PART 4

CHAPTER 3 — ABANDONING AND EMERGENCY LANDING PROCEDURES

(Completely revised by AL6)

Contents

1 Abandoning the Aircraft using the Ejection Seats

(a) The drills for abandoning the aircraft are given in the Flight Reference Cards. Additional information is given in the following paragraphs.

(b) The recommended minimum height and speed for safe ejection in straight and level flight is ground level/90 knots. If the aircraft is in a nose-down or banked attitude, additional height is required. If the aircraft is descending, the minimum safe height is about 100 feet AGL for every 1000 feet/minute rate of descent.

(c) Simultaneous or near simultaneous ejections should not be made because of the risk of the seats colliding.

(d) If time permits, the aircraft should be positioned to take account of the parachute landing area and the aircraft impact area. Using the **Abandoning** drills, the aircraft is trimmed to enter a spiral dive after the controls are released and should impact within a 2 mile radius of the ejection point.

(e) Ejection Drill

(i) Grasp the face-screen firing handle. The elbows must be drawn in close to the body and both hands must grasp the handle firmly with the backs of the hands facing forward. The feet must not be withdrawn from the rudder pedals.

(ii) Draw the handle and face-screen firmly over the face, keeping the head pressed hard against the head-rest. It is not necessary to jerk the handle and in no circumstances should the screen be pulled outwards away from the face as it may not then fire the cartridge.

(iii) If conditions of positive g do not permit the use of the face-screen firing handle, the seat-pan firing handle should be pulled up using a two-handed grip. As no protection is given to the face, it is essential that the visor is lowered; the head must be pressed firmly against the headrest to minimise the risk of spinal injury on ejection. The seat-pan firing handle may provide a more rapid means of initiating the ejection sequence; its use is recommended if the canopy has previously been jettisoned.

(iv) If the seat fails to eject, ensure that the handle has been pulled to its fullest possible extent before using the alternative handle. If the face-screen firing handle has been used unsuccessfully, it is unlikely that the seat-pan firing handle will effect an ejection; should the attempt be made, a one-hand grip on the face-screen handle must be retained to avoid the possibility of the drogue gun bullet fouling the face-screen.

(v) If the ejection is made above 10,000 feet, automatic separation is delayed until that height is reached. If the ejection is made below 10,000 feet, automatic separation takes place 1·25 seconds after the seat has decelerated to a safe speed for parachute deployment.

(vi) If the parachute fails to deploy after separation, pull the parachute ripcord handle.

Note 1: The canopy is jettisoned immediately either handle of either ejection seat is pulled. ejection following 0·5 second later.

Note 2: The seat-pan firing handle remains with the seat and therefore, if it has been used, the grip must be released before separation takes place. If the face-screen firing handle has been used, it remains in the hands and should be discarded as soon as convenient.

Note 3: A 5000 metre BTRU may be fitted to allow for safe operation over mountainous terrain.

Note 4: The emergency oxygen cylinder remains with the seat and therefore emergency oxygen is not available after separation.

(f) Manual Separation. If the automatic separation system fails to operate after ejection:

(i) When the forward speed has reduced, discard the face-screen firing handle.

(ii) Operate the manual separation handle.

(iii) Push clear of the seat. It may be necessary to exert pressure on the sides of the seat to disengage the parachute sticker straps.

(iv) When clear of the seat, pull the ripcord handle with the right hand.

WARNING: Do not operate the QRF otherwise the parachute harness is released.

2 Manual Abandoning

(a) If the seat fails to eject, an attempt can be made to abandon the aircraft manually using the drills given in the Flight Reference Cards.

(b) Emergency oxygen is not available after leaving the seat and therefore, if possible, the aircraft should not be abandoned above 10,000 feet.

(c) It is not possible to leave the seat until the parachute pack is freed from its housing. In the confined space of the cockpit, this is extremely difficult to achieve. After leaving the aircraft, there is a possibility of impacting with the airframe.

WARNING 1: Do not deliberately invert the aircraft as this will probably cause the parachute to jam in its housing; further control of the body is then lost.

WARNING 2: Do not operate the QRF otherwise the parachute harness is released.

3 Forced Landing

(a) The decision whether to make a forced landing or to eject depends on the circumstances. The drills for a forced landing are given in the Flight Reference Cards. Additional information is given in the following paragraphs.

(b) The recommended gliding speed for maximum range is 210 knots. At this speed, the aircraft can achieve about 2 NM per 1000 feet in still air with an average rate of descent of 2300 feet per minute with the engine windmilling; if the engine is seized, the rate of descent is significantly increased and the range is reduced.

(c) At the recommended gliding speed, sufficient hydraulic power is available for limited use of the power controls but coarse or frequent use of the controls, or selection of any other hydraulic service, may result in a reversion to Manual.

