

***TM 1-1520-280-CL**

TECHNICAL MANUAL

OPERATOR'S AND

CREWMEMBER'S

CHECKLIST

HELICOPTER

UH-60M NSN 1520-01-492-6324 (EIC: RSP)

HH-60M NSN 1520-01-515-4615 (EIC: N/A)

WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C. Sec. 2751 et seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App. 2401 et seq. Violation of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

DISTRIBUTION STATEMENT D. Distribution authorized to the DOD and DOD contractors only due to Critical Technology effective as of 15 June 2003. Other requests must be referred to Commander, US Army Aviation and Missile Command, ATTN: SFAE-AV-UH/L, Redstone Arsenal, AL 35898-5230.

DESTRUCTION NOTICE: Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

HEADQUARTERS

DEPARTMENT OF THE

ARMY

1 NOVEMBER 2007

**CHANGE
NO. 1**

**HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 20 June 2008**

**TECHNICAL MANUAL
OPERATOR'S AND CREWMEMBER'S
CHECKLIST**

**ARMY MODELS
UH-60M NSN 1520-01-492-6324 (EIC: RSP)
HH-60M NSN 1520-01-515-4615 (EIC: N/A)**

WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C. Sec. 2751 et seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App. 2401 et seq. Violation of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

DISTRIBUTION STATEMENT D. Distribution authorized to the DOD and DOD contractors only due to Critical Technology effective as of 15 June 2003. Other requests must be referred to Commander, US Army Aviation and Missile Command, ATTN: SFAE-AV-UH/L, Redstone Arsenal, AL 35898-5230.

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

TM 1-1520-280-CL, dated 1 November 2007, is changed as follows:

1. Remove and insert pages as indicated below. On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by a hand pointing to the changed area on the illustration or a MAJOR CHANGE symbol.

TM 1-1520-280-CL
C1

Text that flows to the following page is indicated by the current change number.

Remove pages

A and B
N-3 and N-4

N-5 and N-6
E-13 and E-14
P-3 and P-4
P-7 and P-8
P-19 and P-20

Insert pages

A and B
N-3 and N-4
N-4.1/(N-4.2 Blank)
N-5 and N-6
E-13 and E-14
P-3 and P-4
P-7 and P-8
P-19 and P-20

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0813402

DISTRIBUTION:

To be distributed in accordance with Initial Distribution Number (IDN) 314194, requirements for TM 1-1520-280-CL.

LIST OF EFFECTIVE PAGES

Insert latest changed pages; dispose of superseded pages in accordance with applicable regulations.

NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by a hand pointing to the changed area on the illustration or a MAJOR CHANGE symbol.

Dates of issue for original and changed pages are:

Original 0 1 November 2007
Change 1 20 June 2008

Total number of pages in this manual is 132 and consists of the following:

Page No.	*Change No.	Page No.	*Change No.
Title.....	0	E-9 - E-11	0
Blank.....	0	E-12 Blank.....	0
A	1	E-13.....	1
B.....	1	E-14 - E-21	0
i - iii	0	E-22 Blank.....	0
iv Blank.....	0	E-23 - E-43	0
N-1 - N-2	0	E-44 Blank.....	0
N-3 - N-4	1	P-1 - P-2.....	0
N-4.1	1	P-3 - P-4.....	1
N-4.2 Blank	1	P-5 - P-6.....	0
N-5	0	P-7.....	1
N-6	1	P-8 - P-18.....	0
N-7 - N-18	0	P-19.....	1
E-1 - E-7	0	P-20 - P-33.....	0
E-8 Blank.....	0	P-34 Blank	0

*** Zero in this column indicates an original page.**

TM 1-1520-280-CL

Page No.	*Change No.
P-35 - P-60.....	0

* Zero in this column indicates an original page.

GENERAL INFORMATION AND SCOPE

SCOPE. This checklist contains the operator's checks to be accomplished during normal and emergency operations.

GENERAL INFORMATION.

NOTE

This checklist does not replace the amplified version of the procedures in the operator's manual (TM 1-1520-280-10), but is a condensed version of each procedure.

This checklist consists of three parts: normal procedures, emergency procedures, and performance data. Normal procedures consist of the procedures required for normal flight and those required for "Before Landing". The normal procedures portion will be subdivided to include the before landing checks of Chapter 8 of the Operator's manual. Emergency procedures are subdivided into 10 classifications as follows: engine, propeller/rotor (insert either PROP or ROTOR), fire, fuel, electrical (ELECT), hydraulic (HYD), landing and ditching (LDG/DTCH), flight controls (FLT CONT), bailout or ejection (BAILOUT) (EJECT), and mission equipment (MSN/EQPT) (as applicable). Detailed procedures consist of detailed procedural checks.

NORMAL PROCEDURES PAGES. The contents of the normal procedures of this manual are a condensed version of the amplified checklist appearing in the normal procedures or crew duties portion of the applicable operator's manual.

EMERGENCY PROCEDURES PAGES. The requirements of this section of the condensed checklist manual (CL) are identical to those for the normal procedures, except that the information is drawn from the amplified checks in the emergency procedures portion of the operator's manual. The emergency requirements are subdivided into 10 classifications listed above. Immediate action items shall be underlined.

OZONE DEPLETING CHEMICAL INFORMATION. This document has been reviewed by the engineering, environment, and logistics oversight office for the presence of Class I Ozone Depleting Chemicals. As of 13 September 2004, all references to Class I Ozone Depleting Chemicals have been removed from this document, and chemicals that do not cause atmospheric ozone depletion have been substituted where possible.

HAZARDOUS MATERIAL INFORMATION. This document has been reviewed by the engineering, environment, and logistics oversight office for the presence of solvents containing Hazardous Materials, as defined by the EPCRA 302 and 313 lists. As of 13 September 2004, all references to solvents containing hazardous materials have been removed from this document, and non-hazardous or less hazardous materials have been substituted where possible.

CHECKLIST SYMBOLS. Symbols preceding numbered steps:

- * — Indicates performance of steps is mandatory for all thru flights.
- N — Indicates performance of step is mandatory for night flights.
- ★ — Indicates a detailed procedure for this step is included in the performance checks section, located at the back of the checklist.

- I — Indicates mandatory check for instrument flights.
- O — Indicates if installed.
- ④ — Pilot not on the controls duties.
- Immediate action emergency items are underlined.

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 these 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 Operator's Manual (when using the 2028-2 from the Operator's Manual, make sure the publication number and title are changed to reflect this CL), direct to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of the Operator's Manual immediately preceding the hard copy 2028. For the World Wide Web use <https://amcom2028.redstone.army.mil>.

BEFORE EXTERIOR CHECK.

1. Publications — Check.
- *2. Helicopter covers, locking devices, tiedowns, and grounding cables — Removed and secured.
- *3. Fuel — Check quantity as required.
4. Fuel sample (main and external) — Check.
5. Ensure all access covers and maintenance platforms are closed and checked secured.

EXTERIOR CHECK.

NOSE SECTION (AREA 1).

- *1. Main rotor blades and tip cap lower surface — Check for condition and security.
2. Fuselage — Nose area, check.

COCKPIT – LEFT SIDE (AREA 2).

1. Cockpit area — Check.
- *2. Left engine oil level — Check.
- *3. Check main landing gear drag beam for cracks.

CABIN TOP (AREA 3).

1. Cabin top — Check.
2. APU — Check; oil level.
- O 3. APU IPS — Check.
4. Gust lock — Check.

- O 5. Rotor brake — Check.
- 6. Main transmission — Check; oil level.
- *7. Main rotor system — Check.

INTERIOR CABIN (AREA 4).

- 1. Cabin — Check.
- 2. APU accumulator pressure gage — Check minimum 2,800 psi.
- 3. Transmission oil filter impending bypass indicator — Check.
- 4. Cargo hook — Check.
- 5. Survival gear and mission equipment — Check as required.

FUSELAGE – LEFT SIDE (AREA 5).

- 1. Fuselage — Check.
- *2. Intermediate gear box — Check; oil level.

TAIL PYLON (AREA 6).

- 1. Tail pylon — Check.
- *2. Tail rotor — Check.
- *3. Tail rotor gear box — Check; oil level.

FUSELAGE – RIGHT SIDE (AREA 7).

- 1. Fuselage — Check.

COCKPIT — RIGHT SIDE (AREA 8).

- *1. Right engine oil level — Check.
- 2. Cockpit area — Check.
- *3. Check main landing gear drag beam for cracks.
- 4. Ensure all access covers and maintenance platforms are closed and checked.
- ★*5. Crew and passenger briefing — Complete as required.

BEFORE STARTING ENGINES.

- *1. Copilot's collective — Extended and locked.
- 2. Shoulder harness locks — Check.
- 3. VLEA — Set as required.
- 4. **PARKING BRAKE** — Release, then set.
- ★5. Circuit breakers and switches — Set.
- *6. **BATT NO. 1** and **NO. 2** switches — **ON**.
Beeping tones will be heard during the digital ICS start up checks. Transmit briefly over any radio to cancel the tone.

COCKPIT EQUIPMENT CHECKS.

- *1. **FUEL PUMP** switch — **APU BOOST**.
- *2. **APU CONT** switch — **ON**.
- *3. **GENERATORS APU** switch — **ON**.
- *4. **STBY INST** switch — **ARMED**.

- *5. **EXT PWR** switch — **OFF** and cable disconnected.
- *6. **MFDs** — **ON**.
- *7. **EGI 1** and **EGI 2** switches — **ON**.
- 8. **MASTER WARNING PANEL** — Check **#1 ENG OUT**, **#2 ENG OUT**, **LOW ROTOR R.P.M** segment lights are illuminated. If not pull the segment light out $\frac{1}{4}$ inch, then push back in to reset the bulb.
- ★9. **LAMPS TEST** button — Press and check.
- 10. Fire detection system — Test.
 - a. **FIRE DETR TEST** switch — Position **1**. **APU T-handle**, **#1** and **#2 ENG EMER OFF** T-handles, and master **FIRE** warnings lights illuminate.
 - b. **FIRE DETR TEST** switch — Return to **OPER**, all **FIRE** warning lights extinguish.
- *11. **SAS1**, **SAS2**, **TRIM**, **FPS** switches — **ON**.
- *12. Press **FCC FAILURE RESET** switches.
- *13. Load mission data.
- ★14. **FMS** initialization — Check as required.
- N 15. Interior/exterior lighting — Set.
- O★16. Mission equipment — Check.
- ★*17. Cold weather control exercise — Check if temperature is below -17°C (1°F).

- ★18. Flight controls — Check first flight of day.

- *19. Cyclic and pedals centered. Collective raise no more than 1 inch.
- 20. **BACKUP HYD PUMP** switch — **OFF**.
- ★21. Stabilator — Check.
- 22. Barometric altimeters — Set.
- O★23. Blade deice system — Test as required.
- ★24. Avionics — Check and set as required.
- 25. MFDs — Set-up for mission.

STARTING ENGINES.

- *1. **ENG FUEL SYS** selector(s) — As required. **XFD** for first start of day.
- *2. **ENGINE IGNITION** switch — **ON**.
- *3. **GUST LOCK ENGAGED** caution — Verify off.
- *4. Fire guard — Posted if available.
- *5. Rotor blades — Check clear.
- O*6. Rotor brake — On, if required. Minimum pressure 450 psi.
- ★* (7.) Engine(s) — Start.
- * (8.) If single-engine start was made, repeat step 7. for other engine.
- O*9. Rotor brake, if applied — Off. **ROTOR BRAKE ON** advisory disappears. Monitor tip

path plane. Adjust cyclic as required to reduce droop stop pounding.

- * (10). Systems check.
- * (11). **BACKUP HYD PUMP** switch — **AUTO**.
- ★ (12). Hydraulic leak test system — Check.
- ★ (13). Tail rotor servo transfer — Check.
- O (14). **AUX CABIN HEATER** switch — As desired.

ENGINE RUNUP.

- *1. Flight controls — Hold.
- * (2). **ENG POWER CONT** lever(s) — **FLY**.
- *3. Droop stops — Check out 70% to 75% **NR**.
- *4. **AVCS INOP** advisory disappears above 90% **NR**.
- * (5). **GEN 1 FAIL** and **GEN 2 FAIL** cautions disappear above 95% **NR**.
- *6. Engine warmup — Check if temperature is below -17°C (1°F).
- O★ (7). **DEICE EOT** — Check as required.
- *8. **Q1** and **Q2** — Matched within 5%.
- * (9). **FUEL PUMP** switch — **OFF**.
- * (10). **APU CONT** switch — **OFF**.
- * (11). **AIR SCE HT/START** switch — As required.

- ⑫. **ENG FUEL SYS** selectors — **DIRECT**.
- ⑬. Engine Health Indicator Test (HIT)/Anti-Icing Check — Accomplish.
- O*14. **HH-60M** FLIR — **ON**, wait for self-test complete, set as desired, focus 2X, and modes set.
- N*15. HUD — Adjust brightness, mode, and barometric altitude as necessary.
- *16. **HH-60M** ECS panel switches — As desired.
- *⑰. **FUEL BOOST PUMP** switch(es) — As required. **BOOST PUMP 1** and **2 ON** advisories check on, if required.
- O ★ ⑱. CEFS — Check.
 - 19. Flight instruments — Check and set as required.
 - *20. FMS — Check status.
 - *21. Clear all AFCC BITE codes.
 - 22. Microclimate cooling system (if use is anticipated) — Check. Turn BCA MCU control knob clockwise and check for leaks; note change in temperature. Adjust to desired cooling position.

BEFORE TAXI.

- O*1. Ejector rack lock levers unlocked.
- O ②. **CMWS** **CHAFF** **DISP** panel **ARM SAFE** switch — As required.

O*3. Volcano jettison safety pins — Remove and red arming levers to arm.

O*4. Chaff, electronic module(s) safety pin(s) — Remove.

*5. Chocks — Removed.

*6. Doors — Secure.

*7. **PARKING BRAKE** — Release.

* (8.) **TAIL WHEEL** switch — As required.

9. Wheel brakes — Check as required.

O *10. **CHAFF** **AUTO BYPASS** switch — **BYPASS**.

O * (11.) **CMWS** **CHAFF** Crew safety pin — Remove.

HOVER CHECK.

(1.) Systems — Check cautions/advisories and MFD(s) for normal indications.

(2.) Flight instrument displays — Check as required.

(3.) Power — Check. The power check is done by comparing the indicated torque required to hover with the predicted values from performance charts.

BEFORE TAKEOFF.

* (1.) **ENG POWER CONT** levers — **FLY**.

* (2.) Systems — Check.

* (3.) Avionics — As required.

- * ④ Crew, passengers, and mission equipment — Secure.
- O * ⑤ **CMWS** **CHAFF** On FMS Press MSN → **CMWS** — **CMWS** Check total chaff/flare quantity. **CHAFF** Check total chaff quantity.

AFTER TAKEOFF.

- O ① CEFS transfer — As required.
- ② **HH-60M** OBOGS — As required.
- O ③ **CMWS** **CHAFF** DISP panel ARM SAFE switch — As required.
- O ④ Volcano mine launch, post mine launch — As required.

BEFORE LANDING.

- ① TAIL WHEEL switch — As required.
- ② PARKING BRAKE — As required.
- ③ Crew, passengers, and mission equipment — Secure.
- O ④ AUX FUEL MANAGEMENT PANEL switches — OFF or CLOSE.
- O ⑤ **CMWS** **CHAFF** DISP panel ARM SAFE switch — SAFE.

AFTER LANDING CHECK.

- ① TAIL WHEEL switch — As required.
- ② Exterior lights — As required.

- ③. Avionics/mission equipment — As required.
- O ④. **CMWS** **CHAFF** Crew safety pin — Installed and locked.

PARKING AND SHUTDOWN.

- ①. **TAIL WHEEL** switch — As required.
- 2. **PARKING BRAKE** — Set.
- ③. **FUEL BOOST PUMP** switches — **OFF**.
- 4. Landing gear — Chocked.
- O 5. Volcano red arming levers — **SAFE** and jet-tison safety pins install.
- O 6. Ejector rack locking levers — Locked.
- O 7. Chaff electronic module(s) safety pin(s) — Install.
- ⑧. **HH-60M** ECS panel switch — **OFF**.
- 9. **HH-60M** FLIR — **STOW**, then **OFF**.
- O ⑩. **AUX CABIN HEATER** switch — **OFF**.
- ⑪. **DEICE, PITOT, ANTI-ICE** and **HEATER** switches — **OFF**.
- ⑫. **FUEL PUMP** switch — **APU BOOST**.
- ⑬. **APU CONT** switch — **ON**. The **APU ON**, **BACK UP PUMP ON** and **APU ACCUM LOW** advisories — Appear.
- 14. **GENERATORS NO.1** and **NO.2** switches — **OFF**.

15. DTS — Store as required.
16. **HH-60M** Mission equipment — Off, as required.
17. Collective raise no more than 1 inch.
18. Flight controls — Hold.
- ⑰ **ENG POWER CONT** levers — **IDLE**.
- ⑱ **ENGINE IGNITION** switch — **OFF**.
21. Cyclic — As required to prevent anti-flap pounding.
22. Droop stops — Verify in, about 50% **NR**.
- ⑲ **BACKUP HYD PUMP** switch — **OFF**.
24. Stabilator — Slew to 0° after last flight of the day.
- ⑳ **BACK UP PUMP ON** advisory — Check off.
- ㉑ **ENG POWER CONT** levers — **OFF** after 2 minutes at **NG** of 90% or less.
- ㉒ **ENG FUEL SYS** selectors — **OFF**.
- O 28. Rotor brake — As required, 150-180 PSI at or below 40% **NR**.
- ㉔ **TGT** — Monitor.
30. DEC torque indicator fault codes — Check.
31. Overhead switches — As required.
32. **EGI 1** and **EGI 2** switches — **OFF**.

