SEPT 23

UK Civil Aviation Authority

RADIOTELEPHONY

FOR GENERAL AVIATION PILOTS

SAFETY SENSE

SSL 22

YOUR SAFETY SENSE LEAFLET FOR:
RADIOTELEPHONY

Correct radiotelephony (RTF) is essential for the safe operation of aircraft in a busy air traffic environment. However, many student and qualified pilots find the subject challenging to master.

This leaflet provides guidance on RTF for General Aviation (GA) pilots flying under Visual Flight Rules (VFR). It includes some key material from *CAP 413: Radiotelephony Manual* and the *Skyway Code.*

Requirements for standardised RTF phraseology are set out in Section 14 of the UK Standardised European Rules of the Air (UK Part-SERA). *CAP 413* contains guidance on RTF in the UK and highlights phraseology that is additional to the ICAO standard.

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RADIOTELEPHONY

Radio Licensing and Approval

It is a requirement in most circumstances when operating an aeronautical radio to hold a Flight Radiotelephony Operators Licence (FRTOL). The FRTOL is issued by the CAA and can be either stand-alone or in conjunction with a flight crew licence.

Glider pilots and student pilots under training are, subject to certain conditions, exempt from the requirement to hold a FRTOL under Article 139 of the Air Navigation Order 2016. However, glider pilots without an FRTOL are not permitted to use the radio to communicate with an Air Traffic Service Unit (ATSU) or Air/Ground Communication Service (AGCS).

An Aircraft Radio Licence is required for radio equipment installed in an aircraft. A Transportable Radio Licence is required for any hand-held VHF radio transmitting equipment that has an integral antenna and power supply. Aircraft Radio Licences are issued by Ofcom.

The aircraft radio equipment, whether installed or hand-held, is also required to be approved by the CAA.

Note that many hand-held radios with 8.33 kHz channel spacing are subject to a general CAA Light Aircraft Class 3 Equipment Approval – see the Aircraft Equipment page of the CAA website for more details.

Radio Equipment

Frequency selection

Aircraft VHF radios for voice communication operate in the aeronautical frequency band 117.975 MHz to 137.000 MHz with an 8.33 kHz channel spacing. 8.33 kHz gives the potential for 2280 individual channels within the band. Some VHF radio equipment also includes coverage of the aeronautical radio navigation band 108.000 MHz – 117.975 MHz which is used by radio navigation facilities such as VOR and ILS.

On some radios an additional switch selection is necessary to adjust the smaller decimals of a frequency. This may take the form of a toggle switch or require a rotary knob to be pulled out. The channel spacing may also need to be specifically set to 8.33 kHz. VHF radios are often integrated with other systems, such as a GNSS navigation device. On some modern integrated systems, inputs are made via a touchscreen, which allows the user to type in the desired frequency.

Always review the applicable user manuals and seek instruction if you are unfamiliar with a particular radio installation. Avionics and devices such as VFR Moving Maps or Electronic Conspicuity may cause serious distraction in flight if you do not familiarise yourself with them first.

Volume & Squelch

'Squelch' is an electronic switch that mutes the receiver audio output when very weak or no signal is received. This is designed to reduce operator fatigue from the background audio noise that would otherwise be continuously outputted by the radio.

When a continuous radio signal is received, this lifts the squelch so that the transmission can be heard. Where a variable squelch control is fitted, this allows the operator to determine the strength of the signal required to lift the squelch, which may also be activated by bursts of noise.

Procedure for manual squelch setting:

- set the volume control to approximately halfway;
- turn the squelch up until a 'hiss' can be heard, this is the background 'static' noise;
- turn the squelch back until the hiss has just stopped (this should occur abruptly); and
- leave the squelch control in this position.

On some radios the squelch function is automatic - these sets will typically have a 'TEST' switch which removes the squelch. Lifting the squelch allows the user to assess the volume setting against the background noise or to receive a weak signal, for example a distant ATIS broadcast that would otherwise be filtered out.

The squelch cannot be set correctly while you are receiving a transmission. If the volume control is set excessively high, sound distortion may occur. Ideally the volume control should not exceed 70% of the available range.

Intercom

Aircraft are normally fitted with an intercom which allows dialogue between the occupants of the aircraft wearing headsets. The intercom and any headset controls should be checked and adjusted independently of the radio. Obtain a good balance between intercom and radio volume - if the intercom is too loud, radio calls may be missed if they occur during conversation.

Some intercoms incorporate a squelch function as well - this controls the volume threshold at which the intercom will activate and is separate from the radio transmission squelch.

Always refer to the user guide for the radio equipment fitted to your aircraft, as procedures will vary.

Transponder

Most light aircraft are equipped with a transponder which transmits a 4-digit Secondary Surveillance Radar (SSR) code, commonly known as a 'squawk' code. The code is then displayed on the surveillance screens of air traffic service units (ATSU). The SSR code allows an air traffic controller to identify a radar return as a specific aircraft.

An SSR code is either issued to a specific aircraft by an ATSU or, if no specific code has been issued, one of the 'conspicuity' codes should be selected by the pilot to indicate the flight rules under which the aircraft is flying – **7000** for VFR, and **2000** for IFR. Note 2000 for IFR is not used in all ICAO states, check the relevant state AIP for more information.

There are also codes to indicate non-normal situations:

- **7500** - aircraft is subject to unlawful interference
- **7600** - radio communication failure
- **7700** - emergency
- **0030** - lost (UK procedure)

Almost all transponders will now incorporate Mode C (Charlie), which transmits the aircraft's level (relative to 1013.2 hPa) alongside the squawk code. Transmission of level information requires the 'Altitude' (ALT) function to be selected.

Always select ALT by default, unless otherwise dictated by local procedure or ATC. Adjustment of the aircraft's altimeter pressure setting has no effect on the altitude information sent by the transponder.

Most transponders now also feature Mode S (Sierra), which includes enhanced aircraft identification and the potential to display more data regarding the flight. Information on Mode S equipage requirements is contained in the UK AIP and *Skyway Code.*

Pressing the 'IDENT' button highlights the aircraft's return on the surveillance display, enabling ATC to identify a particular aircraft. Only operate the function when instructed by ATC to 'squawk IDENT'.

Frequency Monitoring Codes

A Frequency Monitoring Code (FMC) is a squawk code for use by aircraft monitoring the frequency of a particular ATSU, without having established communication. You might use an FMC if a frequency is very busy or if you do not wish to request an air traffic service. More information on FMCs can be found in the UK AIP, ENR 1.6.

A map of FMCs is available via the Airspace & Safety Initiative (ASI) and in the *Skyway Code.*

FMCs allow surveillance equipped ATSUs to identify aircraft that are listening to a particular frequency and therefore enable contact to be made if necessary – for example if the aircraft has (or appears to be about to) infringed controlled airspace (CAS).

