Defence Safety Authority

Manual of Military Air Traffic Management (MMATM)

Military Aviation Authority

Military Aviation Authority MAA

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Air Traffic Control (ATC) Procedures

Precision Approaches

1. A Precision Approach is an instrument approach using an Instrument Landing System (ILS) or Precision Approach Radar (PAR) for guidance in both azimuth and elevation.

2. An Air System is permitted to descend on the glidepath to the declared Decision Height (DH)/Decision Altitude (DA); the options at this point are either to continue the approach visually or to break-off the approach. If a break-off is carried out, the Air System is only permitted to descend below DH/DA during the transition from descent to climb using the minimum height loss technique.

Non-Precision Approaches

3. A non-precision approach is an instrument approach using non-visual aids for guidance in azimuth or elevation but which is not a precision approach.

4. Minimum Descent Height/Minimum Descent Altitude (MDH/MDA) is the height/altitude below which an Air System will not descend whilst carrying out an instrument approach or a circling approach. Descent below MDH/MDA is only permitted when the required visual references to accomplish a visual approach are obtained.

5. Descent to MDH/MDA can be permitted at any stage during the final approach, and it therefore remains a matter of personal preference or SOP whether an immediate descent is carried out at the final approach fix (FAF) or whether a notional glideslope is flown. However, other factors (such as limited radar cover, aircraft separation requirements or local population considerations) may mean that only a notional glidepath technique is approved. Where such a limit applies, a note will be included in the remarks column of the relevant TAP chart. If the immediate descent technique is used, the maximum rate of descent allowed is 800 ft/nm (2400 ft/min zero wind at 180 KIAS).

6. The final approach segment begins at the Final Approach Fix/Point (FAF/FAP) and ends at the Missed Approach Point (MAP). The FAF/FAP should be crossed at or above the specified altitude before descent is initiated. When no FAF/FAP is shown, descent should not be initiated until the Air System is established inbound within 5° of the final approach track.

7. The Continuous Descent Final Approach (CDFA) technique is the standard view shown in profile on No1 Aeronautical Information Documents Unit (AIDU) Terminal Approach (TAP) charts. The CDFA is a technique for flying the final-approach segment of a non-precision instrument approach procedure as a continuous descent, from an altitude/height at or above the Final Approach Fix altitude/height to a point approx 15m (50ft) above the landing runway threshold or the point where the flare manoeuvre should begin.

8. In future developments of this technique, it may be that the CDFA is to a DA/DH without level off. AIDU chart specification meanwhile will continue to show a level off at the MDA/MDH until the MAP is reached.

9. Step-down fixes should though, if depicted, be crossed at or above their associated minimum crossing altitudes.

Non Standard Approach Procedures

10. Instrument let-downs which hasten, short-cut or in some other way do not follow the full published or authorized ATC procedure, but which are carried out under an Air Traffic Service (ATS), may be permitted. However, the emergency safe altitude or minimum sector altitude (as appropriate depending on range) will not be infringed until the Air System regains the normal procedure at either the initial, intermediate or FAF, or until ATC using diverse radar vectoring can positively establish that the Air System has passed the outstanding obstacle.

11. Instrument Approach Minima will not be applied to let-downs or approaches which for any reason are not under air traffic control or which do not, or cannot, comply with a recognized and authorized instrument procedure.

Missed Approach Point

12. All instrument procedures have a specific MAP which defines the last point at which overshoot action will be initiated and the missed approach procedure followed if safe obstacle clearance is to be ensured. For precision approaches, the MAP is normally the intersection of the electronic glidepath with the published procedure minimum; however, UK regulations (both civil and military) state that all pilots will overshoot at their personal DH/DA even though this may occur before the facility in use, a particular fix point or a specific distance from the FAF. The TAP for the relevant approach will always indicate the MAP as the point where the descent/level portion is shown to change to a climb. Alternatively, the information can be obtained from ATC All procedures assume a climb gradient of not less than 2.5% during the missed approach.

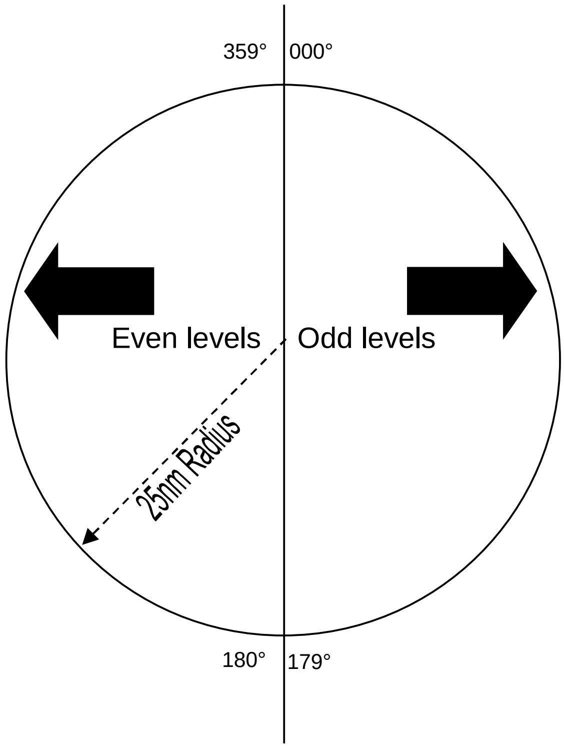
Minimum Safe Flight Levels

13. **Introduction.** The Minimum Safe Flight Level (MSFL) designated for use by ATC to Air Systems on initial homing is the lowest level, which provides the required obstruction and terrain clearance, ie in relation to the safety altitude, within 25 nm of a navigation facility or aerodrome. The lowest usable flight level, however, will be at least 1000 ft above the transition level to ensure sufficient separation from Air Systems flying at 3000 ft AMSL or at the transition altitude if it is higher.

14. **Terminal Approach Procedures.** As an aid to approach controllers in assigning initial homing flight levels to Air Systems, the MSFL will be calculated each day (and as necessitated by changes in the aerodrome QNH) in accordance with the instructions below and prominently displayed in the approach control room.

15. **Reminders to Pilots.** Where a pilot is in visual contact with the ground and is flying at or has requested a lower level, a reminder of the safety altitude will be given. This rule does not apply to a Special VFR clearance.

Figure 1 Sectors for MSFL Calculations



16. **Calculation**. The MSFL for the initial homing will be calculated as follows:

a. On a topographical map draw a circle with radius 25 nm centred on the approach/aerodrome.

b. Divide the circle into 2 equal sectors with reference to 000° (see Figure 1)

c. Determine the elevation of the highest obstacle/terrain within each of the sectors and in the adjacent sector or periphery areas within 4nm of the sector division or the periphery boundary line.

d. Add 1000 ft to the figure so found and round up to the nearest 100 ft.

e. Convert each safety altitude to a MSFL for the prevailing Aerodrome QNH in accordance with the Semi-circular Rule[1].

f. Increase this flight level as necessary to satisfy any other air traffic control requirement.

Note: The phrase 'vicinity of an aerodrome' as applied to the definition of transition altitude is generally to be within a circle radius 25nm centred on that aerodrome.

Pilot Calculation of Decision Height (Altitude)/Minimum Descent Height (Altitude)

17. The appropriate procedure minimum will be passed to the pilot by ATC as early in the procedure as practicable. The pilot is required to inform the controller of the minimum he will use, after allowance has been made for any additions.

a. **Engine Out Allowance (EOA).** EOA values, applicable to precision approaches only, are quoted in Aircrew Manuals/Pilot's Notes for those current multi-engine Service Air System for which they are appropriate.

b. **Additional Allowances.** The following additional allowances may need to be added to the procedure minimum before DH/MDH (DA/MDA) is declared:

(1) Instrument rating.

(2) Engine(s) out allowance.

(3) Command allowance.

c. **Allowances Specific to Air System Type.** Allowances specific to Air System type will also be taken into account. Where appropriate, they are laid down in the Aircrew Manual/Pilot's Notes (or Flight information Handbook for temperature error correction) and may consist of:

(1) Pressure error correction (PEC).

(2) Temperature error correction (TEC).

(3) Helicopter type allowance (HTA).

(4) Standby pressure instrument allowance.

