

Basics of Aviation Radio Communication

Communication at Non-Towered Airports

In addition to expanding the realism of sim flying the use of the radio protocol for communicating at uncontrolled airports can enhance your flying experience when there are others online. This can be used for both visual and instrument approaches but the basic steps described here fit a standard pattern visual approach. For instrument approaches you can substitute key locations such as the initial approach fix, intermediate fix / fixes, final approach fix, etc. to provide your location and intentions.

The purpose of this communication is to inform the other pilots we are flying with where we are and what our intentions are. This is not a two-way conversation. See an example of a typical communication following the 'Basic Elements' section below. The FAA Publication P-8740-47 [Radio Communication Phraseology and Techniques](#) provides a good overview of proper radio communication for use in uncontrolled and controlled airspace. You can also find examples or appropriate radio procedures in the AOPA Safety Advisory [Operations at Non-Towered Airports](#).

Elements the Communication

In uncontrolled airspace you are not having a conversation. You are advising others so they are aware of you and your intentions. But as with any communication you should first LISTEN, then LISTEN SOME MORE to ensure that no one else is transmitting (lest you 'step on them') and then identify:

- Who you are addressing (the traffic at [airport unicom name] airport) – CTAF frequencies are not unique to a single airport so this helps avoid any confusion should you be in range of another facility that uses the same frequency.
- Who you are
 - Aircraft call sign ("N number" in most cases, unless you are not USA-based)
 - Aircraft type
- Where you are (distance and direction from the field)
- Your intentions
 - Usually a landing - full stop or touch-and-go; or takeoff – indicate direction of flight after departure
 - Runway you will use
 - Pattern you will use and where you will enter the pattern
- And, one more time when you're all done talking about yourself - who you are addressing (a repeat of the first step, above, for the same reason as above).

Communication Procedure

Communication at non-towered airports is done on the common traffic advisory frequency (CTAF) which may coincide with a UNICOM, MULTICOM or tower frequency (when the tower is closed). And, some airports have CTAF and separate frequencies for UNICOM so do not confuse them. The appropriate frequency for CTAF can be found in the Chart Supplement (formerly the Airport / Facility Directory) and may be published on the Sectional chart (but frequencies should be verified in the Chart Supplement).

Your first communication should be from somewhere well outside the traffic pattern. The Aeronautical Information Manual (AIM) and FAA Advisory Circulars state the recommended distance is to monitor CTAF at least 10 NM out from your destination and communicate intentions from that point, as described below. As you enter and progress through the traffic pattern you should identify your position, although the information (since you have already given your overall intention) may be more abbreviated (e.g., you can drop your aircraft type, although it is a good idea to repeat this at least one more time). The usual points where you communicate your intentions and position are:

On Arrival – Communicate

- Prior to entering the airport vicinity – 10 NM out, as described above. You should state whether you are landing at the facility or overflying the airport.
- On entry to the downwind leg of the pattern – One variation to consider is to advise just before entry including the direction you are entering from (the recommended downwind leg entry is at a 45° angle to the downwind leg). This is also a good time to repeat your aircraft type if you are not going to restate it in subsequent communications.
- Turning to the base leg of the pattern
- Turning final / on final – and here you may want to add what landing option you are going to exercise (full-stop, touch-and-go, low approach, missed approach)
- When you are clear of the runway (Always specify the runway)
- Any deviation from the pattern or for a missed approach if that has not already been communicated.

Other Information –

Additional information as the situation warrants. These may be used for deviation from a standard visual approach or when doing an instrument approach. Examples include:

- Procedure turns or other maneuvers for spacing
- Change in your expected speed - slower or faster
- Wider or more extended pattern legs
- On missed approach or aborted approach – providing information on your departure and pattern re-entry path

On departure – Communicate

- The runway you are departing from
- The direction of flight once you are airborne
- Continue to monitor CTAF for at least 10 NM from the facility

EXAMPLE:

Jamestown Municipal traffic, Cherokee 5127G (the 'G' spoken phonetically, 'gulf'), 10 miles to the southwest intending a full-stop landing, runway 18. Mid-field crosswind, overfly at [pattern altitude + 500 ft., minimum] to turn for a standard 45 degree entry, left-hand pattern runway 18. Jamestown Municipal.

Jamestown Municipal traffic, Cherokee 5127G, entering downwind leg at mid-field, left hand traffic for full stop landing runway 18, Jamestown Municipal.

Jamestown Municipal traffic, 5127G, left to base, runway 18. Jamestown Municipal.

Jamestown Municipal traffic, 5127G, 2 mile final, runway 18, full-stop landing. Jamestown Municipal.

Jamestown Municipal 5127G is clear of the runway 18 to the right. Jamestown Municipal.

There are many variations on the theme - and other things that may be appropriate depending on the situation. Communicating that you have other traffic in sight, who you are behind and your position in the landing queue are some of the more common things you will hear. Everyone develops their own style but remember to communicate the basic information so others will know where you are and what you are doing – BUT remember: **Keep it concise. Give only the essential information.**

And – a small word of caution. The AIM states that use of the phrase “*any traffic in the area, please advise*” is not a recognized Self-Announce Position or Intention phrase and should not be used under any condition.