- 33. MFDs — **OFF**.
- 34. **STBY INST** — **OFF**.
- O★35. Pressure refueling — If required for auxiliary fuel systems.
- 36. **GENERATORS APU** switch — **OFF**.
- 37. **FUEL PUMP** switch — **OFF**.
- 38. **APU CONT** switch — **OFF**.
- 39. **BATT** switches — **OFF**.

BEFORE LEAVING HELICOPTER.

- 1. Walkaround — Complete, checking for damage, fluid leaks and levels.
- 2. Mission equipment — Secure.
- 3. DTS data cartridge(s) — Remove as required.
- 4. Complete logbook forms.
- 5. Secure helicopter — As required.

THRU-FLIGHT CHECKLIST BEFORE EXTERIOR CHECK.

- *1. Helicopter covers, locking devices, tiedowns, and grounding cables — Removed and secured.
- *2. Fuel — Check quantity as required.

EXTERIOR CHECK.

NOSE SECTION (AREA 1).

- *1. Main rotor blades and tip cap lower surface — Check for condition and security.

COCKPIT – LEFT SIDE (AREA 2).

- *1. Left engine oil level — Check.
- *2. Check main landing gear drag beam for cracks.

CABIN TOP (AREA 3).

- *1. Main rotor system — Check.

FUSELAGE – LEFT SIDE (AREA 5).

- O*1. Volcano armament system — Check.
- *2. Intermediate gear box — Check; oil level.

TAIL PYLON (AREA 6).

- *1. Tail rotor — Check.
- *2. Tail rotor gear box — Check; oil level.

FUSELAGE – RIGHT SIDE (AREA 7).

- O*1. Volcano armament system — Check.

COCKPIT — RIGHT SIDE (AREA 8).

- *1. Right engine oil level — Check.
- *2. Check main landing gear drag beam for cracks.
- ★*3. Crew and passenger briefing — Complete as required.

BEFORE STARTING ENGINES.

- *1. Copilot's collective — Extended and locked.
- *2. **ANTI COLLISION, POSITION and FORMATION LIGHTS** — As required.
- *3. **NO. 1 and NO. 2 GENERATORS** switches — **ON**.
- *4. **BATT NO. 1 and NO. 2** switches — **ON**. Beeping tones will be heard during the digital ICS start up checks. Transmit briefly over any radio to cancel the tone.

COCKPIT EQUIPMENT CHECKS.

- *1. **FUEL PUMP** switch — **APU BOOST**.
- *2. **APU CONT** switch — **ON**.
- *3. **GENERATORS APU** switch — **ON**.
- *4. **STBY INST** switch — **ARMED**.
- *5. **EXT PWR** switch — **OFF** and cable disconnected.

- *6. MFDs — **ON**.
- *7. **EGI 1** and **EGI 2** switches — **ON**.
- *8. **SAS1, SAS2, TRIM, FPS** switches — **ON**.
- *9. Press **FCC FAILURE RESET** switches.
- *10. Load mission data.
- ★*11. Cold weather control exercise — Check if temperature is below -17°C (1°F).
- *12. Cyclic and pedals centered. Collective raise no more than 1 inch.

STARTING ENGINES.

- *1. **ENG FUEL SYS** selector(s) — As required. **XFD** for first start of day.
- *2. **ENGINE IGNITION** switch — **ON**.
- *3. **GUST LOCK ENGAGED** caution — Verify off.
- *4. Fire guard — Posted if available.
- *5. Rotor blades — Check clear.
- O*6. Rotor brake — On, if required. Minimum pressure 450 psi.
- ★* (7.) Engine(s) — Start.
- * (8.) If single-engine start was made, repeat step 7. for other engine.
- O*9. Rotor brake, if applied — Off. **ROTOR BRAKE ON** advisory disappears. Monitor tip

path plane. Adjust cyclic as required to reduce droop stop pounding.

- * ⑩. Systems check.
- * ⑪. **BACKUP HYD PUMP** switch — **AUTO**.

ENGINE RUNUP.

- *1. Flight controls — Hold.
- * ②. **ENG POWER CONT** lever(s) — **FLY**.
- *3. Droop stops — Check out 70% to 75% **NR**.
- *4. **AVCS INOP** advisory disappears above 90% **NR**.
- * ⑤. **GEN 1 FAIL** and **GEN 2 FAIL** cautions disappear above 95% **NR**.
- *6. Engine warmup — Check if temperature is below -17°C (1°F).
- *7. **Q1** and **Q2** — Matched within 5%.
- * ⑧. **FUEL PUMP** switch — **OFF**.
- * ⑨. **APU CONT** switch — **OFF**.
- * ⑩. **AIR SCE HT/START** switch — As required.
- O*11. **HH-60M** **FLIR** — **ON**, wait for self-test complete, set as desired, focus 2X, and modes set.
- N*12. **HUD** — Adjust brightness, mode, and barometric altitude as necessary.
- *13. **HH-60M** **ECS** panel switches — As desired.

* ⑭ **FUEL BOOST PUMP** switch(es) — As required. **BOOST PUMP 1** and **2 ON** advisories check on, if required.

*15. FMS — Check status.

*16. Clear FCC bite codes.

BEFORE TAXI.

O*1. Ejector rack lock levers unlocked.

O*2 Volcano jettison safety pins — Remove and red arming levers to arm.

O*3 Chaff, electronic module(s) safety pin(s) — Remove.

*4 Chocks — Removed.

*5 Doors — Secure.

*6 **PARKING BRAKE** — Release.

* ⑦ **TAIL WHEEL** switch — As required.

O *8. **CHAFF** **AUTO BYPASS** switch — **BYPASS**.

O * ⑨ **CMWS** **CHAFF** Crew safety pin — Remove.

BEFORE TAKEOFF.

* ① **ENG POWER CONT** levers — **FLY**.

* ② Systems — Check.

* ③ Avionics — As required.

* ④ Crew, passengers, and mission equipment — Secure.

O * (5.) **CMWS** **CHAFF** On FMS Press **MSN** →
CMWS — **CMWS** Check total chaff/flare
quantity. **CHAFF** Check total chaff quantity.

Section I. Aircraft Systems

ENGINE.

SINGLE-ENGINE FAILURE.

1. Collective — Adjust to maintain NR.
- ② External cargo/stores — Jettison (if required).

If continued flight is not possible:

3. LAND AS SOON AS POSSIBLE.

If continued flight is possible:

4. Establish single-engine airspeed.
5. LAND AS SOON AS PRACTICABLE.

DUAL-ENGINE FAILURE.

AUTOROTATE.

DECREASING NR.

1. Collective — Adjust to control NR.
- ② ENG POWER CONT lever — LOCKOUT
low Q/TGT engine. Maintain Q approximately
10% below other engine.
3. LAND AS SOON AS PRACTICABLE.

INCREASING NR.

- ①. ENG POWER CONT lever — Retard high **Q/TGT** engine, maintain **Q** approximately 10% below other engine.
2. LAND AS SOON AS PRACTICABLE.

If the affected engine does not respond to **ENG POWER CONT** lever movement in the range between **FLY** and **IDLE**, the HMU may be malfunctioning internally.

If this occurs:

3. Establish single engine airspeed.
- ④. Perform EMER ENG SHUTDOWN (affected engine).
- ⑤. Refer to single-engine failure emergency procedure.

NP INCREASING/DECREASING (OSCILLATION).

- ①. Slowly retard the **ENG POWER CONT** lever on the suspected engine.

If the oscillation stops:

- ②. Place that engine in **LOCKOUT** and manually control the power.
3. LAND AS SOON AS PRACTICABLE.

If the oscillation continues:

- ④. Place the **ENG POWER CONT** lever back to **FLY** and retard the **ENG POWER CONT** lever of the other engine.

When the oscillation stops:

- ⑤. Place the engine in **LOCKOUT**, manually control the power.
6. LAND AS SOON AS PRACTICABLE.

TORQUE (Q) SPLIT BETWEEN ENGINES 1 AND 2.

- ①. If **TGT** of one engine exceeds the limiter (879°C with low power engine above 50% **Q** or 903°C with low power engine below 50% **Q**), retard **ENG POWER CONT** lever on that engine to reduce **TGT**. Retard the **ENG POWER CONT** lever to maintain torque of the manually controlled engine at approximately 10% below the other engine.
- ②. If **TGT** limit on either engine is not exceeded, slowly retard **ENG POWER CONT** lever on high **Q** engine and observe **Q** of low power engine.
- ③. If **Q** of low power engine increases, **ENG POWER CONT** lever on high power engine — Retard to maintain **Q** approximately 10% below other engine (the high power engine has been identified as a high side failure).
- ④. If **Q** of low power engine does not increase, or **NR** decreases, **ENG POWER CONT** lever — Return high power engine to **FLY** (the low power engine has been identified as a low side failure).
- ⑤. If additional power is required, low power **ENG POWER CONT** lever, momentarily move to **LOCKOUT** and adjust to set **Q** approximately 10% below the other engine.
6. LAND AS SOON AS PRACTICABLE.

LOAD DEMAND SYSTEM MALFUNCTION.

If a load demand system malfunction is detected/suspected, perform the following:

On ground:

Shut down and consult maintenance.

In flight:

1. LAND AS SOON AS PRACTICABLE.
2. Perform a normal approach, avoiding low power autorotative descents.

ENGINE COMPRESSOR STALL.

1. Collective — Reduce.

If condition persists:

- ②. ENG POWER CONT lever (affected engine)
— Retard (TGT should decrease).
- ③. ENG POWER CONT lever (affected engine)
— **FLY.**

If stall condition recurs:

4. Establish single engine airspeed.
- ⑤. EMER ENG SHUTDOWN (affected engine).
- ⑥. Refer to single-engine failure emergency procedure.

ENG 1 OIL BYPASS OR ENG 2 OIL BYPASS CAUTION APPEARS.

- ① **ENG POWER CONT** lever — Retard.
2. LAND AS SOON AS PRACTICABLE.

CHIP ENG 1 OR CHIP ENG 2, ENG 1 OIL PRESS OR ENG 2 OIL PRESS, ENG 1 OIL HOT OR ENG 2 OIL HOT CAUTION APPEARS.

- ① **ENG POWER CONT** lever — Retard to reduce torque on affected engine.

If oil pressure is below minimum limits or if oil temperature remains above maximum limits:

2. Establish single engine airspeed.
- ③ EMER ENG SHUTDOWN (affected engine).
- ④ Refer to single engine failure emergency procedure.

ENGINE HIGH-SPEED SHAFT FAILURE.

1. Collective — Adjust.
2. Establish single engine airspeed.
- ③ EMER ENG SHUTDOWN (affected engine).

Do not attempt to restart.

- ④ Refer to single-engine failure emergency procedure.

LIGHTNING STRIKE.

- ①. ENG POWER CONT levers — Adjust (as required to control **NP** and **NR**).
2. LAND AS SOON AS POSSIBLE.

ROTORS, TRANSMISSIONS, AND DRIVE SYSTEMS.

LOSS OF TAIL ROTOR THRUST.

1. AUTOROTATE.
- ②. ENG POWER CONT levers — OFF (when intended point of landing is assured).

LOSS OF TAIL ROTOR THRUST AT LOW AIRSPEED/HOVER.

1. Collective — Reduce.
- ②. ENG POWER CONT levers — OFF (5 to 10 feet above touchdown).

T/R QUAD FAIL CAUTION APPEARS WITH NO LOSS OF TAIL ROTOR CONTROL.

LAND AS SOON AS PRACTICABLE.

T/R QUAD FAIL CAUTION APPEARS WITH LOSS OF TAIL ROTOR CONTROL.

1. Collective — Adjust.
2. LAND AS SOON AS PRACTICABLE.

PEDAL BIND/RESTRICTION OR DRIVE WITH NO ACCOMPANYING CAUTION.

1. Apply pedal force to oppose the drive.

- ②. TRIM switch — Off.

If normal control forces are not restored:

- ③. SAS/BOOST switch — Off.

If control forces, normal for boost off flight are not restored:

- ④. SAS/BOOST switch — ON.

- ⑤. **TAIL SERVO** switch — **BACKUP**, if tail rotor is not restored.

6. LAND AS SOON AS PRACTICABLE.

T/R SERVO 1 FAIL CAUTION APPEARS AND BACK UP PUMP ON ADVISORY DOES NOT APPEAR OR T/R SERVO 2 ON ADVISORY DOES NOT APPEAR.

Automatic switch over did not take place.

- ①. **TAIL SERVO** switch — **BACKUP**.

- ②. **BACKUP HYD PUMP** switch — **ON**.

3. LAND AS SOON AS PRACTICABLE.

**MAIN XMSN PRESS CAUTION APPEARS/
MAIN XMSN OIL HOT CAUTION APPEARS.**

1. LAND AS SOON AS POSSIBLE.

If time permits:

2. Slow to 80 KIAS.
- ③. EMER APU START.
- ④. **GENERATORS NO. 1 and NO. 2 switches — OFF.**

**CHIP L INPUT MDL OR CHIP R INPUT MDL
CAUTION APPEARS.**

- ①. ENG POWER CONT lever on affected engine — IDLE.
2. LAND AS SOON AS POSSIBLE.

**CHIP MAIN MDL SUMP, CHIP L ACC MDL
OR CHIP R ACC MDL, CHIP TAIL XMSN,
TAIL XMSN OIL HOT, CHIP INT XMSN OR
INT XMSN OIL HOT CAUTION APPEARS.**

LAND AS SOON AS POSSIBLE.

MAIN TRANSMISSION FAILURE.

1. Collective — Adjust only enough to begin a descent with power remaining applied to the main transmission throughout the descent and landing.
2. LAND AS SOON AS POSSIBLE.

FIRE.

ENGINE/FUSELAGE FIRE ON GROUND.

- ①. ENG POWER CONT lever — OFF.
- ②. ENG EMER OFF handle — Pull.
- ③. FIRE EXTGH switch — MAIN/RESERVE as required.
- ④. EMER ENG SHUTDOWN — Perform (other engine).

APU COMPARTMENT FIRE.

- ①. APU fire T-handle — Pull.
- ②. FIRE EXTGH switch — MAIN/RESERVE as required.

APU OIL HOT CAUTION APPEARS.

APU CONT switch — OFF. Do not attempt restart until oil level has been checked.

ENGINE FIRE IN FLIGHT.

1. Establish single engine airspeed.
- ②. ENG POWER CONT lever (affected engine) — OFF.
- ③. ENG EMER OFF handle — Pull.
- ④. FIRE EXTGH switch — MAIN/RESERVE as required.
5. LAND AS SOON AS POSSIBLE.

ELECTRICAL FIRE IN FLIGHT.

- ①. BATT and GENERATORS switches — OFF.
2. LAND AS SOON AS POSSIBLE.

SMOKE AND FUME ELIMINATION.

1. Airspeed — 80 KIAS or less.
- ②. **HH-60M** ECS panel switches — OFF.
3. Cabin doors and gunner's windows — Open.
4. Place helicopter out of trim.
5. LAND AS SOON AS PRACTICABLE.

FUEL SYSTEM.

FUEL 1 BYPASS OR FUEL 2 BYPASS CAUTION APPEARS.

- ①. **ENG FUEL SYS** selector on affected engine — **XFD.**
2. **LAND AS SOON AS PRACTICABLE.**

FUEL 1 BYPASS AND FUEL 2 BYPASS CAUTIONS APPEAR.

LAND AS SOON AS POSSIBLE.

FUEL 1 LOW AND FUEL 2 LOW CAUTIONS APPEAR.

LAND AS SOON AS PRACTICABLE.

FUEL 1 PRESS LOW OR FUEL 2 PRESS LOW CAUTION APPEARS.

If the caution appears and the situation is critical:

- ①. FUEL BOOST PUMP switches — **NO. 1** and **NO. 2 — ON.**
2. LAND AS SOON AS PRACTICABLE.

If the situation is not critical:

- ①. **ENG FUEL SYS** selector on affected engine — **XFD.**

If caution still appears:

- ②. **FUEL BOOST PUMP** switches — **NO. 1** and **NO. 2 — ON.**

If caution still appears:

- ③. **FUEL BOOST PUMP** switches — **NO. 1** and **NO. 2 — OFF.**
4. LAND AS SOON AS PRACTICABLE.

FUEL 1 PRESS LOW AND FUEL 2 PRESS LOW CAUTIONS APPEAR.

LAND AS SOON AS POSSIBLE.

ELECTRICAL SYSTEM.

GEN 1 FAIL AND GEN 2 FAIL CAUTIONS APPEAR.

1. Airspeed — Adjust (80 KIAS or less).
- ② **GENERATORS NO. 1 and NO. 2** switches — **RESET**; then **ON**.

If electrical power is not restored:

- ③ **GENERATORS NO. 1 and NO. 2** switches — **OFF**.
- ④ EMER APU START.
5. LAND AS SOON AS PRACTICABLE.

GEN 1 FAIL OR GEN 2 FAIL CAUTION APPEARS.

- ① Affected **GENERATORS** switch — **RESET**; then **ON**.

If caution remains:

- ② Affected **GENERATORS** switch — **OFF**.

CONV 1 FAIL AND CONV 2 FAIL CAUTIONS APPEAR.

- ① Unnecessary dc electrical equipment — **OFF**.
2. LAND AS SOON AS PRACTICABLE.

CONV 1 FAIL OR CONV 2 FAIL CAUTIONS APPEARS.

With a single converter failure all electrical power will be provided by the remaining system. No action is necessary. However do not turn off the battery switch corresponding to the failed converter. This will cause the battery bus cross tie converter to close resulting in loss of the associated battery bus and DC essential bus.

