PART V

EMERGENCY HANDLING

79. Engine failure in flight

(a) *Mechanical defect*

If the engine fails due to an obvious mechanical defect, set:—

Throttle	SHUT.
H.P. and L.P. cocks	SHUT.
Booster pump	Off.
Non-essential electrical services	Off.

Do not attempt to relight.

(b) *Sudden drop in engine r.p.m.*

If a sudden inexplicable drop in engine r.p.m. occurs, close the throttle and set the isolating switch ON. (If the isolating switch is not switched to ON within 4 seconds there is a probability of flame extinction.) Once the switch has been set to isolate it must be left there and the engine opened up slowly to the desired r.p.m. Idling r.p.m. will be high and landing must be carried out with caution.

(c) *Flame out*

(i) Should the failure be caused by mishandling, set:—

Throttle	SHUT.
H.P. cock	SHUT.
Non-essential electrical services	Off.

(ii) If flame-out occurs as a result of a fuel system ~~deflect~~ DEFECT., e.g., engine pump B.P.C. or from a servo system defect proceed as at (i) above and switch ON the isolating switch, leaving it on for the remainder of the flight.

80. **Relighting**

(a) The engine is more likely to relight below 25,000 ft. Airspeed during the relight should be 170–180 knots, otherwise the engine tends to overheat, particularly at high altitudes. If because of weather it is desirable to attempt a relight above 25,000 ft., airspeed during the attempt should be 220 knots.

(b) Check:—

Throttle	SHUT.
H.P. cock	SHUT.
Non-essential electrical services	Off.
Isolating switch	ON. (If the flame-out is due to a defective fuel system).
Booster pump	ON.

(c) Press the relight button and OPEN the H.P. cock simultaneously keeping the relight button pressed. A relight should occur within 20 seconds.

(d) If height permits, dive aircraft when relight occurs to reduce the risk of high j.p.t. and to help increase r.p.m.

(e) When relit open the throttle carefully to avoid overheating.

81. **Failure to relight**

(a) If the engine fails to relight SHUT the H.P. cock and allow 60 seconds before attempting a further relight to enable the engine to dry out. In an emergency the time may be reduced to 30 seconds.

(b) If a number of unsuccessful attempts are made, relighting may be attempted with the throttle fully OPEN, closing it immediately relight occurs.

(c) The most likely cause of failure to relight will be insufficient voltage. Therefore switch off all non-essential electrical services with the exception of the booster pump before attempting to relight.

82. **Action in the event of fire**

WARNING.—Fire in the engine bay may render the flying controls and pressure instruments useless, necessitating immediate abandoning of the aircraft. ~~When Mod. 3418 is embodied the fire warning light may go out because the wiring has burned through~~. A/1

(a) If the fire warning light comes on, close the throttle immediately. (If Mod. 3418 is embodied, the warning light(s) will go out when the temperature has dropped below 300° C. subject to the warning above.)

(i) Turn off H.P. and L.P. cocks.

(ii) Switch off the booster pump.

(iii) Reduce speed to 150 knots if possible and press the fire-extinguisher button.

(iv) Turn oxygen to emergency and turn OFF cockpit pressurisation.

(b) If the fire persists abandon the aircraft.

Page 61 Para. 82 (c) A.L.1

(c) When Mod. 3418 is embodied, if the warning light(s) goes out within five seconds of closing the throttle a fractured air casing is indicated and it should be safe to use the engine under reduced power. Use of the engine in these circumstances must be restricted to emergency corrections during the recovery to an airfield. Unless the power used is small, further damage may be caused and the light will come on and remain on.

83. **Undercarriage and flaps emergency operation**

(a) As soon as hydraulic failure is suspected ensure that the flap selector lever is at neutral, to avoid possible dumping of hydraulic fluid via the flaps pipelines, and that the windscreen wiper is set OFF.

(b) If the engine-driven hydraulic pump fails and Mod. 3627 is not embodied, the hand pump between the seats at shoulder height can be used to operate the undercarriage

and flaps only, after selecting the desired service by normal selector lever. Up to 115 strokes of the hand pump may be necessary to lower the undercarriage fully.

Page 62 Para. 83 (c) A.L.1

(c) If Mod. 3627 is embodied select the desired service and, if the main accumulator has insufficient pressure, move the EMERGENCY HYDRAULICS lever fully aft.

