TM 1-1520-248-CL

TECHNICAL MANUAL

OPERATOR'S AND CREWMEMBER'S

CHECKLIST

ARMY
OH-58D
HELICOPTER

This manual supersedes TM 1-1520-248-CL dated 30 APRIL 1999, including all changes, and TM 1-1520-248-CL CDS4 Supplement, dated 01 November 2000.

HEADQUARTERS
DEPARTMENT OF THE ARMY
15 NOVEMBER 2001

CHANGE NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *15 March 2002*

Operator's and Crewmember's

Checklist

Army OH-58D Helicopter

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

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Remove pages	Insert pages
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TM 1-1520-248-CL
C 2

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

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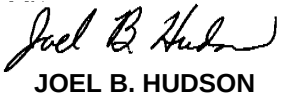

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0206501

DISTRIBUTION:

To be distributed in accordance with Initial Distribution No. (IDN) 311434 for TM 1-1520-248-CL.

CHANGE NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *31 December 2001*

Operator's and Crewmember's

Checklist

Army OH-58D Helicopter

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Remove pages	Insert pages
N-3 and N-4	N-3 and N-4
N-7 through N-10	N-7 through N-10
N-13 and N-14	N-13 and N-14
E-5 and E-6	E-5 and E-6
---	E-6.1/(E-6.2 blank)
E-17 and E-18	E-17 and E-18
---	E-18.1/(E-18.2 blank)
E-23 and E-24	E-23 and E-24
---	E-24.1/(E-24.2 blank)

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TM 1-1520-248-CL

By Order of the Secretary of the Army:

Official:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
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DISTRIBUTION:
To be distributed in accordance with Initial Distribution No. (IDN) 311434, requirements for TM 1-1520-248-CL.

GENERAL INFORMATION AND SCOPE

SCOPE. This checklist contains the checks to be accomplished during normal and emergency procedures, and performance.

GENERAL INFORMATION. The checklist consists of three parts: normal procedures, emergency procedures, and performance.

NOTE

This checklist does not replace the amplified version of the procedures in the operators manual (TM 1-1520-248-10), but is a condensed version of each procedure.

Normal Procedures Pages. The contents of the normal procedures of this manual are a condensation of the amplified checklist appearing in the normal procedures or crew duties portion of the applicable operators manual. A thru-flight checklist is provided in this section and consists of asterisked Thru-Flight items from Chapter 8 of the operators manual. In addition to thru-flight, this checklist may be used for combat/tactical operations when authorized by the commander.

Emergency Procedures Pages. The requirements of this section of the condensed checklist manual (CL) are identical to those for normal procedures, except that the information is drawn from the amplified checks in the emergency procedures portion of the operators manual. Emergency requirements are subdivided into 10 classifications as follows: engine; propeller/rotor (PROP or ROTOR); fire; fuel; electrical (ELECT); hydraulic (HYD); landing and ditching (LDG/DTCH); flight controls (FLT CONT); bail out or ejection (BAILOUT)(EJECT), if applicable; and mission equipment (MSN/EQPT), as applicable. Underlined items are steps that must be performed immediately, without reference to the checklist.

Performance Pages. This section consists of charts, tables, and checklists for use during preflight, takeoff, cruise, landing, and shutdown.

Symbols Preceding Numbered Steps.

* — Indicates performance of steps is mandatory for all thru-flights and combat/ tactical flights

(N) — Indicates performance of step is mandatory for night flights.

★ — Indicates a detailed procedure for this step is located in the performance section of the condensed checklist.

(I) — Indicates mandatory check for instrument flights.

(O) — Indicates if installed.

(4.) — Indicates duties which are normally the responsibility of the CPG.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS. You can help improve this manual. If you find any mistakes or if you know of a way to improve procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of the applicable Aircraft Operator's Manual direct to Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. A reply will be furnished to you.

ODC/HAZMAT STATEMENT.

HELICOPTER AND SYSTEMS

BEFORE EXTERIOR CHECK

WARNING

Do not preflight until armament systems are safe.

O* 1. Weapons systems — Safe.

* 2. LASER ARM/STBY/OFF switch — OFF.

3. Publications — Check as required.

* 4. Covers, locking devices, tiedowns, and grounding cables — Removed as required and secure.

5. Main rotor blades — Check.

* 6. Ignition keylock switch — On.

WARNING

- **(CDS2)** Weapons can be inadvertently fired while the aircraft is on the ground if the MASTER switch is in the ARMED position, electrical power is applied to the aircraft, and either the integrated System Processor (ISP) has failed or the ISP circuit breaker is pulled.
- R Weapons can be inadvertently fired while the aircraft is on the ground if the MASTER switch is in the ARMED position, electrical power is applied to the aircraft, and either the R MCPU has failed or the R MCPU circuit breaker is pulled.

7. Cockpit (power on) — Check.

8. Cockpit right side — Check.

EXTERIOR CHECK

FORWARD FUSELAGE — RIGHT SIDE

O 1. Crew door — Check.

2. Static port — Check.

CAUTION

Absence of lateral rocking motion about aft crosstube center mounting bolt could result in ground resonance and airframe structural damage.

3. Landing gear — Check.

4. Underside of fuselage — Check.

5. Fuel sample — Drain and check.

INTERMEDIATE FUSELAGE — RIGHT SIDE

★O* 1. Weapons system — Check.

2. UWP — Check.

CAUTION

Cargo shall not be placed in avionics compartment.

3. Avionics compartment — Check.

4. Fuel — Check, cap secure.

* 5. Hydraulic servos and flight controls — Check.

6. Transmission cowling — Check.

* 7. Transmission — Check.

O 8. Particle separator or engine barrier filter, if installed — Check.

* 9. Engine compartment — Check.

10. Fuselage — Check.

11. Oil tank — Check.

TAILBOOM — RIGHT SIDE

* 1. Tailboom — Check.

TAILBOOM — AFT

* 1. Tailboom — Check.

* 2. Tail rotor gearbox — Check.

* 3. Tail rotor — Check.

TAILBOOM — LEFT SIDE

* 1. Tailboom — Check.

INTERMEDIATE FUSELAGE — LEFT SIDE

1. Oil cooler fan exhaust — Check.

CAUTION

Prior to servicing engine oil, refer to procedures contained in TM 1-1520-248-10 to preclude over-servicing and damage or possible engine failure.

* 2. Engine oil level — Check.

3. Oil tank compartment — Check.

4. Fuselage — Check.

CAUTION

To prevent damage to electrical components all equipment placed in aft electrical compartment shall be clear of electrical components and properly secured.

5. Aft electrical compartment — Check.

* 6. Engine compartment — Check.

* 7. Transmission — Check.

O 8. Particle separator or engine barrier filter, if installed — Check.

* 9. Hydraulic reservoir — Check fluid level.

10. Transmission cowling — Check.

FUSELAGE — TOP

1. Engine exhaust — Check.

2. Anticollision light — Check.

3. Engine inlet plenum window — Check condition.

4. Hydraulic reservoir — Check.

5. Hydraulic servos and flight controls — Check.

6. Transmission oil filler — Check cap secure.

* 7. Swashplate and flight controls — Check.

* 8. Main rotor system — Check.

O* 9. MMS — Check.

FORWARD FUSELAGE — LEFT SIDE

CAUTION

Cargo shall not be placed in avionics compartment.

1. Avionics compartment — Check.
2. UWP — Check.

★O* 3. Weapons systems — Check.

4. Landing gear — Check.
5. Underside of fuselage — Check.

O 6. Crew door — Check.

7. Cockpit left side — Check.

FUSELAGE — FRONT

1. Static port — Check.
2. Fuselage — Check.
3. Crew or passenger briefing — Complete.

BEFORE STARTING ENGINE — PILOT

* 1. Seat belt, shoulder harness, inertia reel — Fasten and check.

* 2. Overhead panel equipment and switches — Check.

3. Instrument panel instruments and switches — Check and set.
4. Flight controls and switches — Check and set.

O* 5. BATT 2 switch — BATT 2.

* 6. BATT 1 switch — BATT 1.

WARNING

When helicopter is loaded with rockets, do not use external power. Electromagnetic interference from external source may cause accidental firing of rockets.

* 7. GPU — Connect as required (DC only).

* 8. Caution, warning, and advisory messages and audio — Check.

* 9. R FADEC AUTO/MAN switch — Check AUTO.

10. MPD — Test and set.

BEFORE STARTING ENGINE — CPG (AS REQUIRED)

* 1. Seat belt, shoulder harness, and inertia reel — Fasten and check.

(2.) Instrument panel instruments and switches — Check and set.

3. Flight controls — Check.

ENGINE START

* 1. Fireguard — Posted (if available)

* 2. Rotor blades — Clear and untied.

★* 3. Engine start — Accomplish.

* 4. XMSN OIL pressure and ENG OIL pressure — Within limits.

ENGINE RUNUP — PILOT

CAUTION

Do not initially charge both batteries simultaneously. DC charging system damage could occur when second battery is installed.

O* 1. BATT 2 switch — OFF.

* 2. DC GEN switch — DC GEN.

* 3. AC GEN switch — AC GEN.

* 4. ESNTL BUS switch — RUN.

* 5. GPU — Disconnect (if used).

O* 5.1. FILTER/BYPASS switch — Check.

(6.) DTS/MDU — Mission load as required.

NOTE

STBY ALT must indicate above sea level for EGI to align properly.

* (7.) NAV ALIGN — Initiate as required.

8. RADALT — Check.

9. R FADEC system — Check.

* 10. Standby flight instruments — Set.

11. MPD BIT/RST switch — Check.

O 12. ESC — Check.

13. Flight controls — Check.

* 14. Caution, warning, and advisory messages — Review.

* 15. Throttle — Open.

* 16. RPM trim switch — Adjust to 100% NR.

* 17. SCAS — Engage.

18. ENG ANTI ICE — Check.

19. PITOT HTR — Check.

★ O* (20.) Weapons systems — Initialize and check as required.

O (21.) ASE — Check as required.

O 22. ADSS — Check symbology and set if use is anticipated.

O* 23. Dual battery charging — Complete.

O* 24. Grounding cable and ejector rack pins — Removed.