HYDRAULIC SYSTEM.

HYD PUMP 1 FAIL CAUTION APPEARS.

- ①. **TAIL SERVO** switch — **BACKUP**; then **NORMAL**.
2. **LAND AS SOON AS PRACTICABLE.**

HYD PUMP 2 FAIL CAUTION APPEARS.

- ①. **AUTO FLIGHT CONTROL** panel **FAILURE RESET** switches — Press then release.
2. **LAND AS SOON AS PRACTICABLE.**

HYD PUMP 1 FAIL AND HYD PUMP 2 FAIL CAUTIONS APPEAR.

LAND AS SOON AS POSSIBLE. Restrict control movement to moderate rates.

HYD PUMP 1 FAIL OR HYD PUMP 2 FAIL CAUTION APPEARS AND BACK UP PUMP ON ADVISORY DOES NOT APPEAR.

1. Airspeed — Adjust to a comfortable airspeed.
- ②. BACKUP HYD PUMP switch — **ON**.
- ③. FPS and SAS/BOOST switches — Press off (switch lights off, for **HYD PUMP 2 FAIL** caution).
4. LAND AS SOON AS POSSIBLE.

PRI SERVO 1 FAIL OR PRI SERVO 2 FAIL CAUTION APPEARS.

- ①. SERVO OFF switch — Check centered.
- ②. If the caution appears with the **SERVO OFF** switch centered, move the **SERVO OFF** switch to turn off the malfunctioning servo.
3. LAND AS SOON AS POSSIBLE.

RSVR 1 LOW AND HYD PUMP 1 CAUTIONS APPEAR WITH BACK UP PUMP ON ADVISORY APPEARING.

1. LAND AS SOON AS PRACTICABLE.

If the **BACK UP RSVR LOW** caution also appears:

- ②. SERVO OFF switch — 1ST STG.
3. LAND AS SOON AS POSSIBLE.

RSVR 2 LOW AND HYD PUMP 2 FAIL CAU- TIONS APPEAR WITH BACK UP PUMP ON ADVISORY APPEARING.

- ①. **AUTO FLIGHT CONTROL** panel **FAILURE RESET** switches — Press then release.
2. LAND AS SOON AS PRACTICABLE.

If **BACK UP RSVR LOW** caution also appears:

- ③. SERVO OFF switch — 2ND STG.
4. LAND AS SOON AS POSSIBLE.

RSVR 2 LOW CAUTION APPEARS.

- ①. SAS/BOOST switch — Off.
- ②. **FPS** switch — Verify off.
3. LAND AS SOON AS PRACTICABLE.

COLLECTIVE BOOST SERVO HARDOVER/ POWER PISTON FAILURE.

- ①. SAS/BOOST switch — Off.
- ②. **FPS** switch — Verify off.
3. LAND AS SOON AS PRACTICABLE.

PITCH BOOST SERVO HARDOVER.

- ①. SAS/BOOST switch — Off.
- ②. FPS switch — Off.
3. LAND AS SOON AS PRACTICABLE.

BOOST SERVO OFF CAUTION APPEARS.

- ①. SAS/BOOST switch — Off.
- ②. FPS switch — Off.
3. LAND AS SOON AS PRACTICABLE.

LANDING AND DITCHING.

EMERGENCY LANDING IN WOODED AREAS — POWER OFF.

1. AUTOROTATE. Decelerate helicopter to stop all forward speed at treetop level.
2. Collective adjust to maximum before main rotor contacts tree branches.

DITCHING — POWER ON.

1. Approach to a hover.
2. Cockpit doors jettison and cabin doors open prior to entering water.
3. Pilot shoulder harness — Lock.
4. Survival gear — Deploy (if applicable).
5. Personnel, except pilot, exit helicopter.
6. Fly helicopter downwind a safe distance and hover.
7. **ENG POWER CONT** levers — **OFF**.
8. Perform hovering autorotation, apply full collective to decay rotor rpm as helicopter settles.
9. Position cyclic in direction of roll.
10. Exit when main rotor has stopped.

DITCHING — POWER OFF.

1. AUTOROTATE.
2. Cockpit doors jettison and cabin doors open prior to entering water.
3. Apply full collective to decay rotor rpm as helicopter settles.
4. Position cyclic in direction of roll.
5. Exit when main rotor has stopped.

FLIGHT CONTROL/MAIN-ROTOR SYSTEM MALFUNCTIONS.

If the main rotor system malfunctions:

1. LAND AS SOON AS POSSIBLE.
- ②. EMER ENG(S) SHUTDOWN after landing.

ROTOR BRAKE ON ADVISORY APPEARS IN FLIGHT.

May indicate rotor brake pressure is applied to the rotor brake.

1. Rotor brake handle — Check in detent and gage pressure at zero.
2. Check for secondary indications of brake pad dragging (smoke, smell, noise, etc.).

If secondary indications present:

3. LAND AS SOON AS POSSIBLE.

If no secondary indications present:

4. LAND AS SOON AS PRACTICABLE.

AFCS FAIL CAUTION APPEARS.

Indicates failure of one or more modes of AFCC operation or a failure of a computer.

- ① **FAILURE RESET** switch (if illuminated) — Press to reset AFCC.

If operation is not restored:

- ② Malfunctioning system — Off (if possible).

SAS FAILURE WITH NO FAILURE/ADVISORY INDICATION.

If the helicopter experiences erratic motion of the rotor tip path without failure/advisory indication:

- ① **SAS1** switch — Off.

If condition persists:

- ② **SAS1** switch — **ON**.
- ③ **SAS2** switch — Off.

If malfunction still persists:

- ④ **SAS1** switch — Off. (FPS will automatically disengage).
- ⑤ **FPS** switch — Verify off.

SAS OFF CAUTION APPEARS.

- ①. **SAS1** and **SAS2** switches — Off. (FPS will automatically disengage).
- ②. **FPS** switch — Verify off.
3. LAND AS SOON AS PRACTICABLE.

COLLECTIVE, PITCH, ROLL OR YAW TRIM HARDOVER.

This condition will be detected by AFCC #2 which will disengage FPS and trim in the affected axis and cause the **AFCS FAIL** and **TRIM FAIL** cautions to appear.

If failure occurs:

- ①. **FAILURE RESET** switches — Press and then release.

If failure returns, control affected axis manually.

2. LAND AS SOON AS PRACTICABLE.

TRIM ACTUATOR JAMMED.

LAND AS SOON AS PRACTICABLE.

ACTIVE VIBRATION CONTROL SYSTEM MALFUNCTION.

A total failure of the Active Vibration Control (AVC) system will be shown by the appearance of the **AVCS INOP** advisory in flight and an increase in 4 per rev vibrations. A partial failure of the AVC will be indicated by a degraded message on the FMS status page. The system will continue to function with down to one force generator functioning.

If a failure or degraded indication is present with increased vibrations, do the following:

- ① **VIB CONT** switch — **OFF**.

If vibrations decrease:

2. Leave **VIB CONT** switch off and continue the flight.

If vibrations increase:

- ③ Turn **VIB CONT** switch **ON** and continue the flight.

STABILATOR MALFUNCTION — AUTO MODE FAILURE.

If an **AUTO** mode failure occurs:

1. Cyclic mounted stabilator slew-up switch — Adjust if necessary to arrest or prevent nose down pitch rate.
- ②. **AUTO CONTROL RESET** switch — Press ON once after establishing a comfortable air-speed.

If automatic control is not regained:

- ③. Manually slew stabilator — Adjust to 0° for flight above 40 KIAS or full down when air-speed is below 40 KIAS. The preferred method of manually slewing the stabilator up is to use the cyclic mounted stabilator slew-up switch.
4. LAND AS SOON AS PRACTICABLE.

If manual control is not possible, the airspeed limit indication will show the adjusted airspeed limit with a red arc.

5. Airspeed indicator — Check and fly at or below red arc shown on the indicator.
6. LAND AS SOON AS PRACTICABLE.

UNCOMMANDED NOSE DOWN/UP PITCH ATTITUDE CHANGE.

If an uncommanded nose down pitch attitude occurs:

1. Cyclic — Adjust as required.
2. Collective — Maintain or increase.
3. Cyclic mounted stabilator slew-up switch — Adjust as required to arrest nose down pitch rate.
- ④ **MAN SLEW** switch — Adjust to 0° at airspeeds above 40 KIAS and full down at airspeeds below 40 KIAS.
5. LAND AS SOON AS PRACTICABLE.

If an uncommanded nose up pitch attitude occurs:

1. Cyclic — Adjust as required.
2. Collective — Reduce as required.
- ③ **MAN SLEW** switch — Adjust to 0° at airspeeds above 40 KIAS and full down at airspeeds below 40 KIAS.
4. LAND AS SOON AS PRACTICABLE.

STAB UNLOCKED CAUTION APPEARS.

In flight — LAND AS SOON AS POSSIBLE.

INTEGRATED AVIONICS SYSTEM MALFUNCTIONS.

The following component failures will result in — LAND
AS SOON AS POSSIBLE

- a. Loss of two data concentrator units.
- b. Loss of four MFDs.

The following component failures will result in — LAND
AS SOON AS PRACTICABLE.

- a. Loss of one data concentrator unit or:
- b. Loss of two EGIs or:
- c. Loss of up to three MFDs or:
- d. Loss of two ADCs or:
- e. Loss of two FMSs.

SINGLE EGI FAILURE

1. Manually control helicopter attitude/flight path.
- ② **ATT REV** and **HDG REV** on reversionary panel — Press.
- ③ Check FMS **EGI** page to verify that functioning EGI is being used as the navigation source.
- ④ Failed EGI switch — **OFF**, then **ON**.
- ⑤ Check FMS **INITIALIZATION** page 2 for **INU-ALN** indication.

If successful:

- ⑥ An in-air GPS aided alignment will be done in approximately 2 minutes. To improve the quality of the alignment, make a 90° heading change during the first minute if possible.

If unsuccessful:

- ⑦ **EGI** switch — **OFF**.

DUAL EGI FAILURE

1. Transition to ESIS display.
- ② **EGI** switches — **OFF**, then **ON**. If successful, an EGI inflight alignment will automatically be done.
3. **LAND AS SOON AS PRACTICABLE.**

FLT DIR FAIL, FD COUPLE FAIL CAUTIONS APPEAR.

1. Check FD/DCP to verify which flight director modes are functioning.
- ② **FAILURE RESET CPTR 2** — Press to clear flight director cautions.
- ③ Check AFCS and FCC status page if necessary.
- ④ Reengage affected mode when able.
5. Fly affected axis manually if not restored.

COUPLED FLIGHT DIRECTOR MALFUNCTION.

- ① **RMT SBY** switch — Press to disengage FD modes.

If coupled FD does not disengage:

- ② **CPLD** switch — Press to decouple FD.

If coupled FD does not disengage:

- ③ **FPS** and **TRIM** switches — Off.

After FD is uncoupled:

- ④ **FPS** and **TRIM** switches — **ON**.

DISPLAY MALFUNCTIONS.

- ①. If MFD is faulty, cycle MFD mode select switch to **OFF**, then back to **ON**.
- ②. If FMS is faulty, pull the appropriate CDU circuit breakers on the No. 1 dc primary bus or No. 2 dc essential bus, wait 10 seconds, then reset circuit breakers.

If an MFD does not fail but appears to be degraded, check the MFD status display while on the ground (MFD status page is disabled in flight).

1. **VID BRT** and **VID CONT** down switches — Press simultaneously to access MFD status display.

Check for any indications in red.

- ②. Degraded MFD — **OFF** for 10 seconds, then on to reset the display.
3. Record the malfunctions in the helicopter log-book at the end of the mission.

DIGITAL INTERCOMMUNICATIONS MALFUNCTIONS

1. If ICS Lock-up occurs, perform the following: Reset by cycling power to the ICU. Pull and reset the Circuit Breakers for the ICS ICU on the NO. 2 DC ESNTL BUS and the ICS SEC on the NO. 1DC PRI BUS; they must both be pulled and then reset (CBs out at the same time)

Section II. Mission Equipment

EMERGENCY JETTISONING.

CARGO REL or HOOK EMER REL switch
— Press.

EMERGENCY RELEASE OF RESCUE HOIST LOAD. **HH-60M**

If the rescue hoist becomes jammed, inoperative, or the cable is entangled and emergency release is required:

HOIST CABLE CUT.

On either pilot's or crew panel:

CABLE CUT button — Press.

HOIST RUNAWAY.

- ①. Pilot's hoist control panel **PILOT OVERRIDE** switch **UP** or **DOWN** to control, as required.

If control is not possible:

- ②. Pilot's hoist panel **HOIST POWER** switch — **OFF**.

MTR HOT LIGHT ON.

Illumination of the **MTR HOT** light indicates that the hoist motor is hot. The hoist may stop functioning or operate at a reduced rate (approximately 200 fpm) to permit cool down.

If crewmember reports **MTR HOT** light on and hoist continues to operate at a reduced rate:

1. Complete hoist operation at reduced rate, then stop hoist operation.
2. Wait for **MTR HOT** light to go off.

If **MTR HOT** light goes off:

Resume hoist operation.

If crewmember reports **MTR HOT** light on and hoist does not operate:

1. Lower load to ground with helicopter and release.
2. Hand wind cable into cabin and secure.

BLADE DEICE SYSTEM MALFUNCTIONS.

M/R DE-ICE FAULT, M/R DE-ICE FAIL, OR T/R DE-ICE FAIL CAUTION APPEARS.

1. Icing conditions — Exit.

②. **BLADE DEICE POWER** switch — **OFF**, when out of icing conditions.

If vibrations increase:

3. LAND AS SOON AS POSSIBLE.

PWR MAIN RTR AND/OR TAIL RTR MONITOR LIGHT ON.

If a **PWR** monitor light is illuminated with **BLADE DEICE POWER** switch **ON** to stop power from being applied to blades:

1. Icing conditions — EXIT.

②. **BLADE DEICE POWER** switch — **OFF**.

If a **PWR** monitor light is still illuminated with **BLADE DEICE POWER** switch **OFF**:

③. **GENERATORS NO. 1** or **NO. 2** switch — **OFF**.

④. **GENERATORS APU** switch — **OFF** (if in use).

5. LAND AS SOON AS PRACTICABLE.

ICE RATE METER FAIL OR INACCURATE.

- ① **BLADE DEICE MODE** switch — **MANUAL** as required.

If vibration levels increase or **Q** required increases:

- ② Higher icing **MODE** — Select as required.

If ice buildup continues:

3. **LAND AS SOON AS PRACTICABLE.**

LOSS OF NO. 1 OR NO. 2 GENERATOR DURING BLADE DEICE OPERATION.

Pilot not on the controls:

EMER APU START.

ICE DETECTED CAUTION APPEARS.

- ① **BLADE DEICE POWER** switch — **ON.**
- ② **BLADE DEICE MODE** switch — **AUTO.**
3. Torque required and vibrations — Monitor.

LATERAL IMBALANCE CAUTION APPEARS.

If asymmetric fuel transfer occurs:

- ① **XFER/AUTO/OFF/MANUAL** switch — Switch from **AUTO** to **MANUAL** and attempt to transfer from high quantity external fuel tank.
- ② Transfer from other tank set if installed.
3. **LAND AS SOON AS PRACTICABLE.**

Should controlled flight with one heavy external tank become necessary, proceed as follows:

1. Make all turns shallow (up to standard rate), and in the direction away from heavy side (particularly when a right tank remains full).
2. Avoid abrupt control motions, especially lateral cyclic.
3. If possible, shift personnel to the light side of the helicopter.
4. Select a suitable roll-on landing area, and make a roll-on landing with touchdown speed in excess of 30 KIAS. To increase control margin, execute the approach into the wind or with a front quartering wind from the heavy side and align the longitudinal axis of the helicopter with the ground track upon commencing the approach. If a suitable roll-on landing area is not available, make an approach to a hover into the wind, or with a front quartering wind from the heavy side.

EXTERNAL STORES JETTISON.

If jettisoning of tanks is required:

- ①. STORES JETTISON switch — Select INBD BOTH, OUTBD BOTH or ALL as applicable.
- ②. JETT switch — Actuate.

If primary jettison system does not operate:

- ③. EMER JETT ALL switch — Actuate.

FUEL FUMES IN CABIN DURING CEFS TRANSFER.

- ①. XFER/AUTO/OFF/MANUAL switch — OFF.
- ②. All XFER/REFUEL switches — CLOSE.

VOLCANO LAUNCHER RACKS JETTISON.

If jettisoning of launcher rack is required:

- ①. JETTISON switch — JETTISON.

If jettison procedure above fails, do the following immediately:

- ②. EMER JETTISON switch — JETTISON.

LITTER SYSTEM MALFUNCTIONS.

HH-60M

LITTER LIFT RUNAWAY.

From any one of the four cabin medical control panels:

1. EMERGENCY STOP switch — STOP.

If litter continues to runaway:

2. Cockpit AUX SW panel MED INT switch — OFF.

After stopping the runaway:

3. Pull the appropriate bad litter lift system control **FWD** and **AFT LIFT MOT** circuit breaker on the medical interior circuit breaker panel.
4. Do not use bad litter lift system.

OBOGS SYSTEM MALFUNCTIONS.

HH-60M

OBOGS BIT/FAULT LIGHT ILLUMINATED.

If after initial start up of OBOGS the automatic BIT/FAULT cycle light on the monitor panel has not extinguished after five minutes:

1. Cockpit AUX SW panel **OBOGS** switch — **OFF.**
2. Utilize only the remaining O2 from the backup oxygen supply.
3. Do not use OBOGS system.

