OPERATOR'S AND UNIT
MAINTENANCE MANUAL

RADIO SET
AN/GRC-21 5
(NSN 5895-01-156-0456)

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DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE

1 JULY 1990

C2

CHANGE

No. 2

DEPARTMENTS OF THE ARMY
THE NAVY, AND THE AIR FORCE
Washington, DC, 1 July 1995

OPERATOR'S AND UNIT MAINTENANCE MANUAL
RADIO SET AN/GRC-215
(NSN 5895-01-156-0456)
(EIC: LMG)

TM 11-5895-1220-12/NAVY EE160-RG-OMI-010/W110-GRC215/AIR FORCE TO 31R2-2GRC215-1, dated 1 July 1990, is changed as follows:

1. Remove old pages and insert new pages indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Revisions to illustrations are indicated by a miniature pointing hand or a screened border around the affected area.

Remove pages	Insert Pages
xi and 1-0	xi and 1-0
1-3 and 1-4	1-3 and 1-4
1-15 and 1-16	1-15 and 1-16
None	1-16.1/(1-16.2 blank)
1-23 and 1-24	1-23 and 1-24
2-19 and 2-20	2-19 and 2-20
2-47 thru 2-50	2-47 thru 2-50
2-125 and 2-126	2-125 and 2-126
2-129 and 2-130	2-129 and 2-130
4-1 and 4-2	4-1 and 4-2
4-41 thru 444	4-41 thru 4-44
4-61 and 4-62	4-61 and 4-62
4-65 and 4-66	4-65 thru 4-71/(4-72 blank)
A-1 thru A-3/(A-4 blank)	A-1 thru A-4
C-5 and C-6	C-5 and C-6
C-9 and C-10	C-9 and C-10
INDEX-1 thru INDEX-5/(INDEX-6 blank)	INDEX-1 thru INDEX-5/(INDEX-6 blank)

2. File this change sheet in front of the publication for reference purposes.

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General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Acting Administrative Assistant to the
Secretary of the Army
00789

By Order of the Secretary of the Navy:

ROBERT AILES
Rear Admiral, United States Navy
Commander, Space and Naval Warfare
Systems Command

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General, United States Air Force
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To be distributed in accordance with DA Form 12-36-E, block 8056 requirements for TM 11-5895-1220-12.

OPERATOR'S AND UNIT MAINTENANCE MANUAL
RADIO SET AN/GRC215
(NSN 5895-01-156-0456)
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TM 11-5895-1220-12/NAVY EE160-RG-OMI-O 10/WI I-GRC215/AIR FORCE TO 31 R2-2GRC215-1, dated I July 1990, is changed as follows:

1. Remove old pages and insert new pages indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Revisions to illustrations are indicated by a miniature pointing hand or a screened border around the affected area.

Remove pages	Insert pages	Remove pages	Insert pages
C and D	C and D	2-131 and 2-132	2-131 and 2-132
i thru 1-0	i thru 1-0	3-1 and 3-2	3-1 and 3-2
1-3 and 1-4	1-3 and 1-4	3-11 and 3-12	3-11 and 3-12
1-15 and 1-16	1-15 and 1-16	3-19 thru 3-21/(3-22 blank)	3-19 thru 3-22
1-23 and 1-24	1-23 and 1-24	4-1 and 4-2	4-1 and 4-2
1-35 and 1-36	1-35 and 1-36	4-31 and 4-32	4-31 and 4-32
2-1 and 2-2	2-1 and 2-2	4-41 thru 44	4-41 thru 444
2-19 and 2-20	2-19 and 2-20	4-47 and 4-48	4-47 and 4-48
2-23 and 2-24	2-23 and 2-24	4-61 thru 4-66	4-61 thru 4-66
2-29 thru 2-34	2-29 thru 2-34	A-1 and A-2	A-1 and A-2
2-47 thru 2-50	2-47 thru 2-50	B-3 thru B-9/(B-10 blank)	B-3 thru B-10
2-57 and 2-58	2-57 and 2-58	C-3 thru C-8	C-3 thru C-10
2-69 and 2-70	2-69 and 2-70	D-1 and D-2	D-1 and D-2
2-81 and 2-82	2-81 and 2-82	E-1 and E-2	E-1 and E-2
2-113 and 2-114	2-113 and 2-114	F-1 thru F-14	F-1 thru F-18
2-125 and 2-126	2-125 and 2-126	Index-I thru Index-5/(Index-6 blank)	Index-1 thru Index-5/(Index-6 blank)

2. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army

By Order of the Secretary of the Navy:

ROBERT AILES
Rear Admiral, United States Navy
Command, Space and Naval Warfare
Systems Command

By Order of the Secretary of the Air Force:

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Commander, Air Force
Logistics Command

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To be distributed in accordance with DA Form 12-36-E, block 8056, Operator and Unit maintenance requirements for TM 11-5895-1220-12.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

NOTE: DON'T WAIT UNTIL AN ACCIDENT HAPPENS! READ ABOUT ARTIFICIAL RESPIRATION IN FM21-11. AIR FORCE PERSONNEL REFER TO AFOSH 127-50 AND AFOSH 127-66, CHAPTER 10.

A

WARNING
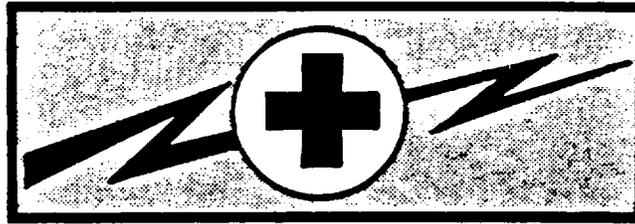
HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, they must be warned about dangerous areas. Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 120 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.

WARNING: DO NOT BE MISLED BY THE TERM "LOW VOLTAGE". POTENTIALS AS LOW.AS 50 VOLTS MAY CAUSE DEATH UNDER ADVERSE CONDITIONS.

For Artificial Respiration, refer to FM 21-11. Air Force personnel refer to AFOSH 127-50 and AFOSH 127-66, Chapter 10.

B

WARNING

RF RADIATION HAZARD
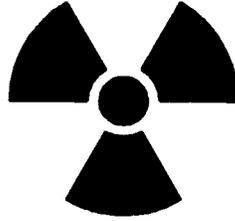
Dangerous RF power levels exist on and around the antenna during operation. Do not stand closer than 40 inches (1.0 meters) to the antenna when the transmitter is operating. Failure to heed this warning may result in death or serious injury.

Do not allow bare flesh to touch exposed equipment during periods of extreme cold or heat. Bare flesh can freeze and stick to the metal as a result of extreme cold, or be severely burned as a result of metal exposed to solar heating. Use of gloves are recommended.

Operator and maintenance personnel should be familiar with the requirements of TB 43-0129 before attempting installation or operation of the antenna. Failure to observe the requirements of TB 43-0129 could result in injury or death.

Before painting equipment, personnel should be familiar with SB 11-573., Painting and Preservation of Supplies and TB 43-0118, Field instructions for Painting and Camouflage.

Change 1 C

CAUTION

This equipment contains certain static-sensitive solid state devices which are subject to damage from electrostatic discharge. Effective control of electrostatic discharge is maintained only through continuous strict observance of the following maintenance procedures:

- Any maintenance requiring disassembly of the equipment must be performed at an approved work station. The work station must include a grounded surface and grounded wrist strap in accordance with DOD-HDBK-263.

- All maintenance personnel must have completed training in the handling of static- sensitive devices before working on this equipment. Maintenance personnel must wear the grounded wrist strap and be at an approved work station when performing maintenance.

- The static-sensitive subassemblies or circuit cards must be stored in approved electrostatic free material when not installed in the equipment.

D

OPERATOR'S AND UNIT
MAINTENANCE MANUAL

RADIO SET AN/GRC-215
(NSN 5895-01-156-0456)
(EIC: LMG)

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 located in the back of this manual, direct to: Commander, US Army Communication-Electronics Command and Fort Monmouth, ATIN: AMSEL-LC-LM-LT, Fort Monmouth, NJ 07703-5000. 1

For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with para 6-5, Section VI, T.O. 00-5-1. Forward direct to prime ALC/MST.

For Navy, mail comments to the Commander, Space and Naval Warfare Systems Command, ATTN: SPAWAR 8122, Washington, DC 20363-5100.

In either case a reply will be furnished direct to you.

Change 1 i

TABLE OF CONTENTS (Cont.)

HOW TO USE THIS MANUAL

• The front cover index identifies frequently used information. Each item is boxed and identified by topic and page number.

• The first page containing the information you are looking for has a block box on the edge of the page.

• Bend the manual in half and follow the margine index to the page with the black edge marker.

• Topics in the table of contents which are the same as the topics on the front cover are also boxed.

• A complete alphabetical subject index is located in the back of the manual. Use the index to locate specific information.

• The glossary contains an explanation of technical terms and acronyms.

The following flow Charts provide a quick reference guide to those sections in the manual needed to operate this equipment under different configurations.

Change 1 iv

TEAM TERMINAL OPERATOR'S GUIDE

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 ( TEAM TERMINAL    )
 (  OPERATION       )
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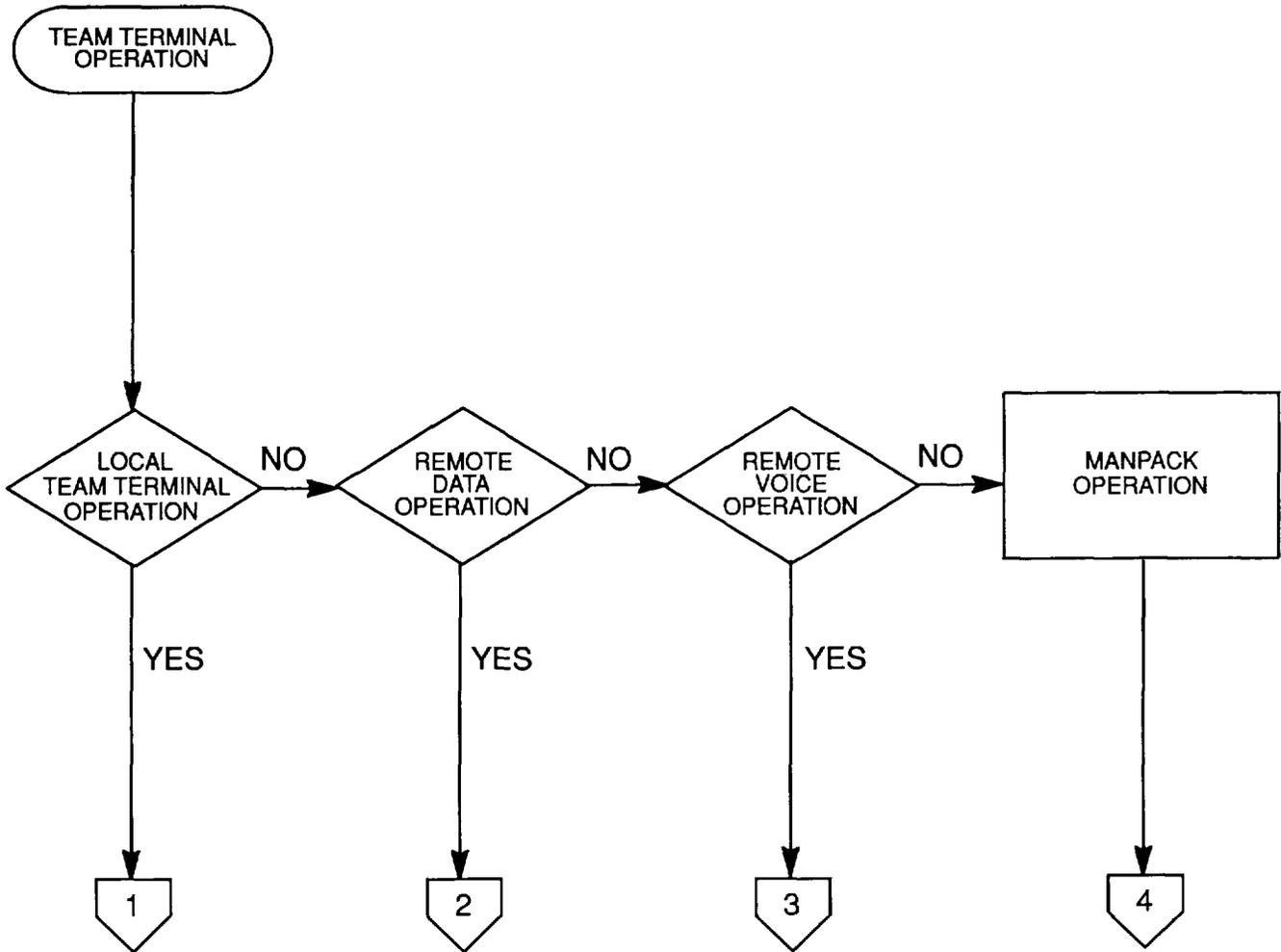
Change 1 v

TEAM TERMINAL OPERATOR'S GUIDE (CON'T)

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  1  ──────────────────────▶  TEAM TERMINAL
                                OPERATION
                               Paragraph 2–8
                                     │
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                              POWER ON
                              PROCEDURES          FAULT        YES      6
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     6  ◀── YES    FAULT        INITIALIZATION  ◀──────────────────  7
                   OCCURS  ◀──── Paragraph 2–8 (b)
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                              OPERATING
                              PROCEDURES          FAULT        YES      6
     7  ──────────────────▶  Paragraph 2–8 (c) ─▶ OCCURS  ──────────▶
                              Through 2–8 (f)
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                              LEAVE NET
                              PROCEDURES  ◀──────────────────────────  7
                              Paragraph 2–8 (g)
                                     │
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                              ZEROIZATION
                              PROCEDURES
                              Paragraph 2–8 (h)
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                                     ▼
                              POWER OFF                         PREPARATION
                              PROCEDURES  ───────────────────▶ FOR MOVEMENT
                              Paragraph 2–8 (i)                 Paragraph 2–9
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Change 1 vi

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   ⎛ 3 ⎞ ─────────►  ⎛ REMOTE VOICE      ⎞
                     ⎜ OPERATION         ⎜
                     ⎝ Paragraph 2–5(5)  ⎠
                              │
                              ▼
                        ◇ ASSEMBLY ◇ ──NO──►  ┌──────────────────┐
                        Paragraph 2–5(5)       │ DISASSEMBLY      │
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                             YES                └──────────────────┘
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                              ▼                          ▼
                    ┌──────────────────┐      ⎛ PREPARATION       ⎞
                    │ OPERATING        │      ⎜ FOR MOVEMENT      ⎜
                    │ PROCEDURES       │      ⎝ Paragraph 2–5(5)  ⎠
                    │ Paragraph 2–8 (k)│
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   ⎛ 6 ⎞ ◄──YES── ◇ FAULT ◇ ──NO──►  ┌──────────────────┐ ◄───── ⎛ 7 ⎞
                    OCCURS            │ OPERATING        │
                                      │ PROCEDURES       │
                                      │ Paragraph 2–8 (k)│
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                          │ ZEROIZATION      │──►│ POWER OFF         │
                          │ PROCEDURES       │   │ PROCEDURES        │
                          │ Paragraph 2–8 (h)│   │ Paragraph 2–8(i)  │
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                                               ⎛ PREPARATION      ⎞
                                               ⎜ FOR MOVEMENT     ⎜
                                               ⎝ Paragraph 2–9    ⎠
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   ( 4 ) ──────────▶   ┌─────────────────────┐
                        │     MANPACK         │
                        │  CONFIGURATION      │
                        │  Paragraph 2–5 (b)  │
                        └─────────────────────┘
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 ╱    ╲ VOICE ◀────────── ╱       ╲ Paragraph ─────▶ │ Paragraph 2–5(b)(1)│
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      ▼             │       ┌─────────────┐        │  FOR MOVEMENT    │
     (5)            └─────▶ │  OPERATING  │        │  Paragraph 2–9   │
                            │ PROCEDURES  │        └──────────────────┘
                            │ Paragraph 2–6│
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                                           │  PREPARATION     │
                                           │  FOR MOVEMENT    │
                                           │  Paragraph 2–9   │
                                           └──────────────────┘
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  ( 5 ) ──▶  ⎛ SECURE VOICE    ⎞
            ⎜ CONFIGURATION   ⎜
            ⎝ Paragraph 2–5 (b)⎠
                    │
                    ▼
              ◇ ASSEMBLY ◇ ──NO──▶ ┌─────────────────┐
              Paragraph 2–5 (2)     │ DISASSEMBLY      │
                    │               │ Paragraph 2–5 (b) (1) │
                   YES              └─────────────────┘
                    │                        │
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            ┌─────────────┐          ⎛ PREPARATION    ⎞
            │ OPERATING   │          ⎜ FOR MOVEMENT   ⎜
            │ PROCEDURES  │          ⎝ Paragraph 2–9  ⎠
            │ Paragraph 2–6 │
            └─────────────┘
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                   OCCURS           │ OPERATING   │
                                    │ PROCEDURES  │
                                    │ Paragraph 2–6 │
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                         │ ZEROIZATION │──▶│ POWER OFF    │
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                                          ⎛ PREPARATION    ⎞
                                          ⎜ FOR MOVEMENT   ⎜
                                          ⎝ Paragraph 2–9  ⎠
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Change 1 x

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┌─────────┐      ┌──────────────────┐        ╱◇╲              YES
│  FAULT  │ ───▶ │       RUN        │ ───▶  ╱ FAULT ╲ ──────────▶ ⬡ 7
│ OCCURS? │      │  TEAM TERMINAL   │       ╲ CLEARS? ╱
└─────────┘      │       BIT        │        ╲◇╱
                 │  Paragraph 3–10  │          │
                 └──────────────────┘          │ NO
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                                        ┌──────────────┐
                                        │   CONTACT    │
                                        │ MAINTENANCE  │
                                        │   SUPPORT    │
                                        └──────────────┘
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Change 1 xi

RADIO SET AN/GRC-215

MANPACK

ATU
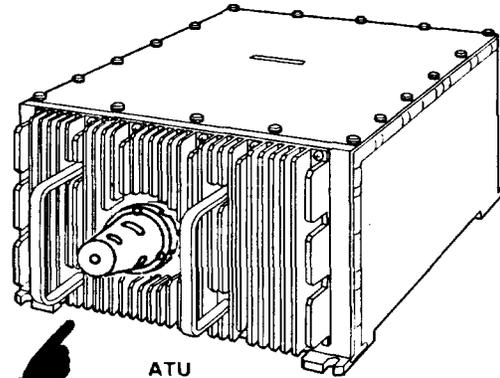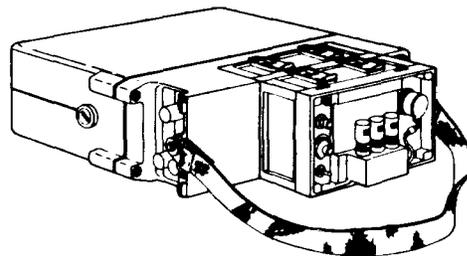
REMOTE CONTROL SET

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

    a.   Type of Manual. Operator and Unit Maintenance Manual.

    b.   Model and Equipment Name. Radio Set AN/GRC-215

    c.   Purpose of Equipment. To provide a single high frequency (HF) communication (secure/nonsecure data and voice) link with a Regency Net (RN) Force Terminal.

    d.   Maintenance Category Cross-reference. Army maintenance categories are referenced in this manual. Navy and Air Force personnel will contact their same-level maintenance group. Refer to the following cross-reference list.

Army	Navy	Air Force
Unit	Organizational	Organizational

1-2. CONSOLIDATED INDEX OF PUBLICATIONS AND BLANK FORMS

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

    b.   Navy. Navy personnel refer to NAVSUP 2002.

    c.   Air Force. For technical publications, Air Force personnel refer to Numerical Index and Requirements Table (NI & RT). For non-technical publications, refer to AFR 0-2. For forms, refer to AFR 0-9.

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 00-35D-54 for unsatisfactory equipment reporting.   Navy personnel will report maintenance performed utilizing the Maintenance Data Collection Subsystem (MDCS) IAW OPNAVINST 4790.4 Vol 13 and unsatisfactory material/conditions utilizing the PMS Feedback Report.

b.   **Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55 SECNAVINST 4355.18/MCO 4430.3J.**

c.   Transportation Discrepancy Report (TDR) (SF 361). Fill out and forward Transportation Discrepancy Report (TDR) (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO 4610.19D/ DLAR 4500.15.

1-4.   HAND RECEIPT (-HR) MANUALS

This manual has a companion document with a TM number followed by "HR" (which stands for Hand Receipt). The TM 11-5895-1220-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e. COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the US Army Adjutant General Publications Center, Baltimore, MD, in accordance with the procedures in Chapter 3, AR 310-2, and DA Pam 310-10-2.

1-5.   REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

a.   Army. 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 the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

b.   Navy. Navy personnel are encouraged to submit EIR's through their local Beneficial Suggestion Program.

c.   Air Force. Air Force personnel are encouraged to submit EIR's in accordance with AFR 900-4.

1-6.   ADMINISTRATIVE STORAGE

Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in Chapter 4.

1-7.   DESTRUCTION OF ELECTRONICS MATERIEL

a.   Army.   Destroy Radio Set AN/GRC-215 in accordance with the procedures in TM 750-244-2 to prevent enemy use.

b.   Navy. Navy personnel comply with the local Command Material Destruction Plan.

c.   Air Force. Air Force personnel comply with TM 750-244-2 or the local emergency destruction plan.

1-8.   PREPARATION FOR STORAGE OR SHIPMENT

a.   Army.   Before placing equipment in administrative storage, insure tha equipment is operational.   If operational, put into storage using appropriate corrosion control techniques. When removing from storage, again perform operational tests and Unit PMCS (if available) to determine mission capability.

b.   Navy. Refer to NAVSUP PUB 503.

c.   Air Force. Refer to AFM 66-267 (storage) and AFR 67-31 (shipment).

1-9.   NOMENCLATURE CROSS-REFERENCE LIST

COMMON NAME	OFFICIAL NOMENCLATURE
Antenna Base	Base, Antenna AB-1335/G
Antenna Cable	Cable Assembly, RF CG-3873/GRC-215
Antenna Matching Capacitor	Capacitor, A3086683
Antenna Tuning Unit (ATU)	Coupler, Antenna CU-2351/GRC-215
ATU Control Cable	Cable Assembly, Special Purpose, Electrical CX-13349/GRC-215
ATU Power Cable	Cable Assembly, Power, Electrical CX-13352/GRC-215
ATU Safety Cap	Cap, Electrical A3172948
ECCM Module	Controller, RT C-11670/G
Field Wire	Telephone Cable WF-16/U
Handset	Handset H-356/G
Headset	Headset H-251/U
I/O Unit	Input-Output Unit MX-10819/GRC-215
KG-84A	Communications Security Equipment TSEC/KG-84A

1-9. NOMENCLATURE CROSS-REFERENCE LIST (Cont.)

COMMON NAME	OFFICIAL NOMENCLATURE
KY-65A	Speech Security Equipment TSEC/KY-65A
Manpack Whip Antenna	Antenna AS-3805/GRC-215
Near Vertical Incident Skywave (NVIS) Antenna	Antenna AS-2259/GR
NVIS Antenna Adapter	Adapter, Antenna to Antenna Base MX-9313/GR
Power Amplifier (PA)	Amplifier, Power AM-7301/GRC-215
Receiver-Transmitter (RT)	Receiver-Transmitter, Radio RT-1511/GRC-215
Remote Cable	Cable Assembly, Special Purpose, Electrical CX-13350/GRC-215
Remote Control Set	Converter CV-3968/GRC-215
RF Cable	Cable Assembly, Radio Frequency CG-3872/GRC-215
RN Modem	Modem, Digital Data MD-1204/G
Team Terminal (TT)	Radio Set AN/GRC-215
Team Terminal Power Supply (TTPS)	Power Supply PP-8170/GRC-215
Time of Day Transfer Cable, (TOD Cable)	Cable Assembly, and Reel CG-3883/G
Time Standard Reference Frequency Oscillator (RFO)	Oscillator, Frequency Reference O-1836/G
Vehicle Input Power Cable	Cable Assembly, Power, Electrical CX-13348/GRC-215
Vehicular Adapter (VA)	Mounting Base, Electrical Equipment MT-6452/GRC-215
Whip Antenna	Antenna Assembly AS-3809/G
Z-AKE	AC/DC Power Supply Z-AKE/TSEC
Z-AKG	Battery Pack Assembly Z-AKG/TSEC
230 VAC Pwr Input Cable	Cable Assembly, Pwr CX-13372/GRC-215
115 VAC Pwr Input Cable	Cable Assembly, Pwr CX-13373/GRC-215

1-10.   LIST OF ABBREVIATIONS

Refer to the glossary at the back of this manual for a list of abbreviations and definition of unusual terms.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-11.   EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

      a. Characteristics. The Team Terminal is a HF radio set. It is normally mounted on a vehicle. It can operate while in motion or at a halt. The Team Terminal features a Manpack capability for radio operation away from the vehicle. The Manpack is a HF radio set which can be operated in either secure or nonsecure voice mode of operation.

      b.   Capabilities and Features.

        (1)   Team Terminal.

- One HF transmit/receive channel

- Frequency range: 2.0000 to 29.9999 MHz

- Power output (selectable): 5, 25, or 100 Watts

- Data or voice modes (secure or nonsecure)

- ECCM capable

- Remoteable via the Remote Control Set (voice only)

- Input voltage +12/+24 Vdc or 115/230 Vac compatibility

        (2)   Manpack.

- One HF transmit/receive channel

- Frequency range: 2.0000 to 29.9999 MHz

- Power output (selectable): 5 or 25 Watts

- Voice mode (secure or nonsecure)

- ECCM capable

- Input voltage +24 Vdc compatibility

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

a. Team Terminal.

RACK MOUNTED COMPONENTS
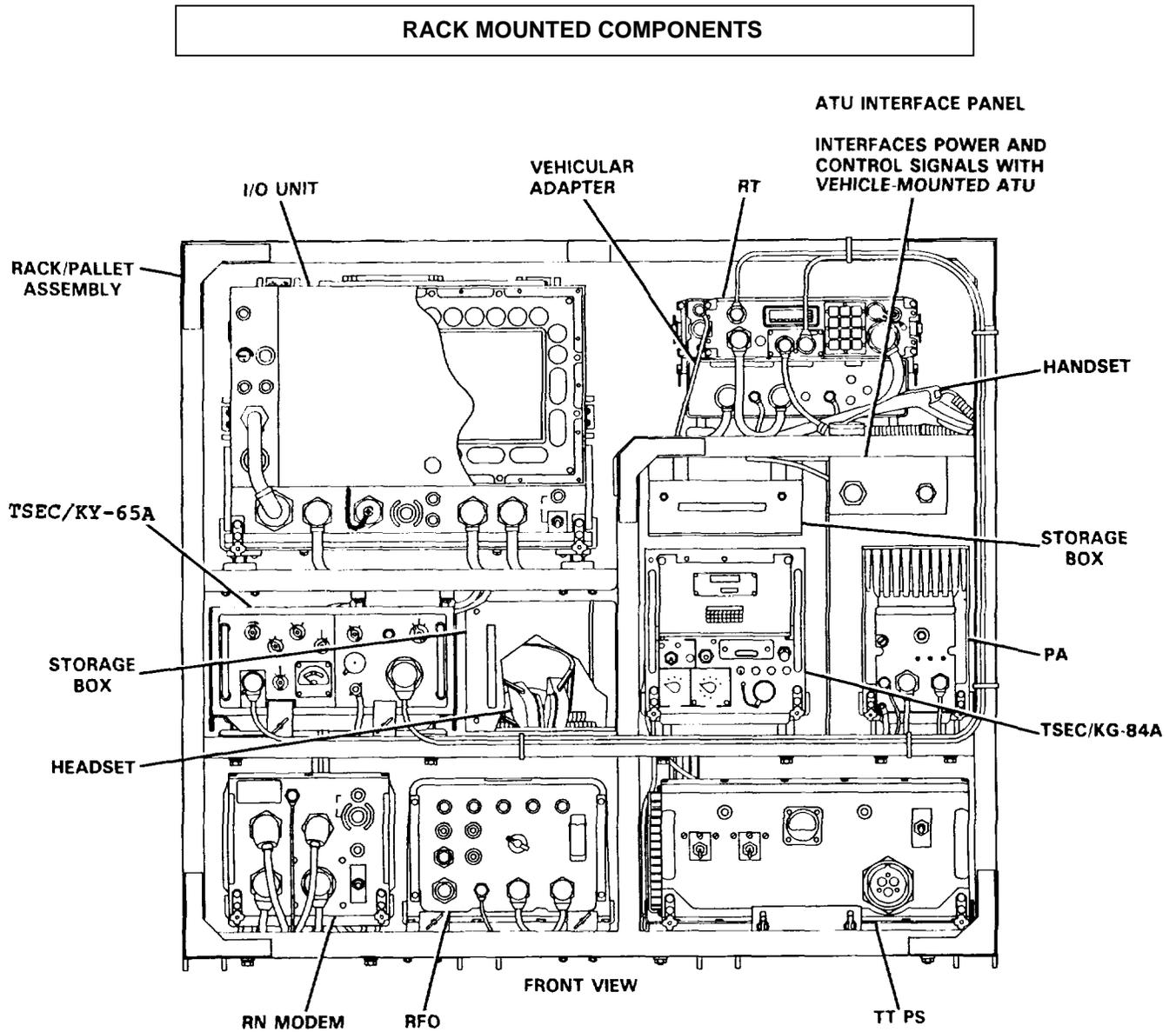
All operating components except the ATU, Remote Control Set, and antennas are housed in a rack/pallet assembly (rack). The rack is normally installed in a vehicle. The COMSEC equipments, TSEC/KG-84A andTSEC/KY-65A, are furnished separately.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

RACK MOUNTED COMPONENTS (Cont.)

KG-84 NONSECURE
BYPASS ASSEMBLY

PROVIDES BYPASS ROUTING
OF DATA SIGNALS WHEN IN
NONSECURE DATA MODE

CONTROL JUNCTION UNIT

PROVIDES DISTRIBUTION
OF CONTROL SIGNALS FOR
THE SYSTEM

BATTERY
CASE/CHARGER

REAR VIEW

POWER JUNCTION UNIT

PROVIDES DISTRIBUTION
OF POWER FOR SYSTEM
COMPONENTS

TT PS FAN

PROVIDES VENTILATION
FOR TT PS

COAXIAL T CONNECTOR

PROVIDES DISTRIBUTION
OF 10 MHZ REFERENCE
SIGNAL FOR THE SYSTEM

1-7

1-12.   LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

I/O UNIT

FRONT VIEW

FRONT VIEW

        The I/O Unit provides the capability to transmit and receive Regency Net messages. It manages, maintains and controls the operating modes of the Team Terminal. The I/O Unit consists of a removable display/keypad (D/K) assembly and the controller assembly. These assemblies are connected by the remote cable to allow the D/K assembly to be mounted in the rack with the controller assembly or mounted separately (via a 20-foot remote cable) in a position more convenient to the operator.