When leaving the relevant frequency, remember to return the squawk to the appropriate conspicuity code or another applicable FMC.

Note: Use of an FMC does not guarantee a warning will be issued to an aircraft before an airspace infringement may occur, however it will allow ATC to make swift contact with the aircraft and reduce the severity of the infringement.

RADIOTELEPHONY

Making Radio Calls

Always use the standard phrases and procedures. Unnecessarily long or imprecise radio calls waste time and may delay others from using the frequency. Only revert to 'plain language' when you need to convey something outside the normal RTF vocabulary.

When two stations transmit simultaneously on the same frequency the signals can mix and this normally renders one or both transmissions unreadable. Always listen before speaking and keep transmissions concise.

When speaking:

- Avoid unnecessary 'filler' words such as 'this is', 'and' or 'with you' at the start of transmissions; and
- Avoid using voice inflections to imply meaning, for example to ask question – instead use a questioning word or phrase, e.g., "Confirm descent to altitude three thousand feet?"

To assist the vocal clarity of transmissions:

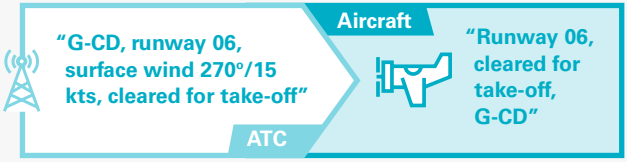
- Keep the microphone close to your mouth;
- Speak directly into the microphone; and
- Ensure that the transmit button is firmly pressed prior to speaking and not released until you have finished.

Use of Callsigns

When making an initial call, you should address the name of the station you are calling, followed by your own callsign.

When making further calls, just give your own callsign. Only reply with an abbreviated callsign if the ATSU has addressed you as such.

When responding to another station, give the response then finish with your callsign.



Readbacks

The following items **must** be read back in their entirety if addressed to you in a transmission from an ATSU:

1. Taxi/towing instructions
2. Level instructions
3. Heading instructions
4. Speed instructions
5. Airway or enroute clearances
6. Approach clearances
7. Runway-in-use
8. Clearance to take off or land
9. Clearance to enter, backtrack, cross, or hold short of an active runway
10. Transponder instructions (squawk codes and Ident)
11. Altimeter settings (including units when the setting is below 1000 hectopascals)
12. VDF information
13. Frequency changes
14. Type of ATS service
15. Transition Levels

Changing frequency

When you wish to change to another frequency, inform the associated station (or via blind call for an unattended frequency) that you are leaving the frequency and your subsequent intentions. Set the appropriate conspicuity squawk code or frequency monitoring code (FMC), with the 'ALT' function selected.

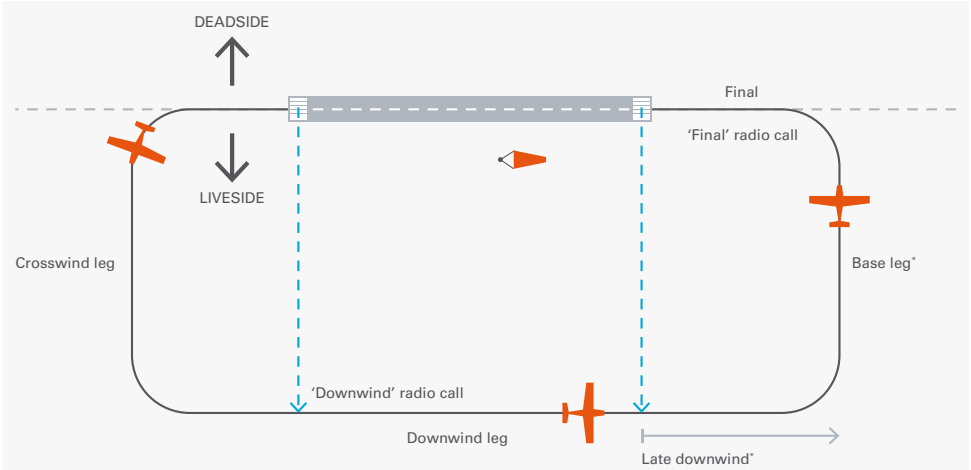
RADIOTELEPHONY

Aerodrome operations

In the Circuit

The circuit can be a busy place where multiple aircraft operate in close proximity. Position reports on the radio are an important source of situational information for pilots, helping them to avoid collisions. It is therefore important that you make the correct radio calls when in the circuit.

Circuit Radio Calls



*Announce these positions if it would enhance situational awareness or if calls were not possible at the standard positions.

At most aerodromes, pilots are expected to report when on the downwind leg and on final approach to land. In some situations extra calls such as 'base leg' may be advisable, to assist the situational awareness of others. When joining the circuit, be clear about your intentions - for example when making an overhead join, report in the overhead and when descending 'deadside'.

COMMON ERROR: INCORRECT **'FINAL'** CALL

'Final' (singular) is a position in the circuit pattern between four nautical miles (NM) and the landing threshold. 'Long final' is a position between four and eight NM from the threshold.

There is no official report 'short final', however if you need to report proximity to the landing threshold, specifying the distance is a more useful indication of position, e.g., announce 'half-mile final'.

RADIOTELEPHONY

ATC Aerodrome

Some aerodromes operate an Air Traffic Control Service (ATC). ATC can only be provided by Air Traffic Control Officers (ATCO). ATC may issue clearances and instructions to aircraft on the ground and in the air, within the applicable area of operation. Within the aerodrome air traffic zone (ATZ) or controlled airspace (CAS), compliance with ATC instructions is mandatory.

ATC services at an aerodrome will often be split between an approach control service (callsign **'Approach'** or '**Radar'**) and an Aerodrome Control Service (callsign **'Tower'**). Where both services are in operation, an approach controller will be your first point of contact and they will pass you over to 'Tower' as you get closer to the aerodrome. Larger aerodromes may also have a ground control frequency (callsign '**Ground**').

Arrival

When arriving at an ATC aerodrome you should call 15 NM or 5 minutes flying time from the ATZ boundary (whichever is greater) and request joining instructions – this will give the controller time to plan your arrival:

- Pilots should state their intention on initial call (e.g., request [circuit] join) – this will help ATC distinguish joining traffic from traffic requesting other services.
- Where an Aeronautical Terminal Information Service (ATIS) frequency is established at an aerodrome, receipt of the broadcast should be acknowledged in the initial call.