FLIR SYSTEMS MALFUNCTIONS.

HH-60M

MODE PROBLEM, CAGE PROBLEM, GIMBAL RACHETING, IMAGE DISTORTION, MISC.

- ① FLIR control panel **POWER** switch — **OFF**.
Wait three minutes then, **ON**.
- ② Perform BIT/FIT check. Allow 3 to 4 minutes
for FLIR to complete BIT/FIT check.

If FLIR problem is not solved:

- ③ Press **STOW FLIR** control panel **POWER** button.
- ④ FLIR control panel **POWER** switch — **OFF**.

FAULT INDICATOR (BIT/FIT ERROR REPORTING AND CLEAR).

- ①. Enable the menus and hook on **FIT**.
- ②. Annotate the error code, hook on **CLEAR** label to clear the error report.
- ③. Hook on **FIT** to initiate FIT.
- ④. Hook on **EXIT** to end FIT.

If FLIR error code cleared and FLIR functions check out:

5. Continue mission and annotate FLIR error code at mission completion.

If FLIR error code did not clear or FLIR functions do not check out:

- ⑥. Press **STOW FLIR** control panel **POWER** button.
- ⑦. FLIR control panel **POWER** switch — **OFF**.
8. Do not use FLIR system.
9. Continue mission and annotate FLIR problem at mission completion.

DETAILED PROCEDURES

CREW BRIEFING.

A crew briefing shall be conducted to ensure a thorough understanding of individual and team responsibilities. The briefing should include, but not be limited to, pilots, crew chief, ground crew responsibilities, and the coordination necessary to complete the mission in the most efficient manner. A review of visual signals is desirable when ground guides do not have direct voice communications link with the crew.

PASSENGER BRIEFING.

The following guide may be used in accomplishing required passenger briefings. Items that do not pertain to a specific mission may be omitted.

1. Crew introduction.
2. Equipment.
 - a. Personal, to include ID tags.
 - b. Professional.
 - c. Survival.
3. Flight data.
 - a. Route.
 - b. Altitude.
 - c. Time en route.
 - d. Weather.
4. Normal procedures.

- a. Entry and exit the helicopter.
 - b. Seating.
 - c. Seatbelts.
 - d. Movement in helicopter.
 - e. Internal communications.
 - f. Security of equipment.
 - g. Smoking.
 - h. Oxygen.
 - i. Refueling.
 - j. Weapons.
 - k. Protective masks.
 - l. Parachutes.
 - m. Hearing protection.
 - n. ALSE.
5. Emergency procedures.
- a. Emergency exits.
 - b. Emergency equipment.
 - c. Emergency landing/ditching procedures.

CIRCUIT BREAKERS AND SWITCHES — SET.

- a. **NO. 1 and NO. 2 BATT**, and **BATT UTIL BUS** circuit breakers — In.
- b. **BLADE DEICE TEST** switch — **NORM**, **POWER** switch — **OFF**, **MODE** switch — **AUTO**.
- c. **HH-60M RESCUE HOIST CONTROL PANEL MASTER** switch — **OFF**.
- d. Data cartridges — Insert in data loader as required.
- e. **STORES JETTISON** switch — **OFF**.
- f. Backup COM power — Set as required.
- g. **ICS** panels — Set as desired.
- h. **MSN SYS** panel — **EGI 1 and 2** — **OFF**, **RAD ALT** — **ON**.
- i. **SERVO OFF** switch — **NORM**.
- j. **TAIL SERVO** switch — **NORMAL**.
- k. **BACKUP HYD PUMP** switch — **AUTO**. **I**
- l. **EMERGENCY CONTROL PANEL** switches — Centered.
- m. **AUX FUEL MANAGEMENT PANEL** switches — **CLOSE**, **XFR** switch — **OFF**.
- n. Mission equipment — Check and set as required.

- o. **ENGINE IGNITION** switch — **OFF**.
- p. MFD power switches — **OFF**.
- q. **ANTI COLLISION, POSITION and FORMATION LIGHTS** — As required.
- r. Copilot's auxiliary circuit breaker panel circuit breakers — **In**.
- s. **VIB CONT** switch — **ON**.
- t. **CARGO HOOK EMER REL** switch — **OPEN**, **CONTR ARM** switch — **SAFE**.
- u. **STBY INST BATT** switch — **TEST**. **BATT GOOD** status light comes on.
- v. **STBY INST BATT** switch — **ARM**. ESIS audio tone will activate.
- w. **STBY INST BATT** switch — **OFF**. The ESIS audio tone will go away.
- x. **BATT NO. 1 and NO. 2** — **TEST**. **BATT GOOD** status light comes on.
- y. **BATT NO. 1 and NO. 2** switches — **OFF**.
- z. **APU GENERATOR** — **OFF**.
- aa. **NO. 1 and NO. 2 GENERATORS** switches — **ON**.
- ab. **EXT PWR** switch — **OFF**.
- ac. **APU CONT** switch — **OFF**.
- ad. **FUEL PUMP** switches — **OFF**.

- ae. **AIR SCE HT/STRT** switch — **APU (OFF** for external air source).
- af. **APU FIRE** T-handle — In.
- ag. **FUEL BOOST PUMP** switch — **OFF**.
- ah. **EMER OFF** T-handles — Full forward.
- ai. **NO. 2 DC ESNTL BUS** circuit breakers — **IN**.
- aj. Pilot's and copilot's overhead circuit breakers — In.
- ak. Mission readiness circuit breaker panel — Crewchief verify all circuit breakers in.

LAMPS TEST BUTTON — PRESS AND CHECK.

The following lights and switches should illuminate:

- a. Upper console capsules (except **BATT GOOD**).
- b. Master warning panels (except **FIRE**). **MASTER CAUTION** lights do not illuminate while **LAMPS TEST** button is pressed.
- c. FD/DCP switches alternate between green and amber. All modes show **LAMPS TEST**.
- d. **AUTO FLIGHT CONTROL** panel switches.
- e. **STABILATOR CONTROL** panel switch.

- f. **TAIL WHEEL UNLKD/LOCK** switch.
- g. Release **LAMPS TEST** button — The **MASTER CAUTION** light will illuminate for two seconds then go out. The steady audio alert tone will also be heard.

FMS INITIALIZATION — CHECK AS REQUIRED.

- a. FMS **INI** key — Press.
- b. On the **INITIALIZATION 1/3** page, enter in present position, date and time if not already correct.
- c. Ensure **WGS-84** is displayed.
- d. Press **NXT** to page down to the **INITIALIZATION 2/3** page.
- e. Ensure **LAND**, is displayed and highlighted.
- f. **GC** and **AUTO NAV — ON**.
- g. Select **INIT** with SK-2 and SK-7 for both EGIs if required. Note the EGI alignment status and timer on the Information Line.
 - (1) **ATT** — Determining helicopter attitude. Attitude indicator appears after approximately 20 seconds.
 - (2) **ORIENT** — Determining north orientation.
 - (3) **ALIGN** — Aligning.

- (4) **D-NAV RDY** — HSI compass appears after approximately two minutes, degraded Nav available.
 - (5) **RDY** — Full alignment complete after approximately four minutes.
 - (6) **NAV** — Navigate.
- h. Press **NXT** to page down to **INITIALIZATION 3/3**. verify **WEIGHT**, **TAIL NO.**, **ETF 1** and **ETF 2**.

MISSION EQUIPMENT — CHECK.

- a. **IRCM** — As required.

MISSION EQUIPMENT

RADAR SIGNAL DETECTING SET AN/APR-39A(V)-1.

- 1. **PWR** switch — **ON**.
- 2. **MODE** switch — **1**.
- 3. **TEST** button — Press.
- 4. **AUDIO** — Set as desired.
- 5. **FMS** — Check status page for **GO** — **NO GO** (Refer to Figure 4-6).
- 6. Self-Test mode.
 - a. After power up, the AN/APR-39A(V)-1 synthetic voice will announce "APR-39 POWER UP" and the (+) symbol will stabilize on the MFD. Self-test should be initiated after approximately one minute.

Self-test can be performed in **MODE 1** or **MODE 2**. In **MODE 1** the synthetic voice will announce "SELF-TEST SET VOLUME, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12". In **MODE 2** the synthetic voice will announce "SELF-TEST SET VOLUME, 5, 4, 3, 2, 1".

- b. A good self-test (no faults detected) ends with the message "APR-39 OPERATION-AL". A bad self-test (faults detected) ends with the "APR-39 FAILURE".
7. **MODE 1** operation. Selecting **MODE 1** the operator will hear all the normal synthetic voice audio when an emitter has been processed e. g., the AN/APR-39A(V)-1 will announce; "SA, S-6 12-O'CLOCK TRACKING". Selection of this mode does not have any effect on emitters received, processed, or displayed; it only affects synthetic voice audio.
8. **MODE 2** operation. Selecting **MODE 2** the operator will hear an abbreviated synthetic voice audio e.g., the AN/APR-39A(V)-1 will announce; "MISSILE 12-O'CLOCK TRACKING".

CARGO HANDLING SYSTEMS

OPERATIONAL CHECK — NORMAL RELEASE MODE.

1. **CARGO HOOK CONTR** switch — As required. **CKPT** for pilot and copilot check, or **ALL** for crewmember check.
2. **ARM** switch — **ARMED**.
3. **CARGO HOOK ARMED** advisory — Check that it appears.

4. Place about 20 pounds downward pressure on load beam.
5. **CARGO REL** button (pilot and copilot); **NORMAL RLSE** (crewmember) — Press and release.
6. Load beam — Check open. **CARGO HOOK OPEN** advisory — Appears.
7. **CARGO HOOK OPEN** advisory — Check that it disappears when hook closes.
8. Repeat steps 4. through 7. for copilot and crew-member positions.

OPERATIONAL CHECK — MANUAL RELEASE MODE.

1. Manual release lever spring — Installed. Check that spring is straight and provides positive pressure on the lever.
2. Place about 20 pounds downward pressure on load beam.
3. Manual release lever — Pull up/turn fully clockwise and release.
4. Load beam — Check open.
5. **CARGO HOOK OPEN** advisory — Appears.
6. When downward pressure is released, load beam will close and latch.
7. **CARGO HOOK OPEN** advisory — Disappears when hook closes.

CARGO HOOK EMERGENCY RELEASE CIRCUIT CHECK.

1. **EMER RLSE TEST LT** — Press. Light should be on.
2. Pilot's release — Check.
 - a. Short test.
 - (1) **EMERG REL** switch — **SHORT**.
 - (2) Pilot's **HOOK EMER REL** button — Press and hold.
 - (3) **EMER RLSE TEST LT** — On.
 - (4) **HOOK EMER REL** button — Release. **EMER RLSE TEST LT** off.
 - (5) Repeat steps (2) through (4) for copilot's **HOOK EMER REL** button and crewmember's cargo hook control pendant **EMER RLSE** button.
 - b. Open test.
 - (1) **EMERG REL** switch — **OPEN**.
 - (2) Pilot's **HOOK EMER REL** button — Press and hold.
 - (3) **EMER RLSE TEST LT** — On.
 - (4) **HOOK EMER REL** button — Release. **EMER RLSE TEST LT** off.

- (5) Repeat steps (2) through (4) for copilot's **HOOK EMER REL** button and crewmember's cargo hook control pendant **EMER RLSE** button.
3. **EMERG REL** switch — **NORM**. If the cargo hook is not to be used immediately after completing the circuit test check, the **EMERG REL** switch shall remain at **OPEN** until ready for load pickup.

RESCUE HOIST. HH-60M

RESCUE HOIST PRE-OPERATIONAL CHECK.

1. Visually check hoist structure and support for defects, cracks, or material surface imperfections.
2. Check hook for free swivel, keeper retention in closed position and damage free condition.
3. Check bumper for proper resilience and shock absorbing capacity.
4. Check fairings and covers for proper attachment.
5. Check electrical connectors for installation and security.
6. Pilot's control panel — Check:
 - a. **HOIST POWER** switch — **ON**.
 - b. On the crew control panel, **ARM/TEST** switch — **ARM**.

- c. Lower hoist approximately 15 feet using **PILOT OVERRIDE/UP/DOWN** switch — Observe cable lowers.
 - d. Raise hoist to full up position.
7. Crew control panel — Check:
- a. **ARM/TEST** switch — **ARM**.
 - b. Rotate and keep pendant's thumbwheel **DN** to reel out approximately 25 feet of cable at maximum rated speed.
 - c. While keeping thumbwheel at maximum speed position, interrupt pendant operation by actuating the **PILOT OVERRIDE/UP/DOWN** switch to the **DOWN** position to check override functions. Verify change in cable speed.
 - d. Retract 25 feet of cable at maximum rated speed by rotating pendant's thumbwheel **UP**.
 - e. Check intermediate slow-up operation and full in limit switch activation by hookup and bumper.
 - f. Ensure cable ball end is clamped and retained within the hook correctly.
 - g. Ensure swivel hook rotates freely with no drag felt on swivel bearing.
8. Perform squib check:
- a. **SQUIB TEST** light — **PRESS TO TEST** to check illumination.

- b. **ARM/TEST** switch — As required.
- c. **SQUIB TEST** light — Check illuminated. If light does not illuminate, external rescue hoist mission shall not be conducted.
- d. **ARM/TEST** switch — Leave in **TEST** position until ready for use, then place in **ARM** position.
- e. **HOIST POWER** switch — **OFF** until ready for use.

EXTERNAL HOIST OPERATION.

- 1. ECS — **OFF**.
- 2. Pilot's control panel **HOIST POWER** switch — **ON**.
- 3. Crew control panel **ARM/TEST** switch — **ARM**.
- 4. Establish desired hover height.
- 5. Set hoist **SEARCH LIGHT** and **FLIR** as desired.
- 6. Open cargo door and extend/retract cable as required.
- 7. At completion of rescue hoist operations, secure cargo door and **HOIST POWER** switch — **OFF**.

POST OPERATIONAL CHECK.

- 1. Pilot's control panel **HOIST POWER** switch — **ON**.

2. Crew control panel **ARM/TEST** switch — **ARM**.
3. Rotate and keep pendant's thumbwheel **DN** to reel out amount of cable used during mission. Check cable for corrosion, kinks, separated strands, wear, and broken or frayed wires.
4. Retract cable by rotating pendant's thumbwheel **UP**. Reel in hoist cable through gloved hand and wipe cable with clean, heavy cloth.
5. Ensure cable ball end is clamped and retained into hook assembly correctly.
6. Ensure swivel hook rotates freely with no drag felt on swivel bearing.
7. Pilot's control panel **HOIST POWER** switch — **OFF**.

MEDICAL EVACUATION INTERIOR. HH-60M

NORMAL OPERATION.

1. Cockpit **AUX SW** panel **MED INT** switch — **ON**.
2. Place **SUCTION** switch located on the overhead control panel to **ON**.
3. To turn the regulator on, position the **CONTINUOUS/NONE/INTERMITTENT** knob to **CONTINUOUS** or **INTERMITTENT**.
4. To adjust the regulator vacuum level, turn the **REGULATOR** knob towards **+** to increase the vacuum or **-** to decrease the vacuum.

5. **INTERMITTENT** operation can be adjusted using the timing controls labeled **INCREASE OFF TIME** or **INCREASE ON TIME**. To increase or decrease the **ON** and **OFF** cycle time, turn the appropriate timing control clockwise to increase the time or counterclockwise to decrease the time.
6. Six collection canisters are included within the vacuum system. Three canisters are located in each of the two medical stations.

OXYGEN GENERATING SYSTEM.

NORMAL OPERATION.

1. **AIR SCE HT/STRT** switch — **APU** or **ENG**.
2. **AUX SW** panel **OBOGS** switch — **ON**. Check that **BOS** light goes out within 5 minutes.
3. The medical attendant determines that oxygen is available after the **PWR ON** light is illuminated.
4. Determine which patients need oxygen and obtain an oxygen hose and mask from the medical cabinet.
5. Attach the patients oxygen hose to the patient and to the corresponding oxygen regulator on the side medical control panel.
6. Select the desired oxygen rate on the regulator.

LITTER LIFT PATIENT LOADING AND UNLOADING.

LOAD FIRST PATIENT.

1. **AUX SW** panel **MED INT** switch — **ON**.

2. All four cabin medical control panel **EMERGENCY STOP** switches placed — **RUN**.
3. Ensure associated medical station control panel **SEAT OVERRIDE DISABLE** switch — **ON**.
4. Position and secure the first patient on the litter platform using the platform restraint belts. If injuries permit, the belt closest to the head is placed under the arms and over the chest and tightened. The other two belts are placed over the entire body and tightened.
5. Simultaneously, press the **UPPER PLATFORM, FWD** and **AFT** controls to the **UP** position. The upper litter platform moves up.
6. As the platform approaches the desired flight position, release the switches. The platform stops. For three patient configurations, use the upper lift positioning reference mark on the side control panel to determine approximate position of the top patient.
7. Use individual **UPPER PLATFORM, FWD** or **AFT** controls to adjust the platform to the necessary tilt being careful to avoid patient to helicopter contact.

LOAD SECOND PATIENT.

1. Position and secure the second patient on the litter platform using the platform restraint belts.
2. Simultaneously, press the **LOWER PLATFORM, FWD** and **AFT** controls to the **UP** position.

3. As the platform approaches the desired flight position, release the switches. The platform stops. For three patient configurations, use the lower lift positioning reference mark on the side control panel to determine approximate position of the middle patient.
4. Use individual **LOWER PLATFORM, FWD** or **AFT** controls to adjust the platform to the necessary tilt being careful to avoid patient to helicopter contact.

LOAD THIRD PATIENT.