CONTROLLER
ASSEMBLY

D/K
ASSEMBLY

REMOTE
CABLE

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

I/O UNIT (Cont.)
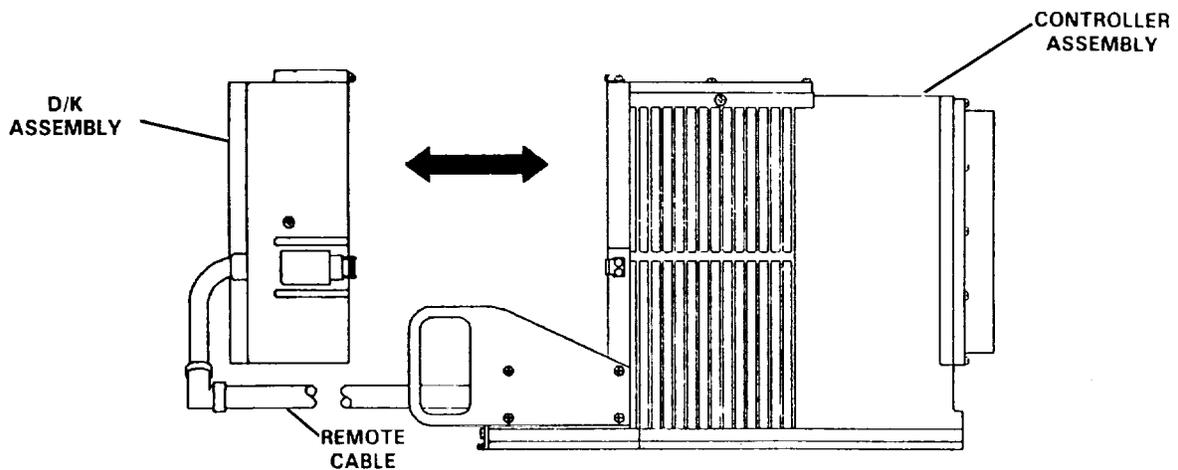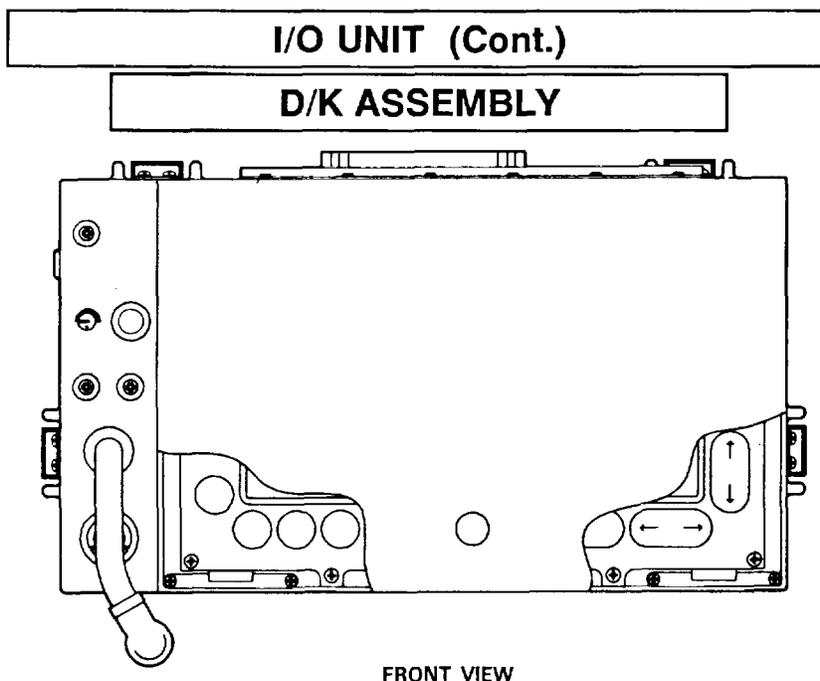
D/K ASSEMBLY

FRONT VIEW

The D/K assembly provides operator interface. It displays menus in response to operational sequences. The D/K assembly is also used to compose and view messages, perform network communications and for initiating BIT.

CONTROLLER ASSEMBLY
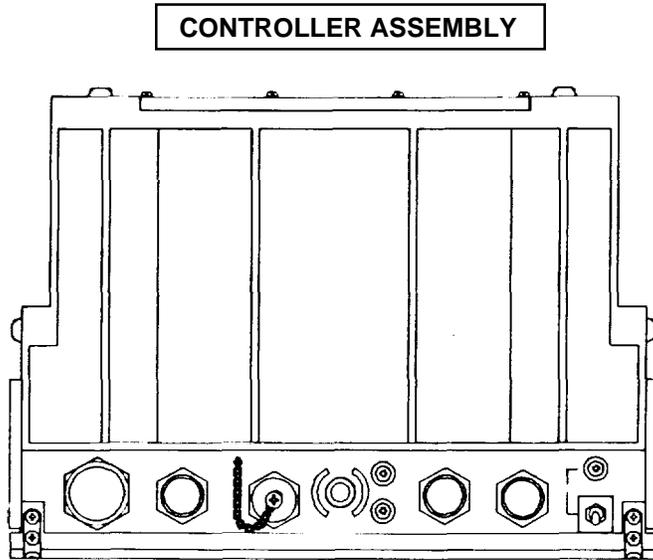
FRONT VIEW

Controller assembly functions include network management and communications and control of the HF equipment.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

RT

FRONT VIEW

FRONT VIEW
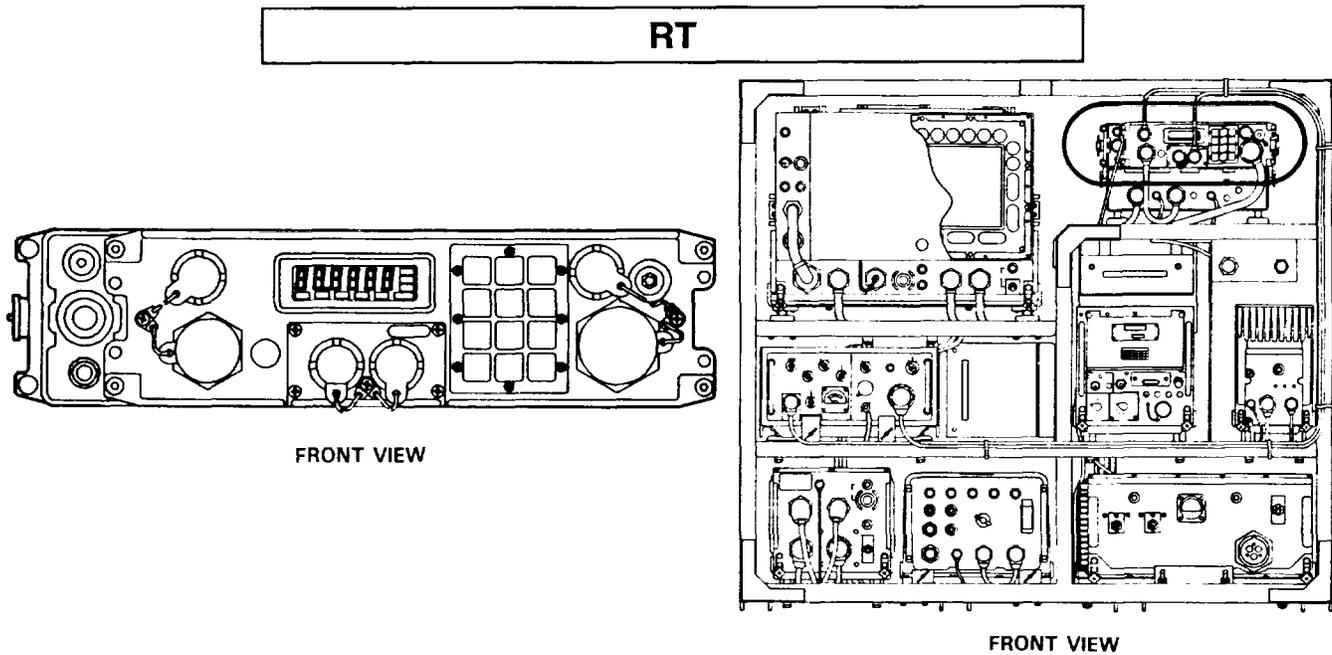
The RT is a single-sideband (SSB) receiving and transmitting unit. The RT comprises the receiver/exciter (R/E) and the ECCM Module. Functional capabilities include:

- Frequency range -   2.0000 to 29.9999 MHz

- Number of possible channels - 280,000

- Output power -   5 Watts, 100 Watts (when used as Team Terminal), 5 Watts, 25 Watts (when used as Manpack)

- Modes -   ECCM, non-ECCM, upper sideband (USB)/lower sideband (LSB), data and voice

- Removable from rack for use as part of Manpack

R/E
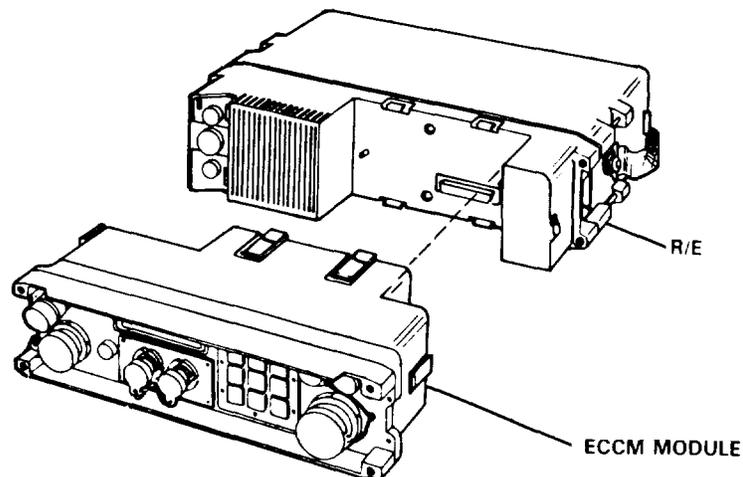
ECCM MODULE

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

| R/T (Cont.) |

| R/E |
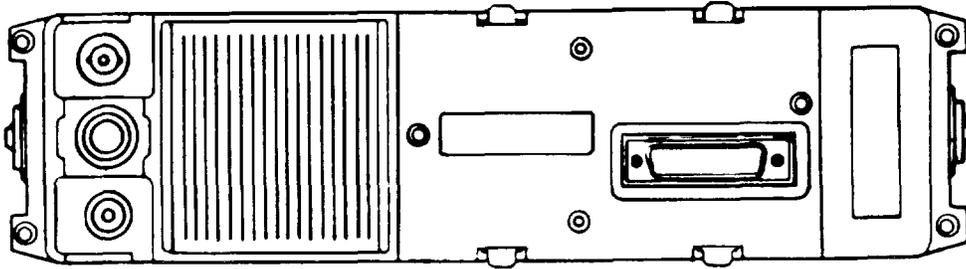
FRONT VIEW

The R/E is controlled by the ECCM Module which plugs into and becomes an integral part of the R/E. All radio functions including operating frequency and power level are selected by means of the I/O Unit D/K assembly or the keypad on the ECCM Module front panel (depending on configuration).

| ECCM MODULE |
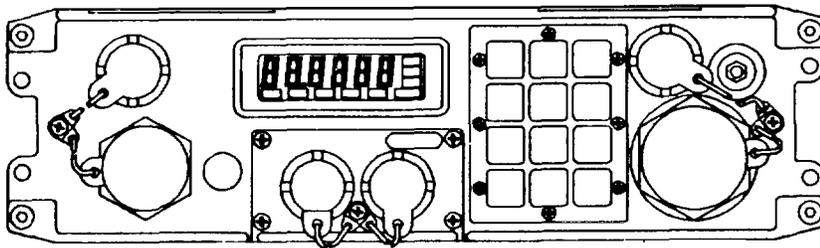
FRONT VIEW

The ECCM Module provides data and voice ECCM capabilities. It is the operator interface for Manpack operations. It controls the frequency synthesizer (high speed synthesizer) contained in the Vehicular Adapter, the PA and the ATU. The ECCM Module contains self-test features.

1-11

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

<div align="center">

VEHICULAR ADAPTER

</div>
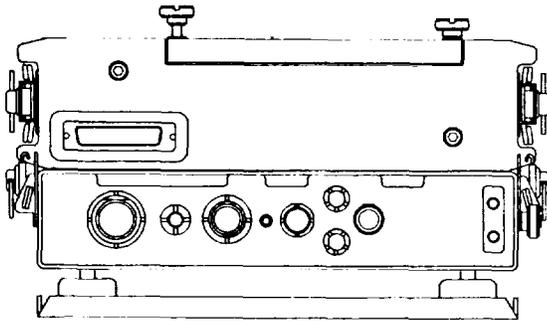
FRONT VIEW
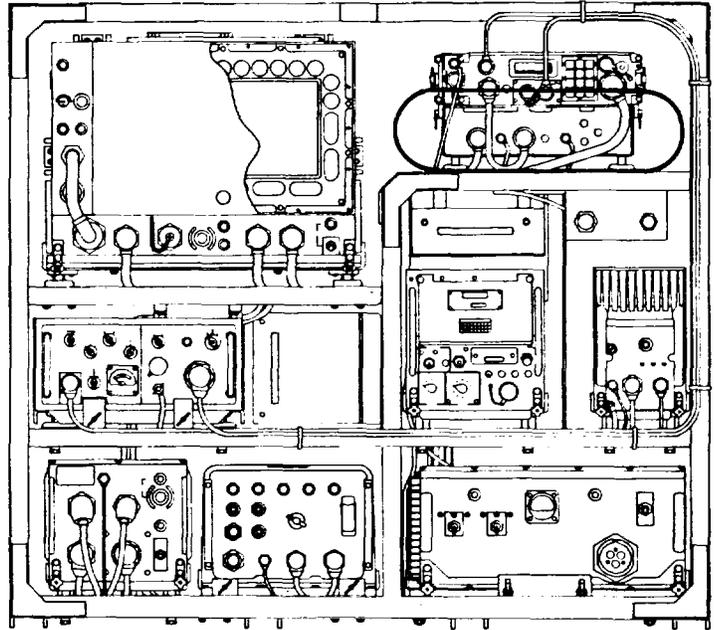
FRONT VIEW

The Vehicular Adapter provides:

- Mounting for the RT and the Battery Case/Charger.

- Automatic charging of the Battery Case/Charger.

- A charger cable for charging the Remote Control Set batteries.

- Contains the high speed synthesizer.

- Routing of signals to/from the high speed synthesizer, the RT, ATU, and PA.

<div align="center">

1-12

</div>

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

PA
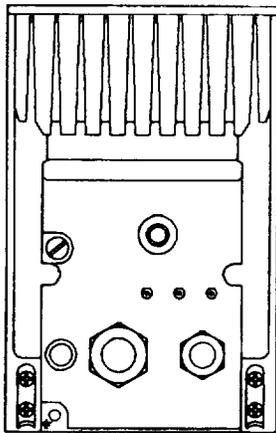
FRONT VIEW
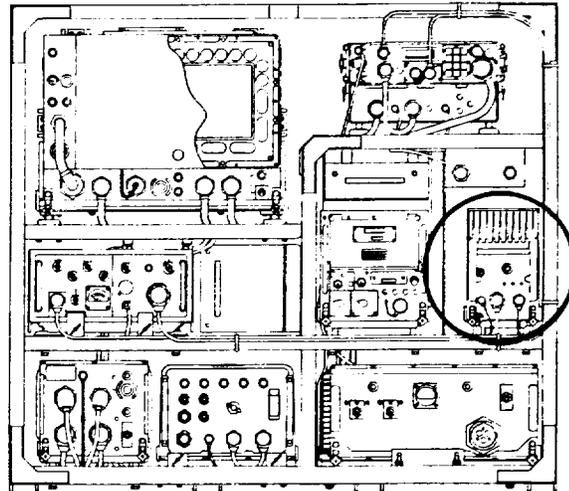
FRONT VIEW

The PA amplifies the transmit radio frequency (RF) signal from the RT. Functional capabilities include:

- 10 Watt input - 25 or 100 Watt output

- When bypassed - 5 Watt input, 5 Watt output

- BIT

TT PS
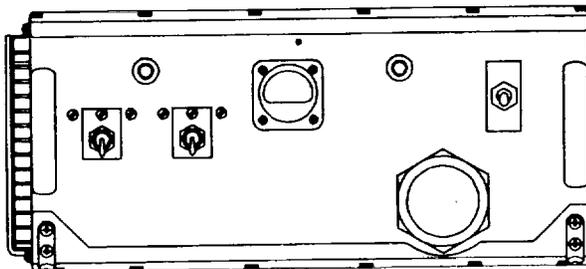
FRONT VIEW
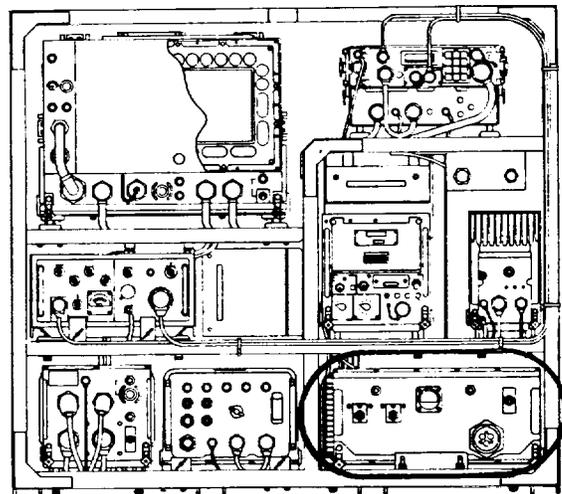
FRONT VIEW

The TT PS converts ac or dc input power to a regulated dc output:

- Input: 115/230 Vac, single phase, 50/60 Hz or +12/+24 Vdc.

- Output: +28 Vdc at 24 amperes and +8.5 Vdc at 3 amperes.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

RFO

FRONT VIEW

FRONT VIEW
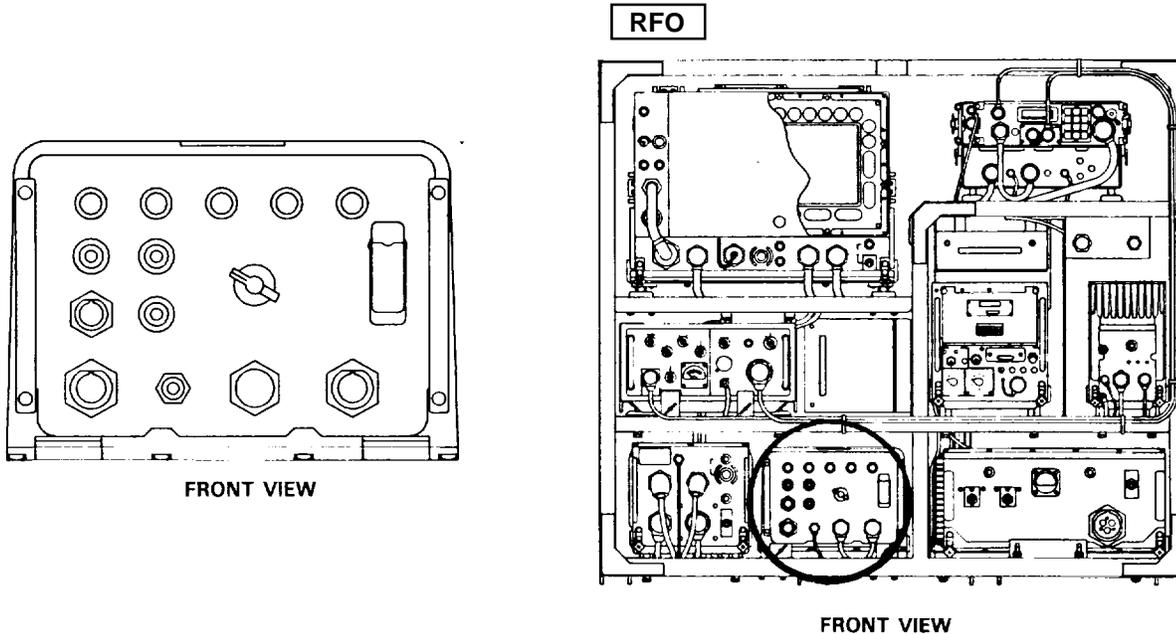
The RFO provides a reliable, real-time clock for the system. Functional capabilities include:

*   Battery back-up; contains rechargeable batteries to provide for continuous operation through transient power interruptions.
*   Receipt of time from other time standard equipment.
*   Provides 10 MHz reference

RN MODEM

FRONT VIEW

FRONT VIEW
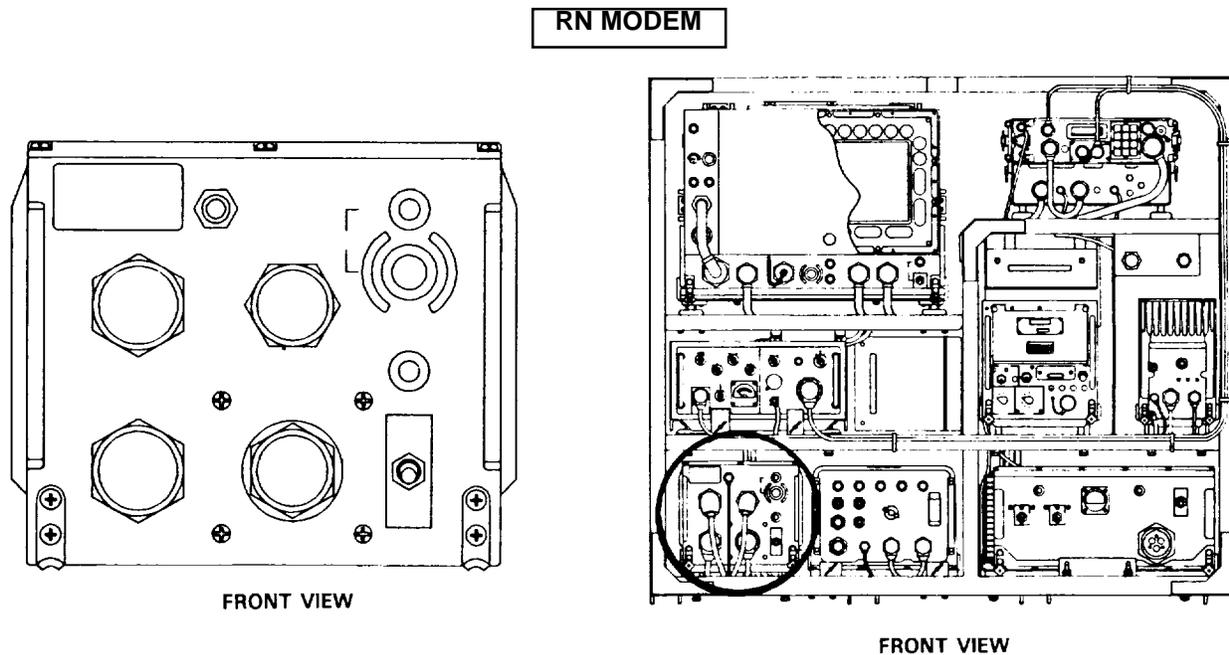
The RN Modem provides the frequency shift key (FSK) modulator-demodulator functions, and modem features. It also interfaces with the TSEC/KG-84A for data input-output and with the RT for message reception and transmission.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

TSEC/KG-84A
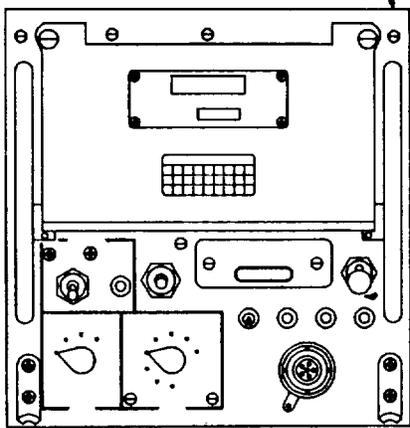
FRONT VIEW
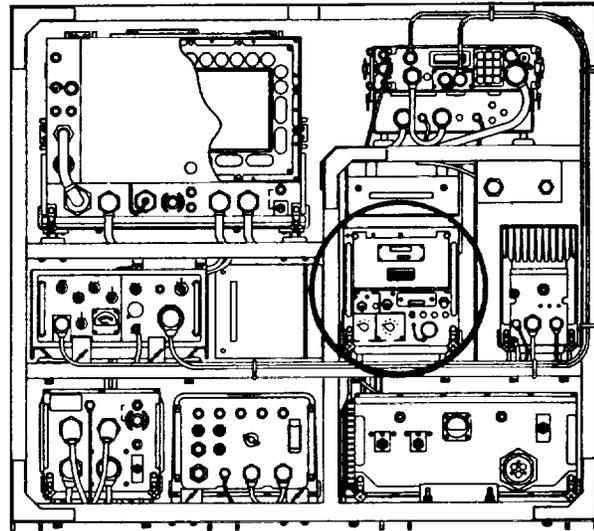
FRONT VIEW
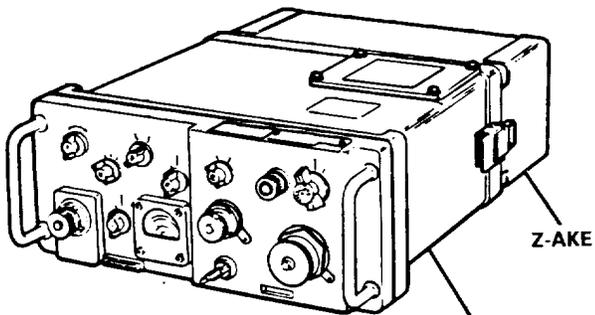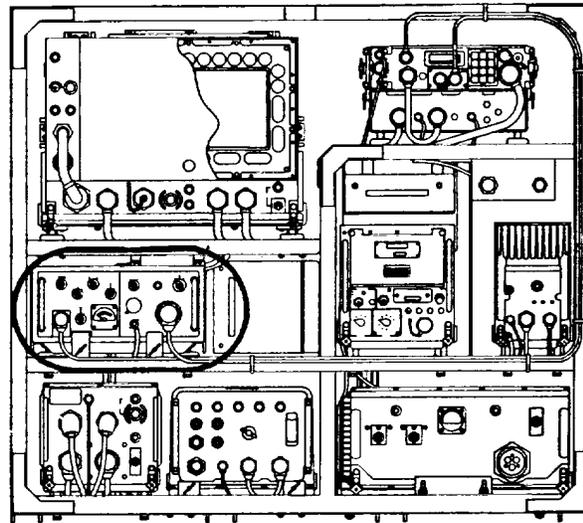
Z-AKE

TSEC/KY-65A

Z-AKG

FRONT VIEW
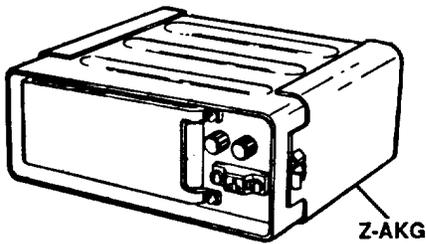
The TSEC/KY-65Aencrypts and decrypts voice traffic. AC/DC Power Supply Z-AKE powers TSEC/KY-65Awhen in the vehicular configuration. Battery Pack Assembly Z-AKG powers TSEC/KY-65Awhen in the manpack configuration.

1-15

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

BATTERY CASE/CHARGER
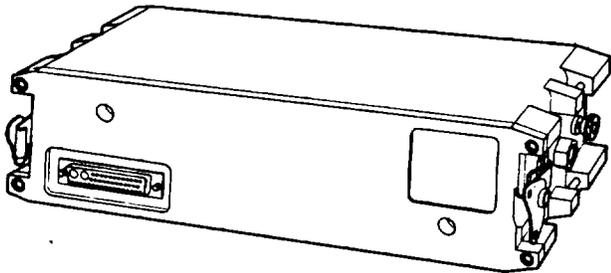
FRONT VIEW
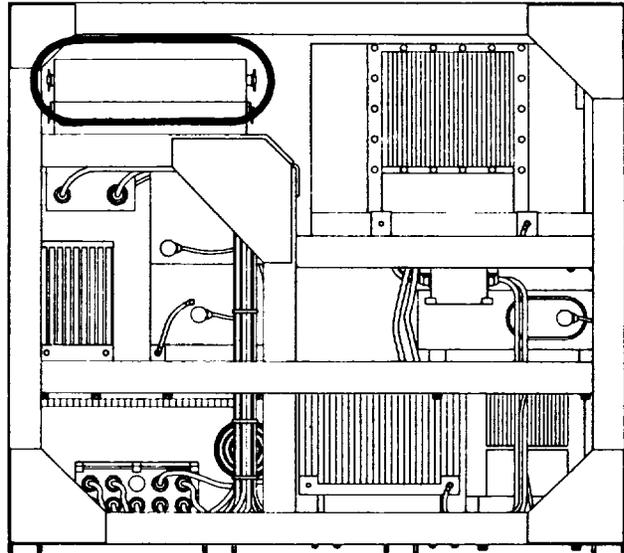
REAR VIEW

The Battery Case/Charger provides dc power for the RT when in the Manpack configuration.

ATU AND ANTENNA MATCHING CAPACITORI
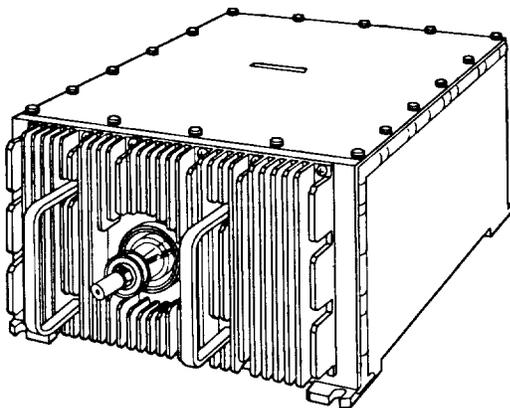
NOTE: ATU shown here without safety cap installed.
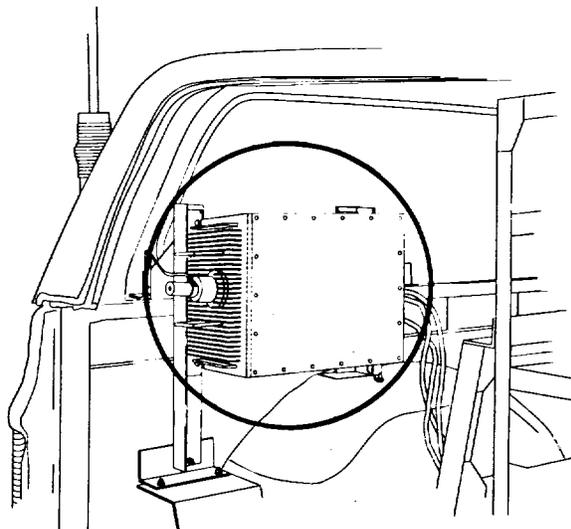
TYPICAL INSTALLATION

The ATU mounts separately on the selected vehicle. The ATU provides'the impedance matching between the antenna and the PA. Functional capabilities include:
- 100 Watt handling capability.   TYPICALINSTALLATION
- Maximum VSWR 1.5:1 after tuning.

The antenna matching capacitor attaches to the output terminal of the ATU. It provides additional capacitance for when the ATU is tuning to the NVIS antenna. The capacitor is not in circuit when the AS-3809/G whip antenna is connected.

