URGENT

***TB 1-2840-229-20-18**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

REVISION TO SCREENING PROCEDURES FOR ALL UH-1 SERIES AIRCRAFT WITH T53-L-13B ENGINE (P/N 1-000-060-22) INSTALLED

Headquarters, Department of the Army, Washington, D. C.
06 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THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.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 to a Circled Red X. The Circled Red X entry shall state "Aircraft restricted to flight operations and inspection procedures IAW UH-1-98-08." 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 required time frame will cause the status symbol to be upgraded to a Red X. While the aircraft is on a Circled Red X status, 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.

*This TB supersedes USAAMCOM Safety of Flight (SOF) Message UH-1-98-08, 171531Z, SEP 98.

(2) Ferry Status.

(a) Inspect at final destination.

(b) Those aircraft that have a DD 250, and are at U.S. Helicopters, will be inspected prior to ferry to final destination.

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

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

g. Component/Parts in Work (Depot and Others). Items listed in paragraph 6. as in work will not be issued until compliance with this TB is complete.

2. Task/inspection Suspense Date. Within next 10 flight hours or 14 days.

3. Reporting Compliance Suspense Date. No later than 13 October 1998 in accordance with paragraph 14.a. of this TB.

4. Summary of the Problem.

a. Background.

(1) TB 1-2840-229-20-15 (SOF UH-1-98-05) established procedures for using the Aviation Vibration Analyzer (AVA) to screen T53-L-13B 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 re-test (initial on-aircraft screening plus one 25-hour re-test) has been completed. TB 1-2840-229-20-15 (SOF UH-1-98-05) also stated that installation of the improved Lock Cup required by TB 1-2E40-229-20-09 (SOF UH-1-96-03) was to continue until all aircraft had been modified. At this time, the continued use of the old style (thin) Lock Cup is considered to be an unnecessary risk, since a corrective action (installation of the improved Lock Cup) to eliminate the Lock Cup-related failure mode has been available for two years. Therefore, all Engines that have not complied with the repairs of TB 1-2840-229-20-09 (SOF UH-1-96-03) shall be removed from service within 60 days of the date of this TB.

(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/videotape 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. Once the coated Spur Gear is installed, the operational flight restrictions previously imposed may be lifted. 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 will be issued to the field for installation at SRA Sites. These assemblies are expected to be available by mid FY 99.

(c) These hardware changes, as well as revised maintenance procedures to require maintaining the integrity of the gear sets during overhaul, will be incorporated into all future T53 maintenance & overhaul contracts. In addition, several previously-approved engineering changes that have not yet been implemented will be incorporated into the DMWR, further enhancing reliability and safety.

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

c. This TB has two purposes:

(1) This TB establishes a 60-day limitation for compliance with the corrective procedures of TB 1-2840-229-20-09 (SOF UH-1-96-03).

(2) This TB extends the recurring AVA inspection interval from 25 hours to either 50 or 150 hours, depending upon the N2 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 re-test (initial on-aircraft screening plus one 25-hour re-test) has been completed.

5. End Items to be inspected. All UH-1 series aircraft with T53-L-13B Engines (P/N 1-000-060-22) installed.

6. Assembly Components to be Inspected.

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
T53-L-13B	1-000-060-22	2840-00-134-4803

7. Parts to be Inspected. N/A.

8. Inspection Procedures.

NOTE

TB 1-2840-229-10 (SOF UH-1-97-01) was a follow-up message to TB 1-2840-20-09 (SOF UH-1-96-03). TB 1-2840-229-10 (SOF UH-1-97-01) provided guidance to properly annotate the Engine records to show installation of the improved Lock Cup.

a. Inspect Engine records to determine if the improved Lock Cup required by TB 1-2840-229-20-09 (SOF UH-1-96-03) has been installed. If engine records show that the improved Lock Cup (NSN 5340-01-430-0385) has been installed, go to paragraph 8.c.

b. If the Engine records do not reflect installation of the improved Lock Cup (NSN 5340-01-430-0385), proceed with the correction procedures in paragraph 9.a.

c. Inspect Engine records to determine if the new configuration (coated) Spur Gear (NSN 3020-01-455-7341) has been installed. If the records show that a coated Spur Gear (NSN 3020-01-455-7341) has been installed, proceed with the correction procedures in paragraph 9.b.

d. If the Engine records do not show installation of a coated Spur Gear (NSN 3020-01-455-7341), inspect the aircraft records to determine if the Engine has passed a minimum of one 25-hour re-test (initial on-aircraft screening plus one 25-hour re-test). If the aircraft records show that the Engine has passed the initial on-aircraft screening plus one 25-hour re-test, proceed with the correction procedures in paragraph 9.c.

e. If the Engine records do not show installation of a coated Spur Gear (NSN 3020-01-455-7341), inspect the aircraft records to determine if the Engine has passed a minimum of one 25-hour re-test (initial on-aircraft screening plus one 25-hour re-test). If the aircraft records show that the Engine has passed the initial on-aircraft screening but has not yet reached the 25-hour re-test, proceed with the correction procedures in paragraph 9.d.

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 150-hour recurring AVA inspection.

a. For Engines that do not have the improved Lock Cup installed, annotate the aircraft records to show the following:

(1) Recurring AVA Engine screening is required every 25 hours.

(2) The flight restrictions from TB 1-2840-20-09 (SOF UH-1-96-03) remain in effect.

