ROUTINE

TB 1-1520-248-20-43

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

RECOMMENDED OPERATIONAL PROCEDURES AND MAINTENANCE ACTIONS WHEN OPERATING OH-58D HELICOPTERS IN DESERT/SANDY CONDITIONS

Headquarters, Department of the Army, Washington, D.C.

30 OCTOBER 1998

This document has been reviewed for the presence of Ozone Depleting Chemicals and Hazardous Materials as specified by the US Army Acquisition Pollution Prevention Support Office, listed in document 'SD-14, Listings of Toxic Chemicals, Hazardous Substances, and Ozone-Depleting Chemicals'. Substitutions have been made that ensure the materials specified in this document conform to Executive Order 12856 and Public Law 102-848.

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NOTE
THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. Priority Classification. ROUTINE.

a. Aircraft in use. N/A.

b. Aircraft in Depot Maintenance. Same as paragraph 1.a.

c. Aircraft undergoing maintenance. Same as paragraph 1.a.

d. Aircraft in transit.

(1) Surface/Air shipment. Same as paragraph 1.a.

(2) Ferry status. Same as paragraph 1.a.

e. Maintenance Trainers. (Category B). Same as paragraph 1.a.

f. Component/Parts in Stock Including War Reserves at all Levels (depot and Others). N/A.

2. Task/Inspection Suspense Date . N/A.

3. Reporting Compliance Suspense Date . N/A.

4. Summary of Problem.

a. Helicopters operating in desert/sandy conditions require unique operational and maintenance procedures.

b. For manpower and downtime and funding impacts see paragraph 12.

c. Purpose. The purpose of this Technical Bulletin is to provide guidance when OH-58D helicopters are operated in desert/sandy conditions. It contains recommended operational and maintenance procedures to reduce helicopter/component wear and damage caused by environmental factors.

5. End Items. All OH-58D Model Helicopters.

6. Assembly/Components to be inspected. N/A.

7. Parts to be removed/installed. N/A.

8. Inspection/Operational Procedures.

NOTE

- **Removal, installation and inspection of components shall be accomplished in accordance with the instructions contained in TM 55-1520-248-23, unless otherwise specified.**
- **Information on consumable items (D numbers) is contained in TM 55-1520-248-23, Appendix D**

a. Operational Procedures.

(1) Minimize ground operations with main rotor speed (NR) below 95%.

(2) Use auxiliary ground power units (AGPU), if available, to conduct avionics/systems checks before turning rotors.

(3) Below 25 feet AGL, maintain forward airspeed over loose grass and sand to minimize ingestion.

(4) Pilots shall be briefed and familiar with the following restrictions that apply to aircraft operating without inlet shields, or aircraft with inlet shields installed and aft panels removed.

WARNING

To minimize the probability of engine surges, during Mk-66 rocket firing, rocket firing shall be limited to out-of-ground-effect conditions only.

(a) Engine surges have been encountered while firing Mk-66 Folding Fin Aerial Rockets (FFAR) and these surges may induce high structural loads in the aircraft drive system. There may be no indications made to the pilot that these surges occur. Use a two-second interval for all rocket firings below 40 knots forward airspeed. The normal rocket system-firing rate may be used for airspeeds above 40 knots. Limit hover firing to a maximum crosswind and tailwind of 20 knots.

(b) When operating at gross weights in excess of 4500 pounds, the maximum rearward airspeed shall be as shown on the Rearward Airspeed Limitation Diagram (Figure 1). The envelope restricts rearward airspeed to a maximum of 20 knots when relative airspeed is from 45 degrees either side of the tailboom. A maximum sideward airspeed of 35 knots is authorized, except for rocket firing as noted above. Airspeed is defined as the speed of air relative to the helicopter, whether produced by flight or wind.

(5) Before each flight, check inducer vent screens for restrictions. The screen area must be kept clear of restrictions to prevent a reduction in the engine surge margins.

(6) Each preflight or through flight, check vortex tubes for condition.

b Maintenance procedures.

(1) If there is evidence of grass entrapment or sand build-up in aft panel area of inlet shield assembly, remove both left and right aft panels from the engine inlet shield system (TM 55-1520-248-23). Pilots shall be briefed and familiar with the limitations in paragraph 8.a(4) when operating with aft panels removed.