Change 2 1-16

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONETS (Cont.)

ATU SAFETY CAP
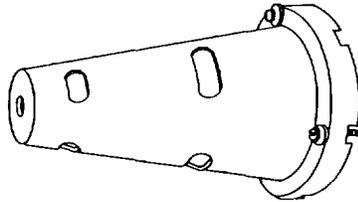

ATU SAFETY CAP
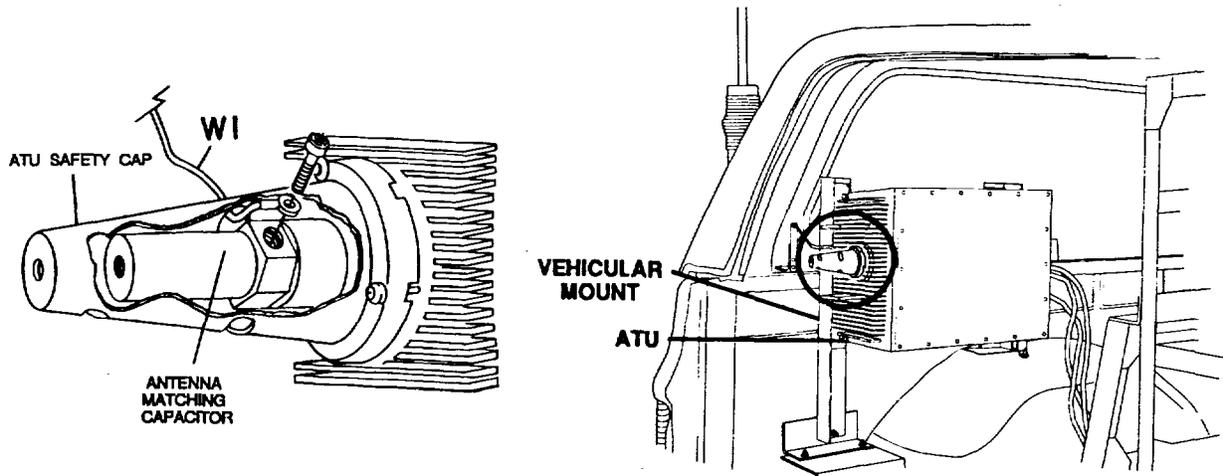
TYPICAL INSTALLATION

The ATU Safety Cap is a cone shaped nylon insulator which attaches to the ATU. It protects personnel from direct physical contact with the tip of the ATU tuning capacitor assembly during operation. The Safety Cap covers the entire antenna matching capacitor and is provided with access slots to facilitate connection of antenna cable W1.

Change 2 1-16.1/(1-16.2 blank)

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

ANTENNAS

WHIP ANTENNA

ANTENNA BASE

ANTENNA INSULATOR BOOT
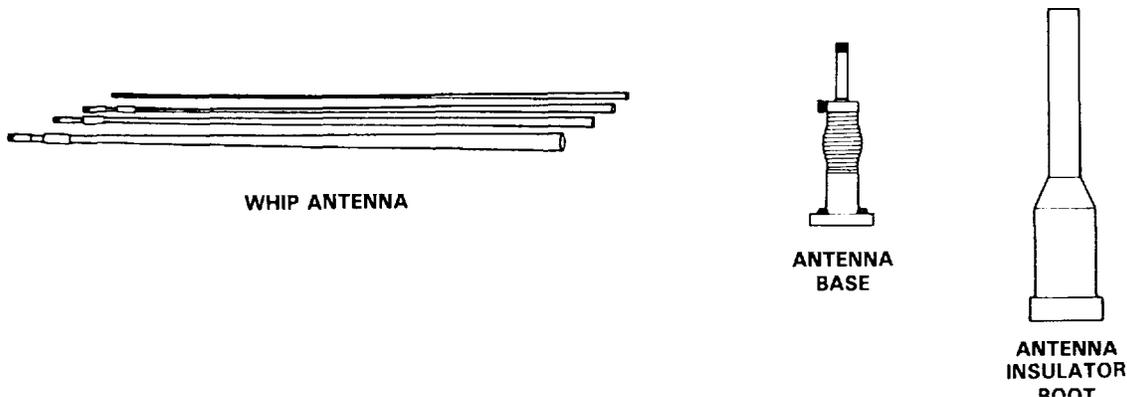
Antenna Assembly AS-3809/G (Whip Antenna) has a frequency range of 2.00 to 29.99 MHz. It consists of four 4-foot sections and Base, Antenna AB-1335/G (Antenna Base). The antenna insulator boot (not part of the Whip Antenna) fits over the Antenna Base to protect personnel from direct contact with the Whip Antenna and possible serious injury.

NVIS ANTENNA

STORAGE PACK

NVIS ANTENNA ADAPTER
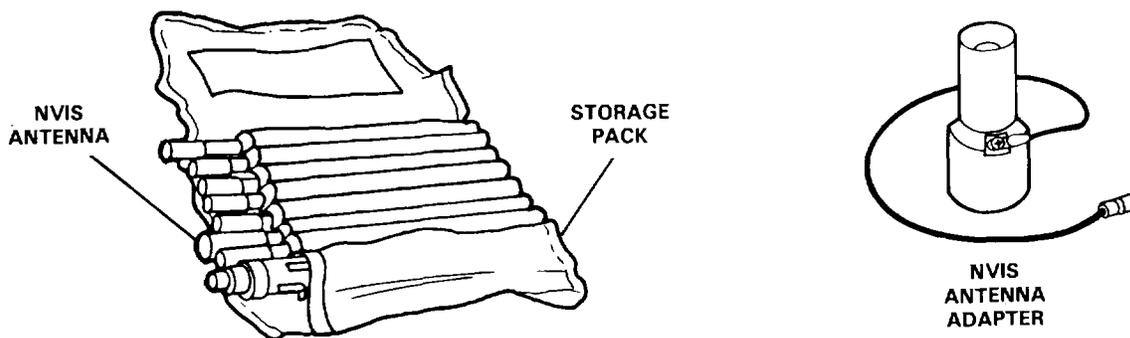
Antenna AS-2259/GR (NVIS Antenna) is stored in a canvas storage pack when not in use. The NVIS Antenna is used to enhance communications in the skip zone. The NVIS Antenna provides high-angle radiation (near vertical incidence) to permit short-range skywave propagation over communication circuits varying from 0 - 300 miles. The NVIS Antenna has a limited frequency range of 2 to 20 MHz. The NVIS Antenna is mounted on the Antenna Base using Adapter, Antenna to Antenna Base MX-9313/GR (NVIS Antenna Adapter).

Antenna AS-3805/GRC-215 (Manpack Whip Antenna) consists of eight sections and has a frequency range of 2.00 to 29.99 MHz.

MANPACK WHIP ANTENNA
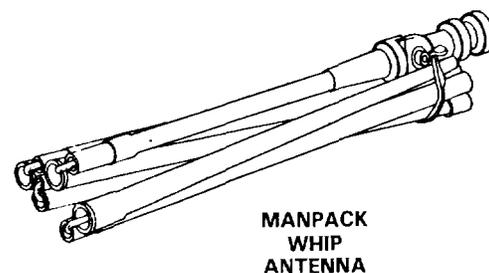
1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONETS

     b. Manpack Radio
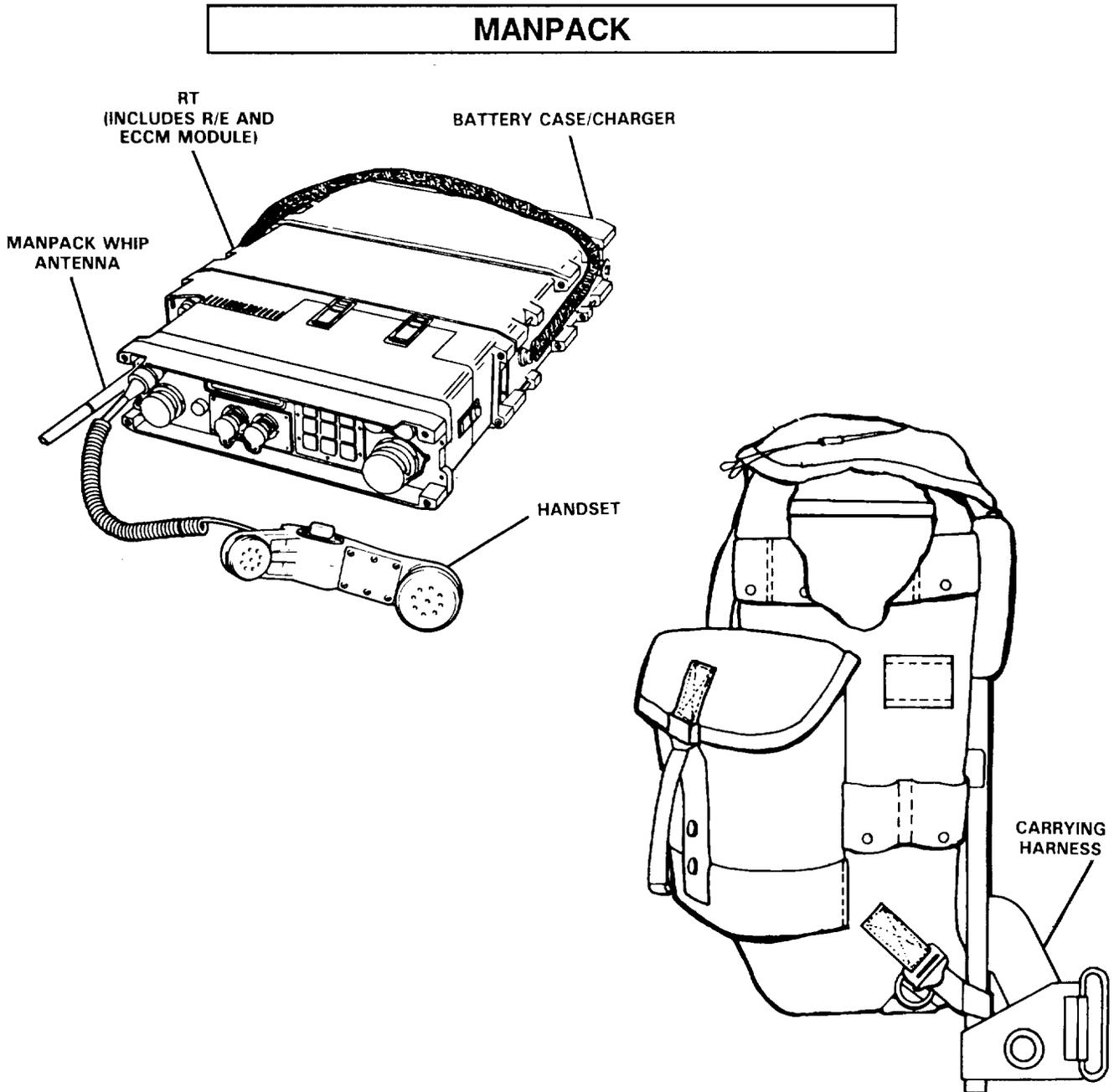
     The Manpack provides single channel HF secure or nonsecure voice communications. It enables the Team Terminal operator to leave the vehicle and maintain voice communications at reduced power. The Manpack is assembled using the RT (comprised of R/E and ECCM Module), Battery Case/Charger, Manpack Whip Antenna, Handset and carrying harness. When in the secure mode, the TSEC/KY-65 is removed from the rack and connected to the Manpack via hard-wire.

1-12. LOCATION AND DESCRIPTION OF MOJOR COMPONETS (Cont.)

REMOTE CONTROL SET

REMOTE LOCATION

R/E
TERMINAL
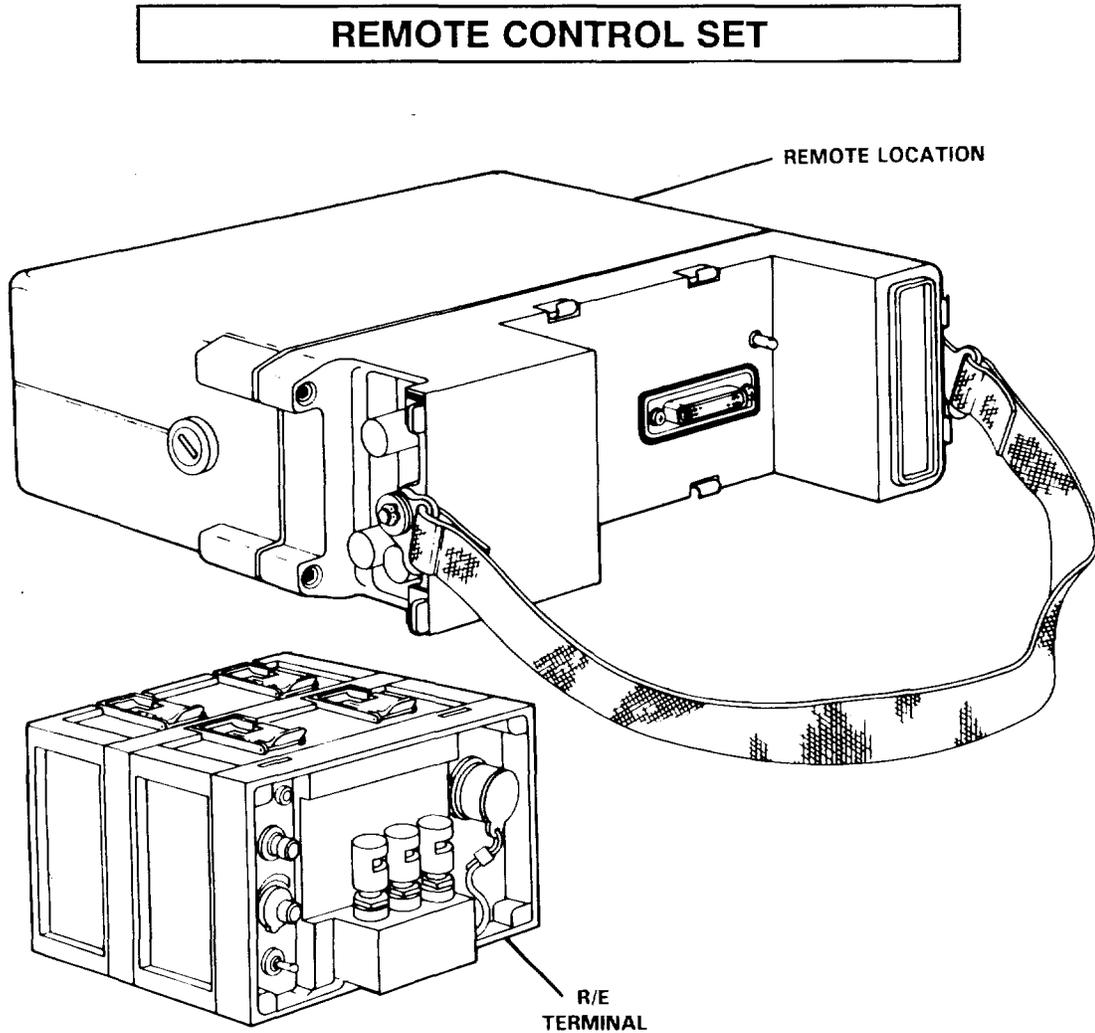
The Remote Control Set provides remote operation of the Team Terminal. It consists of the R/E terminal and the remote location. When deployed, the R/E terminal is interchanged with the ECCM Module of the RT and then the R/E terminal and remote location are connected via field wire.

- R/E Terminal - Provides signal and control interfaces between the R/E and remote location.

- Remote Location - Provides battery power for the ECCM Module and signal/control interfaces between the R/E terminal and ECCM Module.

1-19

1-13. EQUIPMENT DATA

a. Team Terminal.

(1) Power Consumption

	TRANSMIT	RECEIVE
I/O Unit	88	88 Watts
RT	20	4 Watts
Vehicular Adapter	44	44 Watts
PA	350	10 Watts
TSEC/KY-65	40	40 Watts
TSEC/KG-84A	15	15 Watts
TT PS	167	78 Watts
RN Modem	52	52 Watts
RFO	34	34 Watts
ATU	25	25 Watts

(2) Weights and Dimensions

Rack Assembly (without rack-mounted components):

Weight	120 lb
Length	22 in
Width	38 in
Height	33.8 in

Rack Assembly (with rack-mounted components):

Weight	450 lb

I/O Unit:

Weight	58 lb
Length	19.5 in
Width	17.1 in
Height	12.9 in

RT:

Weight	18 lb
Length	9.4 in
Width	12.2 in
Height	5.9 in

Battery Case/Charger:

Weight	7.0 lb
Length	5.9 in
Width	12.2 in
Height	3.1 in

1-13. EQUIPMENT DATA (Cont.)

Vehicular Adapter:

Weight	25 lb
Length	15.75 in
Width	12.2 in
Height	7.09 in

PA:

Weight	19 lb
Length	13.7 in
Width	5.0 in
Height	7.76 in

TSEC/KY-65 (with Battery Pack):

Weight	24.5 lb
Length	16.1 in
Width	11.3 in
Height	4.8 in

TSEC/KG-84A:

Weight	20 lb
Length	15.2 in
Width	7.5 in
Height	7.8 in

TT PS:

Weight	62 lb
Length	14.9 in
Width	15.1 in
Height	6.8 in

RN Modem:

Weight	25 lb
Length	16 in
Width	7.5 in
Height	6.75 in

RFO:

Weight	33 lb
Length	15.5 in
Width	9.5 in
Height	6.8 in

1-13. EQUIPMENT DATA (Cont.)

ATU (externally mounted):

Weight	46.2 lb
Length..	22.6 in
Width	13.5 in
Height	8.38 in

Cabling	35.0 lb

Misc. Hardware	3.5 lb

(3) Power Requirements

Input Voltage	115 Vac 50/60 Hz
....	230 Vac 50/60 Hz

Vehicle Batteries	+12/+24 Vdc

b. Manpack.

(1) Weights and Dimensions

Manpack (RT and Battery Case/Charger):

Weight	25 lb
Length..	15.3 in
Width	12.2 in
Height	5.9 in

TSEC/KY-65 (with TSEC/KY-65 Battery Pack):

Weight	24.5 lb
Length..	16.1 in
Width	11.3 in
Height	4.8 in

(2) Power Requirements:

Input Voltage:

Battery BB-590/U (or Battery BA-5590/U) - three used (two in Battery Case/Charger and one in Remote Control Set)	+24 Vdc

Battery operation subject to the following limitations:

-300F (-340C) and above:	approximately 20 hours
-310F (-340C) and below:	approximately 10 hours.

1-22

1-13. EQUIPMENT DATA (Cont.)

   c. Remote Control Set:

   Separation distance Up to 1 mile

     Remote Location:
        Length................................ .... 3.1 in
        Width.. 11 in
        Height .... 7.6 in

     R/E Terminal:
        Length .... 3.1 in
        Width... .... 5.1 in
        Height .... 5.5 in

1-23

1-14. EQUIPMENT CONFIGURATION

a. Vehicular Configuration. The Team Terminal provides voice or data communications for operations while in motion or at halt. When in motion, the Whip Antenna is used. At halt, the Whip Antenna is normally used or can be replaced by the NVIS Antenna. The rack assembly accommodates installation and use in a wide variety of vehicles (typical installation shown below). All controls are accessible from the front of the rack.

VEHICULAR CONFIGURATION

FRONT VIEW
(TYPICAL INSTALLATION)

REAR VIEW
(TYPICAL INSTALLATION)

GROUND WIRE
(CONNECTS TO ANTENNA BASE ANGLE WASHER)

GROUND WIRE
(CONNECTS TO GROUND STAKE)
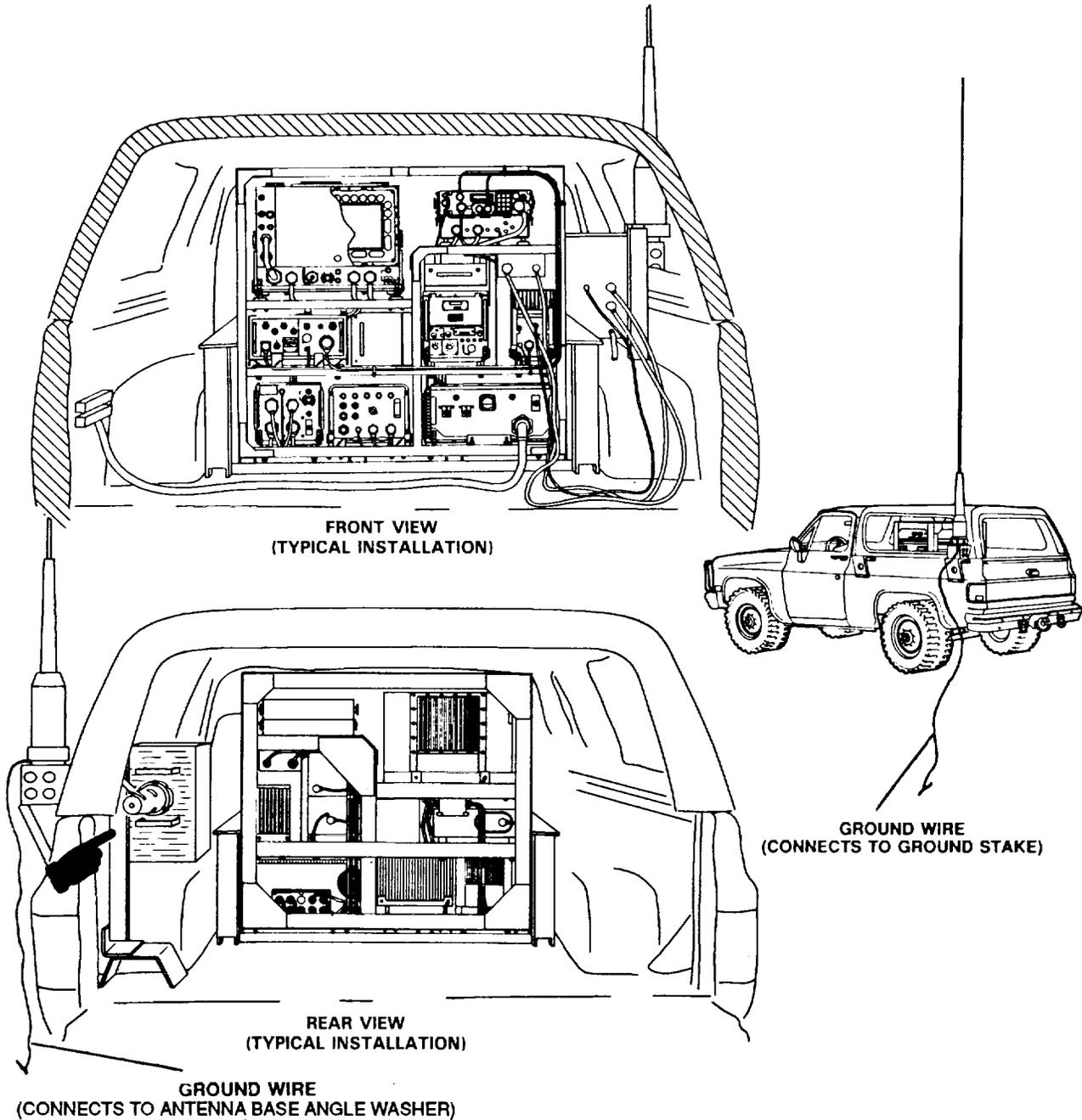
1-14. EQUIPMENT CONFIGURATION (Cont.)

b. Vehicular Remote Configurations. The Team Terminal can be configured for remote data operations or remote voice operations. During remote data operations, the D/K assembly is placed away from the rack assembly for operator convenience, via a 20-foot remote cable. During remote voice operations, the ECCM Module is placed away from the vehicle via the Remote Control Set (includes R/E terminal and remote location). This is accomplished by interchanging the ECCM Module and R/E terminal and connecting the two units via field wire (up to 1 mile).

VEHICULAR REMOTE CONFIGURATIONS

D/K ASSEMBLY

FRONT VIEW
(TYPICAL INSTALLATION)

REMOTE
CABLE

R/E
TERMINAL

ECCM
MODULE

GROUND WIRE
(CONNECTS TO GROUND STAKE)

FIELD
WIRE

GROUND WIRE
(CONNECTS TO GROUND STAKE)

REMOTE
LOCATION
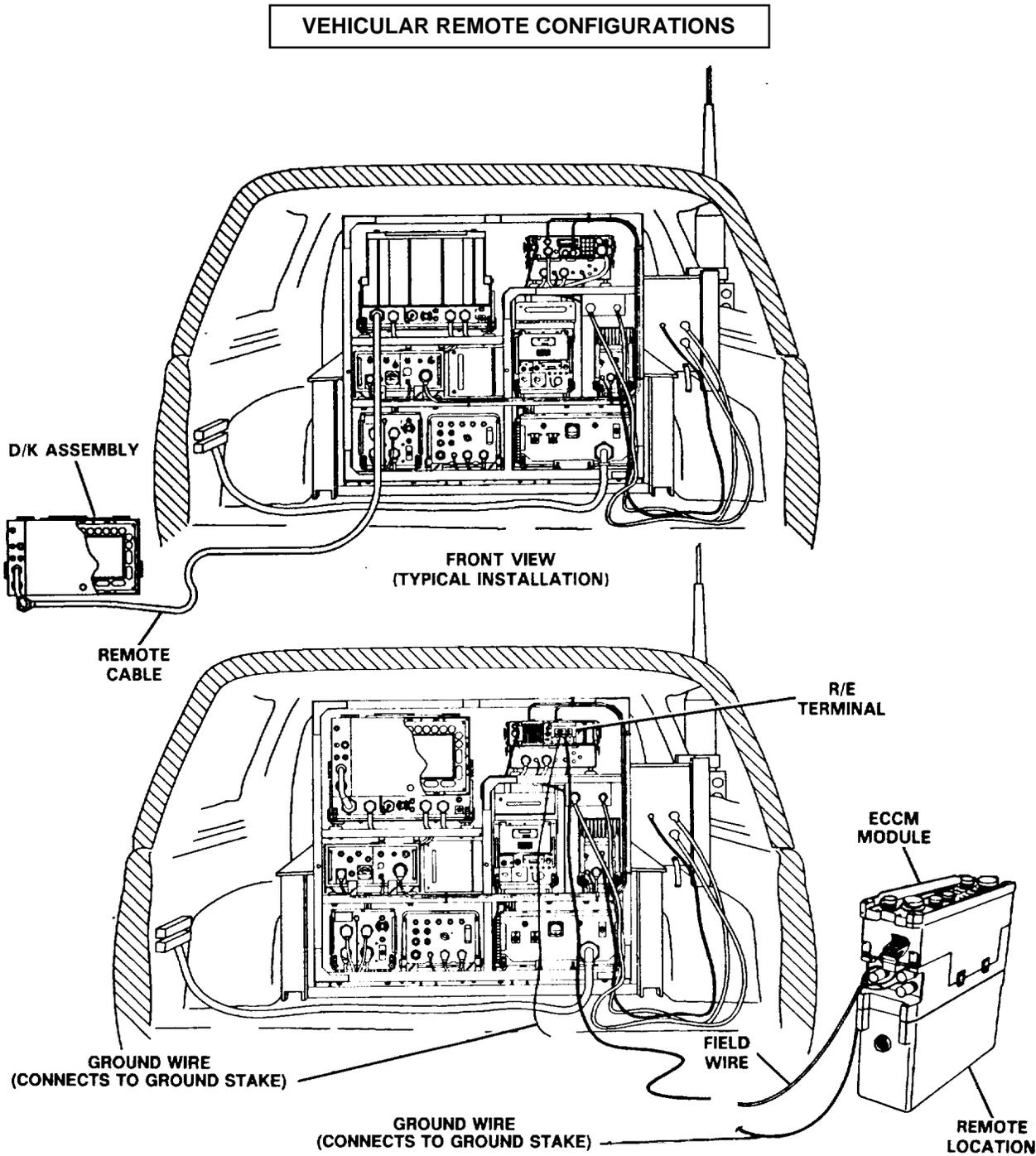
1-14. EQUIPMENT CONFIGURATION (Cont.)

      c. Manpack Configuration. The Team Terminal equipment configuration allows rapid reconfiguration for Manpack operations. This enables the operator to leave the vehicle and maintain secure/nonsecure voice communications. The Manpack consists of the RT fastened to the Battery Case/Charger with the Manpack Whip Antenna and Handset connected to the RT front panel. This equipment fits into a carrying harness for Manpack use. For secure voice operation, the TSEC/KY-65 is removed from the equipment rack and its AC/DC Power Supply is replaced with KY-65 Battery Pack Z-AKG and hard- wired to the Manpack.
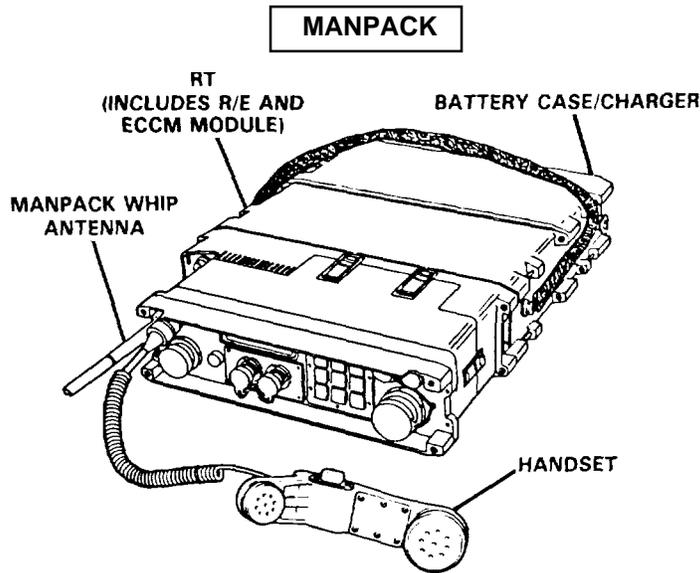
MANPACK CONFIGURATION WITH TSEC/KY-65A
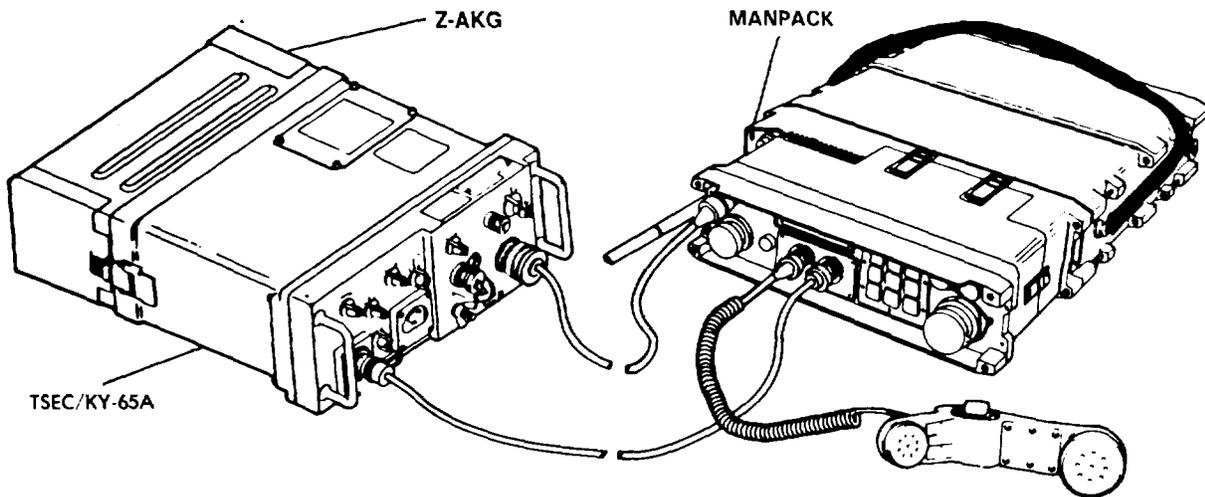
1-15. SAFETY, CARE, AND HANDLING

<div align="center">

CAUTION

</div>

Prior to removing or installing a component or cable, ensure that power to the component has been turned off. Removing and connecting cables while power is applied may result in an arc or short. This can produce damage to the connector pins.

a. Make all cable connections by hand. Do not use tools. When tools are used to make connections, connectors may be over tightened and damage to the connector and pins may occur.

b. Some component weight limits are greater than one person lift. When removing/installing components, observe personnel lift warnings marked on equipment labels and stated in this manual. Always use equipment handles when lifting. Improper lifting may cause injury to personnel.

c. Do not install the antenna where it may come in contact with a structure or material which will cause the radio frequency (RF) signal to be shorted to ground. Damage to the equipment may occur.