(d) The windmilling RPM at 210 knots is insufficient to maintain the generators on line; to achieve this, about 250 knots is required at 40,000 feet increasing to 450 knots at 10.000 feet. Deliberate selection of Manual is only possible whilst electrical power is available. Manual should be selected:

(i) If automatic reversion occurs.

(ii) Before the batteries are exhausted.

(iii) Before joining the circuit.

(e) Control is more comfortable at 175 knots in Manual but the range is reduced.

(f) If it is necessary to reduce speed, climb rather than use the airbrake which requires considerable hydraulic power to operate and could be hazardous on landing should it remain out.

(g) Practice Forced Landing. For practice purposes, a flap setting of 23° (two notches) and 5500 RPM gives a rate of descent comparable with an engine-off glide (engine windmilling).

Note: The final glide with flaps and landing gear down does not simulate the actual glide with a windmilling or seized engine; the considerable residual thrust gives a more favourable gliding performance.

(h) Forced Landing on an Airfield. The standard procedure for making a forced landing on an airfield is given in the Flight Reference Cards. It should be noted that the rate of descent is high with the landing gear down and increases rapidly as the speed is reduced below 180 knots. There is a marked increase in the rate of descent when the flaps are lowered; they should not be lowered until it is certain that the touchdown can be reached. A heavy stick force must be anticipated on roundout.

(i) Landing Away from an Airfield. Experience suggests that it is preferable to lower the landing gear when landing away from an airfield. The landing gear absorbs much, if not all, of the initial impact and assists in retarding the aircraft. Provided that electrical power is available and the emergency lowering system has not been used, it can be raised after touchdown if required. If the landing is made with the landing gear up, the aircraft must be lowered gently on to the ground at the normal speed; if the speed is allowed to drop too low, a wing drop is likely to occur or the tail cone may strike the ground causing the aircraft to porpoise. If the speed is too high, the aircraft is likely to bounce with the initial impact damaging the cockpit.

4 Landing with the Landing Gear in Abnormal Positions

(a) The drills for landing with the mainwheels only locked down, the nosewheel and one mainwheel locked down and with the landing gear up are given in the Flight Reference Cards. In all cases, empty drop tanks should be retained and, if possible, the landing should be made on a runway.

(b) When landing with the nosewheel and one mainwheel locked down, the lateral distance from the landing path to the point of rest averages about 60 yards but can be as much as 400 yards. If possible, the selected runway should have a clear area of about 400 yards in the direction of the anticipated swing and the touchdown should be made on the edge of the runway away from the unlocked leg. Consideration should be given, in this configuration, to making an approach-end cable engagement

particularly if no adequate clear area exists in the direction of the anticipated swing. The AUW should be reduced to the minimum practicable to reduce the stresses on the hook. The engagement should be made before the wing drops (ie before any swing develops) to avoid side stresses on the hook.

5 Landing with a Burst Tyre

There is no difficulty in maintaining directional control when landing with one or more burst tyres.

6 Use of the Arrester Hook

(a) If it is intended to make a cable engagement, the hook should be selected down about 100 yards before the cable. The aircraft should be steered towards the centre of the cable; an off-centre engagement produces undesirable sideloads on the hook. The brakes should be released before engaging the cable and should not be re-applied. As the hook cannot be raised from the cockpit, assistance is required to disengage the hook from the cable.

(b) The hook should not be lowered prior to touchdown because of the possibility of damage to the damper and airframe caused by hook bounce on touchdown.

(c) The maximum speeds at which the various types of arresting gears can be engaged without the risk of damage to the airframe are given in the Flight Reference Cards.

7 Barrier Engagements

(a) The aircraft is cleared to engage the barriers listed in Part 2, Chapter 2. The drills are given in the Flight Reference Cards.

(b) The aircraft should be steered into the centre of the barrier at the lowest possible speed. The brake parachute should normally be streamed but in strong crosswinds and if wheel braking is not available, the parachute should not be streamed if it seems likely that the aircraft might miss the barrier. The canopy should remain closed for the engagement.

(c) Engagement with Drop Tanks

(i) If drop tanks are carried, they may be ruptured on engagement with a possible fire risk. The drop tanks should therefore either be empty before engagement or jettisoned if they contain fuel.

(ii) If necessary, the drop tanks can be jettisoned on the runway. They should be jettisoned before streaming the brake parachute and before applying the brakes. Because of the possibility of the jettisoned tanks following the aircraft into the barrier, they should not be jettisoned within 1000 feet of the barrier; if the tanks have not been jettisoned by the time the aircraft is within this distance of the barrier, the tanks should be retained. With the tanks on, the best entry speed into the barrier is 50 to 60 knots; this gives a clear overrun of the bottom cable thus reducing the risk of rupturing the tanks.

(iii) The drop tanks should not be jettisoned until it is certain that any other aircraft on the runway are not endangered.

8 Ditching

Ditching in any but ideal conditions is likely to be hazardous; the aircraft should be abandoned, if possible, rather than ditched. If ditching is inevitable, the **Ditching** drills in the Flight Reference Cards should be used.

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