"Right Downwind" and "Left Downwind"

This is often a point of confusion – is “right downwind” this the downwind leg of a right traffic pattern or a left traffic pattern (where the downwind leg is, as the pilot and other downwind leg traffic view it, to the right of the runway? You will note in the example above that the phrases "left hand pattern" and "left hand traffic" are used, not "left downwind" (which when

used correctly identifies the downwind leg for a **left**-hand turns traffic pattern). Use of 'left (or right) traffic', 'left (or right) hand pattern' or similar phraseology seems to make it clear that, as in this example this is a left hand pattern - all the turns are to the left once you are in the pattern. But as stated above everyone has their own style and variations on the theme are permitted, here and in the real world, as long as you make it clear as to where you are and what you are doing and stick with accepted terminology. Just to show you how things are not not always perfectly understood or agreed upon in the real world, read on -

You saw in this example that entry into the patter used a mid-field crosswind entry - see page 9 of the AOPA publication on [Operations At Non-Towered Airports](#) . The midfield cross wind entry executed by flying out two or three miles past the pattern and turning right to enter the downwind leg using the standard 45 degree angle is the preferred technique. However, there are variations on the theme which in the late 90's culminated in a safety publication by the AOPA, "[The Great Debate](#)" - interesting reading for those that are into that type of thing.

You might also take a few minutes to watch this video on [Things Pilots Say that Nobody Wants to hear](#). There are examples of poor terminology used not-so-uncommonly at both non-towered airports and with ATC communication. The folks at Boldmethod (a great aviation web site) give some additional advice in their article [Don't Say these 9 Things on the Radio](#).

Communication with Air Traffic Control

Initial Steps

Talk to Other Pilots

The management and staff of your group may include VATSIM certified controllers or pilots experience with standard communication procedures that can help you learn the basics of air traffic control (ATC) communication in a relaxed environment. There are experienced pilots – sim world and real world – that are ready and willing to help too. So, just ask!

This overview will help get you started but there is no substitute for real live practice. Once you have an idea of the general procedures then jump into a controlled session or ask for one to be set up for you at by your group or fellow pilots.

Listen and Learn

You might want to start here (easier than reading) and listen to ATC

[Live ATC on-line](#) - a very busy facility (like KSFO) will have separate feeds for clearance, ground, tower, approach and departure. These are a bit easier to follow since everyone you hear is under the same controller type. You can find airports that combine approach, tower, ground and departure like KSAT. Listening to multiple controllers can be confusing at times but you do get to hear each phase of the flight - this helps in understanding the 'hand off' from one controller to another and the timing, technique and information that is given when transitioning from one phase to another.

Sign up for VATSIM or Other Live ATC

Look on [VAT-Spy](#) to see where there is active ATC. Park at a gate or ramp parking (NOT on a runway or taxiway!), connect, tune your radio to the available controllers (try a spot where both center and tower are online - or more positions if they are there). See the VATSIM website for more information including how to set up your radio. Or, ask someone at your group if they can help you get set up on VATSIM. You should put 'Observing Only' in the remarks box of the Flight Plan section of the connection application you are using (FSInn, vPilot, etc.). Just listen, don't say anything (unless you are called - which should not happen). As of the writing of this guide there is another live ATC site that expects to be online around mid-2020: POSCON. That may also be an option. There are other options, some which may require a paid subscription that you can find using Google.

FSX ATC ‘Robot’

The robot ATC in FSX can give you some idea of what happens but is only a rudimentary starting point follows the basic protocols for ATC communication. This is a very basic system which does not match a live ATC environment but it will give you an idea of the steps involved from initial taxi, takeoff, landing and return to parking and a general concept of how the communication process works.

Finding the Right Frequencies

For sim flying frequencies can be found in various ways depending on the server or system you are using. There are many examples. VATSIM shows the controller frequencies on their vPilot connection application when you are within controlled airspace. VAT-Spy lists controllers on VATSIM along with the frequency. Sometimes the frequency is published by the organizers or you may be instructed to use specific channels in TeamSpeak or a similar communications tool not directly associated with the flight simulator. You can also get them at AirNav.com or SkyVector.com, but larger facilities may have multiple frequencies for the same controller position; one of them should be right, so this might involve some trial and error.

The Most Important Thing to Remember

The priority is always ...

1. Aviate
2. Navigate
3. Communicate

Communication, although very important, takes a back seat to flying the plane and being in the right place. Ask ATC to stand by if you need to. ("Please stand by"). Having used the proper phrase to ask someone to wait makes it clear that you need a moment for whatever reason (which you do not need to explain). No, 'hold your horses', 'keep your shirt on' or 'don't get your panties in a bundle' is not acceptable phraseology.

Terminology and Phraseology

You will hear many variations of accepted terms and phrases. No one is going to (or at least should not) admonish you for not saying things exactly as prescribed as long as you stick to the basic principles but you should make an effort to stick to the recommended terms and phrasing.

Use the phonetic alphabet - review if needed - [click here](#). Note that there are some interesting pronunciations (right hand column).