RADIOTELEPHONY

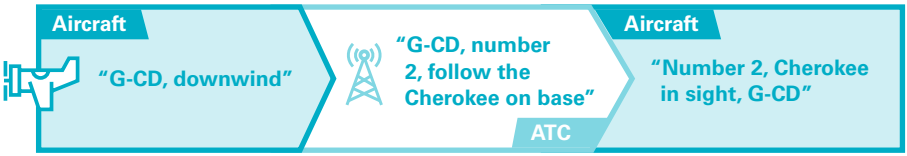
Arrival - Continued

When invited to pass message, you should pass details of your aircraft, location and altitude:

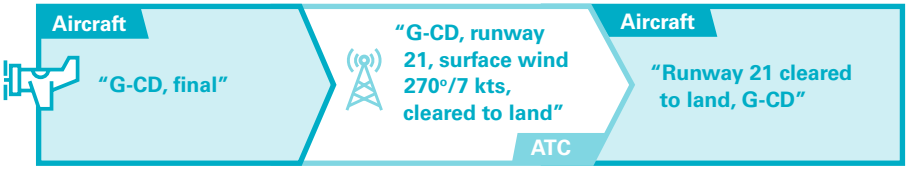
A controller may instruct a pilot to report at a specific position. This could be part of the established circuit, or it may be a position relative to one of the aerodrome's established **Visual Reference Points** (VRPs). You may be asked to route via a position not obvious to you - if in doubt, request clarification.

Simple instructions to report at a particular location do not require readback. Confirm that you have understood and will comply – '**wilco**':

ATC will provide pilots with details of other traffic in the circuit and may assign a priority order for landing. This priority order must be complied with:



You must only land at an ATC aerodrome when you have received the appropriate clearance:



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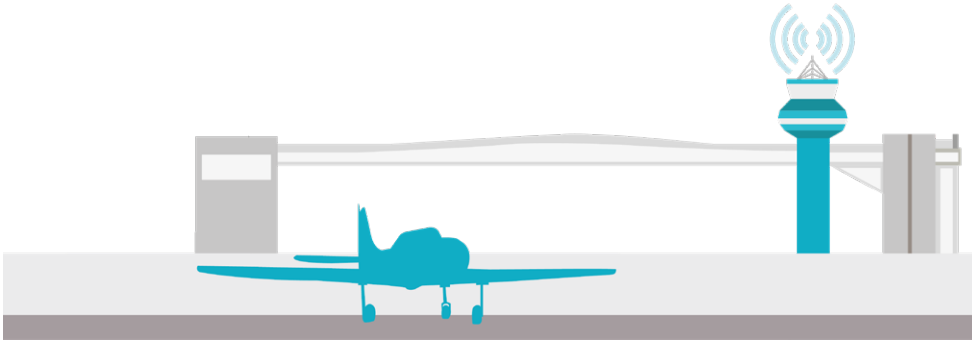
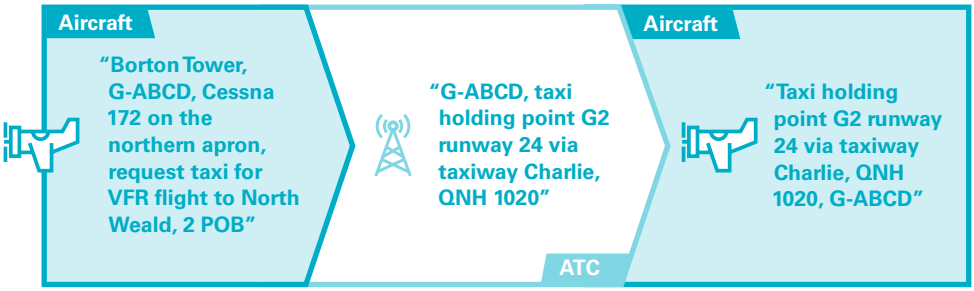


Departure

Taxi instructions issued by an air traffic controller will always contain a clearance limit, which is the point at which the aircraft must stop, unless further permission to proceed is given. For departing aircraft, the clearance limit will normally be the holding point of the runway in use, but it may be any position on the aerodrome, depending on the prevailing traffic.

Taxi requests should include information on type of aircraft, parking location and details of the flight to be undertaken, including persons on board (POB):



If an ATIS broadcast has been received, this should be included as part of your initial call. When including the ATIS information letter, also include the QNH as ATC will check you have this correct.

When you have completed checks and are ready to get airborne, indicate this to an ATC by saying '**ready for departure**'. When the runway is free, ATC will then issue a take-off clearance. You should not say the words '**take-off**' until the appropriate clearance has been received:

Aerodrome Flight Information Service

An Aerodrome Flight Information Service (AFIS) can be identified by the callsign suffix **'Information'**. AFIS provides information to pilots for the conduct of their flight at an aerodrome and within the associated ATZ. In the UK, an AFIS is permitted to issue mandatory instructions to aircraft on the ground up until the aircraft passes a runway holding point. Note this is a UK difference from ICAO, in most states AFIS does not issue instructions at all.

AFIS units do not issue instructions to aircraft in the air, however they may request position reports that are consistent with the aerodrome's published traffic procedures. An AFIS unit will usually pass information about known traffic in the vicinity of the aerodrome, although this should be treated as advisory only.

Arrival

Your request should be included in an initial call to an AFIS station. A request to join the aerodrome traffic circuit should be made in advance of arrival at the ATZ boundary:

Rule 11 of the UK Rules of the Air 2015 requires that pilots report their position and height when entering or leaving an ATZ.

RADIOTELEPHONY

Arrival - Continued

When in the circuit, the FISO may request additional position reports, or they may simply ask you to report '**Final**'. They should advise if any traffic is ahead of you:

The term "**land at your discretion**" is used by AFISOs to aircraft on final. It emphasises that it is the pilot's decision whether to land or not. "Land at your discretion" is not a clearance to land. Pilots must exercise their own judgement and ensure the runway is clear before landing.

COMMON ERROR – USE OFTERM "DISCRETION"

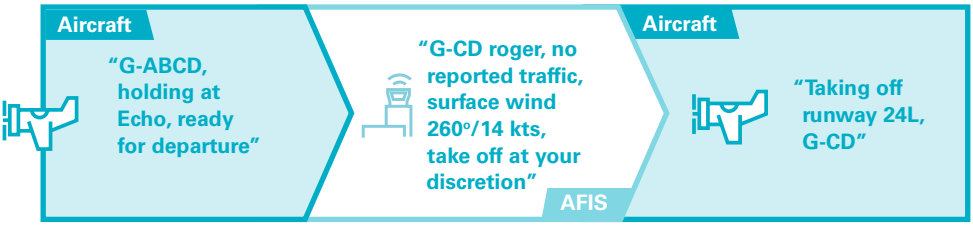
At Aerodromes with an Aerodrome Flight Information Service (AFIS), the phrase "at your discretion" is used to indicate that the Flight Information Service Officer (FISO) is not issuing a clearance. Pilots should not respond using the phrase "at my discretion" but instead reply with their intentions, for example "landing".

RADIOTELEPHONY

Departure

When making an initial departure call to an AFIS, you should provide details of your aircraft, parking location and the flight to be undertaken. This will prompt the FISO to give you the QNH, runway in use and taxi instructions.

