26 - RADIO TELEPHONY (R/T)

Definitions

Station

A radio base or aircraft radio.

Carrier wave

This is the signal which is transmitted when the transmit button is pressed, but no message is passed. The receiving station will hear a mushy 'shhhhh' noise.

Modulation

This is what happens to the carrier wave when you speak into the microphone. If the circuit which modulates the carrier fails, information can sometimes be passed by 'blipping' the transmit button in response to questions.

Squelch

Squelch is a function of the receiver that suppresses irritating hiss, noise, between received messages. If it is manually adjustable it can be used to filter out electrical noise, either from the local environment or a turn and slip, for instance. However, care should be taken that it is not set to suppress the messages that you want to hear as well as the noise.

Ducting

VHF radio waves travel in straight lines and are therefore 'line of sight' emissions. In certain atmospheric conditions (usually high pressure systems with strong inversions), radio signals can be reflected off the inversion and travel much further than normal. However, there can still be a 'Dead' area in the middle (figure 1, next page).

Distress

A term used to describe an aircraft or vessel in imminent danger and requiring immediate assistance. The first transmission should use whatever frequency you are on at the time, prefixed by the words *MAYDAY, MAYDAY, MAYDAY*. A listening watch is maintained on 121.5mhz, which is the normal distress frequency. You should announce any serious emergency, such as being lost above cloud in a mountainous area close to the sea, say, on this frequency.

A PAN call (*PAN-PAN, PAN-PAN, PAN-PAN*) has a lower priority. You might make one if you were lost, or had some other problem which was not immediately life threatening. You can downgrade a MAYDAY to a PAN if the problem turns out to be less serious than you first thought.

'If you need to use the radio at any time for safety reasons, you should use it in spite of any lack of licence held etc.

LEGAL ASPECTS

There are several legacy standards of radio equipment compliance. At present, we are moving over to 8.33 Mhz frequency spacings. That means that once the deadline has passed, pilots cannot legally use radio transceivers that are designed for 25Mhz spacings (720 channels). Doing so could 'block up' other frequencies, and get the person involved into bother. There are also some really old radios that can only transmit with 50Mhz channel spacings (360 channels). Using one of those radios could now cause real carnage!

The law requires any glider fitted with a radio to have a licence for the 'installation', and the owner must pay an annual fee for the privilege of registering the radio, or the aircraft's call-sign! This is supposed to ensure that installed radios comply with the legal transmission requirements. The licensing authority keeps a list of glider radios which have been approved, and most of the usual types are on it. If you are not sure whether your radio is approved or not, contact the CAA 0207 453 6555, or go to the CAA website at www.caa.co.uk.

In almost every other branch of aviation you need yet another licence to be able to use the radio! At present, glider pilots don't need an R/T licence, provided they only use the frequencies allocated specifically to gliding (see Laws & Rules) - emergencies excepted. Although you can teach yourself all you need to know about R/T, you won't get the licence until you take and pass an exam supervised by a qualified CAA examiner. There is usually a charge for this, but once the licence is gained it doesn't have to be renewed!

Some of the R/T course is devoted to radio theory, but this has little practical value - you don't need to understand electromagnetic theory in order to be able to use a telephone. The practical aspects of using a radio are another matter.

OPERATING RULES

Good R/T is POLITE, PRECISE, CONCISE and INFORMATIVE. Chat on the gliding frequencies quite often isn't any of those. Given how crowded the standard glider frequencies are becoming, such poor discipline is somewhat anti-social, to put it mildly.

Before using the radio, check the following:

- is it switched on?
- are the volume and squelch adjusted?
- who do you wish to contact and do you know their call-sign?
- have you selected the correct frequency?
- what do you want to say?

Press the transmit button just before speaking, otherwise the first syllable of your message may not be transmitted.

