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1 Introduction

It is Ministry of Defence (MOD) policy to encourage civil use of military aerodromes where this does not conflict with military flying operations. While the same general rules and procedures apply to aircraft at all aerodromes, the specific requirements of military operations mean that the way they are applied often makes them appear quite different to those to which civilian pilots have become accustomed. Military pilots have their own regulations, but pilots of civil aircraft are always subject to the current Air Navigation Order and Rules of the Air Regulations. This leaflet is intended for use by private pilots, although commercial operators may find it useful background. It should be read in conjunction with SafetySense leaflet 6 “Aerodrome Sense”.

2 Emergencies

a. Many military aerodromes have long hard surfaced runways. Most have resident fire and rescue services and air traffic controllers who are trained to help pilots of aircraft in distress or in urgent need of assistance, and who have the ability to listen and talk on the emergency frequency 121.5 MHz. These facilities suggest that such aerodromes make excellent diversion destinations for any aircraft with problems. Even if the aerodrome is closed, a long hard runway (or any part of a large flat airfield) is a much more attractive place to land in an emergency than a farmer’s field, and it is even possible that some rescue facilities may still be available.

b. There is a natural reluctance on the part of civilian pilots to make use of military facilities. However, if the pilot is experiencing problems which can be reduced by the use of a military aerodrome, the MOD encourages them to do so by waiving landing fees for any aircraft landing as a result of a diversion for genuine safety reasons. Nevertheless, it should be remembered that military operations normally have total priority. Unless pilots of civilian aircraft make distress (“MAYDAY”) or urgency (“PAN, PAN”) calls (which again many civilians seem reluctant to do), they are unlikely to be offered the use of these aerodromes.

c. **If you are experiencing problems in the air, do not hesitate to make a PAN call**, especially if there is anything that ATC can do to help. Because of the nature of military operations and the complexity of the aircraft, military air traffic controllers tend to be well practised in emergency procedures. As the saying goes, “an ounce of prevention is worth more than a pound of cure!”

d. Inexperienced pilots may be worried about information being passed to them too quickly for them to absorb. In that case, consider adding the word “TYRO” to your callsign (for example “TYRO Golf Alfa Bravo Charlie Delta”) to warn the controller that he needs to give information clearly and more slowly than he would to a qualified military pilot.

Part 1- visiting during normal operating hours

3 Pre-flight

a. As for any flight, the most important part is the planning. Except in an emergency situation, every military aerodrome is **strictly PPR** (prior permission required), well in advance. Some require a minimum of 24 hours notice or longer and permission cannot usually be given instantly over the telephone, so an early request is vital. The published telephone number will normally be to Station Operations (Ops), which may or may not be co-located with Air Traffic Control. In order to consider the request, certain information is usually needed, so be ready to give the following:

- Pilot's name (and those of all passengers) (frequent visitors may require security clearance)
- Aircraft type and registration
- Aerodrome of departure
- Estimated time of arrival at the MATZ (if applicable) or ATZ boundary
- Intended time of departure from the military aerodrome
- Reason for the visit (appointment in nearby town, visit friends etc)
- What the aircraft's insurance covers (temporary £7.5 million Crown Indemnity can be added to the landing fee)
- Fuel type and likely quantity for refuelling if required (AVGAS may not be available)
- Pilot's flying experience and currency, including familiarity with that and other military aerodromes
- Customs, Immigration, and Special Branch clearance requirements (which may not be available)

b. Once permission is granted, Ops will have useful airfield information available. An aerodrome "visiting aircraft brief" may be provided to you either by phone, e-mail, fax or letter if there is enough time. It is expected that you telephone early on the day of arrival, so use that call to obtain more up to date information. Every military aerodrome records regular weather reports and has a dedicated terminal aerodrome forecast (TAF). Although these may not be published by the Met office, the aerodrome Ops will have them available. Ask for and be ready to copy down the latest TAF and METAR. Ops personnel will be aware of local navigation warnings, which they can also pass to you. In addition, they may be able to direct you to an aerodrome Automatic Terminal Information Service (ATIS) giving weather and other essential aerodrome information on a radio frequency and/or a telephone number.

