

Communication and Clearances

Pro-Words

Roger
Wilco
Confirm/Verify
Correction
Disregard
Affirmative
Negative
Say Again
Stand By
Unable
Minimum Fuel
Mayday
Pan-Pan-Pan
Over
Out
Request

Numbers

0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW- er
5	FIFE
6	SIX
7	SEV - en
8	AIT
9	NIN – er

Pronunciation

Headings have each number pronounced individually

Ex. 240° = “two four zero” and 006° = “zero zero six”

Radio frequencies have each number pronounced individually

Ex. 121.7 = “one two one point seven”

Altitudes are pronounced in thousands, then hundreds

Ex. 3,500 = “three thousand, five hundred”

Altitudes of 10,000 or higher have the first digits pronounced individually

Ex. 12,500 = “one two thousand, five hundred”

Altitudes above 18,000 are pronounced as flight levels

Ex. 41,000 = “flight level four-one-zero”

Basic Goals:

1. Make calls clear and concise. Use standard phraseology.
2. Know what you are going to say before you transmit.

Morse Code

Learning Morse code is not required for an instrument rating, but it can assist the pilot in identifying VORs quickly without having to consult a chart.

There is a Morse code tutorial at this site: www.learnmorsecode.com

Can you translate this?

.-- --- - --. .-. -.-- -. .-. .-. .-. .-. .-. .-. .-. .-.

A .-	H	O ---	U ..-	0 -----	Fullstop .-.-
B -..	I ..	P .--.	V ...-	1 .-.-.-	Comma -.-.-
C -.-.	J .-.-	Q --.-	W .--	2 ..-.-	Query ..-..
D -..	K -.-	R .-.	X -.-	3 ...--	
E .	L .-..	S ...	Y -.- -	4-	
F ..-.	M --	T -	Z --..	5	
G -.-.	N -.			6 -....	
				7 -.-..	
				8 -.-.-.	
				9 -.-.-.	

Radio Call Format:

Initial call:

Who
 Where
 What
 Notes

Response to ATC:

Respond with numbers (heading, altitude, airspeed), items that you may have had difficulty understanding, and clearances
 Refer to the list of required reports for more

Tips:

Think “VERBS BAD”
 Have ATC spell things out if you do not understand them (procedures, fixes, etc.)
 Query ATC when you suspect omitted or erroneous instructions.
 NEGOTIATE. When ATC gives you a clearance that you are *unable* to accept, say why you are unable and then suggest an alternative.
 Remember that ATC works for you, not the other way around.

Required Reports (*denotes item is required by FARs)

In radar and non-radar environments

Leaving an assigned altitude

VFR altitude changes

Arrivals at an assigned holding fix (time and altitude)

Departing an assigned holding fix

Missed approach

Unable to climb or descend at 500 fpm

TAS variation from filed of 5% or 10 knots, whichever is greater

* Loss of any navigation or communication ability

* Any unforecast weather or any other information relating to safety

In non-radar environment

Leaving the FAF or OM inbound on final approach

Revised ETA for a fix of more than three minutes

* Compulsory reporting points (or any fix ATC directs to report)

Position Reports

Format for over a compulsory reporting point (IPTATEN or I-PATTEN):

Identification	2008H
Position	over Bards
Type	IFR
Altitude	5 thousand
Time (current)	35 after
ETA of next fix	Ester at 48 after
Next fix after that	Percy next

Common Errors

Shortening the call sign before ATC shortens it.

Answering “ident” when told to ident

Using slang (eg. “three point five” for the altitude 3,500)

Waiting too long to declare an emergency

Assuming that ATC will vector pilots away from TFRs and dangerous weather

Types of Air Traffic Control

ATC’s basic job is to separate IFR traffic from other IFR traffic. Other functions, such as VFR separation and flight following are performed on a workload permitting basis.

Center

Short for “Air Route Traffic Control Center” (ARTCC), controls enroute traffic
Generally used for traffic on long trips, at high altitudes, and at night

Approach/Departure Control

Part of a Terminal Radar Approach Control (TRACON), the two functions are generally on the same frequency.

They facilitate the arrival and departure of aircraft into an airport’s airspace.

Tower

Tower controls the immediate airport environment and “runway safety area.”

The primary means of control is visual observation.

Ground Control

Ground is responsible for the airport "movement" areas.

Clearance Delivery

Clearance coordinates with the national command center and the enroute center to obtain releases for aircraft.

Generally, only large airports have clearance delivery.

RADAR

ATC has “Primary Radar” and “Secondary Surveillance Radar” (SSR.)

Primary radar “sees” aircraft by sending out radio signals that bounce off the aircraft.

SSR interrogates transponders within the aircraft, which then reply with information about the flight and aircraft position.