Once at the hold and any necessary checks complete, report "**ready for departure**". It is not correct to report "ready for take-off". Only use the phrase "take-off" or "taking off" when announcing your intention to do so.



The phrase "take-off at your discretion" signals the point at which the FISO is no longer giving you instructions. You are solely responsible for determining whether it is safe to take off. Once airborne and transitioning to enroute flight, you should report leaving the ATZ and frequency at the appropriate time. It is good practice to let the current station know which frequency you are changing to.

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Air/Ground Communication Service

Air/Ground Communication Service (AGCS) is the most basic form of aeronautical ground station you will encounter at an aerodrome. Provision of AGCS does not have formal status as an air traffic service. AGCS stations can be identified by the callsign suffix **'Radio'**.

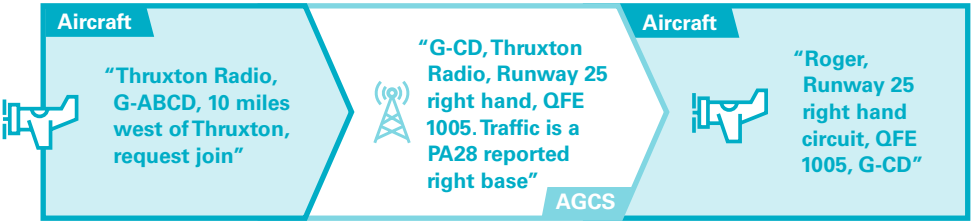
The operator of an AGCS may provide traffic and weather information to pilots operating on and in the vicinity of the aerodrome. Traffic information is normally based on reports from other pilots. It is not a requirement for an AGCS operator to have a continuous view of the ATZ environment or movement area, so such information may not be complete or accurate.

The radio operator has no power to issue clearances or instruct aircraft either in the air or on the ground. While information provided by the radio operator may be used to assist a pilot in making a decision, the safe conduct of the flight remains the pilot's responsibility.

When operating in the AGCS environment, the basic principle is that aircraft announce their position and separate themselves from other aircraft in accordance with the Rules of the Air and any published aerodrome procedures. Only carry out a manoeuvre (such as taxiing, take-off or landing) if you are satisfied that it is safe to do so and that it will not bring you into conflict with other traffic.

Arrival

As with other types of ATSU, you should report your position and request on first contact with an AGCS:



Any traffic information given by an AGCS will be based on the position reports of other pilots and should be treated as advisory only:

RADIOTELEPHONY

Arrival - Continued

Pilots should make standard position reports in the circuit to facilitate the situational awareness of other traffic and the AGCS operator, who may not have a clear view of the circuit. On approach to land, it is usual to call 'Final' which will prompt the operator to offer information about surface wind and other traffic on the aerodrome:

An AGCS will not issue a taxi clearance. Instead, you should announce your position and intentions:

COMMON ERROR – INSTRUCTIONS

Requests for "instructions" should not be made to stations providing an AGCS or AFIS. AGCS operators and FISOs are not permitted to give instructions, except in the case of a FISO communicating with an aircraft on the ground.

Unattended Aerodrome

SAFETYCOM is a common traffic advisory frequency for use at aerodromes that do not have an assigned frequency. It is currently **135.480 MHz** and may be used within 10 NM and up to 1000 ft above the height of the traffic circuit at an aerodrome.

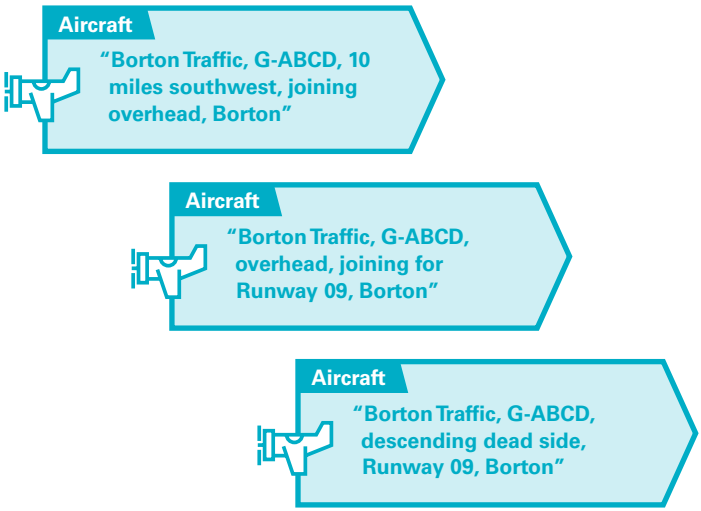
Aircraft should announce their position and intentions at the normal points using the callsign "**Traffic**" after stating the name of the aerodrome they are operating at. Repeating the name of the aerodrome at the end of the transmission further mitigates the risk of confusion when aerodromes are in proximity to each other.

Some UK aerodromes allow aircraft movements to take place outside the hours during which an air traffic service or AGCS is normally provided. In this case pilots should commence transmissions with "**[aerodrome name] Traffic**" on the allocated frequency for that aerodrome.

Arrival

When arriving at an unattended aerodrome, pilots should announce their position and intentions on SAFETYCOM or the allocated frequency for the aerodrome. You must make your own decision on runway and circuit direction in accordance with the aerodrome's published procedures.

When other aircraft are in the circuit, listen out for their positions and plan your entry accordingly:



Arrival - Continued

Position reports at an unattended aerodrome are at pilot discretion but it is recommended to announce the normal downwind and final calls and others may be advisable, depending on other traffic in the vicinity:

Departure

When departing from an unattended aerodrome, announce on the radio your intention to taxi and when entering a runway for departure:

Make additional calls as required to indicate whether you are remaining in the aerodrome circuit or departing the area.

RADIOTELEPHONY

UK Flight Information Services

Pilots are encouraged to make use of the UK Flight Information Services (UK FIS) when flying outside controlled airspace. UK FIS is primarily provided by ATSUs participating in the Lower Airspace Radar Services (LARS) and the UK Area Control Centres (AAC), either London or Prestwick.

Within the UK FIS there are distinct levels of service available to aircraft:

Basic Service 

A Basic Service is intended to offer the pilot maximum autonomy and is available to IFR flights in Class G airspace, or VFR flights in Class E and Class G airspace. If the ATCO or FISO are aware of airspace activity that may affect your flight they will tell you; however, this is subject to their workload and the avoidance of other traffic is soley the pilot's responsibility. **Maintain a good lookout.**

Traffic Service 

Under a Traffic Service, an ATCO will use radar to provide you with detailed traffic information on specific conflicting aircraft; they will not provide you with deconfliction advice, regardless of your meteoroligical conditions. A Traffic Service is available to IFR flights in Class G airspace, or VFR flights in Class E and Class G airspace.

