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(5th Edition)
Pilot's Notes

REFERENCE ONLY

FLIGHT REFERENCE CARDS

CANBERRA B. MK. 2

EMERGENCY DRILLS

ISSUE 5 IN USE

RESTRICTED

BARRIER ENGAGEMENT
(Mk. 5, Mk. 6 or Mk. 12 barrier)

If take-off is aborted:—

1. Close HP cocks and apply the brakes. Make RT call "Barrier."
2. Decide whether to jettison wing tip tanks.
3. Retain canopy and navigator's hatch.
4. Aim to engage barrier between verticals and in the centre of the net if possible.
5. Duck head forward and release brakes just before entry.
6. After entry use steady wheel braking.
7. Apply parking brake when aircraft stops.
8. If possible, switch off all master switches, LP cocks, battery isolating switch and make "safe for parking" before leaving aircraft.

NOTE: Jettison hatch after aircraft stops if speedy exit is essential.

CABIN PRESSURISATION FAILURE

1. If above 40,000 ft. pilot warns crew "Immediate Descent," crew acknowledge.
2. Oxygen mask toggle tight.
3. Throttles fully closed.
4. Airbrakes OUT.
5. Bomb doors open (if practicable).
6. Descend at 0·79M above 40,000 ft., 0·75M below, if bomb doors open.
7. Engine air switches—OFF below 40,000 ft.
8. Altitude—reduce to lowest practicable (at least 30,000 ft.).

NOTE: If cabin or canopy are damaged keep speed below 0·7M or 300 kts. after initial descent.

EMERGENCY USE OF OXYGEN

Toxic fumes

1. Switch regulator EMERGENCY switch to either side.
2. Select 100% OXYGEN.
3. Mask toggles tight.

Blinker failure

Flow indicator remains black

1. Check contents sufficient, select 100% OXYGEN.
2. Check pressure 200-400 PSI, needle oscillating.
3. Press EMERGENCY stud, if pressure increases flight may be continued on 100% OXYGEN. Change fuses.
4. If oxygen is not reaching mask, operate emergency bottle, disconnect main hose, descend to 10,000 ft.

Indicator remains black, and breathing restricted

1. Check connections.
2. If connection made, operate emergency bottle, disconnect main hose, descend to 10,000 ft.

Indicator remains white

1. Check mask tight. Adjust fit.
2. If still white and excessive pressure felt, operate emergency bottle, disconnect main hose, descend to 10,000 ft.
3. Turn regulator OFF.

Use of emergency bottle

1. Operate emergency cable to starboard of seat.
2. Disconnect main hose.
   On ejection the emergency bottle is operated automatically.

NOTE: If a regulator fails, use the wander lead, if possible, before resorting to the emergency oxygen bottle.

JETTISON PROCEDURES

Wing tip tanks

1. Speed below 365 kts. Max. IMN 0·79M below 25,000 ft., 0·80M above.
2. Press the FUEL TANK JETTISON button.

Bombs

1. Switch ON the EMERGENCY BOMB JETTISON switch.
2. When bombs have jettisoned, return switch to OFF to close bomb doors.

Navigator's hatch

1. At pilot's discretion, rear crew remove red disc from safety pin and insert pin in rear sear of each ejection seat.
2. Speed 150 knots min. (90 kts. min. in emergency).
3. Confirm hatch SAFETY switch ON.
4. Lower vizors.
5. Switch ON hatch JETTISON switch.
6. Harness tight and locked before ejection.

Canopy

1. Speed 150 knots min. (90 kts min. in emergency).
2. Vizor down.
3. Confirm MASTER SAFETY switch ON.
4. CANOPY JETTISON switch ON.

Entrance door

Turn the crank above the door clockwise approximately $4\frac{1}{2}$ turns. Strike top of door.

FIRE

Fires on the ground

1. Warn crew.
2. HP cock, LP cocks and pumps ,OFF.
3. Operate fire extinguisher, if necessary.
4. Battery isolating switch OFF.
5. Vacate the aircraft.

(Continued)

Fire—(*continued*)

Wheelbrake fire

1. Warn crew.
2. Do not shut down engine until fire appliances are available. If fire appliances not readily available, shut down by switching off LP pumps and cocks, leaving HP cocks open. (Report this method of shut-down).
3. Battery isolating switch OFF.

