

# DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

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## INSPECTION AND REPAIR FOR T55 SERIES ENGINE RESET PROGRAM (T55-L-712 AND T55-GA-714A)

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Headquarters, Department of the Army, Washington, D. C.  
30 January 2004

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

### NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

**1. Purpose.** This bulletin is to be used as guidance for the restoration of performance to T55 engines that have been operating in Southwest Asia (SWA). These engines are susceptible to damage and accelerated performance degradation because of their exposure to the hostile sand and dirt environment of SWA.

**2. Priority Classification.** This technical bulletin is classified as ROUTINE. Equipment in use (including Equipment in Supply or Maintenance Activities below Depot Level and Equipment in Administrative Storage) will be inspected as soon as practical.

**3. End Items to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
T55-L-712	2-001-020-23	2840-01-030-4890
T55-GA-714A	2-001-020-39	2840-01-458-5361

**4. Modules** (Components, Assemblies, and Subassemblies) to be inspected. Not applicable.

**5. Parts to be Inspected.** As indicated in paragraph 7 below.

**6. Application.**

a. Level of Maintenance. Aviation Unit Maintenance (AVUM)/Aviation Intermediate Maintenance (AVIM).

b. AVUM/AVIM tasks are as follows:

(1) Cleaning. Engine water wash on aircraft. Refer to TM 55-1520-240-23.

(2) Download DECU and update records.

(3) Engine Removal/Installation refer to TM 55-1520-240-23.

(4) Boroscope Inspection (if boroscope kit is available).

(5) Visual engine inspection for obvious erosion and FOD.

(a) If the initial inspection determines that the required maintenance is within the Unit's capability, perform maintenance as indicated in paragraph 7 below.

(b) If the required maintenance is beyond the AVIM scope of work follow instructions in paragraph 7.g. of this TB.

## 7. Inspection Procedures.

### a. Compressor Section.

#### **NOTE:**

If the blade replacements are beyond the AVIM capability refer to paragraph 7.g. of this TB.

(1) Refer to TM 1-2840-265-23 for removal of compressor case half.

(2) Inspect compressor blades in accordance with TM 1-2840-265-23, the following procedures and Table 1.

#### **NOTE:**

1<sup>st</sup> Stage Compressor Blade Rub Inspection. The following figures and instructions below are for determining the amount of first stage blade rub associated with an engine. The following procedure should only be performed if upon visual inspection of the compressor inlet a noticeable 1<sup>st</sup> stage compressor rub is noted. If a first stage compressor rub has been discovered on the engine during a routine inspection or scheduled maintenance then the following inspection needs to be performed at this time if the engine/aircraft is down for scheduled maintenance, otherwise it may be deferred until the next scheduled maintenance event.

**Task 1:** If engine is installed on aircraft remove engine IAW TM 55-1520-240-23.

**Task 2:** Removed affected case half/ halves IAW TM 1-2840-265-23.

**Task 3:** Determine which method of measurement (Method 1 or 2) is appropriated based on the available tools in the shop.

**Method 1,** (Ref: Figure 1A and Task 4)

**Tools Required:**

1) Six-inch metal rule or block of metal of equivalent size

- 2) One set of wire feeler gauges

Method 2, (Ref: Figure 1B and Task 5)

Tools Required:

- 1) Six-inch metal rule or block of metal of equivalent size
- 2) Micrometer style depth gauge

**Task 4**: Inspection Procedure.

- 1) Measure values from Figure 1A and record values A1, A2, and A3 on data sheet 1.
- 2) Calculate sum by adding A1 and A2
- 3) Calculate Avg. A by dividing sum by 2
- 4) Calculate Depth by subtracting Avg A from A3 ( $A3 - \text{Avg A} = \text{Depth}$ )
- 5) If Depth is less than 0.012 inch then engine acceptable for use
- 6) Repeat process 100 hrs later
- 7) If value recorded as depth has not increased for three consecutive times inspection may be discontinued.
- 8) If value recorded as depth is greater than 0.012-inch engine must be repaired or removed from service.
- 9) Go to task 7.