c. Aerodrome and approach charts for military aerodromes are normally not included in the UK AIP, but many are included in commercial guides, and they can be provided by ATC on request or obtained through the internet at www.aidu.mod.uk. The "visiting aircraft brief" should be studied in conjunction with the appropriate charts.

d. Even if permission has been granted, always pre-plan a diversion to a suitable alternative aerodrome and carry enough fuel to reach it after allowing for holding time at your intended destination. Emergencies or military operations may require such holding, and prevent you landing even when on final approach. While most military aerodromes have runways long enough to accommodate the majority of light aeroplanes, they may have only one of them. Know your own crosswind limit in the aircraft you will be flying, and do not make an approach if the wind is outside that limit.

4 Approaching or passing the aerodrome

a. Make yourself as obvious as possible to other traffic; consider using the landing light. While it is not mandatory for civilian pilots to recognise a military aerodrome traffic zone (MATZ), if your track passes through or near one (and obviously if you intend landing!) it is **strongly** recommended that you call on the published VHF LARS or zone frequency at least 15 miles or 5 minutes flying time before you expect to enter the MATZ, and comply with requests from ATC. A serviceable transponder, ideally with altitude transmission (mode C), will assist ATC in identifying you but is not essential. Note that, except in a very few cases, the aerodrome traffic zone (ATZ) of a military aerodrome (whether within a MATZ or not) is permanently active, even if the aerodrome is closed, and you must avoid it unless you have permission to enter.

b. Many military aircraft are only equipped with UHF radio equipment, and Air Traffic Control is provided on UHF frequencies which civilian aircraft cannot use. If the controller is talking to an aircraft on UHF, he will not be able to answer a VHF transmission, and indeed may not even hear it if the UHF transmission happens at the same time. When you make the initial call, it is advisable to say on what frequency you are transmitting (e.g. "on 122.1"). Give the controller time to answer, and be prepared to call again if you hear nothing. Once the controller starts talking to you, he may simultaneously transmit on both UHF and VHF frequencies, so listen carefully for your own callsign at all times. You will hear everything he says, whether on the VHF or UHF frequency, but you will not hear UHF transmissions from other aircraft, which may take place while you are transmitting and cause the controller to ask you to repeat your transmission. If you have not received it already, you may be given the "visiting aircraft brief" over the radio, together with pertinent information about the aerodrome facilities.

c. Military procedures use two altimeter settings below transition altitude. Normally, military aircraft will set the Regional Pressure Setting (RPS) on their altimeter when outside the immediate area of the aerodrome and its instrument approach pattern, and controllers may ask you to do the same when receiving a service from them. Otherwise, QFE is the datum, and all heights indicated are above the runway. However, separation from other traffic may dictate that a controller asks you to use a pressure setting which you do not expect.



PAR controller

5 Instrument approaches

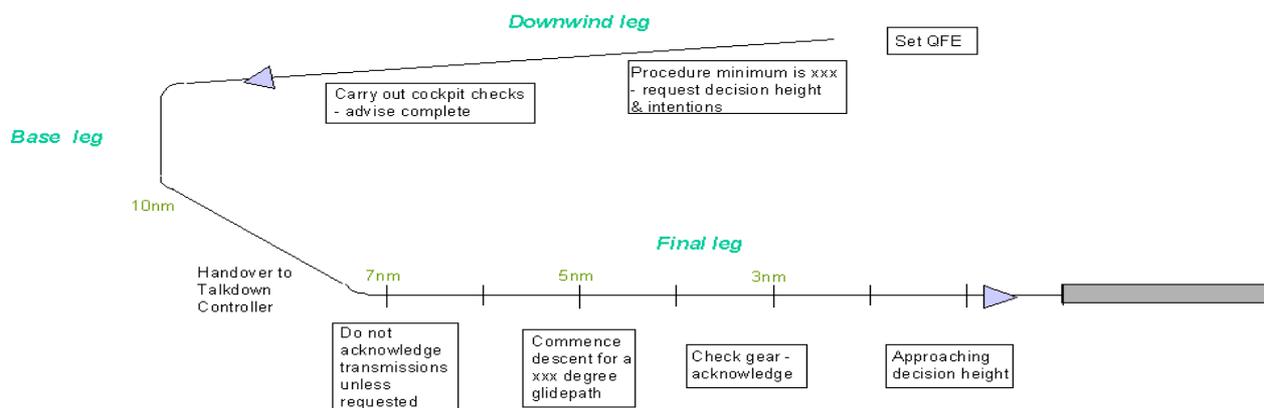
a. Expect to set QFE as above. Most aerodromes equipped with radar will provide you with radar assistance until you are visual with the aerodrome, or will direct (vector) you on to a precision or non-precision final approach using that radar. If a surveillance radar approach (SRA) is provided it will usually be more detailed than at a civilian aerodrome, but is still only an aerodrome (non-precision) approach aid.