1. Position the patient under the lower litter platform.
2. Position and fasten the patient restraints.
3. Once litter(s) are positioned, place one or all four cabin medical control panel **EMERGENCY STOP** switches — **STOP**.

UNLOAD THE THIRD PATIENT.

1. Unfasten the patient restraints.
2. Reverse the loading procedure and carefully unload the patient.

UNLOAD THE SECOND PATIENT.

1. Use individual **LOWER PLATFORM, FWD** or **AFT** controls to level the platform as much as possible.
2. Simultaneously press the **LOWER PLATFORM, FWD**, and **AFT** controls to the **DOWN** position.

3. As the platform approaches the floor position, release the switches. The platform stops.
4. Reverse the loading procedure and slide the litter platform out of the helicopter.

UNLOAD THE FIRST PATIENT.

1. Use individual **UPPER PLATFORM, FWD** or **AFT** controls to level the platform as much as possible.
2. Simultaneously press the **UPPER PLATFORM, FWD**, and **AFT** controls to the **DOWN** position. The upper litter platform moves down.
3. As the upper platform approaches the lower platform, release the switches. The platform stops.
4. Reverse the loading procedure and slide the litter platform out of the helicopter.

AMBULATORY (SEATED) PATIENT CONFIGURATION.

POSITION AMBULATORY PATIENT SEATS.

1. Simultaneously press and hold the **LOWER PLATFORM, FWD**, and **AFT** controls to the **DOWN** position. The lower litter platform moves down. Hold the switches until the platform stops moving. The platform stops about 3 inches above the floor.
2. Simultaneously press and hold the **UPPER PLATFORM, FWD**, and **AFT** controls to the **DOWN** position until the upper litter platform moves down to just above the lower platform.

3. Unlock and release the forward and aft seat tracks fittings from the seat tracks in the overhead lighting fixture (Figure 4-38) by pulling out, with a firm pull, on the circular clip at the end of the seat track fitting.
4. Fold down the ambulatory seats from the top of the compartment and extend the telescoping guide tubes to the top of the upper litter platform.
5. Remove the quick-release pins from their stowed position in the seat pan and install them in the telescoping guide tubes next to the headrest.
6. Lock the seat track fittings into the tracks on the litter platform.
7. Rotate the seat pan down and headrest up into position.

STOW AMBULATORY PATIENT SEATS.

1. Rotate the seat pan up and headrest down to the stowed positions.
2. Locate the seat track fittings holding the seat legs to the upper litter platform and pull up on the circular clip at the end of the seat track fitting.
3. Slide each seat rack fitting into the open slot and remove it from the upper litter platform.
4. Remove the quick release pins from the telescoping guide tubes next to the head rest and install them in their stowed position in the seat pan.

5. Fold the seat to the ceiling and insert the seat rack fittings, on the bottom of the legs, into the stowage tracks of the overhead light fixture.
6. Slide the track fittings toward the end of the slot to align the circular clip lock to the bottom circular slot.
7. Press the circular clip lock into the slot until it clicks into place.

COLD WEATHER CONTROL EXERCISE.

After starting the APU, the controls must be exercised when operating in a temperature range of -17°C (1°F) and below. The control exercise is required:

- a. At temperatures between -17°C (1°F) and -31°C (-24°F), cycle collective slowly for 1 minute.
 - (1) Move collective stick grip up about 3 inches from lower stop, and down again 30 times during 1 minute of control cycling in step a.
 - (2) Move each tail rotor pedal alternately through $\frac{3}{4}$ inch of travel from neutral position 30 times during 1 minute of control cycling in step a.
- b. At temperatures between -31°C (-24°F) and -43°C (-45°F), cycle collective slowly for 2 minutes.
 - (1) Move collective stick grip up about 1½ inches from lower stop and down again during first minute, and 3 inches of travel during second minute of control cycling in step b.

- (2) Move each tail rotor pedal alternately through $\frac{3}{8}$ inch of travel from neutral position during first minute and $\frac{3}{4}$ inch of travel during second minute of control cycling in step b.
- c. At temperatures between -43°C (-45°F) and -54°C (-65°F), cycle collective slowly for 5 minutes.

Move collective and pedals through travel for times shown below:

<u>Collective Travel</u> <u>(Approximately)</u>	<u>Pedals Travel</u> <u>(Approximately)</u>	<u>Time Duration</u>
$\frac{3}{4}$ inch	$\frac{1}{8}$ inch	First minute
$1\frac{1}{2}$ inches	$\frac{1}{4}$ inch	Second minute
$1\frac{3}{4}$ inches	$\frac{1}{2}$ inch	Third minute
$2\frac{1}{2}$ inches	$\frac{5}{8}$ inch	Fourth minute
3 inches	$\frac{3}{4}$ inch	Fifth minute

FLIGHT CONTROLS — CHECK FIRST FLIGHT OF DAY.

- a. Collective — Approximately one inch above midposition, pedals centered.
- b. **SAS/BOOST** switch — Press off. There will be a slight increase in collective and pedal forces. **BOOST SERVO OFF**, **SAS OFF**, and **FPS FAIL** cautions, and **MASTER CAUTION** should appear.
- c. **SERVO OFF** switch — **1ST STG.** No allowable cyclic stick jump. **PRI SERVO 1 FAIL** caution and **MASTER CAUTION** should appear.

- d. Move cyclic and pedals slowly through full range. There should be no binds or restrictions. Move collective full up to full down in about 1 to 2 seconds. Check **PRI SERVO 2 FAIL** caution does not appear during movement of collective.
- e. **SERVO OFF** switch — **2ND STG.** No allowable cyclic stick jump. **PRI SERVO 2 FAIL** caution and **MASTER CAUTION** should appear.
- f. Repeat step d. above. Check **PRI SERVO 1 FAIL** caution does not appear during movement of collective.
- g. **SERVO OFF** switch — Center.
- h. Collective — Move through full range in no less than 5 seconds. There should be no binding.
- i. Pedals — Move both pedals through the full range in no less than 5 seconds. There should be no binding.
- j. **TAIL SERVO** switch — **BACKUP.** **T/R SERVO 1 FAIL** caution, both **MASTER CAUTION** cautions, and **T/R SERVO 2 ON** advisory appear. Move pedals through full range in no less than 5 seconds. There should be no binding.
- k. **TAIL SERVO** switch — **NORMAL.** Cautions and advisories should disappear.
- l. **SAS/BOOST** switch — **ON.** **BOOST SERVO OFF**, **SAS OFF**, and **FPS FAIL** cautions should disappear.

STABILATOR — CHECK.

- a. Stabilator position displays should be between 34° and 42° **DN**.
- b. **TEST** button — Press and hold. Check stabilator position display moves up 5° to 12°. **STAB MANUAL MODE** caution and **MASTER CAUTION** appear. The stabilator audio is heard in three cycles of about three beeps followed by a pause as the system checks the AFCCs individually.
- c. **AUTO CONTROL RESET** switch — Press **ON**. Note that the **STAB MANUAL MODE** caution disappears and audio is off, and stabilator position display moves to 34° to 42° **DN**.
- d. Either cyclic mounted stabilator slew-up switch — Press and hold until stabilator position display moves approximately 15° trailing edge up, release, stabilator should stop. **MASTER CAUTION** lights on and **STAB MANUAL MODE** caution and appears and beeping audible warning in pilot's, copilot's and crewchief's headsets. **MASTER CAUTION** — Press to reset audio tone.
- e. Other cyclic mounted stabilator slew-up switch — Press and hold until stabilator position display moves approximately 15° trailing edge up, release, stabilator should stop.
- f. **MAN SLEW** switch — **UP** and hold until stabilator stops. Stabilator position display should be 6° to 10° up.

- g. **MAN SLEW** switch — **DN** and hold until stabilator position display reads 0°.
- h. **AUTO CONTROL RESET** switch — Press **ON**. Stabilator position display should move 34° to 42° **DN**. **STAB MANUAL MODE** caution disappears.

BLADE DEICE SYSTEM — TEST AS REQUIRED.

- a. Ice rate meter **PRESS TO TEST** button — Press and release.
- b. Ice rate meter indicator — Moves to half scale (1.0) holds about 50 seconds; then falls to 0 or below. **ICE DETECTED** caution and **MASTER CAUTION** appear after 15 to 20 seconds into the test, and **FAIL** flag should not be visible in flag window. Ice rate meter should move to zero within 75 seconds after pressing **PRESS TO TEST** button.
- c. **BLADE DE-ICE TEST** panel select switch — **NORM**.
- d. **PWR MAIN RTR** and **TAIL RTR** monitor lights — Press to test.
- e. **BLADE DEICE POWER** switch — **TEST**.
- f. **PWR MAIN RTR** and **TAIL RTR** monitor lights — Check. **MAIN RTR** monitor light may go on for 2 to 4 seconds. If either light remains on for 10 seconds or more:
 - (1) **BLADE DEICE POWER** switch — **OFF**. If either light is still on:

- (2) **GENERATORS APU** switch and/or **EXT PWR** switch — **OFF**.
- g. **TEST IN PROGRESS** light — Check. The light should be on for 105 to 135 seconds. No other blade deice system lights should be on. **PWR MAIN RTR** and **TAIL RTR** monitor lights may go on momentarily near end of test. The **TEST IN PROGRESS** light should then go off.
- h. Crewman touch each droop stop cam — Cams should be warm to touch.
- i. **BLADE DEICE POWER** switch — **OFF**.
- j. **BLADE DE-ICE TEST** panel select switch — **SYNC 1**.
- k. **BLADE DEICE POWER** switch — **TEST**. **M/R DE-ICE FAIL** caution and **MASTER CAUTION** appear.
- l. **BLADE DEICE POWER** switch — **OFF**. **M/R DE-ICE FAIL** caution and **MASTER CAUTION** disappear.
- m. **BLADE DE-ICE TEST** panel select switch — **SYNC 2**.
- n. **BLADE DEICE POWER** switch — **TEST**. **M/R DE-ICE FAIL** caution and **MASTER CAUTION** appear.
- o. **BLADE DEICE POWER** switch — **OFF**. **M/R DE-ICE FAIL** caution and **MASTER CAUTION** disappear.
- p. **BLADE DE-ICE TEST** panel select switch — **OAT**.

- q. **BLADE DEICE POWER** switch — **TEST**. **M/R DE-ICE FAIL** caution, **T/R DE-ICE FAIL** caution, and **MASTER CAUTION** appear.
- r. **BLADE DEICE POWER** switch — **OFF**. **M/R DE-ICE FAIL** caution, **T/R DE-ICE FAIL** caution, and **MASTER CAUTION** disappear.
- s. **BLADE DE-ICE TEST** panel select switch — **NORM**.

AVIONICS — CHECK AND SET AS REQUIRED.

- a. **FMS COM** key — Press. Set radios as required.
- b. **FMS NAV** key — Press. Set radios as required.
- c. **FMS XPDR** key — Press. Set as required.
- d. **FMS STS** key — Press. Check all systems indicate a **GO** status.
- e. **FMS EGI** verify alignment complete.

ENGINE(S) — START.

- a. If any of these indications occur during start sequence, abort the start.
 - (1) No **TGT** increase (light off) within 45 seconds.
 - (2) No **P** (engine oil pressure) within 45 seconds.

- (3) No **NP1** or **NP2** within 45 seconds (if rotor brake is off).
 - (4) **ENG STARTER ON** caution disappears before reaching 52% **NG**.
 - (5) **TGT** reaches 851°C before idle is attained (above 63% **NG**).
- b. Starter button(s) — Press until **NG** increases; release.
 - c. **TGT** — Check below 30°C before advancing **ENG POWER CONT** levers. If engine is being started one hour or less since previous shutdown, rollover on starter for 60 seconds prior to advancing **ENG POWER CONT** lever(s).
 - d. **ENG POWER CONT** lever(s) — **IDLE**. Start clock.
 - e. System indications — Check.
 - f. **ENG STARTER ON** caution(s). Check disappears above 52% **NG**. If **ENG STARTER ON** caution remains after reaching idle:
 - (1) **ENG POWER CONT** lever — Pull out.

If caution remains:

- (2) **APU CONT** — **OFF** or engine air source remove as required.

HYDRAULIC LEAK TEST SYSTEM — CHECK.

- a. **HYD LEAK TEST** switch — **TEST**. **T/R SERVO 1 FAIL**, **BOOST SERVO OFF**, **SAS OFF**, **RSVR 1 LOW**, **RSVR 2 LOW**, and **BACK UP RSVR LOW** cautions, **T/R SERVO 2 ON** and **BACK UP PUMP ON** advisories, and **MASTER CAUTION** appear. During this check, it is normal for the collective and pedals to move slightly.
- b. **HYD LEAK TEST** switch — **RESET**. The cautions and advisories in step a. should disappear.

TAIL ROTOR SERVO TRANSFER — CHECK.

- a. **BACKUP HYD PUMP** switch — **AUTO** with backup pump not running.
- b. **TAIL SERVO** switch — **BACKUP**. **T/R SERVO 1 FAIL** caution, **T/R SERVO 2 ON** and **BACK UP PUMP ON** advisories, and **MASTER CAUTION** appear within 3 to 5 seconds.
- c. **TAIL SERVO** switch — **NORMAL**. **T/R SERVO 1 FAIL** caution, **T/R SERVO 2 ON** advisory, and **MASTER CAUTION** disappear. **BACK UP PUMP ON** advisory disappears after approximately 90 seconds.

DEICE EOT — CHECK AS REQUIRED.

- a. **BLADE DE-ICE TEST** select switch — **EOT**.

- b. **BLADE DEICE MODE** select switch — **MANUAL M**.
- c. **BLADE DEICE POWER** switch — **ON**.
- d. **T/R DE-ICE FAIL** caution and **MASTER CAUTION** appear after 15 to 30 seconds, **M/R DE-ICE FAIL** caution appears after 50 to 70 seconds, and **M/R DE-ICE FAULT** caution may appear.
- e. **BLADE DEICE POWER** switch — **OFF**. **T/R DE-ICE FAIL** caution, **M/R DE-ICE FAIL** caution, and **MASTER CAUTION** disappear.
- f. **BLADE DE-ICE TEST** select switch — **NORM**.
- g. **GENERATORS NO. 1** or **NO. 2** switch — **OFF**. Applicable **GEN** caution and **MASTER CAUTION** appear.
- h. **BLADE DEICE POWER** switch — **ON**. Wait 30 seconds, no deice cautions appear.
- i. **GENERATORS** switch(es) — **ON**. Applicable **GEN FAIL** cautions disappear.
- j. **BLADE DEICE POWER** switch — **OFF**.
- k. **BLADE DEICE MODE** select switch — **AUTO**.

CEFS TRANSFER.

FUEL TRANSFER IN AUTO MODE.

1. **L OUTBD, L INBD, INT, R INBD, and R OUTBD XFER/REFUEL CLOSE** switches — **CLOSE**.
2. **XFER** switch — **AUTO**.
3. **MAIN FUEL** readout — Check for increase and **L AUX, R AUX, and INT** (if installed) readouts check for decrease.
4. **XFER** switch — **OFF**.

FUEL TRANSFER IN MANUAL MODE.

1. **XFER** switch — **MANUAL**.
2. **L OUTBD, L INBD, INT, R INBD, and R OUTBD XFER/REFUEL CLOSE** switches for desired auxiliary tanks — **XFER/REFUEL**.
3. **MAIN FUEL** readout — Check for increase and **L AUX, R AUX, and INT** (if installed) readouts check for decrease.

When transfer is complete:

4. **XFER** switch — **OFF**.

PRESSURE REFUELING.

1. **XFER** switch — **OFF**.
2. **L OUTBD, L INBD, INT, R INBD, and R OUTBD XFER/REFUEL CLOSE** switches for desired auxiliary tanks to be refueled — **XFER/REFUEL**.

3. **REFUEL PRESS TO PRESET VALVES** button — Momentarily press prior to turning off helicopter power.
4. **XFER** switch — **OFF**, when transfer is complete.

GPS FAILURE (UPDATE INU MANUALLY).

- ① **FIX** — Press.
- ② Press SK-1 (EGI 1) or SK-2 (EGI 2) to select which Nav solution to update.
- ③ SK-1 — Toggle to select update mode.
 - a. **MANUAL** — Manually enter the coordinates of the update point.
 - b. **WPT** — Uses a waypoint from the FMS database as the update point.
- ④ When over the update point, Press SK-7 **MARK**. The display will freeze and the position error will be displayed.
- ⑤ Press SK-8 to accept the update or SK-9 to reject the update.

VOLCANO MULTIPLE MINE DELIVERY SYSTEM.

MINE LAUNCH.

1. DCU **FIRE CIRCUIT** switch safety pin and streamer — Remove.
2. DCU **FIRE CIRCUIT** switch — **ENABLE**.

3. Before reaching target, **VOLCANO ARM** switch — **VOLCANO ARM**. Verify **P/F/ARMED** indicates **ARMED**.
4. Verify that the **HELICOPTER DELIVERY SPEED** settings agree with the helicopter ground speed.
5. **WPN REL** button — Press either pilot's to start launching mines. Press either **WPN REL** button a second time to stop mine launching.
6. If launch is interrupted longer than 60 seconds, resume launch: **VOLCANO ARM** switch — Off for at least sixteen seconds.
7. **VOLCANO ARM** switch — **VOLCANO ARM**. Verify a steady **ARMED** is displayed on the ICP. Launching can then be resumed.
8. During mine launching, if an error code appears on DCU panel that affects mission performance, perform the following:
 - a. DCU **FIRE CIRCUIT** switch — **OFF**.
 - b. Safety pin and streamer — Install to **FIRE CIRCUIT** switch.
 - c. DCU **POWER** switch — **OFF**.
 - d. Return to downloading area and remove canisters, refer to TM 9-1095-208-13&P.