Deconfliction Service 

Only available to IFR flights in Class G airspace. An ATCO will use radar to provide you with detailed traffic information on specific conflicting aircraft and advice on how to avoid that aircraft. However, the pilot retains responsibility for collision avoidance; you can opt not to follow the ATCO's advice.

For more detailed information on levels of service, see *CAP 774 'UK Flight Information Services'.*

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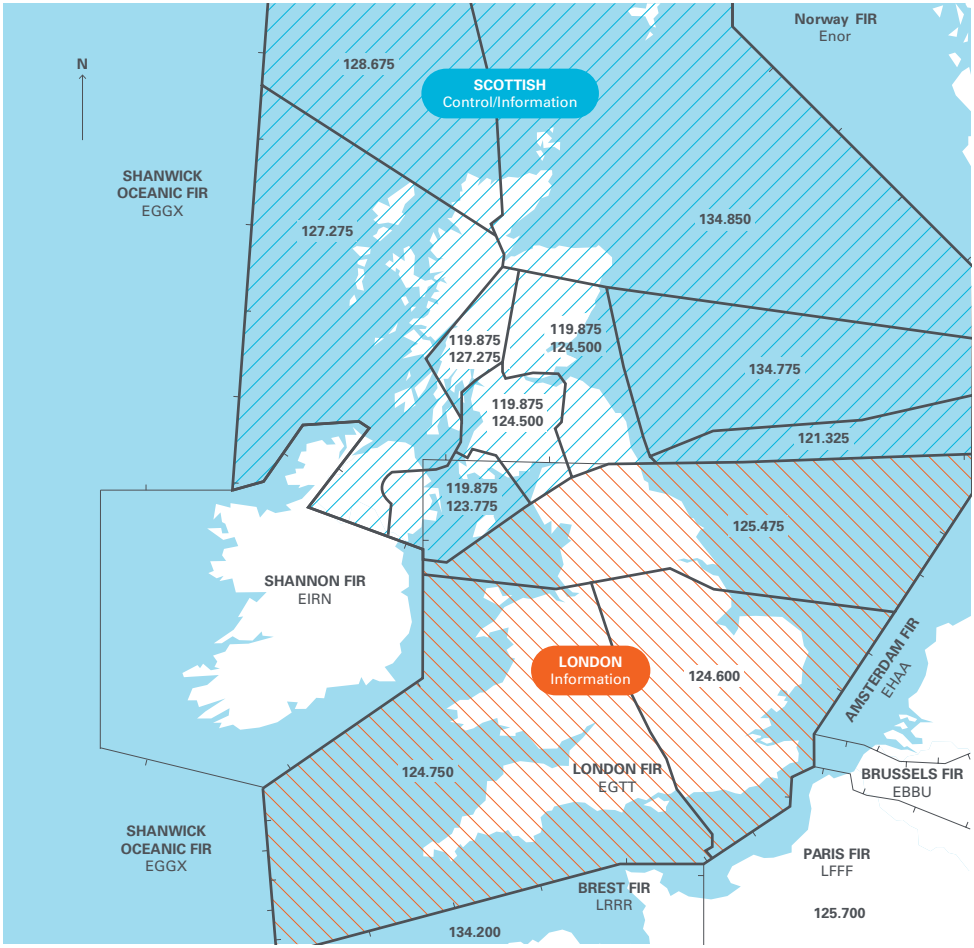
UK FIS Sectors

A Basic Service is available from '**London Information**', or '**Scottish Information**' based in the Prestwick AAC. Note that the entire London Flight Information Region (FIR) may sometimes be operated by one FISO. Although an SSR code may be allocated by London or Scottish, this is normally for reference only and no surveillance service is being provided.

Subject to controller workload, Traffic and Deconfliction Services may also be provided to flights outside controlled airspace by '**Scottish Control**', based at the Prestwick AAC.

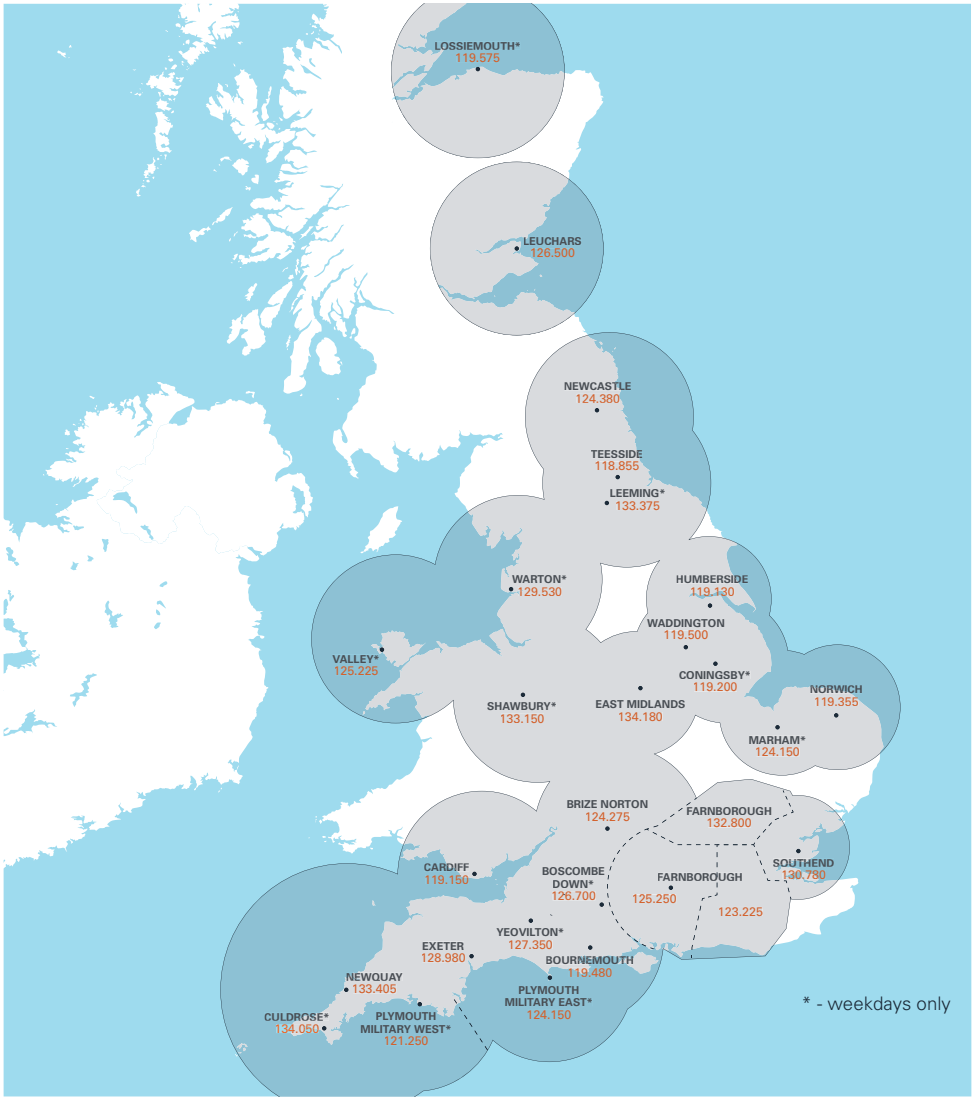


London FIS – all frequencies H24, SFC-FL195
Scottish FIS – all frequencies H24, SFC-FL245 except 119.875 available 0800-2000 local time SFC-FL55