b. Precision approach radar (PAR) may be provided, which can be likened to a ground controlled ILS. The controller will direct you onto the final approach, and then give heading directions to maintain your flight path on the runway centreline, telling you not to acknowledge such instructions unless requested. Once you reach the glidepath he will tell you regularly whether you are above or below it, but will not give specific rate of descent directions. You must make your own adjustments to follow the glideslope down to your decision height. For any approach, expect the controller to ask you what decision height (minimum descent height for a non-precision approach) you are using; he will pass the procedure minimum with which you must compare your system minimum and add any extra allowance (for example for the IMC rating).

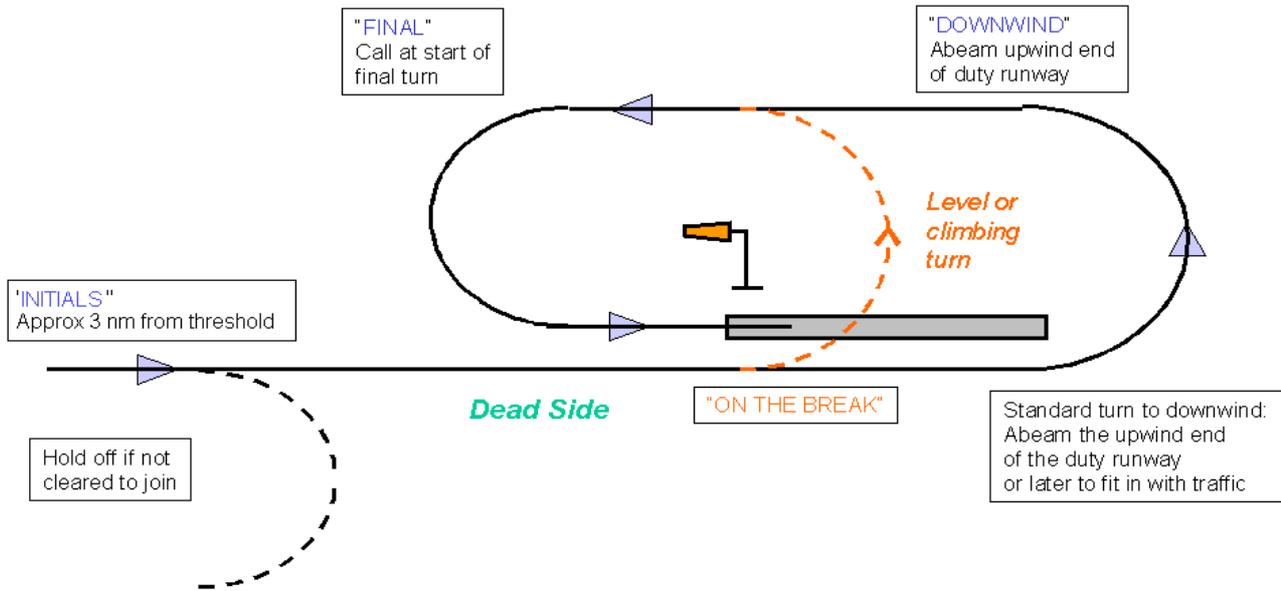
c. On any instrument approach, expect the controller to ask you to “carry out cockpit checks, advise complete” before you turn onto the base leg, and “check gear, acknowledge” during the final approach. Transmit your confirmation when you have completed these checks. On that approach, you may hear the controller talking to the tower controller while he is talking to you. If making an approach towards the runway in use, expect to receive landing clearance or go-around instructions before reaching decision or minimum descent height. Ensure you know the Missed Approach Procedure. If you cannot remember it, ask for “missed approach instructions” well before you reach the final approach.

