

**U.S.A.F.**  
FLIGHT CREW CHECK LIST  
FLIGHT ENGINEER

USAF  
FLIGHT CREW  
CHECK LISTS



FUEL DENSITY

OAT   FUEL WT

60	5.83
62	5.82
64	5.81
66	5.81
68	5.80
70	5.79
72	5.78
74	5.77
76	5.77
78	5.76
80	5.75
82	5.74
84	5.73
86	5.72
88	5.72
90	5.71
92	5.70
94	5.69
96	5.68
98	5.67
100	5.67

T. O. 1C-121(E) D-1C-2

# FLIGHT ENGINEERS'

## ABBREVIATED FLIGHT CREW CHECKLIST

USAF SERIES

### EC-121D/TC-121C

*To 1C-121C E1*

FD4606-67-A-0385-0049

Commanders are responsible for bringing this checklist to the attention of all personnel cleared for operation of the aircraft.

PUBLISHED UNDER AUTHORITY  
OF THE SECRETARY OF THE AIR FORCE

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15 October 1964  
CHANGED 28 FEBRUARY 1967

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NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page.

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 20, CONSISTING OF THE FOLLOWING:

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USAF ACTIVITIES.—In accordance with T.O. 00-5-2.

A

Changed 28 February 1967

USAF  
R-2

### CHECKLIST FOREWORD

**YOUR RESPONSIBILITY.** In accordance with AFR 62-2, the flight crew is required to use this checklist when operating the subject aircraft.

**TECHNICAL ORDER NUMBER.** This checklist is identified by a T.O. number that is identical to that of the applicable Flight Manual except for the addition of the letters CL (checklist) and a suffix number indicating the crew member to which it applies.

**CONTENT.** This checklist consists of two parts, normal procedures and emergency procedures. The numbered items correspond to identically numbered items in the amplified procedures in Sections II and III of the Flight Manual. Items marked with a circled numeral require coordination with the pilots and their checklist. Emergency procedures are identified by a red and black striped border.

**FLIGHT MANUAL.** This checklist does not replace the amplified version of the procedures in the Flight Manual. To perform your duties safely and efficiently, you must read and thoroughly understand why each step is performed and why it occurs in a certain sequence.

**CONCURRENCY.** As changes are made to the amplified checklists in the Flight Manual, concurrent changes will be made to this checklist so that both will agree. However, a change to the Flight Manual may not affect the amplified procedures. Therefore the Flight Manual date may not be the same as the checklist date. To determine the checklist applicable to a given Flight Manual issue, refer to the bottom of the Flight Manual "A" page under "Current Flight Crew Checklist." For purposes of determining the concurrency between the Flight Manual and this checklist, the latest date

of a Safety Supplement affecting this checklist will be considered to represent the latest change date of the Flight Manual.

**SAFETY SUPPLEMENTS.** Whenever you receive a supplement affecting your checklist, write in the appropriate information. Printed, replacement checklist pages will be made available to you as quickly as possible through the "quick change" checklist program. A notation on the bottom inside corner of these pages will indicate that they reflect certain Safety Supplements. Note that there is no action in the checklist program that constitutes authority for discarding a Safety Supplement. Such action is authorized only through the title page of the Flight Manual or T. O. 0-1-1-3A.

**CHANGES AND REVISIONS.** Whenever you receive a normal change or revision to your checklist, check to ascertain that it contains all outstanding Safety Supplements that affect the checklist. If it does not, add in the required information by hand (sometimes you will be able to accomplish this end by retaining the appropriate quick change page which references the outstanding supplement).

**BINDERS.** Binders containing plastic envelopes, to hold and protect the checklist pages, are available through normal AF supply channels. The binders are available with either 15, 25, or 40 envelopes. The Air Force Stock List numbers for these binders are: 7510-766-4268, 7510-766-4269, 7510-766-4270 respectively. Be sure to order enough binders — if you have a large checklist you may want to carry it in two small binders instead of a single large one.

**COMMENTS AND QUESTIONS.** Any comments and questions should be directed through your command headquarters to SMAMA, McClellan Air Force Base, California. Attn: SMNEO.

## NORMAL PROCEDURES

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**EXTERIOR INSPECTION (BY PILOT AND/OR FLIGHT ENGINEER).**

A visual inspection should be conducted by the pilot or flight engineer in accordance with the following items. Assure that the fuel system is pressurized and mixtures AUTO RICH prior to exterior check to make certain that any fuel leaks will be noticeable.

**Aft Fuselage Underside.**

1. Skin condition — Checked.
2. Lwr. radome — Condition.
3. Radome interior (EC-121D) — Checked.

**Wing Trailing Edge.**

1. Flaps, ailerons, trim tabs, static wicks — Condition.
2. Dump chutes — Condition.
3. Trailing edge skin — Condition.

**Flap Retraction Area.**

1. Flap track, assembly, bolts, chains, cables — Checked.
2. Aft rollers and track ends — Checked.

**Inboard Engine Nacelle and Main Gear.**

1. Radome condition & mounting bolts — Checked.
2. Fluid leaks — Checked.
3. Access panels — Secure.

4. Aux vent intake — Clear.
5. Oil cooler scoop — Condition.
6. Nacelle & shielding — Condition.
7. Breather lines — Clear.
8. Drain lines — Check for excessive leaks.
9. Exhaust sys — Condition & security.
10. Cowling, flaps, stayrods — Condition & security.
11. Oil cooler (aft side) — Condition.
12. Gear doors — Condition & security.
13. Carriage hook — Full open.
14. Uplock — Open.
15. Hyd star valve — Open & safetied.
16. Gear pins — Installed, not binding.
17. Fuel leaks & fumes — Checked.
18. Debooster & lockouts — Indication & leaks.
19. HRD fire extinguisher — Note pressure.
20. Actuating cylinder — Condition & leakage.
21. Drag shock strut — Inflation & leakage.
22. Gear strut — Inflation & leakage.
23. Static ground — Contact.
24. Tires — Inflation & condition.
25. Brake hyd lines, drums, springs — Leaks & condition.
26. Fuel dump chute — Condition.
27. HRD blowout disc — Intact.

**Inner Wing Panel & Outboard Nacelle.**

1. Skin condition — Checked.
2. Fuel tanks — Check for leaks.
3. Supercharger doors & scoop — Secure.
4. Heat exch scoops — Clear.
5. Oil cooler scoop — Condition.
6. Breather lines — Clear.
7. Drain lines — Check for excessive leaks.
8. Exhaust sys — Condition & security.
9. Cowling, flaps, stayrods — Condition & security.
10. Oil cooler (aft side) — Condition.

**Outer Wing Panel.**

1. Access panels — Secure.
2. Skin cond & surfaces — Check for leaks.
3. Lights — Lens intact and condition.
4. Tip tanks (EC-121D) — Condition & leaks.
5. Deicer boots — Condition.

**Propeller and Forward Nacelle.**

1. Prop. blades — Check for nicks, positive pitch & boots.
2. Prop. dome & fairings — Security & leaks.
3. Carb scoops — Clean.
4. Cowling latches & stay rods — Secure.
5. Deicer boots — Condition.

**Forward Fuselage Area.**

1. Fuselage general condition — Checked.
2. Driftmeter — Condition.
3. Fwd water filler — Secure.
4. Fwd latrine drain cover — Secure.
5. Static ports — Clear.
6. Ditch valves — Open.
7. HYD overboard drain — Checked.
8. Oxygen discharge disc — Intact.
9. Fwd antennas — General condition.
10. Nose radome — General condition.
11. Pitot covers — Removed.
12. Oxygen filler cover — Secure.

**Nose Gear and Wheel Well.**

1. Tires — General condition.
2. Strut — Inflation & general condition.
3. Taxi lights — Lens intact, condition.
4. Nose steering — Leaks & general condition.
5. Nose gear scissors pin — Secure.
6. LG pin — Installed, not binding.
7. Actuating cyls & lines — Condition.
8. Uplock — Open.
9. Bat., drains, sump jars — Secure condition.

10. Hyd shutoff star valve — Safetied & open.
11. Cargo door — Latch secure, condition.
12. Nose wheel well doors — Condition.
13. CO<sub>2</sub> discharge disc (if applicable) — Intact.

**Aft Fuselage Area.**

1. No. 6 tank filler cover (EC-121D) — Intact.
2. Fuselage skin — Condition.
3. Antennas — Condition.
4. Aux vent exit valve — Condition.
5. Flare chute covers — Intact.

**Tail Cone Area.**

1. Deicer boots — Condition.
2. Stab., surfaces, trim tabs, static wicks — General condition.
3. Tail cone — General condition.
4. Booster drain — Leakage.

**ENGINEERS' PREFLIGHT INSPECTIONS.**

The following checklists are predicated on the fact that there will usually be two flight engineers conducting the preflight inspection. The two flight engineers should coordinate their actions when outside check is required of an item operated from the cockpit.

**FIRST ENGINEER****INTERIOR INSPECTION.**

1. Magneto switches — OFF.
2. Landing gear — Checked down.
3. Form 781 — Checked.
4. Refrigerator — ON.
5. Battery condition — Checked.
6. Battery relay — Checked.
7. Inverter system — Checked.

**FUEL SYSTEM CHECK.**

1. Mixtures — AUTO RICH.
2. Tip tank fuel pumps — ON.
3. Tank No. 6 fuel switches — LOW.
4. Tank selectors, 1, 2A, 3A, 4 — ON, Checked for LOW and HIGH.
5. Tank selectors 2 and 3 — ON, Checked for LOW and HIGH.
6. No. 1, 2, 2A, 3A, 3, and 4 pumps — OFF.
7. Tank selectors — OFF.
8. Fuel pumps — ON then OFF.
9. Tank selectors 1, 2, 3 and 4 — ON.
10. Tank 5 fuel pump — LOW.
11. Tank 5 and crossfeeds — OPEN pressure noted.
12. Tank 5 fuel pump — HIGH.
13. No. 1 emer shutoff lever OFF check — Completed.
14. No. 1 emer shutoff lever ON check — Completed.