RADIOTELEPHONY

Lower Airspace Radar Services

Specific ATC units within the UK participate in the Lower Airspace Radar Service (LARS). The location of these units makes them suitable for providing surveillance-based services to enroute traffic up to FL100. Details of the LARS can be found in the UK AIP within ENR 1.6, with the participating units and their area of responsibility shown in the chart at ENR 6-11.



RADIOTELEPHONY

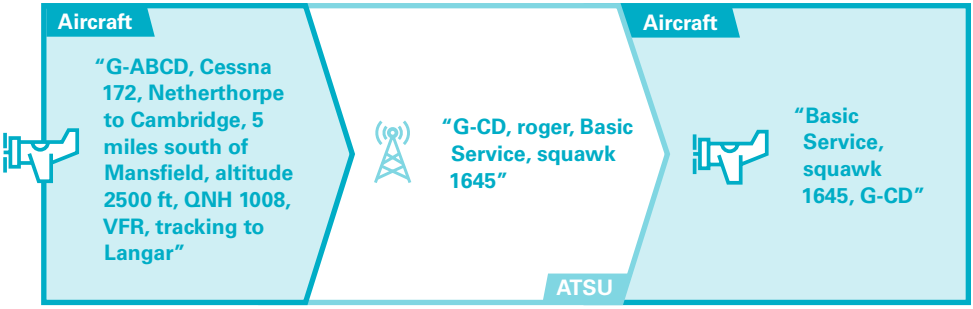
Requesting a UK Flight Information Service

When operating under VFR you will normally be calling ATSUs unannounced. This is known as a 'freecall'. You should state the type of service desired on initial contact:

If the air traffic controller or FISO replies with "**pass your message**", this is the invitation to give more details about the flight and request. If a reply "**standby**" is heard, there is no need to acknowledge this.

Details of your flight and request should follow a standard format:

1. Callsign
2. Aircraft type
3. Point of departure
4. Destination
5. Current position (using a reference point such as a major town that a controller can identify)
6. Current altitude and altimeter setting
7. VFR or IFR
8. Routing/intentions



You do not need to repeat the original request for a service if this was stated in the initial call.

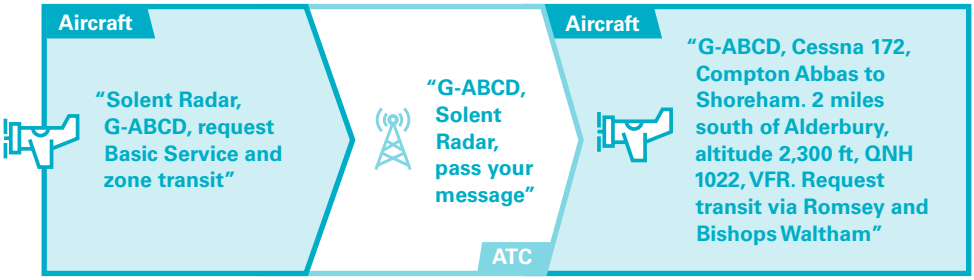
RADIOTELEPHONY

Transit of Controlled Airspace

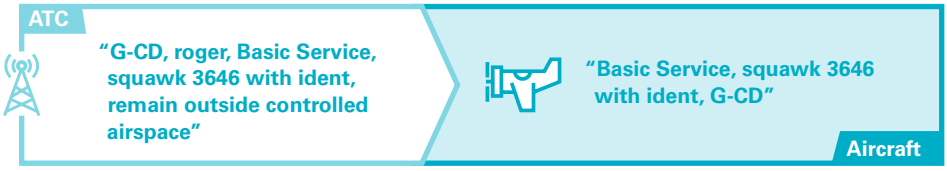
Most control zones (CTR) and areas (CTA) in the UK are designated Class D airspace, which permits VFR flight subject to an ATC clearance.

The likelihood of obtaining a clearance to transit controlled airspace (CAS) will be increased by proficient use of RTF. Sounding professional on the radio and using the standard 'freecall' format will give the controller more confidence that you will be able to comply with the conditions of a clearance.

It is good practice to request a transit around 10 minutes flying time from the airspace boundary.



When invited to pass your message, include more details of the proposed transit, such as preferred entry or exit point. Depending on what service you have requested and/or whether the controller anticipates giving you a clearance, they may reply by giving you a squawk code.



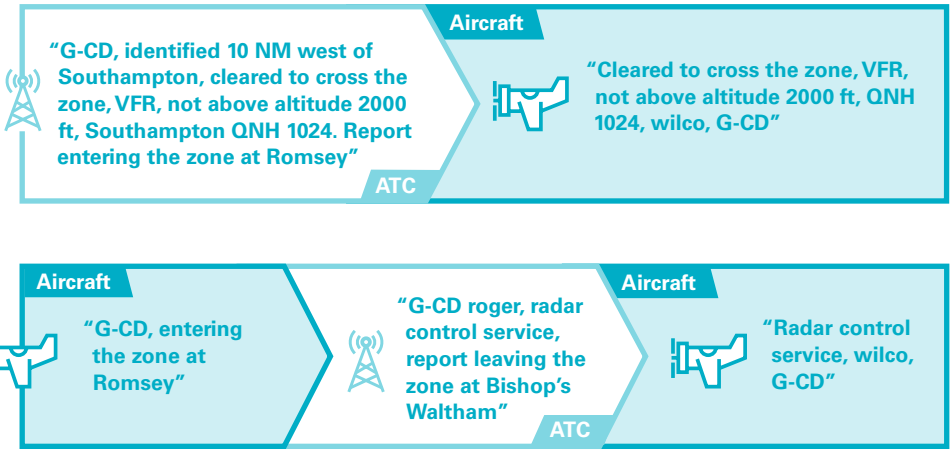
COMMON ERROR – READBACK ORDER

Read back instructions in the same order that they were given – avoid reversing the order.

RADIOTELEPHONY

Transit of Controlled Airspace - Continued

Remain clear of CAS until in receipt of a clearance. Review your 'plan B' route in case the clearance is not forthcoming. Read back the clearance with any altitude limits or other conditions. Instructions, such as to report at certain points in the future may be acknowledged with "wilco".