Engine fire

1. Warn crew.
2. HP cock, LP cocks OFF.
3. Recuperator cock OFF, if fitted.
4. Press fire extinguisher push button.
5. Engine air switch OFF.
6. Generator OFF, field circuit breaker tripped.
7. No. 5 inverter OFF. Switch off non-essential loads. Rebecca *or* Gee receiver may be operated from No. 4 inverter.
8. If necessary carry out "Toxic Fumes" drill.
9. Monitor DC volts.
10. Do not relight. If fire persists, abandon aircraft.

Cabin fire

1. Warn crew.
2. Oxygen regulator to EMERGENCY and 100% OXYGEN.
3. Mask toggle tight.
4. All non-essential electrics OFF
5. Use hand fire extinguisher if fire is located and is peristent.
6. Maintain cabin pressure.
7. Land as soon as possible.
8. If the fumes become dangerous, jettison the navigator's hatch, and, if necessary, the canopy.
9. If the fire spreads abandon aircraft before damage occurs to safety equipment.

BOOSTER PUMP FAILURES

Single booster pump failure

1. Close appropriate throttle.
2. When RPM and JPT stabilise switch on another booster pump on the same side.
3. If JPT and RPM are erratic, shut down and relight.
4. Check all LP cock and pump circuit breakers closed.

NOTE: Fuel from tank with the failed pump may be used for the other engine.

Gravity/Suction feed

If no booster pumps are serviceable in a tank and it becomes necessary to gravity feed from the tank proceed as follows:—

1. Reduce height to 35,000 ft. (AVTUR) or 25,000 ft. (AVTAG) or, if range permits to 15,000 ft. or below.
2. Close throttle of engine to be suction fed.
3. Select "failed tank" cock switch ON, all other pump and cock switches same side OFF.
4. Accelerate engine carefully to 7,200 RPM maximum.
5. Use tanks with serviceable pumps for landing and for climbing.

NOTE: 1. Erratic running must be avoided.
2. Report use of gravity/suction feed.

ENGINE FAILURE AND RELIGHTING

Mechanical failure

1. Throttle and HP cock closed.
2. LP cocks and recuperator cock for affected engine OFF.
3. Engine air switch OFF.
4. Generator OFF, field circuit breaker tripped.
5. Switch off No. 5 inverter and non-essential loads. (Use No. 4 inverter for Rebecca *or* Gee receiver).
6. Do not relight. Watch for indication of fire.
7. Monitor DC volts.

Flame out

Attempt an immediate relight. If this fails:—

1. Close the appropriate throttle and HP cock.
2. Switch generator OFF.
3. Switch OFF No. 5 inverter.
4. Switch OFF LP pumps and engine air switch on the affected side.
5. Monitor DC volts.
6. Attempt a normal relight.

(Continued)

Engine failure and relighting—(*continued*)

Immediate relight

Press relight button for 5 seconds with throttle and HP cock at set position, then keep JPT within limits by throttling back if necessary.

Height/RPM maxima for relighting

1. Pre-Avon Mod. 857 20,000 ft., 1,200 RPM.
2. Post-Avon Mod. 857 25,000 ft., no RPM restriction. Above 25,000 ft. 1,200 RPM.
3. Relighting is practicable up to 5,000 ft. above these altitudes.

Double flame out

1. If below the maximum recommended height for relight select another cock and pump ON.
2. Attempt immediate relight on one engine.
3. If this fails, reduce electrical load to the minimum and carry out "Flame out" drill and "Normal relight" drill on each engine in turn.

Normal relight

1. Height and speed within recommended maxima above.
2. Throttle and HP cock closed. Check DC volts.
3. HP pump isol, switch as required.
4. LP pump ON, warning light out.
5. Check master start and ignition switches ON.
6. Press the relight button whilst opening the HP cock. When RPM and JPT start rising, release relight button. Check JPT, oil pressure, fire warning light.
7. Switch generator and engine air switch ON. Check DC volts and generator light out.

Failure to relight

If no relight within 30 seconds, close HP cock, wait 2 minutes and make another attempt at lower altitude. If necessary, check igniter fuse: No. 43 (Port) or 47 (Stbd.) in the ECP.