(d) In an emergency the undercarriage may be retracted on the ground provided that electric power and a certain minimum hydraulic pressure are available and provided that either U/C OVERRIDE switch is set to up. The hand pump may be used if normal pressure is not available or Mod. 3627 is not embodied.

84. **Bomb and drop tank jettisoning**

Jettison drop tanks or bombs and bomb racks in straight and level flight at any speed up to 260 knots, by pulling back the WING TANKS JETTISON lever.

85. **Flapless landing**

When landing without flaps the approach is very flat and the aircraft requires a long landing run. Speed falls off slowly, and little power is required. Maintain a minimum airspeed of 140 knots until the final turn into wind is completed, then reduce speed to 130 knots for the approach. Cross the runway threshold at 115 knots.

86. **G.G.S. emergency lowering**

If either gunsight fails to lower normally, strike the emergency lowering knob, adjacent to the affected gunsight, a sharp blow with the hand.

87. **Abandoning the aircraft**

NOTE.—The second pilot should eject first followed by the captain. The minimum height for safe ejection is 200 ft. in level flight.

(a) Reduce speed to ~~180~~ 200 knots if possible.

(b) Set the parachute container fully back, lower the seat and visor.

(c) Retract the gun sights and jettison the hood.

(d) Withdraw the feet from the rudder pedals and at the same time grasp the firing handle. The elbows must be drawn in close to the body and both hands must grasp the firing handle with the backs of the hands facing forward.

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

(f) After ejection the drogue gun will fire automatically.

(g) If ejection takes place above 10,000 ft. automatic separation will not occur until that height is reached. If ejection has taken place at or below 10,000 ft. automatic separation will take place within three seconds or within $1\frac{1}{4}$ seconds if a G stop is fitted and has not operated.

(h) *Action if automatic separation fails after ejection*:—

(i) When forward speed is sufficiently low, discard the face screen and disconnect the main oxygen tube.

(ii) Pull the override " D " ring to isolate the parachute auto device.

(iii) Operate the harness quick release.

(iv) Disengage the side restraining straps of the parachute harness.

(v) Lift the flap over the parachute " D " ring and grasp the handle.

(vi) Fall clear of the seat and pull the rip cord handle.

(*j*) *Action if the seat fails to eject*

(i) Retract the airbrakes.

(ii) Isolate the auto device by pulling the override " D " ring.

(iii) Roll the aircraft into the inverted position.

(iv) Release the safety harness.

NOTE.—If both seats have failed the captain should remain tightly strapped into his seat until the other occupant has cleared the aircraft.

88. **Crash landing**

(a) Jettison the hood and external stores.

(b) Where power is available make a normal approach and landing, and lower the undercarriage unless the terrain is unsuitable.

(c) If power is not available glide at 160 knots, the best gliding speed. When manoeuvring to land maintain 140 knots until the selected landing area is within reach.

(d) Lower flaps as required.

(e) Cross the threshold at 105 knots.

89. **Ditching**

(a) The ditching characteristics are believed to be poor due to the probability of the tail booms hitting the water causing a nose-down pitch and subsequent dive in, or the tail booms may break off. It is recommended therefore that the aircraft should be abandoned rather than ditched.

(b) Successful ditchings may be possible in ideal conditions using the following technique:—

(i) Jettison the hood and external stores.

(ii) Lower 10° flaps only and approach with engine assistance if possible.

(iii) Touch-down about 10 knots above normal speed, avoiding a nose-up attitude likely to cause the tail booms to hit the water. If the booms do not hit, the aircraft should plane well on the fuselage.

(iv) To prevent any tendency to porpoise, the rate of descent at touchdown should be at a minimum.

90. **Hood jettisoning**

(a) Successful hood jettison trials have been carried out at speeds between 105 and 280 knots, but the minimum recommended speed is 150 knots.

(b) If the hood jettison fails to operate, unlock the hood by releasing the hood locking catch. Under no circumstances should the handle be gripped.

(c) A certain minimum hydraulic pressure is required to operate the jettison jack. If Mod. 3627 is not embodied, operate the jack by handpump pressure; if it is embodied move the EMERGENCY HYDRAULICS lever aft and then pull the jettison handle.