The official [FAA Pilot/Controller Glossary](#) is the standard of practice in US aviation. Outside the US the International Civil Aviation Organization (ICAO) practice may vary – the FAA Glossary identifies when this is the case. It is worthwhile to repeat here what is stated in AIM 4-2-1.c:

All pilots will find the Pilot/Controller Glossary very helpful in learning what certain words or phrases mean. Good phraseology enhances safety and is the mark of a professional pilot. Jargon, chatter, and "CB" slang have no place in ATC communications. The Pilot/Controller Glossary is the same glossary used in FAA Order JO 7110.65, Air Traffic Control. We recommend that it be studied and reviewed from time to time to sharpen your communication skills.

Altitude Format and Phrases

Below 10,000 feet: The number with the magnitude is spoken

800 - "eight hundred" (where eight is pronounced "ait" - pretty much as you would expect)

4,500 - "four thousand five hundred" (where five is pronounced "fife" - maybe not what you were expecting, so review the phonetic alphabet and the proper pronunciation, like 9,000 - " (nin-er, the correct way to say it) thousand"

3,500 – "tree" thousand "fife" hundred. Three is pronounced 'tree' and five is pronounced 'fife' if done correctly although you will hear three and five even in real-world aviation.

Between 10,000 to 17,999 feet (that's right, 18,000 not included)

12,500 - "one two thousand five hundred"

16,000 - "one six thousand"

11,500 - "one one, eleven thousand five hundred"

Ten and eleven thousand range numbers:

Note the pronunciation of 11,500 - and the use of the separate digits followed by the full number pronunciation. This is the phrasing recommended by aviation safety experts - specifically they recommend this be done for any altitude involving 10 thousand or 11 thousand feet (10,000 - "one zero, ten thousand"; 11,200 - "one one, eleven thousand two hundred"). Some pilots use this for all double digit altitudes up to 18,000 feet (15,500 - "one five, fifteen thousand five hundred") - not strictly correct but not totally unacceptable and it

does reinforce the habit of the separately spoken numbers followed by the full number pronunciation recommended for ten and eleven thousand foot levels.

At or above 18,000 feet: "Flight level" followed by three separate digits

28,000 (FL280) - "Flight level two eight zero".

Since flight levels are in even thousands the last digit spoken is 'zero' – but you will hear the hundreds digit in situations like a descent where, for example, the pilot will state "passing flight level two three **seven** for flight level one nin-er zero". Not strictly correct but understood. It would have been proper to say "through flight level two eight zero for flight level one nin-er zero".

Airspeed

Separate digits followed by the word "knots" or the word "mach" followed by the digits, using the word "point" for the decimal

250 knots - "two five zero knots"

85 knots - "eight five knots"

Mach 1.6 - "Mach one point six"

Mach .64 - "Mach point six four"

When changing speed the 'knots' or 'Mach' can be omitted - "reducing speed to 190"; "reduce speed to 180 or less". Including the word 'knots' or 'Mach' is also correct.

'Point' vs. 'Decimal' - FAA protocol is to use 'point' for a decimal point, as above. International Civil Aviation Organization (ICAO) procedures state that the word 'decimal' should be used. The FAA honors the use of 'decimal' for military and other aircraft operations required to use ICAO procedures.

Direction

Instructions for flying in a specific direction can include use of the heading itself or an amount (in degrees) and direction to turn.

Headings

Always include all three digits (i.e., add leading zeros when needed) and each digit is pronounced separately followed by the word 'degrees' –

325° - three two five degrees

180° - one eight zero degrees

065° - zero six five degrees

005° - zero zero five degrees

In some cases a direction of turn will be included and this must be acknowledged and followed

'Turn left heading one seven zero degrees'

'Turn right heading two three zero degrees'

'Turn left heading zero three zero degrees'

Turns

The direction of turn (right or left) then the *amount* to turn with each digit pronounced separately followed by the word 'degrees'. Note that only the numeric value itself is spoken. Do not add a leading zero when turns are given in amount to turn vs. a heading to turn to

'Turn right two zero degrees'

'Turn left three five degrees'

Occasionally ATC will explain why they are turning you but this need not be repeated, just the amount and direction of turn

'Turn left three zero degrees for separation', your response would be 'left three zero degrees'.

Radio Frequencies and Squawk Codes

Frequencies

Frequencies are given, and should be repeated for confirmation, as separate digits and include the word 'point' to separate the decimal digits.

122.5 – one two two point five

125.0 – one two five point zero

118.75 – one one eight point seven five

See the earlier remarks on: 'Point' vs. 'Decimal'. You may hear (and it is acceptable but not strictly correct) that the leading '1' is dropped on read-back (so 122.5 – becomes just 'two two point five'). And, heard from both controllers and pilots when referring to the Ground Control frequency (because it is so very common that ground is on 121.x, where x is usually 9) just the "point niner (or whatever the number is) said.

Squawk Codes

Squawk codes are given as separate digits following the word 'squawk'

'Squawk two three zero four'

'Squawk five one two seven'

Occasionally you will hear a pilot read back the squawk code as four digits followed by the term "in the box". Known slang, occasionally used but not proper and, at least for me, a bit annoying.

Aircraft Identification

Civilian Aircraft

In the US, civilian aircraft registrations start with 'N'. The rules for dropping the 'N' described below can be followed. Foreign-registry aircraft should retain the country code unless ATC first shortens (abbreviates) your call sign.

Each digit is spoken separately along with any letter identifier that follows— letters in the registration number are spoken phonetically.