<div align="center">

CAUTION

</div>

This equipment contains certain static-sensitive solid state devices which are subject to damage from electrostatic discharge. Effective control of electrostatic discharge is maintained only through continuous strict observance of the following maintenance procedures:

• Any maintenance requiring disassembly of the equipment must be performed at an approved work station. The work station must include a grounded surface and grounded wrist strap in accordance with DOD-HDBK-263.

• All maintenance personnel must have completed training in the handling of static-sensitive devices before working on this equipment. Maintenance personnel must wear the grounded wrist strap and be at an approved work station when performing maintenance.

• The static sensitive subassemblies or circuit cards must be stored in approved electrostatic free material when not installed in the equipment.

<div align="center">

1-27

</div>

TEAM TERMINAL FUNCTION BLOCK DIAGRAM

WHIP   NVIS

+28 VDC — PA   RF

CONTROL   ATU   +28 VDC

CONTROL   RF

IO MHZ   RFO   +28 VDC

TOD

R/E   ECCM MODULE

EXTERNAL TOD INTERFACE

+28 VDC   VEHICULAR ADAPTER

+8.5 VDC

BATTERY CASE/CHARGER

VEHICULAR POWER SOURCE
(+12 OR +24 VDC)

CONTROL BUS   TX/RX DATA

+28 VDC   RN MODEM

+28 AND
+8.5 VDC   TT PS

+28 VDC   TSEC/ KG-84A

CONTROL BUS

TX/RX DATA

115/230 VAC

AUDIO   SYNC VOICE INTERFACE   VOICE INTERFACE

CONTROL BUS

HANDSET

+28 VDC   I/O UNIT   TSEC/ KY-65A   +28 VDC

MANPACK CONFIGURATION

1-28

Section III. PRINCIPLES OF OPERATION

1-16. GENERAL

The Team Terminal is an element of the Regency Net (RN) communications system. Within the RN system, the Team Terminal is the final link in communications from the Network Control Station (NCS). Team Terminals are assigned communication links with individual Force Terminals. Secure or nonsecure voice and data communications are facilitated with a single HF radio set, and use of a whip antenna via ground wave propagation. During poor HF propagation conditions, an NVIS antenna is used to provide short-range skywave propagation over communication circuits varying from 0 to 300 miles. Radio and voice encryption equipment may be removed from the rack assembly in order to provide Manpack voice communications. The block diagram illustrates the functions of the Team Terminal. Items identified with crosshatching are used for the manpack configuration.

1-17.   FUNCTIONAL DESCRIPTION

a. Team Terminal. All automatic functions within the Team Terminal are controlled by the I/O Unit through the control bus. The RT (includes the R/E and the ECCM Module) utilizes a known time of day (TOD) from the RFO to select the receive and transmit frequencies for ECCM operation. The TOD is loaded into the RFO through an external TOD interface. The RFO also provides a 10 MHz reference frequency standard for the RN Modem and the high speed synthesizer, contained in the Vehicular Adapter. Transmit/receive (TX/RX) data from/to the I/O Unit passes through the TSEC/KG-84A and RN Modem to/from the ECCM Module. The PA amplifies the transmit RF signal from the R/E. The ATU couples the output of the PA to the antenna. The Vehicular Adapter serves as a mount for the RT and Battery Case/Charger. The vehicular Adapter also interfaces control signals from the RT to the PA and ATU and charges the batteries in the Battery Case/Charger. The voice interface is provided through the Handset. Audio is routed through the TSEC/KY-65Afor encryption/decryption. The sync voice interface from the ECCM Module activates the TSEC/KY-65A. The TT PS provides +28 and +8.5 Vdc for system components. Input power to the TT PS can be from a vehicular power source of +12/+24 Vdc or from an ac power source of 115/230 Vac. A signal flow description for the following is provided.

- Voice signal flow

- Data signal flow

- Data signal flow with D/K assembly remoted

- Voice signal flow using Remote Control Set

1-29

1-17. FUNCTIONAL DESCRIPTION (Cont.)

(1)   Voice Signal Flow. The block diagram shows the Team Terminal secure voice signal flow. The HF signal is received on the antenna and is passed through the ATU to the PA. The PA filters the HF signal and applies it to the R/E. Within the R/E, the HF signal is filtered again and demodulated. The audio output is routed through the ECCM Module to the TSEC/KY-65A to make the secure voice nonsecure. The nonsecure voice from the TSEC/KY-65A is routed back to and through the ECCM Module and applied to the Handset. Secure voice transmission follows a reversed receive signal flow. Clear voice from the Handset is routed through the ECCM Module to the TSEC/KY-65A to make non-secure voice secure. The secure voice is routed back to and through the ECCM Module to the R/E. The R/E modulates the secure voice and converts it into an HF signal. The HF signal is then routed to the PA. The PA amplifies the HF signal before sending it on to the ATU. The ATU matches the input impedance of the antenna to the output impedance of the PA. The HF signal is then radiated out via the antenna. Nonsecure voice communications follow the same signal flow with theTSEC/KY-65A bypassed. The TSEC/KY-65A can be bypassed by placing the TSEC/KY-65A MODE switch in the PLAIN position.

TEAM TERMINAL VOICE SIGNAL FLOW

ANTENNA

HANDSET — ECCM MODULE | R/E — PA — ATU

TSEC/ KY-65A

1-30
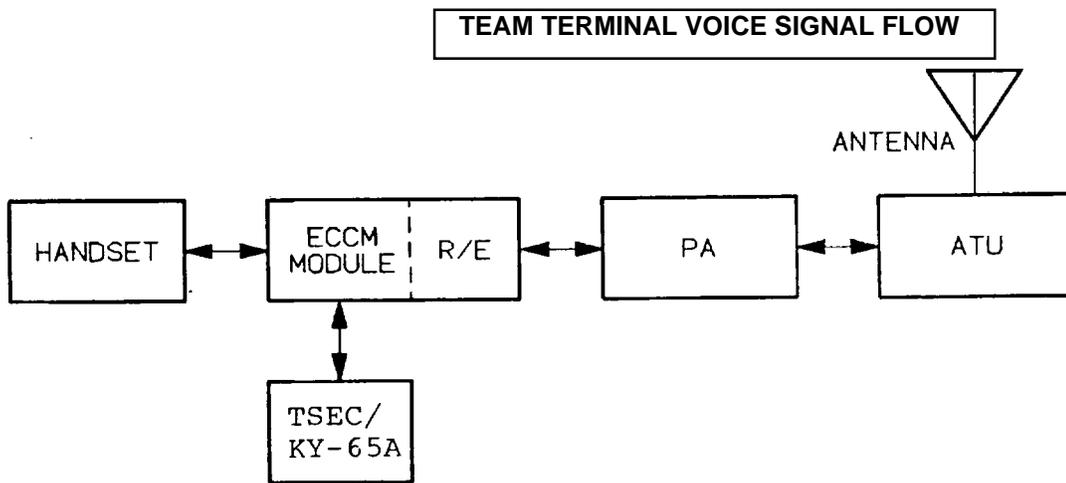
**1-17. FUNCTIONAL DESCRIPTION (Cont.)**

(2)   Data Signal Flow. The block diagram shows the Team Terminal data signal flow. The HF signal from the antenna passes through the ATU and the PA to the R/E. The R/E demodulates the HF signal and turns it into audio tones. The RN Modem converts the audio tones into digital data. The resulting digital data is applied to the TSEC/KG-84A to make the secure data nonsecure. The nonsecure data is passed on to the I/O Unit where it is seen as a displayed message. The I/O Unit dictates operating modes, message reception and transmission sequences, and BIT operations. Messages for transmission are generated by the operator via the I/O Unit. Specific text or status messages are formatted by the I/O Unit and routed to the TSEC/KG-84A to be made secure. The TSEC/KG-84A outputs the secure data to the RN Modem. The RN Modem formats the secure data and converts it to audio tones. The audio tones are applied to and through the ECCM Module to the R/E. The R/E modulates the audio tones and converts them into an HF signal. The HF signal is then routed through the PA for amplification and then sent to the ATU. The ATU matches the antenna impedance with the output impedance of the PA. The HF signal is radiated out via the antenna.


1-31
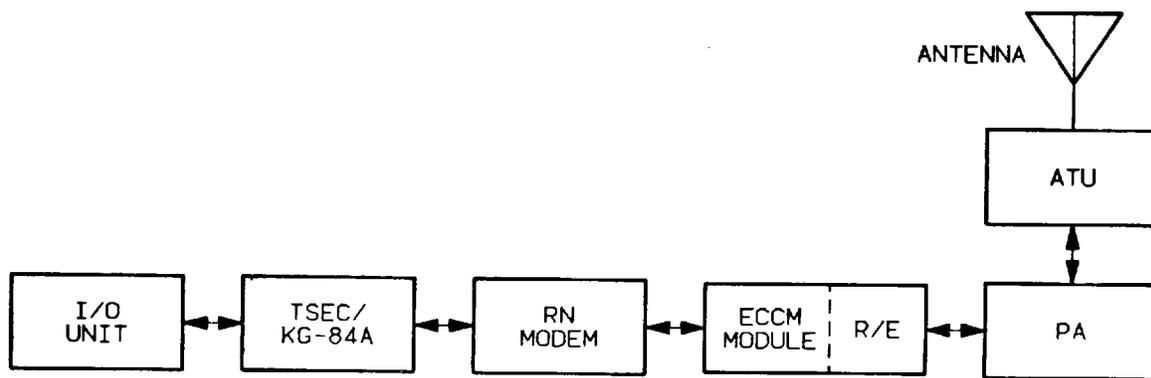
1-17. FUNCTIONAL DESCRIPTION (Cont.)

| DATA SIGNAL FLOW WITH D/K ASSEMBLY REMOTED |
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(3)   Data Signal Flow with D/K Assembly Remoted. The block diagram shows the data signal flow with the D/K assembly remoted. The D/K assembly interfaces with the controller assembly through a remote cable. The data signal flow from the controller assembly to the antenna is the same as it is when in the normal vehicular configuration.
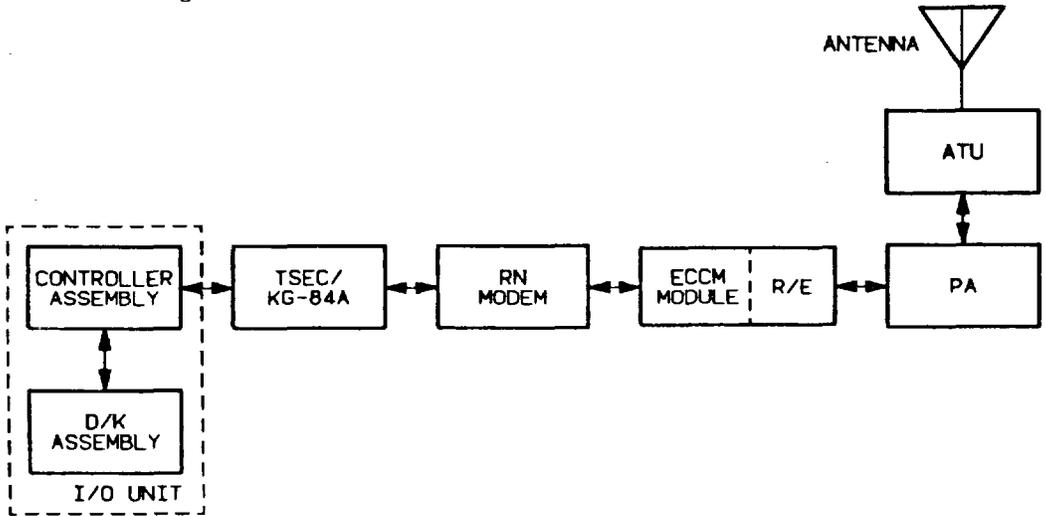

| VOICE SIGNAL FLOW USING REMOTE CONTROL SET |
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(4)   Voice Signal Flow Using the Remote Control Set. The Remote Control Set includes the R/E terminal and the remote location. In this configuration, the ECCM module is removed from the R/E and connected to the remote location. The R/E terminal is removed from the remote location and connected to the R/E. The R/E terminal and the remote location are then connected via field wire. The ECCM Module front panel controls allow the operator to select channel frequency and communication mode. The voice signal flow from the R/E to the antenna is the same as it is when in the normal vehicular configuration.

1-32
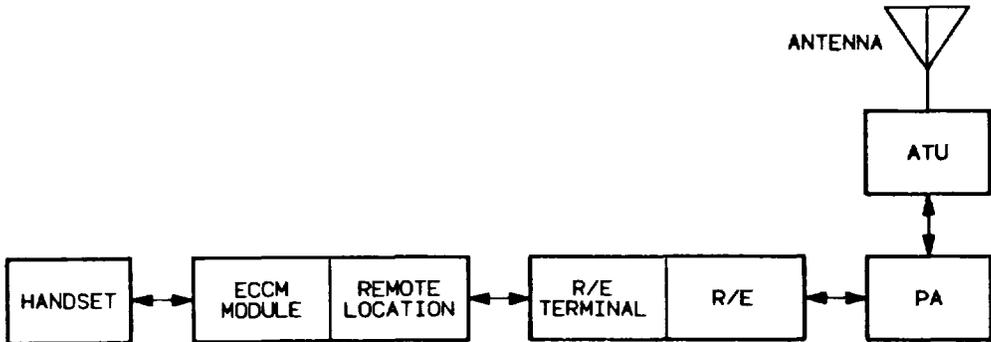
1-17. FUNCTIONAL DESCRIPTION (Cont.)

b. Manpack.

(1)   Capabilities. The Manpack is a single channel HF radio capable of secure or nonsecure voice communications. The Manpack consists of the RT (which includes the R/E and ECCM Module) fastened to the Battery Case/Charger. For secure voice communications, the TSEC/KY-65A is removed from the rack assembly and wired to the RT.

(2)   Voice Signal Flow. During reception, the R/E filters and demodulates the HF signal from the Manpack Whip Antenna and provides audio output. The ECCM Module front panel controls allow the operator to select channel frequency and communication mode. When in the secure voice mode, the audio out put is applied to the TSEC/KY-65A to make the secure voice nonsecure. The TSEC/KY-65A nonsecure voice output is routed back through the ECCM Module to the Handset. Voice transmission from the Handset is applied to the TSEC/KY-65A to make the nonsecure voice secure. The TSEC/KY-65A secure voice output is sent to the R/E. The R/E modulates the secure voice and converts it into an HF signal. The HF signal is amplified and applied to the Manpack Whip Antenna. Nonsecure voice communication is achieved by placing the TSEC/KY-65A in the PLAIN mode or by disconnecting the TSEC/KY-65A from the RT and connecting the handset directly to the ECCM Module AUDIO connector.

MANPACK VOICE FLOW

1-33
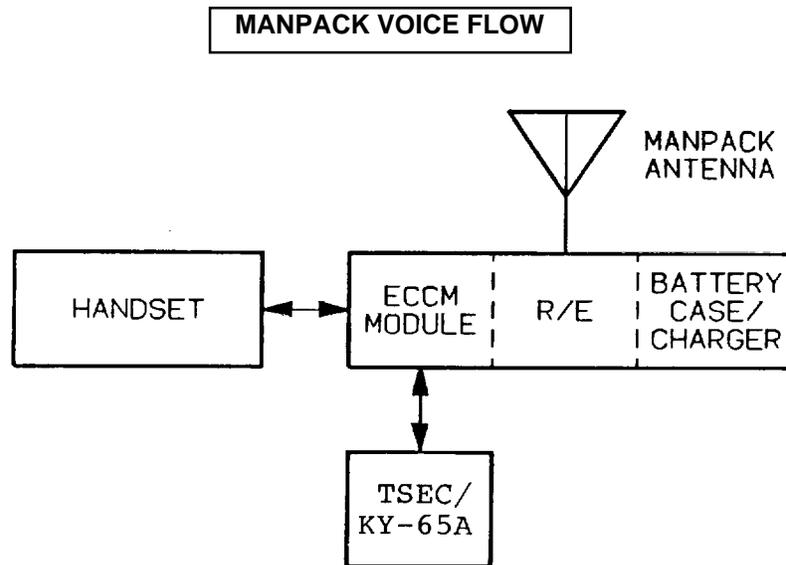
1-18. FUNCTIONAL DESCRIPTION OF COMPONENTS

This paragraph provides a brief functional description of Team Terminal components. For a more detailed functional description of components, refer to the component technical manual as applicable (refer to Appendix A, References).

a.　　RT. The RT is a single-sideband (SSB), receiving and transmitting unit. It operates in a frequency band of 2.0000 to 29.9999 MHz. The RT consists of the R/E and the ECCM Module. The ECCM Module connects to the R/E. All radio functions, including operating frequency and power level are selected by means of the D/K assembly or the keypad on the ECCM Module front panel.

　　(1)　　In the receive mode, the RT filters incoming RF signals and demodulates them to audio signals. The audio signals are amplified and then supplied to the RN Modem, voice decryption equipment, or to the Handset.

　　(2)　　In the transmit mode, the RT accepts audio signals from the RN Modem, voice encryption equipment or the handset and modulates an RF carrier with them. The modulated RF signal is then translated to the desired operating frequency and amplified. When operating with the Whip Antenna, the RT also provides tuning information to the ATU.

b.　　I/O Unit. The I/O Unit allows the operator to transmit and receive data messages. It controls the operating modes of the Team Terminal. The I/O Unit consists of the controller assembly and the D/K assembly. These assemblies are connected by a cable to allow the D/K assembly to be mounted in the rack assembly or separately in a position more convenient to the operator.

　　(1)　　All control and data entries are made via 34 bezel keys and 66 transparent screen overlay switches (referred to as touchpoints). Menus and message prompts guide the operator to perform the following:

　　　　• 　　Enter Team Terminal operating parameters.

　　　　• 　　Initiate message transmission.

　　　　• 　　Display received messages.

　　　　• 　　Perform off-line BIT.

1-34

1-18.   FUNCTIONAL DESCRIPTION OF COMPONENTS (Cont.)

(2)   Menus are composed of instruction and informational text. The menu form is defined as follows:

- Line 1 - Status line (shows received messages to be read, total received messages stored, the date, the time and secure or nonsecure status)

- Line 2 -   Error or status messages to the operator.

- Line 3 -   Blank

- Line 4 -   Menu title

- Line 5 through 22 - The actual menu body

- Line 23 - Prompts and continuation instructions

- Line 24 - Prompts and continuation instructions

```
                                                                    LINE
 ┌──────────────────────────────────────────────────────┐           I
 │ RX MSG WAITING __  TOTAL __    I8:FEB:86    HH:MM:SS Z   SECURE │  2
 │ ---------------------------MESSAGES  TO  THE  OPERATOR----------- │  3
 │                                                                 │  4
 │                       MAIN MENU                                 │
 │                                                                 │
 │        SELECT ONE :                                             │
 │                                                                 │
 │           ┌─────┐                                              │
 │           │     │    RECALL CANNED MESSAGE DIRECTORY            │
 │           │     │                                              │
 │           ├─────┤                                              │
 │           │     │    RECALL LAST EDITED MESSAGE                 │
 │           │     │                                              │
 │           ├─────┤                                              │
 │           │     │    CREATE NEW MESSAGE                         │
 │           │     │                                              │
 │           └─────┘                                              │
 │                                                                 │  22
 │                                                                 │  23
 │           PRESS  │NEXT MENU│  TO CONTINUE                       │  24
 └──────────────────────────────────────────────────────┘
```
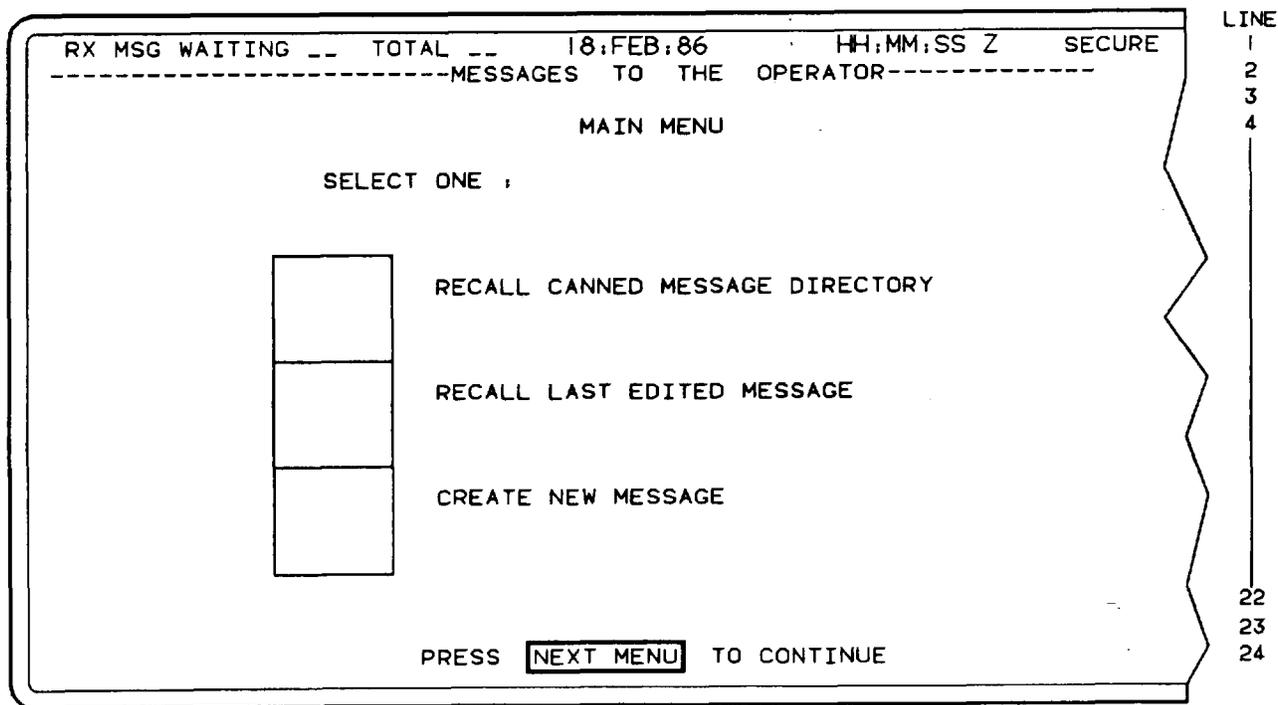
1-18.   FUNCTIONAL DESCRIPTION OF COMPONENTS (Cont.)

c. Vehicular Adapter. The Vehicular Adapter functions primarily as a mount for the RT when in the vehicular configuration. It inter-faces the RT to the PA and ATU. Additionally, this unit supports the high speed synthesizer used in all modes when in the vehicular configuration except when using the Remote Control Set. The Battery Case/Charger mounts on the rear of the Vehicular Adapter. The power which energizes the Battery Case/Charger is routed through the Vehicular Adapter. The Vehicular Adapter also provides a means of charging the battery in the Remote Control Set.

d. PA. This unit amplifies the transmit signal from the RT. It receives a 10-watt RF input from the RT. It then amplifies, filters, and routes it to the ATU. The PA sends BIT status signals back to the RT for transfer to the I/O Unit. The power output is selectable for 5, 25, or 100 watts via the I/O Unit or the ECCM Module; it also filters receive signals.

e. RFO. The RFO provides a reliable, real-time clock for the system. It provides a reference 10 MHz frequency standard to the RN Modem and high speed fast synthesizer located in the Vehicular Adapter. When Time Of Day (TOD) has been correctly transferred into the RFO, and as long as power is maintained, the RFO will maintain TOD accuracy for approximately 90 days before requiring an update. The RFO contains a rechargeable battery for operation during short term power interruptions (nominal 30 minutes).

f. TT PS. The TT PS provides +28 and +8.5 Vdc power to the Team Terminal equipment. It operates from 115/230 Vac, 50/60 Hz or +12/24 Vdc. It has lighting and electromagnetic pulse (EMP) protection at both ac and dc input lines. The output is current limited. It has over-voltage and over-temperature protection. The supply shuts down if the +28 Vdc output voltage exceeds +32.2 Vdc.

g. RN Modem. During transmit, the RN Modem converts digital data from the D/K assembly to analog for modulating the transmitter. In the receive mode, the demodulated analog signals from the RT are converted to digital data and routed to the D/K assembly. The RN Modem is microprocessor controlled and it maintains constant interface with the ECCM module.

h. ATU. This unit couples the output of the PA to the antenna. It compensates for the antenna reactive impedance by matching the antenna impedance with the PA output impedance.

i. Battery/Case Charger. This unit holds the batteries used for Manpack operations and the battery charger.

j. Remote Control Set. This unit provides remote control operation of the Team Terminal (voice only).

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2.1 GENERAL

Description and use of controls and indicators for TSEC/KG-84A and TSEC/KY-65A are not covered in this manual. Refer to TM 11-5810-308-12&P and TM 11-5810-280-12&P, respectively.

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS

I/O UNIT
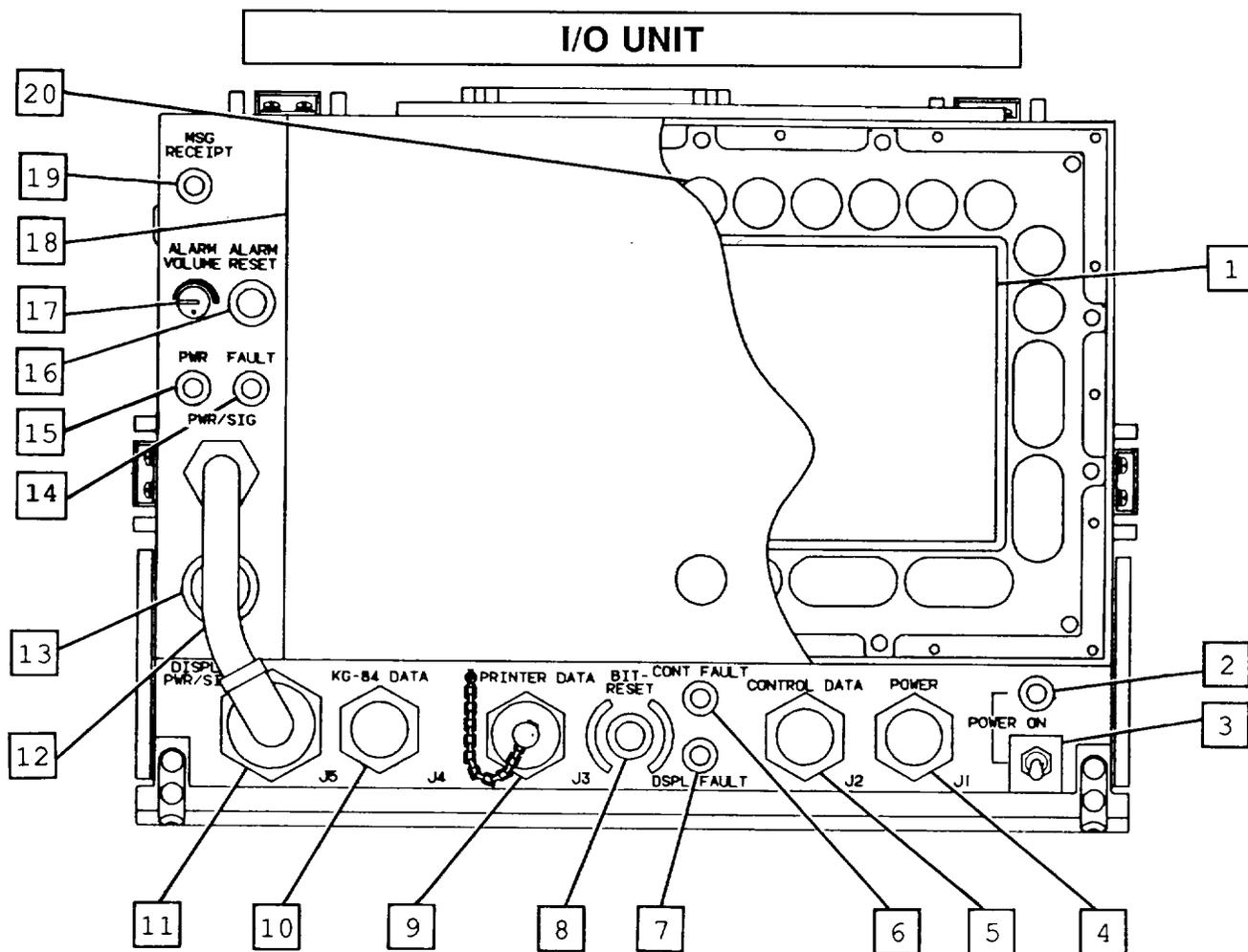
1 Display - Supports prompting and menu display; shows incoming messages and supports compose/edit functions via 66 software-controlled touch sensitive switches on the viewing area.

2 POWER ON Indicator (green) - Lights when power is applied to the controller assembly.

3 POWER ON Switch - Applies power to the I/O Unit.

4 POWER Connector J1 - Used for connecting input power from the TT PS via the power junction unit.

5 CONTROL DATA Connector J2 - Interfaces with the system control/ status bus via the control junction unit.

6 CONT FAULT Indicator (red) - Indicates when there is a fault in the controller assembly.

7 DSPL FAULT Indicator (red) - Indicates when there is a fault in the D/X assembly.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

I/O UNIT (Cont.)