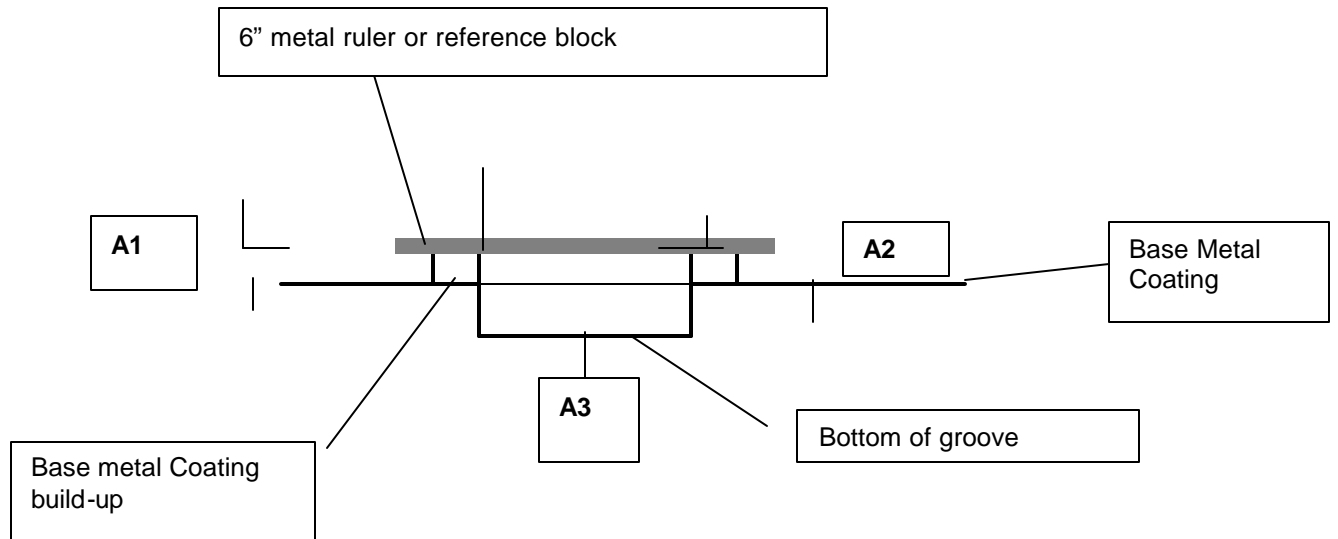
**Task 5**: Inspection Procedure.

- 1) Measure values from Figure 1B and record values A1, A2, and A3 on data sheet 1.
- 2) Calculate sum by adding A1 and A2
- 3) Calculate Avg. A by dividing sum by 2
- 4) Calculate Depth by subtracting Avg A from A3 ( $A3 - \text{Avg A} = \text{Depth}$ )
- 5) If Depth is less than 0.012 inch then engine acceptable for use
- 6) Repeat process 100 hrs later
- 7) If value recorded as depth has not increased for three consecutive times inspection may be discontinued.
- 8) If value recorded as depth is greater than 0.012-inch engine must be repaired or removed from service.
- 9) Go to task 7.

**Task 6**: Reassemble engine IAW TM 1-2840-265-23

**Task 7**: If engine is acceptable for use reinstall IAW TM 55-1520-240-23. If engine is unacceptable and cannot be repaired return to supply system

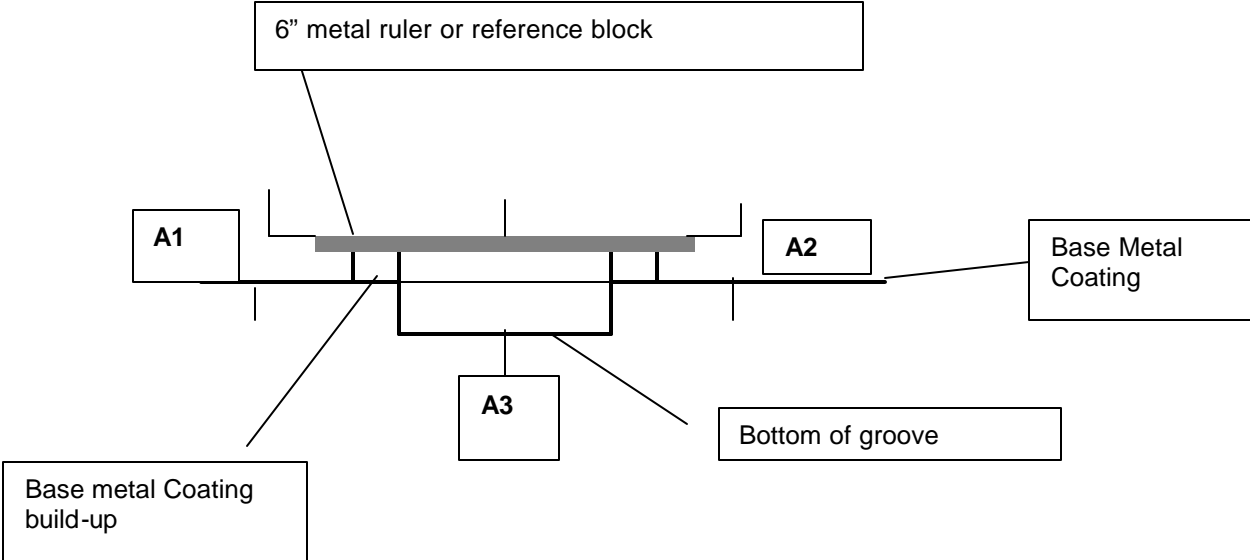
Figure 1A: Measurement with Wire Feeler Gauges