You can identify your full aircraft number followed by your aircraft type but this is not standard practice (although not unacceptable) but should only be used when needed. One example might be 'November one eight zero foxtrot, type experimental'. In almost every case the aircraft type can be identified and the type should precede, not follow the registration number.

Dropping the 'N': You can drop the 'N' when the type of aircraft is given

Baron fife one two seven gulf
Skyhawk two two tango alpha
Cirrus six eight seven two x-ray

Note that the specific type of aircraft is used. Saying 'Cessna' or 'Beechcraft' leaves a lot of room for variation on the type theme. Cessna two two tango alpha might be a 172 or might be a Citation X (Citation ten) – significantly different aircraft.

Student pilots can and should identify themselves as such on initial contact - "Cherokee fife one two seven gulf, student pilot". Feel free to modify this for sim-pilot use when in a controlled session – "Cherokee fife one two seven gulf, sim ATC rookie" or something to that effect if you want to let them know you are new to a controlled airspace situation.

Commercial Air Carriers

Authorized call signs should be used followed by the flight number. Append the word "heavy" for aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are actually operating at this weight during a particular phase of flight. Flight numbers, unlike registration numbers are generally spoken as groups of numbers following their approved call sign –

UAL 283 – 'United two eighty-three'
AWE 1528 – 'Cactus fifteen twenty-eight'
RPN-43 – 'Repatriate forty-three'

Consult the FAA's listing of [official aircraft company identifiers and call signs](#) for a listing of all the call signs and three letter ICAO identifiers currently assigned.

Your group may have their own specific flight prefix and call sign – for the examples in this document we will use the flight number MFL 5127 and the call sign "My Flight".

Radio Communication

General Principles

Tune to the desired frequency and ... LISTEN. Then, LISTEN some more. You don't want to 'step on anyone' (transmit when others are transmitting) or interrupt an exchange in progress. Also, listening gives you good information - who else is in the area, what runway is being used, which 'one minute weather' is in effect or the 'Information' followed by a phonetic letter usually from ATIS. (For automated weather service weather the correct term for AWOS, ASOS or AWSS weather is 'one minute weather'). By listening first, not only will you not interrupt things you will better understand the current situation and be better prepared.

Next - speak? NO - Next **THINK**. Think about what you are going to say and how it should be said (more on the how part, below).

Then, when you're ready, speak: Remember that a complete exchange between ATC and a pilot includes information and read-back of that information. So, while you are waiting to initiate your contact, ***listen to be sure that not only has ATC finished transmitting but that the pilot the controller was talking to has transmitted confirmation of that information (the 'read-back')***. When you speak, be brief. Some pilots (and controllers) mistake fast for brief. There is no need to speak fast (although you will hear plenty of examples of this).

Speak succinctly (back to the 'think' part before you speak). When the total information to be conveyed is lengthy or complex make statements in 'packets'. Do not un-key the mike, just take a breath at logical places. This rule is a bit more applicable to the controller than the pilot in some circumstances - and there are plenty of examples where the controller races through a complex set of instructions, all running together and at the speed of a rabbit on his fourth cup from Starbucks. If this happens, ask the controller to 'repeat more slowly'.

Initial Contact

When making initial contact the following information (at a minimum) should be given:

- Who you are calling
- Who you are - your plane type with N-number (drop the 'N' if you give your plane type but otherwise use the full registration after the 'N' as your call sign), your airline call sign and flight number or other applicable identifier.
- Where you are (several variations on this - best to see the examples that follow and those that you hear)
- Type of message to follow (or if it is short, make your request or statement - again, some examples below will help)
- With (In some cases - certain information. This part is not always used). Usually this is 'with [current information identifier letter] - 'with Juliet', 'with Delta'. Airport information is identified with a single letter starting with 'A' and progressing alphabetically with each revision.
- The word 'Over' - but you will notice that this does not happen much, including in RW communications

Subsequent Contact

Due to the wide variety of communication content there will be many different variations on what happens after initial contact. In general:

- Acknowledge all call-ups, clearances or instructions unless advised by ATC not to do so.
- Include information or remarks appropriate to the communication
- End your communication with your call sign

Call Signs - Abbreviate or Not?

Always use your full call sign on initial contact. Always. A good rule to follow is that if you choose to use an abbreviated version of your call sign do so only after ATC does so. Otherwise, continue to use your full call sign.

Clearance

Communication often begins with request for clearance. An example is given in the next section. The basic components given to you by ATC include the clearance itself and instructions for the initial steps to be taken or expected – some use the ‘**CRAFT**’ acronym to remember what to expect and to set up your notepad to write the information down.

IMPORTANT: Always, always, always have pencil and paper ready, within reach – without exception. Never, never, never try to remember what you are told. Always, always, always write everything down.

Understood?

- C – Clearance (or clearance fix but this is usually your destination)
- R – Route

You should already know the first part of this – this is what you filed (see IFR Flight Planning on how to plan and file a flight plan). Much of the time you will get ‘Cleared to [destination] as filed. Sometimes there may be an amendment – something like ‘Cleared via the Alamo nine departure, Gooch Springs transition, then as filed’.

The second part will involve what you need to do immediately after departure – usually ‘maintain runway heading’ but it may involve a turn at a specified altitude.

- A – Altitude

You will always be given an initial altitude – e.g., ‘Climb and maintain 5000 feet’.