The term '**radar control service**' indicates that the controller may give you instructions to alter course or altitude while inside controlled airspace. Such instructions are mandatory, however if unable to maintain VMC you must inform the controller immediately and an amended clearance should be issued.

Special VFR

Special VFR (SVFR) is a provision that allows flight within a control zone (CTR) when conditions are below VMC minima, without having to comply with the Instrument Flight Rules (IFR). SVFR clearances are subject to availability of ATC separation and consequently pilots may experience a delay in receiving the requested clearance.

A full flight plan is not required for SVFR flight, but the pilot must give brief details of the callsign, aircraft type and intentions, including ETA at the proposed entry point (if applicable).
For more details on SVFR procedures and minima, see *CAP413* and the *Skyway Code*.

RADIOTELEPHONY

Military ATC

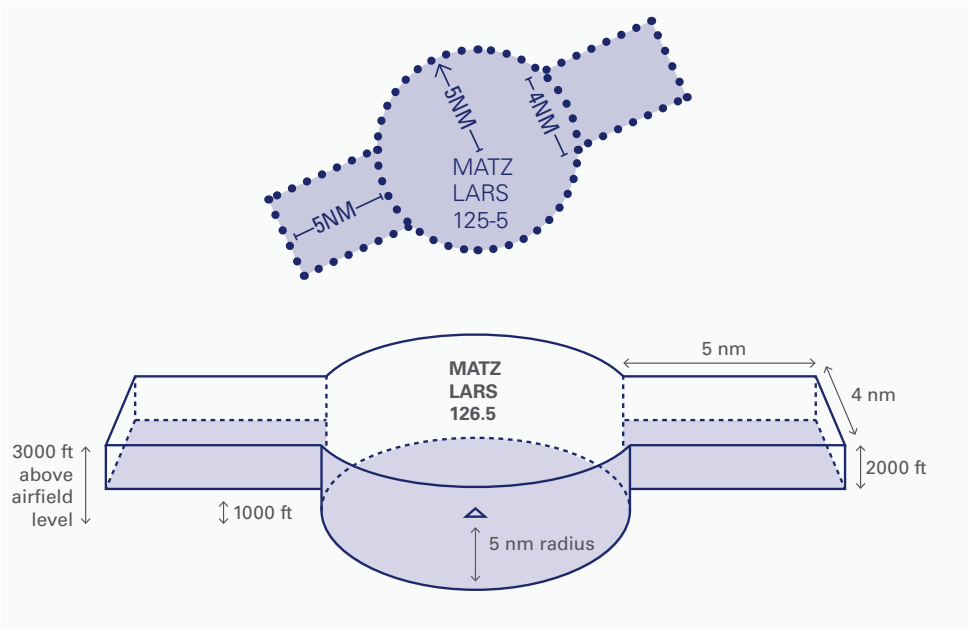
GA pilots should be aware that some military procedures and phraseology are different from civilian ATC. Military controllers may not be aware of civilian Rules of the Air when issuing instructions. It is the pilot's responsibility to advise the controller if they are unable to comply with an instruction and why, for example being given a clearance to over-fly a built-up area below 1,000 ft or at a height where it is not possible to glide clear.

Military ATC use frequencies in the Ultra High Frequency (UHF) band (225-380 MHz) for the primary function of providing air traffic services to military aircraft. When calling a military ATC unit on VHF, you may experience a delay in the reply if the controller is also communicating on UHF. Often military ATC will make transmissions on VHF and UHF simultaneously – civilian aircraft may hear the VHF transmission from ATC, but not the replies from the aircraft on UHF.

Military Air Traffic Zone

A Military Air Traffic Zone (MATZ) is not controlled airspace to civilian aircraft, however it is strongly recommended that pilots contact the relevant frequency prior to penetrating any area of a MATZ and abide by any instructions or routings given by the associated ATC unit. Civilian aircraft wishing to transit a MATZ should request a '**MATZ penetration service**'.

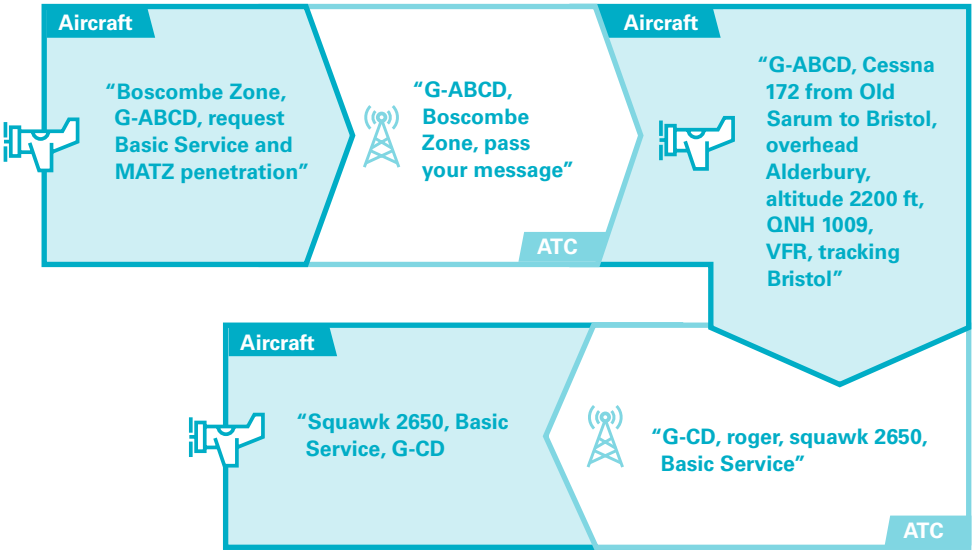
Standard MATZ with two stubs and LARS

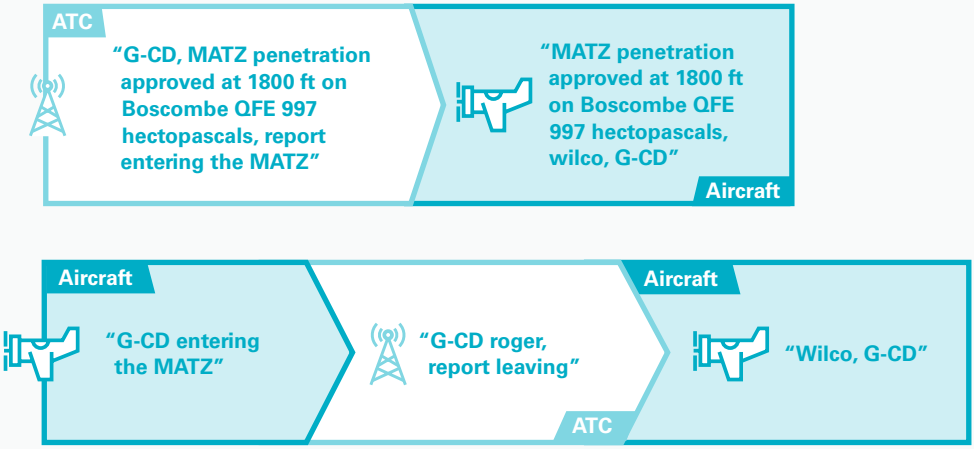


RADIOTELEPHONY

Military Air Traffic Zone - Continued

The procedure for seeking a MATZ penetration is similar to requesting a transit of controlled airspace:





