
DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

**Inspection and Repair of Non-Destructive Test Equipment (NDTE) Portable X-Ray
NSN 6635-01-417-1830 / 6635-01-375-8382**

**Headquarters Department of the Army, Washington, D.C.
6 January 2009**

DISTRIBUTION STATEMENT A: Approval for public release, distribution is unlimited

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. **PURPOSE.** The purpose of this technical bulletin (TB) is to inspect all NDTE Portable X-Ray Units returning from Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) to determine the need for repair or replacement.
2. **PRIORITY CLASSIFICATION.** Routine
3. **SUMMARY OF PROBLEM.** System fatigue encountered during OIF/OEF may have caused system or component deterioration that dictates repair or replacement.
4. **REFERENCE MATERIEL.** The NDTE X-Ray Unit is a Commercial Off the Shelf (COTS) system. Calibration of this equipment by the Test Measurement and Diagnostic Equipment (TMDE) activity is not required and a Calibration Waiver exists. The maintenance and repair procedures outlined in T.O. 33B3-3-31-11 dated 01 January 2008 (available from the Technical POC) will provide guidance for maintenance at the operator/maintainer level and will be used to complete this effort. Any repair outside the parameters of the procedures in the T.O. will be directed to the Original Equipment Manufacturer (OEM) of this equipment.
5. **APPLICATION.** This TB shall be applied to all NDTE X-Ray Units fitting the description listed in Table 1 returning from OIF/OEF. NDTE X-Ray unit Reset will occur based on Dynamic Army Research Priority List (DARPL) sequence and will be coordinated through all applicable major commands (MACOM).
6. **TRANSPORTATION.**
 - a. The NDTE X-Ray Units identified for Reset will be shipped based on direction from PM AGSE and PM Reset. A Transportation Accounting Code will be provided to the unit for shipment to the Reset facility.
 - b. The NDTE X-Ray Unit is not a transportability problem item as defined in AR 70-47 and can be transported by military and civilian transportation systems.
7. **MAINTENANCE REQUIREMENTS.** Because of the safety requirements associated with the operations of the NDTE X-Ray Unit, all test and repair procedures will be executed by the OEM only.
 - a. All data plates, decals, and stencils shall be legible. Replace questionable items.
 - b. Additional data plates will be attached to the exterior of the case(s) that include the following information:

- (1) National Stock Number (NSN).
- (2) Reset facility name.
- (3) Date of Reset.
- (4) Serial Number.

c. **Tube Head Assembly (3-000A-0736).** Follow the inspection criteria for the parts listed below. Reference the T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.

- (1) **Pressure Gage.** Ensure gage is serviceable and readable and is capable of indicating accurate pressure readings (typical operating range for this equipment is 50-55psi at 70°F).
- (2) **Gas Valve Cap.** Ensure it will securely fasten to the charging valve.
- (3) **Twin Cooling Hose Connectors.** Inspect connectors to ensure they are free of dents, nicks, or corrosion. Ensure that all hose couplings seat properly.
- (4) **Cable Connector.** Inspect connector to ensure that all pins are straight, no cracks or breaks in the connector housing, and the connector threads are in serviceable condition. Inspect the connector to ensure it is free of corrosion or debris.
- (5) **Tube Head Handles.** Inspect the handles to ensure they are attached securely and free of any cracks, breaks, or any other damage.
- (6) **Lead Shield.** Inspect the lead shield to ensure it is free of cracks or dents and it rotates freely.
- (7) **Tube Head Housing.** Inspect the housing to ensure the paint finish is in good condition and there is not any corrosion, dents, or any other damage.

d. **Control Unit (3-000A-0738).** Follow the inspection criteria for the parts listed below. Reference the T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.