d. Expect military traffic to be given priority (They usually use a lot of fuel, and often do not carry much spare for diversion – you must!). Consider the aircraft types which normally use the aerodrome. Any major speed difference between these and your own aircraft may result in your being directed perhaps away from the approach to provide separation. The same might apply if there is a major difference in rates of descent; military aircraft often descend quite rapidly, especially above 2000 feet. Be aware that traffic in the visual circuit may pass quite close behind or above you.

e. Once you are able to see the runway, the controller will expect you to land on it if you can, close to the threshold unless there is a cable on the runway (see paragraph 7 below). As always, if you are unable to do so, fly a go-around to join the circuit, manoeuvring onto the dead side as soon as it is safe, or carry out the full Missed Approach Procedure. Beware of jet efflux, and **wake turbulence** from large aeroplanes, or rotor downwash from helicopters which may be using a different but nearby landing area – although the controller will normally be aware of the problem and pass a warning if conditions make such turbulence likely, a lack of warning does not mean a lack of risk. If you are not used to landing on wide runways, beware of the visual illusion which may cause you to round out higher than intended.



PAR procedure



Oval circuit with military join procedures

6 Circuit procedures

a. Many military aerodromes expect visitors to carry out a standard overhead join, as published in the GA safety poster included in LASORS and on the CAA web site. However, depending on the direction of your approach, ATC may direct you to join downwind, or on base leg. Circuit patterns are usually flown at heights which depend on aircraft type. For example, a turboprop trainer may fly the pattern at 1000 feet on QFE, light piston aeroplanes at 800 feet, and, if traffic is mixed, fast jet traffic at 1200 or 1500 feet. The "military standard join" shown above involves approaching parallel with the runway in use from an "initial point" outside the ATZ on the dead side of the runway centreline, at circuit height or lower. A call of "initial" will be made at that "initial point". Some aircraft may approach at high speed for a "run and break", also shown above. Approximately 1-1½ minutes after calling "initials" the aircraft will turn steeply, level or climbing to the circuit height, from the deadside to downwind, calling "on the break" instead of the normal "downwind" call. You may not hear these calls because they will be on a UHF frequency, but ATC may inform you that they have been made. If the aerodrome has "no dead side" (often when helicopters operate together with aeroplanes) the run in may take place over the runway itself. Any non-standard procedures would normally form part of the visiting aircraft brief.

b. Most military circuit patterns are oval. The downwind leg is flown closer than at most civilian aerodromes, because the turn after take-off, and the final turn, both involve continuous 180 degree turns. The "downwind" call is standard, but the call of "final" is given as the aircraft starts its final turn at the end of the downwind leg. It is not easy to fly an accurate military oval circuit, but if you can practise it beforehand, it is very satisfying to be able to fit in. You do not need to change your own normal pattern or radio procedure, but be aware that the controller might be surprised at how late you call "final".

