

Radio Communications – Part I



A typical control tower



The result of failing to listen

One of my challenges as a flight instructor is getting my student pilots to talk on the radio and convey the correct information in an error-free and efficient manner.

Usually the first radio contact a student pilot attempts goes something like this:

Student: “Uhhhh, tower, uhhhh, this is uhhhh, Diamond, uhhhh, over!”

Ground control: “Aircraft calling San Marcos ground control, please identify and state your request.”

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Student: “Uhhhh, tower this is November Diamond 2 T S, uhhhh, uhhhh, information Foxtrot, uhhh, OMG!, over!”

At this point, the student is viewing the radio communication experience as if a rattlesnake has appeared in the cockpit. He or she just wants out of the whole experience, and I usually take over and complete the request out of pity for the student sweating bullets – let’s see what went wrong.

Obviously, the initial call was to the ground controller, nominally for a taxi request. The student didn’t know he/she was calling the ground controller. Further, they didn’t know what information they needed to convey. Finally, they didn’t know they needed to pass three essential elements regarding their request to the ground controller (where they are on the airport, that they have the latest ATIS, and their flight intentions).

Before making any radio call, dissect it into the following elements of Who, Aircraft, Where, Why.

Thus an initial call to ground after receiving ATIS Foxtrot for a departure to the training area might be:

San Marcos Ground, Diamond nine five two Tango Sierra, Texas State Aviation, with Foxtrot, request taxi, southeast departure

Who is being called – *San Marcos Ground,*

ID of Aircraft calling – *Diamond nine five two Tango Sierra*

Where – *Texas State Aviation, with Foxtrot*

Why – *Request Taxi, southeast departure*

Remember this format of: Who, ID, Where, and Why - in almost all cases it will help you to organize your radio calls.

At many airports you must call clearance delivery (even if operating VFR) to get a discrete transponder code and to declare your flight intentions before contacting ground control. In most class D airports, but not all, departure control is handled by the ground controller.

Let’s look at a few of the more common radio services you will be using as a student or private pilot. Descriptions of each of these services will help you use them more effectively. These radio services are listed in the order in which you would typically use them.

- A. ATIS/AWOS/ASOS** – a transmission only service at an airport. Use this to get local airport conditions.

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Automatic Terminal Information Service, or **ATIS**, is a continuous broadcast of recorded *noncontrol* information in busier [terminal](#) (i.e. airport) areas. ATIS broadcasts contain essential information, such as [weather information](#), which runways are active, available approaches, and any other information required by the pilots, such as important [NOTAMs](#). Pilots usually listen to an available ATIS broadcast before contacting the local control unit, in order to reduce the controllers' workload and relieve frequency congestion.

Automated Weather Observing System (AWOS) units are operated and controlled by the [Federal Aviation Administration](#) (FAA) in the United States, as well as by state and local governments and some private agencies.

AWOS I: [wind speed](#) and [direction](#) in [knots](#), wind gust, variable wind direction, [temperature](#), [dew point](#) in degrees Celsius, [altimeter](#) setting, density altitude.

AWOS II: AWOS I + [visibility](#), and variable visibility.

AWOS III: AWOS II + sky condition, and [cloud](#) coverage and [ceiling](#) up to twelve thousand feet.

AWOS III-P: AWOS III + present weather, and precipitation identification.

AWOS III-T: AWOS III + thunderstorm and lightning detection.

AWOS III-P-T: AWOS III + present weather, and lightning detection.

Automated Surface Observing System (ASOS) units are operated and controlled cooperatively in the United States by the NWS, FAA and DOD. After many years of research and development, the deployment of ASOS units began in 1991 and was completed in 2004.

These systems generally report at hourly intervals, but also report special observations if weather conditions change rapidly and cross aviation operation thresholds. They generally report all the parameters of the AWOS-III, while also having the additional capabilities of reporting temperature and dew point in degrees Fahrenheit, present [weather](#), [icing](#), [lightning](#), [sea level pressure](#) and [precipitation](#) accumulation.

- B. Clearance Delivery** is the position that issues route clearances (both VFR and IFR) to aircraft, typically before they commence taxiing. For example, at airports in Class C and B airspace, even VFR flights must have a pre-assigned transponder code and route of flight. When you call clearance delivery you are making a request for these two pieces of information. Therefore, you need to tell them where you are on the airport, VFR, planned cruise altitude, type of aircraft, and the latest weather identifier. They will provide you with a transponder code, route of flight (heading and any altitude restrictions), and the departure frequency. Further, this information will be provided to the tower and the departure controllers. More on tower and departure later.

