Why Should I Have A Radio?

In my flying career, almost every aircraft I have flown has had a flight radio. So basically, I have been brought up with a radio in each and every aircraft… Except for hang gliders.

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I hear some pilots say that using a radio is a waste of time and money, or they serve no real purpose… Well, this is fine, and CASA allow aircraft to operate at certain altitudes and from certain airfields without radios. Most of the Ag pilots I know now have a radio, but rarely use it, unless they have to.

So why have a radio at all and how should you use it? A flight radio gives you, the pilot, the chance to eavesdrop on the airwaves, to establish who is in the area, what the weather is doing and in an emergency, you have a means of telling someone where you are. Of course, you would have to know the necessary frequencies which means you'll have to invest in an ERSA, charts or an EFB. These cost money – weigh the benefits.

I have seen mid-air crashes happen due to an aircraft not having a radio. Glider pilots have had their fair share of incidents and there have been deaths due to not being able to communicate with other gliders or tug aircraft. You can see where I'm coming from and, yes, I do think all aircraft should have flight radios.

While allowing for this preference of mine, let's look at the way you use your radio, if you have one.

I could go into wavelength, frequency, amplitude, sound waves and radio waves as topics, but I won't. You can look up the technical information if you want or need it. What I want to do is talk about the basics. After all, that's the 10% you'll use as an operator. In over 50 years of flying I have never had anyone ask me about wavelength, amplitude or any of the subjects above, except for frequency, so I won't bore you with them.

We use VHF (Very High Frequency) radios in our aircraft (for the technical reader the band is 30 to 300MHz). The VHF radio gives you a high quality line-of-sight communication which is, however, usually short range. This means you can communicate between an aircraft and a ground station, or aircraft to aircraft. The rule of thumb with VHF transmissions is an aircraft at or below 5000ft AGL will have VHF coverage of approximately 60nm range. If we take the aircraft up from 5000 to 10,000ft that range should increase to around 90nm coverage – only as a rule of thumb. Other things to remember about the range of your radio is the type of antenna you use, where it is mounted, as well as the terrain you're flying over, because all of these have a dramatic effect on your range.

There is VHF-Nav equipment in some radios as well, like VOR (VHF Omni-directional Radio range) and the NDB (Non-directional Beacons) and the ADF (Automatic Direction Finder). Again, a number of these Nav aids are being fazed out at this time, so I won't go into their operations.

Some pilots use hand-held radios, but remember that at the moment the only legal hand-held radio you can use is the Icom A-15.

The airspace is set up in sectors. You have Controlled Airspace or Control Zones (CTA). If you are a recreational pilot you don't normally fly into Controlled Airspace. Instead, you would fly in Uncontrolled Airspace (OCTA), and you would fly in and out of Common Traffic Advisory Frequencies (CTAF). The CTAF means you must have a radio to enter that airspace or aerodromes. CAAP 166-1 and CAAP 166-2 explain the reasoning behind the changes. A CTAF normally covers a radius of 10nm around an aerodrome and up to around 5000ft AGL. However, you will need to check the individual CTAF information in the ERSA.

If you look at charts like the ERC Low (Enroute Low Chart), VNC (Visual Navigation Chart), or the VTC (Visual Terminal Chart) you will see the airspace divided into sectors. Each sector has one or two radio frequencies written into a Navigation Box. The box is outlined in green with two frequencies, one in green and one in brown and at the bottom in green is the location of the outlet. The brown coloured frequency is E class and the green frequency is the airspace below the E class airspace. When you are flying around fat, dumb and happy, you should be listening to the area frequency or FIS frequency. You should also be monitoring the local CTAF you may be flying near. I always monitor the area frequency even when I'm in our local area, as this gives me a heads up into who may be arriving when I am heading back into the circuit. I like to know who could interrupt my day. There is nothing worse than arriving at the aerodrome and seeing a disabled aircraft on the runway and knowing I would have to find an alternative. If I listened to the area frequency, I would have been given this information by Airservices and could have planned for an alternative earlier.

So now you have your radio in your aircraft, but are perhaps a little reluctant to use it. I understand that you don't want to make a mistake, or you dont want to make a fool of yourself… Don't worry there is no 'radio police', but at the same time you'll want to use the radio in the right manner. Keep your conversation short, clear and don't be over polite. You don't need to say 'please' or 'thanks'. These words just take up unnecessary time.

When spelling a word, use phonetic spelling. You know: Alpha, Bravo, Charlie and so on. These words are not used just because they sound good. They are used because they are unique words which cannot be easily mistaken for another word. So improvising by using Bob instead of Bravo is not helpful and may in fact confuse.

Don't rush your conversation, take it slowly. If you don't understand a transmission, ask for it again, by saying, 'Say again,' and if you are asked to repeat your transmission, start by saying, 'I say again'. There are a number of standard words and phrases. If you listen to the radio chit chat you will pick them up, or, if you prefer, you could buy the AIP or the new VFRG book. These two publications will explained it all for you.

I wonder if this has ever happened to you: You are flying along fat, dumb, beautiful (in other words you are really enjoying your flight), when smashing through the airwaves comes a broadcast: *"VICTOR, CHARLIE, GOLF Cessna flying near YABBA NORTH 2700 heading for Shepparton."* Then the airwaves go silent.