15. Repeat items 13 and 14 for engines No. 2, 3, and 4 emergency shutoff levers.
16. No. 1, 2A, 2, 3, 3A and 4 pumps — LOW.
17. Keep fuel system pressurized and mixtures in AUTO RICH until exterior preflight is completed.

**EQUIPMENT OPERATIONAL CHECK.**

1. ICS — Checked.
2. Cowl flaps — CLOSED, then OPEN.
3. Ram air doors — CLOSED, then OPEN.
4. Oil cooler flaps — CLOSED, then OPEN.
5. Prop deicer alcohol — Operation and quantity.
6. Heat exch scoops, doors — OPEN, then CLOSED.
7. Pitot heat — ON, then OFF.
8. Ext light master — FLASH and BRIGHT.
9. Parking brake — SET.
10. Taxi lights — ON, then OFF.
11. Anti-collision light — ON, then OFF.
12. Ldg lights — Ext and ON, Ret and OFF.
13. Wing and tail lights — FLASH, then STEADY.
14. Wheel well lights — ON.
15. Leading edge lights — ON, then As required.

16. Position lights — ON.
17. Control surfaces — Checked.
18. Fuel system check — Completed.

**FLIGHT STATION INSPECTION.****Oxygen System Area.**

1. Emer hyd ext tank — Fluid level.
2. Hyd replenishing system — Checked.
3. Fixed oxygen bottles — Serviced, crew valve OPEN.
4. Oxygen regulator — Checked.
5. Portable fire extinguisher — Checked.
6. Fire axe — Stowed.

**MJB Panel Area.**

1. Switches and ckt bkrs — As required.
2. Generators — ON.
3. Warning and indicator lights — Checked.
4. Carb alt fuel switches — NORMAL.
5. Master control deicer switches — OFF.
6. Engine starter selector — OFF.
7. FDS vert gyro switch (EC-121D) — ON.
8. Autopilot master switch (EC-121D) — ON.
9. Ignition analyzer light — Checked.
10. Lower MJB 212 panel — Checked.
11. Upper MJB 212 panel — Checked.

**Upper Switch Panel.**

1. Switches and ckt bkrs — As required.
2. Warning and indicator lights — Checked.
3. Hydraulic crossover switch — NORMAL.

**Center and Lower Instrument Panel.**

1. Instruments — Cond and indications.
2. Warning and indicator lights — Checked.
3. Fuel and oil quant push-to-test — Checked.

**Engineer's Quadrant.**

1. Master RPM cont — DECREASE, then INCREASE.
2. Throttles — Full OPEN, then CLOSED.
3. Blowers — HIGH, then LOW and locked.
4. Spare bulbs and fuses — Checked.

**Engineer's Lower Switch Panel.**

1. Prop governor switches — Checked and OFF.
2. Spark control switch — RETARD.
3. Feathering buttons — Checked.

**238 Circuit Breaker Panel.**

1. Circuit breakers — As required.

**Station 260 Area.**

1. Crash axe — Installed and secured.
2. Escape rope — Attached and stowed.
3. Fire extinguisher selectors — OFF.
4. Fire warning system — Checked.
5. Ckt bkrs and switches — As required.
6. Cabin spare bulb locker — Full.
7. Press and air cond panel — Checked and Set.
8. Ditching valve T handle — Checked.
9. HRD circuit breaker panel — Checked.
10. Fuel dump lever — Neutral.
11. Pitot covers — Stowed.
12. Engineer's head rest — Installed.
13. Seat belts — Checked.
14. Log, takeoff data and forms — Completed.

**SECOND ENGINEER****CURSORY INSPECTION.**

1. Fire extinguisher — Checked.
2. Electrical load on APU — Checked.
3. Static ground — Connected.
4. Chocks — In place.
5. Gear pins — Installed.

6. Brakes — Visually checked.
7. Batteries — Connected.
8. Pitot covers — Removed.
9. Area — Clear.

**EQUIPMENT OPERATIONAL CHECK.**

1. Ground ICS cord — Installed and checked.
2. Cowl flaps — CLOSED, then OPEN.
3. Ram air doors — CLOSED, then OPEN.
4. Oil cooler doors — CLOSED, then OPEN.
5. Prop deicer alcohol — Checked.
6. Heat exch scoops, doors — OPEN, then CLOSED.
7. Pitot heat — Checked.
8. Taxi lights — Checked.
9. Anti-collision light — Checked.
10. Ldg lights — Ext and ON, Ret and OFF.
11. Wing and tail lights — Checked.
12. Wheel well lights — Checked.
13. Leading edge lights — Checked.
14. Position lights — Checked.
15. Control surfaces — Checked.
16. Tip tank, wing, nacelles, wheel well — Checked.
17. Electronic inverter — MAIN and checked.
18. Refrigerator — Operation checked.
19. Fuel system check — Completed.
20. Tip tank pumps (EC-121D) — ON.

**TOP OF WING INSPECTION.**

1. All fuel tanks — Quantity, caps secure.
2. Oil tanks — Quantity, caps and covers secure.
3. Wing nacelles and turbines — Condition.
4. Cowling — Checked.
5. Deicer boots — Condition.
6. Tip tank pumps (EC-121D) — Checked.
7. Aileron hinges — Condition.
8. Deicer fluid tank — Checked.
9. Life raft hatches — Checked.
10. Upper radome (EC-121D) — Condition.
11. Reserve oil tank — Quantity, cap, and cover.
12. Main hyd reservoir — Checked.
13. Dipsticks — Stowed.
14. Tip tank pumps (EC-121D) — OFF.

**INTERIOR INSPECTION.****Forward Baggage Compartment.**

1. Forward compartment door — Secured.
2. Cabin press units — Checked.
3. Inverters — Checked.
4. Aircraft CO<sub>2</sub> fire exting bottles — Checked.
5. Portable fire extinguisher — Checked.
6. Wiring, ckt bkrs and fuses — Checked.

7. Electrical units — Checked.
8. Hydraulic panel area — Checked.
9. Manual oil transfer controls (TC-121C) — Checked.
10. Hyd crossover valve (TC-121C) — Checked.
11. General inspection of area — Completed.

**Forward Lavatory.**

1. Water supply and fittings — Checked.
2. Cabinet — Checked.

**Radar/Cabin Compartment.**

1. Emergency flap crank — Checked.
2. Portable oxygen bottles — Checked.
3. Pyrotechnic pistol and cartridges — Stowed.
4. CGRS (EC-121D) — Erected.
5. Portable fire exting — Checked.
6. Manual oil transfer system (EC-121D) — Checked.
7. Hydraulic crossover valve (EC-121D) — Checked.
8. Electronic inverter — MAIN.
9. Inverter by-pass system (EC-121D) — ON.
10. Wing flap emer extension by-pass — CLOSED.
11. Right secondary heat exch hyd valve — NEUTRAL.
12. Upper radome hatches and latches (EC-121D) — Checked.

**Lower Center Compartment.**

1. Lower radome hatch (EC-121D) — Checked.
2. Flap drive motors — Checked.
3. Wing flap asymm shutoff valve — Checked.
4. Hydraulic lines and fittings — Checked.
5. Electrical cables — Checked.
6. Evidence of fuel vapors/leaks — Checked.
7. General condition of area — Checked.
8. Portable fire extinguisher — Checked.

**Aft Baggage Compartment.**

1. Evidence of fuel vapor/leaks — Checked.
2. Auxiliary vent exit — Checked.
3. General condition of area — Checked.
4. Portable fire extinguisher — Checked.

**Aft Cabin Area.**

1. Escape rope — Attached and stowed.
2. Night lights — Operation checked.
3. Rear main entrance door — Checked.
4. Cargo door control hyd by-pass valve — OPEN.
5. Portable oxygen bottle — Checked.
6. Portable fire extinguisher — Checked.
7. Fire axe — Stowed.
8. Ladder — Condition and stowed.
9. General condition of area — Checked.

**Tail Cone Area.**

1. Emergency cabin pressure valve — Checked.
2. Cabin negative pressure relief valve — Checked.
3. Flare chutes — Checked.
4. Auxiliary booster accumulator — Checked.
5. Servos and controls — Checked.
6. Hydraulic lines and fittings — Checked.
7. AFT bulkhead door — Checked.

**BEFORE STARTING ENGINES.**

1. Ckt bkr & switches — SET.
2. Ground power — LT & CART SWITCH ON.
3. Bat. voltage — \_\_\_\_\_ VOLTS (return sel to BUS).
4. Generators — ON.
5. No. 1 inst inverter — MAIN.
6. No. 2 inst inverter (EC-121D) — OFF.
7. Flt inst power — EMERGENCY, THEN NORMAL.
8. Prop. & carb deicers — OFF.
9. Carb alt fuel — NORMAL.
10. Tank 5 & crossfeeds — CLOSED.
11. Emer shutoffs — ALL ON.
12. Vacuum shutoffs — OPEN.
13. Cowl flaps — OPEN.
14. Oil cooler flaps — AS REQUIRED.
15. Alt air — RAM.

16. Carb air — COLD.
17. Master eng sel — ENG 1 OR ENG 2.
18. Man. spark — RETARD.
19. Master prop. lever — FULL INC RPM.
20. Eng superchargers — LOW & LOCKED IN DETENT.
21. Fuel tanks — ON (takeoff tanks).
22. Mixture levers — OFF.
23. Auxiliary fuel pumps — OFF.
24. Hyd reservoirs & reserve fluid — FULL & CHECKED.
25. Eng oil & reserve — CHECKED.
26. Deicer fluid — CHECKED.
27. Fuel quantity — CHECKED.
28. HYD crossover — NORMAL.
29. Air conditioning — POS A & PANEL SET.
30. TOLD — PASS TO PILOT.
31. Engineer's Before Starting Engines checklist — COMPLETED.