- (1) **Cabinet and Cover.** Inspect the cabinet and cover to ensure the paint finish is in good condition and there is not any corrosion, dents, or any other damage. Inspect the cabinet and cover to ensure there are no loose, missing, or damaged hinges, handles, and other hardware.
- (2) **Cable Connectors.** Inspect the cable connectors to ensure they are firmly seated on the front panel and they are free of bent or broken pins, corrosion or debris, cracked receptacles, and the threads are in serviceable condition.
- (3) **Control Switches.** Inspect pushbuttons to ensure spring back when depressed, ensure the switches are not cracked or broken, and ensure the identification label is clean and readable.
- (4) **Indicator Lamps.** Inspect lamps to ensure they are serviceable and illuminate properly.

- (5) **Liquid Crystal Display (LCD) Screens.** Inspect the screens to ensure they are free of cracks, debris, or any damage. Inspect the screens to ensure the backlight operates properly and ensure proper function of the RESET button.
- (6) **Fan.** Inspect the motor and fan to ensure the shaft rotates freely and the unit is free of cracks, dents, or any other damage.
- e. **Cooling Unit Assembly (3-000A-0737).** Follow the inspection criteria for the parts listed below and reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
 - (1) **Radiator Cap.** Inspect the radiator cap to ensure it can be easily removed and has no damage.
 - (2) **Radiator.** Inspect the radiator for cleanliness and ensure it is free of dents, cracks, leaks, or any other damage.
 - (3) **Drive Belt.** Inspect the drive belt to ensure it is free of cracks, frayed areas, or any other damage. Ensure the belt is properly tensioned.
 - (4) **Air Filter.** Inspect the air filter to ensure it is clean and free of debris, cracks, tears, or any other damage.
 - (5) **Pump Assembly.** Inspect the pump assembly to ensure the shaft rotates freely and the unit is free of cracks, leaks, dents, or any other damage.
 - (6) **Motor and Fan.** Inspect the motor and fan to ensure the shaft rotates freely and the unit is free of cracks, dents, or any other damage.
- f. **Power Cable Assembly (1-040A-0380).** Inspect cable to ensure it is free of cuts, frays, opens or shorts, connector serviceability, and pin-to-pin continuity. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
- g. **Control Cable Assembly (1-040A-0342).** Inspect cable to ensure it is free of cuts, frays, opens or shorts, connector serviceability, and pin-to-pin continuity. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
- h. **Cooler Power Cable (1-040A-0343).** Inspect cable to ensure it is free of cuts, frays, opens or shorts, connector serviceability, and pin-to-pin continuity. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
- i. **Interlock Mating Connector (3-000A-0783).** Inspect connector for opens, shorts, cracks, serviceability, and pin-to-pin continuity. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
- j. **Safety Switch Key (2-610A-0001).** Inspect the safety switch keys to ensure that three (3) are present and serviceable. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
- k. **Cooling Hose Assembly (3-000A-0742).** Inspect cooling hose to ensure it is free of cracks, punctures, leaks, frays, or any other damage. Inspect the hose couplings to ensure they are secured firmly to the hose assembly, are free of corrosion, cracks,

damage, or blockage, and are serviceable. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.

- i. Laser Pointer Device (3-000A-0792).** Inspect the laser pointer device to ensure it is free from cracks, dents, and any other damage to electrical and physical connections. Ensure proper functional serviceability of the device. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
 - m. X-Ray Tube Head Stand (3-000A-0754).** Inspect stand to ensure it is free from any broken, loose, or missing hardware, dents, damaged or missing paint, corrosion, broken components, or any other damage. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. Repair or replace items that do not meet these criteria.
 - n. Transit Cases.** Check cases listed below for external or internal damage. Verify the cases are free of holes, cuts, grease, debris, and other foreign objects that prevent the intended use. Inspect serviceability of the latches, locking mechanisms, and internal foam cutouts for dimensional adherence. Reference T.O. 33B3-3-31-11 dated 01 January, 2008 for additional information. If any equipment does not appear to be secure when packaged, repair or replace items that do not meet these criteria.

