

URGENT

*TB 1-2840-229-20-19

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

REVISION TO SCREENING PROCEDURES FOR ALL AH-1 SERIES AIRCRAFT WITH T53-L-703 ENGINE (P/N 1-000-060-23) INSTALLED

Headquarters, Department of the Army, Washington, D. C.
30 October 1998

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NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR
SUPERSEDED.

1. **Priority Classification.** URGENT

NOTE

See AR 95-1, paragraph 6-6.a, for noncompliance authority of major
commanders.

a. Aircraft In Use. Upon receipt of this TB, the condition status symbol of the cited aircraft will be changed a **Circled Red X**. The **Circled Red X** entry shall state *T53-L-703 Engine N2 vibration inspection procedures required IAW TB 1-2848-229-20-19 (SOF AH-1-99-01). The **Circled Red X** may be cleared when the inspection of paragraph 8. is completed. The affected aircraft shall be inspected as soon as practical, but no later than the task/inspection suspense date. Failure to comply with the requirements of this TB within the time frame will cause the status symbol to be upgraded to a **Red X**. While the aircraft is on a **Circled Red //X//**, it may be reported as fully mission capable (FMC).

b. Aircraft in Depot Maintenance. Same as paragraph 1.a Aircraft will not be issued until compliance with this TB has been completed.

c. Aircraft Undergoing Maintenance. Same as paragraph 1-a Aircraft will not be released until compliance with this TB has been completed.

d. Aircraft in Transit.

(1) **Surface/Air Shipment.** Same as paragraph 1.a

(2) **Ferry Status.** Same as paragraph 1.a

a. Maintenance Trainers (Category A and B). N/A.

*This TB supersedes USAAMCOM Safety of Flight (SOF) Message AH-1-99-01, 081224Z, OCT 98.

f. Component/Parts in Stock at All Levels (Depot and Others) Including War Reserves. Upon receipt of this TB, the material condition tags of all items in all condition codes listed in paragraph 6. shall be annotated to read *TB 1-2840-229-20-19 (SOF AH-1-99-01) not complied with.'

g. Components/Parts in Work In Work (Depot and Others). N/A

2. Task/Inspection Suspense Date. Within next 10 flight hours or 15 days.

3. Reporting Compliance Suspense Date. No later than 30 October 1998 in accordance with paragraph 14.a of this TB.

4. Summary of the Problem.

a. Background.

(1) TB 1-2840-229-20-17 (SOF AH-1-98-01) established procedures for using the Aviation Vibration Analyzer (AVA) to screen T53-L-703 Engines for a damaging vibration associated with failure of the Spur Gear. Analysis of data received from the recurring 25-hour inspections has shown that the inspection interval can be safely extended to either 50 or 150 hours, depending upon the configuration of the N2 Spur Gear installed (non-coated versus coated). The inspection interval for Engines with a coated Spur Gear installed can be increased to 150 hours. The inspection interval for Engines with a non-coated Spur Gear installed can be increased to 50 hours if at least one successful retest (initial on-aircraft screening plus one 25-hour retest) has been completed.

(2) The T53 Blue Team has completed its analysis into the root cause of the N2 failures. The vibration causing the Spur Gear fractures originates in the Nose Reduction Gearbox, resulting from abnormal wear patterns between the Output and Planetary Gears. A follow-up briefing/vidiotape will be forthcoming, explaining the details of the Blue Team's findings.

(3) Based upon the Blue Team's recommendation, the following corrective action plan has been adopted for implementation.

(a) In the short-term, Engines which continue to pass the recurring vibration screenings are candidates to receive the coated N2 Spur Gear. Engines which fail initial or subsequent vibration screenings will remain out of service until they are repaired.

(b) In the long-term, a limited quantity of these "vibing" Engines will be repaired. The repair will consist of replacement of the N2 Carrier Drive Assembly with a redesigned version (also incorporating the coated Spur Gear), and replacement of the Nose Reduction Gearbox with a new or rebuilt assembly utilizing new gears and bearings. The N2 Carrier Drive and the Nose Reduction Gearbox Assemblies are expected to be available in late FY99 or early FY 00.

(c) These hardware changes, as well as revised maintenance procedures to maintain the integrity of the gear sets during overhaul, will be incorporated into all future T53 maintenance & overhaul contracts. Additional engineering changes will also be incorporated into depot maintenance instructions to enhance reliability and safety.

b. For Manpower/Downtime and Funding Impacts see paragraph 12.

c. This TB has two purposes:

(1) This TB extends the recurring AVA inspection interval from 25 hours to either 50 or 150 hours, depending upon the Engine Spur Gear configuration (non-coated versus coated). The inspection interval for Engines with a coated Spur Gear installed can be increased to 150 hours. The inspection interval for Engines with a non-coated Spur Gear installed can be increased to 50 hours if at least one successful re-test (initial on-aircraft screening plus one 25-hour re-test) has been completed.

