

## Part IV

### Chapter 3—Abandoning, and Emergency Landing Procedures

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NOTE: The following emergency drills are contained in the Flight Reference Cards.

- Undercarriage malfunction drills
- Abandoning the aircraft
- Crash landing
- Ditching

#### 1 Abandoning the aircraft

**WARNING.** At high altitude, time must be allowed to depressurise the cabin before operating the door opening lever as the maximum safe differential pressure for opening the door is 1.5 PSI. The following table gives the approximate time taken to reduce from cruise pressure to this figure.

Ht. (ft.)	Time to depressurise to 1.5 PSI diff. press. (secs.)
12,000	0
20,000	4
25,000	7
30,000	9
35,000	11
40,000	13
45,000	14
50,000	15

The maximum safe speed for rear crew members to abandon the aircraft is 250 knots, the recommended speed is approximately 200 knots.

#### (a) Preparatory actions

(i) Before abandoning the aircraft, speed should be reduced as much as possible and the aircraft should be as clean as conditions permit. Flaps and undercarriage should be raised, although experience indicates that successful escape is not precluded if these conditions cannot be achieved.

(ii) The normal order for leaving the aircraft is nav. plotter, AEO, nav. radar, second pilot, first pilot. When a sixth crew member is carried he must leave the aircraft after the Nav/Plotter. Rear crew members should avoid placing bags and other equipment in positions to impede the swivelling of the seats or the escape routes.

(iii) The manual override must not be used above 20,000 feet. However it must be used below 1,000 feet (below 250 knots) although this does not preclude the use of the static line.

(b) *Abandoning the aircraft*

1st Pilot	2nd Pilot	Nav/Plotter	6th Crew Member	AEO	Nav/Radar
Orders "Prepare to abandon aircraft, ht. ....ft."	Acknowledges	Acknowledges	Acknowledges	Acknowledges	Acknowledges
Sets mask toggle down	Sets mask toggle down	Sets mask toggle down	Sets mask toggle down	Sets mask toggle down	Sets mask toggle down
If above 40,000 ft. awaits calls of "READY" from rear crew members	If above 40,000 ft. selects COMBAT PRESSURE	Swivels seat (first) Puts on parachute and reports "READY"	Puts on parachute and reports "READY"	Puts on parachute and reports "READY"	Puts on parachute and reports "READY"
On last call of "READY" or immediately if below 40,000 ft., selects EMERGENCY DECOMPRESSION	On last call of "READY" or immediately if below 40,000 ft. selects NO PRESSURE	Ensures static line connected	Ensures static line connected	Ensures static line connected Transmit Distress Call Sets IFF to EMERGENCY When cabin is depressurised opens door	Ensures static line connected Swivels seat (third)
Operates ABANDON AIRCRAFT switch and orders "Jump, Jump, Jump." (If below 1,000 ft. orders "Low level Jump, Jump, Jump")		Pulls demand emerg. ox. control Disconnects from aircraft systems, operates assister cushion	Pulls demand emerg. ox. control Disconnects from aircraft systems, operates assister cushion	Swivels seat (second) Pulls demand emerg. ox. control Disconnects from aircraft systems operates assister cushion	Pulls demand emerg. ox. control Disconnects from aircraft systems, operates assister cushion
Checks "Crew gone" lights	Checks "Crew gone" lights and informs 1st pilot when all rear crew members have left.				
Operates ejection seat	Operates ejection seat	◀Leaves aircraft first	Leaves aircraft second▶	Leaves aircraft third	Leaves aircraft fourth

*(c) Abandoning aircraft at low altitude*

NOTE: Wherever possible convert speed to height.

Should it be necessary to abandon the aircraft at low altitude (below 1,000 feet) reduction of the time interval between the moment at which the order to abandon aircraft is given and the moment at which the parachute is deployed can be of overriding importance, and the following points should be borne in mind.

(i) Whilst normally the parachute is left in the seat when a crew member is moving around the cockpit, should the parachute be worn it will be necessary to disconnect the static line to leave the seat, pre-Mod. 3760. In this event an attempt should be made to reconnect the static line, but time should not be wasted if this proves troublesome.

(ii) The static line arms the parachute barostat, which then withdraws the pack pins after a delay of 2 seconds. Therefore, irrespective of whether a static line is connected or not, the manual override should always be pulled as soon as possible after abandoning the aircraft below 1,000 feet and 250 knots.