**STARTING ENGINES.**

- ① Start engines — STARTING ENGINES.
2. Area — CLEAR.
3. Start No. 3 eng — START.
4. Fuel pumps — OFF.
- ⑤ Crossover oper — CHECKED.
6. No. 4 eng — START.
7. Eng No. 3 & 4 — 1200 RPM.
8. Bat. — ON.
9. Cart — OFF.
10. External pwr & gear pins — REMOVED.
11. Eng No. 2 & No. 1 — START.
12. Starter sel — OFF.
- ⑬ Fire warning system — CHECKED.
- ⑭ Engineer's Starting Engines checklist — COMPLETED.

**Idle Mixture Check**

- 1 Set throttle to 900 RPM.
- 2 CHT 150°C minimum.
- 3 Mixture auto rich.
- 4 Engine primer - correct mixture will  
increase of approximately 60 RPM TO DISC IN MAN.

**BEFORE TAXI.**

1. Ignition analyzer — ON.
2. Carb deicers — CHECKED.
3. Carb air — CHECKED & COLD.
4. Eng instruments — NORMAL.
5. Oil tank heaters — ON.
6. Mech ICS — OFF.
- ⑦ Gear pins, pitot covers & ground crew headset — ABOARD.
8. Recirculating fans — ON.
- ⑨ Engineer's Before Taxi checklist — COMPLETED.

**TAXI.**

1. Air conditioning — CHECKED & SET.
2. Nesa — SPARE INVERTER.
3. No. 2 inverter (EC-121D) — ON.
- ④ Engineer's Taxi checklist — COMPLETED TO PROP. REVERSING.
- ⑤ Prop. reversing — CHECKED.

**ENGINE RUNUP.**

1. Props. — CHECKED.
2. Auto feathering — CHECKED.
3. Alt fuel — CHECKED.
4. Fuel inlet screen deicing sys — CHECKED.
5. Man. spark — CHECKED & RETARD.
6. Eng superchargers — CHECKED & LOW.
- ⑦ Magnetos — CHECKED.
8. Generators — CHECKED & ON.
- ⑨ Engineer's Runup checklist — COMPLETED.

**BEFORE TAKEOFF.**

1. Door warn. lt — LIGHTS OUT.
2. Alternate air — RAM.
3. Carb air — COLD.
4. Auto feathering — AS REQUIRED.
5. Seat belt & seat — SET & LOCKED.
6. Oil cooler flaps — SET (normally 40%).
- ⑦ Engineer's Before Takeoff checklist — COMPLETED.

**LINEUP.**

1. Press & temps — NORMAL.
2. Air conditioning panel — SET.
3. Recirculating fans — OFF.
- ④ Prop. controls — FULL INCREASE.
- ⑤ Aux fuel pumps (takeoff tanks) — HIGH.
- ⑥ Mixtures — AUTO RICH.
- ⑦ Engineer's Line-up checklist — COMPLETED.

**TAKEOFF.**

- ① Cowl flaps — SET (30%).
- ② Max power — SET.
- ③ Moto power — SET.

**AFTER TAKEOFF.**

- ① Aux fuel pumps — LOW.
2. Auto feathering — OFF.
3. Press. & temps — CHECKED.
4. Air conditioning — CHECKED.
5. Recirculating fans — ON.
6. Overwing check — COMPLETED.
7. Nesa — ALTERNATOR (UP).
8. Cabin altitude — AS REQUIRED.
- ⑨ Engineer's After Takeoff checklist — COMPLETED.

**INTERMEDIATE CLIMB.**

1. Mixtures — AUTO RICH.
2. Man. spark — RETARD.
3. Climb power — SET.
4. Cowl & oil cooler flaps — SET.
5. Cabin altitude — AS REQUIRED.
- ⑥ Engineer's Intermediate Climb checklist — COMPLETED.

**CRUISE.**

1. Cowl flaps — SET.
2. Oil cooler flaps — SET.
3. Man. spark — AS REQUIRED.
4. Mixtures — 10% LEAN.
5. Fuel tanks — As desired.

**DESCENT.**

1. Fuel tanks — LANDING TANKS ON.
2. Tank 5 & crossfeeds — CLOSED.
3. Carb alt fuel — NORMAL.
4. Cowl & oil cooler flaps — SET.
5. Carb alt air — SET.
6. Carb air — SET.
7. Man. spark — RETARD.
8. Eng superchargers — LOW.
9. Cabin altitude — SET FOR LANDING.
- ⑩ Seat belt & seat — ADJUSTED & LOCKED.
- ⑪ Engineer's Descent checklist — COMPLETED TO MIXTURES.
- ⑫ Mixtures — AUTO RICH.
- ⑬ Crossover — AS REQUIRED.
- ⑭ RPM 2400 — RPM 2400 SET.
- ⑮ Landing wt. — \_\_\_\_\_ LB.

**BEFORE LANDING.**

- ① RPM 2600 — RPM 2600 SET.
2. Aux fuel pumps — HIGH (landing tanks).
3. Cowl and oil cooler flaps — SET.
4. Prop. ckt bkrs — CHECKED.
5. Air conditioning panel — SET.
- ⑥ Engineer's Before Landing checklist — COMPLETED.



**AFTER LANDING.**

1. Props. — CHECKED, FULL INCREASE.
2. Cowl & oil cooler flaps — CHECKED, OPEN.
3. Fuel pumps — CHECKED, OFF.
4. Nesa — OFF.
- ⑤ Engineer's After Landing checklist — COMPLETED.

**ENGINE SHUT DOWN.**

1. Magneto ground — CHECKED.
- ② Mixtures — OFF.
3. Unnecessary switches — OFF.
4. Gear pins & pitot covers — INSTALLED.
- ⑤ Engineer's Engine Shutdown checklist — COMPLETED.

**BEFORE LEAVING THE AIRCRAFT.**

1. Post flt walk-around — COMPLETED.
2. Carb air — AS REQUIRED.
3. Cowl and oil cooler flaps — AS REQUIRED.
4. Battery — OFF.
5. Night It — OFF.
6. Doors — CLOSED.

**ALERT PROCEDURES.****ENGINE WARMUP.**

- ① Landing gear pins, pitot covers and ground crew headset — ABOARD.
2. Mechanic's (ICS) switch — OFF.
3. Ignition analyzer switch — ON.
4. Carburetor deicer (switches ON until RPM drops. Do not exceed 10 seconds, then OFF.) — CHECKED.
5. Alternate fuel — CHECKED.
6. Fuel inlet screen deicing system — CHECKED.
7. Carburetor air — CHECKED & COLD.
8. Engine instruments — NORMAL.
9. Air conditioning — CHECK AND SET.
- ⑩ Propeller reversing — CHECKED.
11. Propeller and ignition system — CHECKED.
12. Manual spark — CHECKED AND RETARD.
- ⑬ Engineer's warmup — COMPLETED.

**ENGINE SHUTDOWN.**

- ① Ground power — REINSTALLED.
- ② Mixture levers — OFF.
3. Landing gear pins — REINSTALLED.
- ④ Engineer's Engine Shutdown checklist — COMPLETED.

**PRE-STARTING ENGINES.**

1. Nesa power switch — SPARE INVERTER.
2. Engine start selector switch — SET TO NR 3 ENGINE.
3. Nr 2 inverter (EC-121D) — ON.
4. Ignition analyzer condition switch — SET TO NR 3 ENGINE.
5. Alternate air switches — RAM.
6. Carburetor air switches — COLD.
7. Oil cooler flaps — CLOSED.
8. Mixture levers (Off on hot engine) — AUTO RICH.
9. Master propeller lever — FULL INC RPM.
10. Auxiliary fuel pump switches (takeoff tanks) — HIGH.
11. Oil tank heaters — ON.

**STARTING ENGINES.**

- ① Start engines — STARTING ENGINES.
2. Area — CLEAR.
3. Start Nr 3 engine — START.
4. Ignition analyzer — ON.
5. Nr 4 engine — START.
6. Engines Nr 3 & 4 — 1200 RPM.
7. Battery switch — ON.
8. Cart switch — OFF.
9. External power and landing gear pins — REMOVED.
10. Engines Nr 2 & 1 — START.
11. Starter selector — OFF.
- ② Engineer's Starting Engines checklist — COMPLETED.

**BEFORE TAXI.**

- ① Landing gear pins, pitot covers and ground crew headset — ABOARD.
- ② Engineer's Before Taxi checklist — COMPLETED.

**BEFORE TAKEOFF AND LINEUP.**

1. Door warning lights — LIGHTS OUT.
2. Seat belt and seat, check pilot's seat pins in place— SET AND LOCKED.
3. Engineer's Before Takeoff and Lineup checklist — COMPLETED.

**SECOND FLIGHT ENGINEER FLUSH DUTIES.**

1. Nose gear pin — REMOVED.

**WARNING**

Do not walk through propeller arc.

2. Left main gear pin — Removed.
3. Receive pin(s) — Board aircraft.
4. Rear entrance door — Closed.
5. Landing gear pins — Aboard.

**EMERGENCY PROCEDURES**

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THIS PAGE OF THE CHECK LIST WAS MARKED WITH TAPE BY THE ORIGINAL CREW MEMBER.

**Note**

Items in **BOLD PRINT** are critical action items and will be accomplished prior to reading the checklist. Critical action items are defined as those actions which must be performed immediately and instinctively if the emergency is not to be aggravated and injury or damage are to be avoided.

**ENGINE FAILURE (AND/OR FIRE).**

1. THROTTLE — CLOSED.
2. FEATHER BUTTON — PUSHED.
3. MIXTURE (INOP ENG) — OFF.
4. MIXTURES (OPER ENGS) — AUTO RICH.
5. EMER SHUTOFF (AT ZERO RPM) — FULL OFF.
6. ENG FIRE EXT — SET.
7. FIRE EXT — DISCHARGE (IF FIRE EXISTS).
8. COWL FLAPS — OPEN (FIRE), 10% (FAILURE).
9. FEATHER BUTTON — NEUTRAL.