You may be given a secondary altitude (‘Expect one two twelve thousand after departure) or your final altitude filed (‘Expect flight level three three zero ten minutes after departure)

- F – Frequency – the next frequency to use and who it is you will be contacting
- T – Transponder code

A variation on this is the 'CHART' acronym. The principle difference is that the full clearance is included in the first section 'C'

➤ C – Clearance

Your clearance fix or (usually) your destination airport plus any additional information. As stated earlier, you should already know the first part of this – this is what you filed. Much of the time you will get 'Cleared to [destination] as filed. Sometimes there may be an amendment – something like 'Cleared via the Alamo nine departure, Gooch Springs transition, then as filed'. The CHART version combines the 'C' and 'R' parts of the CRAFT version.

➤ H – Heading (initial heading)

Your heading immediately after departure – usually 'maintain the runway heading' but it may involve an initial turn towards a departure fix at a specified altitude.

➤ A – Altitude

You will always be given an initial altitude – e.g., 'Climb and maintain 5000 feet'.

You may be given a secondary altitude ('Expect one two twelve thousand after departure) or your final altitude filed ('Expect flight level three three zero ten minutes after departure)

➤ R – Radio (radio frequency) – the next frequency to use and who it is you will be contacting

➤ T – Transponder code

You may get additional information – 'cleared for pushback and start, contact ground when ready to taxi'; 'Stay with me this frequency, call when ready to taxi', etc.

Once you get your clearance you **must read it back in full and correctly unless otherwise instructed**. During busy times ATC may (usually if you are cleared as filed with no unusual instructions) instruct you to 'Read back squawk code only' – but if there is something you are not clear on do not do this. Ask ATC to repeat (a particular portion or instruction) if you are not sure what was said.

Otherwise read back as instructed. But that should be simple since you wrote everything down.

Example Communication -

Below is an example of the communication you might hear for a flight originating at KSAT and ending at KMEM. You may not be familiar with some of the terms or at this point not exactly sure about how to file a flight plan. These and other aspects of IFR flying are explained in our [IFR Flight Planning](#) document. For now, just follow the communication sequence to get a feel for how this is done. Also keep in mind that in sim flying (as occasionally happens in real world flying, usually only in a limited way such as Tower covering some Ground control activities) all positions may not (and usually are not) manned. However, this example assumes that most are so you can see how hand-offs are done.

Initial contact, requesting and receiving clearance:

(You)

(Who you are calling) San Antonio Clearance Delivery, *(Who you are)* My Flight 5127 *(Where you are)* at Gate Alpha 2 *(With)* with Foxtrot *(Type of message - in this case, we're going to say what we want)* requesting IFR clearance to Memphis, flight plan on file, over.

Again, without the specific pieces identified and with a 'breath' to put the information into two chunks:

(You)

San Antonio Clearance Delivery*, My Flight 5127 at Gate Alpha 2 with foxtrot (short pause), requesting IFR clearance to Memphis, flight plan on file, over.

*In the real world you may well receive clearance by computer or from Clearance Delivery. In sim flying this would be done by Clearance Delivery if the position is manned but may be done by Ground, Tower, Approach or Center depending on who is currently working the airport you are at.

At this point, depending on how busy ATC is and how long it has been since you filed your flight plan ATC may tell ask you to stand by (may even tell you that you are number 'x' in line to receive clearance). If told this, say roger but say no more. Do not call ATC back. Once ATC is ready it will go something like this:

(San Antonio Clearance Delivery)

My Flight 5127 you are cleared as filed via the ALAMO9 (Alamo nine) departure then to as filed.

Expect runway one three right for departure (since we'll repeat 13 right and many other numbers several times in these examples, when you see numbers written assume the separate digits are spoken when they should be).

On departure maintain runway heading

Climb and maintain five thousand feet, expect planned altitude (may say what that is - "expect flight level 280 ...") 10 minutes after departure

Squawk 4221

Cleared for pushback and start. Contact San Antonio Ground on one two one point two zero when ready to taxi.

Now, you must read back your clearance (and acknowledge ANY OTHER COMMUNICATION anytime you receive it unless otherwise instructed not to). As stated earlier, one common instruction at this point is "Read back squawk code only" in which case you would do just that. In this case below is an example of an acceptable read-back (note that things are a bit abbreviated) -

(You)

Cleared as filed

Expect 13 right

Runway heading, climb and maintain five thousand feet

Expect planned altitude in ten minutes (sometimes this part is omitted - if in doubt, read it back)

Squawk 4221

Contact Ground one two one point two zero when ready

My Flight 5127

You're right – not word for word but since ATC already knows the more detailed version it is acceptable to just hit the high points. It is also acceptable to read back instructions exactly as given. Note the other short-hand versions of acknowledgements given in the remainder of the examples.

Ready to Taxi

Unless otherwise instructed, you can start engines and push back before calling ATC to advise you are ready to taxi. In general, ramp and gate areas, especially those managed by the airline personnel and include trucks, baggage carts, food and beverage vehicles in addition to the familiar guys with the flashlight safety batons are, in FAA parlance, 'Non-Movement Areas' - a really bad name in my opinion since there is a lot of movement in these areas. What the FAA means is that movement in these areas is not controlled by ATC. They only control "Movement Areas". So push back when ready and call ATC ...

