

TECHNICAL MANUAL
 OPERATOR'S AND UNIT
 MAINTENANCE MANUAL

RADIAC SET AN/UDR-13
 (NSN 6665-01-407-1237) (EIC:KYD)

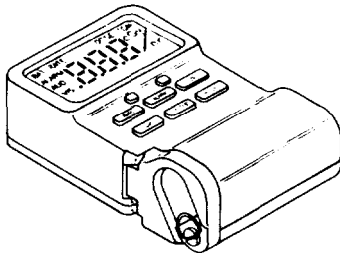
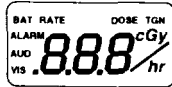


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HEADQUARTERS, DEPARTMENT OF THE ARMY
1 AUGUST 1998

WARNING

Trichlorotrifluoroethane, trichloroethane and similar chemical solvents will no longer be used for ordinary cleaning of equipment. These substances threaten public health and the environment by destroying ozone in the earth's upper atmosphere. Suitable nonhazardous cleaning materials will be used instead, such as a clean cloth, water and mild detergent.

A

HOW TO USE THIS MANUAL

Prior to use or maintenance of the AN/UDR-13, it is recommended that this manual be read in its entirety.

- For a description of Equipment Characteristics, Capabilities and Features refer to Chapter 1, Section II.
- For Equipment Data (weights and dimensions, power requirements, operational ranges, and environmental limits) refer to Chapter 1, Section II.
- For Technical Principles of Operation refer to Chapter 1, Section III.
- For Operation Under Normal Conditions refer to Chapter 2, Section I.
- For Operation Under Unusual Conditions refer to Chapter 2, Section II.
- For Preventative Maintenance Checks and Services (PMCS) refer to Chapter 3, Section II.
- For Battery Installation/ Removal/Replacement refer to Chapter 3, Section II.

B

HOW TO USE THIS MANUAL (Con't)

- For Preparation For Shipment and/or Storage refer to Chapter 3, Section III.
- Familiarize yourself with the information also available in the Appendixes A through G supplied in the rear of this manual.

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HEADQUARTERS
Technical Manual DEPARTMENT OF THE ARMY
No. 11-6665-364-2 Washington, DC, 1 August 1998

**OPERATOR'S AND UNIT
MAINTENANCE MANUAL**

RADIAC SET AN/UDR-13
(NSN 6665-01-407-1237)
(EIC:KYD)

**REPORTING ERRORS AND
RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know, Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendations to AMSEL-LC-LEO-PUBS-CHGBcecom3.monmouth.any.mil

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CHAPTER I

INTRODUCTION

SECTION I. GENERAL INFORMATION

1-1. SCOPE

This publication covers operation, unit maintenance and repair functions required to support the AN/UDR-13 Radiac Set.

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting. Navy personnel will report

maintenance performed utilizing the Maintenance Data Collection Subsystem (MDCS) IAW OPNAVINST 4790.2, Vol. 3 and unsatisfactory material/conditions (UR) IAW OPNAVINST 4790.2, Vol.2, Chapter 17. Marine Corps maintains forms and procedures as prescribed by TM 4700-15/1.

b. Reporting of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355,18/AFR 400-54/MCO 4430.3J.

c. Transportation Discrepancy Report (TDR) (SF 361). Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610,33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have Preventative Maintenance Checks and Services (PMCS) performed before storing. When

removing the equipment from administrative storage, the PMCS checks should be performed to assure operational readiness.

**1-6. REPORTING EQUIPMENT
IMPROVEMENT
RECOMMENDATIONS (EIR)**

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

1-7. QUALITY ASSURANCE (QA)

This equipment has been manufactured and inspected in accordance with MIL-Q-9858A, Quality Program Requirements. Users of this equipment shall report any quality deficiencies to their supervisor or submit an SF 368 (Product Quality Deficiency Report).

1-8. OFFICIAL NOMENCLATURE, NAMES AND DESIGNATIONS

Nomenclature Cross-Reference.

Shortened or modified nomenclature is used in this manual to make procedures easier for you to read. A cross-reference between shortened or modified nomenclature and the official nomenclature is shown in the following table.

Nomenclature Cross-Reference

Manual Nomenclature	Official Nomenclature
Radiac Set Case	Radiac Set AN/UDR-13 Case, Electrical-Electronics, Test and Measuring Equipment CY-8769/UDR-13

1-9. SAFETY, CARE AND HANDLING

1-9.1 NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC) DECONTAMINATION

The Radiac Set, shall be decontaminated in accordance with the appropriate procedures of Field Manual (FM) 3-5 for NBC Decontamination.

1-9.2 Refer to Chapter 3, Section II for preventative maintenance checks and services (PMCS).

1-10. CORROSION PREVENTION AND CONTROL (CPC)

a. Corrosion Prevention and Control (CPC) of the Army material is a continuing concern. It is important that corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of these materials may be a corrosion problem.

b. If a corrosion problem is identified, it can be reported using Standard Form 368. Product Quality Deficiency Report. Use if keywords such as "corrosion", "rust", "deterioration", or "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 738-750 Manual.

1-11. GLOSSARY

The following definitions are provided to clarify terms used throughout this manual.

