

URGENT

*TB 1-2840-229-20-20

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

MANDATORY N2 SPUR GEAR REPLACEMENT FOR ALL AH-1 SERIES AIRCRAFT

Headquarters, Department of the Army, Washington, D. C.
15 July 1999

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

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THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR
SUPERSEDED.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 to a **Red Horizontal Dash (-)**. The **Red Horizontal Dash (-)** entry shall state: "T53-L-703 Engine record inspection required IAW TB1-2840-229-20-20 (SOF AH-1-99-04) within next 10 flight hours/7days." Clear the entry after the inspection procedures of paragraph 8. are completed. Enter a second Red Horizontal Dash (-) entry. The second entry shall state: "Replace T53-L-703 Engine Non-Coated Spur Gear with Coated Spur Gear not later than 01 December 2000, IAW TB 1-2840-229-20-20 (SOF AH-1-99-04)." The **Red Horizontal Dash (-)** may be cleared when the corrections of paragraph 9. are 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**.

b. Aircraft in Depot Maintenance. Aircraft will not be issued until compliance with this TB has been completed.

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.

*This TB supersedes both USAAMCOM Safety of Flight (SOF) Messages 231454Z JUN 99 (SOF-AH-1-99-04) and 231840Z JUN 99 (SOF-AH-1-99-04) .

e. **Maintenance Trainers (Category A and B).** N/A.

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 1-2840-229-20-20 (SOF AH-1-99-04), suspense date for mandatory N2 Spur Gear replacement, not complied with."

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

2. **Task/Inspection Suspense Date.** Within next 10 flight hours/7 days.

3. **Reporting Compliance Suspense Date.** No later than 16 July 1999 in accordance with paragraph 14.a. of this TB.

4. **Summary of the Problem.**

a. Background.

(1) The T53 series Engine has experienced a number of N2 Spur Gear failures that have been attributed to vibration. TB 1-2840-229-20-17 (SOF AH-1-98-01) was issued to implement a vibration inspection utilizing AVA test equipment. Aircraft that passed the vibration inspection were released to fly and were required to perform a recurring 25-hour vibration inspection. Those aircraft that failed the initial, or a subsequent 25-hour vibration inspection remain grounded until future corrective actions are directed or the Engine is replaced and the vibration inspection of TB 1-2840-229-20-17 (SOF AH-1-98-01) is passed.

(2) A coated Spur Gear has been developed that attenuates the stresses in the gear to lower levels. This coated Spur Gear has been installed on UH-1 aircraft with the T53-L-13B Engine that have passed vibration inspection. Aircraft that received the coated Spur Gear were cleared from flight restrictions but were still required to perform the 25-hour recurring vibration inspection. Subsequently, after analysis of data collected from recurring 25-hour inspections, it was determined that inspection intervals for both the T53-L-13B and T53-L-703 Engines could be safely extended to either 50 or 150 hours depending upon the configuration of the Spur Gear installed (non-coated vs coated). TB 1-2840-229-20-19 (SOF AH-1-99-01) has been issued to implement the extended inspection intervals for the T53-L-703 Engine.

(3) Coated Spur Gears are now being made available for installation on the T53-L-703 Engine. To assure 100 percent compliance, a suspense date of 31 December 2000 has been established to accomplish field level installation of the coated Spur Gears on installed Engines that have passed, and continue to pass, the vibration inspections.

(4) Requisitions for the coated Spur Gear shall be made through normal supply channels. The coated Spur Gears are not free issue, but procured through the normal supply procedure with the use of a project code. Unit-funded requisitions will receive a MACOM credit by following the instructions of this TB.

(5) A determination has been made that certain parts removed from an Engine that has failed the vibration inspection of TB 1-2840-229-20-17 (SOF AH-1-98-01) can be re-used on another Engine, as noted in paragraph 9.e.

NOTE

With the exception of establishing this calendar suspense date and authorization for re-use of certain parts from aircraft that have failed the vibration inspection, this TB does not impose any additional requirements to the above referenced TBs. The requirements of those TBs have not changed, and have not been superseded by this TB.

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

c. The purpose of this TB is to:

- (1) Establish a calendar date suspense for completion of field installation of the coated Spur Gears.
- (2) Provide requisitioning and credit instructions for the coated Spur Gear.
- (3) Authorize the re-use of certain parts from Engines that have failed the vibration inspection of TB 1-2840-229-20-19 (SOF AH-1-99-01).