(You)

San Antonio Ground

My Flight 5127 ready to taxi

(San Antonio Ground)

My Flight 5127 taxi for departure to runway 13 right via November - Golf - Kelo

Hold short runway 13 right - this part may or may not be included but if it is be sure to include the "hold short" in your read-back. ALWAYS read back hold-short instructions

Contact Tower one one niner point eight when in position

And of course you will have no problem reading back these instructions because as with all instructions that have multiple components you ***always write it down, never trusting your memory.***

(You)

November to Golf to Kelo

Hold short runway 13 right, contact Tower one one niner point eight at that time

My Flight 5127

"Departure vs. Take-off" - Two terms used frequently, each to be used in their specific situations even though they seem to mean pretty much the same thing. The general rule is - unless you are actually taking off then always use 'departure' - ATC will do the same. They will NOT say "taxi for takeoff" they will say "taxi for departure" and so should you when requesting 'taxi for departure or' when acknowledging instructions. Use "take-off" in circumstances like "cleared for take-off" or "aborting take-off". 'Take-off' is reserved for when you are on the runway, not for use when you are just getting to the runway.

Now you taxi to 13 right and hold, and as instructed and ...

Contact Tower

(You)

San Antonio Tower, My Flight 5127 ready for departure

(San Antonio Tower)

My Flight 5127 line up and wait, runway 13 right

(You)

Line up and wait 13 right

My Flight 5127

You then do just that, taxi onto the runway but only far enough to get yourself lined up - follow the yellow line to the centerline - then stop. Wait to be contacted. Do not call the tower UNLESS you have been holding on the runway for 90 seconds as described in the [FAA Runway Safety Best Practices](#) guide.

(San Antonio Tower)

My Flight 5127 cleared for take-off

Winds calm, altimeter three zero point one six

(You)

Cleared for take-off 13 right

5127

I know - a couple of things you noticed. Yes, it is OK (and almost always done) that the conditions (winds, altimeter, whatever is given) NOT be included in the read-back. And, even though ATC did NOT abbreviate the call sign you will also hear this done - and generally is acceptable when there are short, contiguous exchanges back and forth between pilot and ATC. Not strictly by the book, but you will hear this. BUT - it is always best to do things by the book so this really should have been the full call sign. Just an example of something you will hear that is allowed to slip by but not strictly correct.

You have now taken off ... holding the runway heading and will not exceed 5,000 feet. Wait for Tower to call ...

(San Antonio Tower)

My Flight 5127 turn left heading 360 (three six zero) degrees, climb and maintain 1-2 twelve thousand

(You)

Turn left heading 360, climb to 1-2 twelve thousand

My Flight 5127

Sometimes there might be a sense there is a more casual ATC environment, or some pilots just like to be a bit more 'folksy', so you might hear something like 'Left to 360, up to 12 thousand'. Like talking to your parents [or your kids] you'll get a feel for when you can be easy-going or adhere strictly to the rules. Just be sure to communicate the key information.

So - you've turned and are climbing to twelve thousand feet - but not up there yet, and you hear ...

(San Antonio Tower)

My Flight 5127 contact San Antonio Departure on 125.7 (one two five point seven)

(You)

Contact Departure 125.7

My Flight 5127, Good day. (The traditional 'goodbye' in controlled flight communication)

Again, you will hear more casual versions of this - maybe something like "Over to departure one two five point seven, g'day" (This at least got the key information in - the frequency to switch to.) Not strictly by the book but not unusual to hear the acknowledgement done this way.

A hint regarding frequency changes - put the next anticipated frequency in the Com 1 standby spot. Then all you need to do is hit the "swap frequency" button and you'll be on the right channel - BUT - when you read back the frequency to ATC **look at your radio** to be sure the frequency in the standby slot is the right one. Once you change, when you have a chance (remember - Aviate, Navigate, Communicate) input the next anticipated frequency.

You should be able to make the frequency switch and contact the controller you have been handed off to quickly, generally within 10 seconds. The quicker the better especially when the hand-offs are on the departure or approach leg. You should switch frequency quickly - because before you say anything you will need to LISTEN to be sure no other communication is occurring. As soon as you are sure the frequency is clear contact Departure ...

Departure Phase

(You)

San Antonio Departure, My Flight 5127 [with you**], 7 thousand eight hundred climbing one two, twelve thousand.

(San Antonio Departure)

My Flight 5127 climb and maintain flight level 270

Proceed direct GOBBY

(You)

Climb and maintain flight level 270, proceed direct GOBBY

My Flight 5127

Note that ATC may have turned you, kept you at 12,000 feet for a time, put you at some other intermediate altitude or done other variation on the above. In this case they have cleared you to your planned altitude and to proceed direct to the GOBBY intersection. You should expect one thing at least - hand-off to Houston Center. So, if you have not already put Center's frequency into the Com 1 standby slot (or didn't pre-program Com 2, another useful way of handling multiple frequency changes in a short time period) then do so now.