POST MINE LAUNCH CHECK.

1. ICP **VOLCANO ARM** switch — Off (down).
2. DCU **FIRE CIRCUIT** switch — **OFF**.

3. Safety pin and streamer — Install to **FIRE CIRCUIT** switch.
4. DCU **POWER** switch — **OFF**.

PRESSURE REFUELING — IF REQUIRED FOR AUXILIARY FUEL SYSTEMS.

- a. **XFER** switch — **OFF**.
- b. **XFER/REFUEL CLOSE** switches for desired auxiliary tanks to be refueled — **XFER/REFUEL**.
- c. **REFUEL PRESS TO PRESET VALVES** button — Momentarily press prior to turning off helicopter power to open the valves to the tanks for refueling.

After refueling is complete:

- d. **XFER/REFUEL** switches — **CLOSE**.
- e. **BATT NO. 1** and **NO. 2** switches — **ON**.
- f. **REFUEL PRESS TO RESET VALVES** button — Press momentarily to close the tank valves.
- g. **BATT NO. 1** and **NO. 2** switches — **OFF**.

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		-50	-45	-40	-35	-30	-25	-20
0	1.0	131	132	133	134	135	136	136
	0.9	127	128	129	130	131	132	133
500	1.0	129	130	131	131	132	133	134
	0.9	125	126	127	128	128	129	130
1000	1.0	126	127	128	129	130	131	132
	0.9	123	124	125	125	126	127	128
1500	1.0	124	125	126	127	128	129	129
	0.9	121	121	122	123	124	125	126
2000	1.0	122	123	124	125	125	126	127
	0.9	118	119	120	121	122	123	123
2500	1.0	120	121	122	122	123	124	125
	0.9	116	117	118	119	120	120	121
3000	1.0	118	118	119	120	121	122	123
	0.9	114	115	116	117	117	118	119
3500	1.0	115	116	117	118	119	120	120
	0.9	112	113	114	115	115	116	117
4000	1.0	113	114	115	116	117	117	118
	0.9	110	111	112	112	113	114	115
4500	1.0	111	112	113	114	115	115	116
	0.9	108	109	110	110	111	112	113
5000	1.0	109	110	111	112	112	113	114
	0.9	106	107	108	108	109	110	111
5500	1.0	107	108	109	110	110	111	112
	0.9	104	105	106	106	107	108	109
6000	1.0	105	106	107	108	108	109	110
	0.9	102	103	104	104	105	106	107
6500	1.0	103	104	105	106	106	107	108
	0.9	100	101	102	103	103	104	105
7000	1.0	101	102	103	104	104	105	106
	0.9	99	99	100	101	101	102	103
7500	1.0	100	100	101	102	103	103	104
	0.9	97	97	98	99	100	100	101

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

AM4292_1CL
SAF

Figure 1. Maximum Torque Available (Sheet 1 of 6)

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		-50	-45	-40	-35	-30	-25	-20
8000	1.0	98	98	99	100	101	101	102
	0.9	95	96	96	97	98	98	99
8500	1.0	96	97	97	98	99	99	100
	0.9	93	94	95	95	96	97	97
9000	1.0	94	95	96	96	97	98	98
	0.9	91	92	93	93	94	95	95
9500	1.0	92	93	94	94	95	96	96
	0.9	90	90	91	92	92	93	94
10,000	1.0	91	91	92	93	93	94	94
	0.9	88	89	89	90	91	91	92
10,500	1.0	89	90	90	91	91	92	93
	0.9	86	87	88	88	89	89	90
11,000	1.0	87	88	89	89	90	90	91
	0.9	85	85	86	87	87	88	88
11,500	1.0	86	86	87	87	88	88	89
	0.9	83	84	84	85	85	86	86
12,000	1.0	84	85	85	86	86	87	87
	0.9	82	82	83	83	84	84	85
12,500	1.0	82	83	84	84	84	85	85
	0.9	80	81	81	82	82	83	83
13,000	1.0	81	81	82	82	83	83	84
	0.9	78	79	80	80	80	81	81
13,500	1.0	79	80	80	81	81	82	82
	0.9	77	77	78	78	79	79	80
14,000	1.0	78	78	79	79	79	80	80
	0.9	75	76	76	77	77	78	78
14,500	1.0	76	77	77	77	78	78	79
	0.9	74	74	75	75	76	76	76
15,000	1.0	75	75	75	76	76	77	77
	0.9	72	73	73	74	74	75	75
15,500	1.0	73	73	74	74	75	75	76
	0.9	71	71	72	72	73	73	73

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

AM4292_2CL
SAF

Figure 1. Maximum Torque Available (Sheet 2 of 6)

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		-15	-10	-5	0	5	10	15
0	1.0	138	139	140	141	140	140	137
	0.9	134	135	135	136	134	133	129
500	1.0	135	136	137	138	138	137	135
	0.9	131	132	133	134	132	131	127
1000	1.0	133	134	135	136	135	135	133
	0.9	129	130	131	131	130	129	125
1500	1.0	130	131	133	134	133	133	130
	0.9	127	128	128	129	128	126	123
2000	1.0	128	129	130	131	131	130	128
	0.9	124	125	126	127	125	124	121
2500	1.0	126	127	128	129	128	128	126
	0.9	122	123	124	125	123	122	118
3000	1.0	124	125	126	127	126	126	123
	0.9	120	121	122	122	121	120	116
3500	1.0	121	122	123	124	124	123	121
	0.9	118	119	120	120	119	117	114
4000	1.0	119	120	121	122	122	121	119
	0.9	116	117	117	118	117	115	112
4500	1.0	117	118	119	120	119	119	117
	0.9	114	115	115	116	114	113	110
5000	1.0	115	116	117	118	117	117	114
	0.9	112	113	113	114	112	111	108
5500	1.0	113	114	115	116	115	114	112
	0.9	110	110	111	112	110	109	106
6000	1.0	111	112	113	113	113	112	110
	0.9	107	108	109	110	108	107	104
6500	1.0	109	110	110	111	111	110	108
	0.9	106	106	107	108	106	105	102
7000	1.0	107	108	108	109	108	108	106
	0.9	104	105	105	106	104	103	100
7500	1.0	105	106	106	107	106	106	104
	0.9	102	103	103	104	102	101	98

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

AM4292_3CL
SAF

Figure 1. Maximum Torque Available (Sheet 3 of 6)

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		-15	-10	-5	0	5	10	15
8000	1.0	103	104	104	105	104	103	101
	0.9	100	101	101	102	100	99	96
8500	1.0	101	102	102	103	102	101	99
	0.9	98	99	99	100	98	97	94
9000	1.0	99	100	100	101	100	99	97
	0.9	96	97	97	98	96	95	92
9500	1.0	97	98	98	99	98	97	95
	0.9	94	95	95	96	94	93	90
10,000	1.0	95	96	96	97	96	95	93
	0.9	92	93	93	94	92	91	88
10,500	1.0	93	94	95	95	94	93	91
	0.9	91	91	92	92	90	89	86
11,000	1.0	91	92	93	93	92	91	89
	0.9	89	89	90	90	89	87	84
11,500	1.0	90	90	91	91	90	89	88
	0.9	87	88	88	88	87	85	82
12,000	1.0	88	88	89	89	89	88	86
	0.9	85	86	86	87	85	83	81
12,500	1.0	86	87	87	88	87	86	84
	0.9	84	84	85	85	83	82	79
13,000	1.0	84	85	85	86	85	84	82
	0.9	82	83	83	83	81	80	77
13,500	1.0	83	83	84	84	83	82	80
	0.9	80	81	81	81	80	78	76
14,000	1.0	81	82	82	82	81	80	78
	0.9	79	79	79	80	78	76	74
14,500	1.0	79	80	80	81	80	78	77
	0.9	77	78	78	78	76	75	72
15,000	1.0	78	78	79	79	78	77	75
	0.9	75	76	76	77	75	73	71
15,500	1.0	76	77	77	78	76	75	73
	0.9	74	74	75	75	73	71	69

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

AM4292_4CL
SAF

Figure 1. Maximum Torque Available (Sheet 4 of 6)

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		20	25	30	35	40	45	50
0	1.0	135	132	129	126	122	118	114
	0.9	126	122	117	114	110	106	102
500	1.0	133	130	127	124	120	116	112
	0.9	124	120	115	112	108	104	100
1000	1.0	130	128	125	121	118	114	109
	0.9	122	117	113	110	106	102	99
1500	1.0	128	125	122	119	116	111	107
	0.9	119	115	111	108	104	100	97
2000	1.0	126	123	120	117	113	109	105
	0.9	117	113	109	106	102	98	95
2500	1.0	123	121	118	115	111	107	103
	0.9	115	111	107	104	100	96	93
3000	1.0	121	118	116	112	109	105	101
	0.9	113	109	105	102	98	95	91
3500	1.0	119	116	113	110	107	103	99
	0.9	111	107	103	100	96	93	89
4000	1.0	117	114	111	108	105	101	97
	0.9	109	105	101	98	94	91	87
4500	1.0	114	112	109	106	103	99	95
	0.9	107	103	99	96	92	89	86
5000	1.0	112	110	107	104	101	97	93
	0.9	105	101	97	94	91	87	84
5500	1.0	110	107	105	102	99	95	91
	0.9	103	99	95	92	89	85	82
6000	1.0	108	105	103	100	97	93	89
	0.9	101	97	93	90	87	84	80
6500	1.0	106	103	101	98	95	91	87
	0.9	99	95	91	88	85	82	79
7000	1.0	104	101	99	96	93	89	85
	0.9	97	93	90	86	83	80	77
7500	1.0	101	99	97	94	91	87	84
	0.9	95	91	88	85	82	78	75

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

■ AREA IS ABOVE ENGINE AMBIENT TEMPERATURE LIMIT

AM4292_5CL
SAF

Figure 1. Maximum Torque Available (Sheet 5 of 6)

TM 1-1520-280-CL

MAXIMUM TORQUE AVAILABLE* – 10 MINUTE LIMIT ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF	FREE AIR TEMPERATURE °C						
		20	25	30	35	40	45	50
8000	1.0	99	97	95	92	89	85	82
	0.9	93	89	86	83	80	77	74
8500	1.0	97	95	93	90	87	83	80
	0.9	91	87	84	81	78	75	72
9000	1.0	95	93	91	88	85	81	78
	0.9	89	86	82	79	76	73	70
9500	1.0	93	91	89	86	83	80	76
	0.9	87	84	81	78	75	72	69
10,000	1.0	91	89	87	84	81	78	74
	0.9	85	82	79	76	73	70	67
10,500	1.0	89	87	85	82	79	76	73
	0.9	83	80	77	74	71	68	65
11,000	1.0	87	85	83	80	77	74	71
	0.9	82	79	76	73	70	67	64
11,500	1.0	86	83	81	78	76	72	69
	0.9	80	77	74	71	68	65	62
12,000	1.0	84	82	79	77	74	71	68
	0.9	78	75	72	69	66	64	61
12,500	1.0	82	80	78	75	72	69	66
	0.9	76	73	71	68	65	62	59
13,000	1.0	80	78	76	73	70	67	64
	0.9	75	72	69	66	63	61	58
13,500	1.0	78	76	74	71	69	66	63
	0.9	73	70	67	65	62	59	57
14,000	1.0	77	74	72	70	67	64	61
	0.9	71	69	66	63	60	58	55
14,500	1.0	75	73	71	68	66	63	60
	0.9	70	67	64	62	59	56	54
15,000	1.0	73	71	69	67	64	61	58
	0.9	68	66	63	60	58	55	52
15,500	1.0	71	69	67	65	62	60	57
	0.9	67	64	61	59	56	54	51

* MAXIMUM TORQUE AVAILABLE IS LIMITED TO 120%
BELOW 80 KIAS AND 100% TORQUE ABOVE 80 KIAS

■ AREA IS ABOVE ENGINE AMBIENT TEMPERATURE LIMIT

AM4292_6CL
SAF

Figure 1. Maximum Torque Available (Sheet 6 of 6)

HOVER

CLEAN CONFIGURATION

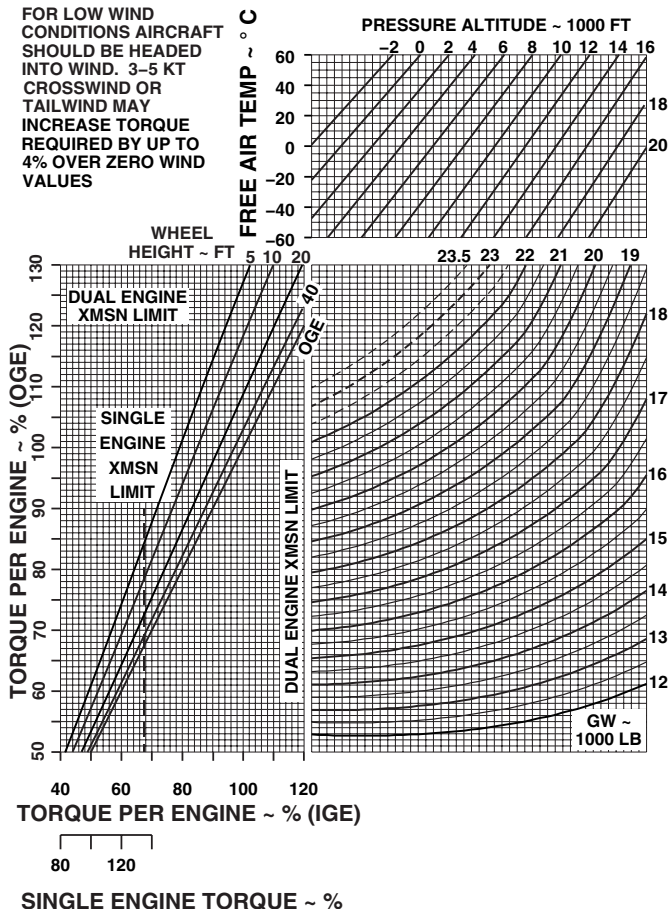
100% RPM R

ZERO WIND

HOVER
CLEAN
T701D(2)

NOTE

FOR LOW WIND
CONDITIONS AIRCRAFT
SHOULD BE HEADED
INTO WIND. 3-5 KT
CROSSWIND OR
TAILWIND MAY
INCREASE TORQUE
REQUIRED BY UP TO
4% OVER ZERO WIND
VALUES



DATA BASIS : FLIGHT TEST

AM4276CL
SAF

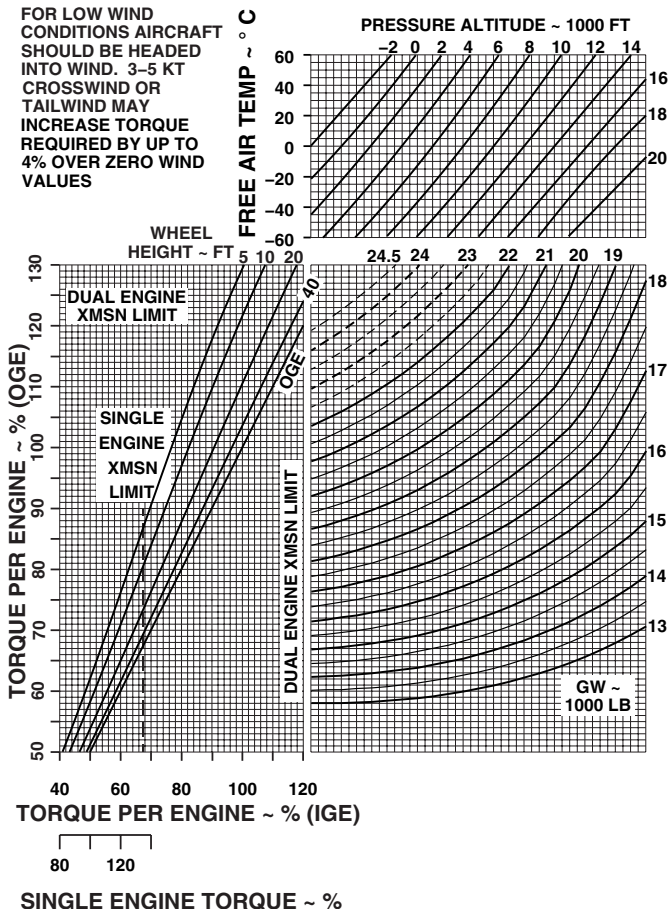
Figure 2. Hover - Clean Configuration



HOVER **HIGH DRAG CONFIGURATION** **100% RPM R** **ZERO WIND**

NOTE

FOR LOW WIND
 CONDITIONS AIRCRAFT
 SHOULD BE HEADED
 INTO WIND. 3-5 KT
 CROSSWIND OR
 TAILWIND MAY
 INCREASE TORQUE
 REQUIRED BY UP TO
 4% OVER ZERO WIND
 VALUES