An example might be: *Austin clearance, Diamond nine five two Tango Sierra, information Bravo, position 1 at Signature, South departure VFR 3,000 to San Marcos, ready to taxi.*

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You might get a response like this: *Diamond nine five two Tango Sierra, squawk 2011, departure heading 230, climb and maintain 1800 until further advised, departure frequency 127.225, contact ground 121.7*

Your readback might be: *Austin clearance, squawk 2011, fly 230 climb & maintain 1800, two Tango Sierra*

Note that all clearances, whether provided by tower, ground, or any other air traffic control (ATC) entity must be read back. Also, once initial call up has been made, you can usually shorten your aircraft identification to the last three letters or numerals.

- C. Ground Control** is responsible for directing all ground traffic in designated movement areas, typically taxiways. When you contact ground, they need to know where you are on the airport. If you are in Class D airspace, the ground controller can also serve as a clearance delivery if there is no discrete position setup for that. For example, here at San Marcos (KHYI) the ground controller will typically want to know your intentions with respect to leaving or staying in the traffic pattern. He/she will convey that information to the tower controller so they can begin to plan for merging you into the flow that is leaving or entering the airport. Typically you provide them with the latest weather identifier, location on the field, and, if they are acting as clearance, route of flight. See the above example at the beginning of this paper.

A typical response from ground here at San Marcos for taxi might be: *Diamond nine five two Tango Sierra, taxi to runway one seven via alpha, bravo, charlie, juliet, cross runway two six, hold short at runway one three*

Your read back would be: *San Marcos Ground, alpha bravo charlie juliet, cross two six, hold short one three*

Remember, this is a clearance and you have been cleared to cross a runway via a specified route, all clearances must be read back.

- D. Tower** is the controller that gets you out of the immediate airport traffic area, and in the case of Class D airspace, out of their airspace. If you have been efficient, you will have already provided them with a departure route via clearance delivery or the ground controller. However, sometimes errors creep in and they may ask you what your route is. Nominally the ground controller will have cleared you up to, but not onto, the runway you will use for takeoff. Thus,



at the hold short line your radio call will be something like: *San Marcos tower, Diamond nine five two Tango Sierra, ready for takeoff, runway one seven*

Their response might be: *Diamond nine five two Tango Sierra, hold short, landing traffic on short final*

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Would you read this back? **Of course, all hold short instructions must be read back.** They are clearances, but have an added emphasis of safety for both you and the other airplane(s).

At this point it might be good to put a special emphasis in the art of listening. During taxi and takeoff and landing operations, a discipline called the *sterile cockpit rule* should be employed. That means, no listening to your XM radio, conversations between pilot and copilot which are not germane to flight ops, and the like.



The above training aid from Qantas explains how they employ the sterile cockpit rule.

Another response from the tower might be: ***Diamond nine five two Tango Sierra, cleared for takeoff runway one seven, proceed on course***

Again, this is a clearance, so a read back is required.

- E. Departure** What if you are flying out of a Class B or C airport? Once airborne, the tower will typically transfer you to departure for continued flight following outside of the controlled airspace.

You likely already received a departure frequency from clearance delivery so this should have already been loaded into the standby position in your radio. The radio call from the tower may be something like this: ***Diamond nine five two Tango Sierra, contact Austin Departure, 127.225***

Your response to the tower: ***two Tango Sierra, Austin Departure, 127.225***

Now you flip standby to active and make a call – remember the Who, ID, Where, Why format – further, let's say you had requested 3,000' but had been given an interim altitude of 1,800' – don't bother to ask to climb as this controller already has your request on his flight strip.

Austin Departure, Diamond nine five two Tango Sierra, climbing to one thousand eight hundred.

Why don't we say more? Well departure already has you on her/his radar and is tracking your progress. As a courtesy you are reinforcing with her/him you understand you have a climb limit

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on your clearance. It is not necessary to provide any further information such as route of flight, destination, etc. Departures response might be:

Diamond nine five two Tango Sierra, Austin Departure, radar contact, climb and maintain 3,000' cleared for takeoff runway one seven, proceed on course

In part II of this tutorial I'll discuss some other communication systems such as ARTCC, FSS, Flight Watch, RCOs, CTAFs, Multi-Comms, and obtaining services such as flight following, opening and closing VFR flight plans, etc.