NOTE

Operating parameters will need to be re-entered after pressing the BIT-RESET pushbutton switch.

| 8 | BIT-RESET Pushbutton Switch - Initiates a reset of the I/O Unit similar to power on reset and performs off-line BIT of the I/O Unit (normally BIT should be performed by pressing the BIT bezel key). Operating parameters will need to be re-entered after pressing the BIT-RESET pushbutton switch. |

| 9 | PRINTER DATA Connector J3 - Interfaces with printer (if optional printer is utilized). |

| 10 | KG-84 DATA Connector J4 - Signal interface for receive and transmit data timing and control. |

| 11 | DISPLAY PWR/SIG Connector J5 - Interfaces controller assembly with D/K assembly (whether D/K assembly is mounted to the controller assembly or remoted). |

| 12 | PWR/SIG Cable - Power and signal interconnect cable from the D/K assembly. |

| 13 | Audible Alarm - The audible alarm indicates a message received or BIT fault. |

| 14 | FAULT Indicator (red) - Lights to indicate any fault detected in the Team Terminal. |

| 15 | PWR Indicator (green) - Lights when power is applied to the D/K assembly (especially useful when the D/K assembly is remoted). |

| 16 | ALARM RESET Pushbutton Switch - Depressing this switch causes the audible alarm to be reset after it has been activated. |

| 17 | ALARM VOLUME Control - Adjusts the volume of the audible alarm from maximum to minimum. |

| 18 | Display Cover - Provides protection for the display. |

| 19 | MSG RECEIPT Indicator (yellow) - Lights to indicate when a message has been received by the I/O Unit. |

| 20 | Bezel Keys - Used to control entry into major I/O functions, support editing operations, and provide general utility functions. |

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

I/O UNIT (Cont.)

BEZEL KEYS
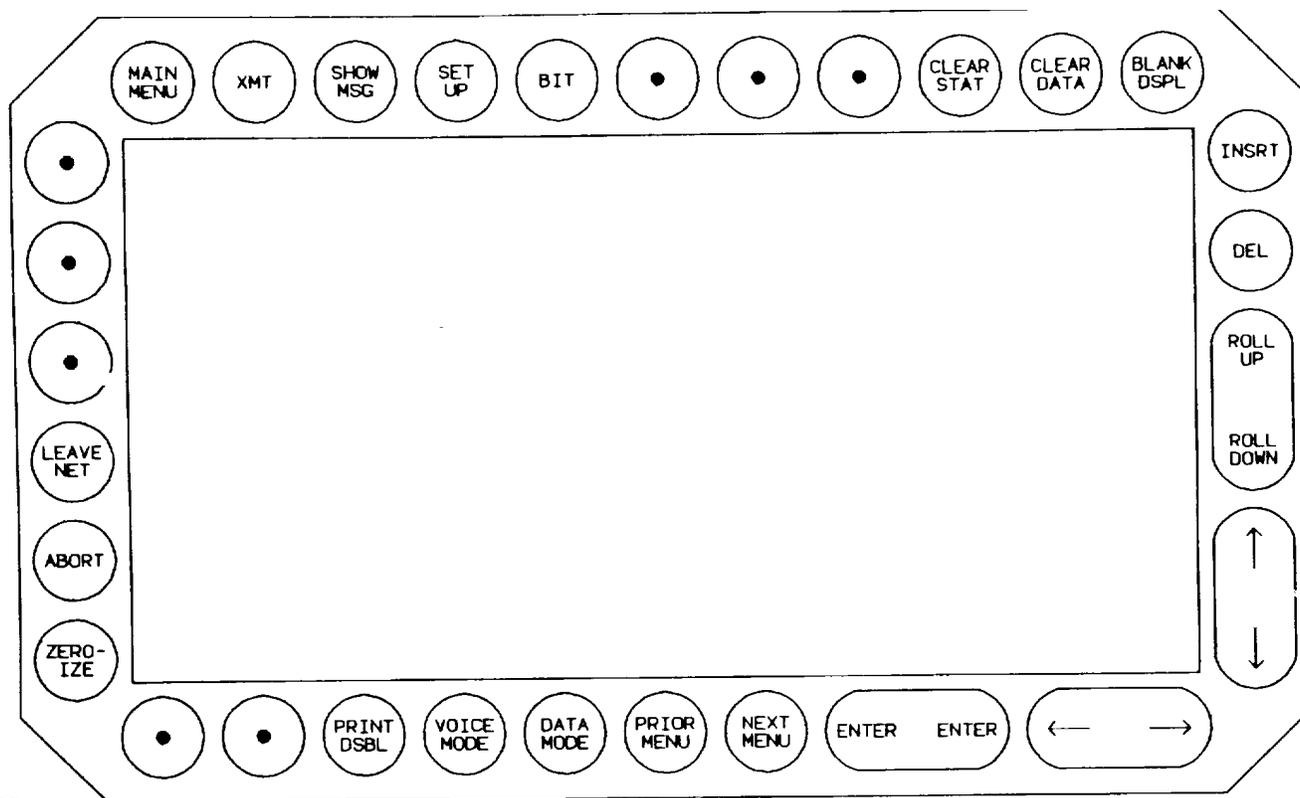
MAIN
MENU   Disposes of currently being edited parameters and displays the main menu.

XMT   Used as the final approval key to transmit a message.

SHOW
MSG   Saves the current menu being displayed, disposes of the currently being edited parameters, and initiates the show message procedure (para 2-7d). The show message mode allows the highest priority received message in memory to be displayed. When the show message mode is exited the saved menu will be displayed.

SET
UP   Saves the current menu being displayed, disposes of the currently being edited parameters, and initiates the operational set up procedure (para 2-7e). When the set up mode is exited, the saved menu will be displayed.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

I/O UNIT (Cont.)

BEZEL KEYS (Cont.)
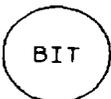
BIT   Initiates the terminal off-line BIT procedure (para 3-10a). Current operating parameters are retained.

●   Keys labeled with a ● are not used.

CLEAR STAT   Clears the status line on the display.

CLEAR DATA   Clears all the data fields on the D/K assembly and displays the cursor at the initial field location.

BLANK DSPL   Blanks the display and saves the current state of the display. Restores the display on any press of a bezel key or touchpoint.

INSRT   Places the compose/edit function in the insert mode until the INSRT bezel key is pressed again. This bezel key is only used on the compose/edit menu. The edited line has characters inserted at the cursor location. After a character insertion, the cursor and following text is shifted right one place. The last character is erased when shifted off the display.

DEL   Deletes the character at the current cursor position and left-justifies the line. The delete function is only used during compose/edit of messages. The delete function removes blank lines.
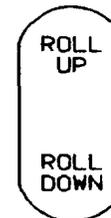
ROLL UP   Scrolls the displayed message up four lines.

ROLL DOWN   Scrolls the displayed message down four lines.

2-5

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

I/0 UNIT (Cont.)

BEZEL KEYS (Cont.)
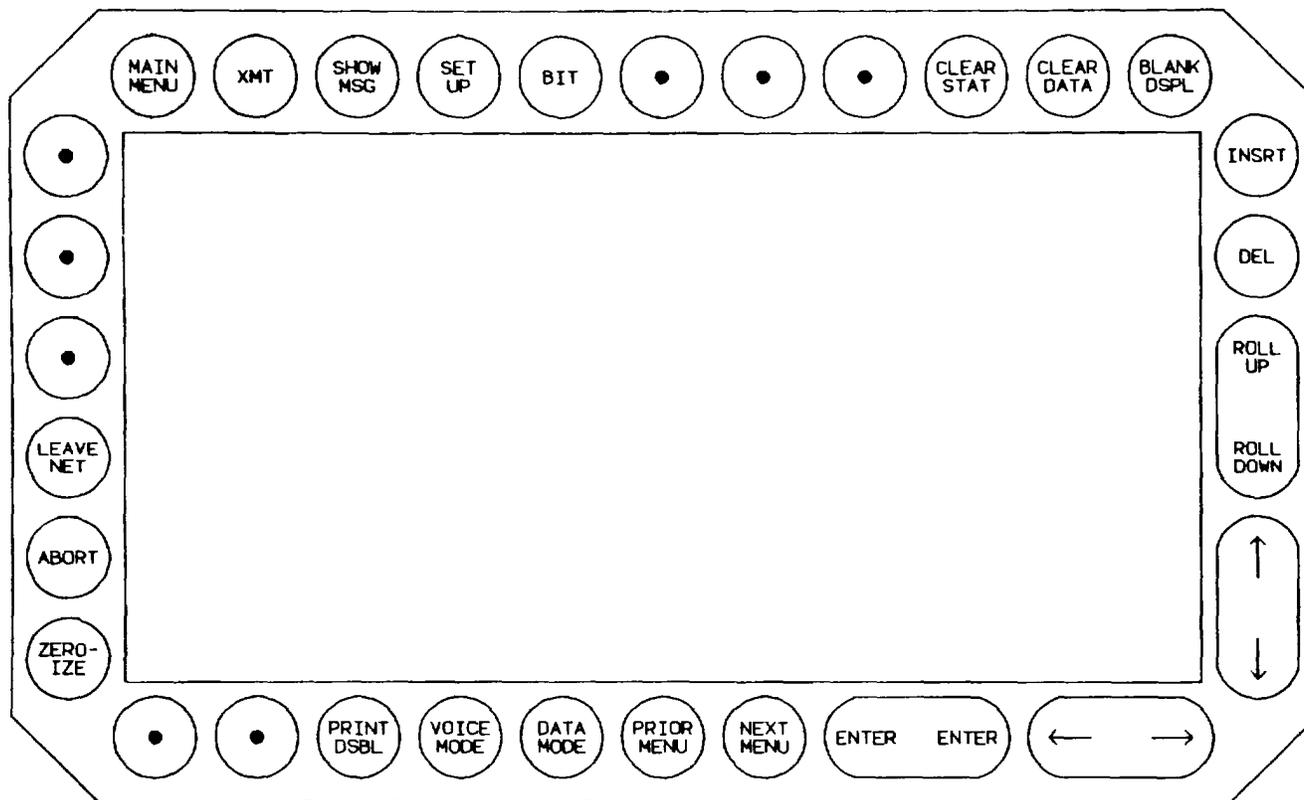
Up arrow - Moves cursor up one line on the display during compose/edit function.

Down arrow - Moves cursor down one line on the display during compose/edit function.
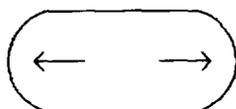
Left arrow - Moves cursor left one character on the display with wrap to the next line during compose/edit function. When selecting parameters, moves cursor to next character in parameter field.

Right arrow - Moves cursor right one character on the display with wrap to the next line during compose/edit function. When selecting parameters, moves cursor to next character in parameter field.

2-6

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

I/O UNIT (Cont.)

BEZEL KEYS (Cont.)

ENTER   ENTER
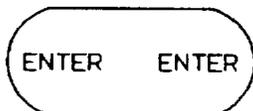
When selecting parameters, this double bezel key terminates a field entry and causes the cursor to move to the next field if the current field parameter is valid. When in compose/edit function, this bezel key moves to next line of text or opens a line if insert mode is enabled. Both enter positions are active and provide redundant operation.

NEXT MENU

Saves the entered parameters, exits from the current menu and displays the next menu in sequence.

PRIOR MENU

The current edit parameters are disposed of and the previous menu in the sequence is displayed. May be used to step back through previously displayed menus.

DATA MODE

Places the Team Terminal in data mode and starts the data mode menu sequence.

VOICE MODE

Places the Team Terminal in voice mode and starts the voice mode menu sequence.

PRINT DSBL

This is a select function to either enable or disable receive/transmit messages on the printer (if printer is available). The print selection enable or disable is displayed on the display status line. This entry has no effect on previous menu operations.

ZERO-IZE

Initiates the zeroize procedure (para 2-7h) and terminates menu editing procedures.

ABORT

Causes the current menu to be exited, disposing of the currently being edited parameters, and going to the start of the current menu sequence.

LEAVE NET

Initiates the leave net procedure (para 2-7g) and terminates menu editing procedures.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

<div align="center">

VEHICULAR ADAPTER

</div>
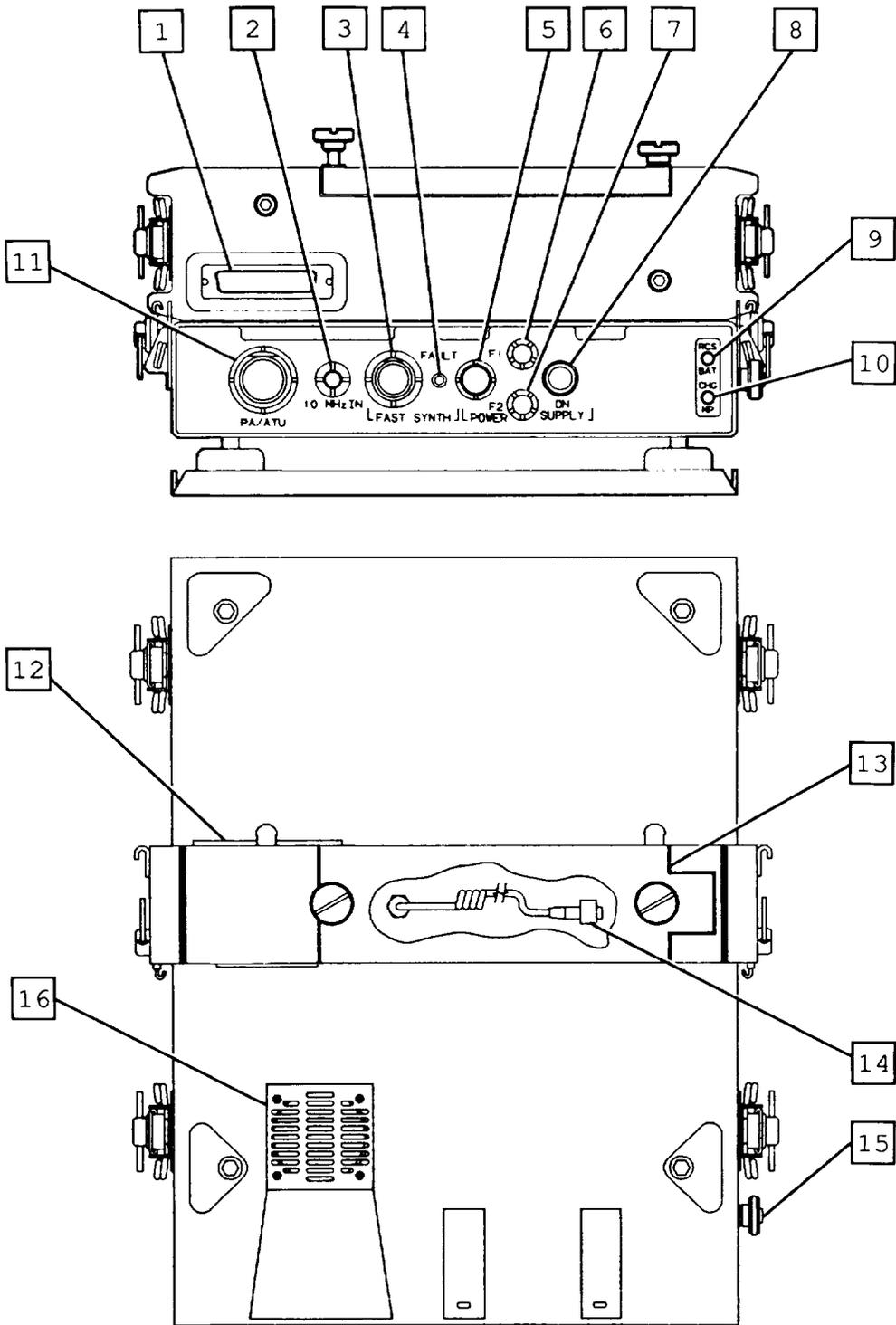
**2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)**

VEHICULAR ADAPTER (Cont.)

1   Connector P3 - Interfaces R/E with Vehicular Adapter.

2   10 MHz IN Connector - Interfaces with external frequency reference (RFO output).

3   FAST SYNTH Connector - Interfaces the ECCM Module with the high speed synthesizer contained in the Vehicular Adapter.

4   FAULT Indicator (red) - When lighted, indicates a failure in the high speed synthesizer.

5   POWER SUPPLY Connector - Used to connect input power from the TT PS via the power junction unit (+8.5 Vdc and +28.0 Vdc).

6   Fuse F1 - 5 A fuse for over-current condition in the +8.5 Vdc power supply contained in the Vehicular Adapter.

7   Fuse F2 - 4 A fuse for over-current condition in the +24 Vdc power supply contained in the Vehicular Adapter.

8   Power Supply ON Indicator (green) - When lighted, indicates presence of both feeding voltages (+8.5 Vdc and +28 Vdc).

9   RCS - BAT CHG Indicator (green) - When lighted, indicates charge in process for Remote Control Set (RCS) battery.

10   MP - BAT CHG Indicator (green) - When lighted, indicates charge in process for Manpack (MP) Battery Case/Charger battery.

11   PA/ATU Connector - Interfaces PA and ATU with the Vehicular Adapter.

12   Connector P1 - Interfaces Battery Case/Charger with the Vehicular Adapter.

13   Compartment for battery charger feeder cable.

14   Battery Charger Feeder Cable - Used for charging Remote Control Set battery.

15   GRD (Ground) Post - Used for connecting ground strap.

16   Fan - Goes on automatically when the temperature exceeds 700C and the RT is in the transmit mode.

2-9

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RT

The RT includes the following:

- R/E

- ECCM Module.

R/E
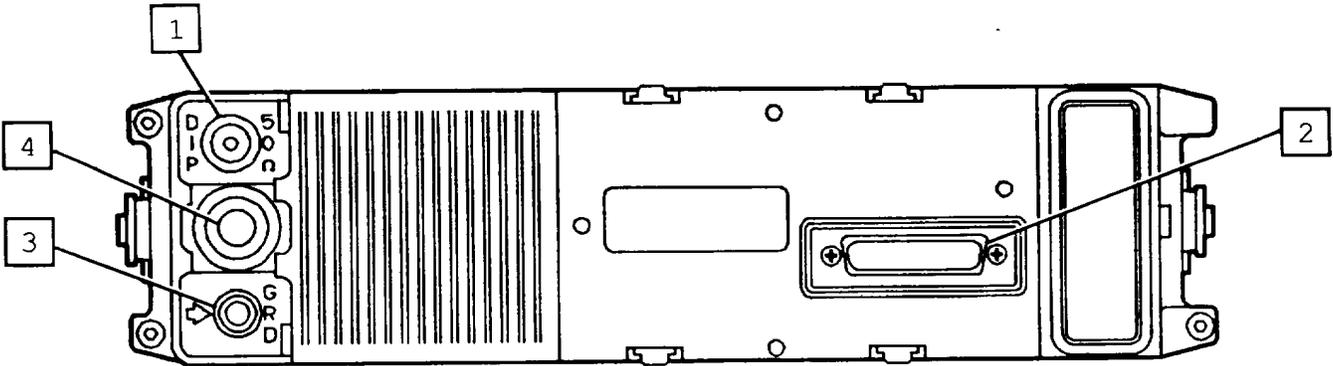
FRONT VIEW
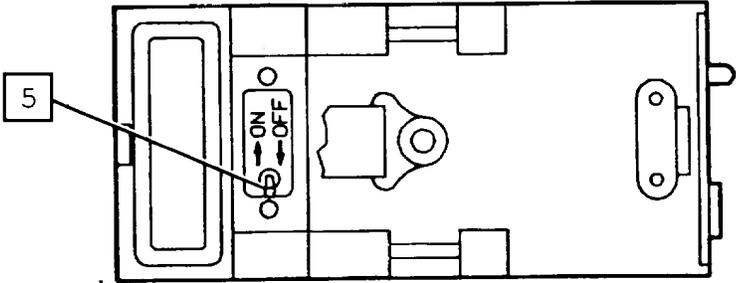
RIGHT-HAND SIDE VIEW
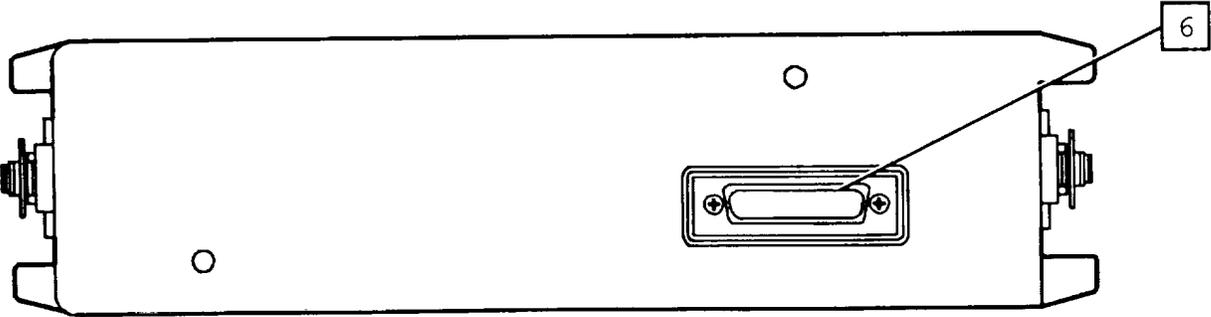
REAR VIEW

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RT (Cont.)
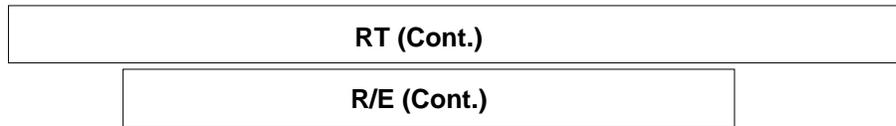
R/E (Cont.)

| 1 | DIP 50 Connector - Interfaces with RF signal cable from PA when in vehicular configuration. |

| 2 | Connector J1 - Interfaces R/E with ECCM Module (or Remote Control Set R/E terminal when ECCM Module is remoted). |

| 3 | GRD Post - Not used. |

| 4 | Antenna Connector - Interfaces with Manpack Whip Antenna. |

| 5 | Power ON-OFF Switch - Applies power to the RT (and the PA, ATU, and Vehicular Adapter when in vehicular configuration). |

| 6 | Connector J2 - Interfaces with Vehicular Adapter (or Battery Case/Charger when in Manpack configuration). |

2-11

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RT (Cont.)

ECCM MODULE (Cont).

FRONT VIEW
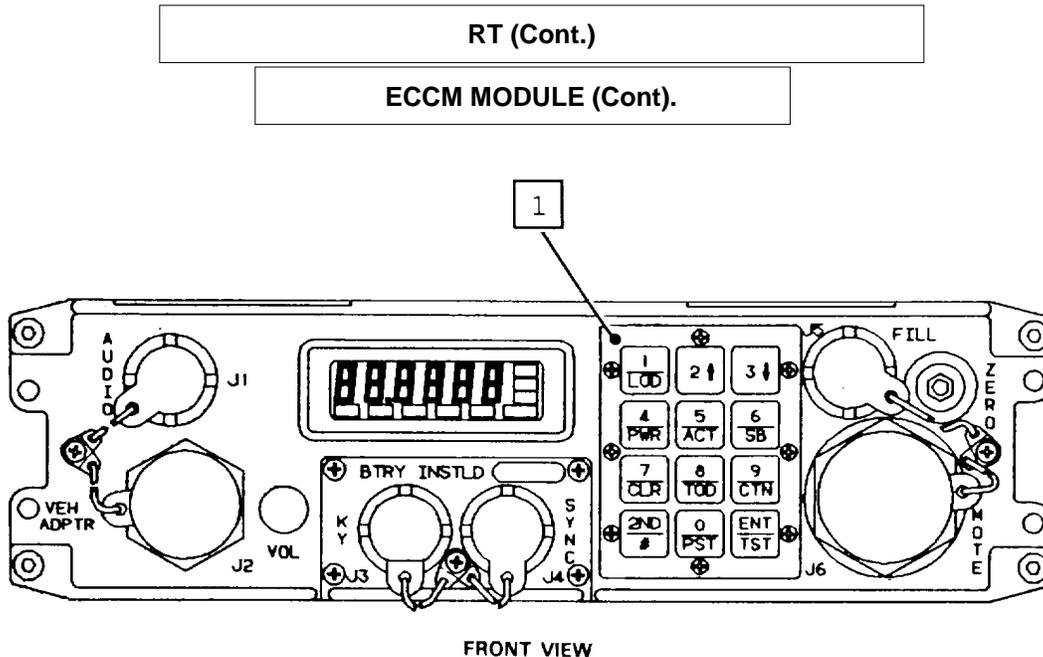
The one key provides numeric entry for frequency data. When coupled with the 2ND function key, activates the load TRANSEC variable mode.
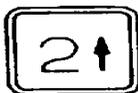
The two key provides numeric entry for frequency data. When coupled with the 2ND function key, allows the frequency to be increased by 10 Hz each time it is pressed. If the key is held depressed, the unit will continually increase the frequency at a one change per second rate.
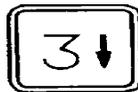
The three key provides numeric entry for frequency data. When coupled with the 2ND function key, allows the frequency to be decreased by 10 Hz each time it is pressed. If the key is held depressed, the unit will continually decrease the frequency at a one change per second rate.

2-12

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RT (Cont.)

ECCM MODULE (Cont.)

The four key provides numeric entry for frequency data. When coupled with 2ND function key, changes the power level (low (5W), medium (25W), or high (100W)).

The five key provides numeric entry for frequency data. When coupled with the 2ND function key, activates the voice ECCM mode.

The six key provides numeric entry for frequency data. When coupled with the 2ND function key, will change sidebands from upper sideband to lower sideband or from lower sideband to upper sideband.

The seven key provides numeric entry for frequency data. When coupled with the 2ND function key, it erases the previous keystroke.

The eight key provides numeric entry for frequency data.
The TOD function key is not used.

The nine key provides numeric entry for frequency data. When coupled with the 2ND function key, provides a continuous tone in transmit.

The second function key activates the alternate mode for each of the other keys.

The zero key provides numeric entry for frequency data. When coupled with the 2ND function key, activates the preset mode. This includes both loading and recalling presets.

The enter key completes each change initiated by another key or series of keys. When coupled with 2ND function key, it initiates the RT off-line BIT function.

2-13

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RT (Cont.)

ECCM MODULE (Cont.)

FRONT VIEW

REAR VIEW
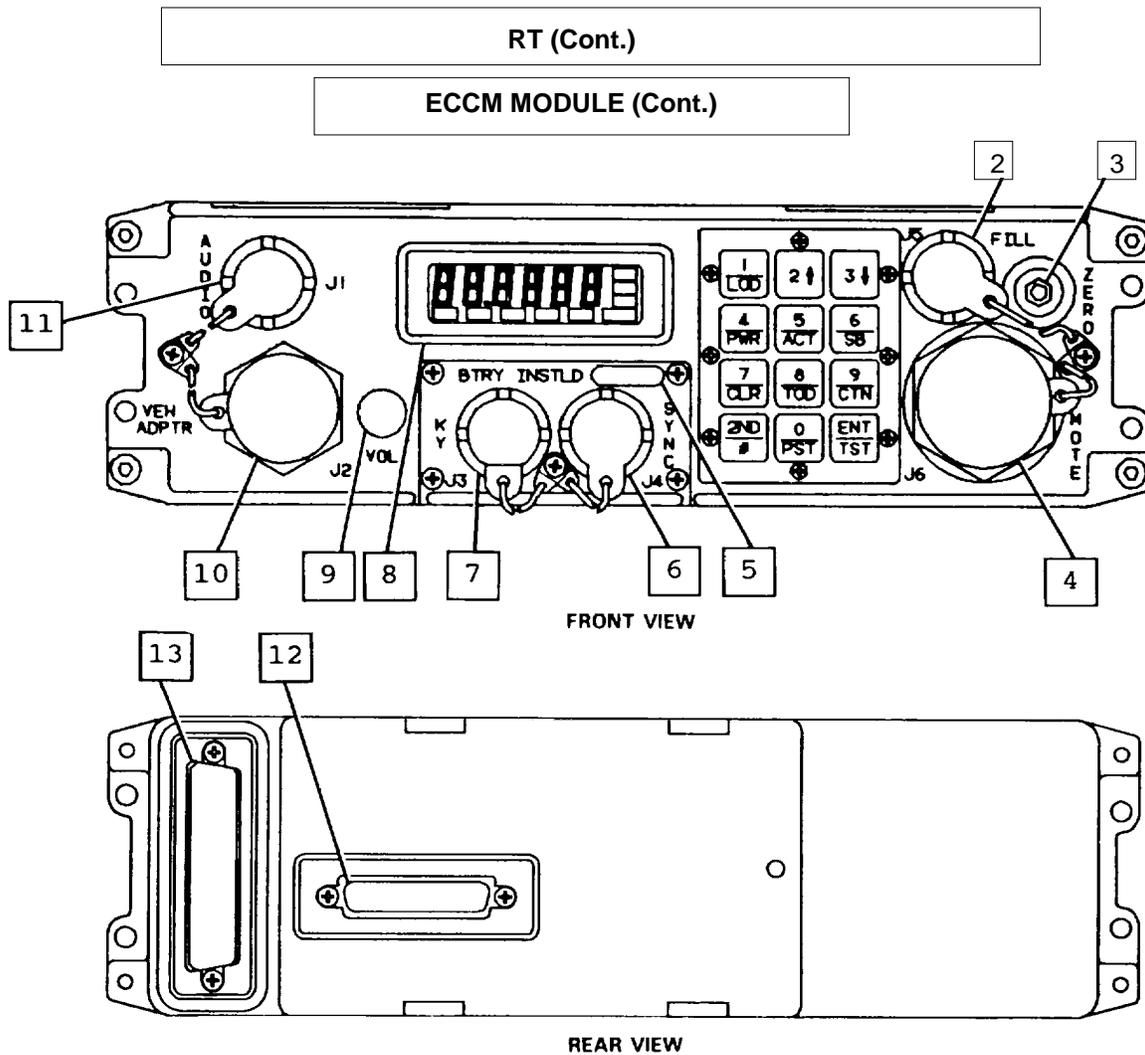
2   FILL Connector J5 - Interfaces with fill device for loading variables into the ECCM Module.

3   ZERO Switch - Depressing this switch, zeroizes all variables in the ECCM Module.

4   REMOTE Connector J6 - Provides interface connections to the RN Modem and the I/O Unit.

5   BTRY INSTLD - This is space for writing the date when a battery was last installed in the compartment behind front panel of ECCM Module. Battery provides for non-destructive storage of variables and presets when equipment is powered-off.

6   SYNC Connector J4 - Provides audio signals and synchronized PTT keying from the RT to TSEC/KY-65.

7   KY Connector J3 - When operating in secure voice mode, the Handset is connected to this connector. It obtains PTT keying for processing and routes audio signals to the SYNC connector J4.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

> **RT (Cont.)**

>> **ECCM MODULE (Cont.)**

8   Display - Shows RT frequency setting, operating modes, and fault codes.
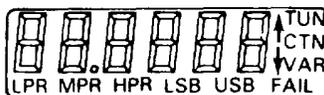
- LPR - Indicates low power transmit mode.

- MPR - Indicates medium power transmit mode.

- HPR - Indicates high power transmit mode.

- LSB - Indicates lower sideband operating mode.

- USB - Indicates upper sideband operating mode.

- TUN - Indicates fine tune mode has been initiated.

- ↑ - Indicates increase operating frequency mode has been initiated.

- ↓ - Indicates decrease operating frequency mode has been initiated.

- VAR - Indicates load variables mode has been initiated.

- CTN - Indicates continuous tone mode has been initiated.

- FAIL- Indicates the unit's BIT has detected a fault.