10. Manual spark — RETARD.
11. Fuel tanks (oper eng) — TANK TO ENGINE.
12. Fuel tank (inop eng) — OFF.
13. Fuel pump — OFF.
14. Tank 5 & crossfeeds — CLOSED.
15. Prop. deicer — OFF.
16. Generator(s) — OFF.
17. Prop. — FULL DEC RPM.
18. Master eng sel — AS REQUIRED.
19. Oil cooler flap — 22%.
20. Cowl flap — 10% (if no fire).
21. Eng fire ext — OFF.
22. Tank 5 & crossfeeds — AS REQUIRED.
23. Emer shutoff (if no fire) — 3RD DETENT (oil on).
24. Ignition — OFF.
25. Engineer's Engine Failure checklist — COMPLETED.

**UNFEATHERING & RESTART DURING FLIGHT.**

1. Ignition — OFF.
2. Emer shutoff — ALL ON POSITION.
3. Airspeed — 140 - 155 KNOTS.
4. Throttle — CLOSED.
5. Fire ext sel — SET.
6. Eng supercharger — LOW.
7. Mixture — OFF.
8. Manual spark — RETARD.
9. Prop. — FULL DEC RPM.
10. Starter — ENGAGE.
11. Fuel tank — ON.
12. Fuel pump — LOW.
13. Ignition — BOTH.
14. Feather button — PULL INTERMITTENTLY.
15. Mixture (at 500 - 600 rpm) — AUTO RICH.
16. Generator — ON.
17. Cowl & oil cooler flaps — AS REQUIRED.
18. Fire ext sel — OFF.
19. Engineer's Unfeathering & Restart checklist — COMPLETED.

**RUNAWAY PROP. DURING TAKEOFF.**

1. PROP. — DEC RPM.
2. THROTTLE — AS REQUIRED.
3. FEATHER BUTTON — PUSHED.

**RUNAWAY PROP. IN FLIGHT.**

1. THROTTLE — RETARD.
2. PROP. — DEC RPM.
3. FEATHER BUTTON — PUSHED.

**INADVERTENT REVERSING IN FLIGHT.**

1. THROTTLE — CLOSED.
2. PROP. REVERSE CKT BKR — PULL OUT.
3. FEATHER BUTTON — PUSHED.

**ENGINE FIRE DURING START/GROUND OPERATION.**

1. DISCONT. PRIME/MIXTURE — OFF.
2. CONTINUE CRANK (fire during start), STOP CRANK (if fire continues).
3. EMER SHUTOFF LEVER (applicable engine) — OFF.
4. USE ACFT & EXTERNAL EXTINGUISHER.
5. All mixtures — OFF.
6. Fuel pump switches — OFF.
7. Battery or cont switch — OFF.

**CABIN &/OR ELECTRICAL FIRE.**

1. RECIRCULATING & FLT STA FANS — OFF.
2. FLT STA MIX. VALVE — COOL.
3. Aux vent. — POSITION B.
4. Fuel tank — TANK TO ENGINE.
5. Tank 5 & crossfeeds — CLOSED.
6. All emer shutoffs\*(inform pilot) — HYD OIL OFF.
7. Flt inst pwr. — EMERGENCY.
- ⑧ RPM — INC AS REQUIRED.
9. Battery — OFF.
- ⑩ All dc generators — OFF.
11. All generator ckt bkr — OFF.
12. Affected equip. — DISCONNECT AS REQUIRED.
13. Combat fire — AS REQUIRED.
- ⑭ Engineer's Cabin &/or Elec Fire checklist — COMPLETED.

**CABIN HEATER FIRE.**

1. CABIN HTR — OFF.
2. RECIRCULATION & FLT STA FANS — OFF.
3. FLT STA MIX. VALVE — COOL.
4. ENG FIRE SEL — OFF.
5. CABIN HTR FIRE SEL — SET.
6. FIRE EXT — DISCHARGE.

**After the Fire Is Out.**

7. Cabin htr fire sel — OFF.
- ⑧ Engineer's Cabin Htr Fire checklist — COMPLETED.

**SMOKE/FUME REMOVAL.**

1. Recirculating & flt sta fans — OFF.
2. Flt sta mix. valve — COOL.
3. Aux vent. — FULL OPEN, THEN POS A.
4. Cabin supercharger — DISCONNECT (if required).
- ⑤ Engineer's Smoke Removal checklist — COMPLETED.

**BRAKE FIRE.**

1. THROTTLES (except over burning wheel) — CLOSED.
2. MIXTURES (except eng over burning wheel which will be placed in RICH) — OFF (at pilot's command).

Upon arrival of fire-fighting equip:

- 3. Throttle (eng over burning wheel) — CLOSED.
- 4. Mixture (eng over burning wheel) — OFF.
- 5. Emer shutoff — FULL OFF.
- 6. Fuel sel — OFF.
- 7. CO<sub>2</sub> eng fire sel — SET.
- ⑧ HRD/CO<sub>2</sub> — DISCHARGED.
- ⑨ Engineer's Brake Fire checklist — COMPLETED.

**EMERGENCY DESCENT.**

1. ENG SUPERCHARGER — LOW.
2. MIXTURES — AUTO RICH.
3. MANUAL SPARK — RETARD.
4. Props. — 2600 RPM.
5. Cowl & oil cooler flaps — 100% (flaps & gear down), AS REQ (clean descent).
6. Aux vent. — FULL OPEN, THEN POS A.
- ⑦ Engineer's Emer Descent checklist — COMPLETED.

**FUEL DUMPING.**

1. Cabin htrs — OFF.
2. Tank 5 & crossfeeds — CLOSED.
- ③ Start dump. — DUMP VALVE OPEN, THEN NEUTRAL.
4. Fuel pumps (6L & 6R) (EC-121D) — AS REQUIRED.
- ⑤ Stop dump. — DUMP VALVE CLOSED, THEN NEUTRAL.
6. Fuel pumps (6L & 6R) (EC-121D) — OFF.
- ⑦ Engineer's Fuel Dumping checklist — COMPLETED.

**EMERGENCY FUEL DUMPING.**

1. Accomplish steps No. 1 thru 4, of fuel dumping procedure.

After fuel dumping:

- ② Stop dump. procedure — DUMP VALVE CLOSED.
3. Fuel pumps (6L & 6R) (EC-121D) — OFF.
- ④ Engineer's Fuel Dumping checklist — COMPLETED.

**LOSS OF ALL GENERATORS.**

1. BATTERIES — OFF.
2. FLIGHT INSTRUMENTS — EMERGENCY.
3. Generators — OFF.
4. Deactivate non-essential dc — OFF.

**FAILURE OF PRIMARY HYD SYS IN FLIGHT.**

- ① EMER SHUTOFFS NO. 1 & NO. 2 — HYD OIL OFF.
2. Troubleshoot.
- ③ Crossover valve — OPEN.

**EMER CONTROL BOOST SHUTOFF.**

If unable to shift:

- ① EMER SHUTOFFS NO. 1 & NO. 2 — HYD OIL OFF.

**EMERGENCY WING FLAP EXTENSION.**

1. Emer shutoffs (No. 3 & 4) — HYD OIL OFF.
- ② Airspeed — 170 KNOTS OR LESS.
- ③ Flaps — 60 - 70%.
4. Flap motor by-pass — OPEN.
5. Flap handcrank — CRANK TO 60%.
6. Flaps — VISUALLY CHECKED.
7. Flap motor by-pass — CLOSED.
- ⑧ Flap lever — 60%.
9. Emer shutoff — AS REQUIRED.
- ⑩ Engineer's Emer Wing Flap Ext checklist — COMPLETED.

**EMERGENCY BRAKE FAILURE (GROUND OPERATION).**

1. MIXTURES — RICH.
- ② Hyd crossover — AS REQUIRED.



**DITCHING (DUTY FLIGHT ENGINEER).****Before Impact.**

1. Htrs & recirculating fans — OFF.
2. Dump fuel on pilot's order.
3. Cabin — DEPRESSURIZE (on pilot's order).
4. Ditch. valve handle & aux vent — PULLED, AUX VENT CLOSED.
5. Paddle switches — WARMER.
6. Survival equip. — DON.
7. Pass loose gear aft for jettisoning.
8. Unnecessary switches — OFF.
9. Emer ditching & night lights — ON.

**Ditching Imminent.**

1. HRD fire ext selectors — OPEN.
2. Battery — OFF.
3. Turn seat aft, install headrest (if applicable) & fasten safety belt.
4. Brace for impact.

**After Impact.**

1. Eng HRD fire ext — DISCHARGE.
2. Seat full fwd on track. Take flashlight, dinghy & evac acft.

**Exit.**

1. Use right emer exit.

**CRASH LANDING (DUTY FLIGHT ENGINEER).****Before Impact.**

1. Htrs & recirculating fans — OFF.
2. Dump fuel on pilot's order.
3. Cabin — DEPRESSURIZE (pilot's order).
4. Survival equip. — DON.
5. Aux fuel pumps — OFF.
6. Fwd crew door — OPEN & LOCKED.
7. Emer & night lights — ON.

**Crash Landing Imminent.**

1. HRD fire ext selectors — OPEN.
2. Battery — OFF.
3. Turn seat aft, install headrest (if applicable) & fasten safety belt.
4. Brace for impact.

**After Impact.**

1. Mixtures — OFF.
2. Fuel tanks — OFF.
3. All elec pwr (generators) — OFF.
4. Eng HRD fire ext — DISCHARGE.
5. Seat full fwd on track. Take flashlight, axe & evac acft.

