

### **Basic callup©**

In most situations the frequency and controller for approach or departure will be the same. The call up to approach or departure depends on whether you are coming or going. Your first call is brief; who you are talking to and who you are. If you received your transponder code while on the ground, your call-up gives only who you are talking to, your identification and altitude as level, climbing or descending.

### **Class C Airspace**

The Class C airspace system has a ten mile inner circle in which a call up is required to an ATC approach facility just as though it were Class D tower airspace. Communications is a FAR requirement as is transponder operation in Mode C. The outer 20 mile circle has a permissive call up. Class C airspaces are charted with altitudes in magenta outlines. Some lower altitudes allow initial call-up to be directly to the Class C tower.

### **Operational procedures**

Get the ATIS

Use the correct frequency

Practice for smoothness/accuracy/completeness

Check for frequency congestion

Full aircraft identification + student pilot

Position and altitude

Request and expected reporting point

Initial Class C airspace call up:

DON'T ENTER THE Class C airspace UNTIL ACKNOWLEDGED. (No clearance required.)

"Podunk approach Cessna 1234X student pilot over"

34X Podunk Approach, go ahead

"34X (position-altitude) with (ATIS) and full intentions with any special request.

"34X contact tower 118.3"

"34X to 118.3" (Always say back things radar says to you)

### **Class C Tower call-up after handoff**

"Podunk tower Cessna 1234X Mormon Temple at 2000 descending"

### **Initial Class C Tower call-up without using Approach**

"Podunk Tower Cessna 1234X student pilot (*position*) at (*altitude*)

request left base entry for the right will report 2 mile base"

Class C departure may be done either through clearance delivery or ground as directed by ATIS.

"Podunk Clearance Cessna 1234X enroute Wherever with (ATIS)"

"34X taxi to 27 right on departure maintain runway heading to 1500' right turn to 030 at or below below 2000 Departure frequency will be 127.0"

Your readback need not be verbatim but it must contain all the essential numbers and restrictions.

## **Class B Airspace**

Be sure that you initiate Class B airspace communications early enough to avoid entering before getting a clearance to enter. Know your positions and altitudes in relation with the Class B airspace so that no entry will occur prior to entry. If the controller fails to give a clearance to enter, be sure to ask for it and get it, before intruding into the Class B airspace. With the latest Class B and Class C airspace requirements, it is not unusual to have a considerable delay before establishing contact. Controllers are often on the phone or processing data that prevents immediate response. In the LAX area it may take five or more minutes before a busy controller can get to a new arrival. General Aviation IFR/VFR flights can expect few, if any, direct or shortest route flights in Class B airspace.

Procedure for arrival to Class B airspace

Monitor frequency to determine use. Be sure to remain clear of Class B airspace both horizontally and vertically.

"Bay Approach Cessna 1234X over" If no response, wait 30 seconds and call up again. The controllers are often on the phone or processing data that prevents immediate response. When their work load permits they will say...

ATC: "Cessna 1234X Bay Approach go ahead"

34X: "Cessna 34X Birones Reservoir at 3000 1200 VFR  
Concord to Half Moon Bay request flight into the  
Class B at 3500 enroute"

ATC: "34X Standby for squawk"

Standby means not to make any response.

ATC: "34X Squawk 0734 and ident"

Turn X-ponder to STANDBY, reset code, set to ALT, push the IDENT button.

34X: 34X squawking 0734

ATC: "34X Radar contact" acknowledge with 34X.

ATC: "34X traffic 11 o'clock 1 mile" Navy A7 at 2000  
climbing"

34X: "34X negative traffic will accept vectors"

ATC: "34X turn right 340"

34X: "34X right to 340 have traffic"

ATC: "34X with reference to traffic proceed own  
navigation via G.G. Bridge and shoreline"

34X: "34X own navigation via bridge and shoreline"

Do not enter Class B airspace until you receive a specific clearance to do so. Always write down squawk and frequencies. Always repeat back squawk, frequencies, headings, and directions as much as practical. All assigned altitudes and headings be maintained since traffic clearances are determined thereby.

## **VFR Radar Flight Following**

ATC radar facilities primarily provide IFR to IFR separation. Secondarily, they will give VFR traffic advisories, navigational assistance, weather information, vectoring, ground speed and safety precautions as work load permits. The VFR pilot is responsible for traffic avoidance but ATC will "take over" if a collision risk exists. VFR flight following is not a substitute for a clearance into Class B or C airspace. When radar coverage does not reach, flight following ceases. There are no VFR separation standards and altitude bust may result only in ATC giving you the current altimeter setting as a gentle reminder. With sufficient altitude you can get flight following

anywhere in the U.S. Even at relatively low altitudes you can get it in the non-Sierra part of California.