9   VOL Control - Adjusts the receive audio level in the Handset (when not using the TSEC/KY-65).

10   VEH ADPTR Connector J2 - Provides interface from ECCM Module to the Vehicular Adapter to gain high speed synthesizer capabilities.

11   AUDIO Connector J1 - Interfaces with audio signals from TSEC/KY-65 or Handset.

12   Connector P1 - Interfaces with R/E (or remote location when ECCM Module is remoted).

13   Connector P2 - Not used in Team Terminal application.

2-15

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

BATTERY CASE/CHARGER
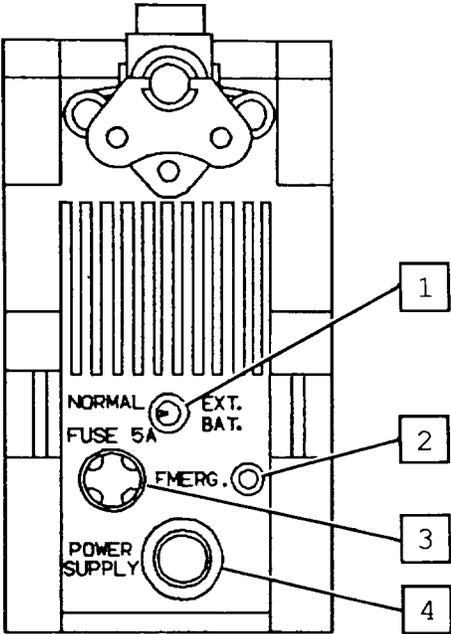
LEFT SIDE VIEW
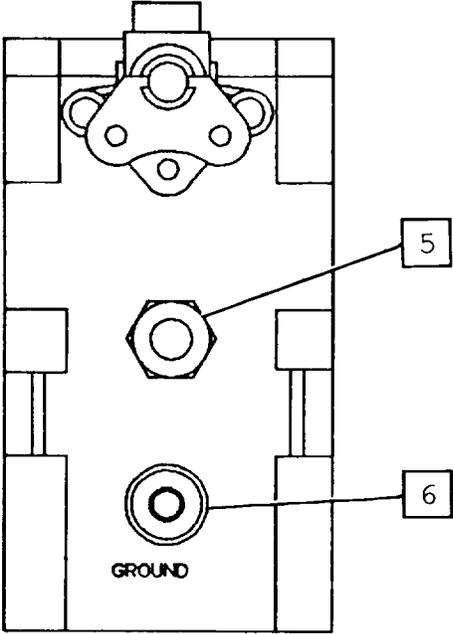
RIGHT SIDE VIEW
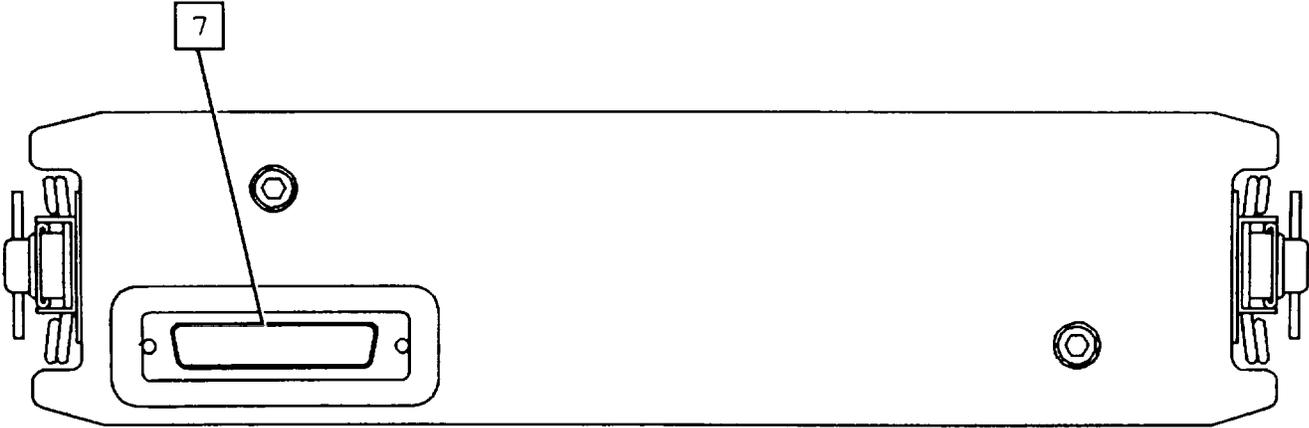
FRONT VIEW

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

BATTERY CASE/CHARGER (Cont.)

1   NORMAL-EXT. BAT. Switch

  • NORMAL - Allows recharge of batteries when Battery Case/ Charger is mounted to Vehicular Adapter. Enables batteries to power the RT when in Manpack configuration.

  • EXT. BAT. - Allows an external power supply (+24 Vdc) to power the Manpack via POWER SUPPLY connector   4

2   EMERG. Indicator (green) - Lights to indicate battery charge in process.

3   FUSE 5A - Protects against an over-current condition.

4   POWER SUPPLY Connector - Interfaces with external power supply, hand-generator, or solar cells.

5   Relief Valve - Provides battery case venting to preclude an internal pressure build-up.

6   GROUND Post - Not used.

7   Connector J2 - Interfaces with Vehicular Adapter when in vehicular configuration or R/E when in Manpack configuration.

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

PA
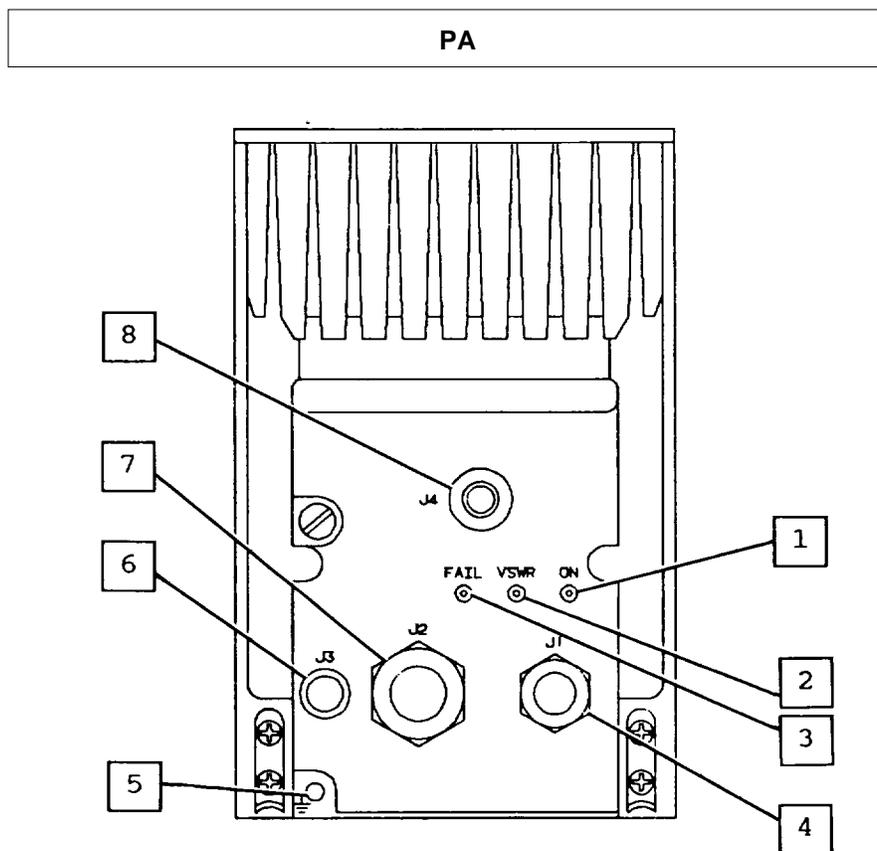
1	Power ON Indicator (green) - Lights when power is applied to the PA.
2	VSWR Indicator (yellow) - Lights to indicate a VSWR that exceeds 3:1 (i.e. antenna mismatch).
3	FAIL Indicator (red) - Lights to indicate a faulty PA.
4	Connector J1 - Provides connections for input power from TT PS via the power junction unit.
5	Ground Post - Connects external ground strap.
6	Connector J3 (TNC type) - Provides connection for RF input from the R/E.
7	Connector J2 - Provides connection for control signals from Vehicular Adapter.
8	Connector J4 (N type) - Provides connection for RF output to the ATU.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

ATU

FRONT VIEW

TOP VIEW
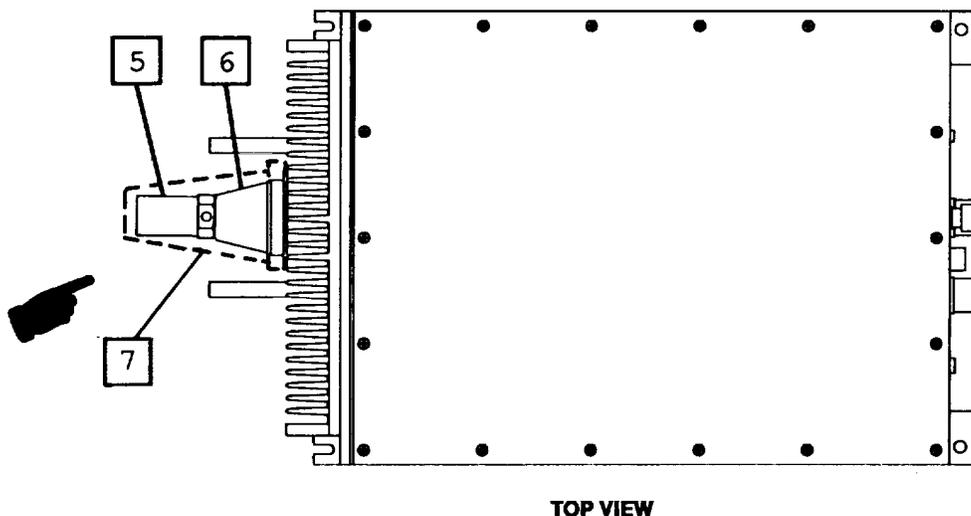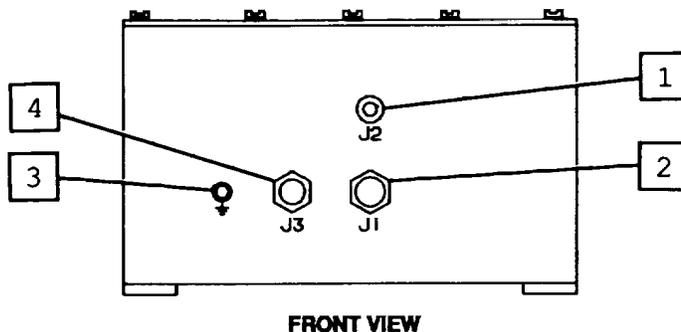
1	Connector J2 - Provides connection for RF signal from the PA.
2	Connector J1 - Provides connection for control signals from the Vehicular Adapter.
3	Ground Post - Connects external ground strap.
4	Connector J3 - Provides connection for input power from TT PS via power junction unit.
5	Antenna Matching Capacitor - Provides additional capacitance for when ATU is tuning to NVIS Antenna. Also provides for connection between ATU and antenna cable W1.
6	Antenna Insulator E1 - Provides for RF output from the ATU. Also provides for the indirect (through antenna matching capacitor) HF antenna connection.
7	ATU Safety Cap - A cone shaped nylon insulator covering the ATU Antenna insulator and matching capacitor.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)
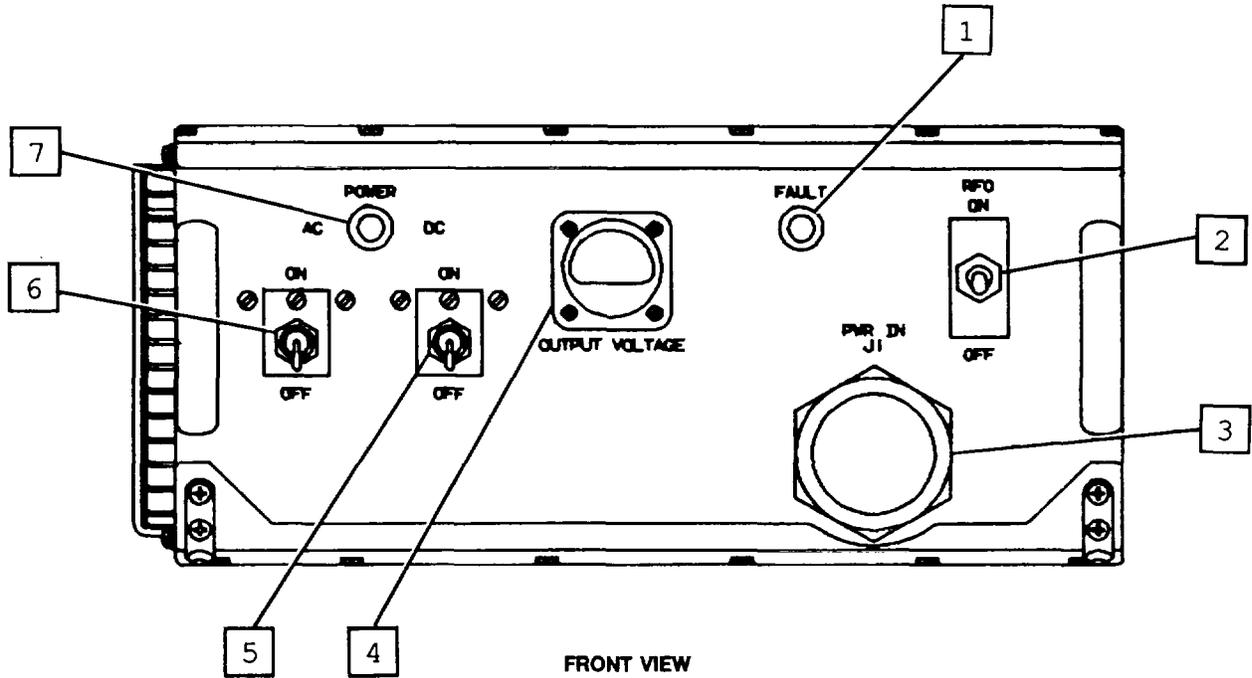
TT PS

FRONT VIEW
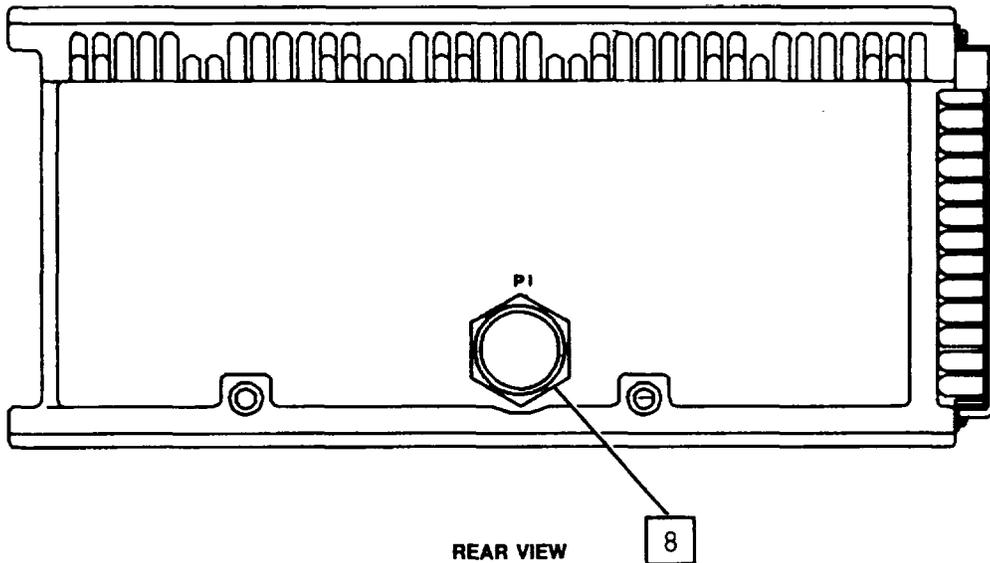
REAR VIEW

2-2. EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

TT PS (Cont.)

1	FAULT Indicator (red) - Lights to indicate a fault in TT PS.
2	RFO ON-OFF Switch - When using a +24 Vdc power source, this switch when left set to ON, applies keep-alive voltage (+24 Vdc) to the RFO for TOD retention, even if both AC and DC ON-OFF switches on the TT PS are set to OFF.
3	PWR IN Connector J1 - Interfaces with Vehicle Input Power Cable or 115/230 Vac Input Power Cable.
4	OUTPUT VOLTAGE Meter - Provides voltage reading for +28 Vdc output.
5	DC ON-OFF Switch - When dc power is used as the input source, this switch is used to apply power to the TT PS.
6	AC ON-OFF Switch - When ac power is used as the input source, this switch is used to apply power to the TT PS.
7	POWER Indicator (green) - Lights to indicate TT PS is supplying output power (+28 Vdc).
8	Connector P1 - Interfaces +28 Vdc and +8.5 Vdc power output from the TT PS with the power junction unit.

2-21

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RFO
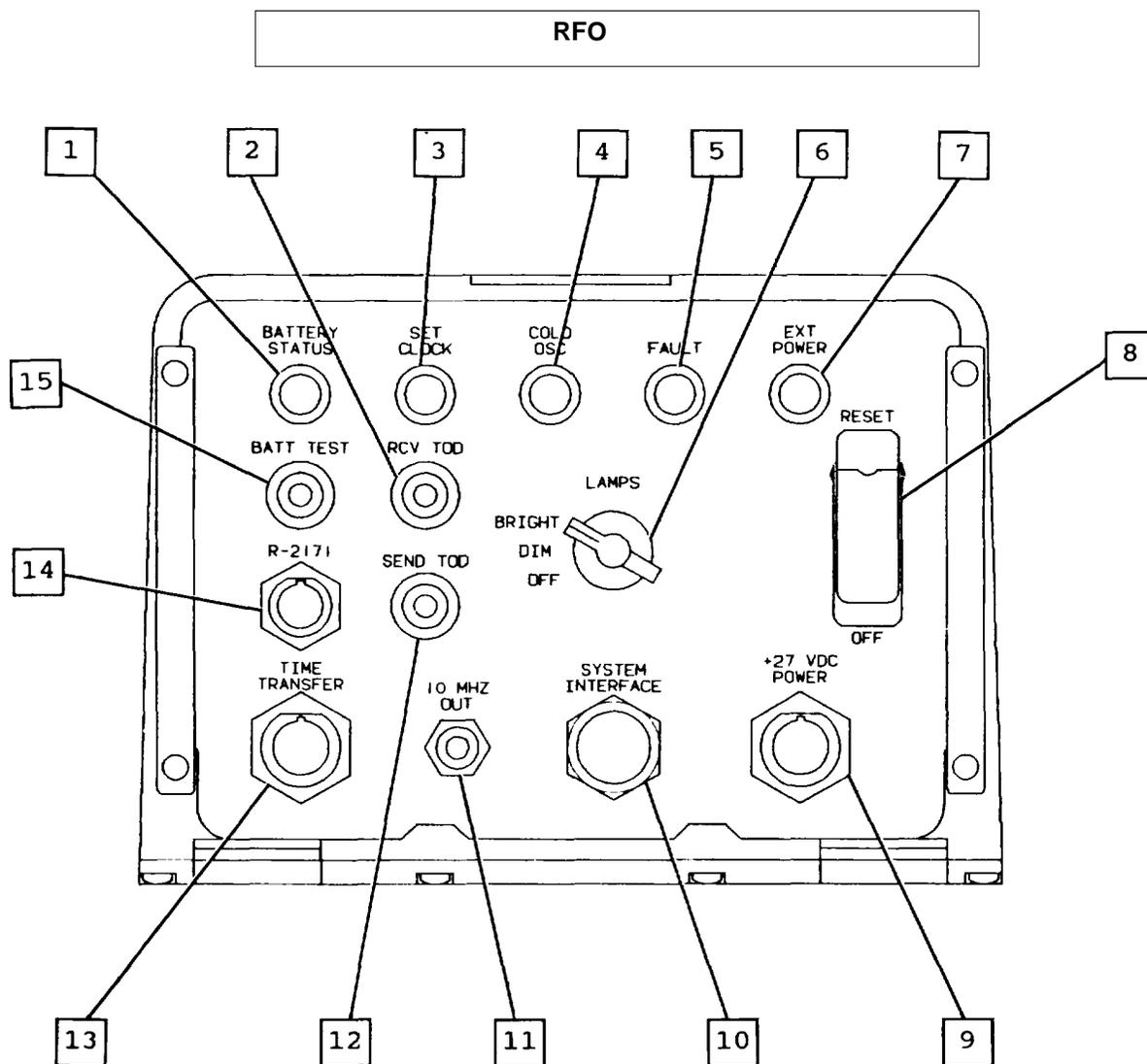
1	BATTERY STATUS Indicator (green) - Lights when the BATTERY TEST switch is pressed if battery has sufficient charge. Failure of the indicator to light during tests indicates that batteries need charging or replacing.
2	RCV TOD Switch - Used to receive time-of-day (TOD) from a TOD source. Pressing switch enables the RFO to accept a TOD signal.
3	SET CLOCK Indicator (red) - Indicates that the oscillator does not contain a TOD. The indicator lights for approximately two seconds upon power-up.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

RFO (Cont.)

4   COLD OSC Indicator (red) - Lights when the internal oscillator is cold (not stabilized); usually at initial turn-on. The indicator will go out when warm-up period is over.

5   FAULT Indicator (red) - Lights when RFO output is not within limits.

6   LAMPS - Turns indicator lamps OFF and permits adjusting lamp intensity (BRIGHT-DIM).

7   EXT POWER Indicator (green) - Lights when power is applied to the RFO.

8   RESET-OFF Switch - Provides power on-off control to the RFO. The switch is protected against accidental operation by a hinged protective cover. TOD is lost when this switch is put in the OFF position. When switch is in RESET position and you disconnect the power, the keep-alive battery in the RFO will retain TOD.

9   +27 VDC POWER Connector - Provides connections for input power from the TT PS.

10   SYSTEM INTERFACE Connector - Interfaces RFO with system through control junction unit.

11   10 MHZ OUT Connector - Used to supply a 10 MHz reference signal.

12   SEND TOD Switch - Pressing the switch sends TOD data to another RFO.

13   TIME TRANSFER Connector - Enables TOD to be sent to or received from another RFO. A TOD transfer cable is used to provide the connection to another RFO, RN FT, or FAN FT.

14   R-2171 Input Connector - Used to input satellite time from a Satellite Action Logic Transfer (SALT) box.

15   BATT TEST Switch - Press-to-test switch to determine internal battery condition. Used with BATTERY STATUS indicator.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)
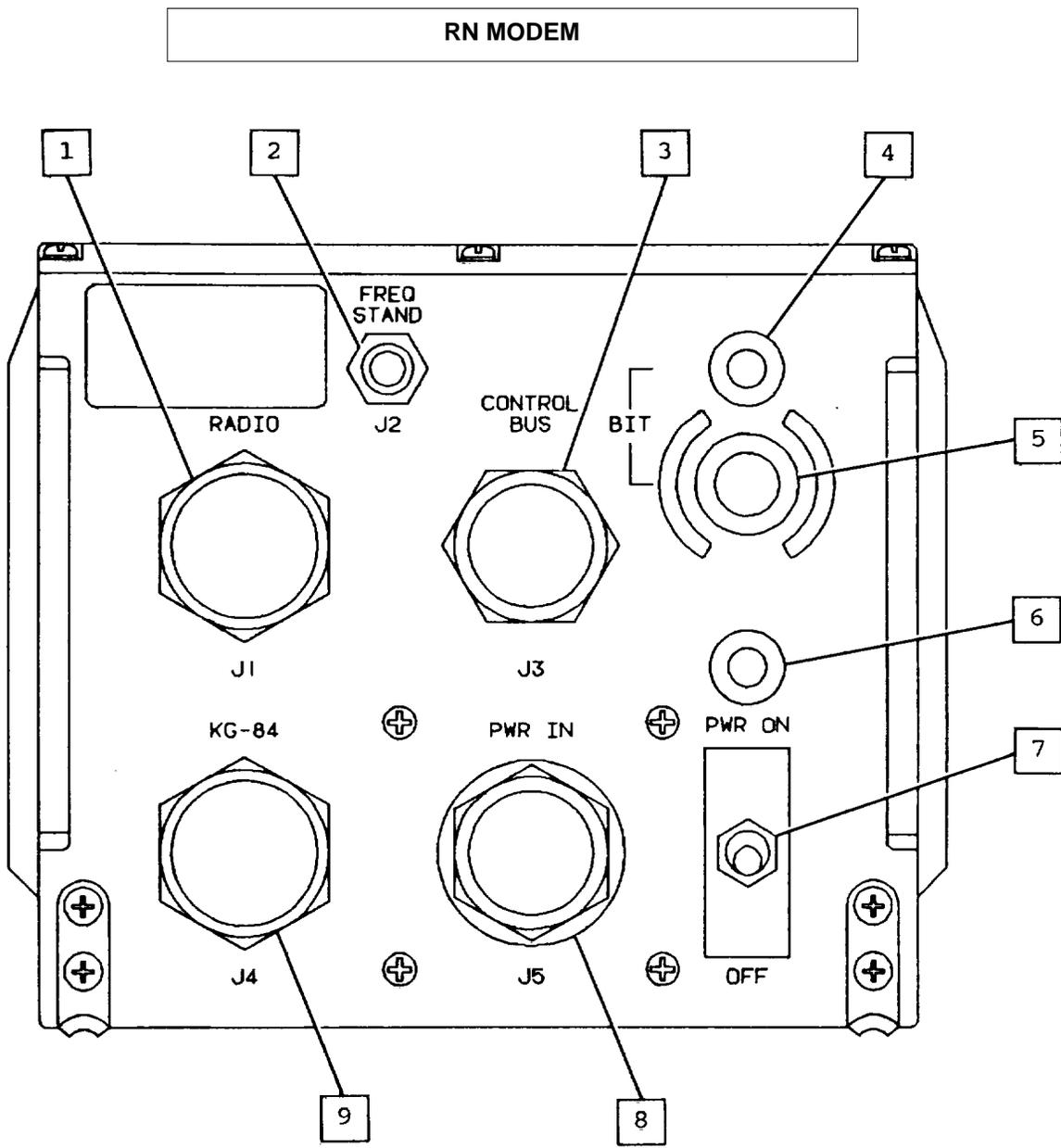
1   RADIO Connector J1 - Provides interface between the ECCM Module and the RN Modem.

2   FREQ STAND Connector J2 - Provides 10 MHz frequency reference to RN Modem from the RFO.

2-2. **EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)**

> **RN MODEM (Cont.)**

3   CONTROL BUS Connector J3 - Serial bus that provides control information from the I/O Unit and allows status information to be returned to the I/O Unit.

4   BIT Fault Indicator (red) - Indicator that provides status on the results of BIT. Indicator is continuously lighted during a fault, flashes during performance of off-line BIT and is off in the absence of faults. This indicator will also light to indicate crypto-alarm state in the TSEC/KG-84A.

5   BIT Initiate Switch - Initiates off-line BIT.

6   PWR ON Indicator (green) - Lights when power is applied to RN Modem.

7   PWR ON-OFF Switch - Applies power to the RN Modem.

8   PWR IN Connector J5 - Provides connection for input power from TT PS via power junction unit.

9   KG-84 Connector J4 - Provides black data interface between TSEC/KG-84A and RN Modem.

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

REMOTE CONTROL SET

•   The Remote Control Set includes the following:

•   Remote Location

R/E Terminal

REMOTE LOCATION

RIGHT SIDE VIEW

LEFT SIDE VIEW

FRONT VIEW

2-26
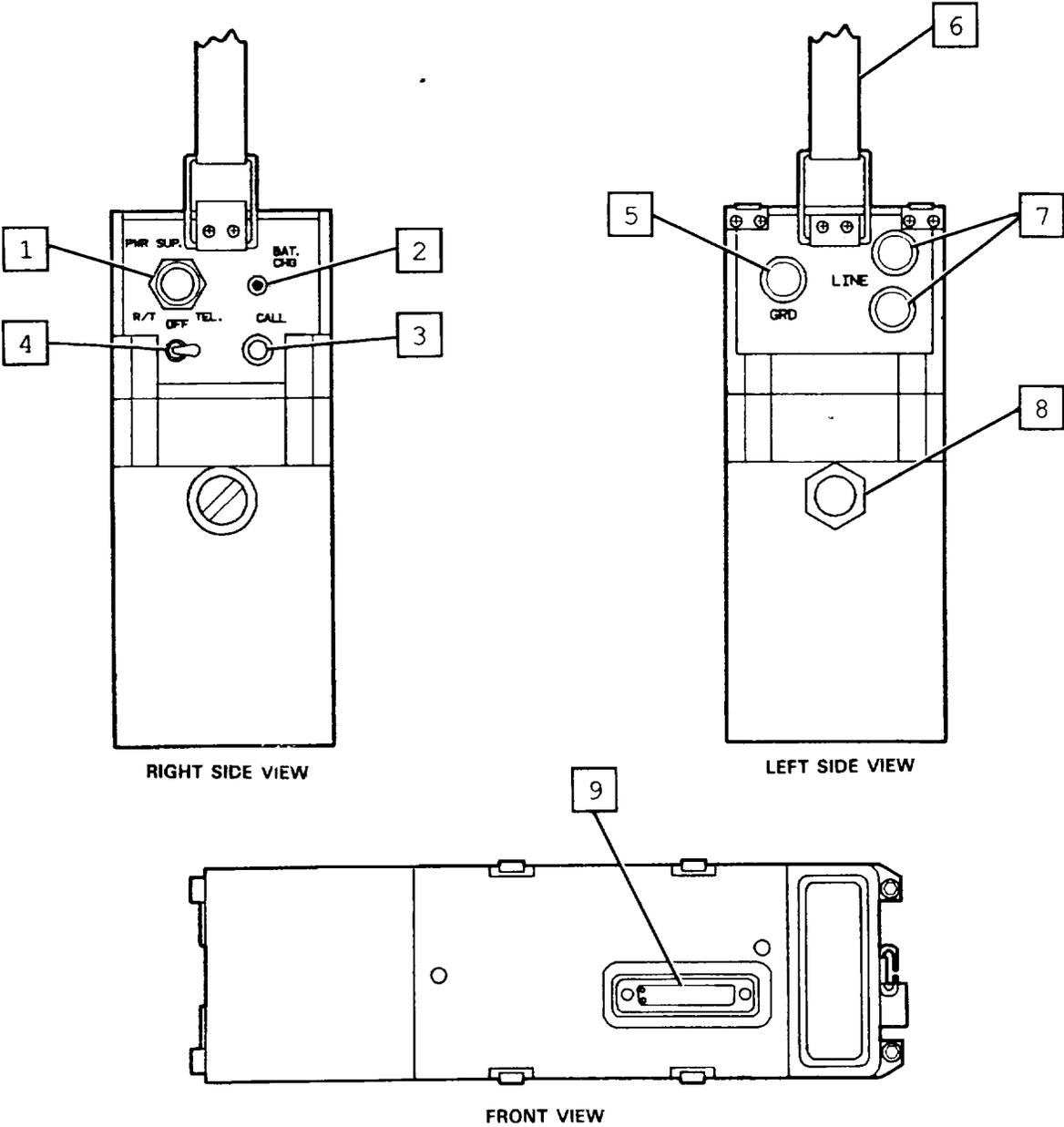
2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

REMOTE CONTROL SET (Cont.)

