

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

**CH-47D AIRCRAFT DESERT OPERATIONS SPECIAL
INSPECTION AND CLEANING**

Headquarters, Department of the Army, Washington D.C.
28 February 2005

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NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. Purpose. To provide an expeditious inspecting and cleaning requirement to remove salt/salt-laden sand and other contaminants from aircraft involved in Desert operations thereby returning aircraft to pre-deployment condition.

Environmental conditions within the Desert Southwest Asia (SWA) Theater of Operations were conducive to the introduction of salt laden sand and other corrosive and damaging substances into the interior surface of the aircraft. These substances, if allowed to remain, will accelerate the corrosion and wear process and lead to premature failure of the aircraft components and structure. Immediate removal of these substances is imperative in order to minimize future corrosion damage and failure of components. This Technical Bulletin (TB) is issued to provide special inspection and cleaning procedures for all redeployed aircraft.

2. Priority Classification. NORMAL

a. Aircraft in Use. Upon receipt of this TB the condition status symbol of the cited aircraft will be changed to a Red Dash (-). The Red Dash (-) may be cleared when the inspection, cleaning and maintenance procedures of paragraph 9 and the correction procedures required in paragraph 10 are completed. The affected aircraft shall be scheduled into maintenance at the earliest possible time to complete this task.

b. Aircraft in Use. No later than 2 years after date of redeployment.

c. Aircraft in Storage. No later than 2 years after date of redeployment.

3. End Items To Be Inspected. All aircraft and Mission Equipment after redeployment from Desert Theaters of Southwest Asia.

4. Assembly Components To Be Inspected. Not applicable.

5. Parts To Be Inspected. Not applicable.

* This TB supersedes TB 1-1520-240-30-02, 31 July 2003, including all changes.

6. Application.

- a. Category of Maintenance. AVIM.
- b. Time Required. Estimated man-hours to accomplish this task: 6050 using 4 to 9 personnel
- c. Estimated Cost of Impact of Stock Fund Items to the Field: TBD
- d. TBs/MWOs to be applied prior to or concurrently with this inspection: Contact Project OLR for MWOs that may be applied with AMCOM Reset Program.
- e. Deferred maintenance shall be accomplished concurrently with this inspection.
- f. Publications which require change as a result of this inspection. Not applicable.

7. Supply/Parts and Disposition.

NOTE

Identification of components replaced or repaired on aircraft since their return from desert operations in South West Asia will decrease aircraft downtime and expedite completion of requirements established by this TB as inspection of these components is not required.

NOTE

Control substitution of components, modules and other parts is authorized and will be documented using a locally produced form, regardless of component historical records requirement. All DA Form 2410 item requirements will be completed prior to releasing aircraft to the owning unit.

- a. Review all component historical forms and records for retirement and overhaul requirements. Ensure owning unit requisitions components due overhaul or retirement. Ensure all DA Form 2408-17 items are inventoried prior to beginning the AMCOM Reset Program.
- b. Parts Required. As required.
- c. Requisitioning Instructions. Requisition using normal supply procedures and assigned Project Code.
- d. Bulk and Consumable Material. As required.

8. Special Tools, Jigs and Fixtures Required. As required.



When using low pressure air for cleaning, do not exceed 30 psi.

9. Inspection Procedures. Inspect in accordance with TM 55-1520-240-PM (Phases 1 through 4) and disassemble in accordance with technical instructions to permit inspection, cleaning and repair of the following areas:

Inspect hydraulic system vaneaxial fan impellers in accordance with the following table:

H-47 Vaneaxial Fan Impeller Inspection

Item	Descrip.	P/N	Vendor P/N	DMWR ¹	Impeller P/N	DMWR ² OIP #	Notes
1	Vaneaxial Fan	145HS202-4	723092A	55-4140-216 ³	725292	OIP 2	
2	Vaneaxial Fan	145HS202-6	41330-1	55-4140-221 ⁴	41404-1	OIP 3	
3	Util. Hyd. Sys. Vaneaxial Fan	145HS202-5	723094B	55-4140-220 ⁵	728676	OIP 3	
4	Util. Hyd. Sys. Vaneaxial Fan	145HS202-7	41340-1	55-4140-223 ⁶	41395-1 41394-1	OIP 3 OIP 4	OIP 3 applies only to 41395-1; OIP 4 applies only to 41394-1.

