

Ground Lesson: XC #2: Services and Procedures

Objectives:

1. to understand available radar services
2. to understand available in-flight services
3. to understand proper procedures for given situations
4. able to safely plan cross country flights

Justification:

1. in practicality, cross country flying is the main objective of real world flying.
2. knowledge of, and proper execution of cross country flights including diversions and lost procedures is required for the private pilot checkride.

Schedule:

Activity	Est. Time
Ground	1.5
Total	1.5

Elements Ground:

- radar services
- in-flight services
- Diversions
- lost procedures
- pertinent FARs

Completion Standards:

1. when the student understands and can use all the cross country services available.
2. when the student can safely plan and fly a pre-planned flight plan

Presentation Ground:

Radar Services

1. Tower Control

- (1) Controls Runway and immediate surroundings
 - i. All of Class D
 - ii. inner core of Class C and Class B

2. TRACON - Terminal Radar Approach Control

- (1) controls surrounding airspace at Class C and Class B
- (2) named "Approach", (i.e. "NorCal Approach")
- (3) created for the purpose of providing separation of
 - i. IFR traffic from other IFR traffic
 - ii. in class B, and optionally in class C separation of all other traffic (including VFR)
- (4) controls above and surrounding airspace (up to 10,000 ft)
 - i. communication as a VFR pilot is optional if you are not IN the class C or class B airspace
- (5) only exists for Class C and Class B specific airports
- (6)

3. TERSA - terminal radar service area

- (1) subclass of TRACON
- (2) may exist for certain Class D's with IFR approaches, or in areas with a lot of class D's in close proximity.
- (3) Location denoted by a "R" enclosed by a circle at the airport

4. ARTCC - Air Route Traffic Control Centers

- (1) provides route coverage for altitudes greater than 10,000 ft
- (2) named "Center" (i.e. "Oakland Center")
- (3) Area of coverage is usually several states
- (4) Oakland Center is our ARTCC, south - LA Center, north - Seattle Center
- (5) ARTCC may provide route coverage lower than 10,000 ft to fill in the airspace not covered by

In-Flight Services

1. EFAS - En Route Flight Advisory Service from a FSS for inflight weather information along route of flight

- (1) a.k.a. Flight Watch
- (2) available via a network of antennas across the country
- (3) frequency is 122.0 below 18,000 or by the nearest FSS.
 - i. 122.0 is Flight Watch, where Pilot's report in-flight weather, and other pilots can receive pilot reports for their area of flight
- (4) above 18,000, check frequency for specific ARTCC
- (5) limited to receiving and updating weather information (use regular FSS freq. for other requests)

2. HIWAS - Hazardous Inflight Weather Advisory Service

- (1) recorded local weather continuously playing on selected VORs
- (2) Denoted by an "H" enclosed by a circle on servicing VOR
- (3) provides AIRMETs, SIGMETs, urgent pireps, etc.

3. **TWEB** - Transcribed Weather Broadcast

- (1) continuous broadcast of route oriented data over VORs and NDBs
- (2) provides NWS forecasts, in-flight advisories, winds aloft, weather reports, NOTAMS, etc.

4. **ASOS and AWOS** - Automated Surface/Weather Observing System

- (1) automated weather reporting systems. ASOS is the newer more capable version of AWOS
 - i. AWOS-A : altimeter setting
 - ii. AWOS-1 : AWOS-A + wind speed, direction, gusts, temperature, dew point
 - iii. AWOS-2 : AWOS-1 + visibility
 - iv. AWOS-3 : AWOS-2 + cloud and ceiling data
 - v. ASOS-1 : AWOS-3 + variable clouds, variable vis, rapid pressure change, precipitation type, intensity, accumulation, start/end times
 - vi. ASOS-2: ASOS-1 + difference between liquid and frozen precipitation
- (2) note: does not provide runway information or remarks section. Pilot must make decision on correct runway usage

5. **ATIS** - Automatic Terminal Information Service

- (1) provided at airport with operating control towers
- (2) human observed weather information as well as runway information, airport activity, etc
- (3) updated whenever official information is updated
 - i. usually this is between :45 and :00 of each hour

6. **VFR radar advisory service** (a.k.a. flight following) -

- (1) service provided by controllers to assist in traffic avoidance
- (2) contact local approach/departure control for traffic advisories. emergencies can also be reported while on flight following
- (3) only given on a workload permitting basis (IFR traffic has priority)
- (4) To receive flight following contact control with:
 - i. initial communication:
 - (i) identity (who you are) : "4871V"
 - (ii) location (where you are): "over Fremont climbing through 3000"
 - (iii) "with request"
 - ii. after "go ahead" by controller
 - (i) Give N number, aircraft type, and equipment: "Cessna 4871V is a Cessna 172RG slash Uniform"
 - (ii) Report type of Flight and Destination: "VFR to SAC"
 - (iii) Give Request: "requesting VFR Flight Following"
 - iii. expect a squawk code

Diversions

1. have alternates pre-selected for each portion of route
2. make a decision and stick to it.
3. to reduce workload, don't plot and calculate everything before diverting
4. use as many rules-of-thumb, and short cuts as possible
 - (1) use VOR compass rose to estimate direction and turn toward diversion
5. calculate ETA, etc time permitting, and if necessary

Lost Procedure

1. Remember the 5 c's
 - (1) climb, communicate, confess, comply, conserve
2. *Keep flying* - do not constantly make turns..this may lead to further disorientation
3. Try to identify landmarks on the ground and locate them on the chart
4. identify last known position and time
 - (1) with this, you can draw a "circle of error" on the chart
5. identify the closest VOR's and for each
 - (1) tune, identify, find which from radial you're on
 - (2) draw a line extending the radial from the VOR station
 - (3) get position fix by using multiple VORs
6. If non VORs are available or reachable:
 - (1) look for biggest airport in the approximate area
 - (2) look up the approach/departure control frequency for that airport and contact
 - (3) notify of situation and give an estimated position and altitude
 - (4) request vectors to destination or known point

Pertinent FAR's

1. 91.3 - Pilot in Command is the final authority and may deviate from any rule to meet an emergency
2. 91.103 - preflight action requirement
3. 91.121 - altimeter must be set to a station along the route and within 100 miles of the aircraft's last setting
4. 91.151 - fuel requirements for VFR flights
5. 91.159 - VFR cruising altitudes