18. **Procedure for Calculating DH/DA - Precision Approaches.** The procedure for calculating DH/DA for precision approaches is as follows:

a. **Fixed-wing Air Systems.** Procedures for fixed-wing Air Systems are as follows:

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[1] MSFL calculation based on the Semi-circular Rule is in effect as of 2 Apr 15.

(1) **Full Power Available.** Pilots are required to obtain the procedure minimum from air traffic control or FLIPs. Master Green and Green rated pilots will add to this figure any Command allowance to obtain the minimum, White and Amber rated pilots will further add the appropriate ratings allowance to this minimum.

(2) **One or More Engines Inoperative.** To the minimum height (altitude) calculated in accordance with Sub-paragraph a.(1) above, pilots will add the appropriate aircraft EOA to obtain their minimum height (altitude) for an engine(s)-out instrument approach.

b. **Helicopters.** All instrument procedures published by AIDU are fixed-wing procedures. All helicopters may operate down to 50 ft below the published minimum for fixed-wing category A Air System as a baseline. Pilots will add any Command or rating allowance to this baseline in order to obtain the actual minimum for the approach.

19. **Procedure for Calculating MDH/MDA - Non-Precision Approaches.** The procedure for calculating MDH/MDA for non-precision approaches is as follows:

a. **Fixed-wing Air Systems.** Full Power Available or One or More Engines Inoperative. The procedure minimum for fixed-wing Air Systems carrying out non-precision approaches will be calculated in accordance with the procedure detailed in Paragraph 18. EOA is not added directly to MDH/MDA but will be taken into account to avoid descending below this height/altitude. While a stepfix is employed in the final approach, any rating allowance is ignored in calculating the minimum height/altitude at the fix point.

b. **Helicopters.** The procedure minima for helicopters carrying out non-precision approaches will be calculated in accordance with the procedure detailed in Paragraph 18.b, excepting that the dispensation to subtract 50 ft from the minimum for category ‘A’ fixed-wing Air System does not apply to non-precision approaches.

20. **Allowances Specific to Air System Type.** Pilots need to take the allowances specific to Air Systems type listed in Paragraph 17.c into consideration in order to convert the true height/altitude of DH/DA or MDH/MDA into an indicated cockpit value. Because these allowances have no bearing on the true value of DH/DA or MDH/MDA they will not be declared to ATC. Although TEC is not, strictly speaking, specific to an Air System type it is treated as such for simplicity. Where the sum of these allowances is 20ft or less it may be ignored.

Air System Categories

21. All Air Systems are categorized according to their approach speed. Where a range of speeds is possible, an Air System may be capable of operating in more than one category. For simplicity the basis for categorization is the normal approach speed at DH/MDH (DA/MDA) or Vat + 15 knots, where Vat is the target threshold

speed. Helicopters are category A, or where published category H. Fixed-wing Air System categories are:

a. Cat A - Speed less than 91 knots.

b. Cat B - Speed 91-120 knots.

c. Cat C - Speed 121-140 knots.

d. Cat D - Speed 141-165 knots.

e. Cat E - Speed over 165 knots.

22. Air System captains have discretion to move the Air System into a higher or lower category when circumstances dictate a significantly higher or lower approach speed than normal.

Instrument Approach Minima

23. The policy determining the applicability of the published minima stated on Terminal Approach Charts and whether this overrules the following minima will be promulgated by appropriate Aviation Duty Holders and Commanders. The lowest minima to which military Air Systems are authorized to make instrument approaches land are:

a. **Fixed-wing.**

(1)	DH Category I	+200 ft true	550 m RVR.
(2)	MDH	+250 ft true	800 m RVR.
(3)	DA Category I	TDZE +200 ft true	550 m RVR.
(4)	MDA	TDZE +250 ft true	800 m RVR.

b. **Helicopter.**

(1)	DH	+150 ft true	300 m RVR.
(2)	MDH	+250 ft true	300 m RVR.
(3)	DA	TDZE +150 ft true	300 m RVR.
(4)	MDA	TDZE +250 ft true	300 m RVR.

c. Certain appropriately equipped and cleared Air Systems can fly precision approaches to Category II and III minima at suitably equipped and cleared aerodromes.

(1) For Category II approaches, the lowest minima are a DH of plus 100 ft true and an RVR of no less than 300 m or a DA of TDZE plus 100 ft true and an RVR or no less than 300 m.

(2) For Category IIIA approaches, the lowest minima are a DH of not less than plus 100 ft true, or with no DH, and an RVR not less than 200 m or a DA lower than TDZE plus 100 ft true, or no DA, and an RVR not less than 200 m.

(3) For Category IIIB approaches, the lowest minima are a DH lower than plus 50 ft, or with no DH, and an RVR of less than 200 m but not less than 75 m, or a DA lower than TDZE plus 50 ft true, or no DA, an RVR or less than 200 m but not less than 75 m.

Duties and Responsibilities of Controllers With Regard to Pilots Instrument Ratings

24. Controllers must not query or challenge a pilot with regard to his instrument rating, or the weather conditions in which the pilot intends to fly, or the height to which the pilot descends in approach. These matters are the responsibility of the authorizing officer and the pilot concerned. Controllers may request a pilot to state his instrument rating as part of the data which ATC requires for approach procedures to assist the pilot in obtaining a suitable diversion. In addition, controllers observing marked weather deterioration before take-off or during an approach may use their initiative to advise the pilot and/or the authorizing officer as appropriate. Having given such advice, the controller is not to question the action of the pilot or the authorizing officer, nor is he in any way responsible for their subsequent actions. Fly 2000 contains details of the pilot’s instrument rating scheme.

Application of DH/DA and MDH/MDA

25. DH/DA and MDH/MDA are applied as follows:

a. **DH/DA**. If, during a precision approach, the required visual references (paragraph 16.d.) have not been established when the DH/DA is reached, a missed approach will be initiated using the minimum height loss technique.

b. **MDH/MDA**. A visual straight-in approach to land can be attempted only when the final approach track is within a maximum of 30° of the runway to be used for landing. When the final approach track differs by more than 30° from the runway heading, the MDH/MDA will not be less than the circling minimum. Descent can only be continued below the MDH/MDA if the required visual reference (paragraph 25.d.) is available. Otherwise the Air System will be levelled at or above MDH/MDA and descent can only be resumed if the visual references become available in time to permit a visual approach. The Air System may be circled for landing only if the conditions for a circling approach can be met. If these conditions for descent below MDH/MDA cannot be met, a missed approach will be initiated.

c. **DH/DA, MDH/MDA and Procedure Minimum**. If the DH/DA or MDH/MDA is well above the procedure minimum due to the allowances added, pilots will, in effect, be overshooting early. If a planned turn is required early in the missed approach, this could result in the Air System turning inside the planned climb-out segment. The same situation could occur during an intentional early overshoot before MAP. In these circumstances it is the pilot's responsibility to delay initiating the turn until the MAP is reached.

d. **Required Visual References**. No approach can be continued below the approach DH/DA or MDH/MDA unless at least one of the following visual references for the intended runway is distinctly visible to, and identifiable, by the pilot:

(1) **Category I Precision Approach or Non-Precision Approach**.

(a) Elements of the approach light system.

(b) The threshold, or its markings, lights or identification lights.

(c) The visual glide slope indicator(s).

(d) The touchdown zone, zone markings or zone lights.

(e) The runway edge lights.

(2) **Circling Approach**. As for non-precision approach, except that for circling approaches pilots must maintain visual references to the runway environment at all times, ie with features such as runway threshold, approach lighting aids or other features identifiable with the intended runway.

(3) **Category II Approach**. A segment of at least 3 consecutive lights; either the centre line of the approach lights, touchdown zone lights, runway centre line lights, runway edge lights, or a combination of these. The visual reference must include a lateral element of the ground pattern, ie an approach lighting crossbar or the landing threshold or a barrette of the touchdown zone lighting.

(4) **Category III Approach**.

(a) **Category IIIA Approach**. A segment of at least 3 consecutive lights; either the centre line of the approach lights, touchdown zone lights, runway centre line lights, runway edge lights, or a combination of these is attained and can be maintained.

(b) **Category IIIB Approach with a DH/DA**. At least one centre line light.

(c) **Category IIIB Approach with no DH/DA**. There is no requirement for visual contact with the runway prior to touchdown.