¹ DMWR - depot maintenance work requirement

² OIP - overhaul inspection procedure

³ DMWR 55-4140-216 "Depot Maintenance Work Requirement For Mixed Flow Fan," US Army Aviation Systems Command, 25 September 1985

⁴ DMWR 55-4140-221 "Depot Maintenance Work Requirement For Vaneaxial Fan Assembly (Flight Boost Hydraulic System)," US Army Aviation Systems Command, 1 May 1991

⁵ DMWR 55-4140-220 "Depot Maintenance Work Requirement For Vaneaxial Fan Assembly (Utility Hydraulic System)," US Army Aviation Systems Command, 15 March 1987

⁶ DMWR 55-4140-223 "Depot Maintenance Work Requirement For Vaneaxial Fan Assembly (Utility Hydraulic System)," US Army Aviation Systems Command, 31 May 1991



Do not use high pressure air fluids in and around the aircraft avionics closet, cockpit, flight control areas and side slip/static ports.

- a. Ensure all engines, transmissions and hydraulic systems oil samples have been submitted for analysis.
- b. Deleted.
- c. Drain and service engine and APU oil systems.
- d. Replace engine and APU fuel and oil filters.
- e. Drain and service all transmission oil systems.
- f. Replace all transmission oil filters.
- g. Clean aircraft inside and out in accordance with TM 1-1500-344-23 and the specific and appropriate cleaning section of the aircraft TM. Ensure all sand and other foreign matter is removed.
- h. Remove #1 and #2 engine transmissions and inspect for cleanliness and condition.

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- i. Remove #1 and #2 engines.
 - (1) Perform Non-Destructive Inspection of the forward and aft engine mount assemblies.
 - (2) Inspect engines and APU for cleanliness and condition.
 - (3) Perform hot end inspection for signs of heat distress and inspect for blockage of GP turbine blade cooling holes. If excessive hot section distress is noted provide picture to AMSAM-RD-AE-P-E.
 - (4) Perform Thermocouple Resistance Check.
- j. Inspect Mechanical Flight Controls (Pedal Boxes Removed) for condition and cleanliness.
 - (1) Clean, inspect and lubricate all rod end bearings to ensure all old grease has been purged. Refer to TM 55-1520-240-23-9 and Tasks 11-2 through 11-15.
 - (2) With Pedal Boxes removed, clean all exposed surfaces/areas.
 - (3) Remove cockpit transfer bellcranks and cockpit transfer shaft. Inspect bellcranks, shaft, and shaft supports IAW TM 55-1520-240-23, tasks 11-11 and 2-351. A light and mirror may be required for shaft support inspections. Repair minor damage to the bellcranks, shaft, and shaft supports IAW TM 55-1520-240-23, tasks 11-12 and 11-13. Repair minor damage to the protective coat and mating surface dissimilar metal contact IAW TM 55-1520-240-23, tasks 11-12, 11-13, and 2-351. If the shaft support mount hub material thickness is eroded by more than 10 percent at any point around the perimeter, the support should be removed and replaced.

NOTE

Contact Reset Program Integrator for Rotor Blade inspection and repair procedures.

- k. Remove main rotor blades. Clean, inspect and remove blade tape and L-100 paint from leading edges.
- l. Remove rotary wing head assemblies.
 - (1) Disassemble and inspect all bearings, pins and splines.
 - (2) Replace all seals.
- m. Remove and inspect Forward Transmission for cleanliness and condition. Inspect support structure for cleanliness, cracks and distortions. Refer to TM 55-1520-240-23-5 for inspection procedures for the transmission and TM 55-1520-240-23-2, Task 2-71 and 2-370 for support structure inspections. Treat and repair any corrosion found.
- n. Remove and inspect Aft Transmission for cleanliness and condition. Inspect support structure for cleanliness, cracks and distortions. Refer to TM 55-1520-240-23-5 for inspection procedures for the transmission and TM 55-1520-240-23-2, Task 2-370, for support structure inspections. Treat and repair any corrosion found.
- o. Remove and inspect Combining Transmission for cleanliness and condition. Inspect Torque Box for cleanliness, cracks and distortions. Refer to TM 55-1520-240-23-5 for inspection procedures for the transmission and TM 55-1520-240-23-2, Tasks 2-274.1 and 2-370 for support structure inspections. Treat and repair any corrosion found.
- p. Remove Aft Pylon in accordance with TM 55-1520-240-23-2, Task 2-306 and Task 2-307.
 - (1) Inspect fuselage/pylon support structure and mating surface (WL 72) for cleanliness, cracks and distortion. Treat and/or repair any corrosion or damage found.
 - (2) Perform visual inspection of Aft Pylon main mounts at STA 482, STA 534 and STA 594. Inspect for cleanliness, cracks and distortion. Treat and/or repair any corrosion or damage found.