ENGINE RUNUP — CPG/PILOT

(1.) DTS/MDU — Mission load as required.

* (2.) NAV align — Initiate as required.

O (3.) ASE — Switches on as required.

(4.) Avionics — Configure.

★ O* (5.) MMS startup checks — Complete as required.

O (6.) AVTR — Initialize and set as desired.

(7.) Navigation systems — Configure as required.

★ (8.) **(CDS2)** ATHS — Configure as required.

★ (9.) R IDM — Configure as required.

★ O* (10.) Weapons systems — Initialize and check as required.

O (11.) ASE — Check as required.

★O (12.) MMS boresight — Complete as required.

BEFORE TAKEOFF

* 1. Avionics — As required.

* 2. NR — 100%.

* 3. R FADEC AUTO/MAN switch — AUTO.

* 4. Systems — Check.

O* 5. ACP — Switches set.

WARNING

If the CPG cyclic is to be used as a flight control, the cyclic shall be engaged.

* 6. CPG cyclic — Engaged as required.

* 7. Crew, passengers, mission equipment, seat belts and armor side panels — Check.

HOVER CHECK

1. Engine and transmission instruments — Check.
2. Power assurance check — Perform on the first flight of the day.
3. Flight instruments — Check and set.
4. Hover power check — Accomplish as required.

BEFORE LANDING (CPG/PILOT AS REQUIRED)

(1.) LASER OFF/STBY/ARM switch — As required.

O (2.) MMS — Stowed as required.

(3.) ACP — Switches set.

4. Landing light — Set as required.

O (5.) IR JAMMER switch — Set as required.

AFTER LANDING CHECK

1. Landing light — OFF as required.

2. Transponder — STBY as required.

3. ASE — Set as required.

ENGINE SHUTDOWN

1. Flight controls — Cyclic centered, pedals neutral, collective down.

2. FORCE TRIM switch — FORCE TRIM.

3. Present position — Store or record as required.

O 4. AVTR — STOP.

▌O* 4.1. FILTER/BYPASS switch — Check.

(5.) MMS — OFF.

(6.) **(CDS4)** IDM — Shut down.

7. Throttle — Reduce to idle for 2 minutes.

8. BATT 1/BATT 2 — Check.

O 9. AC GEN switch — OFF.

10. FUEL BOOST switch — OFF.

O (11.) ASE — OFF.

12. Standby attitude indicator — Caged.

13. SCAS PWR — OFF.

(14.) DTS/MDU — Mission store as desired.

15. ENGINE MONITOR/FADEC MONITOR and ENGINE HISTORY pages — Check and record faults or values that exceed limitations.

O 16. ESC — Check.

17. AVTR — MANUAL Unthread, as required.

18. R OS TEST — Perform (first flight of the day).

19. Throttle — Closed and monitor TGT.

20. Overhead switches — SET; off except battery and required lights.

21. R IGN circuit breaker switch — OFF.

22. Battery and light switches — OFF, when main rotor blades stop turning.

23. Ignition keylock switch — Off, remove key as required.

CAUTION

To prevent damage to honeycomb panel under crew member doorframe, do not drop seat belt against side of aircraft.

O 24. Doors — Close immediately after exiting aircraft.

BEFORE LEAVING THE HELICOPTER

1. Walk-around — Complete.
2. DA Forms — Complete as required.
3. Main rotor blades — Tie down as required.
4. Secure helicopter — As required.

THROUGH-FLIGHT CHECKLIST

BEFORE EXTERIOR CHECK

O 1. Weapons systems — Safe.
2. LASER ARM/STBY/OFF switch — OFF.
3. Covers, locking devices, tiedowns, and grounding cables — Removed as required and secured.
4. IGN keylock switch — On.

EXTERIOR CHECK

★O 1. Weapons systems — Check.
2. Hydraulic servos and flight controls — Check.
3. Transmission — Check.
4. Engine compartment — Check.
5. Tailboom — Check.
6. Tailboom — Check.
7. Tail rotor gearbox — Check.
8. Tail rotor — Check.

9. Tailboom — Check.

10. Engine oil level — Check.

11. Engine compartment — Check.

12. Transmission — Check.

13. Hydraulic reservoir — Check fluid level.

14. Swashplate and flight controls — Check.

15. Main rotor system — Check.

O 16. MMS — Check.

★O 17. Weapons systems — Check.

BEFORE STARTING ENGINE — PILOT

1. Seat belt, shoulder harness, inertia reel and lock — Fasten and check.

O 2. BATT 2 switch — BATT 2.

3. BATT 1 switch — BATT 1.

4. GPU — Connect as required (DC only).

5. Cautions, warning and advisory messages and audio — Check.

6. R FADEC AUTO/MAN switch — Check AUTO.

BEFORE STARTING ENGINE — CPG/PILOT (AS REQUIRED)

1. Seat belt, shoulder harness, inertia reel and lock — Fasten and check.

ENGINE — START

1. Fireguard — Posted (if available).
2. Rotor blades — Clear and untied.

★ 3. Engine start — Accomplish.

4. XMSN OIL pressure and ENG OIL pressure — Within limits.

ENGINE RUNUP — PILOT

O 1. BATT 2 switch — OFF.

2. DC GEN switch — DC GEN.

3. AC GEN switch — AC GEN.

4. ESNTL BUS switch — RUN.

5. GPU — Disconnect (if used).

▮ O 5.1. FILTER/BYPASS switch — Check.

(6.) NAV ALIGN — Initiate as required.

7. Standby flight instruments — Set.

8. Caution, warning, and advisory messages — Review.

9. Throttle — OPEN.

10. RPM trim switch — Adjust to 100% NR.

11. SCAS — Engage.

O 12. Weapons system — initialize and check as required.

O 13. Dual battery charging — Complete.

O 14. Grounding cable and ejector rack pins — Remove.

ENGINE RUNUP — CPG/PILOT

(1.) NAV align — Initiate as required.

★ (2.) **(CDS4)** IDM — Initialize.

★O (3.) MMS startup checks — Complete as required.

★O (4.) Weapons systems — Initialize and check as required.

BEFORE TAKEOFF

1. Avionics — As required.
2. NR — 100%.
3. R FADEC AUTO/MAN switch — AUTO.
4. Systems — Check.

O 5. ACP — Switches set.

WARNING

If the CPG cyclic is to be used as a flight control, the cyclic shall be engaged.

6. CPG cyclic — Engaged as required.
7. Crew, passengers, mission equipment, seat belts and armor side panels — Check.

ENGINE

EMERGENCY SHUTDOWN

1. Throttle — Close.
2. FUEL VALVE handle — OFF.
3. BATT switches — OFF.

R FADEC MANUAL OPERATION

1. Throttle — Reduce.
2. AUTO/MAN switch — MAN.
3. Collective — Adjust to maintain RPM within limits.
4. Throttle and collective — Adjust to maintain RPM within limits.
5. LAND AS SOON AS PRACTICABLE.

If engine RPM cannot be maintained within limits:

6. LAND AS SOON AS POSSIBLE.

ENGINE FAILURE — HOVER

AUTOROTATE.

ENGINE FAILURE — LOW ALTITUDE/ LOW AIRSPEED DURING TAKEOFF OR CRUISE

1. AUTOROTATE.
2. EMER SHUTDOWN. Accomplish during descent if time permits.

(OH-58D) ENGINE RESTART — DURING FLIGHT

1. Attempt start.

2. LAND AS SOON AS POSSIBLE.

R ENGINE RESTART — DURING FLIGHT (FADEC AUTOMATIC MODE)

1. Establish autorotational descent.
2. LAND AS SOON AS POSSIBLE.

ENGINE COMPRESSOR STALL

1. Collective — Reduce.
2. ENG ANTI ICE and HTR switches — ON.
3. LAND AS SOON AS POSSIBLE.

▌(OH-58D) ENGINE OVERSPEED

1. Collective — Increase.
2. Throttle — Adjust.
3. LAND AS SOON AS POSSIBLE.

If rpm cannot be controlled manually:

4. AUTOROTATE.
5. EMER SHUTDOWN.

R ENGINE OVERSPEED

1. Collective — Increase.
2. FADEC MANUAL OPERATION — Perform.

If RPM cannot be controlled manually:

3. AUTOROTATE.
4. EMER SHUTDOWN — Accomplish.

(OH-58D) ENGINE UNDERSPEED

1. Collective — Adjust.
2. Throttle — Check open.
3. RPM ± trim switch — Increase (+).

If underspeed condition still exists:

4. NORM-ANLG BACKUP switch — ANLG BACKUP position.
5. Throttle and collective — Adjust.
6. LAND AS SOON AS PRACTICABLE.

If engine rpm cannot be maintained within limits:

7. LAND AS SOON AS POSSIBLE.

R ENGINE UNDERSPEED

1. Collective — Adjust.
2. Throttle — Check open.
3. RPM ± trim switch — Increase (+).

If underspeed condition still exists:

4. FADEC MANUAL OPERATION — Perform.

ENGINE SURGES/FUEL CONT CAUTION MESSAGE/UNEXPLAINED ENGINE FLUCTUATIONS

In event of FUEL caution message or engine fluctuations/surging proceed as follows:

1. NORM-ANLG BACKUP switch — ANLG BACKUP.
2. LAND AS SOON AS PRACTICABLE.

If engine surges continue, proceed as follows:

3. NORM-ANLG BACKUP switch — NORM position.
4. RPM ± trim switch — Increase (+).
5. Throttle — Reduce.
6. LAND AS SOON AS POSSIBLE.

If fluctuation/surges are not controlled:

7. AUTOROTATE.
8. EMER SHUTDOWN.

R FADEC FAILURE

FADEC MANUAL OPERATION — Perform.

R FADEC MANUAL START

1. FADEC AUTO/MAN switch — MAN.
2. Throttle — Check closed.
3. Collective — Full down.
4. BATTERY — ON.
5. FUEL BOOST switch — FUEL BOOST.
6. START switch — Press and hold for 10 seconds to engage manual mode pistons.
7. TGT — 150 °C or less.

CAUTION

During a manual start, starter switch must be pressed until NG reaches 50%. Releasing switch at any time will disengage starter.