Commencement and Continuation of Approach

26. An instrument approach can be commenced regardless of the reported Runway Visual Range (RVR)/visibility, but an approach to land or touch and go will not be continued beyond the higher of 1000 ft above the Aerodrome level or the FAF if the reported RVR/visibility is less than the applicable approach minima. If, after passing the higher of 1000 ft above the Aerodrome level or the FAF, the reported RVR/visibility falls below the applicable approach minima, the approach can be continued to the DH/DA or MDH/MDA. The approach can be continued below DH/DA or MDH/MDA and the landing completed provided that the required visual references are established at the DH/DA or MDH/MDA and are maintained. The Touchdown Zone Elevation (TDZE) RVR is always controlling. If reported and relevant, the mid-point and stop-end RVR are also controlling. The minimum RVR value for the mid-point is 125 m or the RVR required for the Touchdown Zone (TDZ) if less, and 75 m for the stop-end. For Air Systems equipped with a rollout guidance or control system, the minimum RVR value for the mid-point is 75 m.

> *Note: 'Relevant' in this context, means that part of the runway used during the high speed phase of the landing down to a speed of approximately 60 kt.*

Internal Aids

27. Internal aids approaches can only be used by Air System equipment combinations cleared for the purpose in platform Release to Service. The following criteria apply:

> a. Internal aids approaches can be used only at Aerodromes with authorized Aerodrome surveillance procedures; approaches need not be surveillance monitored.
>
> b. The procedures are non-precision and the MDH/MDA will be based on the procedure minimum for the surveillance radar procedure.
>
> c. Using an airborne aid independent of the one in use for the approach, or a ground radar fix, the Air System crew is required to ensure that the Air System is within the correct final approach segment before initiating the descent on final approach. Subsequently, if any doubts arise about the Air System's position within the final approach segment, the approach will be terminated.

Circling Approach

28. Some instrument procedures do not meet the criteria for straight-in approaches in that the runway heading and the final approach heading differ by more than 30°. When this happens, the instrument procedure will end in a circle to land manoeuvre, termed a circling approach. The procedure minimum for this indicates the lowest height/altitude to which an Air System can safely descend within a specified area yet still maintain the required obstacle clearance. British military TAPs show the circling MDH/MDA using different aids, even to the same runway.

29. A pilot may carry out a circling approach only if the following conditions are met:

a. The visual circuit or partial circuit is carried out at or above the specified minimum circling height and within the specified circling approach area.

b. The in-flight visibility assessed by the pilot is not less than the minimum value for circling approaches specified by his Aviation Duty Holder and the Accountable Manager (Military Flying) (AM(MF)).

c. The Air System's position relative to the Aerodrome or approach facility in use has been established and can be continually monitored either visually or by range and bearing.

30. **Circling Approach Minima**. The circling approach height ensures adequate vertical separation from obstacles on the ground during manoeuvring flight. When circling is intended following a precision or non-precision approach, the instrument minimum adopted will be treated as an MDH/MDA and will not be lower than the circling MDH/MDA. Circling approach minima will not normally be applied to helicopters. The lowest MDH for circling is 400 ft for category A[2] Air Systems, 500 ft for category B Air Systems, 600 ft for category C Air Systems, 700 ft for category D Air Systems and 800 ft for category E Air Systems. The lowest MDA is TDZE plus figures quoted for Air System categories.

Holding Procedures

31. In Approach Control it may be necessary to hold Air Systems and provide separation (horizontal and vertical). The general procedure is to hold Air Systems at a given altitude, height or flight level in an oval orbit aligned with a given heading with radio navigation or visual reference to a given datum.

Standard Oval Orbit

32. The standard oval orbit is performed by flying on a given heading (QDM) and reciprocal (QDR) linked together by rate one turns to the left or right. The oval orbit is normally 4 nm long, or the distance given by a one-minute timed run (in still air) up to FL140 and by a 1½ minute timed run (in still air) above FL140 on the QDR, depending on the aid in use, eg when holding on an aid that gives continuous range reference (Distance Measuring Equipment (DME), Tactical Air Navigation (TACAN)), the orbit will be flown between 2 predetermined ranges 4 nm apart. In the absence of continuous range reference (ILS), the Air System will be turned over the marker beacon, and the one-minute timed run will start when the Air System is steady on the QDR of the orbit. A timed orbit may also be flown when the reference is to a visual object such as a ground feature.

33. **Vertical Separation**. In low-level holding procedures, military Air Systems will be given altitudes which ensure a standard minimum vertical separation of 500 ft

[2] All military Air Systems are categorized according to their approach speed. Where a range of speeds is possible, an Air System may be capable of operating in more than one category.

(1000 ft in Controlled Airspace (CAS)). In high-level holding procedures, a minimum of 1000 ft vertical separation will be provided. In accordance with RA 3228(1), Separation Standards, reduced vertical separation will not be applied to formations except where covered by a Safety Assessment as per RA 1200, Defence Air Safety Management.

34. **Selection of Holding QDM**. When holding on aids which provide track guidance (ILS, TACAN) the orbit will be aligned to the QDM of the beacon and its QDR. When holding on omni-directional aids (Non-Directional Beacon (NDB), visual landmark) the pilot will be given a holding QDM by ATC. This QDM will be selected to avoid:

a. Adjacent holding patterns.

b. Other Aerodromes.

c. Danger and Prohibited areas.

d. Dangerous terrain.

e. Built-up or crowded areas.

35. If possible, Air Systems will be held in the direction of improving weather and at altitudes which avoid icing.

TACAN

36. The basic procedure by pilots using a TACAN beacon as an Aerodrome approach aid may be varied to suit local conditions. Descent is continued until the pilot is in visual contact with the Aerodrome or has reached the MDH. Details of procedures for specific Aerodromes are contained in TAP charts. Appropriate phraseology is given in CAP413, Radiotelephony Manual.

Instrument Landing System (ILS)

37. The regulations for ILS are detailed in RA 3292, ILS, and the pattern is shown below in Figure 2. The initial, intermediate and final approaches using ILS depend on whether the Air System is using a radio facility or fix on, or offset from, the ILS localizer beam, or whether the approach terminates at the localizer.

Procedure with Radio Facility or Fix on a Localizer Beam

38. Procedures for use with radio facility or fix on a localizer beam are as follows:

a. **Initial Approach.** The Air System will be flown towards the radio facility or fix, at a safe semi-circular flight level.

b. **Intermediate Approach**. On reaching the facility or fix on the localizer beam the pilot is required to orientate the Air System on the QDM of the beam and descend on the appropriate altimeter setting to intercept the glidepath at the height given by the Controller.

c. **Final Approach.** The Air System will descend on the ILS glide-path until the pilot reaches his DH or is in visual contact with the required visual references, whichever is earlier. A landing or missed approach as appropriate, will be executed.

Procedure With Radio Facility or Fix Offset from a Localizer Beam

39. Procedures for use with radio facility or fix offset from a localizer beam are as follows:

a. **Initial Approach.** The Air System will be flown towards the radio facility or fix, at a safe semi-circular flight level.

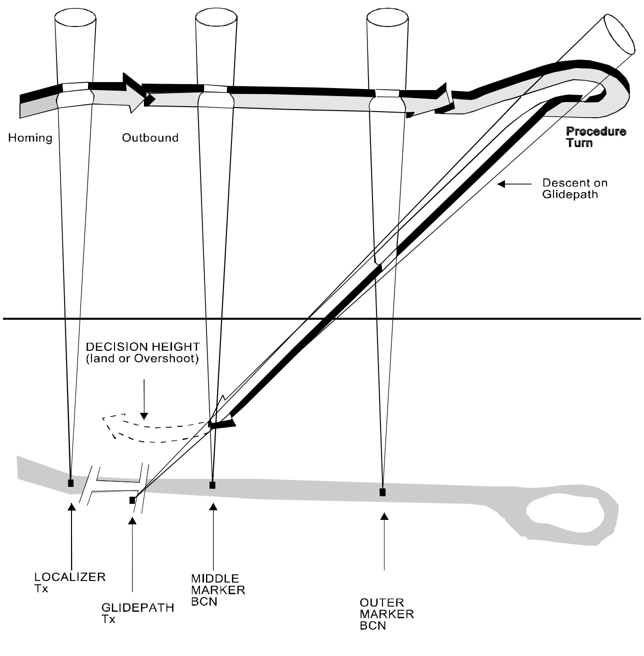
b. **Intermediate Approach.** On reaching the facility or fix offset from the localizer beam, the Air System will descend on the appropriate altimeter pressure setting and carry out one of the following procedures:

(1) Fly from the radio facility or fix along a predetermined track to intercept the localizer beam and glide-path, with the Air System aligned on the QDM, at a position from which the final approach can be started.