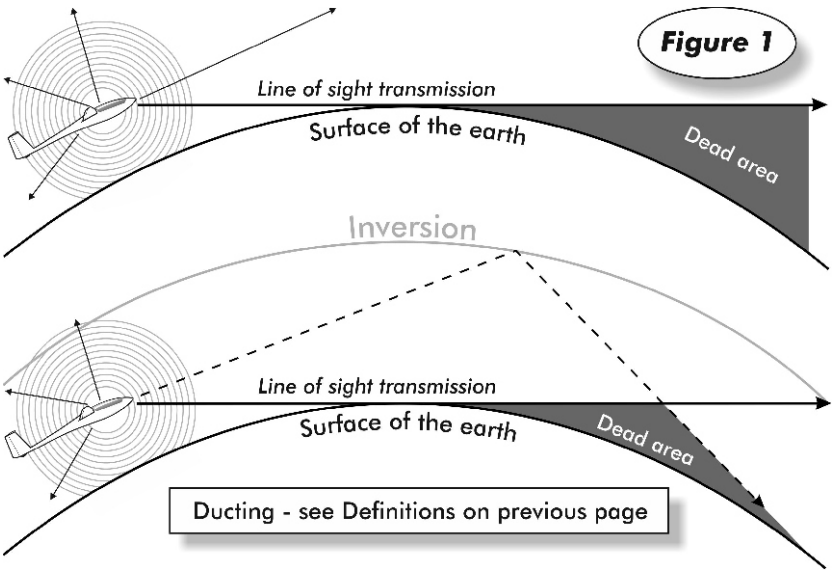
The method of calling

Before transmitting, listen out and make sure no one else is talking at the same time. Your first call is to alert the person to the fact that someone wants to talk to them. The standard practice is to begin a transmission with the other station's callsign, and then use your own, eg *Booker base, this is 925*, or *Booker base, 925*.

Expect a reply such as *925, pass your message*, or *925, go ahead*. You can then ask for, or pass the appropriate information, eg *Booker, 925, what is the wind direction?*, or, *Booker base,925 landing near Aylesbury.*

There can be several reasons for not receiving a reply to your initial call:

- you could be out of range; perhaps your radio is not be very powerful. The line of sight range of a VHF transmitter can be calculated from the formula: Range in miles is approximately equal to the square root of your height in feet. For example, from 5,000' you can transmit Ö5000, or 71 miles.
- you haven't switched the radio on
- the volume and squelch are incorrectly adjusted
- you are on the wrong frequency
- perhaps the person you are calling is not listening, or their transmitter is not working. The latter case would allow you to pass a message to Booker, but obviously they wouldn't be in a position to be able to pass one back to you! You could say, *Booker, 925 will be arriving in five minutes - from the north*. This is a blind call passing on information useful to other aircraft as well as to Booker. Otherwise, try once more and then keep quiet. If you can hear Booker talking to other gliders then you have to assume that your radio is not transmitting properly. Check once with another glider that you can be heard clearly.



In subsequent transmissions, if you are sure that the other station is listening, transmit messages immediately. This prevents the frequency from being cluttered up with unnecessary calls.

Occasionally someone else may interrupt your transmission by transmitting across it. This may not have been deliberate or careless; they may just not have heard yours. The result is usually a dismal howl on the speaker and an unreadable message. Listening before transmitting may not get rid of this problem completely, but does make it less likely.

While the words *OVER* (I've said my bit, now you can say something) and *OUT* (That's it, nothing more to say) are still part of R/T phraseology, they have fallen into disuse because of the vast improvements in radio technology. As in normal conversation, it is usually obvious when a transmission has finished.

Dialling up 121.5 on your radio and transmitting puts you in touch with people who want to help. In most parts of the UK, once you press the transmit button on the radio, the distress and diversion people also know your location. So if you need help, are lost and think you might be close to controlled airspace, or any other situation which is or could lead to an emergency, don't hesitate to call. You can also initiate a practice on this frequency. See the CAA publication CAP 413 for details.

The information in this chapter should be sufficient for glider pilots who don't want to go for the full licence. Until the BGA manages to negotiate a restricted R/T licence, pilots would be well advised to get a full licence if they wish to take advantage of the additional airspace sometimes available if they can talk to ATC. Courtesy costs nothing!

ADVICE TO INSTRUCTORS

The majority of training two seaters do not have radios, so trainees do not hear, copy or get into the habit of good radio discipline. Probably the first time they will ever use a radio in earnest is when they are solo. It shows! In the future, more glider pilots may go for R/T licences so that they can legally contact ATC around the country. This should cut down on trivial and frequency clogging chit chat. As to exactly what you teach your trainees about radio usage - try brevity.

Note It is very important that trainees understand that if anyone makes a MAYDAY call, everybody else should shut up, but note what's being said. If they are able to offer relevant assistance, however, they should wait for a short while before transmitting it. Otherwise, keep quiet until the emergency is over.

Some useful phrases

Roger

☐ I have heard your message and understood it

Wilco

☐ I will comply with the instructions you have just given me

Say again?

☐ I missed most if not all of that last message. Please repeat it

Negative

☐ Standard phraseology for NO

Affirm

☐ Standard phraseology for YES

Read is Radio-speak for 'hear'.

Use of frequencies allocated to gliding		
Frequency	**Primary use**	**Secondary use**
129.900	Ground to ground (Retrieve crew to glider on ground)	Not specified
129.975	Airfield control service (Ground to visiting aircraft or glider)	
130.100	Competition start & finish lines Local flying	Training Lead & follow
130.125	Training Lead & follow Other cross-country messages	Local flying Competition start & finish lines
130.400	Cloud flying Cross-country location messages	Not specified
121.500	Distress frequency (all aircraft)