(2) Inspect air induction cowl IAW TM 55-1520-248-23 and the following:

(a) Inspect all sheet metal seam areas for gaps. Seal gaps (if found) with sealing compound (D20, TM 55-1520-248-23).

NOTE

Pay particular attention to the forward upper and lower sheet metal corner seam areas when inspecting for gaps. To aid in the visual inspection hold a light source up to the cowling and look through the inside of the cowling for light shining through the gaps.

(b) Inspect for sealant around the engine flush nozzle and mounting spacer. Apply sealing compound (D20, TM 55-1520-248-23) as required.

(c) Inspect seals on the forward firewall for damage, dry rot, incorrect seal, and security.

(d) During installation of air induction cowl, clean upper and lower seam areas where air induction cowl mates with forward firewall with dry cleaning solvent (D1, TM 55-1520-248-23) and wiping rags (D53, TM 55-1520-248-23).

(e) After installation of air induction cowl and prior to installation of work platform and particle separator fairing, apply a bead of sealant (D050, TM 55-1520-248-23) along upper and lower seams of mating surfaces

NOTE

When sealing the upper seam, hold sealant tube approximately perpendicular to firewall to prevent excess sealant from entering particle separator through the sheet metal voids.

WARNING

To prevent injury to eyes when using compressed air for cleaning or drying do not exceed 30 psig at the nozzle and wear approved goggles or face shield.

(3) When cleaning particle separator, remove fan and duct (TM 55-1520-248-23). Use cleaning compound (D23, TM 55-1520-248-23), lukewarm water, and cleaning cloth (D56, TM 55-1520-248-23) to clean inside of particle separator through fan discharge port. Rinse inside of particle separator through fan discharge port with clean water and dry with low air pressure and clean cloths (D56, TM 55- 1520-248-23).

(4) Recommend engine rinse once a day as a minimum and engine wash after every 10-flight hours. (ULLS-A units use an 800 inspection number for the 10 hour engine wash).

(5) Remove inlet shield inspection panel (TM 55-1520-248-23). Inspect vortex tubes for obstructions and condition after last flight of day.

(6) Any time the aircraft is operating in a desert/sandy environment where loose and/or dry grass ingestion is present, change particle separator special inspection interval from 300 hours to 20 hours. Increase interval between inspections as conditions dictate.

NOTE

Blockage of vortex tubes due to grass ingestion cannot always be observed from external inspection of tubes. Internal inspection and cleaning is required.

(7) During engine replacement, inspect cowling and particle separator for signs of air leakage (tracks of dust or sand at mating surfaces and seams). Seal all leaks with MIL-S-8802 sealant.

(8) Upon installation of a new T703-AD-700B engine, ensure the engine has a new bleed air valve (Item 23, Figure 23, TM 1-2840-256-23P) installed. Do not utilize bleed air valve from removed T703-AD-700B engine.

(9) For environmental conditions where the potential exists for ingestion of dry grass, dirt or sand, revise the following TM 55-2840-256-23 troubleshooting procedures:

(a) Procedure 28, "Compressor Surge/Stall". Move block "(T703-AD-700B only) Replace compressor bleed air control valve (Tasks 9-4-1 and 9-4-2). Is fault corrected?" To follow the yes decision of block "Inspect compressor rotor for FOD and erosion (Task 3-6-1). Is it serviceable?".

(b) Procedure 22, "Low Power with High TGT". Move block "(T703-AD-700B only) Replace compressor bleed air control valve (Tasks 9-4-1 and 9-4-2). Is fault corrected?" To follow the yes decision of block "Inspect compressor scroll (Task 3-3-1). Is it serviceable?".

For all other conditions the procedures should be performed as written.

(10) At each 20 Hour PMS, inspect fan blades on purge blower fan, P/N 406-360-205-103, Figure 50 in TM 1-1520-248-23P. If approximately one third or more of the fan blade is missing, replace IAW Task 4-2-6.1, TM 55-1520-248-23-2.

(11) Apply main and tail rotor blade erosion protection, as required, IAW TB 1-1615-351-23.