RADIOTELEPHONY

Mayday or Pan call

There are two radio calls a pilot may make when experiencing a non-normal or emergency situation:

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

In both cases, your emergency message should have the same content:

1. **MAYDAY** (repeated three times) or **PAN PAN** (repeated three times).
2. **STATION** (when appropriate / time and circumstances permitting).
3. **CALLSIGN**
4. **TYPE** of Aircraft.
5. **NATURE** of emergency.
6. **INTENTION** of pilot in command.
7. **POSITION** – height and heading.
8. **Pilot qualification:** e.g. Student pilot, no instrument qualification, IMC rating or Instrument Rating(IR).
9. **Any other information** – POB, endurance etc.

Using this format will advise others of who you are, where you are, what the emergency is and how you plan to deal with it.

The distress or urgency call should normally be made to the ATSU you are in contact with at the time.

If not in contact with an ATSU, in UK airspace the Distress and Diversion (D&D) cell, callsign 'London Centre', is available on the emergency frequency 121.5 MHz.

Use of 121.5 MHz for emergencies is an international procedure, however most states do not have a dedicated distress cell and rely on 121.5 MHz being monitored by normal ATC units.

RADIOTELEPHONY

Mayday or Pan call - Continued

Example call:

Aircraft

"MAYDAY MAYDAY MAYDAY, Milthorpe Tower, G-ABCD, C172 engine failed. Will attempt to land Milthorpe. 10 miles south, altitude 4000 feet, heading 360 degrees, student pilot, 1 POB"

"G-ABCD, Milthorpe Tower, Roger MAYDAY, make straight in approach runway 35, wind 260°/10 kts, QFE 1008, you are number one"

ATC

It is likely that after the initial exchange with the ATSU, you will not wish to be occupied with further communication on the radio. Ending a call **'Mayday out'** indicates that you do not need a further reply.

Further attention will be attracted in an emergency by selecting **7700** on your transponder; doing so will highlight to other ATSUs that an aircraft in the area is experiencing an emergency.

There is no ICAO requirement to include pilot qualifications in a distress message. However, this information should be included whenever possible in UK emergency messages as it may help the controller to plan a course of action best suited to the pilot's ability.

Distress calls have priority over all others. On hearing an emergency call, all other pilots on frequency should maintain radio silence, unless they can render assistance like relaying messages to an ATSU that is out of range. Radio silence should be observed until the distress is cancelled, the distress traffic transfers to another frequency or if the ATSU gives permission to resume transmissions.

If a situation may develop into an emergency, it is preferable to make an 'Urgency' (PAN PAN) call as soon as possible. For example, if you experience a loss of oil pressure or alternator failure, do not wait for the situation to deteriorate before making such a call. Notifying an ATSU of your situation will allow assistance to be given, such as priority landing, help with navigation or more timely search and rescue.

RADIOTELEPHONY

Radio Failure

It is important to remember that VFR flight can be conducted safely without a radio - your priority should always be to fly the aircraft. Do not become unduly distracted by attempting to diagnose the problem. Continue to maintain an effective lookout and ensure the aircraft is on a trajectory that will remain VMC and clear of any controlled airspace.

Many apparent communication failures are caused by incorrect setting of the radios. The following procedure should allow you to determine if you are experiencing a genuine equipment failure:

1. Check correct frequency, ensure 8.33/25 kHz mode set as appropriate;
2. Check the station published hours of watch;
3. Master Switch, avionics switch, individual sets all switched on;
4. Audio selector panel set correctly;
5. Volume and Squelch correctly set;
6. Microphone PTT button not stuck;
7. Headset/ microphone plugged in firmly – consider changing sets if possible;
8. Check Circuit Breakers or Fuses (reset only once);
9. Change to alternative radio set (if fitted);
10. Ask other aircraft in the vicinity if they are receiving you. Another aircraft may be able to provide a message relay to a station beyond transmission range; and
11. Try an alternative frequency, e.g another ATSU or the emergency frequency 121.5 MHZ.

If unable to establish communications on the radio:

1. Set 7600 on the transponder.
2. Maintain VMC and remain clear of controlled airspace.
3. Consider whether the flight can safely be continued without a radio. For example, it may be advisable to divert to a quiet aerodrome outside of controlled airspace.
4. If it is possible that only the receive function has failed, state your intentions on the applicable frequency via 'blind' transmission. If only the transmit function has failed, continue to listen for any instructions or information from ATC (if applicable).
5. Once overhead an aerodrome, observe the signal square and circuit. Watch for other traffic and any light signals from the ground.

   Report your landing to any relevant ATSUs as soon as possible.

Full details of UK Radio Failure Procedures may be found within ENR 1.1 of the UK AIP.

RADIOTELEPHONY

Lost procedures

The use of VFR Moving Map devices has made it less common for pilots to become lost, however such devices may not always be available or may fail due to overheating, insufficient battery or user error. Pilots must therefore understand the steps to be taken if they become unsure of their position. Judgement should be exercised as to how serious the situation is – for example a lost situation in good VMC is less serious than in poor weather conditions when you may be forced into IMC or proximity to terrain.

You should seek assistance from a surveillance equipped ATSU as soon as possible. If you do not have an assigned squawk code, **0030** should be selected with ALT mode. A request such as "**G-ABCD, unsure of position, request position fix**" would be appropriate. If requiring navigational assistance to a particular destination, asking for a heading is also appropriate.

The Distress and Diversion (D&D) cell, callsign 'London Centre', may be contacted on 121.5 within UK airspace. You should make it clear that you are lost sooner rather than later. It may be possible to request a VHF Direction Finding (VDF) bearing or heading from certain equipped ATSUs, however a position fix via ATS surveillance is normally of more use. In a real lost scenario, requests for 'training fixes' are not appropriate.

If the safety of the flight is in question, for example if you are struggling to maintain VMC, or are IMC without being qualified, this is an emergency and an Urgency or Distress call should be made using the standard format.

Further reading

- CAP 413 – Radiotelephony Manual
- CAP 774 and CAP 1434 – UK Flight Information Services
- CAP 1535 – The Skyway Code
- CAP 2325 – Guidance for FRTOL Practical Test Candidates
- CAP 2118 – FTROL Examiner Manual