Regarding altitude change reporting: Note the phrase used above ... 7 thousand eight hundred climbing one two, twelve thousand. ..., specifically the use of the term 'climbing' (vs. 'ascending' or 'going up to', etc.) - this is the proper terminology. Likewise, if you are descending that the proper word is 'descending' or if you are level then you say 'level' (or if you prefer, 'level at', which is also acceptable). You will hear other ways of reporting altitude changes but this is the 'official' way to do it. AND, note that it was not 'climbing 7 thousand eight hundred FOR ... The words 'TO' and 'FOUR' should be avoided – say you're in a Cessna 172 and you say "climbing one thousand two hundred for four thousand" - Wow, a Cessna 172 that can get to 44 thousand feet!

**"With you" - We stuck that in brackets here because that's where you usually hear this used - the brackets were to indicate that aviation communication experts say this is not proper and should not be used. This is adding words that don't give any meaning. One controller said that "if the pilot were really with me he would be sitting next to me in an uncomfortable rolling chair drinking bad coffee out of a styrofoam cup"

Handoff to Air Route Traffic Control Center (ARTCC, aka 'Center')

(San Antonio Departure)

My Flight 5127 contact Houston Center on 132.8 (one tree two point eight)

(You)

Contact Houston Center 132.8

My Flight 5127. G'day

Tune to Houston Center, listen to be sure no one else is transmitting, then make initial contact with Center (remember the components of an Initial Contact although the controller you have been handed off to usually has some knowledge of what has occurred prior to handoff and what your clearance and other intentions are).

En-Route Phase (still under control of Center)

(You)

Houston Center

My Flight 5127 one six thousand five hundred climbing flight level 270

Proceeding direct GOBBY

(Houston Center)

My Flight 5127 radar contact

Proceed on course

(You)

Proceed on course, My Flight 5127

'What about the altimeter?' - Depending on where you are at and where you are going (both vertically and horizontally) and whether you are going up or down, Center may not give you the current altimeter setting. In your case, at this point, you are climbing to FL270 and once you pass 18,000 feet you should reset your altimeter to 29.92 in Hg because all flights at or above 18,000 feet are based on pressure altitude - the altitude based on standard atmospheric pressure. So, once you pass 18,000 feet reset your altimeter to 29.92.

At this point you will level off at your planned altitude. Center will likely have nothing more to say to you until they hand you off to the next Center (or Approach, if you stay within that Center's region) but you should still be alert for any communication. And - tune your standby or Com 2 frequency to the next expected frequency.

For this trip you would be passed from Houston Center to Fort Worth Center and then to Memphis Center. The first handoff will be to Fort Worth Center -

(Houston Center)

My Flight 5127 contact Fort Worth Center on 133.30

Smooth flight (one of the typical controller-used 'goodbye' phrases)

(You)

Over to Fort Worth Center 33.30

Thanks for your help (another 'goodbye' phrase you will hear)

5127

'Huh? - Looks like some typos' - No, this is still not strictly correct but often heard (and accepted) - dropping the first digit (the 'one') is done. And, like earlier, we've dropped the 'My Flight' also. And, 'Over to' (instead of 'Contact') is another one of those more casual phrases that get inserted. Beware when you do this - just because others do it does not mean it is correct.

Back to another 'Initial Contact' - for this part of the example we'll use an exchange that might be the briefest you encounter:

(You)

Fort Worth Center

My Flight 5127, flight level 270

(Fort Worth Center)

My Flight 5127, roger

That's it - nothing more to say and no need to acknowledge Center's acknowledgement.

Your flight plan includes a Standard Terminal Arrival Route (STAR) called 'HOBK ONE' (pronounced 'Hobrook One'). STARS are explained in our [IFR Flight Planning](#) document but for this example of ATC communication the important thing is that your transition point is the El Dorado (ELD) VOR that is located within the Fort Worth Airspace. So - If ATC does not contact you first you should contact Fort Worth Center to advise you are going to execute the STAR:

(You)

Fort Worth Center

My Flight 5127 entering the HOBK ONE approach at El Dorado

(Fort Worth Center)

My Flight 5127 descend via the HOBK ONE arrival

Contact Memphis Center 128.47

(You)

Descend via HOBK ONE

Contact Memphis Center 128.47

My Flight 5127.

Good day

Again, what a STAR is, how you knew that the transition point occurred in the Fort Worth Center airspace and why you were (and should have expected to be) handed off right after contacting Fort Worth Center (or at least shortly thereafter) is explained in our [IFR Flight Planning](#) document. AND - as you descend per the published approach, remember to reset your altimeter once you are below 18,000 feet (note that Memphis center tells you the Memphis altimeter, because they know you will be descending).

(You)

Memphis Center

My Flight 5127, flight level 270

Descending via the HOBK ONE arrival for Memphis

(Memphis Center)

My Flight 5127, radar contact

Proceed to Memphis, descend via HOBK ONE

Memphis altimeter 29.97

(You)

Proceed to Memphis, descend via HOBK ONE (as before, repeating the altimeter setting is not needed)

My Flight 5127

The next thing you should expect is to be handed off to Memphis Approach, so - TUNE THAT RADIO STANDBY FREQUENCY NOW while things are still fairly calm and you are not trying to hit published altitudes. The same thing would apply if you were going direct to KMEM (not using a STAR) since at some point Center is going to have you descend, maybe turn or do other maneuvers so while not much is happening get the Memphis Approach frequency in the radio.