Intentions transmitted by military pilots are slightly different from those found in CAP 413. "Roll" effectively equates to "touch and go". "Land" equates to "full stop". You may also hear "overshoot" which means a pilot will make a low approach to the runway followed by a go-around, while confusingly an instruction to "go-around" is the same as an "orbit" (see next paragraph).

c. **Do not expect ATC to take responsibility for separating aircraft in the visual circuit.** You are expected to fit in with the other traffic, and if that is not possible, go-around. The place to make adjustments is at the turn onto the downwind leg. Do not turn crosswind until it is safe to do so, military aircraft usually climb steeply. Priority is normally given to instrument traffic, and ATC will transmit the position of that instrument traffic with its type. If you have called "downwind" before "instrument traffic at 8 (sometimes 6) miles", unless ATC give you other instructions they will expect you to be able to land and move off the runway before that instrument traffic. If you cannot, or you are told to go-around, or the "8(6) mile" call comes before your "downwind" call, go-around at circuit height. This may be referred to, again confusingly, as an "orbit", which involves crossing to the dead side over or just downwind of the threshold at circuit height, rejoining crosswind (ideally over the other threshold), again at circuit height. A call of "instrument traffic at 4(3) miles" is the equivalent of a "final" call; if you have not started the downwind leg you should end up behind the instrument traffic (beware wake turbulence).

d. Once clearance to land is given, the controller will expect you to touch down close to the threshold unless there is a cable on the runway (see paragraph 7 below). Otherwise fly a go-around, manoeuvring onto the dead side as soon as it is safe. Beware of jet efflux, and **wake turbulence** from large aeroplanes, or rotor downwash from helicopters which may be using a different but close landing area – although the controller should be aware of the problem, he may not always have time to remind you.

7 Barriers and cables

a. Several military aerodromes have “arrester cables” which can be laid across the runway to assist fast jet aeroplanes to stop. The mechanism (which may be called RHAG for “rotary hydraulic arrester gear” or a similar sounding acronym) for these cables will normally be permanently fitted on either side of the runway at several hundred metres in from each threshold, one at the threshold or “approach” end, the other (more common) at the “overrun” end (some aerodromes may have more than two). When required, the cables are stretched across the runway between the mechanisms. The position of the cables is marked by yellow discs on vertical boards beside the runway, and often by similar markings on the surface.



“UP” cable



RHAG from threshold

d. There may be an “arrester (or jet) barrier” positioned at or beyond the end of the runway. Unlike a cable, this is for emergency use only and does not affect the runway itself. However, an “up” overrun barrier is a 20 foot obstacle affecting the climb after take-off or go-around. If for some reason the approach end barrier is up, it forms a significant obstruction. Propeller driven aeroplanes should not attempt to use an arrester barrier as an aid to stopping in an emergency.

b. The vertical position of the cables themselves may be one of three possible. “UP”, or possibly “supported”, means the inch thick metal cable is raised 3 inches above the runway surface on vertical rubber discs, as shown above. Although certain civil aircraft types may be able to do so, no propeller driven aircraft should attempt to cross a supported cable. “DOWN” or possibly “unsupported” means that the cable is lying on the runway surface, and the supporting discs have been pushed to one side. Crossing even an unsupported cable should be avoided whenever possible, and only attempted in propeller driven aeroplanes at very slow taxiing speed. A “DE-RIGGED” cable has been removed from the runway surface completely.

c. Air Traffic Control will pass the state of the cables. Land beyond a rigged approach cable, and aim to turn off before an overrun cable. Similarly, aim to start the take-off run beyond an approach cable and lift off before an overrun cable. This will reduce the available runway length, so adjust your performance calculations to suit. In an emergency, the aerodrome may be able to de-rig a cable for you to make a safe landing, but that may take up to 20 minutes



Jet barrier

8 Ground movement

a. Once you have landed, the runway may be required by other aircraft for landing or take-off. You may be asked to vacate the runway quickly ("expedite"). "Expedite" does not mean "rush"! Do not dawdle, but make sure you are totally under control before you make any turns. Pre-flight study will indicate where you may turn off the runway, otherwise check with ATC. Military pilots stop and carry out their after-landing checks when well away from the runway, you should consider doing the same.

b. When taxiing, beware of jet efflux or propeller slipstream from larger aircraft, including rotor downwash from helicopters. Several markings around the aerodrome may be different from the ICAO standard ones to which you are used. You should know the taxi route from your briefing, but if in doubt, stop and ask! If the aerodrome uses the military common frequency of 122.1 MHz for ground control, always use the aerodrome callsign when transmitting. Markings may be unfamiliar, if in doubt stop and ask.