(2) Fly from the radio facility or fix along a predetermined track to intercept the localizer beam, turn onto the QDM of the beam and fly to intercept the glide-path at the height given by the Controller.

c. **Final Approach.** The Air System will descend on the ILS glide-path until the pilot reaches his DH or has achieved the required visual references, whichever is earlier. A landing or missed approach as appropriate, will be executed.

Figure 2 Approach Procedures - ILS



Procedures Where No Suitable Facility or Fix is Available

40. Procedures for use where no suitable facility or fix is available are as follows:

a. **Initial Approach.** In starting the reciprocal track procedure using ILS, the Air System approaches the Aerodrome flying at a safe semi-circular flight level. ATC will pass clearance to use ILS giving the pilot the localizer beam heading, the correct QDM of the runway and the assigned height to be reached during the next phase, ie the intermediate approach.

b. **Intermediate Approach.** The pilot informs the controller when he is overhead the localizer and confirms that he is still at initial approach semi-circular flight level. The pilot then sets the appropriate altimeter setting and starts the intermediate approach. The function of the intermediate approach is to enable the pilot to orientate the Air System on to the outbound heading of the localizer beam and descend from the semi-circular flight level to the height assigned by ATC for the down-wind leg.

c. **Downwind Leg.** The Air System is flown on the QDR of the beam, maintaining the height assigned by ATC. When the outer marker is heard the pilot informs ATC that he is downwind. ATC then gives clearance to let down and the outbound heading is maintained for a period of 2 minutes beyond the outer marker or for a period of one minute beyond the point where the glide-path is intercepted. The pilot then makes a right/left-hand procedure turn on to the QDM of the beam. This completes the down-wind leg.

d. **Final Approach.** The Air System is flown on the QDM of the beam at the briefed altitude until approaching the glidepath. On intercepting the glidepath, final approach is started. At the outer marker the pilot is required to inform ATC that he is on final approach. The controller will then pass instructions to land, continue the approach or go around. The descent can be continued until the pilot has acquired the required visual references and a landing can be made or the pilot reaches his DH/DA and has to initiate a missed approach procedure.

Radar to ILS

41. Air Systems may be recovered for positioning within the localizer beam using a radar pattern similar to the Ground Controlled Approach (GCA) pattern in Figure 3 Director Procedures – Radar Circuit.

Non-Directional Beacon (NDB)

42. **Basic Procedure**. The basic procedure employed by pilots using an NDB as an Aerodrome approach aid may be varied to suit local conditions. Details of procedures for specific Aerodromes are contained in TAP charts and appropriate phraseology is given in CAP413, Radiotelephony Manual. The basic procedure is as follows:

a. **Initial Approach**. The Air System is homed towards the beacon at or above the MSFL. The pilot is given details of the outbound headings associated with the procedure and the MDH/MDA. The pilot reports when overhead the beacon and descent clearance is given, together with the appropriate altimeter pressure setting.

b. **Holding Procedure.** The standard holding procedure is an oval orbit, employing a timed leg, or a 4-mile leg when the beacon provides range information.

c. **Intermediate Approach.** If necessary, the Air System descends in the holding pattern to a specified altitude/height at which the Air System is turned onto the outbound heading and descent is continued for three minutes or to the intermediate approach altitude/height. A left/right-hand procedure turn is then made onto the inbound heading.

d. **Final Approach.** When steady inbound, descent is continued until the pilot is in visual contact with the Aerodrome or has reached the MDH/MDA.

e. **Missed Approach.** If an Air System reaches the facility at the MDH/MDA without the pilot acquiring the required visual references, the pilot is required to initiate a missed approach. The TAP for the relevant approach will always indicate the MAP as the point where the descent/level portion is shown to change to a climb. Alternatively, the information can be obtained from ATC. All procedures assume a climb gradient of not less than 2.5% during the missed approach.

Spiral Descents

43. Spiral descent procedures are conducted as follows:

a. **Practice Approaches.** For practice forced landings, when Direction Finding (DF) is used initially to recover the Air System to the overhead and subsequently to spiral in the descent, the weather minima for Radar to Visual (R-Vis) approaches will be applied and used as the lowest MDH/MDA.

b. **Emergency Approaches.** For emergency forced landings, bearings at the cardinal points will ensure that the Air System is kept within the Cat E Aerodrome circling area (4.5 nm). The Cat E circling MDH/MDA can therefore be used as the basis for the procedure.

Radar to Visual

44. For a R-Vis approach, the surveillance controller can give course guidance and descent down to the appropriate safe height as determined by the Radar Vector Chart (RVC) for that Aerodrome. Aerodromes at which R-Vis approaches are used as a normal means of recovery will have a weather limit below which only authorized precision and non-precision instrument approaches are permitted. It is suggested that this limit be 1000 ft. In all cases, where such procedures are used the minimum required obstacle clearance will be 500 ft inside 10 nm from the Aerodrome and the normal 1000 ft (as specified on the RVC) outside 10 nm. Where the radar head is displaced from the Aerodrome, particular consideration will be given to the base of radar cover when descending Air Systems for R-Vis approaches.

Visual Approaches

45. At some stage during a flight, a pilot must decide whether he can continue his approach using external cues as the primary reference for flying. This decision may be made at any stage during the instrument approach but, once it is made, the approach converts from an instrument to a visual one. All current approach procedures ultimately end with a visual approach when the required visual references are acquired (Paragraph 25.d.) or when a missed approach is begun; however, when the RVR is below that required, as detailed in RA 3275, Runway Visual Range, irrespective of the visual references held, the pilot is not allowed to attempt to land.

Standard Instrument Departures (SID)

46. A SID is an approved procedure for departing safely from a runway and climbing into the en-route or airways structure. Routing for a SID is designed to ensure that major obstructions, prohibited and restricted airspace are avoided.

47. SIDs are applicable to all Air Systems. It is not mandatory to carry out a SID although, if one is flown, the laid down procedure will be followed to ensure safe operation unless dispensation has been obtained from ATC. Commanders of Air Systems unable to achieve the climb gradient specified for a particular SID are required to ensure that meteorological conditions are adequate to allow obstacles to be seen and avoided up to the altitude, height or flight level stated on the departure chart. The climb gradient assumed will be 3.3% (200 ft/nm). Minimum climb gradient tables will be published when the required gradient exceeds 200 ft/nm. If the required climb gradient exceeds 200 ft/nm, a caution and explanation will be included on the departure chart and the controlling obstacle depicted thereon.

Descent to Low Level

48. When a pilot receiving a radar service requests descent to operate low level the controller will:

a. **At Area Radar Units**. Pass the relevant Regional Pressure Setting (RPS) in hPa/ins and clear the pilot to descend to the Area Safety Altitude.

b. **At Terminal Units**. Pass the QFE in hPa/ins and clear the pilot to descend to a height that accords with the RVC. Beyond the lateral limits of the RVC, pilots will be passed the RPS and descended to a level not below the Area Safety Altitude pertinent to the Air System's position and track.

49. The appropriate ATS may be provided down to the level specified in local orders. On completion of the procedure, the controller will pass the relevant RPS if not already set. Phraseology to be used is given in CAP 413, Radiotelephony Manual.

Military Aerodrome Traffic Zone (MATZ) Penetration Service

50. The Approach Controller will coordinate a request for a MATZ crossing with the Aerodrome Controller and Director as necessary. Where possible, Air Systems will be permitted to cross the MATZ so as to avoid unnecessary deviation. The

height/altitude at which Air Systems are permitted to cross the MATZ/CMATZ[3] will be carefully considered so as to cause the minimum of disruption. If it is considered unsafe for the Air System to cross the MATZ/CMATZ, the pilot will be informed and requested to re-route; civil pilots are only required to recognise and avoid the Aerodrome Traffic Zone.

51. When crossing a MATZ/CMATZ it is the responsibility of the pilot to ensure that clearance is obtained to transit each individual embedded ATZ, although the pilot may ask the controller to obtain these clearance(s) on his behalf. When issuing any approval to cross a MATZ or CMATZ controllers will specify clearly any clearance or otherwise to transit embedded ATZs.