Expect handoff just outside the KMEM controlled airspace (distance depends on your speed and the amount of traffic). Expect something that will allow you to contact the facility when you are around 40 miles away - a bit more or less depending on the aircraft you are flying (speed, weight, etc.). So, if you're flying a Boeing 737 then probably about 50 miles out (gives you a minute or so to contact and provides for contact about 40 miles out) or if you're in a Cessna 172 probably more like 30 to 35 miles out - even 30 or 45 seconds or so later you're still between 30 to 35 miles away and not moving all that fast. Nonetheless - anticipate handoff and have your radio standby frequency tuned to the correct frequency. If this is Class B airspace you will need to be cleared into the airspace prior to entering, otherwise (for Class C and D airspace) you will only need to establish communication.

So, as you expected ...

(Memphis Center)

My Flight 5127

Contact Memphis Approach on 119.1

Approach Phase

(You)

Contact Memphis Approach 119.1

My Flight 5127. Good day.

Then, once tuned to the Memphis approach frequency, listening first as to not interrupt others -

(You)

Memphis Approach

My Flight 5127 descending via the HOBK ONE arrival, west of TAMMY

Level at one four thousand feet (DID YOU REMEMBER TO RESET YOUR ALTIMETER??)

Huh? How did I get to 14,000 feet - that's the published altitude for the approach at TAMMY (actually, you can be anywhere between 14,000 and 16,000 feet) - all explained in the [IFR Flight Planning](#) document.

(Memphis Approach)

My Flight 5127 radar contact

Proceed inbound, descend via the HOBK ONE

Expect runway 18 left

(You)

Descend via HOBK ONE

Expect 18 left

My Flight 5127

You should anticipate the hand-off point so when you are transferred from Center to Approach you can advise Approach of your approximate location (in addition to your altitude). In this example you are descending via a defined route (a STAR) which makes it easy. In some cases you may not be on a defined route inbound and may simply be transferred to Center – this usually occurs about 40 NM from your destination. Identifying your general location, e.g., '45 NM southwest of Memphis' is acceptable but a more specific location such as '8.5 DME southwest of the Marvel VOR at the 250 degree radial' is better. Although ATC is giving you heading and altitude direction it is your job to always know where you are and always ensure that headings and altitudes are appropriate for what you intend to do.

At some point of the STAR, or as a continuation of previous vectors and altitude changes on your direct approach you will begin the 'vectored' portion of the approach. For FAA-controlled facilities (vs. ICAO rules, used outside the US) STARs and SIDs (Standard Instrument Departures, one of the two 'Departure Procedures') typically include a vectored portion - direct intervention by ATC in the portion of the approach or departure near the facility.

"Descend via" and "Climb via": As of August 2012 the FAA has changed the phraseology SIDs to use "Climb via [SID name] so it is consistent with the "Descend via [STAR name]" phraseology. See the examples in the FAA publication on ["Climb Via" and "Descend Via" Procedures and Phraseology](#).

Remainder of Approach, Transition to Tower then to Ground

At this point you have had many examples of communications between ATC and pilots. At some point you will be handed off from Approach to Tower, but most if not all of the vectoring has usually been completed. The remainder of arrival will not be detailed out but the following procedures should be followed:

1. When you get instructions to change to a certain heading or altitude, radio back to **confirm EVERY instruction** just as it was given.
2. You may be advised of traffic in the area - the correct response is either 'Negative Contact' if you do not see the traffic (you will likely be instructed to advise when the traffic is in sight so you can pre-empt this by saying "Negative contact but we will advise when the traffic is in sight" - or something to that effect) or "Contact, traffic in sight" if you do see the traffic. (If you do not have visual contact but have TCAS or are using the FSCopilot radar as a form of traffic monitoring you can advise ATC accordingly - "Negative visual contact but we have the traffic on TCAS" – and, did you watch the video [Things Pilots Say that Nobody Wants to hear](#))?
3. You may hear that you are cleared to the ILS approach, runway XX - this is an area of recognized confusion but so far the rules have not changed. This phraseology is still in use, in spite of the fact that this has caused confusion with being 'cleared to land'. So - be aware and be careful. You are only cleared to the approach. ***You are not cleared to land until you are told "Cleared to land"***.
4. You may be cleared to land somewhere prior to being established on the final approach but at the least you can expect landing clearance once you are on the final approach path. As with all other communication, confirm the landing clearance when given.

Once you are on the ground you will receive further instruction regarding exiting the runway and taxiing. You may be handed off to Ground but this position may not be manned. As described earlier this happens in some real-world situations but it is not uncommon in sim flying to have one controller covering multiple positions. So, be aware that in this and any other situation where you might expect to be handed off, you will be told "stay with me this frequency". Do just that, you will receive further instructions in the same manner as if you were handed off to a different controller.

Large airports can be confusing – multiple taxiways and more than one direction to turn at a given taxiway. So, like before – **write down the taxi instructions**. Do not trust your memory. Just as you had charts for SIDs, en-route navigation, STARs and the approach, you should have an airport diagram. Resources like [Skyvector.com](#) can provide this information for aviation within the US. You can also request 'progressive taxi' – Ground will give you taxi instructions at each step of the way. Not a bad idea if you are a novice and find yourself at a very large airport.

A couple of publications that might give you more information:

From the AOPA: [Communicating with ATC](#)

From the FAA: [Instrument Flying Handbook](#) - see chapter two on communications. (Very large .pdf file - you may want to download and save it)