Getting a local ATC radar frequency is not always easy for the VFR pilot. It may be listed in a blue box for Class B airspace and a magenta box for a Class C. You may need to request it from a nearby tower or FSS. The FSS frequency may not be the correct one for your sector of radar coverage but it will get you into the system. You could get old IFR charts and plates as a source for radar frequencies. The way you make contact with a radar facility makes an impression that is likely to affect the service you receive. It shouldn't but it does. The initial contact, unlike that to a tower or an FSS, should give only the name of the facility, your full call sign, and possibly "over". You will understand the "why" of this better if you visit a radar facility. Until then just do it.

"Bay Approach Cessan 1234X over"

When the controller returns your call-up, you give again your full identification, type of aircraft, /(slash code) position (departure point), altitude (final altitude), your destination. To do this well you should practice before initial call-up. Giving the destination lets the controller select a code that lets other controllers up the route know where you are going. The better your flight following radio procedures, the better you will be preparing for your IFR rating and the better overall radar service you will receive.

Under VFR flight following you must be assertive and in charge of your flight. Do not rely on the controller to tell you to climb, descend or heading change. You just state that you are doing so, and do it. If it makes a problem for him he will so advise by making a "suggestion". If you get confused or into trouble, admit your difficulty and state your willingness to accept help. 20% of ATC controllers are pilots many at commercial level or better.

ATC radar is used by the controllers to expedite the movement of traffic. The system is designed and operates for the convenience of ATC despite denials. The individual pilot becomes insignificant and can only be assured of the benefits of radar by being both proficient in communication and aware of the limits of radar. Radar contact occurs when ATC has identified you on the PPI display scope. Radar contact in no way relieves you of your responsibility to see and be seen and to avoid flight into terrain. While you are expected to comply with any assigned headings and altitudes, you are also obligated to question any such assignments that you deem hazardous. Once you acknowledge you have visual contact with another aircraft you are taking responsibility for collision avoidance.

ATC can cancel VFR advisories/following at any time. Should this occur because of lost radar contact, you should ask for the next available frequency that can resume these services along your route. Most often altitude will be the limiting factor as when flying the Sierras or other remote areas. You can monitor the radio frequency you just left or expect and get some idea as to the altitudes and conditions experienced by other aircraft. Center frequencies are not usually available to the VFR pilot but can be obtained from IFR charts for VFR use.

The altitude limits of radar means that just when you need it most, it will not be available. Much the same limits exist for radio

communications. If you are in conditions that put you both below ATC radar and communications, it is time to get on the ground. Many FSS or Flight Watch frequencies can be used through remote outlets where other ATC frequencies are not available. It never hurts to have another radio frequency option along your route.

### **Procedure**

Initial call-up to get into the system before you have a transponder code (squawk) is always:

Blank Approach Cessna 6185K over  
If no answer...  
Check your radio switches and frequency  
Wait 30 seconds and try again

When ATC radar responds they need certain information for their computer.

Aircraft type and identification  
Present position and destination  
Present altitude and final altitude  
The ATIS letter if you are inbound for landing

There is a 'canned' procedure for saying this:

Cessna 6185K is a Cessna 150 Walnut Creek landing Oakland out of one-thousand six hundred for two thousand five hundred with Alpha

ATC will assign a transponder code and possibly directions and restrictions:

1. Write down the assigned code
2. Say back the code as...  
"85K understand squawk 5234 ident
3. Place selector on standby
4. Set in assigned code
5. Place selector on altitude
6. If ATC does not advise in radar contact, say  
"85K squawking 5234"

Occasionally, you may immediately be given a squawk or just to remain clear and standby. Be sure you understand the significance of what ATC says. Normally, you will be assigned a squawk and may or may not be told to IDENT. Do not IDENT unless told to. The IDENT button causes a flashing IDENT to appear on the controllers scope adjacent to your data block. The discrete transponder code does more than just identify the aircraft. It often is used as a destination indicator so that other sector controllers know where you are going.

If the controller says "Radar Contact" acknowledge with your last three call letters. If for some reason no secondary target (transponder) is seen, you may be requested to recycle. This means to reset the numbers perhaps providing better electronic contact.

All instructions, traffic point-outs must be repeated back to the controller in acknowledgment with aircraft identification.

Any changes of altitude or direction must be communicated to ATC before being made. Such changes may be countermanded or authorized by the controller.

When you leave a radar service area the controller will so advise you and ask you to squawk VFR (1200) and approve a frequency change. You must never leave contact with ATC approach/departure without such an approval. If you need to change frequency to contact Flight Watch or an FSS just request a 30 second frequency change. You will be told to report when back on frequency.