52. Phraseology for the penetration of a MATZ/CMATZ and ATZ is detailed in CAP413, Radiotelephony Manual.

Bandboxing/Splitting Control Positions

53. Whenever Sector/Control positions are bandboxed or split controllers will ensure, by carrying out mandatory checks, that the position has been correctly configured and that relevant parties have been notified, before an ATS is provided from the bandboxed or split Sector/Control position.

54. Unit Cdrs/Senior ATC Officers (SATCOs) will ensure that checklists are readily available to controllers to enable them to confirm that all necessary action has been completed. The checklists, which will be specific to every Sector/Control position that could be bandboxed or split, will include the following:

a. RT frequencies that will be selected or de-selected as appropriate.

b. Selection or de-selection of the landline connections relevant to the responsibility of the bandboxed/split Sector/position.

c. Surveillance selection, if appropriate.

d. Frequency and landline confidence checks.

e. List of parties that will be notified of the new Sector/Control position configuration.

Embellish Air Systems

55. ‘EMBELLISH’ is a codeword signifying that an Air System is prepared to act as a target for fighter interception.

56. When under the control of an Air Traffic Control Radar Unit (ATCRU), an EMBELLISH Air Systems could be placed in a potentially hazardous situation if it is given avoiding action against conflicting traffic which, unbeknown to the controller, is

[3]Combined Military Aerodrome Traffic Zones (CMATZs) are occasionally established as the means of integrating and coordinating traffic patterns and specified control services. Where 2 or more MATZs are grouped together, one Aerodrome is designated the Controlling Aerodrome.

a fighter carrying out interceptions under the control of a Air Control Centre (ACC)/Control and Reporting Centre (CRC). Therefore, when an Intelligence Surveillance Target Acquisition and Reconnaissance (ISTAR) 1 Airborne Early Warning (AEW) or Air Surveillance and Control Systems unit selects an EMBELLISH Air System for interception, details of the flight are required to be passed to the appropriate ATCRU. The ATCRU Supervisor will brief the relevant ATCRU controller of the intended interception and the controller will notify the Air System and take this into account when passing information on conflicting traffic or initiating avoiding action. Notification of an immediate interception and identification of the fighter involved will be passed to the ATCRU by the Fighter Marshal.

Chapter 2:
Director Procedures

Directing Patterns

57. Controllers will use normal pattern radar circuits and Short Pattern Circuits (SPC) to establish Air Systems on the final approach of an instrument approach as follows:

a. **Normal Pattern**. The main elements of a normal pattern are a base leg, a converging heading and final approach. For multiple circuits, a downwind leg will also be included. See Figure 3 Director Procedures - Radar Circuit.

b. **Short Pattern Circuit**. An Air System overshooting from an instrument approach and precluded by weather conditions or other reasons from carrying out a visual circuit or normal pattern radar circuit can be repositioned on final approach using the SPC procedure with the minimum expenditure of fuel. See Figure 4 Director Procedures - Short Pattern Circuit.

Monitored Approaches

58. Monitored approaches will be given at the request of the pilot or as laid down in local orders or other instructions. Monitoring will be carried out by a suitably qualified controller who will:

a. Advise distances from touchdown if required.

b. Be prepared to take over control.

c. Give warning of other traffic.

d. Give warning if the Air System is going well below the glidepath or if for any other reason the approach is becoming hazardous.

e. Obtain, and pass to the pilot, clearances, surface wind and circuit information normally associated with a PAR approach.

f. *Note: If the ILS localizer is offset from the runway, the precision radar centreline will not coincide with the centreline of an ILS approach as interpreted by the pilot.*

The Radar Circuit

59. The Radar Circuit is divided into four parts; the circuit pattern and procedures are illustrated in Figure 3 and are based upon STANAG 3297, NATO Standard Aerodrome and Heliport ATS Procedures. The radar circuit consists of the following:

a. **The Downwind Leg**. This is the leg extending from a point abeam the threshold of the runway concerned to a point “A,” situated ± 25° from the reciprocal of the runway QDM[4] depending on the circuit direction, at a range of 10 nm (this range may be varied to suit the Air System type and adjacent traffic patterns).

b. **Base Leg**. That leg of the pattern from point ‘A’ to point ‘B’, a position on the base leg where a line of bearing ± 10° from the reciprocal of the runway QDM intercepts the base leg. The heading of this leg, in still air, is equal to the runway QDM ± 90° depending on the circuit direction.

c. **Converging Heading**. This splits the 90° turn between base leg and final approach to the advantage of the controller and the pilot.

d. **Final Approach**. From the converging heading, the Air System is turned to close with the extended centre-line of the runway. This phase of the procedure will be arranged such that the Air System is established inbound, with the handover to the talkdown controller complete, prior to arrival at the descent point.

Cockpit Checks

60. On radar-assisted procedures cockpit checks are instigated by controllers; however, pilots usually instigate their own cockpit checks on pilot interpreted non-radar assisted procedures.

Variation of Radar Circuit and Information

61. To accommodate differences in Air System performance or approach procedures, the basic radar circuit and sequence of information can be adjusted as required prior to the final leg. The down-wind leg, base leg and converging heading may be varied as a means of delay to ensure adequate separation between successive Air Systems is maintained and to prevent overloading the talkdown controller.