(3) Engines shall be removed form service not later than 60 days from the date of this TB. Upon expiration of the 60 days, remove the Engine from service and annotate the Engine records with the following entry: "Unserviceable Engine due to thin Lock Cup installed. Refer to TB 1-2840-20-09 (SOF UH-1 -96-03) for repair procedures." Contact your MACOM POC in paragraph 16.c. to schedule the Lock Cup repair for your Engines.

b. For engines with the improved Lock Cup (NSN 5340-01-430-0385) and a coated N2 Spur Gear (NSN 3020-01-455-7341) installed, annotate the records to show the recurring AVA Engine screening is required every 150 hours. The flight restrictions of TB 1-2840-229-20-15 (UH-1-98-05) are removed. It is permissible to perform the next AVA Engine screening early in order to align follow-on screenings with the aircraft 150-hour phase inspection cycle. Unit Level Logistics System (ULLS-A) users will use this TB as permission to delete inspection number 52 (recurring 25-hour AVA inspection) if applicable, and add inspection number 250 for the 150-hour recurring AVA Engine screening.

c. For Engines with the improved Lock Cup (NSN 5340-01-430-0385) and the non-coated Spur Gear installed that have not yet reached the first 25-hour re-test, annotate the records to show the recurring AVA engine screening is required every 25 hours. The flight restrictions of TB 1-2840-229-20-15 (UH-1 -98-05) remain in effect.

d. For Engines with the improved Lock Cup (NSN 5340-01-430-0385) and the non-coated Spur Gear installed that have passed the install on-aircraft screening plus one 25-hour re-test.

e. Problems have been reported with the AVA memory cards and script files. Units having problems with the AVA memory cards or script files should either:

(1) Procure a new memory card from the prime contractor for $140 by contacting Mr. Craig Ryder at (619) 697-6133.

(2) Download the files from the contractor bulletin board by contacting Mr. Klepin at (619) 697-6201 for assistance.

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 changed to AVUM maintenance.

b. Estimated Time Required.

(1) Total of 1 man-hour using 1 person.

(2) Total of 1 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 1-2840-229-20-09 (SOF UH-1 -96-03).

b. TB 1-2840-229-20-10 (SOF UH-1-97-01).

c. TB 1-2840-229-20-15 (SOF UH-1-98-05).

d. TB 1-2840-229-20-16 (SOF UH-1-98-06).

e. TM 1-1500-328-23.

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 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 M DS, 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 MACOM 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. Please ensure that each Engine re-test is numbered and dated for proper accounting. Be sure to annotate which test interval applies (25-, 50- or 150-hour) to the test being reported.

(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) Materiel in Wholesale Depot Storage. N/A.

(2) Materiel 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 2408-15, Historical Record for Aircraft.

(5) DA Form 2408-16, 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) 313-4964; Datafax is DSN 897-4961 or (256) 313-49631; E-mail Is <heitertm@redstone.army.mil>. Alternate POC is Mr. Stephen Monaco, AMSAM-AR-E-I-B-IJ, DSN 645-0078 or (256) 955-0078; Datafax is 645-6590; E-mail is <monaco-sd@redstone.army.mil>.

b. Logistical point of contact for this TB is Mr. Charles Elkins, AMSAM-DSA-UH-U, DSN 645-0073 or (256) 955-0073. Datafax is 645-0073. E-mail is "elkins-ce@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
TRADOC	Judy Dyer	DSN 680-5683
USAREUR	Lorane Green	011-49-622-157-8532
USARPAC	Milt Ford	DSN 315-438-8623
INSCOM	Ken Harvey	DSN 235-1170
EUSA	Dennis Reiland	DSN 315-723-4417

d. 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>.

e. Safety point of contact for this TB is Mr. Robert Brock, AMSAM-SF-A, DSN 788-8632 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 (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.

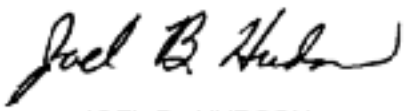
g. After hours contact AMCOM Command Operations Center (COC) DSN 897-2066/2067 or commercial (256) 313-2066/2067.

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 2028 by E-mail may be found at the back of most TMs.

By Order of the Secretary of the Army:

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

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
04861

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THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

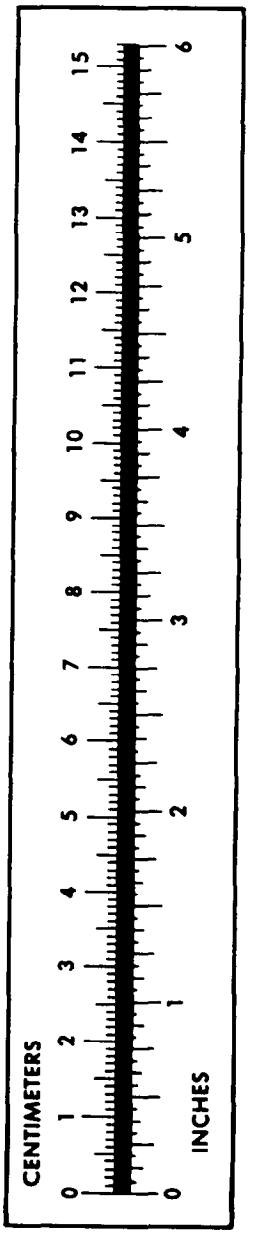
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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