REMOTE LOCATION (Cont.)

| 1 | PWR SUP. Connector - Interfaces the remote location with an external power source or for recharge of battery when connected to the Vehicular Adapter. |

| 2 | BAT. CHG Indicator - Lights to indicate battery charge in process. |

| 3 | CALL Switch - Pushbutton for the call signal of the local operator. |

| 4 | R/T-OFF-TEL Switch - 3 Position Switch, selects operating condition R/T or Telephone or OFF. |

| 5 | GRD Post - Used for ground connection of Remote Control Set. |

| 6 | Carrying Belt. |

| 7 | Binding Posts - Used for the connection of the two terminal units (remote location and R/E terminal) through telephone field wire. |

| 8 | Breather Valve - Used for the exit of gas produced by batteries. |

| 9 | Connector J3 - Interface connector between remote location and the ECCM Module when in remote configuration (interfaces with R/E terminal when R/E terminal is recovered from the R/E). |

2-27
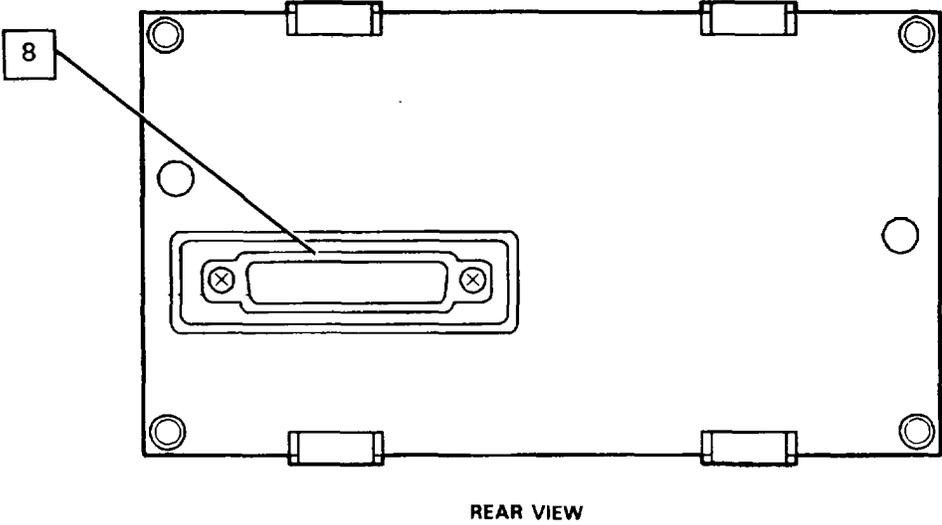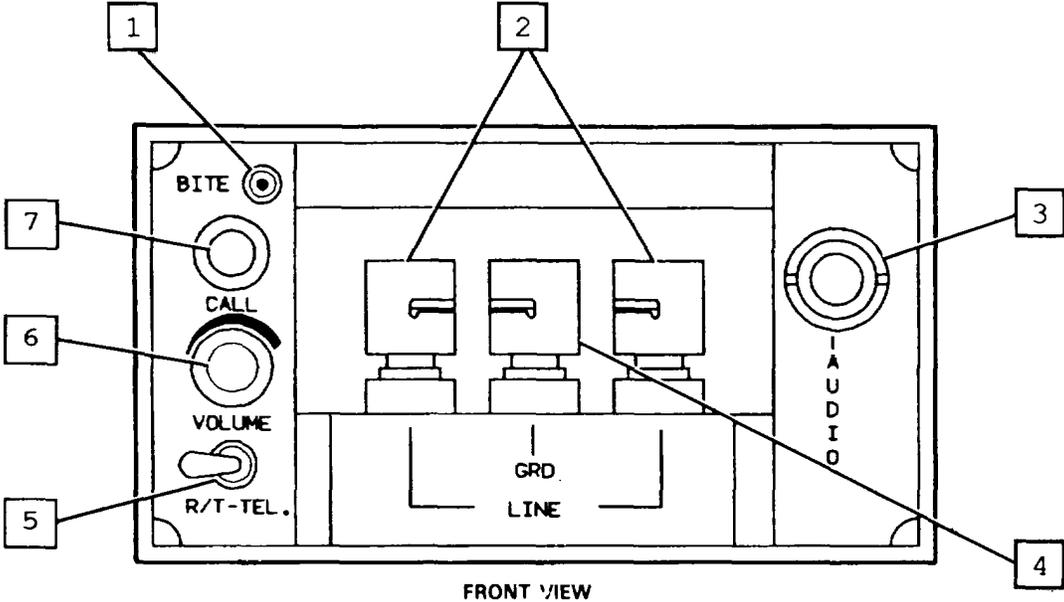
2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

REMOTE CONTROL SET (Cont.)

R/E TERMINAL

FRONT VIEW

REAR VIEW

2-2.   EQUIPMENT CONTROLS, INDICATORS, AND CONNECTORS (Cont.)

REMOTE CONTROL SET (Cont.)

R/E TERMINAL (Cont.)

1. BITE Indicator (red) - Lights to indicate a failure in the R/E.

2. LINE Binding Posts - Used for the connection of the two terminal units (R/E terminal and remote location) through telephone field wire.

3. AUDIO Connector - Allows the operations of transmission and reception in the R/E terminal when Headset/Handset is connected.

4. GRD Post - Connects to ground strap.

5. R/T-TEL. Switch - Used to select operating condition: receive/transmit or telephone.

6. VOLUME Control - Adjustment for Handset/Headset volume.

7. CALL Switch - Pushbutton for signal call generation.

8. Connector - Interface connector between R/E terminal and R/E when in remote configuration (interfaces with remote location when R/E terminal is recovered from a remote deployment).

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS)

2-3. GENERAL

NOTE

When performing PMCS or routine checks, observe all WARNINGS and CAUTIONS listed at the beginning of this manual, at the appropriate place in the procedures, or on plates and decals attached to the equipment.

Operator preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of failure, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that the equipment is always ready for a mission, do the schedule PMCS.

a. <u>Maintenance Forms and Records</u>. The forms and records you fill out have several uses, including: (1) a permanent record of the services, repairs and modifications made to your equipment; (2) reports to the next level of maintenance and to your commander; and (3) a checklist for you when you want to know the status of the equipment after its last use, and whether faults, if any, have been fixed. For information on forms and records, see DA Pam 738-750.

b. <u>Routine Checks</u>. Routine checks such as cleaning, dusting, and washing, stowing items not in use, covering unused receptacles, and checking for damage, are not listed on PMCS checks. They are things you should do any time you see they must be done. Ensure that all discrepancies are noted and corrected.

c. <u>Operator PMCS</u>. Operator's PMCS are the required periodic inspections and actions necessary to keep your equipment in good operating condition. PMCS should be performed if/when:

(1) You are the assigned operator and have not operated the Terminal since the last PMCS.

(2) You are operating the equipment for the first time.

(3) Whenever a component is removed or installed for any reason.

d. <u>PMCS PROCEDURES</u>.

(1) <u>Continuous Operation</u>. If equipment must be kept in continuous operation, check and service those items that can be done without disturbing operation. Make the complete checks and services when the equipment is not in use.

(2) <u>Scheduling</u>. PMCS must be done at the specified times if possible. If operational requirements prevent doing PMCS at the specified time, make the required checks and services at the first opportunity.

2-4. OPERATOR PMCS TABLE

The PMCS table lists all the scheduled maintenance tasks required for your system.

    a. Explanation of Columns.

        (1) Item No. This column contains a number for each procedure to be performed. When reporting malfunctions or failures on DA Form 2404, Equipment Inspection and Maintenance Worksheet, place this number in the "TM Item No." column.

        (2) Interval. These columns tell you when to do a procedure. Each column that applies will contain a bullet (•). Some procedures will have bullets in more than one column.

        (3) Item to be inspected/procedure. This column contains the name of the item to be inspected and tells how to perform the required checks and services on it. Carefully follow these instructions and perform them in the order listed.

        (4) Equipment is not ready/available if:. This column tells you the conditions which will cause the equipment to be classified as not ready for readiness reporting.

    b. Instructions.

        (1) Do your before (B) preventive maintenance just before you operate your equipment. Pay attention to CAUTIONS and WARNINGS.

        (2) Do your during (D) preventive maintenance while the equipment and/or its components systems are in operation.

        (3) Do your after (A) preventive maintenance right after operating the equipment. Pay attention to CAUTIONS and WARNINGS.

        (4) If a malfunction should occur, refer to the MAC at appendix B to determine at what level corrective action should occur. Take appropriate corrective action and report all uncorrected faults to your supervisor IMMEDIATELY.

        (5) Always do your preventive maintenance in the same order.

        (6) If anything goes wrong and you can't fix it, write on your DA Form 2404, or other applicable form. If you find something seriously wrong, report it to the next level of maintenance IMMEDIATELY.

WARNING

• Never operate the equipment until it has been properly grounded. Electrical defects in the load lines or equipment can cause DEATH by electrocution when contact is made with an ungrounded system.

• Compressed air shall not be used for cleaning purposes except where reduced to less than 29 psi and then only with effective chip guarding and personnel protective equipment. Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent chips or particles (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel.

NOTE

Your equipment may still be rated mission capable with component(s) rated not ready if that/these component(s) are not required to support the assigned mission.

OPERATOR PMCS TABLE

Operator Preventive Maintenance Checks and Services

Item No.	Interval			Item to be Inspected Procedure	Equipment is not ready/available if:
	B	D	A		
1	•		•	Whip Antenna Check that antenna is securely mounted and not broken. Check that cable is firmly mated with antenna connection. Ensure antenna tip-cap is installed.	Antenna broken or not securely mounted. Cable not securely mated to the antenna connector. Antenna tip-cap is missing.
2	•		•	Rack Assembly and Shock mounts Check that rack assembly and shock mounts are secure and have not become displaced during transportation. Check that attaching hardware is not missing.	Damage to the equipment that presents a hazard or a condition that can cause damage to equipment.

Change 1 2-32

2-4. OPERATOR PMCS TABLE (Cont.)

Operator Preventive Maintenance Checks and Services

Item No.	Interval			Item to be Inspected Procedure	Equipment is not ready/available if:
	B	D	A		
3	•			Cables Check for frayed or broken cables. Check that cables are securely con- nected to the correct connector; see equipment hook-up chart (para 4-7a)	Cables are frayed or broken; improperly installed.
4	•			Grounds All ground straps must be secure. If operating at halt and operating from a motor generator, power ground must be installed.	Ground straps loose or not installed. Motor generator not grounded.
5	•	•		Handset Check that the handset mates are with the appropriate connector. available.	Handset is defective and no replacement is
6		•		Communication Equipment including Data/Voice check During operation, daily, weekly if not; check of all fault and performance in- dicators includes terminal off-line Bit (para 3-10). Check that communica- tions with a distant station may be ac- complished in a satisfactory manner	Fault or fail indicators light, or Terminal off- line Bit fails. Com- munications with dis- tant station is not pos- sible.

Change 1 2-33

Section III. OPERATION UNDER USUAL CONDITIONS

2-5.   ASSEMBLY AND PREPARATION FOR USE

Following are procedures for assembly and preparation for use of the Team Terminal in the vehicular configuration and in the manpack configuration. In addition to these procedures, Battery BA-1372/U (user-supplied) must be installed in the ECCM Module (contact MMCT).

a.   Vehicular Configuration.   Assembly and preparation for use for vehicular operations include the following procedures:

• Installation of COMSEC equipment (The Team Terminal is shipped without COMSEC equipment. A TSEC/KY-65A and a TSEC/KG-84A are required).

• KG-84A nonsecure bypass assembly hookup (required only when in nonsecure data operations).

•· Configure for Remote Data/Voice Operation (as desired).

• Installation of Whip or NVIS Antenna.

• Vehicle grounding. When operating at halt, ground the vehicle. The angle washer located on the antenna base provides a convenient location to attach a ground strap.

(1)   Installation of TSEC/KY-65A. Preparation for and installation of the TSEC/KY-65A must be made with the assistance of unit or higher level maintenance.

INSTALLATION OF TSEC/KY-65A

STEP
1   Ensure TT PS DC and AC ON-OFF switches are set to OFF. If TSEC/KY-65A is not configured with Z-AKE, install Z-AKE on rear of TSEC/KY-65A and fasten

STEP
2   Refer to TM 11-5810-280-12 & P and perform assembly and preparation for use procedures for the TSEC/KY-65A.
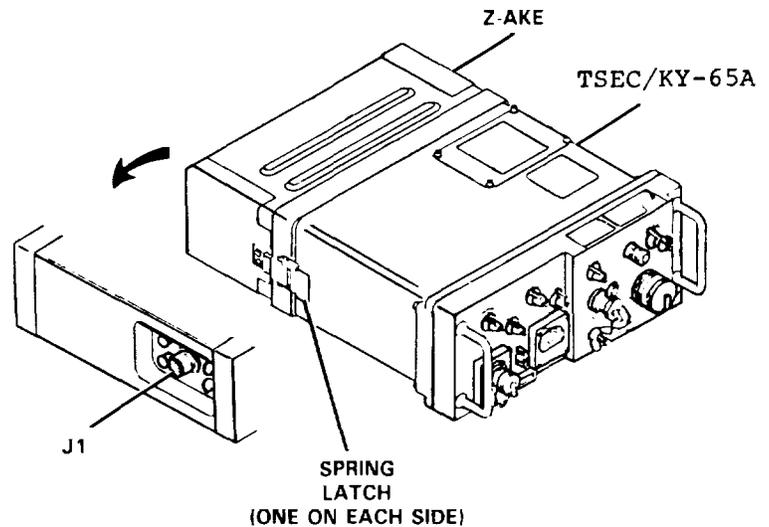
Change 1 2-34

2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

(2) Configure Manpack for Secure Voice Operation

| INSTALLATION OF TSEC/KY-65A (cont.) |

STEP
3 Slide TSEC/KY-65A to its stationary position in rack and connect cable plug W108P1 to POWER connector J1 on Z-AKE rear panel.

STEP
4 Align 2 thumbscrew clamps into position and tighten to secure TSEC/KY-65A to its mount.

STEP
5 On TSEC/KY-65A front panel make the following connections:

Cable/plug	TSEC/KY-65A connector
W307P2	HANDSET connector
W308P2	RADIO connector
Ground strap	Ground terminal

W108P1

Z-AKE

TSEC/KY-65

LEFT-HAND SIDE VIEW

GROUND TERMINAL

HANDSET CONNECTOR

GROUND STRAP

RADIO CONNECTOR

W307P2

W308P2

MOUNT

THUMBSCREW CLAMPS

PARTIAL FRONT VIEW

2-35
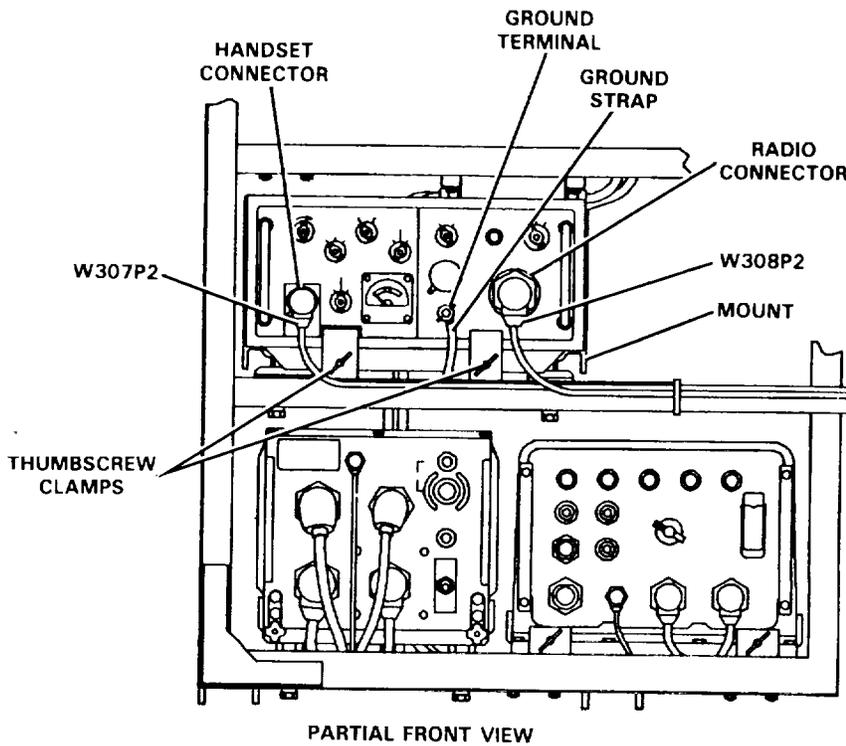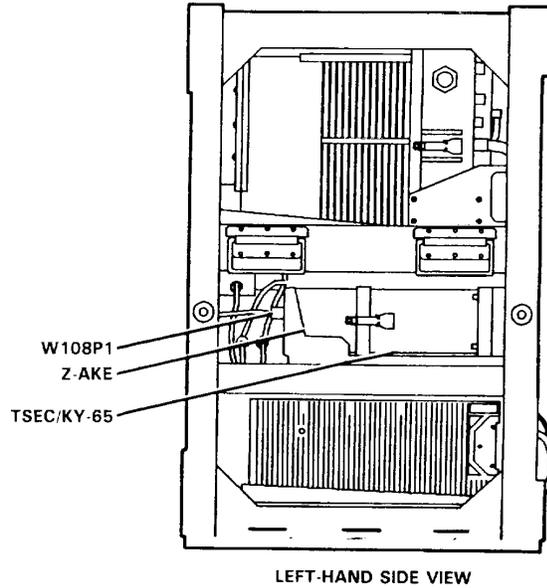
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

(2)   Installation of TSEC/KG-84A. Preparation of the TSEC/KG-84A must be made with the assistance of unit or higher level maintenance.

> **INSTALLATION OF TSEC/KG-84A**

STEP
1   Ensure TT PS DC and AC ON-OFF switches are set to OFF. Disconnect cable plugs W306P1, W103P1, and W305P2 from J2, J1, and J3 on KG-84A nonsecure BYPASS ASSEMBLY. Place connector covers on connectors J2 and J3.

KG-84 NONSECURE BYPASS ASSEMBLY

J3
J1
J2

W306P1
W103P1
W305P2
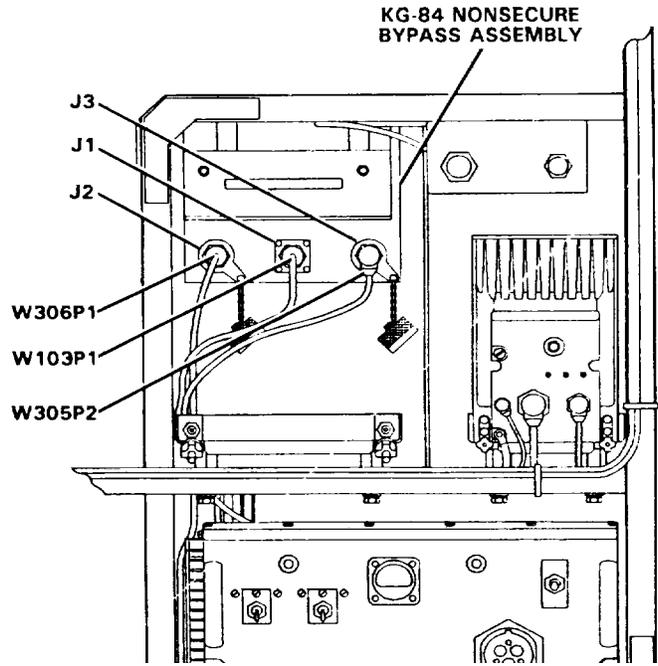
PARTIAL FRONT VIEW

STEP
2   Check battery installation date written on front panel of TSEC/KG-84A. Replace battery when more than 90 days old. Notify MMCT.

BATTERY INSTALLATION DATE

FRONT VIEW

2-36
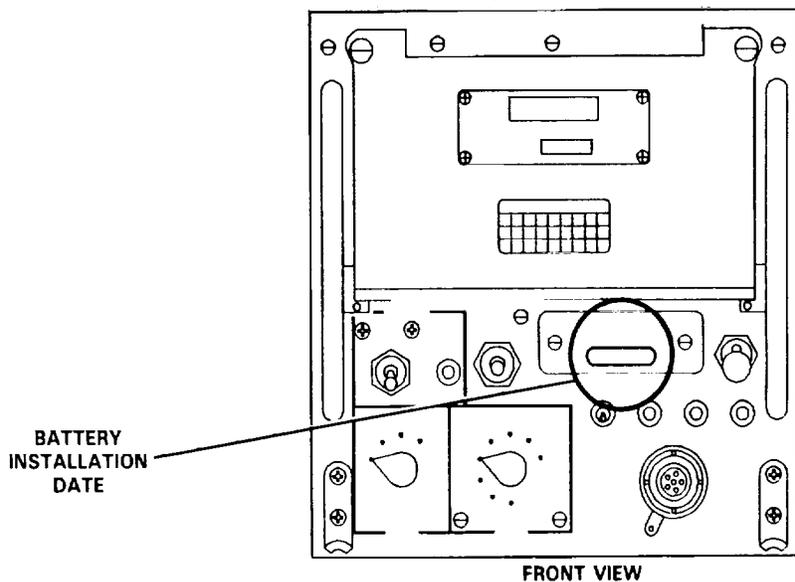
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

> INSTALLATION OF TSEC/KG-84A

STEP
3   Compare KG-84 STRAPPING CHART with chart on right-hand side of TSEC/KG-84A. Ensure correct strapping is installed. Installed straps are indicated with a check mark in box on chart. If strapping is incorrect notify MMCT.

KG-84 STRAPPING CHART

BD - PLUG		FUNCTION	STRAPPING			
A1	P2 P3	ETCT	[ ] BAL:	J6-J7 J8-J9	[X] UNBAL:	J5-J6 J9-J10
	P4 P5	XMT CTRL/CTTR	[ ] BAL:	J12-J13 J15-J16	[X] UNBAL:	JII-J12 J14-J15
	P6	INTERFACE	[X] KG-84A:	J17A	[ ] KG-84:	J17B
A2	P2 P3	TCTC	[ ] BAL	J6-J7 J9-J10	[X] UNBAL	J5-J7 J8-J10
	P4	CLK LOCK	[ ] DSBL:	J20-J22	[X] ENBL:	J21-J22
	P5 P7	CTCD/CTRS	[ ] BAL	J15-J16 J12-J13	[X] UNBAL	J14-J16 J11-J13
	P6	CTCD/CTRS	[X] KG-84A	J18-J19	[ ] KG-84:	J17-J18
A5	P2	TIME OUT	[ ] DSBL:	J8-J9	[X] ENBL:	J9-J10
	P3	VUX	[ ] DSBL:	J5-J7	[X] ENBL:	J5-J6
	P4	FILL SELECT	[X] KG-84A:	JII-J12	[ ] KG-84:	J12-J13
A6	P2	U UPDATE	[X] ENBL:	J7-J8	[ ] DSBL:	J8-J9
A9	P2 P3	RED I/O	[ ] BAL:	J14 J15	[X] UNBAL:	J6 J7
	P4	STEP PULSE	[ ] SGL:	J8-J9	[X] DBL:	J9-J10
	P5	TX CLOCK	[X] CONT:	J11-J12	[ ] GATED:	J12-J13

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

INSTALLATION OF TSEC/KG-84A (Cont.)

STEP

4   Insert TSEC/KG-84A into rack and secure ground strap to GND
terminal on rear panel by tightening cross-tip screw. Make the
following cable connections on TSEC/KG-84A rear panel:

Cable/plug	TSEC/KG-84A connector
W103P1	POWER J1
W306P1	BLACK I/O J2
W305P2	RED I/O J3

PARTIAL REAR VIEW
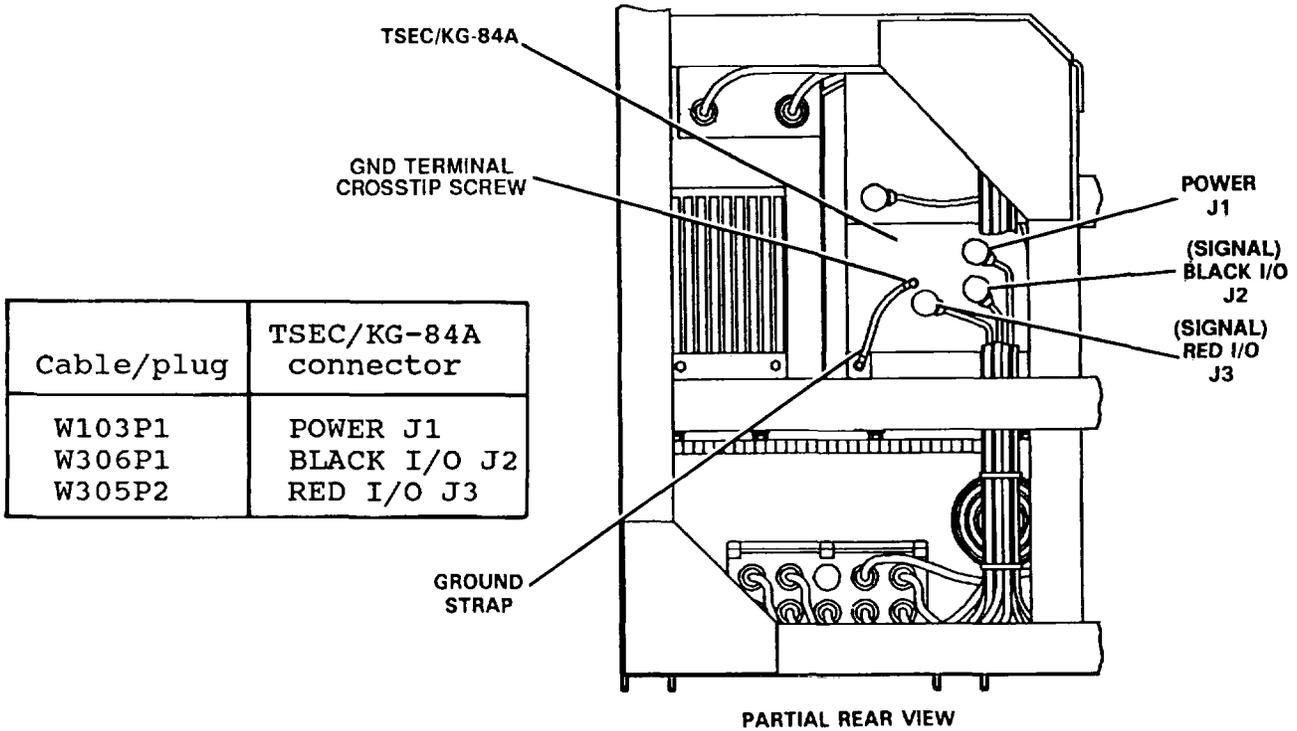
STEP

5   On TSEC/KG-84A, loosen 2 thumbscrews and open access panel. Make the following control settings (these
settings should remain except for variations that are defined and permitted by operating directives):

Switch	Position
CLOCK:	1
DATA MODE:	2
DATA RATE (TX and RX):	4
TOGGLE SWITCHES (A-B):	B
STEP PULSE INTVL:	1
TTY MODE:	5
INTFC:	1
DATA LENGTH:	SYNC
SYNC MODE:	4
COMM MODE:	2
+8/+0 SWITCH:	+0

2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

INSTALLATION OF TSEC/KG-84A

STEP

6 Slide TSEC/KG-84A to its stationary position on its mount and secure by tightening 2 clamp bolt assemblies as follows:

- Slide collars onto hold down hooks on TSEC/KG-84A.

- Tighten knobs.
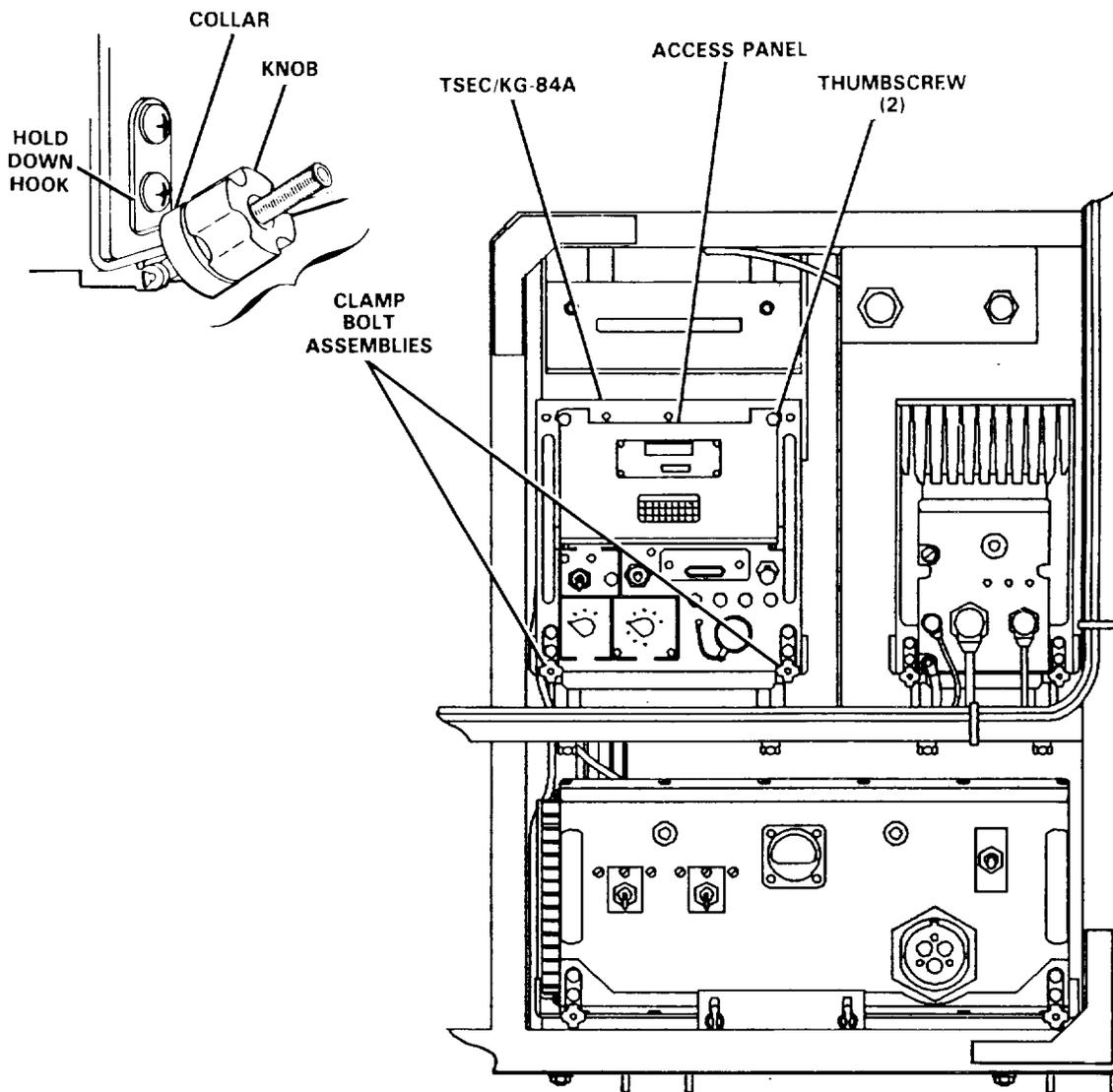
PARTIAL FRONT VIEW

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

(3) KG-84 Nonsecure Bypass Assembly Hookup. The KG-84 nonsecure bypass assembly is utilized during nonsecure data operations (with TSEC/KG-84A removed).