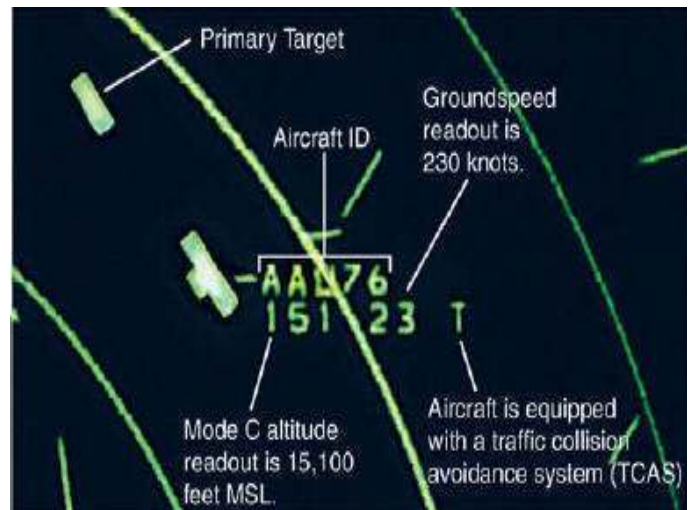
The amount of information returned depends on the type of transponder:

Mode-A (4096 code)

Mode-C

Mode-S

When establishing “radar contact” with an aircraft, a controller generally wishes to know the aircraft’s tail number, general location, and altitude. The controller can then verify the aircraft’s position by comparing this information with the aircraft’s squawk code.



For good examples of radio calls, visit: www.eagle-east.com/Pilotguide2006.pdf

Weather Briefings

According to 14 CFR 91.103, a pilot must be familiar with weather information and NOTAMS before a flight.

The two most common ways for a pilot to create a record of obtaining this information is:

1. Through DUAT or another FAA certified weather source. (www.duat.com)
2. Through an Automated Flight Service Station (www.afss.com) Generally, this is accomplished by calling 1-800-WX-BRIEF (1-800-992-7433.)

However, talking with a weather briefer is the only way to ensure up-to-date information on Temporary Flight Restrictions.

A weather briefing will only include *unpublished* NOTAMS, unless published NOTAMS are specifically requested.

The three types of NOTAMS are:

- NOTAM-L
- NOTAM-D
- NOTAM-FDC
- GPS NOTAMS

In-flight Weather Information

Below 5,000', call a Flight Service Station.

- a) Use the VOR box on a chart to find the nearest Remote Communications Outlet.
 - 1 The name of the FSS will be below the VOR box.
 - 2 Frequencies will be above the VOR box.
 - 3 If a frequency has an "R" after it, it indicates that the FSS can only receive over that frequency. The FSS will then transmit over the VOR. Be sure to change the squelch on your navigation radio so that it is easier to understand the weather briefer's voice.
 - 4 Say the FSS name and call sign ("Radio") twice, then tell them which frequencies you are using for transmitting and receiving.
 - 5 Example: "Cleveland Radio, Cleveland Radio, Cessna 12345, transmitting on 122.1 and receiving on 108.8, Mansfield VOR."
- b) Find a VOR box with a shadow that indicates it is located at a Flight Service Station. Contact them on 122.2
- c) You can receive weather briefings, file flight plans, and give PIREPs, just like you would if you called the FSS from the ground.



Above 5000', call the Enroute Flight Advisory Service, better as "Flight Watch."

- a) Use frequency 122.0
- b) Find the name of the controlling Center, and call them using the call sign "Flight Watch." Eg. "Atlanta Flight Watch, Cessna 12345, over."

- c) Tell them where you are, where you are going, and what you would like to know about the weather.
- d) You may also want to tell them anything significant about the weather you are experiencing so that they can turn it into a PIREP. “Currently we are experiencing light turbulence and negative icing.”

Ways to Pick Up an IFR Clearance

At a controlled field:

- a) Call clearance delivery.
- b) If there is no clearance delivery, ground control will fulfill that function.
Ex, “Lansing Clearance, Cessna 12345, IFR to Detroit Metro.”

At a non-controlled field:

- a) Call FSS from land line and get a clearance void time (be ready to run to the plane.)
- b) Call FSS from a cell phone after completion of the engine runup and get a clearance void time. Ex. “This is Cessna 12345 at Coldwater, I have an instrument flight plan to Detroit Metro. I’ll be ready to depart runway 25 in 10 minutes. I’d like to get a clearance void time.”
- c) Call the local approach control from a cell phone after completion of the engine runup and get a clearance void time. Treat it like a radio call, not a phone conversation. Ex. “Cessna 12345 ready to depart runway 25 at Coldwater, I’d like to pick up my IFR clearance to Detroit Metro.”
- d) Use a Ground Communications Outlet (4 clicks for approach, 6 for a flight service station) to make contact with approach or a flight service station and then proceed as above.
- e) Occasionally, can call a local approach control/clearance delivery on a radio frequency directly from the ground.
- f) “SCUD RUNNING” – Take off and stay in VMC until you are able to pick up an IFR clearance from the air. Ex. “Kalamazoo Approach, Cessna 12345, just off Marshall. One thousand two hundred climbing three thousand. I’d like to pick up my IFR clearance to Detroit Metro.”

Clearance Format (CRAFT)

C – Clearance limit: Destination or fix with expect further time

R – Route of flight: As filed, ATC amends, or DP

A – Altitude: to with expect in 10 minutes

F – Departure frequency

T – Transponder code

Other pertinent information