5. End Items to be inspected. All AH-1 series aircraft.

6. Assembly Components to be Inspected.

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

7. Parts to be Inspected.

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
N2 Spur Gear	1-070-062-04	3020-00-453-9441
N2 Spur Gear (Coated)	1-070-062-06	3020-01-455-7341

8. Inspection Procedures.

a. Inspect aircraft records to determine if the vibration inspection of TB 1-2840-229-20-17 (SOF AH-1-98-01) has been completed, follow-on vibration inspections have been performed per TB 1-2840-229-20-19 (SOF AH-1-99-01), and the installed Engine continues to pass the vibration inspections.

b. Inspect aircraft records to determine if the coated N2 Spur Gear has been installed on the passed Engine.

(1) If the coated N2 Spur Gear has been installed, the inspection is complete and the requirements of this TB have been met.

(2) If the coated Spur Gear has not been installed, proceed with the correction procedures of paragraph 9.

9. Correction Procedures.

a. Only AMCOM-approved, depot-trained teams shall replace the N2 Spur Gear (P/N 1-070-062-04) with the coated N2 Spur Gear (P/N 1-070-062-06).

NOTE

The interval for the recurring vibration inspection shall be increased to 150 hours, as specified in TB 1-2840-229-20-19 (SOF AH-1-99-01), on Engines that have the coated Spur Gear installed. It is allowable to apply a plus or minus ten percent time tolerance, not to exceed 5 flight hours per TM 1-1500-328-23, for the purpose of completing the 150-hour recurring inspections.

NOTE

The authorized repair teams will be using a revised AMCOM procedure to install the spur gear. The DMWR and TM 1-2840-260-23P will be updated to show changes and parts.

b. Upon completion of coated N2 Spur Gear installation, the AVA vibration inspection shall be performed IAW the procedures specified in TB 1-2840-229-20-17 (SOF AH-1-98-01).

c. If the Engine passes the vibration inspection after installation of the coated N2 Spur Gear, the AVA inspection interval shall be increased to 150 hours per TB 1-2840-229-20-19 (SOF AH-1-99-01).

NOTE

Some Engines may have been pre-screened for vibration in a test cell using the AVA procedure in TB 1-2840-229-20-17 (SOF AH-1-98-01). Engines that exhibit acceptable vibration levels in a test cell may be installed on an aircraft. However, the vibration screening of TB 1-2840-229-20-17 (SOF AH-1-98-01) must again be performed on the Engine after installation.

d. The requirement to perform recurring vibration screenings per TB 1-2840-229-20-19 (SOF AH-1-99-01) has not changed.

e. Parts may be removed from Engines that fail the vibration inspection of TB 1-2840-229-20-19 (SOF AH-1-99-01) and used on other Engines with the exception of the following:

- (1) The Reduction Gear Box (P/N 1-030-350) and all parts therein.
- (2) The Sun Gear (P/N 1-030-192).
- (3) The N2 Carrier Assembly (P/N 1-070-220) and all parts therein, except as noted below:

NOTE

Removal and subsequent re-installation of the coated N2 Spur Gear from the Accessory Drive N2 Carrier may be authorized, but requires a separate AMCOM authorization from the technical POC listed at paragraph 16.a. of this TB. Under no circumstances shall a previously-installed coated Spur Gear that has been subjected to a vibration exceeding .25 ips be installed in another Engine.

f. If an Engine fails any vibration inspection, clearly annotate the maximum vibration level on the turn-in paperwork – DA Form 2408-5-1, Historical Record (Engine). Annotate vibration level in "ips".

10. Supply/Parts and Disposition.

a. Parts Required.

NOMENCLATURE	P/N	NSN	COST
Spur Gear	1-070-062-06	3020-01-455-7341	\$1,381.62
Spur Gear Replacement Kit	75306-KT CAGE 81996	3020-01-462-0434	\$265.70

b. Requisitioning Instructions. Two requisitions are required: (DD Form 1348-1A and DD Form 1348-6).

