSL or lower and by 2000ft in areas where the highest elevations are 5001ft MSL or higher. The Grid MORA is a good value to determinate obstacle clearance whenever the pilot has to, or would like to divert from the airway, e.g. during an emergency descent or when flying direct to a point away from an airway.

Figure 2 MORA

The MORA around the Rome airport is 4700 ft.

The Minimum Crossing Altitude (MCA) is the lowest altitude at which a navigational fix can be crossed when entering or continuing along an airway that will allow an aircraft to clear all obstacles while carrying out a normal climb to the required minimum en route IFR altitude (MEA) of the airway in question beyond the fix The MCA is related with signal reception and obstacle clearance; this will be indicated by a flagged [X] on NOS and Jeppesen charts as an airway number and altitude. The pilot should climb to the MCA before reaching the intersection; in that way the MCA will not be violated.

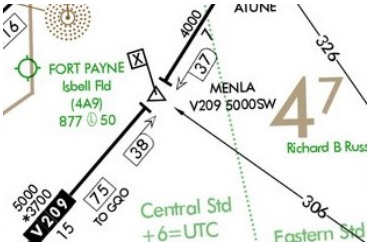


Figure 3 MCA

In Figure 3, V209 5000SW means if you are on V209 you need to be at 5000+ ft when heading SW.

The Minimum Reception Altitude (MRA) is the lowest altitude on an airway segment where an aircraft can be assured of receiving signals from navigation aids like VOR or NDB.

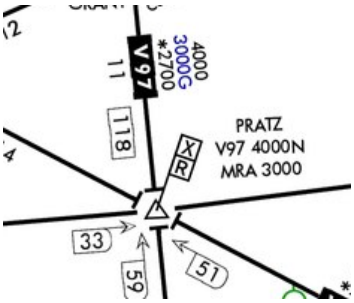


Figure 4 MRA

The MRA at intersection PRATZ is 3000 ft.

Other Chart Info

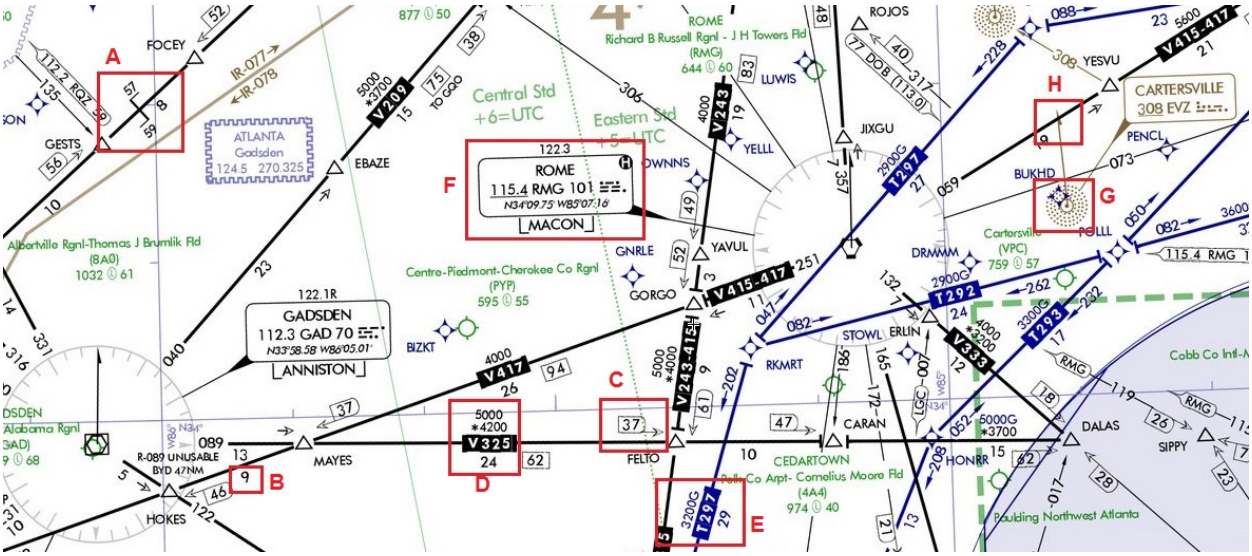


Figure 5

A – Changeover point from one VOR to another

B – Miles between HOKES and MAYES

C – DME fix…the arrow is the VOR radial

D – VOR airway

E – GPS/RNAV airway

F – You can call Macon Radio flight service at 122.3…the H in the circle is HIWAS is available

G – NDB EVZ

H – Points to magnetic north

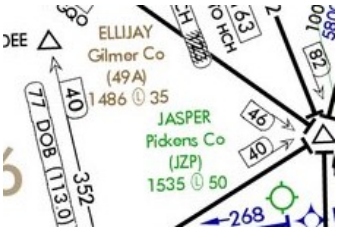


Figure 6

Airports in green have instrument approaches, the ones in brown do not. If you are in the clouds you can count the brown airports out.

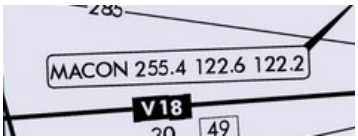


Figure 7

122.6 is an RCO.

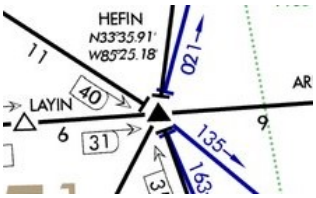


Figure 8

If a GPS point is filled in black it is a mandatory reporting point. You will always tell ATC when you pass it.

VFR-on-top clearance

If you are in a situation where you have heavy cloud cover at say 2500 AGL but the clouds are only a couple hundred feet tall you can ask for VFR-on-top. When you are above the clouds if you get this clearance you would use normal VFR cruising altitudes. You would not have to ask every time you wanted to change altitude or heading. You would need to check in with ATC when you need to pass back through the clouds. You still have to make required reports. You can not to VFR-on-top in class A airspace.

Fly Over vs Fly By