DATA BASIS : FLIGHT TEST

AM4277CL
 SAF

Figure 3. Hover - High Drag Configuration

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C					
		-45		-40		-35	
		1.0	0.9	1.0	0.9	1.0	0.9
0	GW ~ 100 LB	235	235	235	235	235	235
	Q ~ OGE ~ %	108	108	108	108	109	109
	Q ~ IGE ~ %	92	92	93	93	93	93
1000	GW ~ 100 LB	235	235	235	235	235	235
	Q ~ OGE ~ %	109	109	110	110	111	111
	Q ~ IGE ~ %	93	93	93	93	94	94
2000	GW ~ 100 LB	235	235	235	235	235	235
	Q ~ OGE ~ %	111	111	112	112	112	112
	Q ~ IGE ~ %	94	94	94	94	95	95
3000	GW ~ 100 LB	235	235	235	235	235	235
	Q ~ OGE ~ %	113	113	114	114	114	114
	Q ~ IGE ~ %	95	95	95	95	96	96
4000	GW ~ 100 LB	235	235	234	234	234	230
	Q ~ OGE ~ %	114	114	115	115	116	113
	Q ~ IGE ~ %	96	96	96	96	96	94
5000	GW ~ 100 LB	225	221	225	221	226	221
	Q ~ OGE ~ %	110	107	111	108	112	109
	Q ~ IGE ~ %	92	90	92	90	93	91
5500	GW ~ 100 LB	221	217	221	217	221	217
	Q ~ OGE ~ %	108	105	109	106	110	107
	Q ~ IGE ~ %	90	88	91	88	91	89
6000	GW ~ 100 LB	217	213	217	213	217	213
	Q ~ OGE ~ %	106	103	107	104	108	105
	Q ~ IGE ~ %	88	86	89	87	90	87
6500	GW ~ 100 LB	213	209	213	209	213	209
	Q ~ OGE ~ %	104	101	105	102	106	103
	Q ~ IGE ~ %	87	85	87	85	88	86

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_1CL
SAF

Figure 4. Hover Torque Required (Sheet 1 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C					
		-45		-40		-35	
		1.0	0.9	1.0	0.9	1.0	0.9
7000	GW ~ 100 LB	209	205	209	205	209	205
	Q ~ OGE ~ %	102	99	103	100	104	101
	Q ~ IGE ~ %	85	83	86	84	86	84
7500	GW ~ 100 LB	205	201	205	201	205	201
	Q ~ OGE ~ %	100	98	101	98	102	99
	Q ~ IGE ~ %	84	82	84	82	85	83
8000	GW ~ 100 LB	201	197	201	197	201	197
	Q ~ OGE ~ %	99	96	99	96	100	97
	Q ~ IGE ~ %	82	80	83	81	83	81
8500	GW ~ 100 LB	197	193	197	194	197	194
	Q ~ OGE ~ %	97	94	97	95	98	95
	Q ~ IGE ~ %	81	79	81	79	82	80
9000	GW ~ 100 LB	193	190	194	190	194	190
	Q ~ OGE ~ %	95	92	96	93	96	94
	Q ~ IGE ~ %	79	77	80	78	80	78
9500	GW ~ 100 LB	190	186	190	186	190	186
	Q ~ OGE ~ %	93	91	94	91	95	92
	Q ~ IGE ~ %	78	76	78	76	79	77
10,000	GW ~ 100 LB	186	182	186	183	186	183
	Q ~ OGE ~ %	91	89	92	89	93	90
	Q ~ IGE ~ %	76	74	77	75	77	75
10,500	GW ~ 100 LB	182	179	183	179	183	179
	Q ~ OGE ~ %	90	87	90	88	91	88
	Q ~ IGE ~ %	75	73	75	73	76	74
11,000	GW ~ 100 LB	179	176	179	176	179	176
	Q ~ OGE ~ %	88	86	89	86	89	87
	Q ~ IGE ~ %	73	72	74	72	74	73

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_2CL

SAF

Figure 4. Hover Torque Required (Sheet 2 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C					
		-45		-40		-35	
		1.0	0.9	1.0	0.9	1.0	0.9
11,500	GW ~ 100 LB	175	172	175	172	175	172
	Q ~ OGE ~ %	86	84	87	85	88	85
	Q ~ IGE ~ %	72	70	72	71	73	71
12,000	GW ~ 100 LB	172	169	172	169	172	169
	Q ~ OGE ~ %	85	82	85	83	86	83
	Q ~ IGE ~ %	71	69	71	69	72	70
12,500	GW ~ 100 LB	169	165	169	165	169	165
	Q ~ OGE ~ %	83	81	84	81	84	82
	Q ~ IGE ~ %	69	68	70	68	70	68
13,000	GW ~ 100 LB	165	162	165	162	165	162
	Q ~ OGE ~ %	81	79	82	80	82	80
	Q ~ IGE ~ %	68	66	68	67	69	67
13,500	GW ~ 100 LB	162	159	162	159	162	159
	Q ~ OGE ~ %	80	78	80	78	81	78
	Q ~ IGE ~ %	67	65	67	65	67	66
14,000	GW ~ 100 LB	158	155	158	155	159	155
	Q ~ OGE ~ %	78	76	79	76	79	77
	Q ~ IGE ~ %	65	64	66	64	66	64
14,500	GW ~ 100 LB	155	152	155	152	155	152
	Q ~ OGE ~ %	77	74	77	75	78	75
	Q ~ IGE ~ %	64	62	64	63	65	63
15,000	GW ~ 100 LB	152	149	152	149	152	149
	Q ~ OGE ~ %	75	73	76	73	76	74
	Q ~ IGE ~ %	63	61	63	62	63	62
15,500	GW ~ 100 LB	149	146	149	146	149	146
	Q ~ OGE ~ %	74	71	74	72	74	72
	Q ~ IGE ~ %	61	60	62	60	62	61

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_3CL
SAF

Figure 4. Hover Torque Required (Sheet 3 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-30		-25		-20		-15	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
0	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	110	110	110	110	111	111	111	111
	Q ~ IGE ~ %	93	93	94	94	94	94	95	95
1000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	111	111	112	112	112	112	113	113
	Q ~ IGE ~ %	94	94	95	95	95	95	96	96
2000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	113	113	114	114	114	114	114	114
	Q ~ IGE ~ %	95	95	96	96	96	96	97	97
3000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	115	115	116	116	116	116	117	117
	Q ~ IGE ~ %	96	96	97	97	98	98	98	98
4000	GW ~ 100 LB	234	230	235	230	235	231	235	231
	Q ~ OGE ~ %	117	113	117	114	118	115	119	116
	Q ~ IGE ~ %	97	95	98	95	99	97	100	97
5000	GW ~ 100 LB	226	222	226	222	227	222	227	223
	Q ~ OGE ~ %	113	109	113	110	114	111	115	112
	Q ~ IGE ~ %	94	92	94	92	96	93	96	94
5500	GW ~ 100 LB	222	217	222	218	222	218	223	219
	Q ~ OGE ~ %	111	107	111	108	112	109	113	110
	Q ~ IGE ~ %	92	90	93	91	93	91	95	92
6000	GW ~ 100 LB	217	213	217	214	218	214	217	215
	Q ~ OGE ~ %	108	105	109	106	110	107	111	108
	Q ~ IGE ~ %	90	88	91	89	92	90	93	91
6500	GW ~ 100 LB	213	209	214	210	214	210	215	211
	Q ~ OGE ~ %	106	103	107	104	108	105	109	106
	Q ~ IGE ~ %	89	87	90	87	90	88	91	89

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_4CL

SAF

Figure 4. Hover Torque Required (Sheet 4 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-30		-25		-20		-15	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
7000	GW ~ 100 LB	209	205	210	206	210	206	211	207
	Q ~ OGE ~ %	105	102	105	102	106	103	107	104
	Q ~ IGE ~ %	87	85	88	86	89	86	90	87
7500	GW ~ 100 LB	205	201	206	202	206	202	207	203
	Q ~ OGE ~ %	103	100	103	100	104	101	105	102
	Q ~ IGE ~ %	86	83	86	84	87	85	88	86
8000	GW ~ 100 LB	201	198	202	198	202	198	203	199
	Q ~ OGE ~ %	101	98	101	98	102	99	103	100
	Q ~ IGE ~ %	84	82	85	83	85	83	86	84
8500	GW ~ 100 LB	198	194	198	194	198	195	199	195
	Q ~ OGE ~ %	99	96	99	97	100	97	101	98
	Q ~ IGE ~ %	82	80	83	81	84	82	85	83
9000	GW ~ 100 LB	194	190	194	190	195	191	195	191
	Q ~ OGE ~ %	97	94	98	95	98	95	99	96
	Q ~ IGE ~ %	81	79	82	80	82	80	83	81
9500	GW ~ 100 LB	190	187	190	187	191	187	191	187
	Q ~ OGE ~ %	95	92	96	93	96	94	97	94
	Q ~ IGE ~ %	79	77	80	78	81	79	82	79
10,000	GW ~ 100 LB	187	183	187	183	187	183	187	184
	Q ~ OGE ~ %	93	91	94	91	95	92	95	92
	Q ~ IGE ~ %	78	76	79	77	79	77	80	78
10,500	GW ~ 100 LB	183	179	183	180	183	180	184	180
	Q ~ OGE ~ %	92	89	92	90	93	90	93	91
	Q ~ IGE ~ %	76	75	77	75	78	76	78	76
11,000	GW ~ 100 LB	179	176	179	176	180	176	180	177
	Q ~ OGE ~ %	90	87	90	88	91	88	92	89
	Q ~ IGE ~ %	75	73	76	74	76	74	77	75

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_5CL

SAF

Figure 4. Hover Torque Required (Sheet 5 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-30		-25		-20		-15	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
11,500	GW ~ 100 LB	175	172	176	173	176	173	176	173
	Q ~ OGE ~ %	88	86	89	86	89	87	90	87
	Q ~ IGE ~ %	74	72	74	72	75	73	75	73
12,000	GW ~ 100 LB	172	169	172	169	172	169	173	169
	Q ~ OGE ~ %	86	84	87	84	87	85	88	85
	Q ~ IGE ~ %	72	70	73	71	73	71	74	72
12,500	GW ~ 100 LB	169	165	169	166	169	166	169	166
	Q ~ OGE ~ %	85	82	85	83	86	83	86	84
	Q ~ IGE ~ %	71	69	71	69	72	70	72	71
13,000	GW ~ 100 LB	165	162	165	162	166	162	166	163
	Q ~ OGE ~ %	83	81	83	81	84	81	84	82
	Q ~ IGE ~ %	69	68	70	68	70	68	71	69
13,500	GW ~ 100 LB	162	159	162	159	162	159	163	159
	Q ~ OGE ~ %	81	79	82	79	82	80	83	80
	Q ~ IGE ~ %	68	66	68	67	69	67	70	68
14,000	GW ~ 100 LB	159	155	159	156	159	156	159	156
	Q ~ OGE ~ %	80	77	80	78	80	78	81	79
	Q ~ IGE ~ %	67	65	67	65	67	66	68	66
14,500	GW ~ 100 LB	155	152	155	152	156	153	156	153
	Q ~ OGE ~ %	78	76	78	76	79	77	79	77
	Q ~ IGE ~ %	65	64	66	64	66	64	67	65
15,000	GW ~ 100 LB	152	149	152	149	152	149	153	150
	Q ~ OGE ~ %	76	74	77	75	77	75	78	76
	Q ~ IGE ~ %	64	62	64	63	65	63	65	64
15,500	GW ~ 100 LB	149	146	149	146	149	146	150	147
	Q ~ OGE ~ %	75	73	75	73	76	73	76	74
	Q ~ IGE ~ %	63	61	63	61	64	62	64	62

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_6CL

SAF

Figure 4. Hover Torque Required (Sheet 6 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-10		-5		0		5	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
0	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	112	112	112	112	113	113	113	113
	Q ~ IGE ~ %	95	95	96	96	96	96	97	97
1000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	113	113	114	114	114	114	115	115
	Q ~ IGE ~ %	96	96	97	97	98	98	98	98
2000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	115	115	116	116	116	116	116	116
	Q ~ IGE ~ %	98	98	98	98	98	98	99	99
3000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	117	117	117	117	118	118	118	118
	Q ~ IGE ~ %	99	99	99	99	100	100	101	101
4000	GW ~ 100 LB	235	232	235	233	235	233	235	235
	Q ~ OGE ~ %	119	117	119	118	120	118	120	120
	Q ~ IGE ~ %	100	98	101	100	101	100	102	102
5000	GW ~ 100 LB	228	224	229	224	230	224	228	222
	Q ~ OGE ~ %	116	113	117	114	118	114	117	112
	Q ~ IGE ~ %	97	95	99	96	99	96	99	96
5500	GW ~ 100 LB	224	219	224	220	225	220	224	218
	Q ~ OGE ~ %	114	111	115	111	116	112	115	110
	Q ~ IGE ~ %	96	93	96	94	98	95	98	94
6000	GW ~ 100 LB	220	215	220	216	221	216	220	213
	Q ~ OGE ~ %	112	109	113	109	113	110	113	108
	Q ~ IGE ~ %	94	91	95	93	96	93	96	92
6500	GW ~ 100 LB	215	211	216	212	217	212	215	209
	Q ~ OGE ~ %	110	107	111	107	111	108	111	106
	Q ~ IGE ~ %	92	90	93	91	94	91	94	90

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_7CL
SAF

Figure 4. Hover Torque Required (Sheet 7 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-10		-5		0		5	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
7000	GW ~ 100 LB	211	207	212	208	213	208	211	205
	Q ~ OGE ~ %	108	105	109	105	109	106	109	104
	Q ~ IGE ~ %	91	88	92	89	92	90	92	89
7500	GW ~ 100 LB	207	203	208	204	208	204	207	201
	Q ~ OGE ~ %	106	103	106	103	107	104	106	102
	Q ~ IGE ~ %	89	87	90	87	91	88	90	87
8000	GW ~ 100 LB	203	199	204	200	204	200	203	197
	Q ~ OGE ~ %	104	101	104	101	105	102	104	100
	Q ~ IGE ~ %	87	85	88	86	89	86	89	85
8500	GW ~ 100 LB	199	196	200	196	200	196	199	193
	Q ~ OGE ~ %	102	99	102	99	103	100	102	98
	Q ~ IGE ~ %	86	83	86	84	87	85	87	84
9000	GW ~ 100 LB	196	192	196	192	196	192	195	189
	Q ~ OGE ~ %	100	97	100	98	101	98	100	96
	Q ~ IGE ~ %	84	82	85	83	86	83	85	82
9500	GW ~ 100 LB	192	188	192	188	193	188	191	186
	Q ~ OGE ~ %	98	95	98	96	99	96	98	94
	Q ~ IGE ~ %	82	80	83	81	84	81	84	80
10,000	GW ~ 100 LB	188	184	188	184	189	184	187	182
	Q ~ OGE ~ %	96	93	96	94	97	94	96	92
	Q ~ IGE ~ %	81	79	81	79	82	80	82	79
10,500	GW ~ 100 LB	184	181	185	181	185	181	183	178
	Q ~ OGE ~ %	94	91	95	92	95	92	94	90
	Q ~ IGE ~ %	79	77	80	78	81	78	80	77
11,000	GW ~ 100 LB	181	177	181	177	181	177	180	175
	Q ~ OGE ~ %	92	90	93	90	93	90	92	89
	Q ~ IGE ~ %	78	76	78	76	79	77	79	76

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_8CL

SAF

Figure 4. Hover Torque Required (Sheet 8 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		-10		-5		0		5	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
11,500	GW ~ 100 LB	177	173	177	174	178	174	176	171
	Q ~ OGE ~ %	90	88	91	88	91	88	91	87
	Q ~ IGE ~ %	76	74	77	75	77	75	77	74
12,000	GW ~ 100 LB	173	170	174	170	174	170	172	167
	Q ~ OGE ~ %	89	86	89	87	90	87	89	85
	Q ~ IGE ~ %	75	73	75	73	76	74	75	72
12,500	GW ~ 100 LB	170	167	170	167	170	167	169	164
	Q ~ OGE ~ %	87	84	87	85	88	85	87	83
	Q ~ IGE ~ %	73	71	74	72	74	72	74	71
13,000	GW ~ 100 LB	166	163	167	163	167	163	165	160
	Q ~ OGE ~ %	85	83	86	83	86	83	85	82
	Q ~ IGE ~ %	72	70	72	70	73	71	72	70
13,500	GW ~ 100 LB	163	160	163	160	164	160	162	157
	Q ~ OGE ~ %	83	81	84	81	84	82	83	80
	Q ~ IGE ~ %	70	68	71	69	71	69	71	68
14,000	GW ~ 100 LB	160	156	160	157	160	156	158	154
	Q ~ OGE ~ %	82	79	82	80	83	80	81	78
	Q ~ IGE ~ %	69	67	69	68	70	68	69	67
14,500	GW ~ 100 LB	156	153	157	154	157	153	155	151
	Q ~ OGE ~ %	80	78	80	78	81	78	80	76
	Q ~ IGE ~ %	67	66	68	66	69	66	68	65
15,000	GW ~ 100 LB	153	150	153	150	154	150	152	147
	Q ~ OGE ~ %	78	76	79	77	79	77	78	75
	Q ~ IGE ~ %	66	64	67	65	67	65	67	64
15,500	GW ~ 100 LB	150	147	150	147	150	147	148	144
	Q ~ OGE ~ %	77	75	77	75	78	75	76	73
	Q ~ IGE ~ %	65	63	65	64	66	64	65	63