8. Start switch — Press and hold.
9. BATT V START V — Check.
10. Throttle — Advance slowly at 10 to 12% NG and modulate throttle to maintain TGT within limits.
11. ENG oil pressure — Check.
12. Rotor blades — Turning by 25% NG.
13. START switch — Release by 50% NG.
14. XMSN OIL pressure and ENG OIL pressure — Within limits.

HIGH OIL TEMP ENG CAUTION MESSAGE

LAND AS SOON AS POSSIBLE.

FILTER SEGMENT LIGHT ILLUMINATION (Intermittent or Steady)

CAUTION

Operating the aircraft with the filter bypass door open channels unfiltered air directly into the engine intake. Engine damage and power loss will result if solid airborne particles are present. Longer operation and/or heavier airborne particulate will result in increased engine damage and increased power loss.

1. Filter bypass door — Open (if desired).

2. LAND AS SOON AS PRACTICABLE.

If a high TGT or other abnormal engine parameter is associated with the segment light illumination:

3. Filter bypass door — Open.

4. LAND AS SOON AS POSSIBLE.

ROTORS, TRANSMISSIONS, AND DRIVE SYSTEMS MALFUNCTIONS

MAIN DRIVESHAFT FAILURE

1. AUTOROTATE — Throttle full open.

2. EMER SHUTDOWN after landing.

CLUTCH FAILS TO DISENGAGE

1. Throttle — Open

2. LAND AS SOON AS POSSIBLE.

CLUTCH FAILS TO RE-ENGAGE

1. AUTOROTATE.

2. EMER SHUTDOWN.

FIRE

ABORT START/HOT START/RESIDUAL FIRE

1. Throttle — Close.

2. START switch — ON and hold until TGT is less than 200 °C.

ENGINE/FUSELAGE/ELECTRICAL FIRE — GROUND

EMER SHUTDOWN.

ENGINE/FUSELAGE FIRE — LOW/CRUISE ALTITUDE

If power-on landing:

1. LAND AS SOON AS POSSIBLE.
2. EMER SHUTDOWN after landing.

If power-off landing:

3. AUTOROTATE.
4. EMER SHUTDOWN.

ELECTRICAL FIRE — FLIGHT

1. AC and DC GEN switches — OFF.
2. LAND AS SOON AS POSSIBLE.
3. EMER SHUTDOWN after landing.

SMOKE AND FUME ELIMINATION

1. VENT PULL knobs — PULL.
2. R and L DEFOG BLWR switches — ON.
3. COMPT BLWR switch — ON.

FUEL SYSTEM MALFUNCTIONS

FUEL BOOST PUMP FAILURE

1. FUEL BOOST switch — OFF.
2. Descend below 8,000 feet PA.
3. LAND AS SOON AS PRACTICABLE.

ELECTRICAL SYSTEM MALFUNCTIONS

COMPLETE LOSS OF ELECTRICAL POWER

LAND AS SOON AS POSSIBLE.

DC GENERATOR FAILURE — NO OUTPUT

1. DC GEN FIELD and DC GEN RESET circuit breakers — Check In.
2. DC GEN switch — RESET then DC GEN. Do not hold the switch in the RESET position.

If generator output is not restored, or if generator goes off the line again:

3. DC GEN switch — OFF.
4. LAND AS SOON AS PRACTICABLE.

HOT BATT 1, HOT BATT 2, OR HOT BATT 1 & 2 CAUTION MESSAGES(S)

In the event of battery overheat:

1. Affected BATT switch — OFF. If condition is corrected, flight may be continued with the affected battery switch off.

If condition is not corrected proceed as follows:

2. LAND AS SOON AS POSSIBLE.
3. EMER SHUTDOWN after landing.

AC GEN FAIL CAUTION MESSAGE

In the event of AC generator failure:

1. AC GEN switch — OFF, then AC GEN.

If generator output is not restored, or generator fails again:

2. AC GEN switch — OFF.
3. LAND AS SOON AS PRACTICABLE.

AUDIO DISTRIBUTION UNIT (ADU) FAILURE

1. Transmit and receive on plain FM-1.
2. LAND AS SOON AS PRACTICABLE.

EGI FAILURE

1. EGI DC circuit breaker — Out.
2. EGI DC circuit breaker — In.
3. Last known present position — Enter.
4. Execute a MANUAL EGI alignment.

If EGI functionality is not restored or fails again:

5. EGI DC circuit breaker — Out.

GPS DIVERGENT

If abnormal system operation continues:

1. INS mode of navigation — Select. Compare reported position to that of a known waypoint as soon as possible.

If position error is evident:

2. Manual update — Perform to correct the INS drift.

If position error is not observed:

3. GPS mode of navigation — Select.

If position error is observed:

4. INS mode of navigation — Reselect and continue flight operations.

(CDS2/CDS3) LEFT MCPU/RIGHT MCPU FAILURE

1. MCPU L/R circuit breaker — Out.

2. MCPU L/R circuit breaker — In. Check MFD FOR MCPU caution message.

If MCPU is not recovered:

3. LAND AS SOON AS POSSIBLE.

(CDS4) LEFT MCPU/RIGHT MCPU FAILURE (GROUND)

1. MCPU L/R circuit breaker — Out.

2. MCPU L/R circuit breaker — In. Check MFD FOR MCPU caution message.

If MCPU is not recovered:

3. Maintenance action is required to recover failed MCPU prior to flight.

(CDS4) LEFT MCPU FAILURE (IN-FLIGHT)

1. LAND AS SOON AS POSSIBLE.

MPD WARNING LIGHT ILLUMINATION IN FLIGHT

1. BIT RST switch — RST.

If WRN light illuminates again:

2. BIT check — Accomplish.

If an error code displays:

3. LAND AS SOON AS PRACTICABLE.

AIR DATA SYSTEM FAILURE

LAND AS SOON AS PRACTICABLE.

HYDRAULIC SYSTEM MALFUNCTIONS

HYDRAULIC POWER FAILURE

1. Airspeed — Adjust.
2. HYD SYS circuit breaker — Out; check for restoration of hydraulic power.

If hydraulic power is not restored:

3. HYD SYS circuit breaker — In.
4. HYD SYS switch — OFF.

WARNING

Do not return the HYD SYS switch to the HYD SYS position for the remainder of the flight. This prevents any possibility of surge in the hydraulic system creating sudden, unexpected control movements.

5. LAND AS SOON AS PRACTICABLE (at an area which will permit a run-on landing).

LANDING AND DITCHING

LANDING IN TREES

A landing in trees should be made when no other landing area is available. In addition to accomplishing engine failure emergency procedures, select a landing area containing the least number of trees of minimum height. Decelerate to minimum forward speed at treetop level and descend into the trees vertically. Apply all remaining collective prior to the main rotor contacting the trees.

DITCHING — POWER ON

1. Doors — Jettison at hover.
2. CPG or passenger — Exit.
3. Hover a safe distance away from personnel.
4. AUTOROTATE. Apply all remaining collective as the helicopter enters the water. Maintain a level attitude as the helicopter sinks and until it begins to roll. Apply cyclic in the direction of the roll.
5. Pilot — Exit when main rotor stops.

DITCHING — POWER OFF

1. AUTOROTATE.
2. Doors — Jettison as the helicopter enters the water.
3. CPG or passenger and pilot — Exit when main rotor stops.

FLIGHT CONTROL

FLIGHT CONTROL MALFUNCTIONS

1. LAND AS SOON AS POSSIBLE.
2. EMER SHUTDOWN after landing.

STABILITY AND CONTROL AUGMENTATION SYSTEM (SCAS) FAILURE

In the event of a SCAS disengagement proceed as follows:

1. Affected SCAS channel — Attempt to reengage.

   If SCAS cannot be reengaged:

2. LAND AS SOON AS PRACTICABLE.

LIGHTNING STRIKE

LAND AS SOON AS POSSIBLE.

IN-FLIGHT WIRE STRIKE

LAND AS SOON AS POSSIBLE.

MISSILE UNLATCHED

1. Avoid nose low attitudes and excessive bank angles.

2. LAND AS SOON AS PRACTICABLE.

MISFIRE — 2.75-INCH ROCKET

1. Position the aircraft so that rocket is oriented downrange for a period of 10 minutes.
2. Upon landing the aircraft — Notify explosive ordnance disposal.

ROCKET/MISSILE — HANGFIRE

1. JETTISON switch(es) — Activate.
2. LAND AS SOON AS POSSIBLE.

RUNAWAY GUN

1. Orient gun in a safe direction.
2. MASTER switch — STBY.
3. Allow gun to fire out.
4. Gun switch — SAFE.

CARGO HOOK FAILS TO RELEASE ELECTRICALLY

1. Maintain tension on sling.
2. Pull EMER CARGO RELEASE PULL handle.

TABLE E-1. (CDS2/CDS3) WARNING MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
ENGINE OUT	Verify condition. Autorotate.
ENG OVER TRQ	LAND AS SOON AS POSSIBLE.
(CDS3) FADEC FAIL	Refer to FADEC failure emergency procedure.
(CDS3) FADEC MANUAL	Refer to FADEC failure emergency procedure.
HIGH RPM	Verify condition. Adjust collective.
(CDS3) LOW FUEL PRES	LAND AS SOON AS POSSIBLE.
LOW RPM ROTOR	Verify condition. Adjust collective.
TGT OVER TEMP	LAND AS SOON AS POSSIBLE.
XMSN OVER TRQ	LAND AS SOON AS POSSIBLE.

TABLE E-2. (CDS2/CDS3) CAUTION MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
AC GEN FAIL	Refer to emergency procedure.
ADU FAIL	Refer to emergency procedure.
BATT CHGR FAIL	Information/system status.
CHIPS ENG FREEWHEEL	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS ENG LOWER	LAND AS SOON AS POSSIBLE.
CHIPS ENG UPPER	LAND AS SOON AS POSSIBLE.