<u>Term</u>	<u>Definition</u>
Dose	Accumulative amount of radiation produced or absorbed over a period of time (cGy).
Centigray	Unit of measure of absorbed radiation (One centigray is equal to one rad).
Rate	The instantaneous amount of radiation being produced (cGy/hr).
Dose Rate	Same as Rate.
TGN	Total Gamma - Neutron Accumulation

SECTION II. EQUIPMENT DESCRIPTION AND DATA

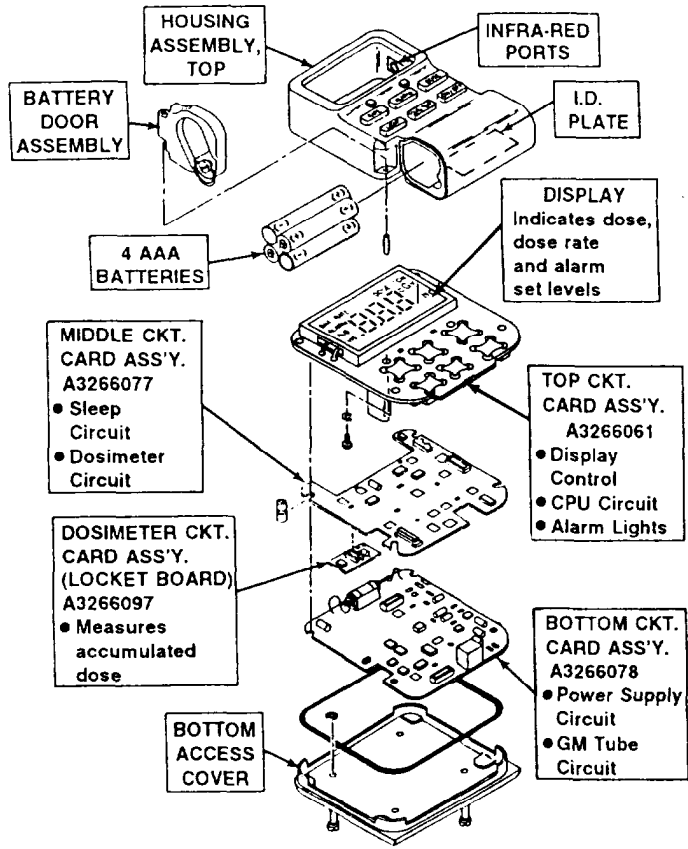
1-12. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

a. The AN/UDR-13 Radiac Set is a portable radiation detector used for detecting Neutron/Gamma radiation dose and Gamma dose rate.

b. The AN/UDR-13 Radiac Set consists of a Radiacmeter and a Case. The Radiacmeter is capable of measuring and displaying 0-999 cGy/hr gamma radiation dose rate. The Dosimeter Module is capable of measuring, storing and displaying dose from 0-999 cGy. It also features a Presettable Alarm and a Sleep mode. The Sleep mode allows for automatic, periodic, short-time displays of dose rate.

c. The Radiac Set is a miniaturized Radiacmeter that can be carried in a soldiers pocket. The set includes a case which is a soft carrying pouch which may be worn on a belt or carried in a pocket.

1-13. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



1-14. EQUIPMENT DATA

ENVIRONMENTAL

Altitude operating range: To 15,000 feet
(4,572 m) above sea level

Humidity: 95 percent

Temperature operating range: -51 to 120°F
(-46 to +49°C)

Storage temperature range: -60 to 160°F
(-52 to +71°C)

Water resistance: Will withstand immersion in water up to 3 feet deep

WEIGHTS AND DIMENSIONS

RADIAC SET	Radiacmeter Alone	In Carrying Case
Weight: (with batteries)	9.5 oz.	11.5 oz.
(without batteries)	8.0 oz	10.4 oz.

1-14. EQUIPMENT DATA (Con't.)

	Radiacmeter Alone	In Carrying Case
Length:	3.95"	≈4.90"
Width:	2.61"	≈4.00"
Depth:	0.99"	≈1.90"
POWER	4 (1.5V) AAA dry cell batteries	

BATTERY LIFE

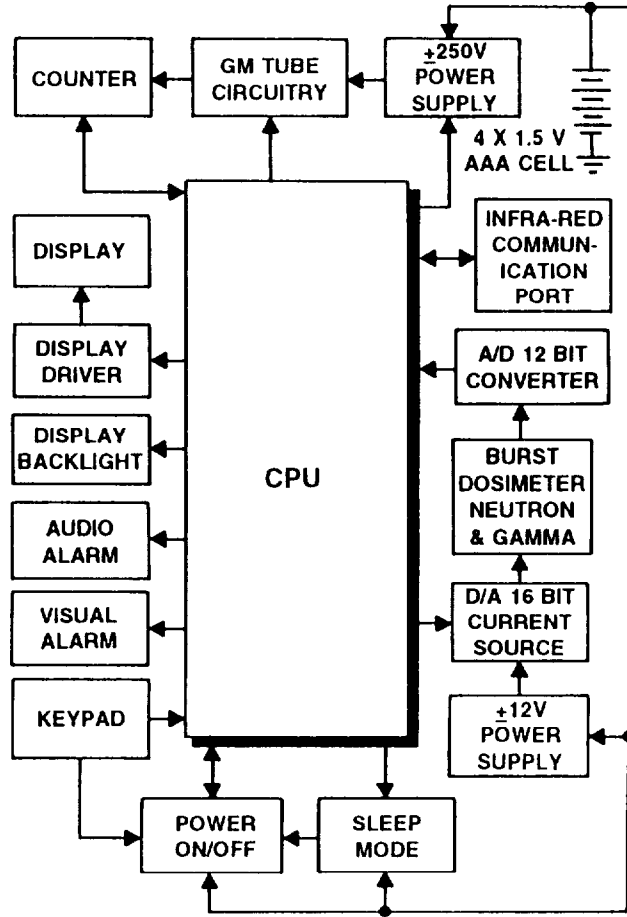
Normal Operation 100 hours

Sleep (SLP) Mode 294 hours

OPERATIONAL: RADIAC SET

Rate	0-999 cGy/hr gamma radiation detection
Dose	0-999 cGy neutron/gamma dose accumulation
Accuracy	±20% of True Dose and dose rate
Communication	RS-232, via optical Infra Red data channel

SECTION III TECHNICAL PRINCIPLES OF OPERATION



Gamma rays interact with the GM tube detector and provide electrical output pulses. These pulses are counted by microprocessor (CPU) controlled circuitry and evaluated with respect to reference signals to ultimately provide the measurement and display of the gamma ray field intensity in the vicinity of the Radiac Set. The Radiac Set also includes two solid state detectors for the detection and measurement of high intensity gamma and neutron radiation pulses as encountered when a nuclear weapon is detonated. When these detectors are exposed to such radiation, the detector experiences a change of output voltage proportional to the total accumulated dose. This voltage is measured by the internal circuitry and converted by the microprocessor into the dose measurement.