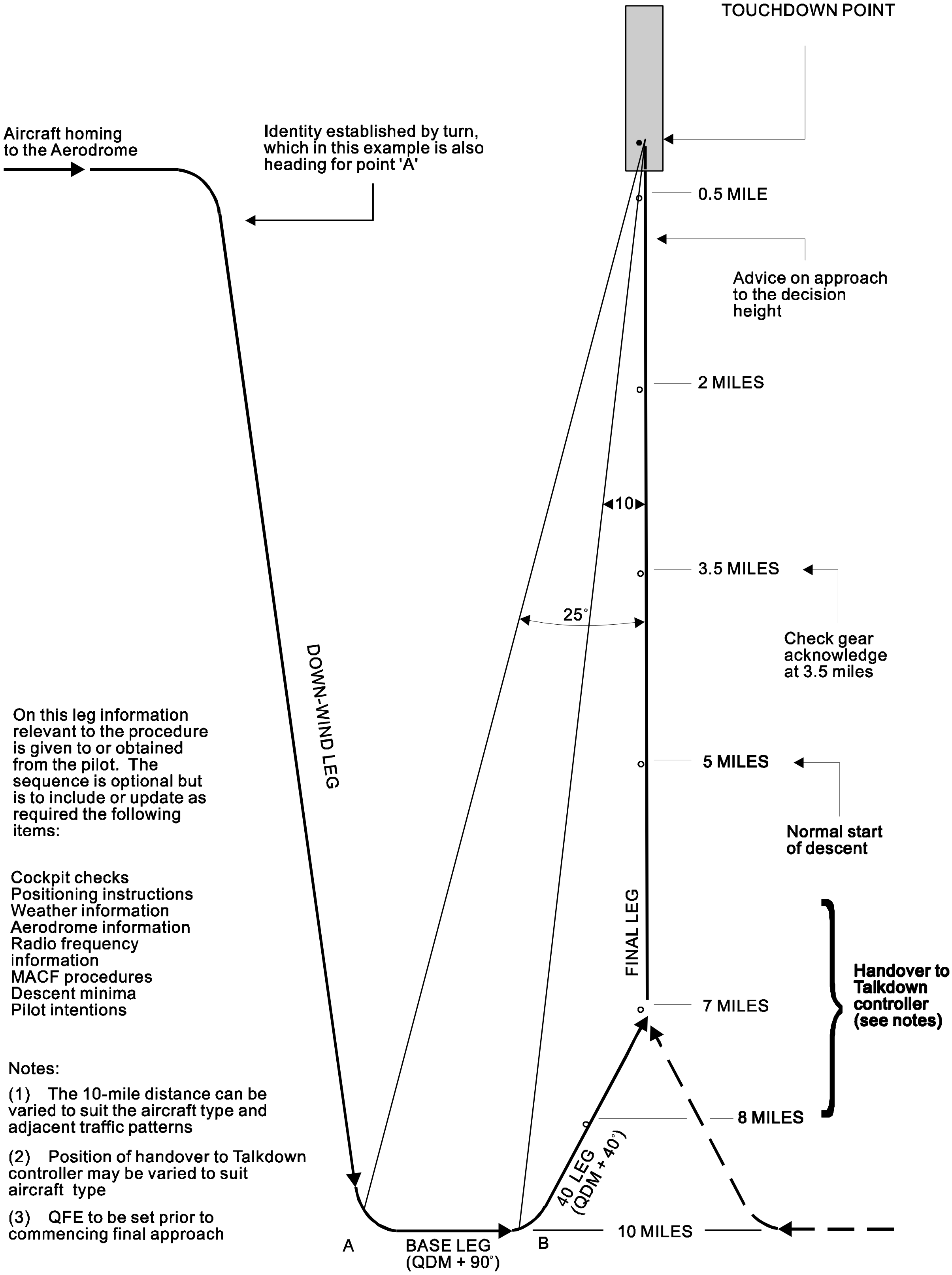
Short Pattern Circuit

62. The direction and height of the SPC for a particular runway will be laid down in unit/local orders. Factors that may be considered in deciding the circuit direction include high ground, traffic patterns, relative position of neighbouring Aerodromes, Restricted Areas, type of approach control radar, etc. With certain surveillance equipment it may be possible to derive advantage from precision radar coverage of the final approach area by turning the Air System in a particular direction. The procedure, illustrated in Figure 4, is designed for use by short endurance jets which have been unable to land from their previous approach and require a further radar approach with the minimum expenditure of fuel.

[4] QDM is the magnetic heading from the Air System.

63. Normally, an Air System committed to a SPC will be instructed by the talkdown controller to contact the Director, as it will cease to be in precision radar coverage. The Air System will be controlled by Director until it is once again in precision radar coverage, when the PAR controller will resume control and complete the approach. Whenever possible, the SPC and subsequent approach will be completed on a single frequency. The Director will adjust the flow of other traffic so that the Air System on a SPC is not delayed but is given the priority the situation warrants.

Figure 3 Director Procedures - Radar Circuit



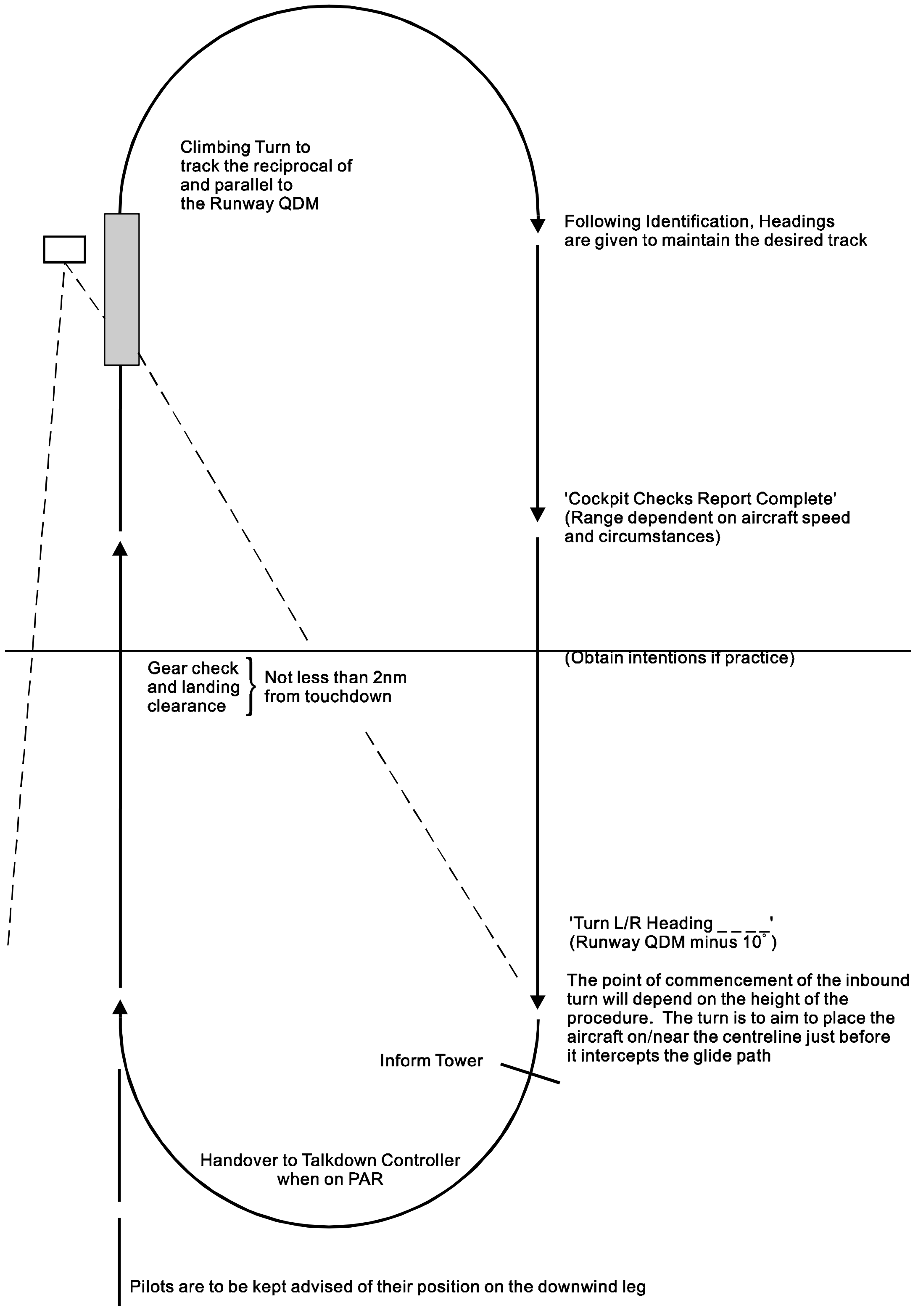
Notes:

(1) The 10-mile distance can be varied to suit the aircraft type and adjacent traffic patterns

(2) Position of handover to Talkdown controller may be varied to suit aircraft type

(3) QFE to be set prior to commencing final approach

Figure 4 Director Procedures - Short Pattern Circuit



Chapter 3:
Approach Procedures

Departure Procedures

64. The Approach Controller may control Air System departures in accordance with procedures published for the Aerodrome; identifying the Air System and handing them over to the next agency as appropriate.

Handovers to Director

65. The Approach Controller will normally carry out the initial identification of Air Systems calling for random radar recoveries and Air Systems performing missed approach procedures. The Approach Controller will ensure that these Air Systems are at a suitable altitude/height/Flight Level (FL) and position for the Director to integrate them into the pattern. In addition, the Approach Controller will carry out the procedures in relation to Missed Approach and Communications Failure (MACF) procedure.

Radar to Visual Recoveries

66. Air Systems requiring radar-to-visual recoveries will be recovered in the most expeditious manner consistent with the prevailing weather and traffic conditions. If required by Local/Unit orders, the surveillance controller will inform the Aerodrome Controller of the approaching Air System when it is at a suitable distance from the Aerodrome, dependent on Air System's speed and local conditions or as specified in local orders. When positioning Air Systems for this type of approach the Approach Controller may consider:

a. Reported cloud base, visibility and weather.

b. Approach lighting aids available.

c. Director's patterns and conflicting traffic.

d. Other Aerodromes' traffic patterns.

e. Airspace restrictions.

f. Terrain clearance.

g. Clearance criteria.

Chapter 4: Emergency Procedures

Single Frequency Approach Procedure

67. This procedure, applicable to RT radio frequencies, is aimed at reducing, as much as possible, pilot actions that might cause spatial disorientation during the let-down/approach phases of flight. Whenever practicable, this principle will also be applied to Identification Friend or Foe (IFF)/Secondary Surveillance Radar (SSR) code changes.

68. **Definitions**. Definitions are as follows:

a. **Single Frequency Approach.** This is an ATC approach procedure whereby pilots will not normally be required to change radio frequency from the beginning of the instrument approach to touch-down, except that pilots conducting an en-route descent may be required to change frequency when control is transferred from the ATCRU to the terminal facility.

b. **Single-piloted Air System.** This is an Air System possessing one set of flight controls, tandem cockpits, or 2 sets of controls but operated by one pilot.

