URGENT

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

OPERATIONAL RESTRICTION
ON ALL UH-1 SERIES AIRCRAFT
FOR T53-L-13B ENGINES

Headquarters, Department of the Army, Washington, D. C.
15 May 1996

1. Priority Classification. Urgent.

a. Aircraft in Use. Upon receipt of this Technical Bulletin (TB) the condition status symbol of the cited aircraft will be changed to a **circled red X.** The **circled red X** 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. Same as para 1.a.

c. Aircraft Undergoing Maintenance. Same as para 1.a

d. Aircraft in Transit.
(1)Surface/Air Shipment. Same as para 1.a.
(2) Ferry Status. Same as para 1.a.

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

f. Component/Parts in Stock Including War Reserves at All Levels (Depot and Others). Immediately upon receipt of this TB all condition code // A // items listed in para 7 shall be placed in condition code // B //. Change the condition code on the DD Form 1574 serviceable tag-materiel and annotate the remarks block to read: operating restrictions of SOF message UH-1-96-03 (TB 1-2840-229-20-9) apply to this materiel.

(1) Materiel Located in Wholesale Depot Storage. Report compliance with this TB in accordance with para 14.c. to the materiel management point of contact in para 16.c.

This TB supersedes USAATCOM (PROV) Message (UH-1-96-03).

(2) Materiel Located in Installation/Unit Storage. Report compliance with this TB in accordance with para 14.b. to the MACOM point of contact in para 16.d.

g. Components/Parts in Work. Assembly components (listed in para 6) in work shall not be issued until compliance with this TB.

2. Task/Inspection Suspense Date. Prior to next flight. This publications is effective until 15 May 1998 unless sooner rescinded or superseded.

3. Reporting Compliance Suspense Date. No later than 31 May 1996 per para 14.a. of this TB.

4. Summary of the Problem.

a. Background. Since 1991 numerous N2 accessory drive carrier assembly failures have occurred in the T53-L-13B engine, P/N 1-000-060-22. Review of the available data indicates the three components of the drive assembly presumed responsible for the failures are the spur gear, the bevel gear, and the retainer nut lock cup. The failure rate for the N2 drive assembly retainer nut lock cup has steadily increased over the last five years.

b. Summary. The accessory gear carrier assembly has a spur gear which drives the N2 gearbox drive system. This gear is held in place by a retaining nut and a cup-type retainer which is used to secure the gear retaining nut in place. Fatigue failure of the cup-type retainer permits the gear retaining nut to back off, allowing the spur gear to disengage from the accessory gear carrier, causing an N2 gear box failure. When this happens, there will be a complete loss of torque oil pressure indication, the N2 indicator will go to zero, the RPM warning light will illuminate, and the overspeed governor will stop, causing an engine overspeed. In this situation, proper use of the throttle as outlined in the emergency procedure should control the overspeed condition.

(1) Additional indications may be present prior to a complete failure of the N2 spur gear. The torque pressure and N2 RPM indicators may fluctuate, surges of engine power, high frequency vibration from the engine, and illumination of the engine chip detector caution light. There is the possibility of an engine oil pump failure caused by debris in the lubrication system. In the event of an oil pump failure, an engine failure is inevitable. The internal condition of the engine will dictate how long the engine will continue to operate. The engine may run for several minutes or fail almost instantly.

(2) Due to the nature of the spur gear failure, the possibility exists for an accompanying engine failure. This could be caused by the spur gear falling into the accessory gear carrier assembly and severely damaging the other drive gears. This will likely be accompanied by severe vibrations and grinding noises. The carrier assembly also drives the N1 gearbox. If the carrier is no longer able to drive the N1 gearbox, the fuel control will stop operating and the engine will fail quickly due to fuel starvation. Regardless of which of the three suspect parts fail, the symptoms and emergency procedures remain the same.

c. For Manpower/Downtime and Funding Impacts. See para 12.

d. The purpose of this TB is to:
(1) Alert users to this engine problem and procedures for corrective action.
(2) Restrict certain aircraft operations of all UH-1 series aircraft.
(3) Require units to contact their MACOM to facilitate scheduling of ATCOM authorized depot teams to repair all T53-L-13B engines.