- (1) The Spur Gear requisition (DD Form 1348-1A) will have a project code (cc 57-59) of "XFA".
- (2) The parts kit requisition (DD Form 1348-1A) will have project code "XFA" in card column block 57-59.

c. Army National Guard units listed below will requisition and turn in components as outlined. These units have the authority to requisition and receive wholesale credit for the components required by this TB, in the quantities indicated:

NGB UIC	DODAAC	STATION & STATE	NUMBER OF GEARS
W7TMAA	W81LHA	CA AVCRAD CA	39
W7TKAA	W90E3H	CT AVCRAD CT	142
W7TLAA	W90E3J	MO AVCRAD MO	102
W7TNAA	W90AUA	MS AVCRAD MS	34
		NGB TOTAL	317

NOTE

Project code "XFA" is required to track and establish a data base of stock fund expenditures incurred by the field as a result of SOF/ASAM actions, and to create the return credit.

If you are having difficulty in receiving the coated Spur Gear and parts kit, contact the wholesale materiel POC listed at paragraph 16d. Be prepared to provide stock number and document number for each requisition.

d. **Bulk and Consumable Materials.** Bulk and consumable materials included in the installation kit are listed below:

NOMENCLATURE	PART NUMBER	NSN	QUANTITY
Retainer Nut/Locknut	1-070-065-01	5340-00-916-2591	1 EA
Packing	1-020-017-01	5331-00-766-8653	1 EA
Packing	M83248/1-008	5331-00-166-0967	2 EA
Packing	M83248/1-012	5331-00-166-0980	2 EA
Packing	M83248/1-013	5331-00-166-0988	6 EA
Packing	M83248/1-014	5331-00-166-0990	7 EA
Packing	M83248/1-015	5331-00-166-0991	5 EA
Packing	M83248/1-113	5331-00-166-1062	2 EA
Packing	M83248/1-114	5331-00-166-1063	1 EA
Packing	M83248/1-122	5331-00-167-5111	2 EA
Packing	M83248/1-128	5331-00-167-5116	1 EA
Packing	M83248/1-131	5331-00-167-5119	1 EA
Packing	M83248/1-138	5331-00-537-3929	1 EA
Packing	M83248/1-144	5331-00-167-5126	1 EA
Washer Convex	1-030-138-04	5310-00-161-7435	1 EA
Retainer Bolt	1-030-141-03	2840-00-084-7761	1 EA
Gasket	1-080-026-01	5330-01-388-3065	1 EA
Gasket	1-080-025-02	5330-01-330-9629	1 EA
Seal Tubing	1-300-368-01	5330-00-570-9811	1 EA
Gasket	1-160-454-01	5330-01-374-9261	1 EA
Washer	STD3023K2	5310-00-658-5299	3 EA
Lockcup	1-070-066-03	5340-01-430-0385	1 EA

NOTE

Requisitioning units will pay standard price when ordering parts. Retail SMA activities will provide 100 percent credit for turn-ins of the defective Army-managed components NSNs/Part Numbers stated in paragraph 10.b. reflecting the project code "XFA". AMCOM will provide 100 percent credit to Army National Guard units for turn-in of the defective Spur Gear and kits based on the UICs, DODAACs, NSNs/Part Numbers and the "XFA" project code in the quantities indicated in paragraph 10.c.

NOTE

Flight Safety Critical Aircraft Parts (FSCAP), criticality code of "E" or "F", require special processing prior to being turned-in to the DRMO for disposal. For AMCOM-managed items, contact the POC in paragraph 16.i.

e. Disposition. Demilitarize/mutilate all N2 Spur Gears (P/N 1-070-062-04). All coated N2 Spur Gears (P/N 1-070-062-6) shall be demilitarized/mutilated if removed from an Engine that has failed the vibration test at a level greater than .25 ips. Demilitarize by cutting, crushing or grinding to prevent further use. Since the N2 Spur Gears are normally considered consumable, in order to receive turn-in credit the units must prepare a complete DD-1348 (turn-in document) to include signal and fund codes as well as a DRMS Form 145 (demilitarization certificate). The completed forms will be forwarded through their respective MACOM POCs (paragraph 16.c) to validate the credit.

f. Disposition of Hazardous Material. In accordance with Environmental Protection Agency directives as implemented by your servicing environmental coordinator (AR 200-1).

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

12. Application.

a. Category of Maintenance. AVUM.

b. Estimated Time Required.

(1) Total of 0.5 man-hours using 1 person.

(2) Total of 0.0 hours 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.