## 2 Landing with the hydraulic system in the emergency condition

If an EMERGENCY HYDRAULIC SELECTOR warning light has illuminated it must be anticipated that, during the landing run, wheelbrake pressure will be limited to accumulator pressure and nosewheel steering will not be available. The use of flaps will be available but airbrakes will not be available. A normal approach and landing should be made at the correct speeds. In normal wind conditions the brake-parachute should be streamed, but if cross-wind conditions exist, consideration must be given to the lack of directional control aids which exist. It is suggested that the parachute should be streamed to gain the initial deceleration, but jettisoned before excessive brake pressure is required to maintain directional control. Sufficient brake pressure should be available

for a normal full-stop landing. Apply the brakes steadily and continuously, increasing pressure as the speed reduces, but avoiding excessive pressure which may cause the maxaret units to operate and cause intermittent brake application. When the brake pressure gauge readings fall to 2,000 PSI, further brake application will cause the readings to fall to zero. When the aircraft is stopped make no attempt to taxi further but close down the engines and have the aircraft towed away.

## 3 Crash landing on an airfield

The following drill is recommended in conjunction with the appropriate Check List :

- (a) Reduce weight as much as is practicable.
- (b) Jettison bombs and underwing tanks at captain's discretion. Ensure bomb-doors are closed.
- (c) If, in the opinion of the captain, there will be a danger of the navigators and AEO being trapped in the aircraft after landing, they should be ordered to abandon the aircraft.
- (d) Make a normal approach with the undercarriage up or down as required. The advantages of reducing impact load with the undercarriage down, however, should be carefully considered.
- (e) Ensure that the crew are strapped in and that their seats are at the crash position.
- (f) At 500 ft. jettison the pilots' hatches and close the HP cocks just before touch-down.
- (g) After touch-down the crew should escape through the nearest exit.

## 4 Landing with one main leg retracted

Should it become necessary to land with one main undercarriage unit not locked down the following drill is recommended in conjunction with the appropriate Check List.

- (a) Reduce weight as much as possible.

- (b) Render ejection seats safe.
- (c) Disconnect parachutes, dinghies, leg-restraining straps and emergency oxygen tubes.
- (d) Operate the pressurisation dump valve, jettison the pilots' canopies and open the entrance door.
- (e) Ensure that crew are firmly strapped in, with their seats at the crash position.
- (f) Land using normal landing flap, with sufficient speed to ensure a touchdown at 125 kts.
- (g) Lower the nose wheel and simultaneously apply aileron to hold the wings level.
- (h) As the speed falls to 110 kts. lower the wing-tip gently onto the ground, and simultaneously apply rudder and wheel brakes to hold the aircraft straight.
- (j) Stream the braking parachute as soon as the wing tip touches the ground. Continue to apply aileron to reduce the ground reaction at the wing tip and so delay the start of the ground loop.
- (k) Aileron effectiveness is lost at approximately 105 kts. To reduce the possibility of major damage to the wing it is important that the wing tip is lowered to the ground at a controlled rate whilst aileron control is still available.

NOTE: A ground loop imposes a heavy strain upon the undercarriage, and should be delayed until speed is as low as possible. A foam strip laid along the side of the runway which the wing-tip is expected to strike will reduce friction and enable the aircraft to be held straight down to a lower speed.

## 5 Ditching

NOTE: Model tests indicate that the ditching characteristics should be satisfactory, there being no tendency to dive under the surface provided the vertical rate of descent is low at the moment of ditching.

- (a) The following drill is recommended in conjunction with the appropriate Check List.
- (b) During the final stages of the approach, the airspeed should be the minimum consistent with satisfactory control. The round out should be made as accurately as possible to obtain the minimum rate of descent at touch-down. The touch-down should be made parallel to the swell. If the swell is not steep and the wind across it is above 25 kts., it may be preferable to land into wind.
- (c) At the touchdown, if the bomb doors hold and the procedure in (b) is carried out correctly, the ditching should be gentle. If the impact is severe enough to collapse the bomb doors, the deceleration is increased but the ditching is still satisfactory.
- (d) Just before touch-down, close the HP cocks. All crew members should operate the dinghy release handle in turn and the crew leave the aircraft through the pilots' escape hatches carrying personal dinghies.

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