9. Avionics/ASE Inspection and Maintenance Procedures.

a. Antennas. Inspect all antennas for chips, cracks, and loose or missing paint. Minor touch up painting procedures should be performed according to TB 43-0118 Painting and Preserving Electronics Command Equipment.

b. AN/APR-39A(V)1. Inspect antenna-detectors for cracks. Use non-corrosive RTV-3145 (NSN 8040-00-117-8510) to seal small cracks around the edge of the surface of the antenna-detectors. Caution should be used to allow no RTV to come in contact with the face of the antenna radome. Covering cracks in the antenna-detectors with RTV will allow antenna-detectors to stay in service as long as they pass the ground test. Antenna-detectors with any cracks or blistering on the face of the radome should be condemned along with antenna-detectors having severe cracks compromising the structural integrity of the radome.

WARNING

Isopropyl alcohol is flammable; use in a well ventilated area. Failure to observe this warning could result in injury or death.

c. AN/ALQ-144A(V)1. Before each flight, remove the protective cover. Clean the Transmitter T1360A(V)1/ALQ-144(V) covert windows with Leak Detecting Compound (NSN 6850-00-186-2963) or isopropyl alcohol (NSN 6810-00-753-4993) and a clean lint-free Cheesecloth (NSN 8305-00-267-3015), removing any dust, dirt, grease or fingerprints from the windowpanes. If the window assembly panes are damaged (chipped, scratched, cracked), return the transmitter to AVIM for repair.

d. AN/AVR-2A. Inspect the SU-130A/AVR-2A sensor unit windowpanes for any damage. Remove the baffle and clean the sensor unit windowpanes with Leak Detecting Compound (NSN 6850-00-186-2963) or isopropyl alcohol (NSN 6810-00-753-4993) and a clean lint-free Cheesecloth (NSN 8305-00-267-3015), removing any dust, dirt, grease or fingerprints from the windowpanes. If the windowpanes are damaged (chipped, scratched, cracked, or fogged-up), return the sensor unit to Intermediate maintenance for repair.

10. Supply/Parts and Disposition.

a. Parts Required. As required.

b. Bulk and Consumable Material. As required.

c. Disposition. Dispose of removed parts in accordance with local supply procedures.

d. Disposition of Hazardous Material. N/A.

11. Special Tools, Jigs and Fixtures Required. N/A.

12. Application.

a. Category of Maintenance. AVUM/AVIM.

b. Estimated Time Required. N/A.

c. Estimated Cost Impact of Stock Fund Items to the Field. N/A.

d. TB/MWOS to be Applied Prior to or Concurrently with this Inspection. N/A.

e. Publications Which Require Change as a Result of This Technical Bulletin. N/A.

13. References.

a. TM 1-1520-248-PPM, OH-58D Helicopter, Progressive Phase Maintenance Inspection Checklist and Preventive Maintenance Services, dated 15 October 1993, as changed.

b. TM 55-1520-248-23, OH-58D Helicopter, Aviation Unit and Intermediate Maintenance Manual, dated 12 January 1988, as changed.

c. TM 1-1520-248-23P, OH-58D Helicopter, Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List, dated 15 December 1994, as changed.

d. TM 55-2840-256-23, OH-58D Helicopter, Aviation Unit and Intermediate Maintenance Manual for Model T703-AD-700 Engine, dated 2 January 1986, as changed.

e. TM 1-2840-256-23P, OH-58D Helicopter, Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for Model T703-AD-700 Engine, dated 30 April 1996, as changed.

f. TB 1-1615-351-23, Rotor Blade Erosion Protection, dated 31 December 1991, as changed.

g. TM 11-5865-200-12, Operator's And Aviation Unit Maintenance (AVUM) Countermeasures Sets AN/ALQ-144A(V)1 (NSN 5865-01-299-5859 And AN/ALQ-144A(V)3 (NSN 5865-01-299-5860.

h. TM 11-5841-294-12, Operator's And Aviation Unit Maintenance Manual Radar Signal Detecting Set AN/APR-39A(V)1 (NSN 5841-01-236-8951) (EIC: 1A9)

i.TM 11-5841-304-12, Operator's And Aviation Unit Maintenance Manual Laser Detecting Set AN/AVR-2A(V)1 (NSN 5865-01-346-4772) (EIC. N/A) AN/AVR-2A(V)2 (NSN 5865-01-393-9754) (EIC: N/A) AN/AVR-2A(V)3 (NSN 5865-01-393-7713) (EIC: N/A)

14. Recording and Reporting Requirements.

a. Reporting Compliance Suspense Date (Aircraft). N/A.

b. Task/Inspection Reporting Suspense Date (Aircraft). N/A.

c. Reporting Compliance Suspense Date (Spares). N\A.

d. Task/Inspection Reporting Suspense Date (Spares). N/A.

e. The following forms are applicable and are to be completed in accordance with DA Pam 738-751, 15 Jun 92.