**CHAPTER 2
OPERATING INSTRUCTIONS**

**SECTION I. OPERATION UNDER
NORMAL CONDITIONS**

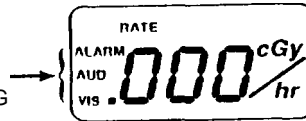
- NOTES:**
1. For simplicity throughout these operating procedures, RATE is used in lieu of DOSE RATE.
 2. Review the Preoperational Test Procedure prior to operating the AN/UDR-13.

**2-1. PREOPERATIONAL TEST
PROCEDURE**

1. Press and hold ON/OFF button until a series of indefinite numbers (1-6) will be displayed, followed by a full display.
 - If no display or the letter *b* is displayed (see page 2-8), in 4 or more seconds, replace batteries (see para. 3-3 (page 3-2) in this manual). If there is still no display indication, return entire unit through unit level to General Support for repairs.

- If DOSE ALARM is flashing see note on page 2-3.
- The following display (RATE MODE) should appear.

ANY OR ALL OF THESE
3 INDICATORS MAY NOT
BE DISPLAYED DEPENDING
ON PREVIOUS USE



- a. The radiacmeter must indicate RATE in the top left corner.
- b. A reading of .000 must appear followed by cGy/hr in known low background area.

NOTE:

A variable indication above .000 cGy/hr indicates the possible presence of radiation, notify your supervisor.

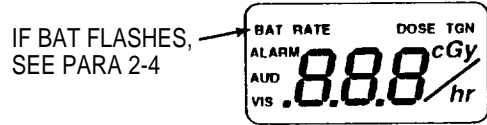
- c. The cGy/hr must blink approximately every 2 seconds.
- If any of these Preoperational Test Procedures, (except for low batteries indication), page 2-8, are not as described, return entire unit through unit level to General Support for repairs.

NOTE: DOSE FLASHING

If the DOSE ALARM is flashing on unit turn-on, proceed as follows:

- a. Check the DOSE total accumulation in accordance with para. 2-2a2 on page 2-11 and retain.
- b. Check the DOSE ALARM set point in accordance with para 2-2c1 on page 2-18 and retain.
- c. If the DOSE accumulation is greater than the DOSE ALARM set point, the unit is functioning properly - the alarm should be flashing.
- d. This condition can be altered if desired, depending on the mission status, in one of the following manners,
 - 1) Reset the accumulated dose to 000 cGy in accordance with para. 2-2c3 on page 2-20.
 - 2) Raise the DOSE ALARM set point above the DOSE indicated accumulated in accordance with para. 2-2c2 on page 2-19.

- Press and hold CLR/TEST button until a complete display appears as shown below, then release button. A sequence of numbers in the following order will appear. Check that all of the numbers are exactly as shown





.000 cGy	666 Gy
1.11 cGy	777 Gy
22.2 cGy	888 Gy
333 cGy	999 Gy
44.4 Gy	000
555 Gy	9 Blinking

NOTE:

The "TGN" located in the upper right corner of the display is for use by maintenance personnel only. As such, it does not appear in the display in normal operation, except in the test mode of step 2 above.

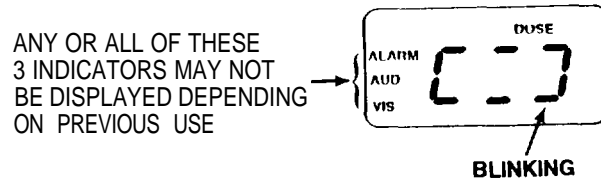
NOTE:

A flashing  followed in about 10 seconds by the blinking 9, indicates that the combination of the neutron and gamma pulse detectors is nearing 1000 cGy of total dose accumulation. The AN/UDR-13 is entirely functional, including all forms of dose measurement, and this flashing  is displayed to alert the user that the dosimeter assembly should be replaced in the near future.

3. At any time during the above sequence of numbers, press and hold ALARM button. The alarm should sound and both alarm lights should turn on, press DOSE button and only DOSE ALARM LIGHT and sounder turn on, press RATE button only RATE ALARM LIGHT and sounder come on.
4. When the 000 display appears, in the previous sequence, check the proper operation of the buttons by pressing each button and observing the numerical indication as shown on page 2-6. Any other numerical indication denotes a fault in the function of the circuit of the button pressed.

<u>PRESS BUTTON</u>	<u>NUMERICAL INDICATION</u>
DOSE	002
ALARM	010
RATE	001
LIGHT	020
CLR/TEST	004

5. At the end of this sequence a blinking 9 will appear indicating that the RATE function of the unit is operational. The unit will automatically return to the RATE mode in approximately ten seconds.
6. Press and release the DOSE button, the following will appear:



This display is immediately followed by this display:

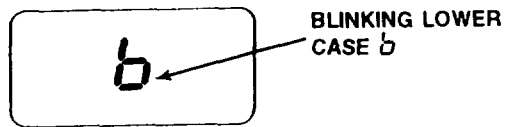
ANY OR ALL OF THESE
3 INDICATORS MAY NOT
BE DISPLAYED DEPENDING
ON PREVIOUS USE



Any previously accumulated DOSE
exposure will be displayed here
in place of .000 cGy
Example 1.02 cGy

- Within 10 seconds the unit will return to display RATE MODE, the DOSE function is operational.
7. Press and release LIGHT button, Back Light will turn on for approximately 5 seconds and then go off. Cup your hand around display window to be able to observe Back Light.

