



Use of Radio

Based on notes produced by Don Puttock for Black Mountain Gliding Club, with grateful thanks

Introduction

Like so many things we need to learn in aviation, there is a mixture of hugely practical and some relatively useless stuff.

Understanding comes from recognition of the structure of control within the UK and some history.

1. Early radios were very unreliable and sometimes difficult to hear. Standard phraseology came about to reduce the length of transmissions and make messages easier to understand.
2. There is a very real risk that radio might be used as a part of a terrorist attack for instance. Anyone with an aviation transceiver could send bogus messages, and disrupt air traffic into busy airports. Licensing is part of a safety control mechanism.
3. The civil aviation authority (CAA) controls all UK aviation radio operations. The aims are, 1) to ensure the sets themselves (referred to as stations), operate correctly without interfering with other transmitters and 2) the users are trained to follow strict procedures. Glider pilots are exempted from holding formal licences provided they stick to the limited range of frequencies allocated to them. At the Mynd you have been using 129.975 MHz routinely. All sets must have a radio communications licence (issued by the CAA.)
4. Some of the Bronze C syllabus covers subjects that cannot be practised without an operators licence, but is still required knowledge.
5. British Glider Pilots are amongst the worst in the world for radio skills. At the end of this introduction you will begin to recognise some of the failings that routinely happen. Good operating skills are obvious to those "in the know", many pilots operate in ignorance without realising they are making fools of themselves.

Radio transmission techniques

1. Think before you transmit.---being prepared reduces the umms and errs.
2. Listen to ensure you are not interrupting anyone else.---Their message may be critically important.
3. Remember, when you press the push to talk button no one else can get through. (stuck mike is not unusual, so if it seems to have gone quiet on the radio, make sure you are not sitting on the microphone switch).
4. When talking maintain a constant distance from your mouth to the microphone.
5. Enunciate each word clearly and distinctly using a normal conversational tone.
6. Keep your speech rate constant, a maximum of 100 words per minute.
7. Avoid using hesitation sounds such as er.
8. Keep the operation of the transmit button to a minimum. Depress the button fully before speaking and do not release it until the message is complete.
9. make sure the button is released after transmission and that it cannot be inadvertently switched on after stowage
10. VHF radio transmissions are line of sight---the higher you are the further it is possible to transmit and receive. (at altitude it is important to make your location clear----" Kilo One Nine , five thousand feet descending over the airfield" will be heard at the other end of the country!!!
11. Keep transmissions brief and to the point.



Radio around the airfield

1. Ground stations can never give instructions to an aircraft unless they are air traffic controllers operating in a controlled environment.----"Mynd base, Kilo One Nine, request circuit instructions"-----"Kilo One Nine , gliders are flying right hand circuits landing South-west"----- (in other words—its up to you to decide, but this is what everyone else seems to be doing)
2. Transmissions are often blind, a reply is not necessarily expected—"Kilo One Nine, downwind, right hand, landing east, gear is down and locked."
3. Transmissions always start with the station being called, followed by your call sign---"you, this is me"
4. If you expect a reply don't pass your question in a garbled outburst.-----"Kilo One Nine, Four Four Nine"----(wait)---"Four Four Nine pass your message"-----"Kilo One Nine, what are your intentions?"----"Four Four Nine, intend commence right hand circuit"
5. A general safety announcement might sound like this-----"All Mynd Gliders be advised a heavy rain shower is approaching the airfield from the west"

Readability scale

It is good practice to check your radio is working properly;

"Mike Golf Charlie, Kilo One Nine, request radio check" " Kilo One Nine readability five"

The scale goes from 5 (perfectly readable to 1 (unreadable), 3 is readable with difficulty.

Gliding Frequencies

Frequency	Primary use	Secondary use
130.125MHz	Training (lead and follow) Other cross-country location messages	Local and other flying Competition start and finish lines
130.1 MHz	Competition start and finish lines	Training (lead and follow)
130.4 MHz	Cloud flying and relaying cross country messages only	
129.975 MHz	As a control frequency within 10 nautical miles and up to height of 3000ft above certain approved airfields	
129.9 MHz	Ground to ground only	

(Source Laws and Rules for Glider pilots)

Call Signs

- Gliders registration letters or competition number-----("Kilo One Nine"---"Four Four Five")
- Cars...include designation "mobile"-----("Two Eight Eight mobile")
- Sites...include the designation "base"-----("Mynd base")

(Source laws and Rules for Glider pilots)

In addition:-

Airfields and other services have other designations

("Shobdon Radio") ----- a non air traffic controlled radio station.

("Cardiff information") ----- an information service available to all aviators in the vicinity



Distress and diversion

In the event of difficulty (uncertain of position, or some other pressing situation) you should remain on your base frequency, however if you get no response 121.5 MHz is the UK distress frequency. This frequency is manned 24/7.

Airspace and Radio

All airspace is designated a letter (from A to G). A is the highest. The rules are tougher the higher the designation.

Class D airspace (D reminds me of dialogue), you must have 2 way communication with the air traffic controller before entering. (Bristol and Cardiff are examples). Without an operators licence, you cannot talk to air traffic control, so you cannot go in. However if you do have an operators licence, you can talk to him and he might let you in.