(2) This TB prohibits the use of the obsolete Lock Cup (NSN 5340-00-916-2592, P/N 1-070-066-01) when replacing the Spur Gear. The improved Lock Cup (NSN 5340-01-438-0385, P/N 1-070-066-02) is the only authorized replacement for use on the Spur Gear.

5. End items to be Inspected. All AH-1 series aircraft with T53-L-703 Engines (P/N 1-000-060-23) installed.

6. Assembly Components to be Inspected.

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
T53-L-703	1-000-060-23	2840-00-621-1860

7. Parts to be Inspected. N/A

8. Inspection Procedures.

a. Inspect Engine records to determine if the new configuration (coated) Spur Gear (NSN 3020-01-455-7341, P/N 1-070-082-08) has been installed. If the records show that a coated Spur Gear (NSN 3020-01-455-7341, P/N 1-070-062-06) has been installed, proceed with the correction procedures in paragraph 9.a

b. If the Engine records do not show installation of a coated Spur Gear (NSN 3020-01-455-7341, P/N 1-070-062-06), inspect the aircraft records to determine if the Engine has passed a minimum of one 25-hour retest (initial on-aircraft screening plus one 25-hour retest). Proceed as follows:

(1) If the aircraft records show that the Engine has passed the initial on-aircraft screening plus one additional 25-hour retest proceed with the correction procedures in paragraph 9.b.

(2) If the aircraft records do not show that the Engine has passed the initial on-aircraft screening and one 25-hour re-test, proceed with the correction procedures in paragraph 9.c.

9. Correction Procedures.

NOTE

It is allowable to apply a plus or minus ten percent time window variance, not to exceed 5 flight hours, per TM 1-1500-328-23, for the purpose of completing the AVA Vibration Inspection.

NOTE

For Engines that fail the initial or re-test vibration inspections, change the aircraft condition status symbol to a **Red X**

a. For Engines with a coated N2 Spur Gear (NSN 3020-01-455-7341, P/N 1-070-062-06) installed, the recurring AVA Engine Screening is required every 150 hours. Unit Level Logistics System - Aviation (ULLS-A) user's will use this TB as permission to delete inspection number 52 (25-hour AVA Engine Screening), if applicable, and add inspection number A250 for the 150-hour AVA Engine Screening.

b. For engines with the non-coated N2 Spur Gear installed that have passed the initial on-aircraft screening plus one 25-hour retest, the recurring AVA Engine Screening is required every 50 hours. All ULLS-A user's will use this TB as permission to delete inspection number 52 (25-hour AVA Engine Screening), if applicable, and add an 800 inspection number for the 50-hour AVA Engine Screening.

c. For engines with the non-coated N2 Spur Gear installed that have not passed the initial on-aircraft screening plus one 25-hour retest, the recurring AVA Engine Screening is required every 25 hours. All ULLS-A user's will use this TB as permission to delete inspection number 52 (25hour AVA Engine Screening), if applicable, and add an 800 inspection number for the 25-hour AVA Engine Screening. This 800 inspection number can be deleted when it is no longer required.

10. Supply/Parts and Disposition. N/A

- a. Parts Required. N/A
- b. Requisitioning Instructions. N/A
- c. Bulk and Consumable Materials. N/A
- d. Disposition. N/A
- e. Disposition of Hazardous Material. N/A

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

12. Application.

- a. **Category of Maintenance.** AVUM. Aircraft downtime will be charged to AVUM maintenance.
- b. **Estimated Time Required.**
 - (1) Total of 1 man-hour using 1 person.
 - (2) Total of hour downtime for one end item.
- c. **Estimated Cost Impact 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 Inspection.** N/A

13. References.

- a. TB 1-2940-229-20-17 (SOF AH-1-98-01).
- b. TM 1-1500-3328-23.

14. Recording and Reporting Requirements

a. **Reporting Compliance Suspense Date (Aircraft).** Upon entering requirements of this TB on DA Form 2408-13-1 for all subject mission design series (MDS) aircraft, forward a priority message, datafax or E-mail to CDR, AMCOM, ATTN: AMSAM-SF-A (SOF Compliance Officer). Datafax number is DSN 8697-2111 or (236) 313-2111. E-mail address is <safeadm@redstone.army.mil>. The report will cite this TB number, date of entry on DA Form 2408-13-1, aircraft MDS, and serial numbers of aircraft in numerical order.