ELECTRICAL SYSTEM FAILURES

Electrical loads

NOTE: Items considered non-essential to the immediate safety of the aircraft in the event of generator failure are shown in the left-hand column. Radio, fuel pumps and tail trim should be used as economically as possible.

Non-essential items		*Other items*	
Load	*Amps*	*Load*	*Amps*
No. 5 inverter	110·0	Tailplane trim	20·0
No. 3 inverter	24·0	LP fuel pumps (6)	15·0 each
No. 4 inverter	22·0	UHF	15·0
Landing lamp	9·25	No. 2 inverter	10·0
Bombsight	4·5	Rudder trim	5·0
Rebecca (DC)	4·0	Pressure head heater	6·0
Ident. lamp	3·0	VHF (2)	6·0 each
Taxy lamps (2)	5·0 total	Instrument lamps	5·0 total
F24 camera	3·5	Aileron trim	2·75
Air drier	1·25	Nav. lights	2·5 total
Gee (DC)	1·0	Vent valve heater	2·0
AMU and API	4·0	Intercomm.	1·5

Overvolting

After starting

1. 28-30 volts. Keep engine running, have fault checked.
2. Over 30 volts. Shut down and report defect.

In flight

1. 28-29 volts. Continue flight, monitor DC volts closely.
2. 29-30 volts. Return to base and land as soon as practicable.
3. Over 30 volts:—
   (a) Swicth off radar. No. 4 and 5 inverters.
   (b) Switch off each generator in turn and check voltage. If one generator is serviceable, switch the other off and return to base using minimum electrics.
   (c) If voltage is still 30-34, leave both generators on, switch battery off, and land at nearest suitable airfield. Battery ON for landing.
   (d) If voltage is over 34 switch off both generators and proceed as for double generator failure.

NOTE: A reduction in engine RPM may reduce the voltage.

(continued)

Electrical system failures—(*continued*)

Single generator failure

1. Switch generator OFF.
2. Switch off No. 5 inverter, associated services and non-essential loads.
3. Check DC voltage.
4. Check generator field circuit breaker closed.
5. After approx. 30 seconds switch generator ON.
6. If warning light remains on, repeat above procedure, once only.
7. If generator still off line:—
   (a) Trip generator field circuit breaker.
   (b) Switch generator OFF.
   (c) Use No. 4 inverter only for Rebecca *or* Gee receiver.
   (d) All non-essential electrics OFF.

Double generator failure

1. Switch both generators OFF.
2. All non-essential electrical loads OFF.
3. Carry out reset drill above for each generator in turn.
4. If both generators remain off-line proceed as at 5 and 6 following.
   Battery may last 20 minutes. Use tail trim as little as possible.
5. Reduce height to 15,000 ft. (max.) or if this is not practicable restrict RPM to 7,200 (max.) and maximum height to 35,000 ft. (AVTUR) or 25,000 ft. (AVTAG).
6. Land at nearest airfield.

NOTE: There is a risk of double flame out when the main battery is exhausted if the LP cocks of an empty fuel tank are on; consequently consideration should be given to conserving sufficient battery power to switch OFF the LP cocks of tanks at very low fuel states.

No. 2 Inverter failure

1. No. 3 inverter automatically takes over and the emergency inst. supply indicator shows white.
2. To regain No. 2 inverter, reset its field circuit breaker if necessary, and, once only, switch off the starboard master start switch for 1 second then on again.

(*Continued overleaf*)

Electrical system failure (*Continued*)

No. 3 inverter failure

1. Check, and if necessary reset, once only, the circuit breaker.
2. If inverter will not operate, trip its circuit breaker and leave off.

No. 5 inverter failure

1. Switch off associated radar.
2. Select inverter changeover switch to No. 4 inverter to supply Gee receiver *or* Rebecca.

MALFUNCTION OF WHEELBRAKES

NOTE: Flaps probably not available. Use longest runway available.

1. Raise pressure with handpump if possible.
2. Do not operate brakes before landing.
3. Reduce weight by normal fuel drill.
4. Close HP cocks at touchdown.
5. Touchdown at lowest practicable speed; then hold nose up as long as possible. (Use tail trim).
6. Use handpump to maintain pressure whilst holding single application of brakes.