Class E downwards you do not need to maintain radio contact.

Emergencies

There are two recognised states of emergency, classified as follows:-

1. **Distress**---A condition of being threatened by serious and/or imminent danger and requiring immediate assistance.
2. **Urgency**---A condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but not requiring immediate assistance.

In the case of distress, the call is prefixed MAYDAY/MAYDAY/MAYDAY, in the case of urgency the call is prefixed PAN/PAN/PAN

Whenever possible the emergency message should be relayed in the following order.

1. MAYDAY/MAYDAY/MAYDAY or PAN/PAN/PAN.
2. Name of station addressed
3. Your call sign
4. Type of aircraft
5. Nature of emergency
6. Intention of person in command
7. Present or last known position, height and heading.
8. Pilot qualifications.
9. Any other useful information.

Standard Words and Phrases

Included are all standard phrases and meanings. For the bronze paper and general radio use you should know the phrases shown in **bold**

Word/Phrase	meaning
ACKNOWLEDGE	Let me know you have received and understood this message.
AFFIRM	Yes
APPROVED	Permission for proposed action granted



BREAK	Indicates the separation between messages
CANCEL	Annul the previously transmitted message
CHANGING TO	I intend to call...(unit) on...(frequency)
CHECK	Examine the system or procedure (no answer normally expected)
CLEARED	Authorised to proceed under the conditions specified.
CLIMB	Climb and maintain
CONFIRM	Have I correctly received the following...? Or Did you correctly receive this message?
CONTACT	Establish radio contact with...(your details have been passed)
CORRECT	This is correct.
CORRECTION	An error has been made in this transmission (or message indicated) The correct version is...
DESCEND	Descend and maintain.
DISREGARD	Consider that transmission as not sent
FREECALL	Call...(unit) (your details have not been passed—mainly used by military ATC)
HOW DO YOU READ	What is the readability of my transmission
I SAY AGAIN	I repeat for clarity or emphasis
MONITOR	Listen out on (frequency)
NEGATIVE	No; or permission not granted; or that is not correct
OVER	My transmission is ended and I expect a response from you
OUT	This exchange of transmissions is ended and no response is expected.
PASS YOUR MESSAGE	Proceed with your message
READ BACK	Repeat all, or the specified part, of this message back to me exactly as received.
REPORT	Pass requested information
REQUEST	I should like to know...or I wish to obtain
ROGER	I have received all your last transmission.—under no circumstances should this be used in reply to a question requiring a direct answer---(AFFIRM or NEGATIVE)
SAY AGAIN	Repeat all or the following part of your last transmission
SPEAK SLOWER	Reduce your rate of speech
STANDBY	Wait and I will call you
VERIFY	Check and confirm
WILCO	I understand your last message and will comply with it
WORDS TWICE	Please send every word twice or I am sending every word twice.(because communication is difficult)

Volmet

Meteorological information is transmitted continuously (for the bronze you only need to know it exists). Volmet contain current aerodrome reports and (sometimes) trends.

The content of a volmet broadcast is as follows:

1. Aerodrome identification
2. Surface wind



- 3. Visibility
- 4. RVR (Runway visual range)
- 5. Weather
- 6. Cloud
- 7. Temperature
- 8. Dew Point
- 9. QNH
- 10. Trend (if applicable)

Phonetic alphabet

Alpha	November
Bravo	Oscar
Charlie	Papa
Delta	Quebec
Echo	Romeo
Foxtrot	Sierra
Golf	Tango
Hotel	Uniform
India	Victor
Juliet	Whiskey
Kilo	X-Ray
Lima	Yankee
Mike	Zulu

Transmission of numbers

Numeral or numeral element	Latin alphabet representation
0	ZERO
1	WUN
2	TOO
3	TREE
4	FOWER
5	FIFE
6	SIX
7	SEVEN
8	AIT
9	NINER
Decimal	DAYSEEMAL
Hundred	HUN DRED
Thousand	TOUSAND

(A) Messages Containing

Call signs—altimeter settings—flight levels—headings—wind speeds/directions—transponder codes and frequencies.



Each digit is transmitted separately. Examples below

Number	Transmitted as	Pronounced
K13	Kilo one three	Kilo wun tree
FL80	Flight level eight zero	Flight level ait zero
190 degrees	One nine zero degrees	Wun niner zero degrees
15 knots	One five knots	Wun fife knots
130.1	One three zero decimal one	Wun tree zero dayseemal wun

(B) messages containing

Altitude—height—cloud height—visibility---(which contain whole hundreds and whole thousands).

Should be transmitted by pronouncing each digit in the number of hundreds or thousands followed by HUNDRED or TOSAND

Examples

Number	Transmitted as	Pronounced as
10	One zero	Wun zero
100	One hundred	Wun hundred
2500	Two thousand five hundred	Too thousand fife hundred
11000	One one thousand	Wun wun tousand
25000	Two five thousand	Too fife tousand

Q codes

The only Q codes you need to know at Bronze level are:-

QFE...The pressure level at airfield level.

QNH....QFE reduced to sea level pressure using the standard atmosphere lapse rate.

You may hear the term QNE.....with 1013mb set in the altimeter subscale, this is the height shown on the altimeter when at airfield level, you do not need to remember this

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