TABLE E-2. (CDS2/CDS3) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
CHIPS T/R GRBX	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS XMSN SUMP	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS XMSN UPPER	If no successful burnoff - LAND AS SOON AS POSSIBLE.
DC GEN FAIL	Refer to emergency procedure.
EGI FAIL	Refer to emergency procedure.
* ENG TRQ TIME LIM []	Adjust collective.
FUEL BOOST FAIL	Refer to emergency procedure.
(OH-58D) FUEL CONT	Refer to emergency procedure.
FUEL FILTER BYP	LAND AS SOON AS POSSIBLE.
FUEL LOW	LAND AS SOON AS PRACTICABLE.
(OH-58D) GPS DIVERGENT	Refer to emergency procedure.
HIGH OIL PRESS ENG	LAND AS SOON AS PRACTICABLE.
HIGH OIL TEMP ENG	Refer to emergency procedure.
HIGH OIL TEMP XMSN	LAND AS SOON AS POSSIBLE.
HIGH TEMP T/R GRBX	LAND AS SOON AS POSSIBLE.
* HIGH TGT TIME LIM []	Adjust collective.
HOT BATT 1	Refer to emergency procedure.

TABLE E-2. (CDS2/CDS3) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
HOT BATT 2	Refer to emergency procedure.
HOT BATT 1 & 2	Refer to emergency procedure.
(CDS3) HOT BATT 1, 2	Refer to emergency procedure.
IFF FAIL	Information/system status.
IFF MODE 4 FAIL	Information/system status.
INS FAIL	Information/system status.
INV FAIL	Information/system status.
IR JAMMER INOP	Information/system status.
(CDS2) ISP FAIL	Information/system status.
LEFT MCPU FAIL	Refer to emergency procedure.
(CDS3) LOW ALTITUDE*	Information/system status.
LOW HYD PRESS	Refer to emergency procedure.
LOW OIL PRESS ENG	LAND AS SOON AS POSSIBLE.
LOW OIL PRESS XMSN	LAND AS SOON AS POSSIBLE.
LOW OIL QUANTITY ENG	LAND AS SOON AS POSSIBLE.
* MAST TRQ TIME LIM []	Adjust collective.
MISSILE UNLATCHED	Refer to emergency procedure.
OIL BYP ENG	LAND AS SOON AS POSSIBLE.
P/R DISENG	Refer to SCAS failure emergency procedure.
RECT FAIL	Information/system status.
RIGHT MCPU FAIL	Refer to emergency procedure.

TABLE E-2. (CDS2/CDS3) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
SCAS DISENG	Refer to SCAS failure emergency procedure.
* (CDS2) TGT 5 MIN LIM []	Adjust collective.
* TGT 30 MIN LIM []	Adjust collective.
(CDS3) WEAPONS FAIL	Information/system status.
YAW DISENG	Refer to SCAS failure emergency procedure.

NOTE

* The time displayed in brackets is a cumulative time not dependent on a given time period. Up to 99 seconds can be displayed.

TABLE E-3. (CDS2/CDS3) ADVISORY MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
ALARM ONE LABEL	Information/system status.
(CDS3) ALARM	Information/system status.
(CDS3) ASE FAIL	Information/system status.
(CDS2) ATH AUTHENT TABLE LOW	Information/system status.
(CDS2) ATH MESSAGE RECEIVED	Information/system status.
(CDS2) ATHS FAIL	Information/system status.
(CDS2) ATHS QUEUE FULL	Information/system status.
BATT PREHEAT ON	Information/system status.
BYPASS (segment light)	Information/system status.
CARGO HOOK ARMED	Information/system status.
(CDS2) CHECK MESSAGE CHECKALL	Information/system status.

TABLE E-3. (CDS2/CDS3) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
(CDS2) CHECK MESSAGE CHECKFIRE	Information/system status.
(CDS2) CHECK MESSAGE MAYDAY	Information/system status.
CODE NOT ACCEPTED	Information/system status.
DATA LOADER FAIL	Information/system status.
DTS FAIL	Information/system status.
EGI BATT LOW	Refer to emergency procedure.
ENG ANTI-ICE ON	Information/system status.
EXT PWR	Information/system status.
(CDS3) FADEC DEGRADE	Refer to emergency procedure.
(CDS3) FADEC MAINT	FADEC requires maintenance action.
FILTER (segment light)	Refer to emergency procedure.
(CDS3) FM-1 CT FAIL	Information/system status.
FM-1 CUE	Information/system status.
FM-1 FAIL	Information/system status.
(CDS3) FM-1 HUB LOW	Information/system status.
(CDS3) FM-1 PT FAIL	Information/system status.
(CDS3) FM-2 CT FAIL	Information/system status.
FM-2 CUE	Information/system status.
FM-2 FAIL	Information/system status.
(CDS3) FM-2 HUB LOW	Information/system status.
(CDS3) FM-2 PT FAIL	Information/system status.
(OH-58D) FUEL CONTROL	Information/system status.
(CDS3) GPS DIVERGENT	Refer to emergency procedures.
GPS FAIL	Information/system status.
HDG HLD	Information/system status.

TABLE E-3. (CDS2/CDS3) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
HF RADIO FAIL	Information/system status.
HF RADIO TUNE	Information/system status.
(CDS3) HVR DEGRADED	Information/system status.
(CDS3) IDM FAIL	Information/system status.

TABLE E-3. (CDS2/CDS3) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
IFM FAIL	Information/system status.
(CDS3) IMAGE RECEIVED	Information/system status.
(CDS3) INVALID COMMAND	Information/system status.
KY-75 ALARM	Information/system status.
LASER CODE MISMATCH	Information/system status.
LAUNCHER SAFED	Information/system status.
LEFT COOLANT LOW	Information/system status.
LEFT LAUNCHER FAIL	Information/system status.
MISSILE ALERT	Information/system status.
MISSILE ALERT — AI	Information/system status.
MISSILE ALERT — SAM	Information/system status.
MMS FAIL	Information/system status.
MOIST VTR TAPE	Information/system status.
NAV INVALID	Information/system status.
NAV NOT ALIGNED	Information/system status.
NAV UPDT REQUIRED	Information/system status.
(CDS3) NO AUTO START	A detected failure may hinder auto start.
NO CODE	Information/system status.
ONE YAW CHAN OFF	Information/system status.
PITOT HEAT ON	Information/system status.
P(Y) CODE INVALID	Information/system status.
RHE FAIL	Information/system status.
RIGHT COOLANT LOW	Information/system status.
RIGHT LAUNCHER FAIL	Information/system status.
(CDS3) RMS FAIL	Information/system status.
(CDS3) SCAN NOT AVAILABLE	Information/system status.
TACAN FAIL	Information/system status.

TABLE E-3. (CDS2/CDS3) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
TACAN INVALID	Information/system status.
(CDS3) TACFIRE AUTH TABLE LOW	Information/system status.
(CDS3) TACFIRE MSG CHECKALL	Information/system status.
(CDS3) TACFIRE MSG CHECKFIRE	Information/system status.
(CDS3) TACFIRE MSG MAYDAY	Information/system status.
(CDS3) TACFIRE MSG NO	Information/system status.
(CDS3) TACFIRE QUEUE FULL	Information/system status.
(CDS2) TIMER ONE LABEL	Information/system status.
(CDS3) TIMER	Information/system status.
UHF FAIL	Information/system status.
(CDS3) VDU FAIL	Information/system status.
VHF FAIL	Information/system status.
VTR FAIL	Information/system status.
VTR TAPE FULL	Information/system status.
WEDGE CONSTANT ZERO	Information/system status.
WPN NOT ACTIONED	Information/system status.
WPN NOT ARMED	Information/system status.
WPN NOT SELECTED	Information/system status.

TABLE E-4. (CDS4) WARNING MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
LOW ALTITUDE*	Information/system status.
ENGINE OUT	Verify condition. Autorotate.
ENG OVER TRQ	LAND AS SOON AS POSSIBLE.
FADEC FAIL	Refer to FADEC failure emergency procedure.
HIGH RPM	Verify condition. Adjust collective.
LOW FUEL PRES	LAND AS SOON AS POSSIBLE.
LOW RPM ROTOR	Verify condition. Adjust collective.
TGT OVER TEMP	LAND AS SOON AS POSSIBLE.
XMSN OVER TRQ	LAND AS SOON AS POSSIBLE.

NOTE

*This warning is not displayed in the warning box. It is only indicated by sounding of 3-Hz warning tone.

TABLE E-5. (CDS4) CAUTION MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
AC GEN FAIL	Refer to emergency procedure.
ADU FAIL	Refer to emergency procedure.
BATT CHGR FAIL	Information/system status.
CHIPS ENG FREEWHEEL	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS ENG LOWER	LAND AS SOON AS POSSIBLE.

TABLE E-5. (CDS4) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
CHIPS ENG UPPER	LAND AS SOON AS POSSIBLE.
CHIPS T/R GEARBOX	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS XMSN SUMP	If no successful burnoff - LAND AS SOON AS POSSIBLE.
CHIPS XMSN UPPER	If no successful burnoff - LAND AS SOON AS POSSIBLE.
DC GEN FAIL	Refer to emergency procedure.
EGI FAIL	Refer to emergency procedure.
* ENG TRQ TIME LIM []	Adjust collective.
FADEC MANUAL	Refer to FADEC failure emergency procedure.
FUEL BOOST FAIL	Refer to emergency procedure.
FUEL FILTER BYP	LAND AS SOON AS POSSIBLE.
FUEL LOW	LAND AS SOON AS PRACTICABLE.
HIGH OIL PRESS ENG	LAND AS SOON AS PRACTICABLE.
HIGH OIL TEMP ENG	Refer to emergency procedure.
HIGH OIL TEMP XMSN	LAND AS SOON AS POSSIBLE.
HIGH TEMP T/R GRBX	LAND AS SOON AS POSSIBLE.
* HIGH TGT TIME LIM []	Adjust collective.
HOT BATT 1	Refer to emergency procedure.