 - (1) Tube Head Transit Case (2-630-0025).
 - (2) Control Unit Transit Case (2-630-0026).
 - (3) Cooling Unit Transit Case (2-630-0027).
 - (4) Cable Transit Case (2-630-0028).
 - o.** Clean all item surfaces so that they are free of dirt, grease, or any other foreign material.
- 8. CORRECTION PROCEDURES.** Not applicable unless a questionable defect with the system is identified. A questionable defect will require that a Quality Deficiency Report be processed.
 - 9. DESIGNATION OF NSNs.** All NDTE X-Ray units processed through Reset will retain their original NSN.
 - 10. SUPPLY/PARTS.** The losing organization will be responsible for ensuring that the turn-in NDTE X-Ray Units are complete in accordance with the component listing. Missing and unserviceable items on requisition will remain on requisition to fill known shortages. A DA Form 2404 will be used to identify any discrepancies and included with each NDTE X-Ray Unit, to include any document numbers of parts that are missing from the system.
 - 11. DOCUMENTATION.** Shop travelers, pre and final inspection records, tags, and test sheets shall be used to document all processes, procedures, testing, and inspections specified and performed herein. A single document can be used to cover single or multiple items. The original paperwork shall be maintained at the Reset facility for a period of NLT two years.
 - 12. TECHNICAL INSPECTION.** The NDTE X-Ray Unit Inspections will be completed by OEM representatives who will repair or replace any items identified defective. The criteria cited in paragraph 7 represent grounds to repair or replace the identified components.

13. **QUALITY ASSURANCE.** Initial and final inspections shall be noted and documented on a DA FORM 2404 (Equipment Inspection and Maintenance Worksheet). No technical publications will be affected by this TB.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET															
For use of this form, see DA PAM 738-750 and 738-751; the proponent agency is DCSLOG															
1. ORGANIZATION					2. NOMENCLATURE AND MODEL										
3. REGISTRATION/SERIAL/NSN		4a. MILES		b. HOURS		c. BOUNDS FIRED		d. HOT STARTS		5. DATE		6. TYPE INSPECTION			
7. APPLICABLE REFERENCE															
TM NUMBER				TM DATE				TM NUMBER				TM DATE			
COLUMN a – Enter TM item number. COLUMN b – Enter the applicable condition status symbol. COLUMN c – Enter deficiencies and shortcomings.						COLUMN d – Show corrective action for deficiency or shortcoming listed in Column c. COLUMN e – Individual ascertaining completed corrective action initial in this column.									
STATUS SYMBOLS															
"X" – Indicates a deficiency in the equipment that places it in an inoperable status.					DIAGONAL "/" – Indicates a material defect other than a deficiency which must be corrected to increase efficiency or to make the item completely serviceable.										
CIRCLED "X" – Indicates a deficiency, however, the equipment may be operated under specific limitations as directed by higher authority or as prescribed locally, until corrective action can be accomplished.					LAST NAME INITIAL IN BLACK, BLUE-BLACK INK, OR PENCIL - Indicates that a completely satisfactory condition exists.										
HORIZONTAL DASH "-" – Indicates that a required inspection, component replacement, maintenance operation check, or test flight is due but has not been accomplished, or an overdue MWO has not been accomplished.					FOR AIRCRAFT - Status symbols will be recorded in red.										
<i>ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.</i>															
8a. SIGNATURE (Person(s) performing inspection)				8b. TIME		9a. SIGNATURE (Maintenance Supervisor)				9b. TIME		10. MANHOURS REQUIRED			
TM ITEM NO. <i>a</i>	STATUS <i>b</i>	DEFICIENCIES AND SHORTCOMINGS <i>c</i>				CORRECTIVE ACTION <i>d</i>				INITIAL WHEN CORRECTED <i>e</i>					