NOTE: If it is necessary to engage an arrester barrier the engines may be left running to assist directional control. The HP cocks should be closed approx. 400 yds. before engagement.

MALFUNCTION OF BOMB DOORS

1. Avoid operation if possible.
2. Make normal selection and use hand pump.
3. Use emergency lever if essential. Doors cannot be closed again in flight.

MALFUNCTION OF UNDERCARRIAGE

Retraction

Fails to retract (3 *greens remain*)

1. Select DOWN.
2. Check main hydraulic pressure.
3. If UC master switch at SAFE, select LIVE, reselect UP.
4. If UC master switch LIVE, do not reselect, land as soon as practicable.

(*continued*)

Malfunction of undercarriage—(*continued*)

Fails to retract (main wheel red light(s) remain)

1. Lower undercarriage.
2. Land as soon as practicable.

Fails to retract (nose wheel red light remains)

1. Check main hydraulic pressure.
2. Reduce speed to practical minimum (approx. 150 kts.).
3. Sharply apply a small amount of negative G.
4. If red light remains, select DOWN, land as soon as practicable.

Raising the undercarriage in emergency

1. UC master switch LIVE.
2. Rotate collar of UP button clockwise to its stop and select UP. Not to be used in flight unless imperative.

Failure to lower

Hydraulic failure

1. If pressure below 2,000 PSI or there is reduced resistance to the handpump, and UC fails to lower, hydraulic failure is probable.
2. Select DOWN, operate handpump.

Indcator or mechanical failure

If the hydraulic system appears serviceable and the undercarriage is felt or heard to lower:—

1. Check changeover light on position indicator.
2. Change fuse No. 68 on the ECP.
3. Use handpump (the additional pressure may assist in locking the wheels down).
4. Apply positive G and yaw, under 190 kts., within limitations.
5. If an external source confirms UC still not locked down, select UP and DOWN several times.

Electrical failure of selector valve

1. Change fuse No. 67 and select DOWN.
2. If the above actions fail, select down by pulling the undercarriage emergency handle *fully* out to its locked position. If main hydraulic pressure then drops check that the toggle is fully out and locked.

HAZARDOUS LANDINGS

Preparation and escape

Before landing

1. At pilot's discretion, remove red discs and fit safety pins in ejection seats rear sear if possible.
2. Release life jacket from survival pack.
3. Disconnect emergency oxygen and AVS if worn.
4. Tighten harness and helmet straps.
5. Navigator—if ordered to jettison hatch, see JETTISON PROCEDURES.
6. All non-essential electrics off before touchdown.

After landing

1. Battery master switch OFF.
2. Disconnect oxygen, RT, harnesses and leg restraint. Fit seat pan handle safety pins if seats have not been made safe.
3. Exit through entrance door or hatchway.
4. If necessary, return to aircraft when safe to do so and make it "safe for parking." Re-connect red discs to safety pins if necessary.

Both main wheels only locked down

1. Reduce weight (normal fuel drill).
2. Carry out "Before landing" drill above. Hatch may be retained at pilot's discretion.
3. Approach and landing normal. Close HP cocks just before touchdown.
4. Hold nose up, using tail trim, until elevator effectiveness just sufficient to lower nose smoothly onto runway. Use brakes gently.
5. Carry out "After landing" drill above.

One mainwheel not locked down

1. Jettison wing tip tanks and internal stores.
2. Reduce weight (normal fuel drill).
3. Carry out "Before landing" drill.
4. Jettison navigator's hatch.
5. Allow 100 yards to side of touchdown centre line for swing after landing.
6. Landing normal, biased to side of locked down main wheel.

(*continued*)

Hazardous landings—(*continued*)

7. Close HP cocks just before touchdown. Use aerodynamic braking, hold wings level to 60 kts. (approx.) and lower the nose and wing gently before elevator and aileron control is lost. Use wheelbrakes to delay groundloop.
8. Carry out "After landing" drill.

All wheels up

1. Jettison wing tip tanks and internal stores.
2. Reduce weight (normal fuel drill).
3. Carry out "Before landing" drill.
4. Jettison navigator's hatch.
5. HP cocks closed just before touchdown.
6. Carry out "After landing" drill.