**Exit.**

1. Use nearest available exit.

**BAILOUT (DUTY FLIGHT ENGINEER)**

1. Execute specific order from pilot.
2. Cabin — DEPRESSURIZE (pilot's order).
3. Push seat forward.
4. Parachute & survival equip. — DON.
5. Remain at station.
6. Bailout signal — BAIL OUT REAR EXIT.

**Exit.**

1. Use rear entrance door.

**DITCHING (OFF-DUTY FLIGHT ENGINEER).**

**Before Impact.**

1. Assist duty engineer as necessary.
2. Survival equip. — DON.
3. Loose equip. — STOW.

**Ditching Imminent.**

1. Ditching position — (EC-121D) STATION 4 / (TC-121C) STATION 11.
2. Brace for impact.

**After Impact.**

1. (EC-121D) Take flashlight, dinghy, additional equip. & evacuate acft.  
(TC-121C) Take flashlight, additional equip., supervise & assist launching & loading cabin raft on left side, & evacuate acft.

**Exit.**

1. (EC-121D) Use right emer exit.  
(TC-121C) Use rear entrance door.

**CRASH LANDING (OFF-DUTY FLT ENGR).**

**Before Impact.**

1. Assist duty engineer as necessary.
2. Survival equip. — DON.
3. Loose equip. — STOW.

**Crash Landing Imminent.**

1. Rear entrance door — LASH OPEN.
2. Crash landing position — (EC-121D) STATION 4 / (TC-121C) STATION 11.
3. Brace for impact.

**After Impact.**

1. (EC-121D) Take flashlight, additional equip. & evacuate acft.  
(TC-121C) Take flashlight, additional equip., supervise & assist passengers & evacuate acft.

**Exit.**

1. (EC-121D) Use nearest emer exit.  
(TC-121C) Use rear entrance door.

**BAILOUT (OFF-DUTY FLIGHT ENGINEER).**

1. Assist preparing acft for bailout.
2. Parachute & survival equip. — DON.
3. Remain at assigned position.
4. Bailout signal — BAIL OUT REAR EXIT.

**Exit.**

1. Use rear entrance door.

**ENGINE OPERATION AND SPECIFIC PERFORMANCE CHECKS**

**SPARK PLUG CLEAN-OUT PROCEDURES**

1. Low RPM Procedure
  - A. Throttle levers - 1000 RPM
  - B. Mixture levers - Lean to 25 RPM below the idle best power. Maintain this setting for 5 minutes, then recheck for plug fouling.
2. 150 BMEP Burn-Out Procedure
  - A. Cowl flaps - Open
  - B. Mixture levers - Auto Rich
  - C. Propeller switches - Full Inc RPM
  - D. Throttle levers - As required for 150 BMEP.

**NOTE: DO NOT USE ALCOHOL.**

Operate the engine at this power one minute for each 15 minutes of ground operation. Maintain CHT at 200°C or below if possible but do not exceed 260°C.

3. Progressive Power Clean-Out Procedure
  - A. Mixture levers - Auto Rich
  - B. Propeller switches - Full Inc RPM
  - C. Throttle levers - 1600 RPMFrom 1600 RPM increase power in 200 RPM increments and allow instruments to stabilize. Check for fouled plugs with analyzer. When fouled plugs are detected reduce power until plug begins to fire. Allow plug to fire for 15 seconds and then increase 200 RPM to next power.

4. Fouled Out Cylinder, Plug Clean-Out Procedure

- A. Mixture levers - Auto Rich
- B. Throttle levers - MAP Barometric
- C. Prime - On
- D. Throttle - Gradually open to 2600 RPM while holding prime on.
- E. Prime - Release when analyzer shows any activity on either pattern and reduce power to barometric.
- F. Recheck all plugs at 150 BMEP.

NOTE!  
If one minute of operation at 2600 RPM with prime does not restore cylinder, shut down the engine and return to ramp for these plugs to be replaced.

5. In Flight Plug Clean-Out Procedure

- A. Move mixture to Auto Rich
- B. Advance power slowly (1" Hg MAP per 5 sec) to 1540 BHP
- C. As soon as analyzer pattern indicates optimum plug firing - Return to cruise power and manually lean engine.

FUEL SYSTEM CHECKS

1. Primer check (in flight)

- A. Note Fuel flow, MAP and BMEP at 10% lean power setting
- B. Hold prime and release to 10% with same fuel flow.
- C. Note new BMEP - If higher than before there is trouble with the fuel injection system.
- D. While holding prime place mixture to auto Rich and release prime.

6. Primer Check (on the ground)

- A. Warm engine to 150°C CHT
- B. Propeller switches - Full Inc RPM
- C. Mixture levers - Auto Rich
- D. Throttle levers - 1200 RPM
- E. Hold steady prime on and move mixture to off
- F. Adjust throttle to highest RPM and lowest MAP
- G. Record exact RPM and fuel flow
- H. Move mixture to auto-lean and release primer.
- I. Using only the mixture control set the same fuel flow
- J. Check the RPM. If it is the same or within 25 of step G engine is O K.

ENGINE MALFUNCTION ANALYSIS

When a spread of over 100 RPM on symmetrical engines is encountered at field barometric pressure, the following procedures will be initiated to determine the cause.

- A. Warm engines until normal temperatures are reached.
  - B. Aircraft must be headed into the wind
- NOTE! If the aircraft is not headed into the wind, unstable readings and possible RPM spread may be encountered.
- C. Perform standard magneto check noting RPM, BMEP and fuel flow. A drop of 100 RPM while operating on one magneto is permissible, provided no engine roughness is encountered.
  - B. If ignition system is satisfactory, a cruise power performance check will be made.

- . Cruise power performance check
1. Mixture levers - Auto Rich
  2. Propeller switches - Full Inc RPM
  3. Master spark control switch - Retard
  4. Throttle levers - Advance to 2200 RPM for symmetrical engines
  5. Propeller switches - Toggle to 2100 RPM
  6. Throttle levers - Advance to obtain 169 BMEP
  7. Mixture levers - Manually lean to best power and reset throttle to 169 BMEP

**NOTE:** If the BMEP increase between Auto Rich and best power is more than 3 BMEP, the master control is metering too rich. If no increase occurs place the mixture lever in Auto Rich, engage the primer intermittently and if any increase of BMEP occurs the master control is metering too lean. If master control is metering too lean, corrective action is required.

8. Mixture levers - Continue leaning to 152 BMEP
9. Throttle levers - Advance to obtain 169 BMEP

**NOTE:** Under normal conditions, with either best power or at 10% lean, all engines should be within 2"Hg MAP, or 5 BMEP. If these limits are exceeded, specific performance checks should be made. Suitable allowances should be made in above checks for accessory power variations.

10. Check for engine instability.
- If the above check is satisfactory, check RPM, MAP and BMEP at max power.

**NOTE:** Once the propeller is of the low-pitch stop, the governor will maintain proper blade pitch.

(4)

PAGE 2

#### MAGNETO AND BREAKER POINTS CHECK

AFTER STARTING, WARM UP ENGINE UNTIL THE CYLINDER HEAD TEMPERATURE IS 125°C OR MORE. WITH THE THROTTLES CLOSED, THE ENGINE'S SHOULD IDLE AT APPROXIMATELY 600 RPM.

MOVE THE MIXTURE CONTROL INTO IDLE-CUT-OFF, AND THEN WHEN THE ENGINE SLOWS DOWN TO 300 RPM, MOVE THE MIXTURE CONTROL BACK TO AUTO RICH.

THE ENGINE SHOULD RETURN SMOOTHLY TO 600 RPM. MAKE THIS CHECK WITH THE IGNITION SWITCH ON RIGHT (R) AND THEN ON LEFT (L).

THE ENGINE SHOULD BE CAPABLE OF PERFORMING THIS TEST ON EITHER SIDE OF THE IGNITION SWITCH, IF THE MAGNETS AND BREAKER POINTS ARE IN GOOD CONDITIONS. THIS TEST SHOULD NOT BE MADE UNTIL THE ENGINE IS WARMED-UP AND THE TEMPERATURES ARE STABILIZED.

#### INJECTION PUMP SYNCHRONIZATION CHECK GROUND

1. GROUND CHECK
 

a. CHT	MINIMUM 150°C
b. THROTTLES	SET 1200 RPM
c. MIXTURES	LEAN TO LOWEST RPM AT WHICH ENGINE WILL RUN.

**LIMIT:** GOOD ENGINE WILL STOP AT APPROX. 600 RPM  
POOR ENGINE WILL GO AS LOW AS 300 RPM.

2. IN FLIGHT CHECK
 

a. ALTERNATE AIR SW	RAM
b. CHT SPREAD (A&B)	CHECK AND RECORD

1. THE FOLLOWING CONSTITUTES THE LIMIT OF ALLOWABLE CHT SPREAD FOR BOTH LOW AND HIGH BLENDER OPERATION.

LOW BLEED: AN EXCESSIVE HEAT NOW HIGH PAGE 3  
CONDITION EXISTS WHEN THE "A" NOW CNT IS MORE  
THAN 20° C HOTTER THAN THE "B" NOW WHEN OPERATED  
AT 10% LEAN MIXTURE ACCOMPANIED BY A SHIFT OF THE  
HOT HEAD TO THE "B" NOW WHEN THE ENGINE IS  
OPERATED IN AUTO-RICH.

FRONT NOW HIGH CONDITION EXISTS WHEN THE "B"  
NOW CNT IS MORE THAN 15° C HOTTER THAN THE "A"  
NOW CNT WHEN OPERATING AT 10% LEAN ACCOMPANIED  
BY A SHIFT OF THE HOT HEAD TO THE "A" NOW IN  
RICH.

HIGH BLEED: AN EXCESSIVE HEAT NOW HIGH CONDITION  
EXISTS WHEN THE "A" NOW CNT IS MORE THAN 25° C HOT-  
TER THAN THE "B" NOW CNT WHEN OPERATED AT 10%  
LEAN ACCOMPANIED BY A SHIFT OF THE HOT HEAD TO  
"B" IN RICH.