69. **Procedures**. When the pilot of a single-piloted Air System requests a single frequency approach they will, whenever possible, be allocated a single radio frequency to be used from the beginning of the instrument approach to touch-down. Exceptions are as follows:

a. During daylight hours, when a non-surveillance approach is made, Air Systems may be instructed to change to tower frequency after the pilot reports being able to proceed by visual reference to the ground.

b. At night, when in level flight prior to joining the circuit for a visual circuit and landing.

Flame-Out Procedures

70. Although the term 'flame-out' is used to describe the complete loss of engine thrust in jet Air Systems, this procedure may be used by non-jet Air Systems, and for partial power in either jet or non-jet Air Systems. Flame-out procedures are not suitable for all Air Systems. For this reason, Aviation Duty Holders and Commanders are authorized to produce, as necessary, patterns and techniques to suit their own requirement and lay down weather minima for the recovery procedure. The purpose of the procedure is to bring an Air System into visual contact with the Aerodrome at a suitable height for landing to be attempted. Appropriate RT phraseology is in CAP413, Radiotelephony Manual.

71. Whenever an actual flame-out is notified to ATC, it will be considered and handled as an emergency condition. In all cases, the Air System's position will be confirmed by the quickest available means so that the wisest choice of diversion Aerodrome may be made.

72. It is the responsibility of the pilot-in-command to determine if a flame-out recovery will be attempted after consideration of data provided by ATC, the particular situation that exists, and procedures established by his operating authority concerning flame-outs in the type of Air System being flown. Because of the many possible variables involved in a flame-out attempt (type of Air System, relative location of recovery Aerodrome, weather and winds, pilot experience, etc) it is not practicable to establish ATC procedures to be used for specific application.

73. **Action by the Pilot.** The pilot is required to carry out the following actions:

a. Make a distress call as soon as possible and squawk emergency. The call will include Air System type, altitude/height and position.

b. Advise ATC of initial intentions and request any assistance immediately required such as determining position, heading to location of nearest suitable Aerodrome or heading to reach nearest land.

c. Generally advise ATC of the progress of the recovery.

d. Advise ATC of any change in intentions.

74. **Actions by ATC.** ATC will carry out the following actions:

a. Advise other Air Systems of the emergency in progress and, where possible, transfer other Air Systems off the frequency being used by the Air System in distress. If possible, avoid changing the frequency of the Air System in distress once suitable contact is established.

b. Inform the pilot of the most suitable Aerodrome, considering weather conditions (including winds), terrain, obstructions etc. The Air System will be homed to the selected Aerodrome by the most direct route.

c. Inform the pilot not to acknowledge transmissions for which acknowledgement is not essential.

d. Coordinate actions with other ATC facilities as required and alert crash and rescue facilities.

e. If the pilot intends to carry out a forced landing at an Aerodrome, provide him with information regarding runway in use, wind, altimeter setting, weather, etc. Be as brief as possible and do not unnecessarily disturb the pilot, particularly in the final stages of approach.

f. If the Air System is over water, guide the pilot toward land as soon as possible. If overland, position the Air System in the most favourable area for pilot survival.

g. Do not volunteer courses for action but give the pilot in distress essential information upon which he can base his decisions.

Ejection

75. If ejection is elected and time permits, the pilot will pass to ATC, immediately prior to the ejection, Air System heading and altitude. ATC will record this information in accordance with RA 3204, ATM Records and pass it immediately to the Distress & Diversion cell (D&D). RA 3261(2), Aerodrome Emergency Services, also contains detail on controllers' actions in the event of a pilot abandoning his Air System.

Radar Actual and Practise Forced Landing

76. The following radar actual/practice forced landing (RA/PFL) procedure permits recovery from above a cloud layer or in conditions of poor visibility following an engine failure. Relevant RT phraseology is in CAP413, Radiotelephony Manual. The procedure is as follows:

a. Following the initial request for a RA/PFL, the pilot is given a steer for the Aerodrome corrected as necessary, to permit a homing to overhead.

b. The pilot may have lost some instruments, including navigation displays, and therefore may not be able to give an accurate position report. Identification will be as expeditious as possible by whatever means are available. The pilot may be able to squawk SSR Mode A 7700 in an actual emergency.

c. Once identified, the pilot is given ranges from the overhead at 1 nm intervals. While gliding towards the overhead, the pilot compares his range with his height in thousands of feet and adjusts his glide such that he is able, ultimately, to achieve a 1-in-1 glide slope. If the Air System is positioned particularly high in relation to the distance to run, the Air System Commander may elect to arc or circle in order to achieve the required range/height relationship.

d. Once the Air System has established in the glide, range information is required at ½ nm intervals.

e. On becoming visual with the Aerodrome, (lowest altitude is the circling minimum) the pilot uses his excess speed to position for the most suitable runway at Low Key point, as for a visual RA/PFL.

77. **Terminology**. The following terms apply:

a. **High Key Point.** This varies in position and height according to the Air System type but generally is high 'dead-side' of the landing runway.

b. **Low Key Point.** Downwind, opposite the landing threshold.

Hawk T2 Straight-In Forced Landing (SIFL)

78. The Hawk TMk2 Forced Landing (FL) procedure[5] is an internal aids approach requiring minimal ATC input. Hawk TMk2 will only carry out such an approach away from RAF Valley in an emergency. After an engine failure the Air System may suffer degraded navigation capability until a back up generator comes online; therefore, a vector and range to the Aerodrome may be requested. Once the back up generator is online, the pilot will have full navigation capabilities and will require freedom of manoeuvre to achieve the centreline.

79. The Hawk T2 does not fly the traditional Radar Forced Landing (RFL) profile; instead the ac is self-navigated to a point 5-6 nm from touchdown at approximately 6-7000 ft from where a straight-in approach is made on a 13 degree glide angle. The procedure can be flown in Instrument Meteorological Conditions (IMC) or Visual Meteorological Conditions (VMC), but is always conducted under IFR; it is therefore radar monitored for both the requirements of the pilot and for safe integration with other instrument traffic.

80. The initial action by ATC should be to clear the visual circuit due to the steep angle of the approach and high position at final.

81. The Hawk TMk2 aims to glide to the extended centreline of the desired landing runway for a straight-in approach, positioning directly at the threshold in a steep 15 deg nose down descent maintaining a speed of 160 – 190 kts. This may involve arcing around the Aerodrome or flying through the overhead before turning inbound. The exact position achieved depends on the energy state of the Air System, height of initiation of the failure, distance to go and wind aloft. Approximately 200 ft from landing, the pilot will raise the nose to around 7 deg nose down, reducing the rapid rate of descent. With around 40 ft to go, the pilot will raise the nose a second time to adopt the landing attitude. These landings may be considerably inset from the threshold and will usually involve a brake chute deployment.

82. The procedures below provide guidance on Hawk T2 SIFLs to Aerodromes other than RAF Valley who have full information in their Order Book.

83. The pilot will call and request a SIFL, the TC(RA) controller will:

a. Instruct the pilot to squawk emergency, identify the Air System and provide the requested ATS.

b. Inform the pilot of the circuit state – controllers will endeavour to clear the circuit as this is an emergency procedure and the emergency Air System will be unable to deconflict from any other traffic.

c. Pass Aerodrome details and instruct the pilot to set the QFE. Own navigation can then be given and "taking own terrain clearance, descent approved" subject to the pilot **not** being in receipt of Deconfliction Service.

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[5] Known as a 'straight-in forced landing'.

d. Warn the TC(ADC) controller that a SIFL is inbound.

e. Ensure safe integration with other instrument traffic – this may mean breaking off other traffic to allow the emergency Air System priority.

f. At 5nm from touchdown, request a joining clearance from ADC.

g. Instruct the emergency Air System to continue with ADC. This should be no earlier than the join clearance and no later then 2nm from touchdown.

84. The TC(ADC) Controller will:

a. Ensure that the circuit traffic is positioned appropriately to allow the emergency Air System to make a landing; ideally, the circuit should be cleared.

b. Ensure a QFE and gear check are obtained.

c. Issue a clearance to land.

No Compass No Gyro Procedures

85. If both compass and gyro are unserviceable the pilot is instructed to make all turns standard rate one and the controller times all turns (3º per second). A standard controlled descent through cloud is then carried out with the controller timing all turns. Standard procedures are used where possible and specific RT phraseology in CAP413, Radiotelephony Manual, will be used.