Forced landing

NOTE: It may be advantageous to have the undercarriage down to absorb impact load.

With engine power available

1. Jettison wing tip tanks and internal stores.
2. Reduce weight (normal fuel drill).
3. Carry out "Before landing" drill.
4. Jettison navigator's hatch.
5. Approach—normal; HP cocks closed before touchdown.
6. Carry out "After landing" drill.

With no engine power available

1. Glide at 165 kts.
2. Jettison wing tip tanks and internal stores.
3. Close HP cocks, switch off LP cocks.
4. If time permits, carry out "Before landing" drill; in any case jettison navigator's hatch.
5. Lower flap if possible
6. Approach 130 kts.; threshold speed normal plus 10 kts.
7. Carry out "After landing" drill.

Asymmetric wing tip fuel load

1. Determine, at a safe height, the lowest speed for adequate lateral control with undercarriage and flaps down, keep threshold speed 5 kts. above this speed.
2. Jettison the tip tanks if their retention jeopardises the safety of the aircraft.

DITCHING

Do not ditch if the aircraft can be abandoned in flight. If forced to ditch:—

1. Bomb doors and entrance door closed.
2. Lower vizors.
3. Jettison the navigator's hatch.
4. Tighten harness and helmet straps.
5. Final approach flaps down. Touchdown at lowest practicable speed and rate of descent.
6. After touchdown release harnesses, RT and oxygen connections.
7. Leave aircraft through hatch aperture.
8. Inflate life jackets.

ABANDONING

Flight conditions

1. *General*

   (a) The best speed for ejection is 200 kts. in straight and level flight.

   (b) The navigator's hatch *must* be jettisoned before rear crew eject unless Type 2CA2 Mk.2/MK4 ALS seats with SLE are fitted.

2. *Type 1CN seats*

   The minimum recommended height for ejection is 1,000 ft. AGL.

3. *Type 2CA series seats*

   Seats have ground level capability at speeds above 90 knots in straight and level flight.

(*continued*)

Abandoning—(*Continued*) { TYPE 2CA1 MK1 or MK2 / TYPE 2CA2 MK1 or MK3

Abandoning drill (Type 1 CN or ~~Type 2 CA Mk. 1~~ seats) 4L.5

1. If above 40,000 ft., operate emergency oxygen, disconnect main supply.
2. Jettison the navigator's hatch. (See JETTISON PROCEDURES.).
3. Harnesses tight and locked.
4. Bomb-aimer—grasp face screen handle.
5. Navigator and bomb-aimer* eject in turn.
6. Pilot—Confirm MASTER SAFETY switch ON.
   Pre-Mod. 4045 operate control column snatch unit.
   *Eject (Snatch unit operated automatically with 2CA1 Mk. 1 seat). or 2CA1 MK2 2L5
7. On Type 1CN seats kick seat away after auto-harness release operates.
   *On Type 2CA series seats use seat pan firing handle if necessary.

Abandoning drill (Rear crew with Type 2 CA 2 Mk. 2 seats and SLE) 4 4L5

1. If above 40,000 ft. operate emergency oxygen, disconnect main supply.
2. Navigator—confirm HATCH SAFETY switch ON.
3. Navigator—stow table if practicable.
4. Bomb-aimer grasp firing handle.
5. Navigator eject.
6. Bomb-aimer eject.

WARNING: If bomb-aimer ejects first he must ensure that *his* HATCH SAFETY switch is ON.

Failure of the automatic system after ejection

1. On Type 2CA seats only, pull the override D-ring.
2. Operate the seat harness quick release and kick seat away.
3. Pull ripcord when clear of seat, at safe† height.

Failure of ejection seat to fire

1. On Type 1CN seats, operate emergency oxygen, disconnect main supply.
2. On Type 2CA seats, disconnect main and emergency oxygen.
3. Operate static line key (Type 1CN) or override D-ring (Type 2CA).
4. Operate safety harness quick release.
5. Jettison entrance door and abandon.
6. Pull ripcord when clear of aircraft, at safe† height.

†No emergency oxygen available after leaving Type 2CA seat.