AN EXCESSIVE FRONT NOW HIGH CONDITION EXISTS  
WHEN THE "B" NOW CNT IS MORE THAN 10° C HOTTER  
THAN THE "A" NOW CNT WHEN OPERATED AT 10% LEAN  
MIXTURE ACCOMPANIED BY A SHIFT OF THE HOT HEAD  
TO THE "A" NOW WHEN THE ENGINE IS OPERATED IN  
AUTO RICH.

NOTE: INJECTION PUMP SYNCHRONIZATION CHECK  
SHOULD BE MADE ABOVE 1800 RHP IN LOW BLEED  
AND 1700 RHP IN HIGH BLEED WITH 24" AIR AND  
SPARE IN ADVANCE. (ONT GRAPH)

THE FOLLOWING IS TO BE USED AS A GUIDE IN THE  
ACCOMPLISHMENT OF THE PREFLIGHT CHECK AS  
OUTLINED IN T. O. 1C-121(B)D-1.

5. BATTERY CONDITION CHECK

- A. Battery switch -- OFF
- B. External power switch -- OFF
- C. Elevator and rudder auxiliary boost --  
NORMAL ON

NOTE! BATTERY VOLTAGE SHOULD REACH THE MAXIMUM  
DROP IN APPROXIMATELY 3 SECONDS.

- D. External power switch -- ON

NOTE! BATTERY VOLTAGE SHOULD INCREASE TO  
APPROXIMATELY 24 VOLTS.

- E. Elevator and rudder auxiliary boost  
switches -- EMERGENCY ON THEN OFF

6. BATTERY RELAY CHECK

- A. Battery switch -- ON

NOTE! WHEN BATTERY SWITCH IS ON, AND EXTERNAL  
POWER SWITCH IS ON, BATTERY VOLTAGE  
SHOULD READ APPROXIMATELY THE SAME AS  
BUS VOLTAGE. A MINIMUM OF 18 VOLTS IS  
REQUIRED TO CLOSE THE BATTERY RELAY.

- B. Battery switch -- OFF

CAUTION! ENSURE BATTERY RELAY OPENS BY A DROP  
IN BATTERY VOLTAGE.

7. INVERTER SYSTEM CHECK

- A. # 1 Instrument inverter on main --  
CHECK FREQUENCY AND VOLTAGE
- B. # 2 Instrument inverter on main --  
CHECK VOLTAGE
- C. NESA power switch on spare -- CHECK  
VOLTAGE
- D. # 1 Instrument inverter on spare --  
CHECK LIGHTS, FREQUENCY AND VOLTAGE

- E. # 2 Instrument inverter on spare -- CHECK "O" VOLTS AND # 2 DEAD BUS
- F. # 1 Instrument inverter on main -- CHECK FOR PROPER INDICATIONS (# 2 SHOULD GO TO SPARE)
- G. # 2 Instrument inverter on main -- CHECK FOR PROPER INDICATIONS (NORMAL OPERATION)
- H. NESA Power switch -- OFF
- I. Emergency flight instrument inverter on emergency -- CHECK FREQUENCY THEN NORMAL

**NOTE!** IF THE ATTITUDE GYRO INDICATOR FLAGS ARE NOT CHECKED AT THIS TIME THEY WILL BE CHECKED DURING THE BEFORE STARTING ENGINE CHECK LIST.

17. CONTROL SURFACE CHECK with boosters on

- A. Climbing left turn
  - 1. Second engineer checks
    - a. Surface control position -- CLIMBING LEFT TURN
    - b. Wing tip and tail lights on flash
    - c. Wheel well, leading edge and position lights -- ON
- B. Descending right turn
  - 1. Second engineer checks
    - a. Surface control position DESCENDING RIGHT TURN
    - b. Wing tip and tail light -- ON STEADY

**WARNING!** CLEAR AREA AROUND TAIL OF AIRCRAFT, AND MAKE SURE TAIL CONE IS CLEAR OF PERSONNEL BEFORE OPERATING ELEVATOR AND RUDDER.

*Range of operation*

Max. temp. of fuel	115 Knots
Max. temp. of oil	115 Knots
At 15000 feet or below	385 Knots
At 20000 feet	370 Knots
At 25000 feet	340 Knots
Landing gear extended	165 Knots
Flaps extended	190 Knots
60%	175 Knots
80%	175 Knots
100%	155 Knots
Landing lights extended	165 Knots
Max. fuel dumping	190 Knots
Open escape hatches	175 Knots
Instruments penetration	60 Knots

*above stall sp.*

*Alternate method*

- a. prop. at full desc. RPM
- b. throttle open to approximately 1500 RPM

**Note**  
obtain approximately 1500 RPM and reduce throttle opening while prop. goes through flat pitch.

- a. prop. at 5MC. RPM after prop. comes out of severe temp.

Fuel Burned GAL.	Time	Tanks	MAX. DIFFERENTIAL FLT or Landing	Takeoff	Procedure
5000	11:00				
5800	13:00	2A+3A 1 <sub>or</sub> 4	3,390# (565 Gal.)	1200 <sup>m</sup> (200 Gal.)	180 GPH (by out to exceed
5900	13:15	1 <sub>or</sub> 4	5,400# (900 Gal.)	1800 <sup>m</sup> (300 Gal.)	220 GPH will
6000	13:30	2 <sub>or</sub> 3	4,740# (790 Gal.)	4700 <sup>m</sup> (790 Gal.)	Reduce Thr. Fuel
6100	13:45	2 <sub>or</sub> 3 5000 <sup>lb</sup>	2700 <sup>m</sup> (450 Gal.)	1200 <sup>m</sup>	load at 5000 lb. min.
6200	14:00	2B+3B	300 <sup>m</sup> (50 Gal.)	200 Gal.	
6300	14:15		MAX. Fuel in 2B+3B For Landing		
6400	14:30		Thr. 125,000 lb. 300 Gal. B.		
6500	14:45		Thr. 115,000 lb. 300 Gal. B.		
6600	15:00		Tanks		
6700	15:15		(1) - Max. Dumping		
6800	15:30		(2) - Dumping at 1000 Miles/Sydney		
6900	15:45		(3) - Dumping 1000 Miles/Sydney		
7000	15:45		(4) - Aborting For This Melbourne		
7100	16:00				
7200	16:15				
7300	16:30				
7400	16:45				

Fuel Burned GAL.	Time	Tanks	MAX. DIFFERENTIAL FLT or Landing	Takeoff	Procedure
7500	17:00				
7600	17:15				
7700	17:30				
7800	17:45				
7900	18:00				
8000	18:15				
8100	18:30				
8200	18:45				
8300	19:00				
8400	19:15				
8500	19:30				
8600	19:45				
8700	20:00				
8800	20:15				
8900	20:30				
9000	20:45				
9100	21:00				
9200	21:15				
9300	21:30				
9400	21:45				
9500	22:00				
9600	22:15				
9700	22:30				
9800	22:45				
9900	23:00				
10000	23:15				

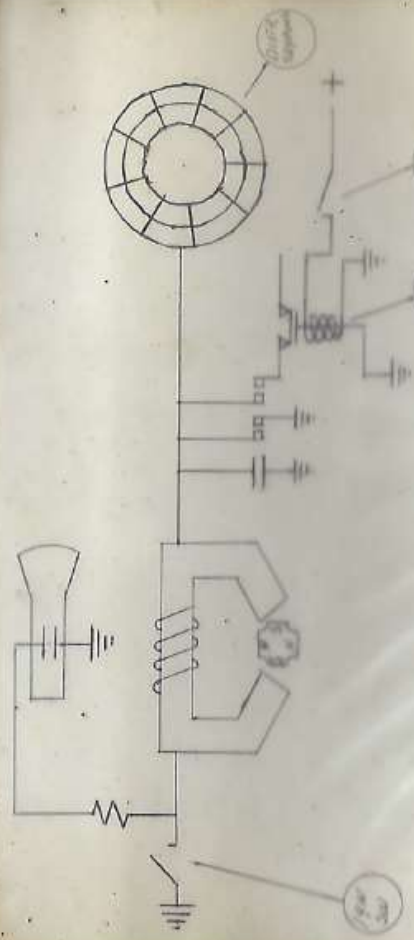
Fuel Burned GAL.	Time	Tanks	MAX. DIFFERENTIAL FLT or Landing	Takeoff	Procedure
10100	23:30				
10200	23:45				
10300	24:00				
10400	24:15				
10500	24:30				
10600	24:45				
10700	25:00				
10800	25:15				
10900	25:30				
11000	25:45				
11100	26:00				
11200	26:15				
11300	26:30				
11400	26:45				
11500	27:00				
11600	27:15				
11700	27:30				
11800	27:45				
11900	28:00				
12000	28:15				
12100	28:30				
12200	28:45				
12300	29:00				
12400	29:15				
12500	29:30				
12600	29:45				
12700	30:00				
12800	30:15				
12900	30:30				
13000	30:45				
13100	31:00				
13200	31:15				
13300	31:30				
13400	31:45				
13500	32:00				
13600	32:15				
13700	32:30				
13800	32:45				
13900	33:00				
14000	33:15				
14100	33:30				
14200	33:45				
14300	34:00				
14400	34:15				
14500	34:30				
14600	34:45				
14700	35:00				
14800	35:15				
14900	35:30				
15000	35:45				