TABLE E-5. (CDS4) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
HOT BATT 2	Refer to emergency procedure.
HOT BATT 1, 2	Refer to emergency procedure.
IFF FAIL	Information/system status.
IFF MODE 4 FAIL	Information/system status.
INS FAIL	Information/system status.
INV FAIL	Information/system status.
IR JAMMER INOP	Information/system status.
LEFT MCPU FAIL	LAND AS SOON AS POSSIBLE.
LOW HYD PRESS	Refer to emergency procedure.
LOW OIL PRESS ENG	LAND AS SOON AS POSSIBLE.
LOW OIL PRESS XMSN	LAND AS SOON AS POSSIBLE.
LOW OIL QUANTITY ENG	LAND AS SOON AS POSSIBLE.
* MAST TRQ TIME LIM []	Adjust collective.
MISSILE UNLATCHED	Refer to emergency procedure.
OIL BYP ENG	LAND AS SOON AS POSSIBLE.
P/R DISENG	Refer to SCAS failure emergency procedure.
RECT FAIL	Information/system status.
RIGHT MCPU FAIL	Refer to emergency procedure.
SCAS DISENG	Refer to SCAS failure emergency procedure.
* TGT 30 MIN LIM []	Adjust collective.
WEAPONS FAIL	Information/system status.
YAW DISENG	Refer to SCAS failure emergency procedure.

TABLE E-5. (CDS4) CAUTION MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
	NOTE
	* Brackets display accumulated time, in seconds, by which limit was exceeded.

TABLE E-6. (CDS4) ADVISORY MESSAGES EMERGENCY PROCEDURES

MESSAGE	CORRECTIVE ACTION
AIR MSN REJECTED	Information/system status.
AIR MSN X UPDATE	Information/system status.
AIR RQST MSN	Information/system status.
ARTY MSN X UPDATE	Information/system status.
ALARM (alarm name)	Information/system status.
ASE FAIL	Information/system status.
BATT PREHEAT ON	Information/system status.
BSA UPDATE	Information/system status.
BYPASS (segment light)	Information/system status.
C2 MSG RCVED	Information/system status.
CARGO HOOK ARMED	Information/system status.
CODE NOT ACCEPTED	Information/system status.
DTS FAIL	Information/system status.
EGI BATT LOW	Refer to emergency procedure.
ENG ANTI-ICE ON	Information/system status.
EXT PWR	Information/system status.
FADEC DEGRADE	Refer to emergency procedure.
FADEC MAINT	FADEC requires maintenance action.
FILTER (segment light)	Refer to emergency procedure.
FM 1 CUE	Information/system status.
FM 1 CT FAIL	Information/system status.

TABLE E-6. (CDS4) ADVISORY MESSAGES
EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
FM 1 FAIL	Information/system status.
FM 1 HUB LOW	Information/system status.
FM 1 PT FAIL	Information/system status.

TABLE E-6. (CDS4) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
FM 2 CUE	Information/system status.
FM 2 CT FAIL	Information/system status.
FM 2 FAIL	Information/system status.
FM 2 HUB LOW	Information/system status.
FM 2 PT FAIL	Information/system status.
GPS FAIL	Information/system status.
GPS DIVERGENT	Refer to emergency procedures.
HVR DEGRADED	Information/system status.
IDM FAIL	Information/system status.
IDM NO STARTUP	Information/system status.
IDM SHUTDOWN CMPLT	Information/system status.
IFM FAIL	Information/system status.
IMAGE RECEIVED	Information/system status.
INVALID COMMAND	Information/system status.
LASER CODE MISMATCH	Information/system status.
LAUNCHER SAFED	Information/system status.
LEFT COOLANT LOW	Information/system status.
LEFT LAUNCHER FAIL	Information/system status.
MISSILE ALERT	Information/system status.
MISSILE ALERT — AI	Information/system status.
MISSILE ALERT — SAM	Information/system status.
MMS FAIL	Information/system status.
MOIST VTR TAPE	Information/system status.
NAV INVALID	Information/system status.
NAV NOT ALIGNED	Information/system status.
NAV UPDT REQUIRED	Information/system status.
NET JOIN - FMx	Information/system status.
NO AUTO START	A detected failure may hinder auto start.

TABLE E-6. (CDS4) ADVISORY MESSAGES EMERGENCY PROCEDURES (Cont)

MESSAGE	CORRECTIVE ACTION
NO CODE	Information/system status.
NO VIXL NET	Information/system status.
ONE YAW CHAN OFF	Information/system status.
P(Y) CODE INVALID	Information/system status.
PITOT HEAT ON	Information/system status.
RHE FAIL	Information/system status.
RIGHT COOLANT LOW	Information/system status.
RIGHT LAUNCHER FAIL	Information/system status.
RMS FAIL	Information/system status.
TACAN FAIL	Information/system status.
TACAN INVALID	Information/system status.
TACFIRE AUTH TABLE LOW	Information/system status.
TACFIRE MSG CHKALL	Information/system status.
TACFIRE MSG CHKFIRE	Information/system status.
TACFIRE MSG MAYDAY	Information/system status.
TACFIRE MSG NO	Information/system status.
TACFIRE QUEUE FULL	Information/system status.
TIMER (timer name)	Information/system status.
UHF FAIL	Information/system status.
VDU FAIL	Information/system status.
VHF FAIL	Information/system status.
VTR FAIL	Information/system status.
VTR TAPE FULL	Information/system status.
WEDGE CONSTANT ZERO	Information/system status.
WPN NOT ACTIONED	Information/system status.
WPN NOT ARMED	Information/system status.

(OH-58D) ENGINE — START

CAUTION

- To prevent damage to engine, if FUEL CONT caution message is displayed on MFD, do not start engine.
- To prevent damage to engine, if auto acceleration occurs when throttle is opened, abort start.
- DO NOT attempt start if BATT V is less than 21 volts.
- BATT V may go below 14 volts during initial starting cycle; however, BATT V must be at least 14 volts prior to advancing throttle. If after advancing throttle BATT V is less than 14 volts, abort start to prevent possibility of a hot start.
- If TGT does not rise by 18% NG, abort start.
- To prevent damage to engine, if it becomes apparent that temperature limits will be exceeded before 50% NG is attained, abort start.

a. START switch — Press and hold. Start time.

b. BATT V — Check above 10 volts.

c. TGT — 150 °C or less.

d. Throttle — Advance slowly at 12% NG and modulate throttle to maintain TGT within limits. Slowly advance to idle after TGT has decreased from initial peak.

e. TGT — Increasing and within limits.

f. ENG oil pressure — Check.

g. Rotor blades — Beginning to turn by 25% NG.

h. START switch — Release at 50% NG.

NOTE

For cold temperature starts, if ENG OIL and/or XMSN OIL pressures are above limits, or ENG OIL and/or XMSN OIL temperatures are below limits, do not accelerate engine above idle.

i. NG — Check stabilized at idle (63 to 65%).

R ENGINE — START (AUTOMATIC MODE)

CAUTION

- DO NOT attempt start if BATT V is less than 21 volts.
- To prevent a hot start, if the NO AUTO advisory is displayed on the MFD, do not attempt an automatic start, unless message is deleted when throttle is advanced to the idle detent.

NOTE

The START switch must be activated within 60 seconds of advancing the throttle or the engine will not start. This is a safety feature to prevent inadvertent automatic starting of engine. Clearing of this safety feature requires the pilot to place the throttle in the cutoff position, cycle the FADEC circuit breaker switch OFF then ON, then reinitiate the start sequence.

a. AUTO/MAN switch — Check AUTO.

b. Throttle — Open to idle detent.

CAUTION

- BATT V may go below 14 volts during the initial starting cycle; however, BATT V must be at least 14 volts by the time NG reaches 10%. If this requirement is not met, or BATT V decreases below 14 volts after 10% NG, abort the start to prevent the possibility of a hot start.
- If TGT does not begin to rise by 18% NG, abort the start.
- To prevent damage to engine, if it becomes apparent that temperature limits will be exceeded before 50% NG is attained, abort start.

NOTE

If BATT V goes below 20 volts, MFDs will temporarily go blank; this is normal. Monitor TGT and NG. CDS and FADEC control will function properly. Continue start.

c. START switch — Press for 2 seconds then release.

d. BATT V — Check.

e. TGT — Increasing and within limits.

f. ENG oil pressure — Check.

g. Rotor blades — Turning by 25% NG.

h. START V — Decreased to near 0 at 50% NG.

CAUTION

If starter is still engaged at idle (indicated by START V not near 0) the throttle must be closed, and after TGT is below 200 °C the battery switch(es) must be turned off to prevent damage.

NOTE

For cold temperature starts, if ENG OIL and/or XMSN OIL pressures are above limits or ENG OIL and/or XMSN OIL temperatures are below limits, do not accelerate engine above idle.

i. NG — Check stabilized at idle (63 to 65%).

BEFORE STARTING ENGINE — MMS SWITCHES SET — CPG

CAUTION

- When MMS is operating but not being used, the sight shall be slaved FWD to prevent the payload assembly from contacting and damaging the azimuth and elevation stops.
- Turn MMS mode select switch off if MMS fails to respond to control commands.

1. LASER ARM/STBY/OFF switch — OFF.
2. FIRST/LAST switch — As desired.
3. VIDEO MMS SYM INTEN toggle switch — MAN.
4. VIDEO GAIN toggle switch — As desired.
5. VIDEO LEVEL toggle switch — AUTO.

6. OPR mode select switch — OFF.

7. ALFGL switch — OFF.

8. TIS INTEG switch — OFF.

9. LMC switch — OFF.

10. ALE switch — OFF.

ENGINE RUN-UP — MMS STARTUP CHECKS — CPG

1. MMS key — Press.

NOTE

- MMS run-up requires 3-phase AC power from the AC generator or external AC power. Prior to turning the MMS on, verify required power is available.
- When MMS select switch is set to FWD, the system immediately checks the output of the LOS CONT switch on the CPG cyclic control grip and supplies an opposite bias in order to zeroize the LOS output. Pressing the LOS switch during the first 5 seconds after power turn-on may induce an error into the bias calculation and cause the MMS to drift.