8. If at any time the following indicator is displayed (indicating batteries are low but still functional), replace the batteries (see para. 3-3 of this manual).



9. SLEEP Test

In the RATE mode, depress and hold RATE button and while holding it, press the ON/OFF button for approximately 2 seconds or until the display becomes blank, except for a SLP indication. Continue to hold depressed the ON/OFF and RATE buttons, the following display will appear followed by this

display 

Release both buttons, only the SLEEP will remain indicating the unit is now in the SLEEP mode. If SLEEP indication doesn't appear, send entire unit through Unit Level to General Support for repairs.

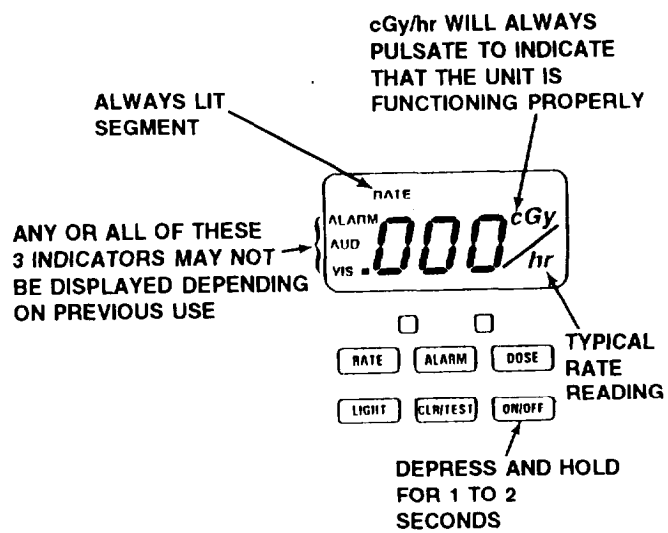
10. Press and hold ON/OFF button until the display returns to the RATE MODE and the SLEEP indicator disappears. The radiacmeter is now ready for operation. (See par. 2-2 below, normal operating procedures). Turn unit off by depressing and holding the ON/OFF button for approximately 2 seconds.

2-2. NORMAL OPERATING PROCEDURES

a. Rate Operation and Dose Accumulation Reading.

1. To turn Radiacmeter on and to read Rate.
 - Depress and hold ON/OFF button for 1 to 2 seconds until a Rate reading is displayed after first displaying only .000 plus one or more of the following: ALARM. AUD, VIS.

- The RATE, ALARM, AUD and VIS segment on the Display will be lit or not lit, as described below.

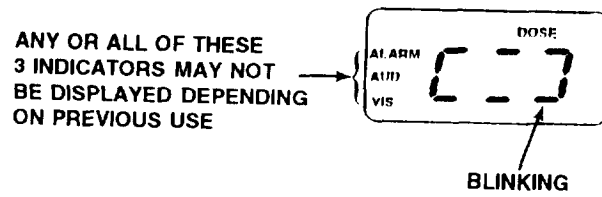


2. To read total accumulated Dose:

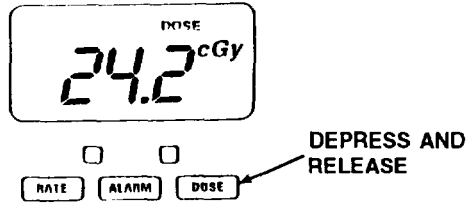
- After unit is in Rate mode, depress the DOSE button until the display shows the blinking segment as shown below.

NOTE

When a nuclear weapon has been detonated it may remain in the "blinking" state for up to 10 minutes while processing the total dose measurement.



- The total DOSE accumulation will then be displayed as shown below.
- The DOSE segment on the Display will be lit.

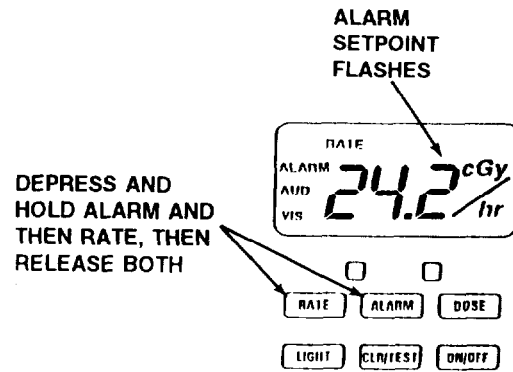


3. The Unit will automatically return to the Rate Mode if the DOSE button is not depressed within 10 seconds of any dose reading operation.

b. Rate Alarm Setting and Viewing

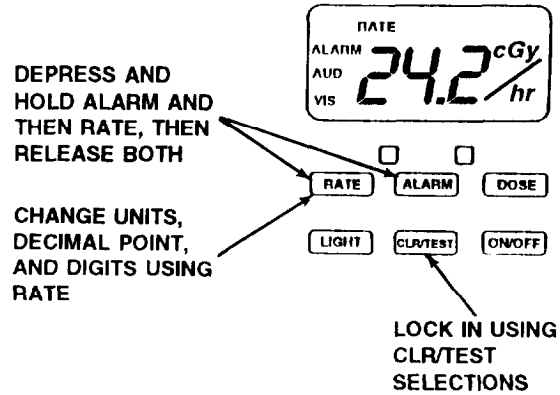
1. To display the setpoint for the Rate Alarm.

- Depress and hold the ALARM button and then while holding it, press the RATE button.
- Release both buttons, the Display will flash the setpoint value for RATE ALARM.
- The unit will return to displaying Rate in about 10 seconds.



2. To Change the Setpoint for the Rate Alarm.
 - In the RATE mode, depress and hold the ALARM button and then the RATE button.
 - Release both buttons, the Display will flash the setpoint value for RATE ALARM.
 - **WITHIN 10 SECONDS**, depress and release CLR/TEST button.
 - Repeatedly depress and release RATE button until desired units (cGy/hr and Gy/hr) and decimal point location are displayed.
 - Depress and release CLR/TEST button. This action will lock in the Units and Decimal Point selected and cause the left-most digit to flash.