(1) DA Form 2408-13, Aircraft Status Information Record.

(2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.

(3) DA Form 2408-13-2, Related Maintenance Action Record.

(4) DA Form 2408-15, Historical Record for Aircraft.

15. Weight and Balance. N/A.

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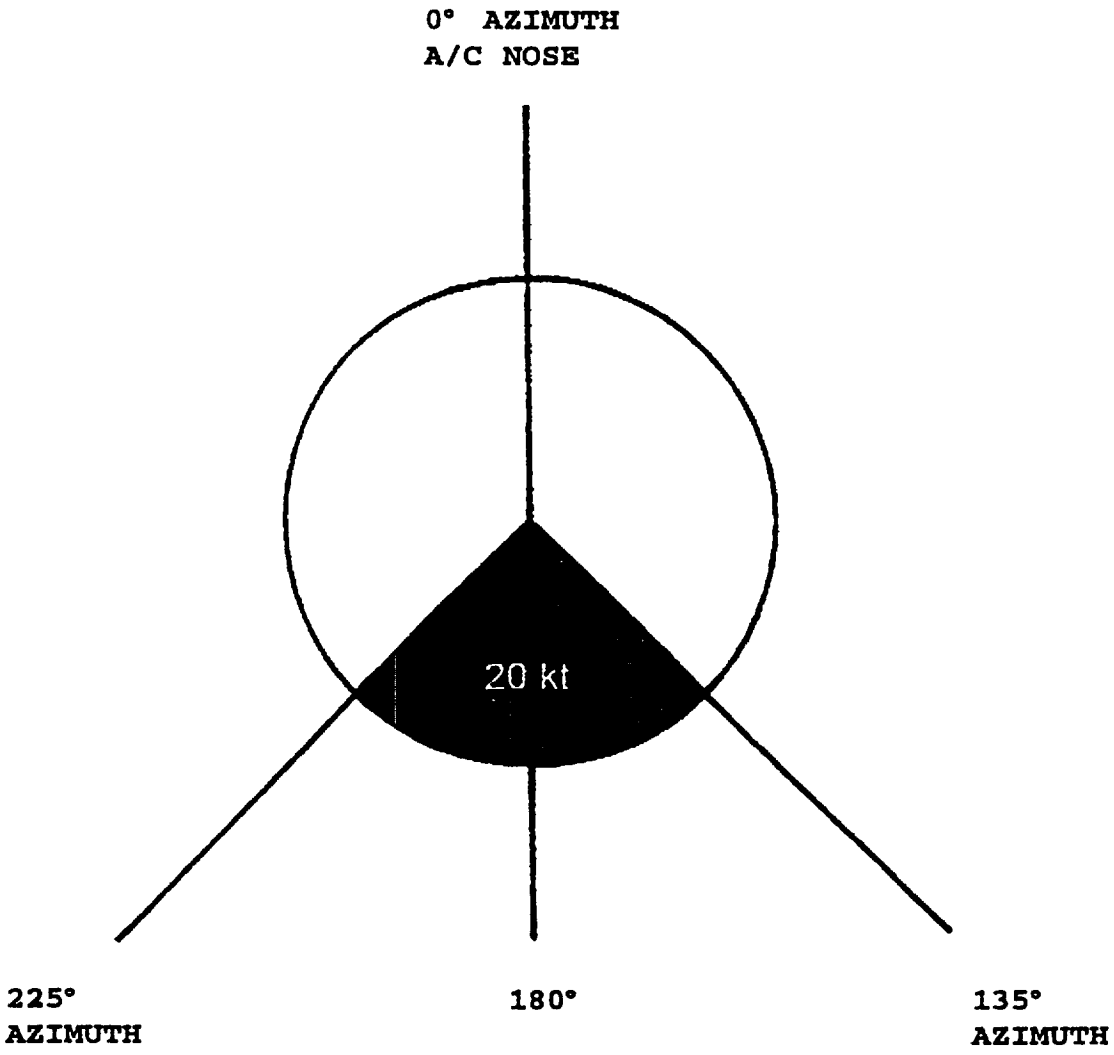

Figure 1. REARWARD AIRSPEED LIMITATION DIAGRAM

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