### **The Handoff**

The area around a radar facility or antenna is divided into both horizontal and vertical sectors. This means that as you proceed you will be changed from one controller to the next. This is called a handoff. The controller will, prior to informing you of the hand off, tell the next controller via phone/computer that you are coming and the particulars about your aircraft and operation. Then he will advise you of who to contact and on what frequency.

Once the controller has completed your data block this information can be passed via computer from sector to sector or between facilities. For this reason the 'handoff' requires a minimum of communications. As you transition from Travis airspace to Sacramento Class C airspace, the controller will say...

**"85K contact Sacramento Approach on 118.8"**

### Operational Procedures

- Write down the new ATC name and frequency
- Repeat back the essentials for confirmation
- Set new frequency and establish contact
- Check for congestion before using radio

You must request any changes of altitude or course while in Class B airspace. You must advise on any changes in altitude or course in Class C airspace or other radar areas when in contact. At any time ATC may assign an altitude and heading for safety purposes. If no such assignment is made you are free to make changes as long as you keep them advised of your intentions.

The radar controller as part of FAA Order 7110.65, Air Traffic Control paragraph 2-16b is required to coordinate with other ATC facilities such as a tower of your passage through their areas. You are not expected to obtain your own authorization since it would detract from your ability to maintain radio contact with your primary facility. However, if you have a specific need to contact a facility such as flight watch, FSS, or tower it is appropriate to request a 30 second frequency change for such contact. You must report back on frequency when through.

A radar traffic advisory usually gives a 'clock' direction off your nose, a distance and an altitude. Expect the 'clock' to be wrong by an hour or so. You are unlikely to see any small aircraft beyond 5 miles and in haze the distance may be less than a mile. You immediately advise, "85K looking, 85K have traffic, 85K negative traffic" as appropriate. If you can't find the traffic and feel it constitutes a hazard wait 30 seconds and say, "85K negative traffic, will accept vectors." You do this because ATC may wait too long to give you warning or to turn you. Most often they come back with, "85K traffic no longer a factor". You readback everything a radar controller tells you to do. This procedure is to prevent misunderstandings.

The radar handoff requires that you read back the instructions given and the frequency. If you have been listening to what other aircraft have been told you should be expecting the change. The controller has

already told the next controller/facility, electronically, that you are coming. They are expecting you. Don't be in too much of a hurry. When a break in the frequency occurs the handoff call requires you merely to state, who you are talking to, your identification, and altitude. You say...

85K to Sacramento Approach on 118.8

You then change frequency to 118.8 and say...

Sacramento Approach Cessna 85K level at five thousand five hundred

Say this every 30 seconds or so until acknowledged.

There is a procedure for changing from one code to another designed to prevent the inadvertent selection of a restricted code as for Air Force One.

Procedure:

1. Standby
2. Select new code
3. Altitude

Have a pencil ready in your hand you can keep it there while holding the yoke (lefties) or while holding the throttle (righties) You should begin your flying while holding a pencil or pen so that it becomes a natural process.

#### **VFR Radar Advisories**

ATC does not provide VFR flights with terrain separation. Terrain avoidance is a pilot responsibility per FAR 91.119. VFR pilots should never expect ATC to provide any warnings about terrain. Night VFR, off-airways, or marginal VFR conditions under FAR 91.103 require special planning.

ATC radar does not show terrain. Blocks of airspace have Minimum Vectoring Altitudes (MVA) that can be displayed. These are IFR altitudes that allow 2000' in mountains and otherwise 1000' terrain clearance. VFR flight below these altitudes is relatively common but radar has no specific knowledge of terrain below the MVA. If you have Mode-C on your transponder radar may have Minimum Safe-altitude Warning (MSAW) or Low-altitude Alert System (LAAS) but this is often MVA and no lower.

Since VFR difficulties can develop into emergencies, a VFR pilot must know how to get ATC radar assistance and its limitations. ATC cannot tell the pilot what to do; the pilot must make all decisions. ATC can advise or suggest only. A pilot can request MSAW or LAAS but beyond that radar is limited by the system display to providing MVA as the 'safe' altitude. An individual controller may have sufficient knowledge to vector you to successively lower MVA sectors and it doesn't hurt to ask.

Radar advisories can be terminated to VFR flights just on the say-so of the ATC specialist. There are some automatic terminations that apply to IFR flights but they can be applied to VFR situations. It is very possible that a VFR flight may just be dropped from the system without the pilot ever being told. You should have some general idea of the region and altitudes for a given radar facility. If you have not been in communications for a while, just ask for a radio check. You may have

flown off the scope without being noticed. Never leave a radar communication frequency without advising ATC.