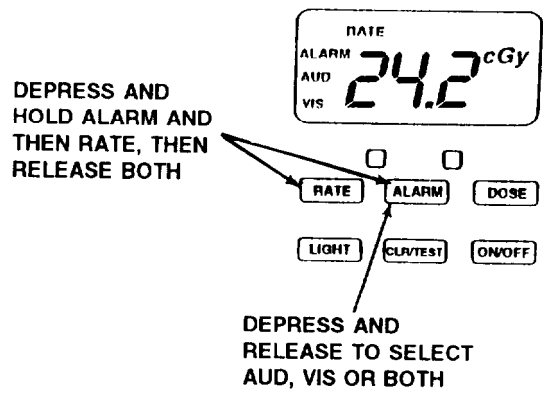
- Repeatedly depress and release the RATE button until the desired left most digit is displayed.
- Depress and release the CLR/TEST button to lock in this digit.
- Repeat the above to select and lock in the remaining digits.



- Unit will display Rate Alarm setting for approximately 10 sec. and then return to RATE MODE.

3. To Select Rate Alarm Visual or Audio indications:

- Depress and hold the ALARM button and then the Rate button.
- Release both buttons, the Display will flash the setpoint value for Rate Alarm.
- Select AUD or VIS by repeatedly depressing and releasing the ALARM button.
- Do not change the alarm setpoints. After approximately 10 seconds the unit will return to the Rate mode and the ALM display indication will be in accordance with selected options.

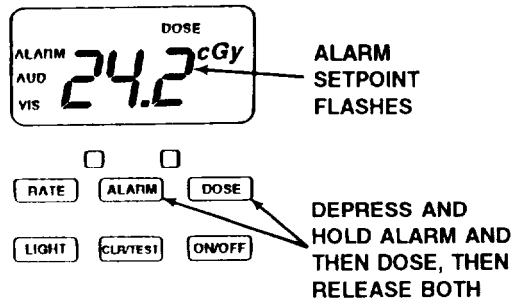


NOTE:

It is not possible to select the Alarm options when the Alarm setpoints are lower than the Rate the unit is exposed to. In this case, raise the Alarm setpoints in accordance with step 2, on page 2-14, and then select the desired Alarm options.

c. Dose Alarm Settings and Viewing

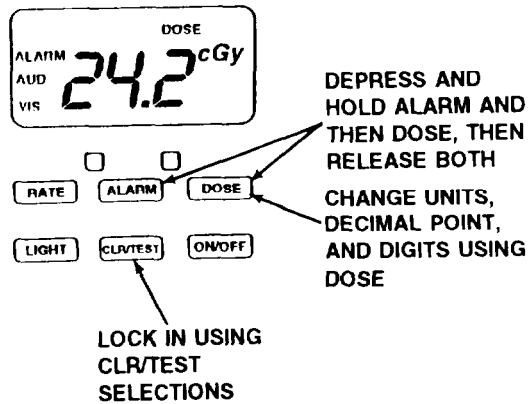
1. To display the setpoint for Dose Alarm.
 - With unit in Rate mode, depress and hold ALARM button and then depress DOSE button.
 - Release both buttons, the Display will flash the setpoint value for Dose.
 - The unit will return to displaying Dose in about 10 seconds.
 - To return to Rate, press RATE button.



2. To change the Setpoints for the Dose Alarm.

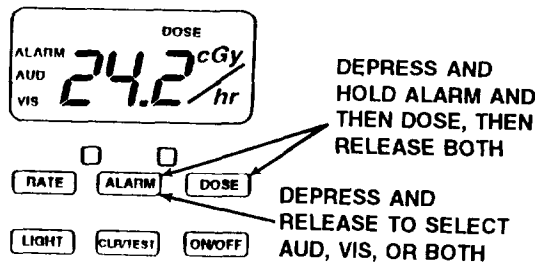
- With unit in Rate mode, depress and hold ALARM button and then depress DOSE button.
- Release both buttons, the Display will flash the setpoint value for Dose Alarm.
- **WITHIN 10 SECONDS,** depress and release CLR/TEST button.
- Repeatedly depress and release DOSE button until desired units (cGy and Gy) and decimal point location are displayed.
- Depress and release CLR/TEST button. This action will lock in the Units and Decimal Point selected and cause the left-most Digit to flash.
- Repeatedly depress and release the DOSE button until the desired left-most digit is displayed.

- Depress and release the CLR/TEST button to lock in this digit.
- Repeat prior page to select and lock in the remaining digits.



- Return to Rate by pressing 'RATE'.
3. To reset DOSE indication to 000, depress DOSE and CLR/TEST simultaneously for approximately 5 seconds.

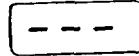
4. To select Dose Alarm Visual and/or Audio indications.
- Depress and hold ALARM button then the DOSE button.
 - Release both buttons, the Display will flash the setpoint value for Dose.
 - Select AUD or VIS by repeatedly depressing and releasing the ALARM button.
 - Do not change the Alarm setpoints. After approximately 10 seconds, the unit will return to the Dose mode and the ALM display indication will be in accordance with selected options,
 - To return to Rate Mode press RATE. If RATE button is not pressed, the unit will return to the Rate Mode within 5 minutes.



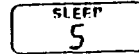
NOTE: It is not possible to select the Alarm options when the Alarm setpoints are lower than the DOSE accumulated in the Dosimeter Module. In this case, raise the alarm setpoints in accordance with step 2 on page 2-19, and then select the desired Alarm options.

d. Entering and Leaving SLEEP mode.