**NOTE**

A1 is the distance from the bottom of the ruler to the bottom of base material.  
A2 is the distance from the bottom of the ruler to the bottom of base material.  
A3 is the distance from the bottom of the ruler to the bottom of groove.

Figure 1B: Measurement with Depth Gauge



**NOTE**  
A1 is the distance from the top of the ruler to the bottom of base material.  
A2 is the distance from the top of the ruler to the bottom of base material.  
A3 is the distance from the top of the ruler to the bottom of groove.

<b>Table 1. Compressor Inspection</b>	
<b>*Technical Manual Reference</b>	<b>Area of Inspection</b>
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<u>First Stage:</u> Critical Area .5 inch from base 1/4L from critical area - .025 depth 1/2L from critical area - .050 depth 3/4L from critical area - .075 depth L from critical area – 0.100 depth Tip depth .060 depth Minimum Chord Erosion – 1.522 inch (1.539 inches from tip)
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<u>Second Stage:</u> Critical Area .5 inch from base 1/4L from critical area - .015 depth 1/2L from critical area - .030 depth 3/4L from critical area - .045 depth L from critical area – 0.060 depth Tip depth .060 depth Minimum Erosion Tip Chord of .919 inch
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<u>Third Stage:</u> Critical Area .375 inch from base 1/4L from critical area - .015 depth 1/2L from critical area - .030 depth 3/4L from critical area - .045 depth L from critical area – 0.060 depth Tip depth .060 depth Minimum Erosion Tip Chord of .704 inch
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<u>Fourth Stage:</u> Critical Area .375 inch from base 1/4L from critical area - .015 depth 1/2L from critical area - .030 depth 3/4L from critical area - .045 depth L from critical area – 0.060 depth Tip depth .060 depth Minimum Erosion Tip Chord of .562 inch
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<u>Fifth-Seventh Stages:</u> Critical Area .250 inch from base 1/4L from critical area - .015 depth 1/2L from critical area - .030 depth 3/4L from critical area - .045 depth L from critical area – 0.060 depth Tip depth .060 depth Minimum Erosion Tip Chord of .562 inch
TM 55-2840-254-23 (T55-L-712) and TM 1-2840-265-23 (T55-GA-714A)	<b>Air Diffuser:</b> Leading edge erosion - .094 inch
<b>*714A and 712 field manuals use actual blade lengths to define “L”.</b>	

b. Air Bleed Actuator. Refer to TM 1-2840-265-23 and paragraphs (1) and (2) below.

(1) There shall be no cracks in the radius between the gusset support area (4, refer to Task 2-4, TM 1-2840-265-23) and the bracket that when combined are longer than half of the length of gusset support area (4). Stop drill cracks as necessary.

(2) Inspect bracket (3, refer to Task 2-4, TM 1-2840-265-23). There shall be no cracks within 1/2 inch of one another such that if connected would result in a piece of the bracket separating.

(3) Test the air bleed actuator in accordance with TM 1-2840-252-23-1, paragraph 2-7.

c. Hot End Inspection (AVIM).

(1) Completely disassemble, clean and inspect hot section in accordance with applicable T55 engine manual.

(2) Visually inspect the thermocouples for signs of burn through or sand erosion damage.

(3) Perform resistance check of the thermocouples.

(4) Visually inspect the gas producer blade cooling holes for signs of blockage. There shall be no blockage allowed. If blockage is present the cooling holes must be cleaned so that no restriction is present.