14. POINTS OF CONTACT.

- a. Logistics points of contact for this TB is Mr. Rickey Clay, SFAE-AV-AS-AG, DSN 645-8391 or commercial (256) 955-8540, e-mail rickey.clay@us.army.mil.
- b. Alternate Logistics point of contact is Ms. Sandra Ratley, SFAE-AV-AS-AG, DSN: 897- 0199 or commercial (256) 313-0199, e-mail sandra.ratley@us.army.mil.
- c. Technical point of contact for this TB is Mr. David Wallace, SFAE-AV-AS-AG, DSN: 645-0485 or commercial (256) 955-0485, e-mail david.wallace1@us.army.mil.

- 15. REPORTING ERRORS.** You can help improve this bulletin. If you find mistakes or know of a way to improve procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), located at the back of this bulletin, 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. Instructions for sending an electronic 2028 may be found at the back of this bulletin immediately preceding the hard copy 2028. For the World Wide Web use: <https://amcom2028.redstone.army.mil>

By Order of the Secretary of the Army

Official:

A handwritten signature in black ink that reads "Joyce E. Morrow". The signature is written in a cursive style with a large initial "J" and "M".

JOYCE E. MORROW
*Administrative Assistant to the
Secretary of the Army*
0834408

GEORGE W. CASEY, JR.
*General, United States Army
Chief of Staff*

DISTRIBUTION:

To be distributed in accordance with Initial Distribution Number (IDN) 314227, requirements for TB 9-6635-417-20-1.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@wherever.army.mil

To: 2028@redstone.army.mil

Subject: DA Form 2028

1 **From: Joe Smith**
2 *Unit: home*
3 **Address: 4300 Park**
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
11 *Change Number: 7*
12 *Submitter Rank:* MSG
13 **Submitter FName:** Joe
14 *Submitter MName:* T
15 **Submitter LName:** Smith
16 **Submitter Phone:** 123--123--1234
17 **Problem: 1**
18 *Page: 2*
19 *Paragraph: 3*
20 *Line: 4*
21 *NSN: 5*
22 *Reference: 6*
23 *Figure: 7*
24 *Table: 8*
25 *Item: 9*
26 *Total: 123*

27 **Text:**

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS <small>For use of this form, see AR 25-30; the proponent agency is ODISC4.</small>						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE 8/30/02
TO: (Forward to proponent of publication or form)(Include ZIP Code) Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM--MMC--MA--NP Redstone Arsenal, AL 35898						FROM: (Activity and location)(Include ZIP Code) MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	
PART 1 - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 9-1005-433-24					DATE 16 Sep 2002	TITLE Organizational, Direct Support, And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System	
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON	
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.	
EXAMPLE							
<small>* Reference to line numbers within the paragraph or subparagraph.</small>							
TYPED NAME, GRADE OR TITLE MSG, Jane Q. Doe, SFC					TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION 788-1234	SIGNATURE	

TO: (Forward direct to addressee listed in publication) Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (Activity and location) (Include ZIP Code) MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	DATE 8/30/02
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PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER			DATE	TITLE				
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<div style="font-size: 100px; opacity: 0.5; transform: rotate(-30deg); pointer-events: none;"> EXAMPLE </div>								

PART III - REMARKS (Any general remarks or recommendations or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

EXAMPLE

TYPED NAME, GRADE OR TITLE MSG, Jane Q. Doe, SFC	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 788-1234	SIGNATURE
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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25--30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO: (Forward to proponent of publication or form) (Include ZIP Code) Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898						FROM: (Activity and location) (Include ZIP Code)	
PART 1 --ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER						DATE	TITLE
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON	
* Reference to line numbers within the paragraph or subparagraph.							
TYPED NAME, GRADE OR TITLE						TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE

TO: <i>(Forward direct to addressee listed in publication)</i> Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: <i>(Activity and location) (Include ZIP Code)</i>	DATE
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PART II --REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER			DATE	TITLE				
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III --REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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