INTERCOMMUNICATIONS

Fuel Burned GAL.	Time	Tanks	MAX. DIFFERENTIAL FLT or Landing	Takeoff	Procedure
15100	36:00				
15200	36:15				
15300	36:30				
15400	36:45				
15500	37:00				
15600	37:15				
15700	37:30				
15800	37:45				
15900	38:00				
16000	38:15				
16100	38:30				
16200	38:45				
16300	39:00				
16400	39:15				
16500	39:30				
16600	39:45				
16700	40:00				
16800	40:15				
16900	40:30				
17000	40:45				
17100	41:00				
17200	41:15				
17300	41:30				
17400	41:45				
17500	42:00				
17600	42:15				
17700	42:30				
17800	42:45				
17900	43:00				
18000	43:15				
18100	43:30				
18200	43:45				
18300	44:00				
18400	44:15				
18500	44:30				
18600	44:45				
18700	45:00				
18800	45:15				
18900	45:30				
19000	45:45				
19100	46:00				
19200	46:15				
19300	46:30				
19400	46:45				
19500	47:00				
19600	47:15				
19700	47:30				
19800	47:45				
19900	48:00				
20000	48:15				

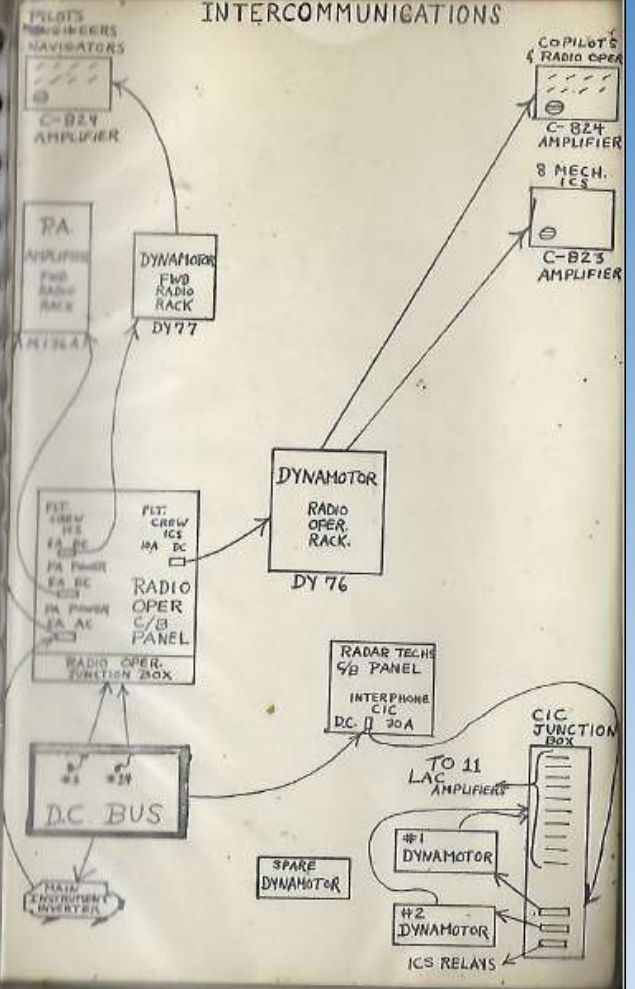
INTERCOMMUNICATIONS



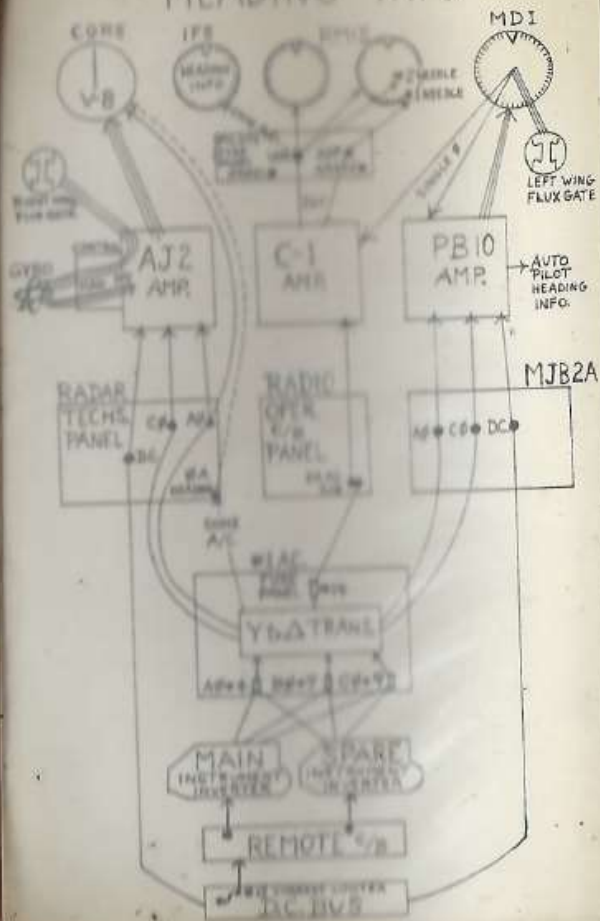


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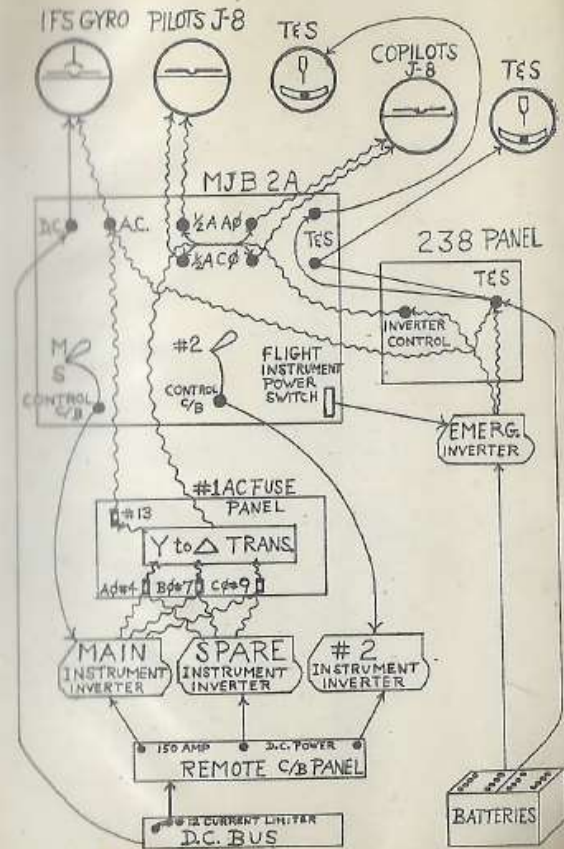
INTERCOMMUNICATIONS



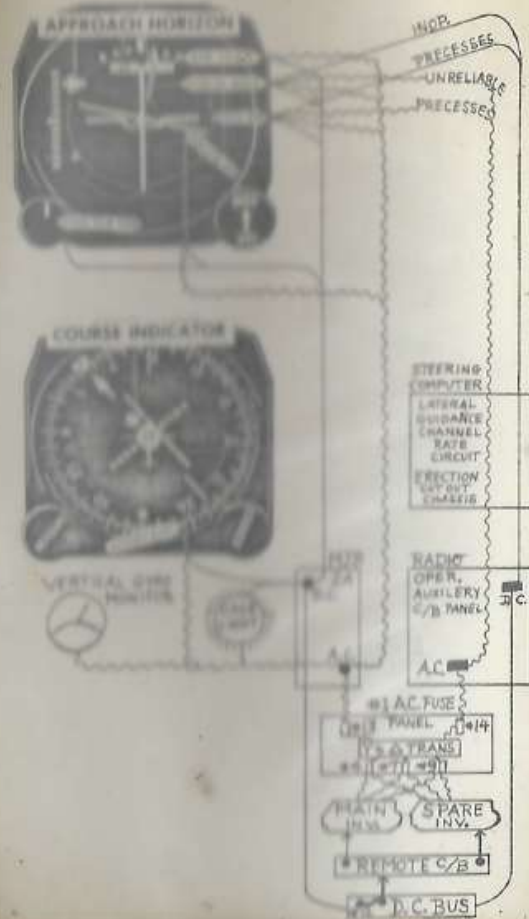
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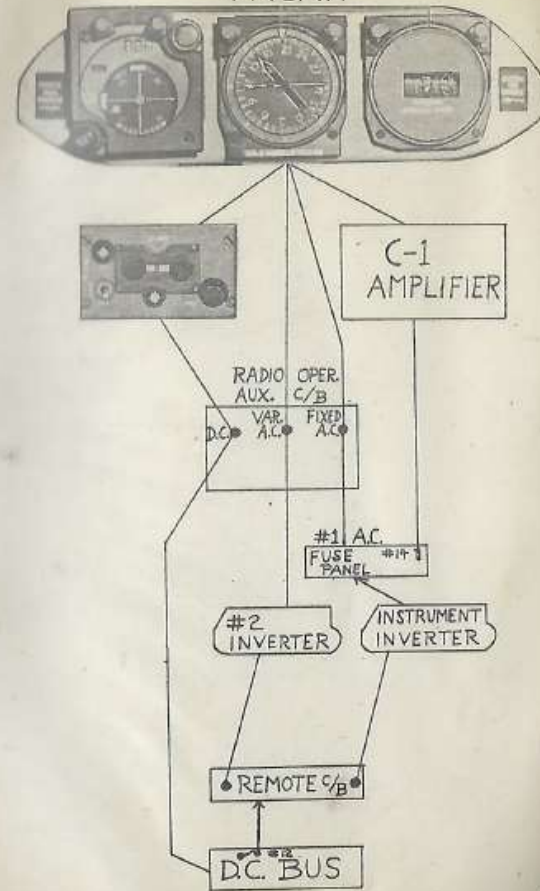
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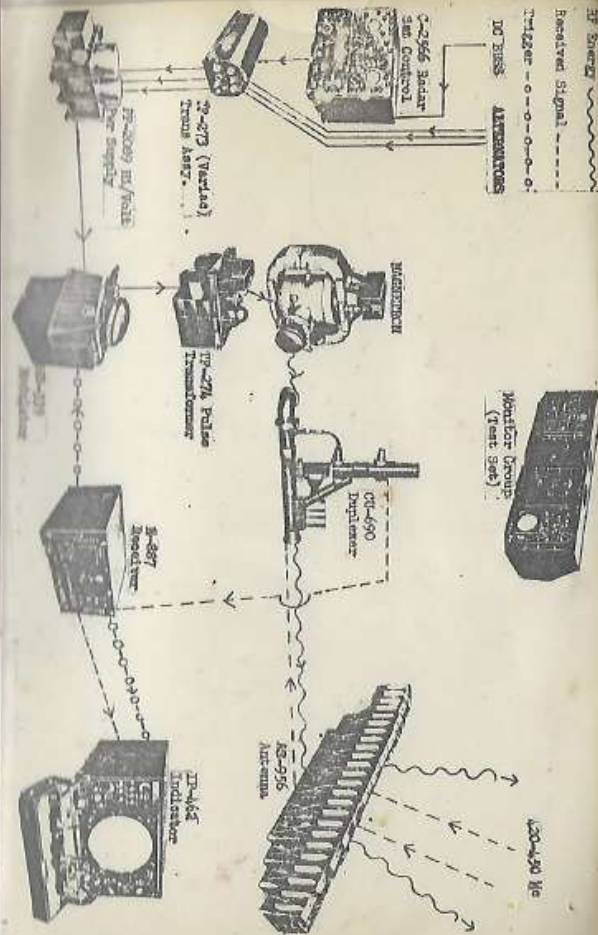
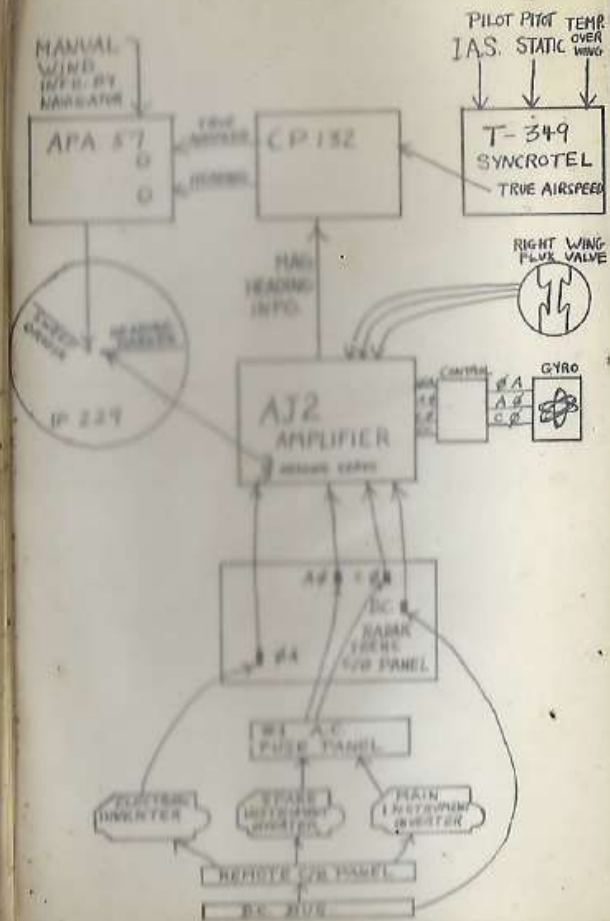
NO-121D. INTEGRATED FLIGHT SYSTEM