(1) TB 1-2840-229-20-17 (SOF AH-1-98-01)

(2) TB 1-2840-229-20-19 (SOF AH-1-99-01)

e. Publications which Require Change as a Result of this Inspection. TM 1-2840-260-23P and DMWR 1-2840-113, Volumes 1-4 shall be changed to reflect this TB. A copy of this TB shall be inserted in the appropriate Technical Publication as authority to implement these changes until the printed changes are received.

13. References.

a. DMWR 1-2840-113, Volumes 1-4

b. TB 1-2840-229-20-17 (SOF AH-1-98-01)

- c. TB 1-2840-229-20-19 (SOF AH-1-99-01)
- d. TM 1-1500-328-23
- e. TM 1-2840-260-23P
- f. TM 1-6625-724-13&P
- g. TM 55-1520-236-10
- h. TM 55-1520-236-23
- i. TM 55-1520-236-23P-1
- j. TM 55-1520-236-MTF

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), Redstone Arsenal, AL. 35898-5000, IAW AR 95-1. Datafax number is DSN 897-2111 or (256) 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) Within 10 days of installation, units installing coated Spur Gears will provide the results of the installation on the backlash worksheet forms supplied with the repair procedures, signed by the technical inspector, to their MACOM POC listed in paragraph 16.c. Assure that both the aircraft serial number and the Engine serial number are entered on the data sheet for each Engine screened.

(2) MACOMs shall 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 long-term corrective action.

c. Reporting TB Receipt (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 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.

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) 313-4964; Datafax is (256) 313-496; E-mail is <heitertm@redstone.army.mil> or Mr. Skip Jackson, AMSAM-AR-E-I-B-H, DSN 645-9753 or (256) 955-9753; Datafax is DSN 645-9536; E-mail is <skip.jackson@redstone.army.mil>.

b. Logistical point of contact for this TB is Mr. Ed Grimble, AMSAM-ASH-L, DSN 645-7968 or (256) 955-7968; Datafax is DSN 645-7125 or (256) 955-7125; E-mail is <edward.grimble@redstone.army.mil> or Mr. Albert E. Clarke, AMSAM-MMC-VS-UN, DSN 897-1077 or (256) 313-1077; Datafax is DSN 897-1558; E-mail is <clarke-ae@redstone.army.mil>. The AVA logistical point of contact is Mr. Larry Quinton, AMSAM-DSA-WAG, DSN 788-0393 or (256) 842-0393; E-mail is <quinton-ld@redstone.army.mil>.

c. The MACOM points of contact are as follows:

MACOM	CONTACT	DSN PHONE
AMC	John Savelli	DSN 767-9891
USAR	Monte McDonald	DSN 367-8310
FORSCOM	MSG Tucker	DSN 367-5369
NGB	Ken Winters	DSN 327-7769
USARPAC	Dutch Heath	DSN 438-8623
INSCOM	Ken Harvey	DSN 235-1170
EUSA	Dennis Reiland	DSN 315-732-4417

d. Wholesale supply point of contact for the installation kit is Ms. Cynthia Cash, AMSAM-MMC-VS-UN, DSN 897-1082 or (256) 313-1082; Datafax is DSN 897-1558; E-mail is <cash-cy@redstone.army.mil>. POC for the N2 Spur Gear is Ms. Bonnie Winfrey, AMSAM-MMC-VS-UN, DSN 897-1080 or (256) 313-1080; E-mail is <winfrey-bj@redstone.army.mil>.

e. Maintenance/maintenance engineering point of contact is Mr. Steve Schick, AMSAM-MMC-VS-UN, DSN 897-1066 or (256) 313-1066; Datafax is DSN 897-1558; E-mail is <schick-sr@redstone.army.mil>.

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

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

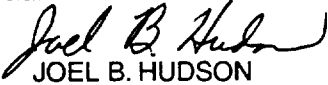
h. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact CW5 Joseph L. Wittstrom, Security Assistance Management, AMSAM-SA, DSN 897-0681 or commercial (256) 313-0681; E-mail is <wittstrom-jl@redstone.army.mil>. Alternate POC is Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-0869 or (256) 313-0869; Datafax is DSN 897-0411 or (256) 313-0411; E-mail is <sammons-rw@redstone.army.mil>. Huntsville, Alabama is GMT minus 6 hrs.

i. After hours contact AMCOM Command Operations Center (COC) 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 (256) 842-6546. Instructions for sending a DA Form 2028 by E-mail may be found at the back of most Technical Manuals.

By Order of the Secretary of the Army:

Official:


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