PART IV
EMERGENCY HANDLING

57. Engine failure and relighting in flight

(a) *Mechanical defect*

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

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

Do not attempt to relight. Carry out forced landing.

(b) *Flame-out*

Should engine failure be caused by mishandling, set:—

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

(c) *Relighting (if ignition time switch fitted)*

(i) The engine is more likely to relight if height is below 30,000 ft. Airspeed during relight should be 150 knots or over, otherwise the engine tends to overheat, particularly at high altitudes.

(ii) Check throttle closed and booster pump on.

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(iii) Rotate the ignition time switch fully clockwise to ON and move the H.P. cock quickly to the fully OPEN position. A relight should occur within 20 seconds.

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

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

(d) *Failure to relight (when ignition time-switch fitted)*

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

(ii) If a number of unsuccessful attempts are made, the relight drill may be attempted with the throttle fully open, closing it immediately a relight is accomplished.

(iii) The most likely cause of failure to relight will be insufficient voltage. All non-essential electrical services, with the exception of the booster pump, should be switched off before relighting.

(e) *Relighting (if no time-switch fitted)*

If no time-switch is fitted, when the engine failure is due to flame extinction, the following procedure has been known to effect a successful relight. Chances of a successful relight are increased with a decrease in altitude and airspeed.

(i) Reduce airspeed to a safe minimum.

(ii) Booster pump on.

(iii) Throttle closed.

(iv) Move H.P. cock to $\frac{3}{4}$ open position.

(v) Press the booster coil pushbutton, on the left-hand side of the cockpit, for a maximum of 15 seconds.

(vi) Watch engine r.p.m. and j.p.t. If either of them indicate a relight, move the H.P. cock slowly to the fully open position. Then open the throttle very slowly and check j.p.t.

(vii) Once relight has occurred, diving the aircraft may assist the engine to accelerate. If high j.p.t. persists the H.P. cock must be closed immediately and the attempt to relight abandoned.

(viii) If no light up occurs after 15 seconds, the attempt *must* be abandoned, otherwise a grave fire risk exists.

58. **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.

If a fire occurs, immediate action should be:—

(a) Throttle closed

(b) L.P. cock OFF

(c) H.P. cock off

(d) Booster pump off

(e) Extinguisher pushbutton, press.

If possible, airspeed should be reduced and the cockpit pressurization (if fitted) turned off before the fire extinguisher is operated.

59. **Undercarriage and flaps emergency operation**

(a) In the event of failure of the engine-driven hydraulic pump and exhaustion of accumulator pressure, the hand-

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pump to the left of the seat can be used to operate the undercarriage and flaps. The flap selector should be set to neutral immediately hydraulic failure is suspected, to avoid possible dumping of hydraulic fluid.

NOTE.—Up to 115 strokes of the hydraulic handpump may be necessary to lock the undercarriage down.

(b) In an emergency the undercarriage can be retracted when the aircraft is on the ground, provided that electric power is available. The undercarriage emergency retraction switch must first be switched ON (back) before the undercarriage selector lever can be operated.

60. **Hood jettisoning**

(a) Successful hood jettison trials have been carried out between 110 and 280 knots.

(b) If either Mod. 3577 or 3578 is not embodied ensure that the lanyard is attached to the winding handle and open the hood to the limit imposed by the lanyard (about 1 in.). Otherwise the hood may be left closed.

(c) Reduce speed as much as possible lower the seat fully and, with the head well down, pull the jettison handle.

61. **Landing with asymmetric load**

(a) *With empty drop tank*

No special precaution is necessary when landing with one empty, or nearly empty, drop tank.

(b) *With full drop tank or with one 1,000 lb. bomb*

When flying with asymmetric load, some rudder will be found necessary at the lower airspeeds. Before landing, the rudder pedals should be readjusted to ensure that full aileron can be applied without the control column fouling the pilot's knee. A wide circuit should be made at 150 knots, and this speed maintained until on the final approach. Full flap should then be lowered and speed reduced so that the airfield boundary is crossed at 115 knots. The aircraft should be flown on to the ground.

NOTE.—Landing in this condition should not be necessary since the fuel from one tank will transfer, even if the other tank has been jettisoned. Also the bomb can be dropped electrically, or jettisoned with its carrier, mechanically.

62. **Wing drop tank and bomb jettisoning**

(a) To jettison the wing drop tanks or bombs and carriers, pull up the lever marked JETTISON FUEL TANKS to the left of the seat.

(b) The drop tanks should be jettisoned in straight and level flight at airspeeds below 260 knots.

63. **Forced landing**

(a) In all cases of engine failure when a relight is not possible the following actions should be carried out:—

L.P. and H.P. cocks	OFF
Booster pump	OFF
All non-essential electrics	OFF
Glide at 140 knots	

(b) If circumstances permit, jettison the wing drop tanks and external stores. R.P. cannot be jettisoned; they can only be fired.

(c) Jettison the hood.

(d) A maximum of half flap should be selected until the landing area is within certain reach. When full flap is lowered the rate of descent is high.

(e) Cross the threshold at 110 knots.

NOTE.—If to minimise fire-risk, the Ground/Flight switch is set to GROUND before landing it must be set to FLIGHT after landing if it is required to operate the fire extinguisher. UNLESS MOD 3522 IS EMBODIED

64. **Flapless landing**

(a) The turn on to the final approach should be made at 130 knots. The approach is very flat, and little power, if any, is required. The airfield boundary should be crossed at 105 knots. A long landing run results.

(b) The landing run can be reduced slightly if the engine is stopped after touch-down. The L.P. cock should be closed in such an emergency as it is more easily operated than the H.P. cock.

65. Ditching

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

(b) Successful ditchings, in ideal conditions, may be possible if the following technique is used:—

(i) Jettison the hood and all external stores.

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

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

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

(v) If power is not available the final approach should be made at 120 knots. The touch-down will probably occur at 80 knots.

66. Abandoning the aircraft

Speed should be reduced if possible, the aircraft trimmed nose-heavy and then inverted to enable the pilot to fall out.