1. To enter into Sleep mode, unit must first be in Rate mode, then:
 - Depress and hold the RATE and then ON/OFF button for approximately 2 seconds or until display becomes blank except for SLP indication. Continue to hold depressed the ON/OFF and RATE buttons, the following display will appear

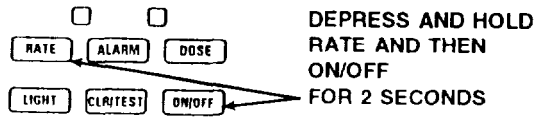
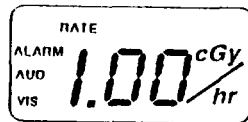


followed by this display

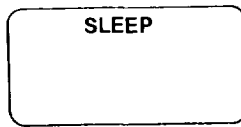


Release both buttons, only the SLEEP will remain indicating the unit is now in the SLEEP mode.

- In this mode, no RATE will be displayed for approximately 5 minute intervals.
- After each 5 minute interval, the Rate will be displayed for approximately 1 second. The unit will again go blank for the next 5 minute interval unless the Rate or Dose Alarm setpoints are exceeded. In that case, the unit will revert to normal monitoring mode and constantly display Rate. If the Dose level is above the preset alarm points (if set), the Dose Alarm will be activated.



NOTE
Rate alarm should be set to 1 cGy/hr prior to putting in the Sleep Mode, unless instructed otherwise by your supervisor.



**UNIT IN SLEEP MODE
(BLANK EXCEPT FOR SLEEP)**

2. To return to a continuous Rate display, depress and release the ON/OFF button for a minimum of 2 seconds. This will cause the SLEEP mode to be discontinued. To return to the SLEEP mode, re-enter in accordance with step 1, para. 2-2d1.

2-3. DISPLAY LIGHT OPERATION

Press light button at any time and display light will stay on for approximately 6 seconds each time light button is pressed.

SECTION II.

2-4. BATTERY LIFE INDICATION

- a. When the unit's batteries have 600 minutes or less of useful life, a blinking **BAT** will appear in the top-left corner of the display.

b. **VIEWING REMAINING BATTERY**

LIFE: In the RATE mode with the **BAT** indication displayed, press the CLR/TEST button, a 3 digit number will be displayed indicating the approximate remaining battery life in minutes,

i.e. 190 = 190 minutes remaining.

Whenever **BAT** is displayed, replace the batteries as soon as possible since the remaining battery life number is only a very rough approximation,

- c. If at any time a lower case blinking *b* is displayed, indicating **very low** batteries, replace the batteries as soon as possible per para. 3-3 (page 3-2).

2-5. **OPERATION UNDER UNUSUAL CONDITIONS.**

At temperatures below -22°F (-30°C) it takes somewhat longer for characters to form on the display. The Radiac Set automatically corrects for this display by sensing the ambient temperatures and increasing the display time from 2 seconds to 5 seconds. Operation of the Radiac Set is otherwise unchanged.

2-25/(2-26 Blank)

CHAPTER 3
OPERATOR AND UNIT
MAINTENANCE INSTRUCTIONS

NOTE

See the Maintenance Allocation Chart (MAC) for specific operator and unit maintenance tasks.

SECTION I

3-1. LUBRICATION INSTRUCTIONS

The AN/UDR-13 requires no periodical lubrication. Lubricants shall not be used.

SECTION II

3.2 PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Preventative maintenance consists of routine checks of the equipment before and after each mission, or at any time they are necessary.

Routine checks include:

- Conduct Preoperational Test Procedure as per page 2-1.
- Cleaning (para. 3-2.1)
- Inspecting battery cover gasket

- Inspecting battery contacts for corrosion (remove using a pencil eraser)

3-2.1 CLEANING, DUSTING AND WASHING THE SET

- Remove dust, moisture and loose dirt from the outside surfaces of the set or set components with a clean soft cloth. If necessary, components may be cleaned with a mild solution of ordinary detergent and water and thoroughly dried, or appropriate procedures of field manual (FM) 3-5.

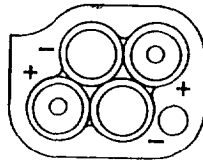
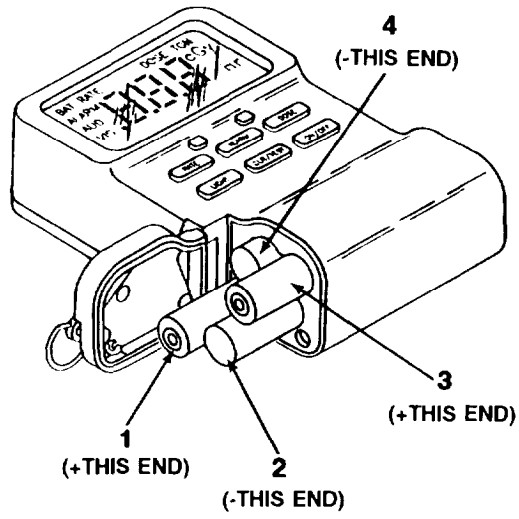
3-3. RADIACMETER BATTERY INSTALLATION/REMOVAL REPLACEMENT

NOTE

Do not remove batteries prior to turning the AN/UDR-13 "OFF". Some data in memory will be lost if this caution is not observed.

- Turn fastener 1/4 turn counterclockwise and swing batteries door open.
- With the unit in a horizontal position as shown, on page 3-3, install batteries in the following order observing proper polarities.

3-2



POLARITY

BATTERIES (FRONT VIEW)

Section III
PREPARATION FOR STORAGE OR SHIPMENT

3-4. PREPARATION FOR SHIPMENT

Perform the following step prior to shipping the Radiac Set AN/UDR-13:

- a. Remove the (4) AAA batteries from the Radiac Set in accordance with paragraph 3-3.

3-5. PREPARATION FOR STORAGE

Perform the following steps prior to storing the Radiac Set AN/UDR-13:

- a. Perform the routine checks of the Radiac Set listed in paragraph 3-2.
- b. Remove the (4) AAA batteries from the Radiac Set in accordance with paragraph 3-3.