2. OPR mode select switch — FWD. Allow MMS to stabilize.

3. MNL/SLAVE switch — Press. Observe MMS slews FWD.

4. Laser codes — Check; enter as required.

5. MMS current laser code — select appropriate code as required.

(CDS4) TACFIRE CONFIGURATION — IDM INITIALIZATION — CPG

NOTE

Load mission, using HOG, from DTM if available. If not available, proceed as follows:

1. IDM switch — Press as required to display IDM index page.
2. START key — Press.
3. Paging (R-1) key — Press.
4. TEST key — Press. Enter a T using MFK; GO or NOGO will display on MFD.
5. NETS key — Press to access and complete NET Data pages. Enter prompts as follows:
   a. TFR/AIR NET key — Press to scroll type or net desired adjacent to NET number.
   b. BLK key — Press to scroll between SGL and DBL. Leave as desired.
   c. BAUD key — Press to select desired baud rate.
   d. Radio key — Press to select radio which will be used for transmitting and receiving.
   e. R-1 key — The time required to transmit will display.
   f. PRE key — Press to access the Preamble Entry page and press PREAMBLE — SEC key. Enter desired preamble length of 0.1 to 9.9 seconds using MFK.

NOTE

L-3 (OFF), on the MONITOR page, can be pressed to disable monitor function.

g. MON key — Press if required to access Monitor Entry page and press MONITOR — SEC key. Enter length of time from 0.5 to 9.9 seconds using MFK.

h. AUTH key — Press to scroll between MANUAL or NONE.

i. On CPG auxiliary control panel, press IDM switch.

j. START key — Press.

k. Paging (R-1) key — Press to select page 2/3.

l. NETS — Set up each of the eight pages as required for each net to be used by repeating steps a. through k.

m. Paging (R-1) key — Press as required to return to Start page 2/3.

6. SUBS key — Press and proceed as follows:

NOTE

During send operations, the user will be prompted to select which net to transmit on if the subscriber ID is entered in more than one NET.

a. NET key — Press as desired to activate desired net and enter subscriber identifier(s).

b. R-1 key — Press as required to access subpages and enter identifier(s). Press to sequence to return to Start page 2/3.

7. AUTH key — Press and proceed as follows:

NOTE

Subscriber must already be entered in subscriber list.

a. SUBS key — Subscriber is displayed or press key and enter subscriber using MFK.

b. XMT LINE — Current transmit authentication table line will be displayed. To change, press key and enter desired line using MFK.

c. RCV LINE — Current receive authentication table line will be displayed. To change, press key and enter desired line using MFK.

d. MODE key — Press once to activate authentication tables. Press again to scroll between XMT, BOTH, or RCV.

e. TABLE key — Press to access transmit or receive table index.

(1) Select desired transmit table line.

(2) Press key adjacent to line number. Enter transmit authentication code from SOI.

(3) R-1 key — Press to sequence to Start page 2/3.

8. MSGS key — If desired, press to access Message Present entry pages. Press R-1 as required to return to Start page 2/3.

9. MVT key — If desired, press to access Preset Movement Message pages. Enter movement commands on subpages. Press R-1 key as required to return to Start page 2/3.

10. BULK key — Press if it is desired to upload another operator IDM.

    a. Enter Destination ID by pressing L-1.

    b. Press L-2 to access Bulk Data Select page. Making a selection causes a default back to Bulk Data Summary page.

    c. SEND; then scroll to next page. Utilize the SCROLL-SEND procedure until all desired data has been sent.

    d. COMPLETE — Send COMPLETE message when finished with bulk data transmission.

11. IDM switch — Press.

    a. Start key — Press.

    b. Paging (R-1) key — Press as necessary to select page 3/3.

    c. L-1 key — Press to scroll through Rapid function selections. Select desired function.

    d. L-3 key — Press to toggle between AUTO SHOT on and off. AUTO SHOT does not function in this installation.

    e. L-4 key — Press to access Serialization Subscriber Assignment page.

        (1) L-1 key — Press to toggle between XMT and NONE.

        (2) L-2 key — Press to enter desired subscribers.

        (3) L-4 key — Press to scroll through subscribers to read initial serialization count of messages.

(4) R-4 key — Press to edit/enter initial serialization count of messages.

(5) R-1 key — Press to return to Start page 3/3.

12. Select IDM — Press. Then select Start page 1/3.

a. CURR NETS key — Press.

NOTE

RADIO selection at L-4 selects the NET transmission radio. The radio selected to receive net traffic need not be the same.

b. RADIO 1 through RADIO 4 keys — Press one of the keys and use MFK to type in the desired net number for each radio to receive.

c. RTN key — Press.

d. ORIG key — Enter subscriber identifier.

e. TEAM key — Enter team number.

f. BC key — Enter broadcast number.

NOTE

Time of day is automatically input by GPS.

g. TIME key — Enter current time of day only if GPS fails.

IDM SHUTDOWN — CPG

CAUTION

Do not remove power from IDM before accomplishing a manual shutdown. Doing so may corrupt the IDM's configuration databases, requiring maintenance action to recover.

1. Press IDM key to display INITIAL PAGE 1.
2. Press L-4, as required, to select HOG ON.
3. On CPG cyclic, press freeze frame switch to display HOG menu on MFD.
4. Using FOV switch, select SHUTDOWN on HOG menu. Press PNT TRK switch to confirm (enter) selection.
5. Using FOV switch, select CONFIRM SHUTDOWN. Press PNT TRK switch to confirm (enter) selection.
6. SHUTDOWN IN PROGRESS will display on HOG menu.
7. Shutdown is complete when the HOG menu returns to INIT-DB/DF display.
8. On CPG MFD INITIAL PAGE 1, press L-4 as required to select HOG OFF. Verify HOG menu display is removed.

MMS MANUAL BORESIGHT

A manual boresight is recommended prior to the first automatic boresight on a power cycle, when LOS reticle shifts off target upon FOV or sensor change, or when a REBORESIGHT message remains after automatic boresight. If any of the previous conditions exists, accomplish a manual boresight as follows:

NOTE

- If required, TIS setup procedure should be performed prior to obtain proper TIS picture.
- MMS is boresighted automatically in TV NFOV and TIS NFOV only. Manual boresighting can be accomplished in wide or narrow. Each sensor should be boresighted in WFOV prior to NFOV.
- Only one sensor FOV can be boresighted at a time in BRST MAN. To boresight each, it is necessary to deselect BRST MAN, select the other sensor and/or FOV, then reselect BRST MAN.

1. OPR mode select switch — PREFLT.
2. LASER ARM/STBY/OFF switch — ARM.
3. TV/TIS switch — Select desired sensor.
4. FOV SEL switch —Select desired field of view.
5. BRST MAN key — Press. Resolution target appears for approximately 6 seconds then disappears. Check clear and in focus.
6. LASER fire switch — Press and hold. Adjust LOS reticle until it is centered over the laser spot by adjusting the LOS CONT switch. Then release LASER fire switch.
7. BRST MAN — Press to deselect manual boresight.
8. Repeat steps 3 through 7. as required to boresight each sensor and field of view.
9. LASER ARM/STBY/OFF switch — Set as required.

MMS AUTOMATIC BORESIGHT

NOTE

- If required, TIS setup procedures should be performed prior to boresighting to obtain proper TIS picture.
- TIS HOT message may remain as an advisory message. Disregard if TIS picture meets operational requirements.

1. FOV SEL switch — Select narrow field of view for both TV and TIS sensors.
2. OPR mode select switch — PREFLT.
3. LASER ARM/STBY/OFF switch — ARM.
4. BRST AUTO key — Press. Resolution targets for each sensor appear for approximately 6 seconds each, then disappear. Check clear and in focus.
5. LASER fire switch — Press and hold before second resolution target disappears.
6. TV and TIS — Verify laser spot size (TV 1/16 - 1/8 inch, TIS 2-3 lines for MSP, 3-4 lines for IMSP).Verify target gate displays sizes and tracks laser spot. There should be no jitter and spot should be centered in the gate.

NOTE

If REBORESIGHT appears after selecting an operating mode, accomplish manual boresight.

7. BRST COMPLETE message — Appears in status block.
8. LASER fire switch — Release.
9. LASER ARM/STBY/OFF switch — OFF. ▮

SINCGARS — SET AND CHECK

NOTE

- **(CDS2)** SINCGARS AN/ARC-201 radio may not be configured for 1 minute while radio completes BIT and initializes frequency presets.
- R SINCGARS AN/ARC-201D radio may not be configured for 1 minute while radio completes BIT and initializes frequency presets.
- Procedures for configuring both SINCGARS radios are typical.

1. COMM key (or DSPL SEL switch) — COMM page displays.
2. L-1/L-5 — Press to select FM radio.
3. R-5 — Press to access FM control page.
4. SC/FH key — Press to select single channel or frequency hop. (For **(CDS4)**, SC/FH/FH-M — Press to select single channel; frequency-hopping - member (FH); or frequency-hopping - master (FH-M).)
5. EMER T/R key — Press to select current SC or emergency frequency.
6. PWR key — Press to select IFM power level.

NOTE

- KYBD will not display when FH is selected since frequencies/channels cannot be changed in FH mode.
- ERR will display when channel entered is not in frequency list or if entered frequency is out of range for the radio.

7. KYBD key — Press to activate MFK for entering radio channels from frequency list or manual frequencies.

8. TOD key — Press to retrieve the radios TOD. A cursor will appear allowing entry of a new TOD. All leading and trailing zeros must be entered. If no new TOD is entered then radios will retain the displayed TOD.

NOTE

SQL displays and squelch function is activated only when SC mode is selected.

9. SQL key — Press to select squelch as desired.

10. OSET/MEMBER/CONTROL key — Press to select as desired. Selects frequency offset for current preset or manual frequency when operating in the SC mode. MEMBER or CONTROL is selected when operating in the FH mode. (For **(CDS4)**, this key is blank in frequency-hopping mode. Operating mode (member or master) is selected at L-1.)

11. FREQ LIST key — Press to select frequency list. **(CDS4)** - FH frequency list is displayed boxed in center of page.)

12. **(CDS4)** DATA MODE key — Press R-3 to toggle between SDM and EDM modes.

13. **(CDS4)** DATA RATE key — Press R-4 to cycle through data rates available for selected mode.

14. FH DATA PAGE 2 key — Press to load, edit, and select frequency hop data page 2 when FH mode is selected.

15. ERF RCV/SEND key — Press to select as desired. ERF SEND retrieves FH data from radio permanent memory and sends data to net members when in CONTROL mode. ERF RCV configures radio to receive a remote fill from net controller when in MEMBER mode.

NOTE

- **(CDS3)** L-2 is LOAD key and, when helicopter is on the ground, toggles between COMSEC and MODE 23.
- **(CDS4)** L-2 is LOAD key and toggles among COMSEC, HSET, LSET, and MODE 23.