c. You will usually be marshalled into your parking position by qualified personnel, rather than choose your own space. Leaflet 6, "Aerodrome Sense", shows the most common signals. You may be offered chocks, but these may be too large for your aircraft, so check them before allowing them to be fitted. Adding weight in the form of fuel may lower wheel spats onto the chocks! If you have asked for fuel, remember that the refuelling personnel will not be familiar with your aircraft. You should supervise the refuelling, paying particular attention to the type of fuel being dispensed. AVGAS and AVTUR (JET A-1) must not be confused! Check that additives are compatible with your aircraft.

d. You should report to Ops to discuss your requirements and future movements. You will probably be required to show your certificate of insurance detailing the level of third party and crown indemnity cover. Ensure you have an appropriate means to pay landing and other fees. Cheques are acceptable, but few military aerodromes have the facilities to accept credit cards. Make sure that if your aircraft has to be moved for operational reasons, the aerodrome authorities are able to either move it or contact you quickly.

9 Departure

a. You should receive a departure briefing from Ops. At that time give them the information you would normally pass on a taxi call, including how you wish to leave the aerodrome area; they will pass this to ATC to reduce radio transmissions. Confirm the frequency to use on start-up. Even if you are departing soon after arrival, a visit to Ops or ATC may provide much useful information and assistance. The staff may be able to help you to file a flight plan, or inform your destination of your intentions. They should certainly be able to update you with TAFs and METARs; NOTAMs should also be available, often already plotted on a map. Check the taxi pattern – find a suitable place for engine and/or navigation equipment

checks which will not obstruct the taxiway. If a suitable place for such checks does not exist, consider carrying out whatever checks you can before starting to taxi.

b. When starting engines, you may have the assistance of ground personnel, who will have access to a fire extinguisher and perhaps be able to remove chocks, although 12v ground power is unlikely to be available. Brief them about your intentions, for example if you are delaying taxiing to carry out equipment checks, or allowing the engine to warm up. ATC may have asked you to inform them that you are starting engines, but you must always inform your marshaller! A signal to remove chocks is a good way to indicate to him that you are ready to taxi, whether chocks are in place or not.

c. In many cases, aerodrome information is provided in a similar format to an Automatic Terminal Information Service (ATIS). That information will have been displayed in Ops, but may also be available by telephone, or on an ATIS frequency before engine start. When calling for taxi instructions (stating the frequency on which you are calling), add the code letter applicable to the information you have already copied down, and ATC will assume you know it so will not give long instructions. You will be passed the runway in use and QFE when given taxi instructions; the regional pressure setting will be given later if you do not already know it from the aerodrome information.

d. When taxiing, again beware of jet efflux, rotor downwash or propeller slipstream. Do not dawdle, but do not rush. Even if you appear to be holding up other traffic, remember safety comes first. You should know the taxi route from your briefing, but if in doubt, stop and ask the controller. You may be given departure instructions (including the regional pressure setting) while taxiing, or at the same time as you are given take-off clearance.

e. When ready for departure, look carefully for traffic approaching to land, or taxiing onto the runway from the opposite direction. You will probably need greater separation from fast moving traffic than normal. Do not call until you are ready to enter the runway immediately, and do not stay on the runway for longer than necessary. However, essential checks on the runway should not be omitted. Consider the position of any arrester cables and barriers.

f. Once airborne, and at a safe height (500 feet or higher as directed), turn onto your cleared track or heading as advised. When outside the circuit pattern, tell ATC. Your controller may change, either by your changing frequency or by a different voice talking on the same frequency. Once outside the MATZ, you may wish to leave the frequency, although if they can provide a radar service it might be advisable to continue to accept that service for as long as it is offered. If you wish to continue your flight with the aerodrome QNH set, you may need to ask for it before you change frequency.