TACAN



# NAVIGATION EQUIPMENT



NAVIGATION EQUIPMENT

MONARCH

SIMULATED CHECK LIST - PILOTS & ENGINEERS

SIMULATE

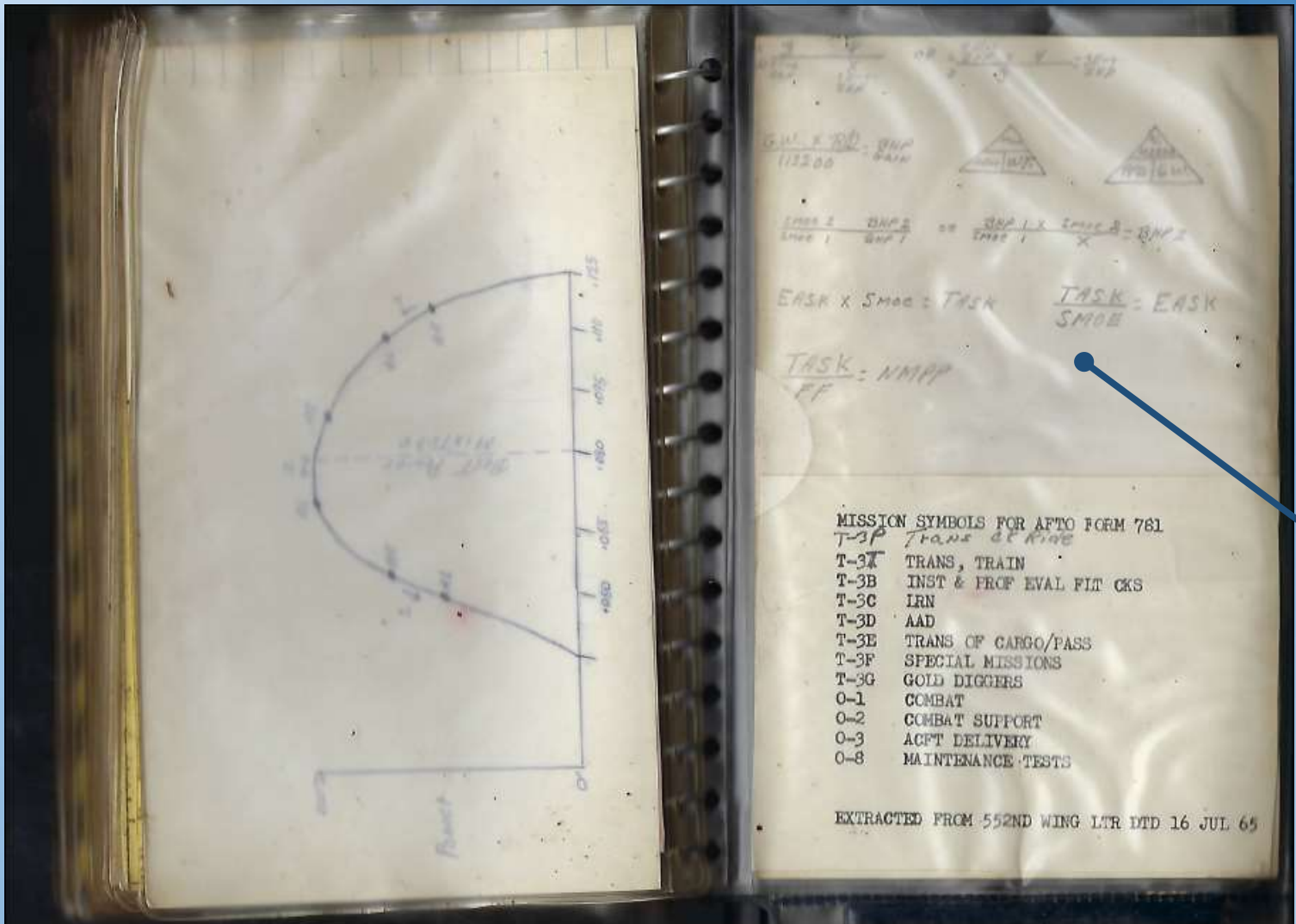
1. Loss of Power #1 1A. Overspeed #1 1B. Fire#1
  2. Loss of Power #2 2A. Overspeed #2 2B. Fire#2
  3. Loss of Power #3 3A. Overspeed #3 3B. Fire#3
  4. Loss of Power #4 4A. Overspeed #4 4B. Fire#4
- Simulate Feather 20" MAP - 3000 RPM
5. Inv. Failure - (Main & Spare) - Pull Inv. Cont G.B.
  6. Inv. Failure - (Main & Spare - Pull Inv. Power G.B.'s.
  7. Total AC Failure - Pull Inv. Cont. & Emer. Inv G.B.'s.
  8. IFS Failure - Pull Pilots IFS Fuse (MJB 2A)
  9. Gyro Hor. - Pull Pilots Gyro Hor. Fuse (MJB 2A)
  10. T&B Ind - Pull Pilots T&B Fuse (MJB 2A)
  11. T&B Ind - Pull T&B G.B. on 238 Panel
  12. PB-10 - Pull Pilots PB-10 G.B. (MJB 2A)
  13. ADF Ind - Pull ADF Fuse (Panel aft of Engr's seat).
  14. VOR - Pull VOR Fuse (Panel aft of Engr's seat)
  15. TACAN - Pull A38-21 Fuse (Panel aft of Engr's seat)
  16. ILS - Pull #2 Inv. Cont. G.B. (MJB 3)
  17. ILS - Pull VOR & ILS Glide Slope (Radio Table Leg)
  18. C-1 Ampl. - Pull G.B. (Radio Table Leg)
  19. Landing Gear Up-lock - Pull ld. gr. uplk G.B. (MJB 3)
  20. De-Icer Boot Failure - Pull De-Icer Timer (MJB 3)
  21. Sec. Hyd Failure - Pull #3 & 4 Overhead Shut-off (HYD OFF Position)
  22. Pri. Hyd. Failure - Pull #1 & 2 Overhead Shut-off (HYD OFF Position)
  23. Cabin Heater Fire - Simulate
  24. Cabin Elec. Fire - Simulate

1. Verify 20" MAP (sim)  
 2. Verify emergency engine start procedure  
 3. Verify #1 & 2 fuel pumps



SOI Valve  
 Required for  
 Pitch Movement  
 in Prod. Direction





THIS CLEAR PIECE OF PLASTIC WITH HASH MARKS WAS FOUND TUCKED INTO THIS LAST PAGE. OVER-ALL HEIGHT OF MARKINGS IS 63 MM FROM BOTTOM TO TOP WITH 1.5 MM BETWEEN EACH.