16. HSET/LSET key — Press to select hopset display or lockset display information.

17. CH keys — Press to increment/ decrement displayed fill channel code received from radio. Displayed channel code received from radio. Displayed channel number is channel in which the hopset is stored and hopset used for frequency hopping when FH data selected is HSET. Displayed channel number is the first digit of lockout set when FH data selected is LSET.

NOTE

This channel number is not to be confused with operational frequency channel of the radio. This channel is for selection and display of FH parameter only.

18. HSET EDIT key — Press to change existing channel code or create new code. Code displays next to HSET channel number. (**(CDS4)** - L-5 has no legend or functionality. HSET EDIT functions on COMM CONTROL page at R-1 when FH or FH-M mode is selected.)

NOTE

(CDS4) - ZEROIZE is at R-1 and LATE NET is at R-2.

19. ZEROIZE/LATE NET (R-1) — ZEROIZE clears all data stored in the RT, including all preset SC frequencies and FH data. When pressed ZEROIZE will flash; press R-1 again to ZEROIZE. ZEROIZE is only available when the helicopter is on the ground. LATE NET allows the RT containing all fill data, but whose clock is out of sync, to join a net. To activate LATE NET, select appropriate FH channel (L-3/L-4) and press R-1 (**(CDS4)** - Press R-2); LATE NET will box until the RT has received a new time sync. LATE NET is only available when the helicopter is off the ground.

NOTE

While LATE NET is boxed, transmission by other members of the net causes the radio's time to synchronize.

20. COPY HSET (R-2) — Allows one channel to be copied to another. When pressed display will change to FROM CH=, a stored channel is entered from the MFK, the cursor changes to TO CH=, and desired destination channel is entered from the MFK. (**(CDS4)** - R-2 is LATE NET. COPY HSET functions on COMM CONTROL page at R-2 when FH or FH-M mode is selected.)

21. FILL (R-3) — Allows TSEC variable, HSET variables and LSET variables to be loaded to the RT while the helicopter is

on the ground. To load, connect fill device to RT, select desired variable on fill device, and turn fill device power on. Press R-3, which will box FILL, and allow the RT to interrogate fill device. The TSEC variable is loaded by selecting manual (M) channel at L-3/L-4 and pressing FILL. Once TSEC variable is loaded, legend COLD will appear adjacent to channel indicator when M channel is selected. If an HSET is interrogated, then that HSET will be stored with displayed HSET channel number. If an LSET is interrogated, then LSET channel number associated with LSET will be stored and displayed. After complete, turn fill device power off and remove from RT. FH will not function if fill device is left attached to RT.

NOTE

- ERR will appear adjacent to R-4 if current HSET channel is entered.
- Cannot clear currently selected channels.

22. CLEAR (R-4) — Clears individual channels. When pressed, display changes to CH=; select channel to be cleared and enter on MFK.

ASE — CHECK

Operation AN/APR-39A(V)1

1. WPN ASE or WEAPON SEL switch — Position to ASE.

2. ASE SET-UP/BIT page — Verify appears on CPG MFD.

NOTE

- The user defined module (UDM) must be installed in the AN/APR-39A(V)1 prior to aircraft power up. If the UDM is not installed, the radar warning indicator will display a **"**p**"** after an initial BIT. An audio message will annunciate **"**APR-39 failure.**"** Any subsequent strobe displays on the indicator should be considered unreliable.
- If the AN/APR-39A(V)1 radar detecting system is not installed, the legend to the right of L-1 will be blank.
- **(CDS4)** - If AVR-2 is not installed, the first line of the legend to the right of L-1 will be blank. If AN/APR-39A(V)1 is not installed, the second and third lines of the legend will be blank.

3. PULSE RADAR WARN PWR — OFF. Verify displayed on the first line to the right of L-1.

4. FULL and TERSE — Verify displayed on the third line to the right of L-1.

NOTE

AN/APR-39A(V)1 mode is controlled by L-1. Successive presses of L-1 cause the AN/APR-39A mode to toggle between FULL and TERSE modes.

5. RADAR WARN circuit breaker switch — RADAR. Verify that the legend to the right of L-1 changes to PULSE RADAR WARN PWR — ON and VOICE APR-39 power up should be heard AVR-2 PWR ON should also be present.

NOTE

Allow one minute for system warmup.

6. R-1 — Press to initiate system BIT.

7. SELF-TEST SET VOLUME 1 through 12 — Verify synthetic voice count is heard on the headset.

8. Volume — Adjust audio level while count is taking place and verify proper volume control operation.

9. RWR system indicator — Verify displays the numbers of operational flight program (OFP) and emitter identification data (EID).

NOTE

If a fault is noted, the display shall show two triangles for the aft and forward location, with the faulty receiver blinking.

10. Indicator — Verify forward and aft receivers triangles appear at 6 and 12 o'clock.

11. Asterisk — Verify appearance in all four quadrants along with the system receiver status. They represent AVR-2A sensors.

12. APR-39 OPERATIONAL — Heard on the ICS headset at the end of successful self-test operation.

13. APR-39 FAILURE — Heard on the ICS headset at the end of successful self-test operation.

14. **"+"** symbol — After completion of self-test, should be displayed at the center of the indicator.

15. L-1 — Select TERSE.

16. R-1 — Press to initiate self-test.

17. SELF-TEST SET VOLUME 5 through 1 — Verify synthetic voice short count heard on the ICS headset.

NOTE

- **(CDS2)** If the ISP fails, the AN/APR-39A(V)1 will default to FULL mode. Audio will be present but at reduced amplitude. ASE SET-UP/BIT page will display whatever was present at the time the ISP failed.
- R If the R MCPU fails the AN/APR-39A(V)1 will default to FULL mode. Audio will be present but at reduced amplitude. ASE SET-UP/BIT page will display whatever was present at the time the R MCPU failed.

18. Display — Verify symbology same as in FULL mode.

Operation AN/APR-44

NOTE

- **(CDS2)** If the ISP fails the AN/APR-44 will default to ON. Audio will still be present but at reduced amplitude. No advisories will display with the ISP failed.
- R If the R MCPU fails the AN/APR-44 will default to ON. Audio will still be present but at reduced amplitude. No advisories will display with the R MCPU failed.

1. RADAR DETR circuit breaker switch — RADAR. Allow 1 minute warmup.
2. CW RADAR WARN PWR — Check ON displays.
3. Volume — Adjust as required.
4. Headset — Verify low pitch tone followed by brief high pitch tone and momentary display of MISSILE ALERT — Al and MISSILE ALERT — SAM advisories.

Operation AN/AVR-2A

The AN/AVR-2A is checked simultaneously with the AN/APR-39A(V)1 system. Once system bit is completed the system is ready for operation.

NOTE

If the **(CDS2)** ISP/R R MCPU fails, the AN/AVR-2A will operate in the backup default mode. While operating in the default mode the AN/AVR-2A will continue to provide normal function with the following exceptions: current system power status will not be displayed on the ASE SET-UP/BIT page. Aural warning will be reduced in amplitude.

1. RADAR WARN circuit breaker switch — RADAR. Allow 1-minute warmup.
2. AVR-2A PWR — Check ON displays.
3. PULSE RADAR WARNING BIT key — Press. Four asterisks will appear simultaneously. A faulty AN/AVR-2A quadrant is shown as a flashing asterisk. No audio announcement is associated with the AN/AVR-2A self-test.
4. BRIL control — Rotate, check indicator illumination.
5. Volume — Adjust as required.

Operation AN/ALQ-144

NOTE

- ASE SET-UP/BIT page may be selected by pressing the WPN ASE button on the CPG auxiliary panel.
- AN/ALQ-144 is an active IR countermeasure system that is separate from the AN/APR-44 radar warning system.

1. ASE SEL switch — Press. ASE SET-UP/BIT page displays.
2. IR JAMMER BASE switch — IR JAMMER (ON).
3. IR JAMMER XMTR switch — XMTR (ON).
4. MFD — Check ON-IR JAMMER PWR displays.
5. After a minimum of 15 minutes of operation, IR JAMMER BASE switch — BASE (OFF).
6. IR JAMMER XMTR switch — IR JAMMER (OFF).
7. MFD — Check OFF-IR JAMMER PWR displays, after 1-minute cool down period.

WEAPONS SYSTEMS — CHECK

.50 CALIBER MACHINE GUN

EXTERIOR — CHECK

1. Ejector rack — Check.
2. Ammunition can — Check.

O 3. Ammunition — Properly loaded.

4. Ammunition can cover — Closed and locked.

5. Feed chute — Check.

6. Electrical connectors — Secure.

7. Cover — Open.

8. Bolt — Forward.

9. Feed mechanism — Aligned.

10. First round — Curved portion against stripper with double loop link toward gun.

11. Cover — Closed and locked.

WARNING

The gun is now loaded. Personnel should avoid passing directly in front of the gun.

12. Gun — Check.

ENGINE RUNUP

1. MASTER switch — STBY.

2. PDU BIT — Accomplish.

3. WEAPON SEL switch — Select WEAPONS PAGE.

4. L-3 — Press. Enter number of rounds loaded.

5. WEAPON SEL switch — Select gun.

NOTE

Ground personnel should hold up round and link to indicate proper ammunition feeding.

6. GUN switch — RECOCK (strips first round out and chambers round).

2.75 INCH ROCKETS

EXTERIOR — CHECK

1. Ejector rack — Check; impulse cartridges installed.

O 2. Rockets — As required.

3. Launcher — Check. Check lanyard attached.

4. Electrical connectors — Check.

O 5. Fuze umbilical — Connected.

ENGINE RUNUP

1. MASTER switch — STBY.

2. PDU BIT — Accomplish.

3. WEAPON SEL switch — Select WEAPONS PAGE.

4. R-5 — Press to select WEAPONS BIT/ SET-UP PAGE.

5. R-4 — Press to select ROCKET TYPES by ZONE MENU.

6. WARHEAD — Enter ZONE A type followed by ZONE B type.

7. R-5 — Press to return to WEAPONS PAGE.

8. L-4 — Press to enter AIRBURST FUZE/ CUE DISTANCE as required.

9. L-5 — Press to enter CONTACT FUZE/ CUE DISTANCE as required.

10. ROCKET SPARSE VSD — Select.

11. MODE — Select as required.

12. ZONE — Select as required.

ATAS

EXTERIOR — CHECK

1. Ejector rack — Check; impulse cartridges installed.

O 2. Coolant bottle — Check for 4500 to 6500 psi. If less than 3500 psi, coolant bottle must be recharged.

