ICAO RT

The International Civil Aviation Organisation (ICAO) RT language is a subset of English, with a relatively small number of standardised phrases which, together with the Phonetic Alphabet, need to be learned and understood by a student pilot. These phrases have been refined over the years to avoid the possibility of mishearing or misinterpretation, especially in the less-than-ideal environment of a noisy cockpit and distorted radio.

Aircraft Call-Signs

All civil aircraft are allocated a unique 5- or 6-character registration code which, in the UK, commences with the letter 'G'. Other letters have been allocated to other countries, for example 'F' France, 'D' Germany, and 'N' for the USA. It is suggested that the Pilot RT App is restricted to the use of 'G' registration aircraft, with 4 following letters, for example G-ABCD.

For RT communication purposes, the pilot will identify himself by the phonetic equivalent of his aircraft registration, such as Golf Alpha Bravo Charlie Delta, for the above example. This is his call-sign. Where there is no possibility of misunderstanding, the call-sign may be abbreviated to the first and last two letters, for example Golf Charlie Delta, but only after the ground station (e.g., Air Traffic Control, or ATC) has done so first. The pilot is not allowed to initiate an abbreviated call sign but can continue to use it if it has been initiated by ATC.

The ICAO Phonetic Alphabet

A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

ICAO Numbers

Numbers are referred to by their normal English names, for example, one, two, etc, but to assist understanding in noisy environments, some are pronounced slightly differently, for example 3 is pronounced 'Tree', 4 as 'Fower', 5 'Fife', and 9 'Nina'.

0	Zero	Zero
1	One	One
2	Two	Two
3	Three	Tree
4	Four	Fower
5	Five	Fife
6	Six	Six
7	Seven	Seven
8	Eight	Eight
9	Nine	Nina

ATC will always use these alternative number pronunciations, but not all pilots do so, therefore the App needs to be able to understand both these and the standard English versions.

RT Altitude / Height Transmission

Aircraft Altitudes or Heights are transmitted as you might expect, except that the word ‘thousand’ will be transmitted as ‘tousand’ by ATC, to assist clarity. So, for example:

2,000 ft	Two tousand feet
3,500 ft	Tree tousand fife hundred feet.

Again, we need to make allowance for the normal English pronunciation of these words.

Altimeter Settings

An altimeter is merely an aneroid barometer, with its scale calibrated in feet rather than inches of mercury, since air pressure reduces with increasing altitude by approx. 1 inch of mercury per 1,000 ft. However, air pressure also changes with the weather, typically falling in wet & stormy conditions, and rising in dry and settled weather. To compensate for this, the altimeter must be manually adjusted by the pilot to compensate for the local ground

conditions. Local ground level pressure is passed to the pilot by ATC during the RT conversation.

In the USA, this local pressure information is sent as inches of mercury, for example 29.15. However, in Europe, including the UK, the pressure is sent as millibars, where 1,000 millibars = one Bar, or one atmospheric pressure at sea level. To further complicate it, since 2011 the unit millibar has been replaced by hectopascal in RT terminology, in honour of the French philosopher, Blaise Pascal.
Note that 1 hectopascal = 1 millibar.

In the UK, ATC will pass one of two local pressure settings to the pilot, using so-called 'Q' codes (a hangover from the old days of Morse code transmission). If the aircraft is merely passing by the location of the ATC, en-route to some other destination, the pressure setting will be relative to sea level, and is given the three-letter code, QNH (transmitted using the normal upper-case pronunciation QueueEnnAitch) followed by the numerical pressure, e.g. 'QNH1010'. The altimeter will now record the aircraft's altitude in feet above sea-level. Conversely, if the aircraft is intending to land at the airfield or airport, the QFE pressure setting is sent, e.g., 'QFE1005'. The altimeter now record's the aircraft's height, also in feet, above the runway. Note the use of 'Altitude' and 'Height' to describe the aircraft's vertical position above sea-level or the runway, respectively.

In either case, the unit 'hectopascal' is included when the pressure is less than 1,000, but is omitted for pressures of 1,000 and above, for example 'QFE1001' but 'QFE998 hectopascals'.

Note that all the characters and digits are transmitted individually, for example, 'QNH1009' is transmitted as 'Queue Enn Aitch one zero zero nina' and 'QFE998' as 'Queue Eff Ee Nina Nina Eight hectopascals'.

Radio Frequencies

Civil aircraft communicate using VHF frequencies from 117.975 to 137.0. These are split into bands, with 8.33KHz spacing. Consequently, 3 decimal places are required to define each band.
Birmingham Radar, for example, operates on a frequency of 123.980 MHz.

This would be transmitted over the RT as 'One Two Tree decimal Nina Eight Zero'. Note the use of the word 'decimal' to describe the decimal point.

If the final two digits are zeros, these are omitted, hence 119.500 is transmitted as 'One One Nina decimal Fife'.

Runway & Taxiway Identification

Runways are identified by their magnetic bearing in degrees, but with the final digit omitted. Birmingham Airport's main runway, for example, has a magnetic bearing of 330 degrees in one direction, and 150 degrees in the reverse. These are transmitted as 'Runway Tree Tree' and 'Runway One Fife', respectively. Taxiways and holding points (where the aircraft must stop until given specific permission to enter the runway) are allocated letters and transmitted using the phonetic alphabet.