What would your reaction be? I know what mine was: *"Shit, he's on an intersecting track to mine!"* But do I remember his call sign? No. All I can remember was a rushed broadcast with something about YABBA NORTH, (Yes, I saw this on my map and I was flying near YABBA NORTH). The altitude was similar to mine and he was heading for Shepparton. In other words, he was going to cross my track. The first thing I would do is scan the sky to get a visual on that Cessna. Do I see it? No. My next reaction is to place a call, but what should I say? Remember, I didn't catch his call sign! My call would go like this: *"Aircraft in the YABBA NORTH area,... Trike 8722 is tracking Shepparton... for Yarrawonga at 2500ft... Overhead YABBA NORTH."* This gives the Cessna a chance to respond to me and, more importantly, he knows that there is another aircraft in his airspace with an intersecting track. Most times this happens to me, I do get a response and this time was no exception. The Cessna pilot got back to me, amended his altitude, we both got a visual and passed each other without incident. But if his initial broadcast had been a little different and slower, I would have picked up more information. I would have liked to have heard it like this: *"YABBA NORTH traffic.... Victor... Charlie... Golf... Cessna 172... Tracking 5nm north of YABBA NORTH for Shepparton at 2700ft, YABBA NORTH."* That type of broadcast gives me a massive amount of clear, useful information. The first is the 'YABBA NORTH traffic'. He is near me. Secondly, the registration and type of aircraft. If I miss the registration, I will still get the aircraft type. A Cessna, but more importantly it is a 172, so I know the profile of the aircraft I am looking for and possibly the speed range. Thirdly, the track is from Yarrawonga to Shepparton. I could look in the direction I am heading, but this is now not necessary since the other pilot has said, *"Tracking 5nm NORTH of YABBA NORTH."* A quick look at the map or EFB and there is YABBA NORTH, just over my left shoulder, and the Cessna 172 is heading for Shepparton. This means he will pass me on my left. The fourth and last bit of information, is the altitude, 2700ft. I am at 2500ft, so we have 200ft separation... or do we? I hope my QNH is the same as the Cessna's! Either way, I would make a broadcast and let the Cessna pilot know my information. We can now make an informed decision on what manoeuvre to make next.

So before you make a broadcast, think about it, and then, when you speak, don't rush it. Take it slowly, so that all the other aircraft listening in can make sense of what you are trying to communicate.

What you need to get across the airwaves is:

- Where I am
- Who I am
- What I am doing
- Where I am, again (so that if the listener missed the first part of the broadcast he will pick up where you are with the last part, and if you are in his immediate area ask you to repeat it...)

That's the important stuff.

You will find all the calls you need to make when approaching a CTAF in CAAP 166-1 and CAAP 166-2 or in the AIP and VFRG. I won't go through them in this article. Just remember that on entering a CTAF, you must give your call by 10nm not 9nm. You could make the call at 20nm if you like and don't forget to give your time to circuit. If you will be arriving in the circuit at 59 minutes past the hour you should say, *"Expected Circuit Time 59,"* or if you are arriving on the hour, you should say, *"Expected Circuit Time on the hour."* When you are giving your circuit calls, it is the Base call when you must give your intentions ('full stop' or 'touch and go'). This gives an aircraft behind you time to plan their turn onto base for final.

If you are intending to join on Base or do a Straight in Approach, do remember that you must give way to all circuit traffic and you must know the wind direction and strength before making your approach.

Don't forget when conducting a Straight in Approach, your last call should be at 3nm. All you need to broadcast is: *"Yarrawonga Traffic Trike 8722, three mile final, ('full stop' or 'touch and go'), Yarrawonga."*

There it is! The flight radio is nothing to fear. As pilots it is just a tool of our trade. I use my radio frequently and I quite often contact flight service to get a clearance or find out the QNH, and they have always been very helpful. I also use my radio to talk to other aircraft. When on a fly-away we have a dedicated chat channel. This means all the pilots on the fly-away can talk in plain English without infringing the normal area or CTAF frequencies.

There's one more thing to remember if you are testing your radio. Don't do it on the CTAF frequency, go to a discreet frequency. That way you will not be broadcasting to everyone on the CTAF with, *"Test, 1... 2... 3..."* I can tell you it's very annoying for pilots doing circuits to hear you testing your radio. If you do need to test your transmission, simply ask for a radio check and someone will give you a readability check from 1 to 5.

Next time you're flying around using your radio, just remember to think about the information you would like to know about any aircraft flying near you. This information is what you want to tell other pilots. Process it, perhaps even rehearse it. Press the transmit button and wait while you count 'one', (so you don't cut off the first piece of information you transmit) then take it slowly,... You don't like it when someone rushes information which you need to hear, so keep your broadcast simple, slow and precise. That way it will be useful to the people you are communicating to.

And if you haven't got a radio? Well, you don't know what you're missing! Happy flying.

NOTE: Periodically, CASA and Airservices will, after much consideration for aviation safety, elect to alter radio frequencies and boundaries, radio techniques or even methods of delivering radio communication, right down to when to make a call and what to say at each stage of approaching a landing area.

These changes are reflected in charts and ERSA as they are implemented. Far more important than fear of being caught out and fined, it is an excellent reason to make sure that your own documentation is kept up to date and that you use the current published information when you are flying.

Photos: Peter McLean