- q.** Inspect Fwd and Aft Landing Gear Torque Boxes (landing gears not removed and disassembled).
 - (1)** Torque Boxes and surrounding internal areas for cleanliness, condition, corrosion and deformality or structures.
 - (2)** Service struts.
 - (3)** Lube landing gears.

- r.** Inspect Fuel Cells and Fuel Pods (in accordance with TM 55-1520-240-23-8, Task 10-4) for cleanliness and condition.

- s.** Inspect cockpit area, avionics closet, Aircraft Survivability Equipment (ASE), instruments and related navigational/avionics components for cleanliness and condition in accordance with TM 1-1500-343-23, TM 11-1520-240-23, and TM 55-1520-240-23.
 - (1)** Clean and inspect mount areas.
 - (2)** Remove the avionics cooling fan assembly and duct. Clean and inspect the fan and ducting.
 - (3)** Clean and inspect ASE, Avionics and navigational electrical, antenna and grounding cables. Clean and inspect center console and overhead console and power distribution panel areas.
 - (4)** Inspect all antennas and antenna connectors for serviceability. If available apply AV-Dec corrosion preventative gasket kit to antenna mount surfaces and connectors. (Contact Reset Program Integrator for kit information.)
 - (5)** Verify electrical bonding of avionic/navigational equipment racks and hardware to aircraft grounds.

- t.** If necessary, remove aircraft heater, intake and exhaust ducting and fuel drain lines.
 - (1)** Inspect and clean aircraft heater.
 - (2)** Inspect and clean aircraft heater ducting with vacuum cleaner and/or low pressure air.

- u.** Inspect electrical wiring, wire bundles and connectors for cleanliness and condition.
 - (1)** Inspect wires for chaffing and foreign debris (sand/dirt).
 - (2)** Clean wires with cloth or soft bristle brush and low compressed air.
 - (3)** Disconnect, clean and inspect all electrical connectors.
 - (4)** Preserve electrical connectors in accordance with TM 1-1500-343-23.
 - (5)** Verify the electrical and mechanical integrity of the external power service receptacle (no loose or burned pins).

- v.** Inspect hydraulic flight control dynamic components for cleanliness and condition.

- w.** Remove all air ducting to hydraulic coolers and clean fan motors with vacuum cleaner/low pressure air to remove foreign material. Clean reservoir cooler assembly fins with low pressure air. If necessary, use low pressure water/garden hose to reverse flow or back flush fins to ensure removal of foreign material.

- x.** Inspect transmission fans and coolers for cleanliness and condition. Use low pressure air to clean out transmission coolers. If necessary, use low pressure water/garden hose to reverse flow or back flush fins to ensure

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removal of foreign material. If transmission sump or reservoir component has sight gauges that are cloudy or fluid level cannot be determined, the sight gauges shall be cleaned and if necessary, replaced.

y. Inspect airframe for cleanliness, corrosion and condition. Perform U.S. Army AMCOM Corrosion Prevention & Control Center of Excellence CH-47 Corrosion Assessment Checklist (contact the Logistical point of contract for copies of this Checklist). Pay particular attention to the fwd transmission mount area, fwd STA 95 (Front and Aft sides), remove existing pro-seal prior to conducting inspection. Repair as necessary.

z. Purge Pitot-Static and Sideslip Sense systems per TM 55-1520-240-23-7, Task 8-26.

aa. Remove and inspect forward, aft, and center cargo hooks for cleanliness.

ab. Inspect and clean manual release mechanism. Check for operation, cables and linkages for binding.

ac. Remove and inspect all sync. drive shaft assemblies for cleanliness IAW TM 1-1520-240-23-5, Task 6-10.1.

ad. Remove and inspect engine drive shaft assemblies for cleanliness IAW TM 1-1520-240-23-5, Task 6.30.3.