APPENDIX A
REFERENCES

A-1. SCOPE

This appendix lists all forms and publications referenced in this manual.

A-2. FORMS

Recommended Changes to Publication
and Blank Forms DA Form 2028

Equipment Inspection and Maintenance
Worksheet DA Form 2404

Discrepancy in Shipment Report
(DISREP)SF 361

Report of Discrepancy (ROD)..... SF 364

Quality Deficiency Report..... SF 368

A-3. FIELD MANUALS

First Aid for Soldiers..... FM 21-11

Field Manual (F) 3-5,
NBC Decontamination..... FM 3-5

Technical BulletinTB 11-6665-364-10

A-4. MILITARY STANDARDS

Abbreviations for Use on Drawings,
Specifications, Standards and in
Technical Documents..... MIL-STD-12

A-5. MISCELLANEOUS PUBLICATIONS

Expendable/Durable Items
(Except: Medical, Class V
Repair Parts and Heraldic ItemsCTA 50-970

Consolidated Index of Army
Publications and Blank FormsDA Pam 25-30

The Army Maintenance Management
System (TAMMS)..... DA Pam 738-750

A-6. TECHNICAL BULLETINS

Field Instruction for Painting and Preserving
Electronics Command Equipment Including
Camouflage Pattern Painting of Electrical
Equipment Shelters TB 43-0118

A-7. TECHNICAL MANUALS

General Support Maintenance Manual Including
Repair Parts and Special Tools for Radiac Set
AN/UDR-13..... TM 11-6665-364-40&P

Procedures for Destruction of
Electronics Materiel to Prevent Enemy Use
(Electronics Command)..... TM 750-244-2

A-2

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance function.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function as referenced from Section II.

B-2. MAINTENANCE FUNCTION.

Maintenance functions will be limited to and defined as follows:

B-1

a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. **Test.** To verify serviceability by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. **Service.** Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required) to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, hydraulic fluids, compressed air supplies or gases.

d. **Adjust.** To maintain within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.

f. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. **Install.** The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. **Replace.** The act of substituting a serviceable like type part, subassembly or module (component or assembly) for an unserviceable counterpart.

i. **Repair.** The application of maintenance services¹ or other maintenance² to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly) and item or system.

¹ Services - inspect, test, service, adjust, align, calibrate, or replace.

² Actions - welding, grinding, riveting, straightening, facing, remachining, or resurfacing.

j. **Overhaul.** That maintenance effort (service/action) necessary to restore an item to a completely serviceable /operational condition as prescribed by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. **Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/ components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. **Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

B-4

b. **Column 2, Component/Assembly.** Column 2 contains the names of components, assemblies, subassemblies, and modules on which maintenance is authorized.

c. **Column 3, Maintenance Category.** Column 3 lists functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2).

d. **Column 4, Maintenance Category.** Column 4 specifies by, the listing of a work time figure in the appropriate subcolumns, the lowest level category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time in hours required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart.

The symbol designations for the various categories are as follows:

- C - Operator or crew
- O - Unit maintenance
- F - Direct support maintenance
- H - General support maintenance
- D - Depot maintenance

e. Column 5, Tools and Test Equipment.

Column 5, specifies, by code, those common tool sets(not individual tools) and special tools, TMDE, and support equipment required to perform the designated function. The code in this column is keyed to the tool and test equipment list in Section III.

f. **Column 6, Remarks.** Column 6 contains, when applicable, a code, which is keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. **Column 1, Tool or Test Equipment Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. **Column 2, Maintenance Category.** The lowest level category of maintenance authorized to use the tool or test equipment.

c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.

d. **Column 4, National/Nate Stock Number.** The national stock number of the tool or test equipment.

e. **Column 5, Tool Number.** The manufacturers part number.

B-5 EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. **Column 1, Remarks Code.** The code listed in Column 6. Section II.

b. **Column 2, Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

B-8

Section II. MAINTENANCE ALLOCATION CHART FOR RADIAC SET AN/UDR-13

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP. REF. CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	RADIAC SET AN/UDR-13	INSPECT TEST SERVICE SERVICE REPAIR REPAIR CALIBRATE	0.1 0.1 0.3	0.3 0.2		0.5 0.3	1 2,3 or 4	A B C D E F G,H or I	
01	RADIACMETER	REPAIR				0.5	1	J	
0101	MAIN ASSY.	REPAIR				0.5	1	K	
010101	UNIT SUB- ASSY.	REPAIR				0.5	1	L	
03	LOCATING BRKT. ASSY.	REPAIR REPLACE				0.1 0.1	1 1	M N	

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
RADIAC SET AN/UDR-13**

TOOL OR TEST EQUIPMENT REF. CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	H	TOOL KIT, ELECTRONICS EQUIP. TK-105/G	5180-00-610-8177	
2	H	CALIBRATOR SET, RADIAC AN/UDM-2	6665-00-179-9037	
3	H	TEST FIXTURE, AN/UDM-2 (LOCATING BRACKET ASSEMBLY)	5340-01-431-7610	
4	H	NYA (INFRA-RED PORT, COMPUTER ADAPTER)	NYA	

Section IV. REMARKS
RADIAC SET AN/UDR-13

REMARKS CODE	REMARKS
A	VISUAL INSPECTION
B	PERFORM PREOPERATIONAL TEST PROCEDURES AS DEFINED IN THIS MANUAL
C	SERVICE BY REPLACING BATTERIES, PERFORMING PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS). AND DECONTAMINATION.
D	SERVICE BY CHECKING OUT ANY OPERATOR LEVEL PROBLEMS.
E	REPAIR BY REPLACING CARRYING CASE (GROUP #02) WHENEVER OTHER REPAIRS OR CALIBRATION IS REQUIRED FOR THE AN/UDR-13. RETURN ENTIRE END ITEM TO GENERAL SUPPORT. FOLLOW PREPARATION FOR STORAGE OR SHIPMENT
F G	REPAIR BY REPAIRING THE RADIACMETER CALIBRATE AFTER MAINTENANCE ACTIONS AND DURING REGULAR CALIBRATION INTERVALS
H	FIELD CALIBRATION/CHECKS USING THE ANAJDM-2 AFTER UNSCHEDULED REPAIRS OR FOR SCHEDULED CALIBRATION.
I	THIS IS PART OF AN ALTERNATIVE CALIBRATION PROCEDURE, WHICH WILL BE PROVIDED WHEN IT BECOMES AVAILABLE.