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

6. Assembly Components Affected:

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.

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a Inspect aircraft records for serial number of the engine. Confirm serial number of the engine by a physical inspection of the engine on the aircraft, and spare engine serial numbers.

b. Proceed with correction procedures of paragraph 9.

9. Correction Procedures.

a. All UH-1 aircraft are immediately restricted as follows:

(1) No operations inside the avoid or caution regions as defined in the appropriate height velocity diagram, figure 9-3 or 9-3.1, TM 55-1520-210-10 except when both of the following conditions have been satisfied:

(a) An instructor pilot is at one set of controls.

(b) The flight must be over a route that has been surveyed and contains suitable landing sites from any point along the flight route.

(2) Restricted from IMC and operations over a terrain where a suitable landing area is not available.

(3) No long distance flights over water when another land route is available, even if longer in distance.

(4) No practice autorotations, except to an improved landing area with a crash rescue capability.

NOTE

Autorotations as part of maintenance test flights may be performed. These maneuvers must be accomplished to a known safe landing area.

(5) Sling load operation is not authorized.

(6) No hoist operation authorized, other than MEDEVAC, and search and rescue operations where loss of life/severe injury is a factor.

(7) Minimum of 1000 feet AGL on night unaided flights except during takeoff and landing.

NOTE

Further restrictions for NVG operations are not deemed necessary.

b. As part of the pre-mission briefing the pilot in command shall review these limitations, the symptoms concerning this possible failure mode, and corrective actions in para 9-17, operators manual, TM 55-1520-210-10, emergency procedure for engine overspeed. Add to the emergency procedure: even if manual throttle corrects the overspeed, land as soon as possible, since there is a chance of an impending engine failure due to the debris generated by the initial N2 failure. Insert a copy of this TB into the pilot's information file, and place a copy of this TB in the aircraft logbook.

c. The restrictions of this TB apply to MEDEVAC missions with consideration given to mission planning. The nature of the MEDEVAC mission shall be considered when planning the in route flight path to comply, when possible, with restrictions listed in para 9.a.

d. All aircraft shall remain on a **circled red X** status until an ATCOM authorized depot team repairs the engine. Make an entry on DA Form 2408-13-1 stating “aircraft is restricted per TB 1-2840-229-20-9.

e. Units shall contact their MACOM point of contact listed in para 16.d. per the instructions of para 14.b. and provide the information specified. Repair teams will be dispatched to repair engines on a HQDA priority basis. Units will be notified of inspection teams schedules by the MACOM points of contact.

f. MACOM points of contact shall prioritize the list of effected engines and aircraft. Provide this list to logistic point of contact (para 16.b.) by E-Mail or datafax.

10. Supply/Parts and Disposition.

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 - Records Inspection. AVUM.

b. Estimated Time Required. A total of 0.25 manhours to perform the records inspection using one person.

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 Inspection. N/A.

13. References. N/A.

14. Recording and Reporting Requirements.

a. Reporting compliance suspense date (Aircraft). Upon entering requirements of this TB on DA Form 2408-13-1, forward a priority message, datafax or E-Mail to Commander ATCOM, ATTN: AMSAT-R-X (SOF Compliance Officer), per AR 95-3. Datafax number is DSN 693-2064 or commercial (314) 263-2064. E-Mail address is "AMSATRXS@EMH4.STL.ARMY.MIL". The report will cite this TB number, date of entry in DA Form 2408-13-1, the aircraft mission design series and serial numbers of aircraft in numerical order.

b. Task/Inspection Reporting Suspense Date (Aircraft). All units shall forward a priority message to the MACOM point of contact listed in pare 16.c. The report will cite unit point of contact and phone number, unit identification code, aircraft serial number, and engine serial number, and condition code and serial numbers for all spare engines on hand.

c. Reporting Compliance Suspense Date (Wholesale Spares). Report compliance including original condition code, condition code as a result of this TB, and the serial number for each serviceable engine to the materiel management point of contact (para 16.c within 5 working days of receipt of this TB).