3. Missile launcher — Check.

4. Missiles — Check as follows:

O a. Blowout disk — Check.

b. Electrical connections — Check.

c. Humidity indicator — Check (green).

O d. IR cover — Remove.

e. Seeker head — Check.

ENGINE RUNUP

1. MASTER switch — STBY.

2. PDU BIT — Accomplish.

3. WEAPON SEL switch — Select WEAPONS PAGE.

4. R-5 — Press to select WEAPONS BIT/ SET-UP PAGE.

5. ATAS BIT — Press.

HELLFIRE

1. Ejector rack — Check; impulse cartridges installed.

2. Missile launcher — Check as follows:

   a. SAFE/ARM switch — SAFE.

   b. Umbilical connector — Check connected to launcher. Pullaway cable connected to rack and connector.

   c. Missiles — Check missile security on rail and that holdback release handle is in the LATCH position.

3. Rails — Check as follows:

   a. Grounding straps — Check.

   b. Electrical cover plate — Down (if missile not installed).

CAUTION

If only one missile is loaded on a launcher, the missile shall be loaded on the outboard launcher rail.

   c. Missile load configuration — Per mission requirement.

   d. Swaybrace and jamnuts — Check.

O 4. Missiles — Check as follows:

WARNING

If deice cover (environmental protective cover) is installed, aircraft doors must be installed and vents placed in the closed position to prevent injury to personnel from shattered frangible dome.

a. Seeker dome — Clean and undamaged.

b. Deice dome cover — Check dome cover installation on missiles and harness connection to launcher rail.

c. Strakes/wings/control surfaces — Check.

d. Missile body — Check.

ENGINE RUNUP

1. MASTER switch — STBY.

2. WEAPON SEL switch — Select WEAPONS PAGE.

NOTE

- The laser codes are entered into the system from the MFK onto the Laser Code List page on the MMS. No two addresses should have the same laser code.
- When entering codes into the HMS the first digit must be 1, the second, third and fourth digits can be any number from 1 through 8. The system will not accept the numbers 9 and 0.

3. R-1 — Press to enter PRI/ALT laser codes.

4. R-5 — Press to select WEAPONS BIT/ SET-UP PAGE.

5. R-1 — Press to enter MISSILE PER CODE data.

6. L-1 — Press to perform HELLFIRE BIT.

AIRBORNE CALIBRATION

NOTE

- Airborne calibration should be checked for proper accuracy on every flight. Airborne calibration is performed only if prepoint target is not visible in narrow field of view.
- Surveyed locations are much better than ones whose coordinates are read from a map.

1. Target waypoint — Enter and select as fly-to waypoint in the FLIGHT PLAN.

2. Ensure the navigation system is accurate.

3. Helicopter — Position at hover at least 3 km from target being used, with the target visible in the MMS.

4. MMS mode select switch — PREFLT.

5. SETUP key — Press.

6. AIRBORNE CAL key — Press to display the AIRBORNE CALIBRATION Page.

7. Clear key — Press, as required to eliminate existing airborne cal values.

8. Store key — Press as required.

9. TV or TIS narrow field-of-view — Select and point track the target.

10. Target — Position helicopter to put target greater than 90° to the right of helicopter.

11. TGT RIGHT key — Press.

12. Target — Perform a right pedal turn at no more than 5° per second to position target greater than 90° to the left of helicopter.

13. TGT LEFT — Press.

14. STORE key — Press to load these values into nonvolatile memory, as desired.

NOTE

- Failure of airborne cal is usually very obvious. When step 15 is completed and the target is not even close, sequence through the flight plan back to correct target and repeat airborne cal beginning at step 3.
- If step 15 reveals the target is close but not within narrow FOV or if an azimuth error exists but elevation is good, an EGI heading error could be the cause. In this event, repeat the entire airborne cal beginning at step 1.

15. MMS mode select switch — PREPNT. Prepoint the target with wide field of view selected and verify airborne cal accuracy by verifying that the target is within narrow field of view area.

MANUAL DRIFT COMPENSATION

1. MMS mode select switch — PREFLT.

2. SETUP key — Press.

3. MDC key — Press to ON.

CAUTION

Ten to 200 seconds can be used and the longer sample will provide more accurate data. During the sampling period, the MMS LOS will continue to drift. Do not allow MMS to contact stops.

4. MDC key — Press to OFF.

5. MMS mode select switch — FWD.

6. MNL/SLAV switch — FWD mode.

7. MNL/SLAV switch — Press to enter manual track mode.

8. LOS drift — Check. If drift has not been corrected, call maintenance.

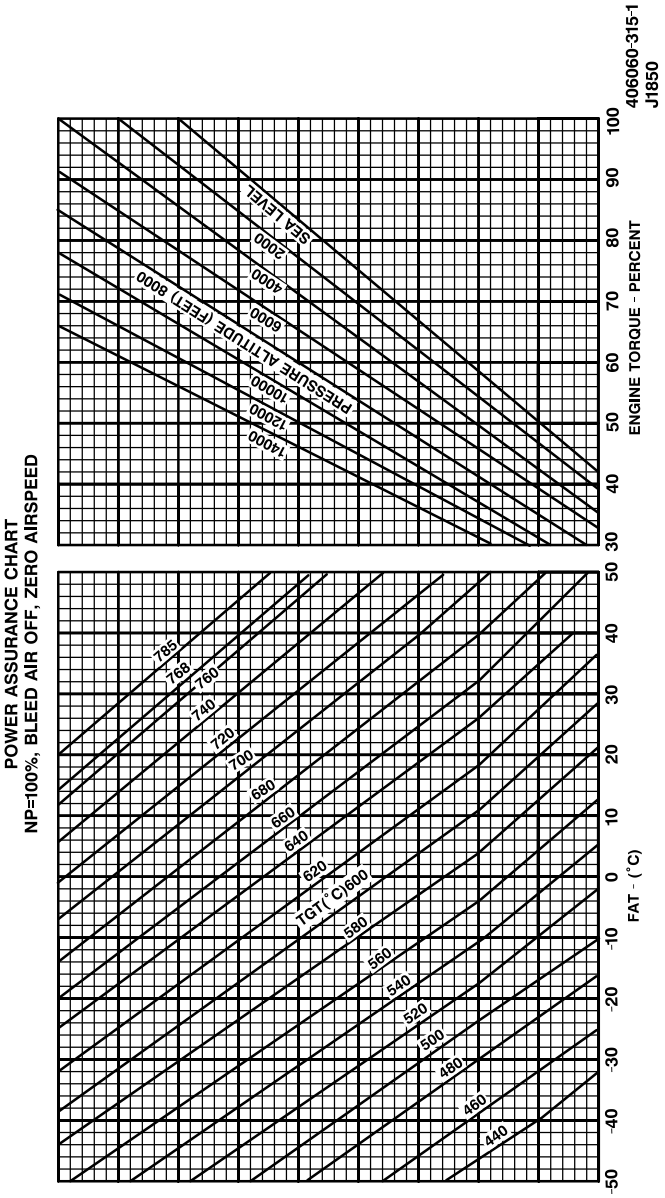

Figure 1. Power Assurance Charts (T703-AD-700A/250-C30R)(Sheet 1 of 2)

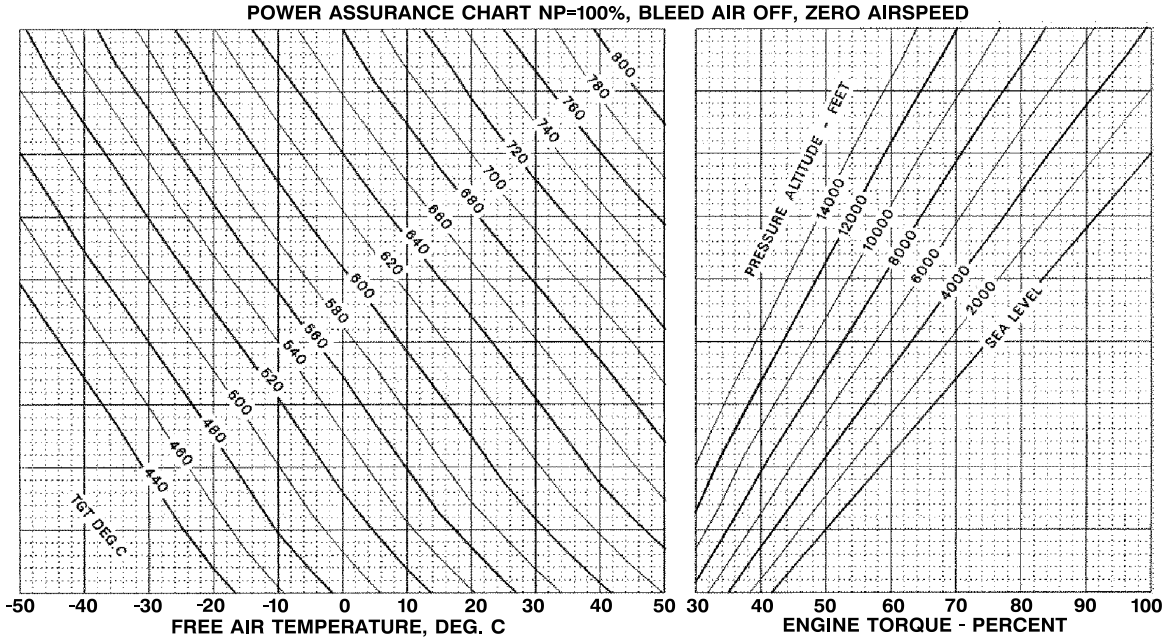

Figure 1. Power Assurance Chart (250-C30R/3) (Sheet 2 of 2)

TM 1-1520-248-CL

By Order of the Secretary of the Army:

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