NOTE

Contact Reset Program Integrator for ERFS II inspection and repair procedures.

ae. Inspect Mission Equipment (ERFS II, HICHS, EAPs, etc.) for cleanliness and condition.

(1) Remove Engine Air Particle Separator, if installed, and inspect mounts, and rails for condition. Ship Engine Air Particle Separators to Sierra Army Depot for cleaning, inspection, preservation and storage.

(2) Remove HICHS, if installed, inspect, disassemble, clean and repair as required in accordance with TM 55-1680-358-12&P.

(3) For transportability equipment, contact the Reset Program Integrator for instructions.

10. Correction Procedures.

a. Comply with requirements of TB 1-1500-200-20-31. If TB has already been applied, this is not necessary.

WARNING

Degreasing solvent, MIL-PRF-680, is combustible and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas (or use approved respirator as determined by local safety/industrial hygiene personnel). Keep away from open flames or other sources of ignition.

NOTE

For degreasing, use MIL-PRF-680, Type II.

WARNING

Cleaning Compound, MIL-PRF-85570, can irritate eyes and skin. Wear protective gloves and goggles. Avoid repeated or prolonged contact with skin.

NOTE

For aqueous cleaner, use MIL-PRF-85570, Type II.

WARNING

Isopropyl Alcohol, TT-I-735, is flammable and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas (or use approved respirator as determined by local safety/industrial hygiene personnel). Keep away from open flames, sparks or other sources of ignition.

NOTE

In place of Trichlorotrifluoroethane, use Isopropyl Alcohol, TT-I-735, Grade B.

- b.** Repair all faults discovered during the inspection procedures of paragraph 9 of the TB. Replace all unserviceable parts or components.

NOTE

Aircraft in compliance with this TB, once released will enter the Modular PMD and 400 Flight Hour Cycle Service Plan in accordance with the AMCOM AWR, or returned to a "zero" phase condition with the next phase due as phase number 1.

- c.** Perform requirements of phase 1 through 4 and zero phase aircraft.
 - d.** Touch-up Paint as required in accordance with TM 55-1500-345-23.
 - e.** Apply MIL-C-81309 Type II Corrosion Preventive Compound (CPC) (8030-00-938-1947) or equivalent to water entrapment areas, airframe mating surfaces, bilge areas, and any other corrosion prone areas. Follow up with a coat of MIL-PRF-16173, Grade 4, Class 1 or 2.
- 11. Weight and Balance.** Aircraft will be inventoried, weighed and DD Form 365 series updated prior to returning aircraft to the owning unit.

12. Recording and Reporting Requirements. Per DA Pamphlet 738-751.

- a.** DA Form 2408-5, Equipment Modification Record.
- b.** DA Form 2408-5-1, Equipment Modification Record (Component) for the Engine.
- c.** DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
- d.** DA Form 2408-15, Aircraft Historical Record.

13. Points of Contact.

- a.** Reset Program Integrator and Logistical point of contact is Mr. George Hellman, SFAE-AV-CH-L, DSN 645-8859, commercial (256) 955-8859.
- b.** Technical point of contact is Mr. Matt Wesselschmidt, SFAE-AV-CH-T, DSN 897-3376 or commercial (256) 313-0734.
- c.** Point of contact for Forms and Records is Ms. Ann Waldeck, AMSAM-MMC-MA-MM, DSN 746-5564 or commercial (256) 876-5564.
- d.** Point of contact for Technical Documentation is Mr. James Appleton, AMSAM-MMC-AV-CA, DSN 897-3331 or commercial (256) 313-3331.

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e. Wholesale Material (Supply) point of contact (spares) is Ms. Geri Reddy, AMSAM-MMC-AV-CA, DSN 897-1454 or commercial (256) 313-3370.


f. ULLS-A point of contact is Mr. San Yen Lee, AMSAM-MMC-MA-NM, DSN 746-4468 or commercial (256) 876-4468.

g. AMAC point of contact is Mr. Ted Schmidt, SFAE-AV-CH-L, DSN 897-3374 or commercial (256) 313-3374.

14. Reporting of Errors and Recommending Improvements. You can improve this TB. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly 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.

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