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

e. The following forms are applicable and are to be completed in accordance with DA PAM 738-751, 15 June 1992:

(1) DA Form 2408-13, Aircraft Status Information Record.
(2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
(3) DA Form 2408-15, Historical Record for Aircraft.

15. Weight and Balance. N/A.

16. Points of Contact.

a. Technical point of contact for this TB is Mr. Dan Flesher, AMSAT-R-EPE, DSN 693-0306 or commercial (314)263-0306.

b. Logistical point of contact for this TB is Mr. Mike Haragan, AMSAT-D-WAU, DSN 693-2134 or commercial (314)263-2134, Fax Ext. 1508, AMSATWAU@EMH4.STL.ARMY.MIL.

c. Materiel management point of contact for Materiel in Wholesale Storage is Ms. Pat Noltkamper, AMSAT-I-SABD, DSN 693-5953 or commercial (314)263-5953.

d. MACOM points of contact for task inspection reporting.

AMC	John Savelli	DSN 767-9891
USAR	Monte McDonald	1-800-359-8483 EXT8687
USMA	CW3 Hood	DSN 220-3298
MDW	Capt. Katie Boehn	DSN 656-7325
FORSCOM	Dwayne Raymer	DSN 367-6274
NGB	Ken Winters	DSN 327-7754
TRADOC	Judy Dyer	DSN 680-5683
USAREUR	Dave Spinks	011-49-631-413-8900
USARPAC	CW5 Peterson	DSN 438-9892
INSCOM	Msgt. Fields	DSN 235-1648
ALASKA	Ron McIntosh	907-353-6029
KOREA	Bob Spencer	DSN 723-4394

NOTE

Any regional MACOMs should contact the nearest supporting MACOM listed above. Example would be land Southeast should use USAREUR.

e. Forms and Records point of contact for this TB is Ms. Ann Waldeck. AMSAT-I-MDM, DSN 490-2318 or commercial (314)260-2318.

f. Point of contact for this TB is Mr. Lyell Myers, AMSAT-R-X, DSN 693-2438 or commercial (314)263-2438.

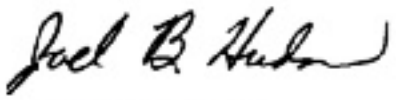
g. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact Mr. Ron Van Rees, AMSAT-D-SAF, DSN 693-3659 or commercial (314)263-3659. Datafax is 2917.

h. After hours contact ATCOM Command Operations Center (COC) DSN 693-2066/7 or commercial (314)263-2066.

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 Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. You may also submit your recommended changes by E-Mail directly to <mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you.

By Order of the Secretary of the Army:

Official:



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

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Chief of Staff

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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

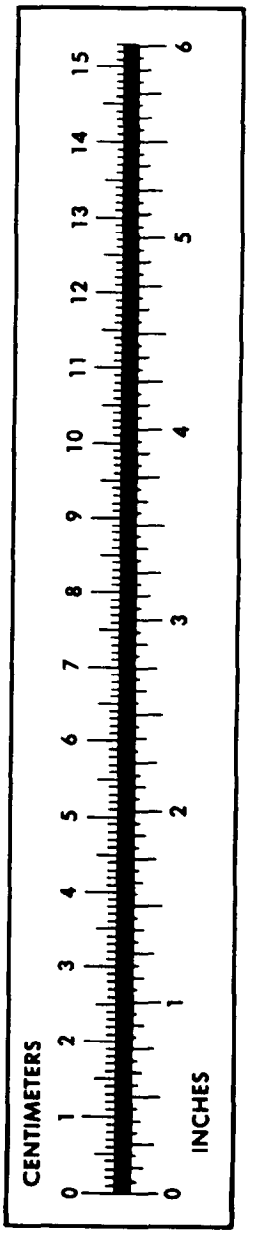
TEMPERATURE

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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