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

(1) Units will continue to provide the results of the vibration screening entered on the data forms supplied with the AVA Memory Card, signed by the Unit Commander, to their MACCM POCs listed in paragraph 16.c., NLT 7 days after the test is conducted. Ensure that both the aircraft serial number and the Engine serial number are entered on the data sheet for each Engine screened.

(2) MACOMs shall continue to forward the data sheets to the logistics POC listed in paragraph 16.b. MACOM POCs will be provided routine updates as further information becomes available on Gear replacement/N2 Carrier Assembly replacement schedules and training.

c. Reporting TB Receipt (Spares). N/A

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

- (1) Materials In Wholesale Depot Storage. N/A
- (2) Material In Retail Storage. N/A

e. The Following Forms are Applicable and are to be Completed in Accordance with DA Pamphlet 738-751, Dated 15 June 1992:

NOTE

Unit Level Logistics System-Aviation (ULLS-A) users will use applicable electronic "-E" forms.

- (1) DA Form 2408-5-1, Equipment Modification Record (Engine).
- (2) DA Form 2408-13, Aircraft Status Information Record.
- (3) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
- (4) DA Form 2468-15, Historical Record for Aircraft
- (5) DA Form 2488-16, Aircraft Component Historical Record (Engine). Complete only if Engine is replaced.
- (6) DA Form 2408-18, Equipment Inspection List.
- (7) DD Form 2410, Component Removal and Repair/Overhaul Record (Engine). Complete only if Engine is replaced.

15. Weight and Balance N/A

16. Points of Contact

a. Technical point of contact for this TB is Mr. Mark Heitert, AMSAM-AR-E-P-E, DSN 897-4964 or (256) 313-4984; Datafax is DSN 897-4961 or (258) 3134961; E-mail is <heitertm@redstone.army.mil>. Alternate POC is Mr. Skip Jackson, AMSAM-AR-E-I-B-H, DSN 788-0975 or (256) 842-0975; Datafax is 645-9536; E-mail is <jackson-sk@redstone.army.mil>.

b. Logistical point of contact for this TB is Mr. Mr. Joe Dewitt, AMSAM-DSA-CC, DSN 645-9551 or (256) 955-9551; Datafax is 645-9536; E-mail is <dewitt-jh@redstone.army.mil>.

c. MACOM points of contact are as follows:

AMC	John Savelli	DSN 767-9891
USAR	Monte McDonald	DSN 367-8310
FORSCOM	MSG Crawford	DSN 367-5369
NGB	Bobby Brown	DSN 327-7769
USARPAC	Mitt Ford	DSN 438-8623
EUSA	Dennis Reiland	DSN 315-7234417

d. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAM-MMC-RE-FF, DSN 746-5564 or commercial (256) 876-5564; Datafax is DSN 746-4904 or (256) 8784904; E-mail is <waldeck-ab@redstone.army.mil>.

e. Safety point of contact for this TB is Mr. Robert Brock, AMSAM-SF-A, DSN 788-8832 or commercial (256) 842-8632; Datafax is DSN 897-2111 or (256) 313-2111; E-mail is <brock-rd@redstone.army.mil>. Alternate POC is Mr. Howard Chilton, AMSAM-SF-A, DSN 897-2068 or commercial (256) 897-2068; Datafax is DSN 897-2111 or (256) 313-2111; E-mail is <chilton-hl@redstone.army.mil>.

f. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact either CW5 Joseph L Wittstrom, Security Assistance Management, AMSAM-SA, DSN 897-0681 or commercial (266) 313-0681; E-mail is wittstrom-jl@redstone.army.mil. Alternate POC is Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-0869 or (266) 313-0869; Datafax is DSN 897-0411 or (266) 3134411; E-mail is sammons-rw@redstone.army.mil. Huntsville, Alabama is GMT minus 6 hrs.

g. After hours contact AMCOM Command Operations Center (WC) DSN 897-2066/2067 or commercial (256) 313-2066/2067.

17. 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, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, Alabama 35898-5230. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address at ls-lp@redstone.army.mil, or by datafax at DSN 788-6546 or commercial (266) 842-6546. Instructions for sending a 2028 by E-mail may be found at the back of most TMs.

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON

Administrative Assistant to the
Secretary of the Army
04865

DENNIS J. REIMER
General, *United States Army*
Chief of Staff

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