Part 2 – visiting outside normal operating hours

10 Pre-flight

a. A government aerodrome is always PPR (prior permission only). If you wish to use it outside normal operating hours (unless you are making an emergency landing), you must obtain permission during these normal operating hours, as in paragraph 3. Obtain as much of the “visiting aircraft brief” as is relevant. If intending to land later the same day, ask for the TAF and the latest METAR. Check what facilities, if any, will be available (the aerodrome fire and rescue service for example) and how to contact them for assistance if required. Check where you should park, and how anyone who is to meet you can gain access to the apron. Ask how you should pay your fees, and be aware that an aircraft using a military aerodrome outside its normal operating hours may be subject to a surcharge on its landing fees.

b. Find out if any airfield maintenance (grass cutting, runway sweeping etc.) is expected. Check what other activities may take place on the aerodrome (shooting, driving, model flying etc.). Some military aerodromes have gliding clubs operating outside normal hours. Ensure you know how to keep out of their way, and what frequency they operate on.

11 Approaching the closed aerodrome

a. If possible, make use of a Lower Airspace Radar Service (LARS) from a nearby military aerodrome, informing them of your intentions. Except in a very few cases, the ATZ of a military aerodrome is permanently active, even if the aerodrome is closed. If you have permission to land outside operating hours, you will expect to receive no reply when you call on the published VHF zone or approach frequency. However, continue to make ‘blind’ calls on that frequency. Other civilian aircraft, even flying clubs, may be based at the aerodrome, and will use the frequency when they require it (they may even provide an air/ground communication service). It is also possible that the aerodrome has been re-activated at short notice and the lack of reply is the result of a radio problem!

b. Radio aids to navigation may still be switched on. They can help you find the aerodrome, but do not fly an instrument approach. Any instrument approach to a military aerodrome in IMC must be flown only under Air Traffic Control. In addition, most maintenance is done outside normal operating hours, even if it was not planned when you telephoned, and your instrument indications may not be correct!

12 Circuit procedures at a closed aerodrome

a. Aim to make a standard overhead join unless the “visiting aircraft brief” tells you otherwise. Check the windsock and select the most suitable published runway. Check for obstructions on and close to the runways and taxiways – vehicle drivers and pedestrians will almost certainly not be expecting you. If gliding or powered flying is already taking place, fit in with their established procedures unless it is unsafe to do so, in which case take extreme care.

b. Military aircraft will not be using the aerodrome, so fly your normal circuit pattern with normal calls (on the approach frequency unless advised otherwise) in the correct place. A go-around from the first approach, especially if there is no other flying activity taking place, may act as a warning of your presence to those on the ground. For the same reason, consider using the landing light even in good visibility.

c. The barriers should normally be down and the cables de-rigged. However, that cannot be relied upon; maintenance is a possible reason for them to be up. Look at the position of the barriers during the circuit and initial go-around, and aim to land beyond the approach end cables unless performance limitations apply and you are sure it is safe to do so. Keep a sharp lookout for possible runway intruders, and be ready to go-around. Local people may have become used to having the free run of the aerodrome in the evenings and at weekends.

13 Summary

- Ask for permission well in advance
- Obtain a “visiting airfield brief”
- Check for weather close to arrival time
- Make the radio call early before entering the MATZ
- Be prepared (and pre-planned) to divert at any time
- Listen out carefully
- Priority may be given to military aircraft
- Beware wake turbulence
- Avoid cables and barriers
- Monitor refuelling
- Beware incursions onto the manoeuvring area outside hours

Appendix – Military aerodrome colour codes

In addition to a normal TAF or METAR, military aerodromes may use a colour code, which is a form of shorthand for their crews to reinforce the information in the main message. The meaning of each colour is listed below. PPL holders without instrument qualifications are advised that any code except “blue” or “white” may indicate serious problems, and even “white” is no guarantee that the weather is good, even at the time of the report.

Colour Code	Minimum base of lowest cloud (SCT or more) above aerodrome level	Minimum reported visibility
Blue	2500 feet	8 km
White	1500 feet	5 km
Green	700 feet	3700 m
Yellow	300 feet	1600 m
Amber	200 feet	800 m
Red	below 200 feet (or sky obscured)	Below 800 m
Black	Aerodrome unavailable for reasons other than cloud or visibility	