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_9CL

SAF

Figure 4. Hover Torque Required (Sheet 9 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		10		15		20		25	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
0	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	114	114	114	114	114	114	115	115
	Q ~ IGE ~ %	98	98	98	98	99	99	99	99
1000	GW ~ 100 LB	235	235	235	235	235	235	235	235
	Q ~ OGE ~ %	115	115	116	116	116	116	116	116
	Q ~ IGE ~ %	99	99	99	99	100	100	100	100
2000	GW ~ 100 LB	235	235	235	235	235	235	235	228
	Q ~ OGE ~ %	117	117	117	117	118	117	118	113
	Q ~ IGE ~ %	100	100	101	101	101	101	102	98
3000	GW ~ 100 LB	235	235	235	232	235	226	233	220
	Q ~ OGE ~ %	119	119	119	117	119	113	118	109
	Q ~ IGE ~ %	101	101	102	100	103	97	102	94
4000	GW ~ 100 LB	234	228	232	223	229	218	224	212
	Q ~ OGE ~ %	120	115	119	112	117	109	114	105
	Q ~ IGE ~ %	102	99	102	96	100	94	98	91
5000	GW ~ 100 LB	227	219	224	215	220	209	216	203
	Q ~ OGE ~ %	117	111	114	108	112	105	110	101
	Q ~ IGE ~ %	99	95	98	93	97	90	95	87
5500	GW ~ 100 LB	223	215	219	210	216	205	212	199
	Q ~ OGE ~ %	114	109	112	106	110	103	107	99
	Q ~ IGE ~ %	98	93	96	91	95	88	93	86
6000	GW ~ 100 LB	218	211	215	206	211	201	207	195
	Q ~ OGE ~ %	112	107	110	104	108	101	105	97
	Q ~ IGE ~ %	96	91	94	89	93	87	91	84
6500	GW ~ 100 LB	214	207	211	202	207	197	203	191
	Q ~ OGE ~ %	110	105	108	102	106	99	103	95
	Q ~ IGE ~ %	94	90	92	87	91	85	89	82

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_10CL

SAF

Figure 4. Hover Torque Required (Sheet 10 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		10		15		20		25	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
7000	GW ~ 100 LB	210	203	207	198	203	193	199	188
	Q ~ OGE ~ %	108	103	106	100	104	97	101	93
	Q ~ IGE ~ %	92	88	91	86	89	83	87	81
7500	GW ~ 100 LB	206	199	202	194	199	189	195	184
	Q ~ OGE ~ %	106	101	104	98	102	95	99	91
	Q ~ IGE ~ %	90	86	90	84	87	82	86	79
8000	GW ~ 100 LB	202	195	198	190	195	185	191	180
	Q ~ OGE ~ %	104	99	101	96	99	93	97	89
	Q ~ IGE ~ %	88	84	87	82	86	80	84	77
8500	GW ~ 100 LB	198	191	194	186	191	182	187	176
	Q ~ OGE ~ %	102	97	99	94	97	91	95	88
	Q ~ IGE ~ %	87	83	85	81	84	78	82	76
9000	GW ~ 100 LB	194	187	190	183	187	178	183	173
	Q ~ OGE ~ %	99	95	97	92	95	89	93	86
	Q ~ IGE ~ %	85	81	84	79	82	77	80	74
9500	GW ~ 100 LB	190	183	186	179	183	174	179	169
	Q ~ OGE ~ %	97	93	95	90	93	87	91	84
	Q ~ IGE ~ %	83	79	82	77	80	75	79	73
10,000	GW ~ 100 LB	186	179	183	175	179	170	176	165
	Q ~ OGE ~ %	95	91	93	88	91	85	89	82
	Q ~ IGE ~ %	81	78	80	76	79	74	77	71
10,500	GW ~ 100 LB	182	176	179	171	176	167	172	162
	Q ~ OGE ~ %	93	89	91	86	89	84	87	80
	Q ~ IGE ~ %	80	76	78	74	77	72	75	70
11,000	GW ~ 100 LB	178	172	175	168	172	163	168	158
	Q ~ OGE ~ %	92	87	90	85	88	82	85	79
	Q ~ IGE ~ %	78	75	77	73	75	70	74	68

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_11CL

SAF

Figure 4. Hover Torque Required (Sheet 11 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		10		15		20		25	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
11,500	GW ~ 100 LB	174	168	171	164	168	160	165	155
	Q ~ OGE ~ %	90	85	88	83	86	80	83	77
	Q ~ IGE ~ %	77	73	75	71	74	69	72	67
12,000	GW ~ 100 LB	171	165	168	161	164	156	161	151
	Q ~ OGE ~ %	88	83	86	81	84	78	82	75
	Q ~ IGE ~ %	75	71	74	70	72	67	71	65
12,500	GW ~ 100 LB	167	161	164	157	161	153	157	148
	Q ~ OGE ~ %	86	82	84	79	82	76	80	74
	Q ~ IGE ~ %	73	70	72	68	71	66	69	64
13,000	GW ~ 100 LB	163	158	160	154	157	150	154	145
	Q ~ OGE ~ %	84	80	82	77	80	75	78	72
	Q ~ IGE ~ %	72	68	70	67	69	65	68	62
13,500	GW ~ 100 LB	160	154	157	151	154	146	151	142
	Q ~ OGE ~ %	82	78	80	76	78	73	76	70
	Q ~ IGE ~ %	70	67	69	65	68	63	66	61
14,000	GW ~ 100 LB	156	151	153	147	151	143		
	Q ~ OGE ~ %	80	76	78	74	77	72		
	Q ~ IGE ~ %	69	65	67	64	66	62		
14,500	GW ~ 100 LB	153	148	150	144	147	140		
	Q ~ OGE ~ %	79	75	77	72	75	70		
	Q ~ IGE ~ %	67	64	66	62	65	60		
15,000	GW ~ 100 LB	150	144	147	141	144	137	ABOVE ENGINE AMBIENT TEMP LIMIT	
	Q ~ OGE ~ %	77	73	75	71	73	68		
	Q ~ IGE ~ %	66	63	64	61	63	59		
15,500	GW ~ 100 LB	146	141	144	138	141	134		
	Q ~ OGE ~ %	75	72	73	69	72	67		
	Q ~ IGE ~ %	64	61	63	60	62	58		

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_12CL
SAF

Figure 4. Hover Torque Required (Sheet 12 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		30		35		40		45	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
0	GW ~ 100 LB	235	235	235	231	235	226	235	219
	Q ~ OGE ~ %	115	115	116	113	116	110	116	106
	Q ~ IGE ~ %	100	100	100	98	101	96	101	92
1000	GW ~ 100 LB	235	230	235	231	235	218	229	211
	Q ~ OGE ~ %	117	113	116	113	118	106	114	102
	Q ~ IGE ~ %	101	98	100	98	102	93	99	89
2000	GW ~ 100 LB	235	216	232	215	227	209	220	203
	Q ~ OGE ~ %	118	109	117	105	114	102	109	98
	Q ~ IGE ~ %	102	92	101	91	99	89	95	86
3000	GW ~ 100 LB	229	213	224	207	218	201	211	195
	Q ~ OGE ~ %	116	105	112	101	109	98	105	95
	Q ~ IGE ~ %	100	91	98	88	95	85	92	82
4000	GW ~ 100 LB	220	205	215	199	210	193	203	187
	Q ~ OGE ~ %	111	101	108	97	105	94	101	91
	Q ~ IGE ~ %	96	88	94	84	91	82	88	79
5000	GW ~ 100 LB	212	197	207	191	201	186	195	180
	Q ~ OGE ~ %	107	97	104	94	101	91	97	87
	Q ~ IGE ~ %	93	84	90	81	88	79	85	76
5500	GW ~ 100 LB	207	193	202	187	197	182	191	176
	Q ~ OGE ~ %	105	95	102	92	99	89	95	86
	Q ~ IGE ~ %	91	83	88	80	86	77	83	74
6000	GW ~ 100 LB	203	189	198	183	193	178	ABOVE ENGINE AMBIENT TEMP LIMIT	
	Q ~ OGE ~ %	103	93	100	90	97	87		
	Q ~ IGE ~ %	89	81	87	78	84	76		
6500	GW ~ 100 LB	199	186	194	179	189	175		
	Q ~ OGE ~ %	101	92	98	88	95	85		
	Q ~ IGE ~ %	87	79	85	76	82	74		

* GW ~ 100 LB = GW DIVIDED BY 100 LB
Q = TORQUE %
OGE = 100 FT WHEEL HEIGHT
IGE = 10 FT WHEEL HEIGHT
MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB
120% Q TRANSMISSION LIMIT OR
10 MINUTE ENGINE Q LIMIT.

AM4293_13CL
SAF

Figure 4. Hover Torque Required (Sheet 13 of 15)

**MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED
ANTI-ICE OFF T700-GE-701D ENGINE (CONTINUED)**

HP ~FT	ATF *	FREE AIR TEMPERATURE ~ °C							
		30		35		40		45	
		1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
7000	GW ~ 100 LB	195	182	190	176	185	171		
	Q ~ OGE ~ %	99	90	96	86	93	83		
	Q ~ IGE ~ %	86	78	83	75	81	73		
7500	GW ~ 100 LB	191	178	186	172	181	167		
	Q ~ OGE ~ %	97	88	94	84	91	82		
	Q ~ IGE ~ %	84	76	81	73	79	71		
8000	GW ~ 100 LB	187	174	182	168				
	Q ~ OGE ~ %	95	86	92	83				
	Q ~ IGE ~ %	82	75	80	72				
8500	GW ~ 100 LB	183	171	179	165				
	Q ~ OGE ~ %	93	84	90	81				
	Q ~ IGE ~ %	80	73	78	70				
9000	GW ~ 100 LB	180	167	175	161				
	Q ~ OGE ~ %	91	83	88	79				
	Q ~ IGE ~ %	79	72	76	69				
9500	GW ~ 100 LB	176	164	171	158				
	Q ~ OGE ~ %	89	81	86	77				
	Q ~ IGE ~ %	77	70	75	67				
10,000	GW ~ 100 LB	172	160						
	Q ~ OGE ~ %	87	79						
	Q ~ IGE ~ %	75	68						
10,500	GW ~ 100 LB	168	157						
	Q ~ OGE ~ %	85	77						
	Q ~ IGE ~ %	74	67						
11,000	GW ~ 100 LB	165	153						
	Q ~ OGE ~ %	83	76						
	Q ~ IGE ~ %	72	66						

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_14CL

SAF

Figure 4. Hover Torque Required (Sheet 14 of 15)

TM 1-1520-280-CL

MAXIMUM OGE HOVER WEIGHT AND TORQUE REQUIRED ANTI-ICE OFF T700-GE-701D ENGINE

HP ~FT	ATF *	FREE AIR TEMP ~ °C			
		50		55	
		1.0	0.9	1.0	0.9
0	GW ~ 100 LB	230	212	216	199
	Q ~ OGE ~ %	114	102	105	95
	Q ~ IGE ~ %	99	89	92	82
1000	GW ~ 100 LB	222	204	208	191
	Q ~ OGE ~ %	109	99	101	91
	Q ~ IGE ~ %	96	86	88	79
2000	GW ~ 100 LB	213	196		
	Q ~ OGE ~ %	105	95	ABOVE ENGINE AMBIENT TEMP LIMIT	
	Q ~ IGE ~ %	92	83		
3000	GW ~ 100 LB	205	189		
	Q ~ OGE ~ %	101	91		
	Q ~ IGE ~ %	88	79		

* GW ~ 100 LB = GW DIVIDED BY 100 LB

Q = TORQUE %

OGE = 100 FT WHEEL HEIGHT

IGE = 10 FT WHEEL HEIGHT

MAXIMUM HOVER WEIGHT IS LIMITED TO 22,000 LB

120% Q TRANSMISSION LIMIT OR

10 MINUTE ENGINE Q LIMIT.

AM4293_15CL
SAF

Figure 4. Hover Torque Required (Sheet 15 of 15)

TM 1-1520-280-CL

FAT °C	ENGINE HEALTH INDICATOR TEST (HIT) TGT REFERENCE TABLE (TRQ = 60% - % RPM R = 100%) PRESSURE ALTITUDE - FEET					
	-1000	-500	0	500	1000	1500
55	736	740	744	748	753	758
50	721	724	728	733	737	742
45	706	709	713	717	721	725
39	690	692	696	700	704	707
37	684	687	690	694	698	702
35	679	681	685	689	692	695
33	673	676	679	683	687	690
31	668	670	674	677	681	685
29	662	665	668	671	675	679
27	657	659	662	666	670	673
25	651	654	657	660	664	667
23	645	648	651	655	658	662
21	639	642	645	649	652	656
19	634	636	640	643	647	650
17	628	631	634	638	641	644
15	623	625	629	632	635	638
13	617	620	623	626	630	633
11	612	614	618	621	624	627
9	606	609	612	616	619	622
7	600	603	607	610	613	616
5	595	598	601	605	608	611
3	589	592	595	599	602	605
1	584	586	590	593	597	600
-1	577	579	583	586	590	593
-3	571	574	557	581	584	587
-5	566	568	572	575	578	581
-7	560	563	566	569	573	576
-9	554	557	560	564	567	570
-11	549	552	555	558	561	564
-13	543	546	549	553	556	559
-15	538	540	544	547	550	553
-17	532	535	538	541	544	547
-19	526	529	532	536	539	542
-21	521	523	527	530	533	536
-23	515	518	521	524	527	530
-25	510	512	515	519	522	524
-27	504	507	510	513	516	519
-29	498	501	504	507	510	513
-31	492	495	498	501	504	507
-33	487	490	493	496	499	501
-35	482	484	487	490	493	496
-37	476	478	481	484	487	490
-39	470	473	476	479	482	484
-45	453	456	459	462	465	467
-50	439	441	444	447	450	453
-55	425	427	430	433	436	438

AM4448_1CL
SA

Figure 5. TGT Reference Table (Sheet 1 of 3)

TM 1-1520-280-CL

FAT °C	ENGINE HEALTH INDICATOR TEST (HIT) TGT REFERENCE TABLE (TRQ = 60% - % RPM R = 100%) PRESSURE ALTITUDE - FEET					
	2000	2500	3000	3500	4000	4500
55	763	769	775	781	787	792
50	747	752	758	764	770	776
45	731	736	741	747	753	759
39	712	716	721	725	732	738
37	706	710	714	720	725	731
35	700	704	709	713	719	724
33	694	698	703	707	712	717
31	689	692	697	702	707	711
29	683	687	691	696	701	705
27	677	681	685	690	695	700
25	671	675	680	684	689	694
23	666	669	674	678	683	688
21	660	664	668	672	677	682
19	654	658	662	667	671	676
17	648	652	656	661	665	670
15	642	646	650	655	659	664
13	636	640	644	649	654	658
11	631	634	638	643	647	652
9	625	629	633	637	641	646
7	620	623	627	631	635	640
5	614	618	621	625	630	634
3	609	612	616	620	624	629
1	603	607	610	614	618	622
-1	596	600	603	607	611	615
-3	591	594	598	602	606	609
-5	585	589	592	596	600	604
-7	579	583	587	590	594	598
-9	574	577	581	585	589	592
-11	568	571	575	579	583	586
-13	562	566	569	573	577	581
-15	556	560	564	567	571	575
-17	551	555	558	562	565	569
-19	545	549	552	556	559	563
-21	539	543	548	550	554	557
-23	534	537	540	544	548	551
-25	528	531	535	538	542	545
-27	522	526	529	532	536	539
-29	516	520	523	525	530	534
-31	511	514	517	521	524	528
-33	505	508	511	515	518	522
-35	499	502	506	509	512	516
-37	493	497	500	503	506	510
-39	487	491	494	497	500	504
-45	470	473	476	479	483	486
-50	456	459	462	465	468	471
-55	441	444	447	450	454	457

AM4448_2CL
SA

Figure 5. TGT Reference Table (Sheet 2 of 3)

TM 1-1520-280-CL

FAT °C	ENGINE HEALTH INDICATOR TEST (HIT) TGT REFERENCE TABLE (TRQ = 60% - % RPM R = 100%) PRESSURE ALTITUDE - FEET						
	5000	5500	6000	7000	8000	9000	10000
55	796	801	805	814	825	835	846
50	782	788	792	802	811	822	832
45	764	771	776	788	798	808	818
39	744	750	755	768	780	792	802
37	737	743	748	761	773	787	796
35	730	736	741	754	766	779	791
33	723	729	735	746	759	772	786
31	716	722	727	739	752	765	779
29	710	715	720	732	745	758	771
27	704	709	714	725	737	750	764
25	698	703	707	718	730	743	756
23	692	697	701	711	723	736	749
21	686	691	695	705	715	728	742
19	680	685	689	699	709	721	734
17	674	679	683	693	703	714	727
15	668	673	677	686	697	708	719
13	662	666	671	680	690	701	712
11	656	660	665	674	684	695	706
9	650	654	659	668	678	689	699
7	644	648	652	662	671	682	693
5	637	642	646	656	665	676	687
3	631	636	640	649	659	669	680
1	626	629	634	643	653	663	674
-1	618	622	625	635	645	655	666
-3	613	617	620	629	639	649	659
-5	607	611	615	623	632	642	652
-7	601	605	609	617	625	636	646
-9	596	599	603	611	620	630	639
-11	590	594	597	606	614	623	633
-13	584	588	591	600	608	617	627
-15	578	582	586	594	602	611	620
-17	572	576	580	588	596	605	614
-19	566	570	574	582	591	599	608
-21	560	564	568	577	585	593	602
-23	555	558	562	571	579	587	596
-25	549	552	556	565	573	581	589
-27	543	547	550	559	567	575	583
-29	537	541	545	553	561	569	577
-31	531	535	539	547	554	563	571
-33	525	529	533	541	548	556	565
-35	519	523	527	539	542	550	558
-37	513	517	521	529	536	544	552
-39	507	511	515	523	530	538	546
-45	489	493	497	505	512	519	527
-50	475	478	482	490	497	504	512
-55	460	464	467	475	481	489	496

AM4448_3CL
SA

Figure 5. TGT Reference Table (Sheet 3 of 3)

TM 1-1520-280-CL

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

A handwritten signature in black ink, reading "Joyce E. Morrow". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0720701

DISTRIBUTION:

To be distributed in accordance with Initial Distribution
Number (IDN) 314194 requirements for TM 1-1520-280-CL.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short ton

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Temperature Conversion

$$^{\circ}\text{C to }^{\circ}\text{F} = (9/5 \times ^{\circ}\text{C}) + 32$$

$$^{\circ}\text{F to }^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$$

PIN: 084160-000