Missed Approach and Communications Failure (MACF) Procedures

86. MACF procedures are published as follows:

a. **MA Procedure.** The MA procedure for an Aerodrome is published in the appropriate TAP chart. In the case of Ground Interpreted Aids not covered by that means the MA procedure will be published in TAPs under 'Special Procedures'.

(1) The MA procedure begins at the Missed Approach Point (MAP) but separate instructions may be issued by the controller if the pilot is unable to complete the approach to that point.

b. **CF Procedure.** Where a detailed CF procedure is specified by the Operating Authority, it will be included on the applicable TAPs in accordance with the arrangements given for MA procedures.

(1) The phrase "If radio contact is lost and you are unable to continue your approach" will precede any CF procedure message transmitted by the controller.

87. Pilots are expected to be familiar with the MACF procedures, or, if not, are required to request details from the controller before the first approach. The MA or CF procedure will be transmitted separately and is passed by the controller in the following circumstances:

a. To visiting Air Systems in emergency, where appropriate (see Note), including practice emergency exercises.

b. When requested by the pilot.

c. When the procedure is temporarily changed from that published.

d. When directed by the Operating Authority.

Note: During certain emergencies, eg Flame Out/Fuel Shortage, the giving of such procedures would be counterproductive and will be omitted.

88. Where a controller requires confirmation that a pilot is familiar with the MACF procedures, the phrase “confirm you are familiar with the Missed Approach and Communication Failure procedures” will be used.

Air System with Communications or Total Electrics Failure in the Visual Circuit

89. The presence of an Air System with radio or total electrics failure in the visual circuit will be acknowledged by the use of a green pyrotechnic as the Air System proceeds downwind accompanied by an RT transmission “RT/total electrics failure turning downwind”.

90. Landing instructions will be given to such Air Systems on final using lamp or pyrotechnic signals.

91. When an Air System with total electrics failure requires an undercarriage status check prior to landing, the procedure will be as follows:

a. A port to starboard sequence for indicating undercarriage status.

b. Green pyrotechnics to indicate undercarriage down, red to indicate position other than locked down.

c. Air Systems with outriggers will receive a total of 4 pyrotechnics indicating undercarriage position in order left outrigger, nosewheel, right outrigger and mainwheels.

d. Hook fitted Air Systems receive a green (fourth pyrotechnic) for the hook only if it is down.

e. Pyrotechnic indications will be given when the Air System is downwind other than at those Aerodromes with special requirements.

Loss of Communications

92. **General.** If RT contact is lost with an Air System receiving a radar service the following steps will be taken to establish which elements of the air and/or ground equipment are unserviceable:

a. Call other Air Systems on frequency in use.

b. Instruct the pilot to carry out one of the following:

(1) Make a Secondary Surveillance Radar (SSR) code change.

(2) Operate the IDENT feature.

(3) Effect a turn of at least 30°.

c. Carry out a ground check of the frequency in use.

d. Call the pilot on 243.00 or 121.50 MHz having obtained approval from D&D.

Air Equipment Unserviceable

93. Equipment unserviceabilities are dealt with as follows:

Total Radio Failure.

a. If an Air System has total radio failure, a controller will:

(1) Continue to trace the Air System to its destination or handover point or to the limits of radar cover.

(2) Ensure, if possible, other traffic is vectored clear of the RT fail Air System.

(3) Pass details of the situation to the Military Supervisor, requesting that he co-ordinates with civil staffs where necessary.

(4) Inform D&D of the action taken.

(5) Arrange any subsequent handover of control.

Transmitter Failure

b. If an Air System has transmitter failure, the controller will:

(1) Obtain information from the pilot by instructing him to squawk ‘Ident’.

(2) Try other frequencies including VHF if practicable. However, the controller will ensure that the pilot continues to listen out on the frequency being used so that complete contact is not lost.

(3) Inform the military supervisor.

(4) Advise the next unit to which the Air System is likely to be transferred.

(5) Advise D&D of the situation and, if possible, provide a service on 243.00 or 121.50 MHz.

Receiver Failure

c. If a controller suspects an Air System receiver has failed, he will:

(1) Advise D&D of the situation and, if possible, provide a service on 243.00 or 121.50 MHz.

(2) Take actions as per Total Radio Failure.

Microphone Failure

d. The speechless procedure is used primarily in Terminal ATC. In the area radar environment the identity and destination of an Air System will usually be known and the speechless procedure will be adapted to fit an incident. While it is impracticable to detail the actions to be taken in all circumstances, whenever possible, area radar controllers will include the following questions during the incident:

(1) 'Do you require recovery to (station name)? (if the destination is not known, endeavour to ascertain).'

(2) 'Do you have any further emergency?'

Phraseology to be used is detailed in CAP 413, Radiotelephony Manual.

Chapter 5:
Establishment, Cancellation or Changes to Airspace

MATZ

94. Proposals for the establishment, cancellation or changes to the dimensions of a MATZ will be submitted through Group and Command HQ for approval by Defence Airspace and Air Traffic Management (DAATM); the latter consult the Civil Aviation Authority (CAA) Safety and Regulation Group (SARG), Airspace, Aerodromes and Air Traffic Management (AAA) before approving a non-standard MATZ.

Aerodrome Approach, Holding and Departing Patterns and Procedures

95. Proposals for new Aerodrome approach, holding or departure patterns and procedures, or alteration to existing patterns and procedures, will be submitted to No 1 Aeronautical Information Distribution Unit (AIDU) for coordination. AIDU are responsible for seeking HQ Air Traffic Management (ATM) Force advice to resolve possible conflictions between adjacent Aerodromes or other published procedures, and for gaining HQ ATM Force endorsement of new patterns and procedures.

UK Prohibited and Restricted Areas

96. Proposals for the establishment, cancellation or changes to the details of UK Prohibited or Restricted Areas (EGP…. or EGR….) will be submitted through Group and Command HQ through DAATM for wider MOD agreement prior to submission to CAA (SARG AAA Airspace Utilisation (AU)) for consideration

Provost Marshal's Prohibited and Restricted Areas

97. Proposals for the establishment, cancellation or changes to the details of Provost Marshal Prohibited or Restricted Areas (PMP….or PMR….) will be submitted through Group and Command HQ for consideration by HQ ATM Force, (Ops (LF) 1) and MOD AS21.

UK Danger Areas

98. Proposals for the establishment, cancellation or changes to the details of UK Danger Areas (EGD….) will be submitted through Group and Command HQ for consideration by the appropriate service sponsors, as follows:

a. **RN.** NCHQ Danger Area Airspace Manager (DAAM) - NAVY CSAV-OPS SPT SO1.

b. **Army.** HQ LAND DAAM – DIO SD Trg-HQ TrgSafety Air.

c. **RAF.** HQ AIR (SO2 1Gp Ranges) for Air Command AWR Danger Areas and DAAM for Air and DE&S – Air-1Gp-BM ATM DAAM SO1 all other RAF Danger Areas.

99. Proposals accepted by the sponsors are forwarded, through DAATM, to CAA (SARG AAA AU) for further military and civil consultation. If agreed to, new Areas or

alterations will then be notified and introduced via the Aeronautical Information Regulation and Control (AIRAC) System.

Military Training Areas (MTA)

100. Proposals for the establishment, cancellation or alteration to airspace should be submitted through Group and Command HQ to HQ ATM Force, Dep Force Cdr (CSAV Ops Spt SO1 – RN), for consideration by the MUACT through DAATM before formal submission to CAA.

Areas of Intense Aerial Activity (AIAA)

101. Proposals for the establishment, cancellation or changes to the details of an AIAA will be submitted through Group and Command HQ to HQ ATM Force, Dep Force Cdr, for consideration by the MUACT and formal submission to CAA (SARG AAA AU) through DAATM.

Aerial Tactics Area (ATA)

102. Proposals for the establishment, cancellation or changes to the details of an ATA will be submitted through Group and Command HQ to HQ ATM Force, Dep Force Cdr, for consideration by the MUACT and formal submission to CAA (SARG AAA AU) through DAATM.

Air-to-Air Refuelling Areas (AARA)

103. Proposals for the establishment, cancellation or changes to the details of an AARA will be submitted through HQ 2 Gp to HQ ATM Force, Dep Force Cdr, for consideration by the MUACT and formal submission to CAA (SARG AAA AU) through DAATM.

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