(5) Visually inspect all nozzles for signs of blockage. Clean as necessary.

d. Reassemble engine.

e. Run engine in FEDS/METS, if available.

f. Perform engine installation MTF.

g. Depot Maintenance. Turn-in engine in accordance with guidelines below.

(1) Germany: Engines and components that require depot level repairs will be turned in as a supply transaction (receiving turn-in credit through a Reset fund site) and order a replacement engine. Unserviceable engines shall be shipped via airfreight to BR4 (Red River). The following information must be e-mailed to the IMMC logistics POC: Shipping document number, engine serial number, known maintenance requirements, engine time since overhaul and appropriate information from the DECU download.

(2) Fort Campbell: Perform R3 repairs as authorized. Engines and components requiring overhaul/repair beyond the Fort Campbell ESRA scope of work will be

turned in as a supply transaction and shipped via airfreight to BR4. Contact the IMMC logistics POC who will provide appropriate shipping instructions to the DLA warehouse (ADL).

(3) Fort Hood: Engines and components requiring repairs beyond the AVIM capability should be turned in as a supply transaction. The following information must be provided to the Reset POC: Shipping document number, engine serial number, known maintenance requirements, and engine time since overhaul.

(4) Fort Lewis: Same as Fort Hood.

(5) Fort Stewart: Same as Fort Hood. In addition, forward the DECU download information to the Reset POC.

h. Additional Information. These instructions are for SWA deployed and operated engines only unless specifically stated to the contrary.

## **8. Supply/Parts and Disposition.**

- a. Parts Required to Accomplish this Technical Bulletin. Not applicable.
- b. Parts Disposition. Not applicable.
- c. Expendable Supplies. As required.

## **9. References.**

- a. DMWR 55-2840-254, Depot Maintenance Work Requirement for Engine, Aircraft Gas Turbine, Model T55-L-712.
- b. TM 55-2840-254-23, Aviation Unit and Aviation Intermediate Maintenance Manual, Engine, Gas Turbine.
- c. TM 1-2840-265-23, Aviation Unit and Intermediate Maintenance Manual, Engine, Aircraft, Gas Turbine.
- d. DA PAM 738-751, Functional Users Manual for the Army Maintenance Management System–Aviation (TAMMS-A).
- e. TB 55-8100-200-25, Maintenance of Specialized Reusable Containers for Aircraft Equipment.
- f. TM 1-2840-252-23, Aviation Unit and Aviation Intermediate Maintenance Manual, Engine, Gas Turbine
- g. TM 55-1520-240-23, Aviation Unit and Aviation Intermediate Maintenance Manual for CH-47D Helicopter.



**10. Recording and Reporting Requirements.** Per DA PAM 738-751.

**11. Points of Contact.** Questions regarding this TB should be addressed to the U.S. Army Aviation and Missile Command, Redstone Arsenal, AL 35898.

a. Engineering point of contact for this TB is Mr. Steven Cahill, AMSRD-AMR-AE-P-E, commercial (256) 319-5216. E-mail is [steven.cahill@rdc.redstone.army.mil](mailto:steven.cahill@rdc.redstone.army.mil) or Mr. Curtis Stevens, AMSRD-AMR-AE-P-E, commercial (256) 319-5261. E-mail is [curtis.stevens@rdc.redstone.army.mil](mailto:curtis.stevens@rdc.redstone.army.mil).

b. Logistical points of contact for this TB are:

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(5) Mr. Mike Keefer (Germany and Ft. Lewis), commercial (256) 313-2491. E-mail is [Michael.Keefer@redstone.army.mil](mailto:Michael.Keefer@redstone.army.mil).

(6) Mrs. Ruth Gordon (Reset and Supply Funding/Credits), commercial (256) 313-2503. E-mail is [Ruth.Gordon@redstone.army.mil](mailto:Ruth.Gordon@redstone.army.mil).

**12. 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, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or commercial (256) 842-6546. Our e-mail address is: [2028@redstone.army.mil](mailto:2028@redstone.army.mil). Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web, use: <https://amcom2028.redstone.army.mil>.



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4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-JUL-85
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12. **Submitter Rank:** MSG
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20. **Line:** 4
21. **NSN:** 5
22. **Reference:** 6
23. **Figure:** 7
24. **Table:** 8
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26. **Total:** 123
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