B-10

Section IV. REMARKS
RADIAC SET AN/UDR-13

REMARKS CODE	REMARKS
	REPAIR BY REPLACING I.D PLATE (KEEP REPAIRING THE MAIN ASSEMBLY.
K	REPAIR BY REPLACING COVER SUBASSEMBLY, MIDDLE, BOTTOM AND DOSIMETER CCA'S. LARGE AND SMALL O-RINGS AND ATTACHING HARDWARE OR BY REPAIRING THE UNIT SUB-ASSEMBLY.
L	REPAIR BY REPLACING THE HOUSING ASSEMBLY. TOP CCA, ATTACHING HARDWARE, AND O-RINGS.
M	REPAIR BY REPLACING FLAT HEAD SCREWS AND/OR SPECIAL NUTS.
N	THIS IS A SPECIAL TEST FIXTURE USED FOR CALIBRATION; SEE MAC SECTION III, REFERENCE CODE 3.

B-11/(B-12 Blank)

APPENDIX D

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists components of the end item and basic items for the AN/UDR-13 Radiac Set to help you inventory the items for safe and efficient operation of the equipment.

D-2. GENERAL

The components of a End Item (COEI) and Basic Issue Items (BI) Lists are divided into the following sections:

a. *Section II, Components of End Item.*

This listing is for information purposes only, and is not authority to requisition replacements. These items are part of the end item. As part of the end item, these must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary.

Illustrations are furnished to help you find and identify the items.

D-1

b. *Section 111, Basic Issue Items.* These essential items are required to place the end item in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the end item during operation and when it is transferred between property accounts. This list is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE.

D-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listing:

- a. Column (1), Illus Number, gives you the number of the item illustrated.
- b. Column (2), National Stock Number, identifies the stock number of the item to be used for requisitioning purposes.
- c. Column (3), Description identifies the Federal item name followed by a minimum description when needed. The last line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number.

D-2

d. Column (4), U/M (unit of measure), indicates how the item is issued for the National Stock Number shown in column two.

e. Column (5), Qty Rqd, indicates the quantity required.

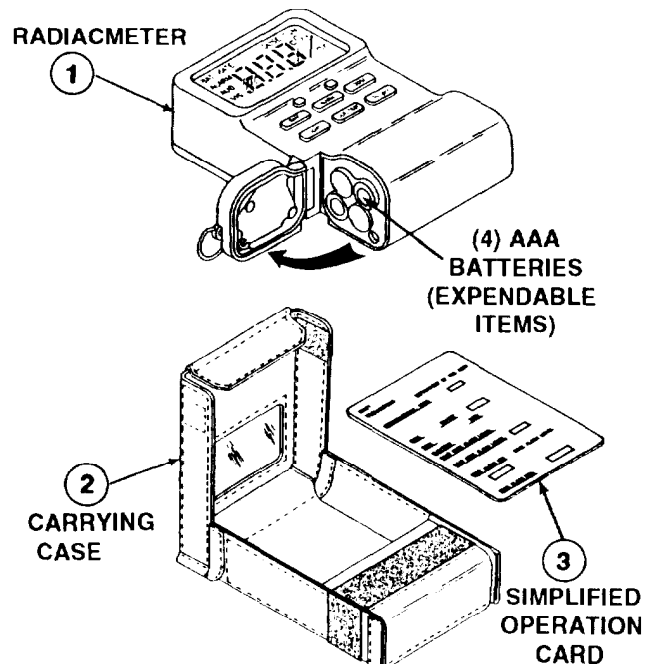


FIGURE D-1 RADIAC SET, AN/UDR-13;
COMPONENTS OF END ITEM

Section II. COMPONENTS OF END ITEM

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER		
1	N/A	RADIACMETER (064421 A3266048	EA	
* 2	6665-01-431-8172	CASE, ELECTRICAL ELECTRONICS, TEST AND MEASURING EQUIPMENT CY-97/UDR.13 (06442) A3245793	EA	1
3	TB 11-6665-364-10	SIMPLIFIED OPERATIION CARD	EA	1

Section III. BASIC ISSUE ITEMS

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	(4) U/M	(5) QTY
	N/A	PUBLICATION TM-11-6665-364-12 TECHNICAL MANUAL, OPERATOR'S AND UNIT MAINTENANCE MANUAL RADIAC SET ANUDR-13	EA	

*UNIT LEVEL IS AUTHORIZED TO
REPLACE CY-8769/UDR-13 CASE,
SEE REMARK E IN SECTION IV OF
MAINTENANCE ALLOCATION CHART.

APPENDIX F

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. ILLUSTRATION

F-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Radiac Set AN/UDR-13. These items are authorized to you by CTA 50-970, Expandable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

F-2. EXPLANATION OF COLUMNS.

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material.

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item.

- C - Operator/Crew
- 0 - Unit Maintenance
- H - General Support Maintenance
- D - Depot

c. **Column 3 - National Stock Number.** This is the National stock number assigned to the item; use it to request or requisition the item.

d. **Column 4 - Description.** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGE) in parentheses followed by the part number.

e. **Column 5 - Unit of Measure (U/M).** indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) QTY
1	C,O	6135-00-826-4798	BATTERIES, 1.5V DRY CELL (AAA)	4
2	C,O	6810-00-753-4993	ISOPROPYL ALCOHOL	QT

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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
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