KG-84A NONSECURE BYPASS ASSEMBLY HOOKUP

STEP
1   On TSEC/KG-84A, pull out and set ENABLE-ZEROIZE switch to ZEROIZE
position and set POWER ON-OFF switch to OFF. Ensure TT PS DC and AC ON-OFF switches are set to OFF (If Team Terminal is powered up, perform power-off sequence (para 2-7i).

STEP
2   Loosen 2 clamp bolt assemblies to free TSEC/KG-84A from its mount.

- Loosen knobs.

- Slide collars off of hold down hooks and allow clamp bolt assembly to fall free of TSEC/KG-84A.

STEP
3   On rear panel of TSEC/KG-84A, disconnect cable plugs W103P1, W306P1, and W305P2 and then dis-connect ground strap.

TSEC/KG-84A

CLAMP BOLT ASSEMBLIES

COLLAR

KNOB

HOLD DOWN HOOK

GND TERMINAL HEX NUT
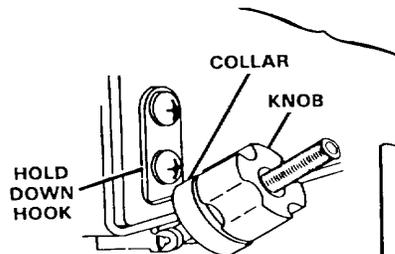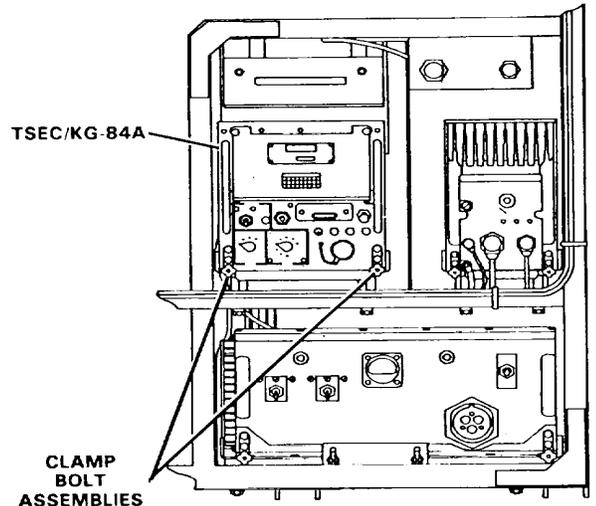
W103P1

W306P1

W305P2

GROUND STRAP
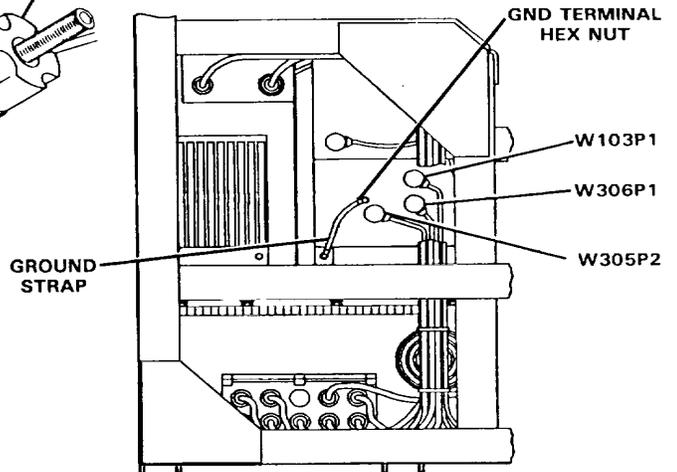
PARTIAL REAR VIEW

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

> ### KG-84A NONSECURE BYPASS ASSEMBLY HOOKUP (Cont.)

STEP

4   Remove TSEC/KG-84A from its mount.

STEP

5   Remove connector covers
from connectors J3 and J2 on
KG-84 nonsecure BYPASS ASSEMBLY.

STEP

6   Make the following connections
to KG-84 nonsecure bypass assembly:
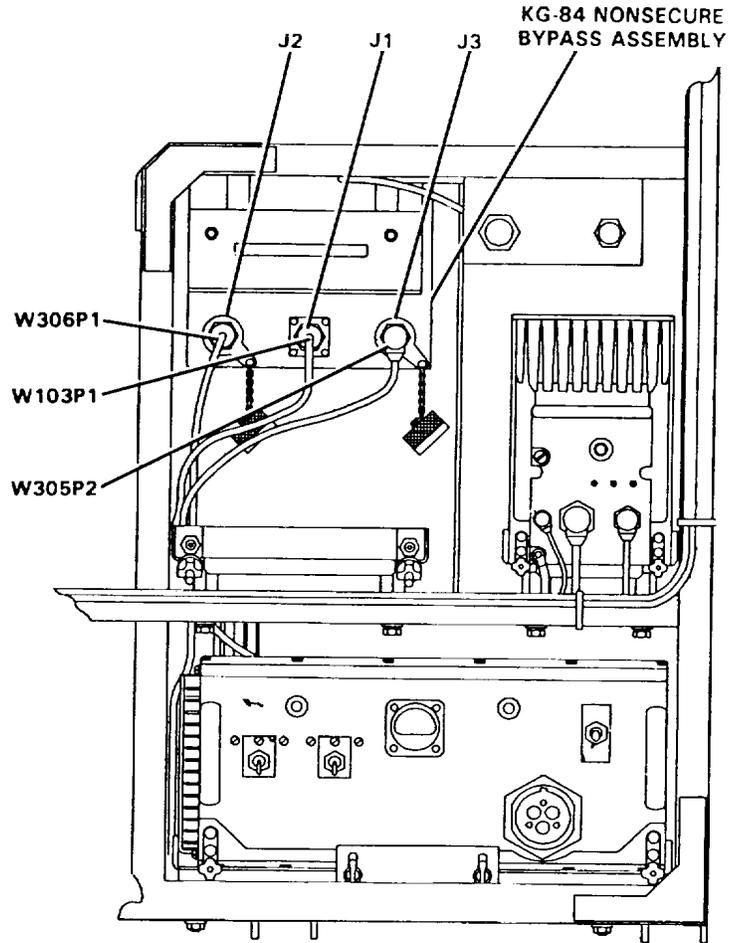
Cable/plug	KG-84 nonsecure bypass assembly connector
W103P1	J1
W306P1	J2
W305P2	J3

PARTIAL FRONT VIEW

2-41

2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

(4) Configure for Remote Data Operation.

CONFIGURE FOR REMOTE DATA OPERATION

STEP

1 On I/O Unit, set POWER ON switch to off (down position). Disconnect cable plug W309P1 from DISPLAY PWR/SIG connector J5.

STEP

2 Loosen and free 4 spring latches (1 on each side, and 2 on top). Remove the D/K assembly from the I/O Unit.

STEP

3 Interconnect the D/K assembly and the controller assembly via remote cable W313 (20 ft) as follows:

Cable/plug	Connector
W313P1 W313P2	J5 on controller assembly W309P1 on remoted D/K assembly
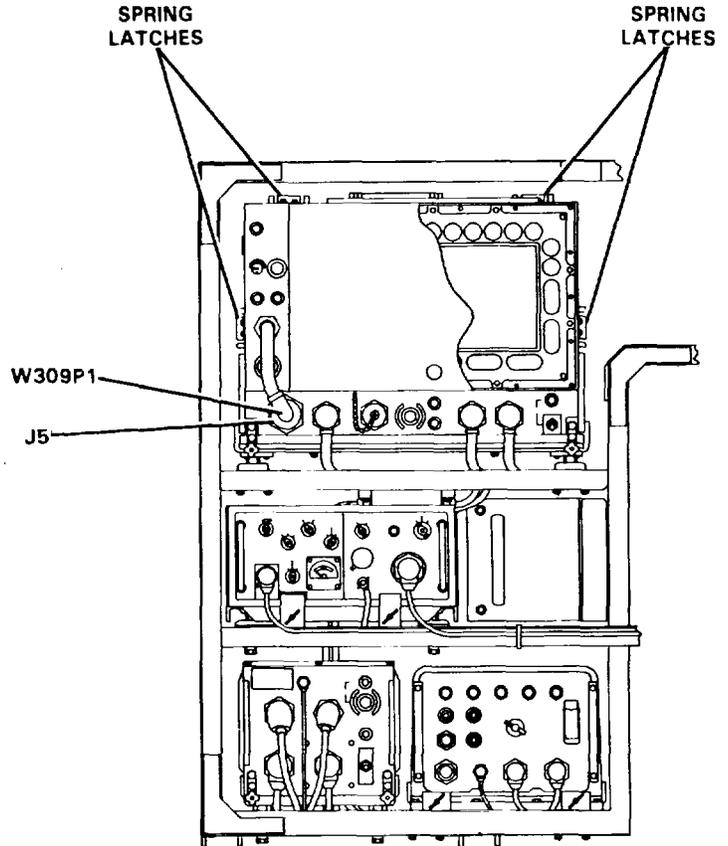
STEP

4 Place the D/K assembly at desired remote location.

2-42

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE FOR REMOTE DATA OPERATION (Cont.)

CONTROLLER
ASSEMBLY

J5

D/K ASSEMBLY
(REMOTED)

W313P1

W309P1   W313P2

REMOTE CABLE
W313
(20 FT)

REPLACEMENT IN EQUIPMENT RACK
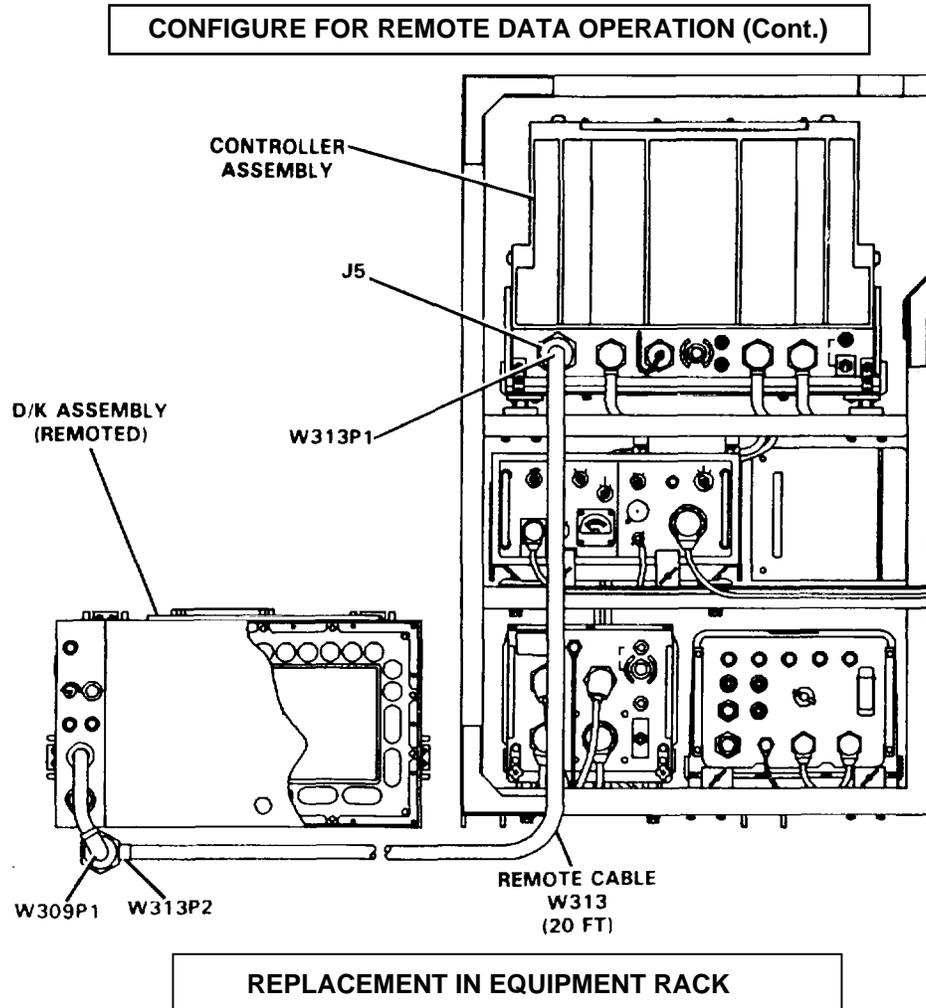
STEP
1   On I/O Unit, set POWER ON switch to off (down) position.

STEP
2   Disconnect remote cable W313 and place in storage area.

STEP
3   Mount the D/K assembly on the controller assembly and secure by
fastening 4 spring latches.

STEP
4   Connect cable plug W309P1 to DISPLAY PWR/SIG connector J5 on
controller assembly.

2-43

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

(5)   Configure for Remote Voice Operation.

CONFIGURE FOR REMOTE VOICE OPERATION

STEP
1   Set RT power ON-OFF switch to
OFF. Set I/O Unit POWER switch to off
(down position).

STEP
2   Disconnect cable plugs W202P1,
W304P1, W308P1, W307P1, W312P1, and
Handset (If Required) from RT front panel.

STEP
3   Disconnect cable plug W304P2
from Vehicular Adapter front panel.
Place W304 in storage box.

STEP
4   On Vehicular Adapter, loosen
and free 4 clip latches, and remove
RT from Vehicular Adapter by pulling
forward.

STEP
5   Remove ECCM Module from R/E by
loosening 7 spring latches (2 located
on top and bottom, 2 on left-hand side
and 1 on right-hand side).

STEP
6   Remove R/E terminal from remote
location by loosening 4 spring latches
(2 located on top and 2 on bottom).

STEP
7   Install R/E terminal in R/E and
secure by fastening 4 spring latches.
Install ECCM Module in remote location
and secure fastening 7 spring latches.
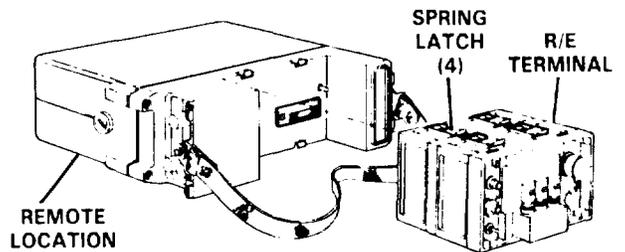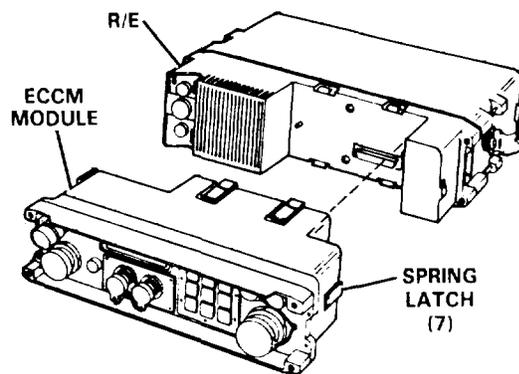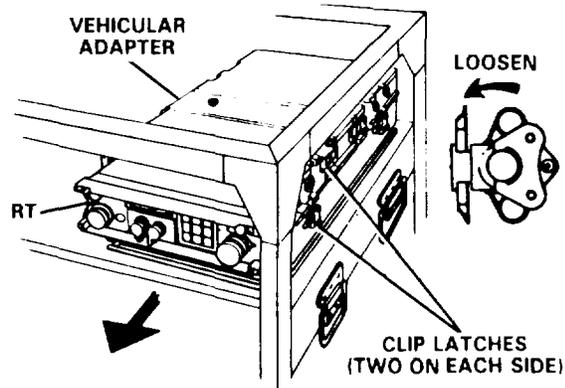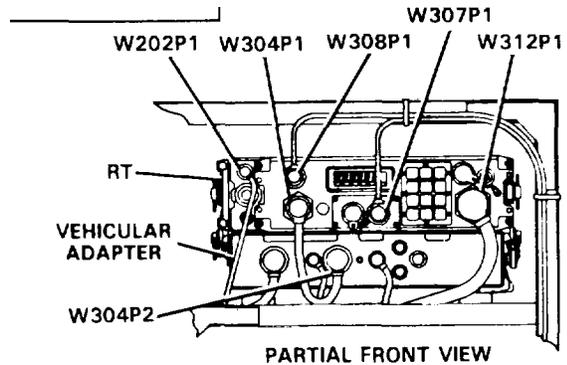
2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE FOR REMOTE VOICE OPERATION (Cont.)

ASSEMBLY (Cont.)

STEP
8   Return the R/E (with R/E terminal) to the Vehicular Adapter and secure by fastening 4 clip latches. Connect cable plug W202-Pl to DIP 50 ohm connector on R/E.
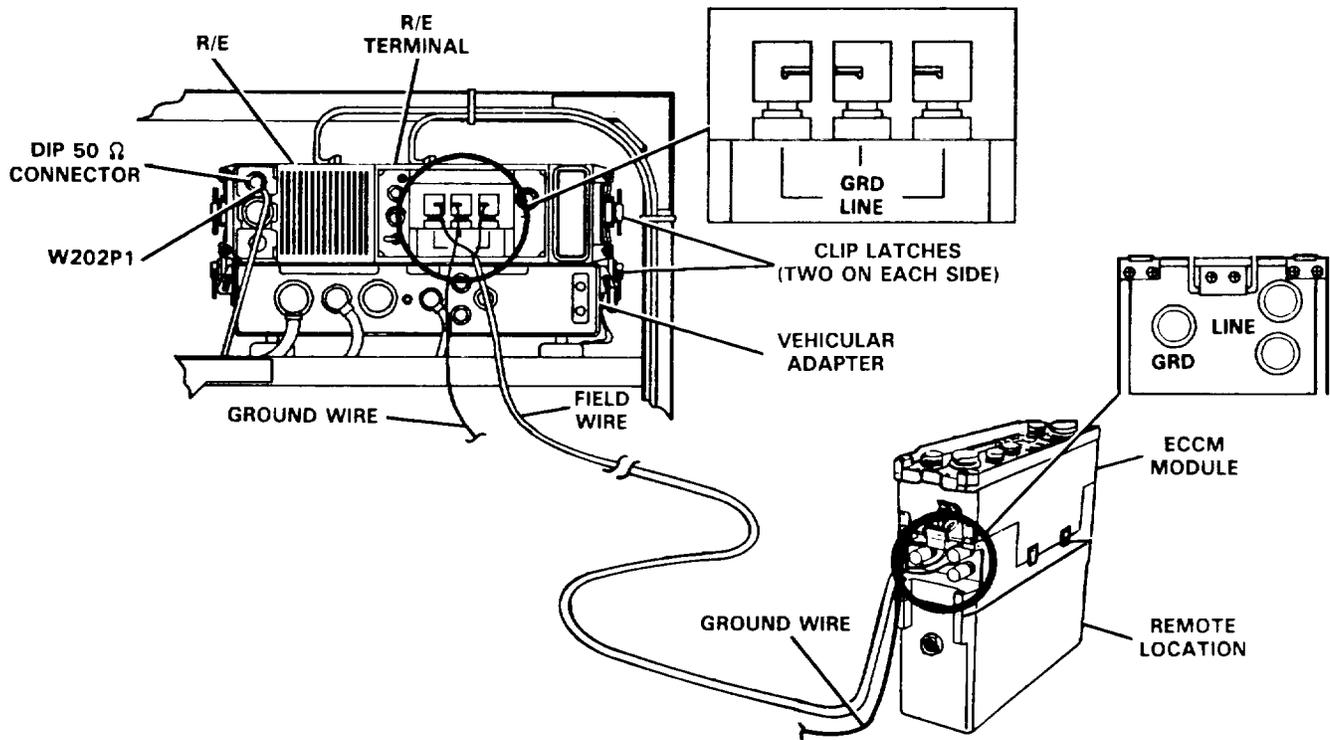
STEP
9   Connect field wire between R/E terminal and remote location. Connect the wires to the LINE binding posts on the R/E terminal and on the Remote Location.

STEP
10   Connect a ground wire from the GRD binding post on the R/E terminal to ground stake. Similarly, connect a ground wire from the GRD binding post on the remote location to ground stake.

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

<div align="center">

CONFIGURE FOR REMOTE VOICE OPERATION (Cont.)

DISASSEMBLY

</div>

STEP
1   Set R/E power ON-OFF switch to OFF. Set remote location R/T-OFF-TEL. switch to OFF. Disconnect cable plug W202P1 from DIP 50ft (ohm) connector.
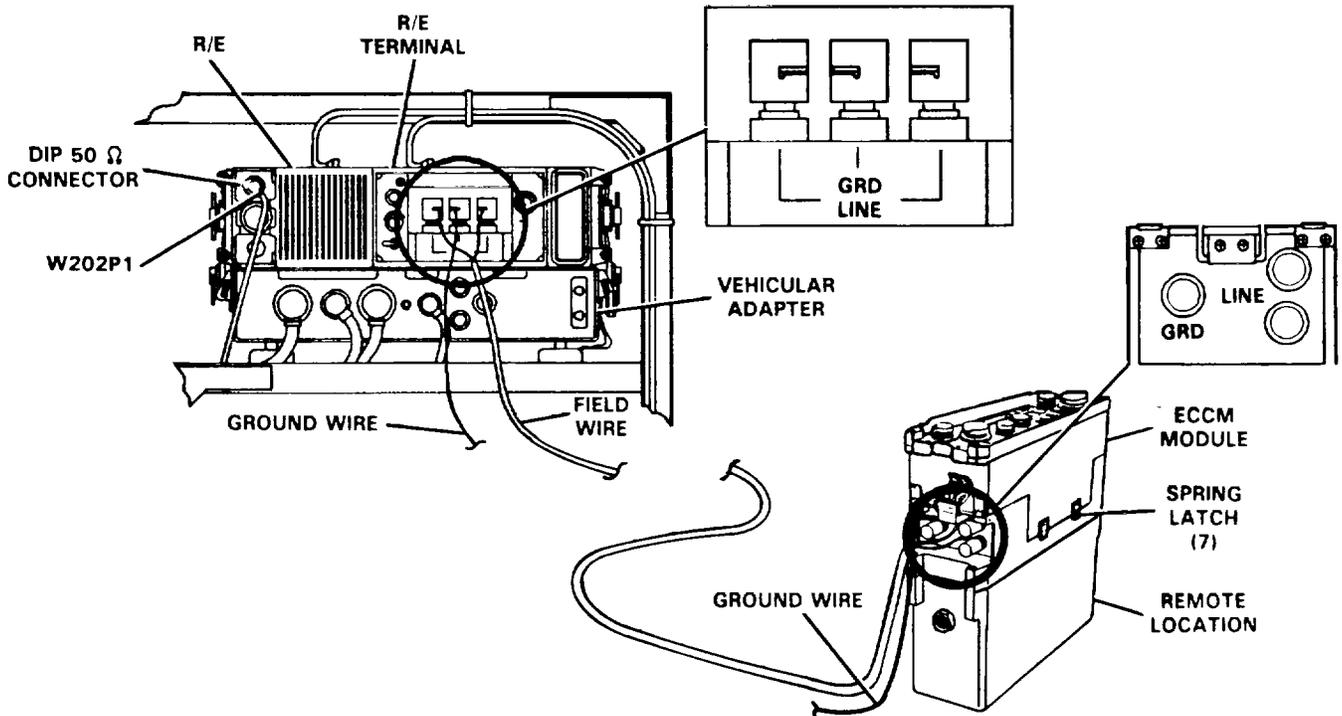
STEP
2   Disconnect field wire from LINE binding posts on the R/E terminal and the remote location. Disconnect ground wires from R/E terminal and remote location. Return field wire and ground stakes to storage.

STEP
3   Remove ECCM Module from remote location by loosening 7 spring latches (2 located on top and bottom, 2 on left-hand side and 1 on right-hand side).

STEP
4   On Vehicular Adapter, loosen and free 4 clip latches. Remove R/E (with R/E terminal) from Vehicular Adapter by pulling forward.
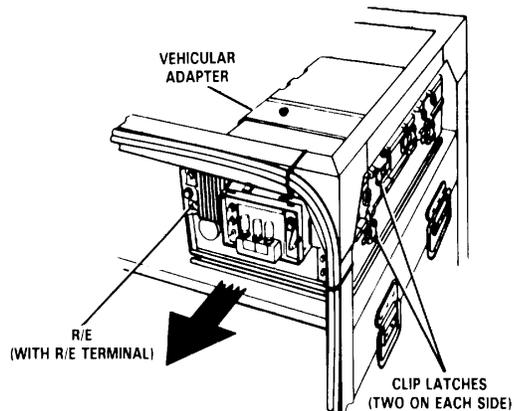
2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE FOR REMOTE VOICE OPERATION (Cont.)

DISASSEMBLY (Cont.)

STEP
5 Remove R/E terminal from R/E by loosening 4 spring latches (2 located on top and 2 on bottom).
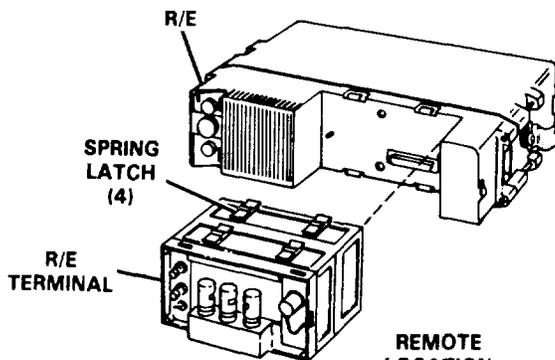
STEP
6 Install R/E terminal in remote location and secure by fastening 4 spring latches. Return Remote Control Set to storage.
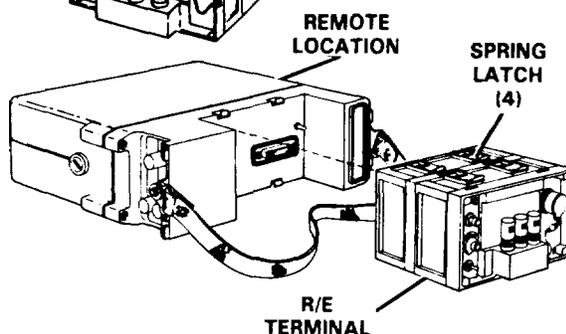
STEP
7 Install ECCM Module in R/E and secure by fastening 7 spring latches. Mount the RT to front of Vehicular Adapter and secure by fastening 4 clip latches.
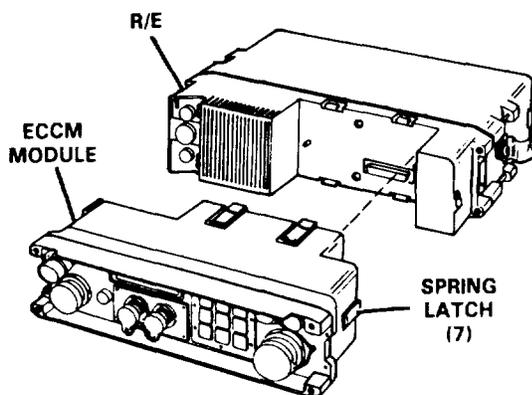
STEP
8 Obtain W304 from storage box and connect W304P2 to FAST SYNTH connector on Vehicular Adapter.

STEP
9 Make the following connections to the RT front panel:

Cable/plug	Connector
W202P1	DIP 50
W304P1	VEH ADPTR J2
W308P1	AUDIO J1
W307P1	SYNC J4
W312P1	REMOTE J6

2-47
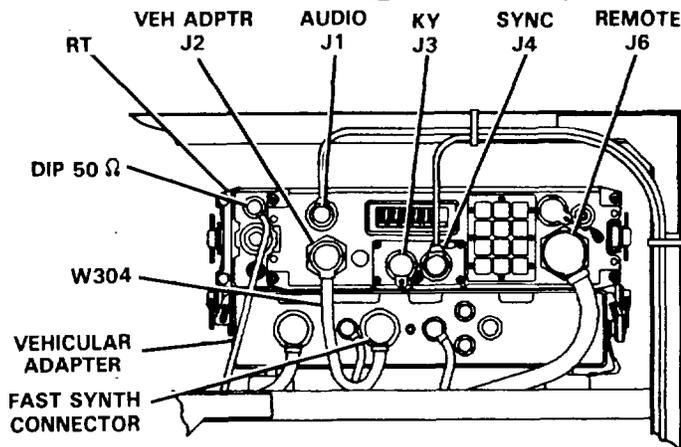
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

(6) Installation of Whip Antenna.

CAUTION

Prior to antenna installation, ensure power is off. Perform terminal
power-off sequence (para 2-8i).

AT-1039/U
AT-1040/U
AT-1041/U
AT-1042/U

AT-1039/U
AT-1040/U
AT-1041/U
AT-1042/U

INSULATOR

BASE
SECTION

ANTENNA
BASE
AB-1335/G
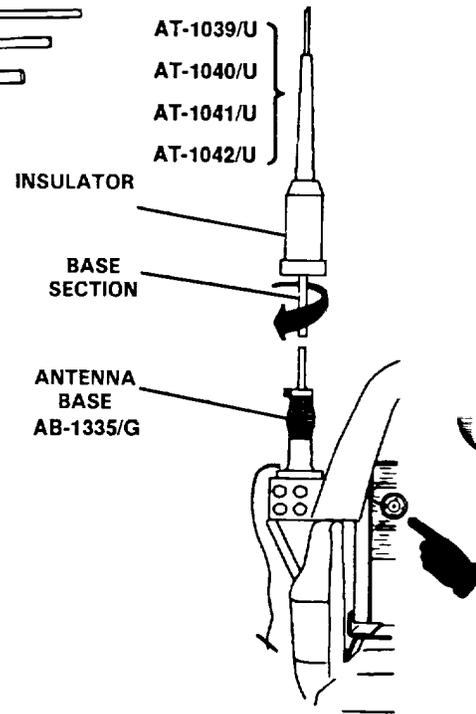
NOTE

Wipe the unpainted and threaded areas thoroughly to
remove all moisture, dust, oils or other contaminating
materials.

NOTE

Make sure an ANTENNA TIP CAP is firmly in place on the
tip of the top antenna element. Use low temperature tape
if necessary to tape the ANTENNA TIP CAP in place.

STEP
1   Assemble the 4 sections of the
Whip Antenna.

STEP
2   Slide the insulator boot onto
the base section. Place the large
threaded butt of the base section over
the Antenna Base and turn clockwise
until secure. Do not overtighten.

STEP
3   Pull the antenna insulator boot
over the spring section of the Antenna
Base.

STEP
4   Ensure antenna cable W1 is
attached to the screw hole located on
the nut portion of the antenna matching
capacitor.

ATU
SAFETY CAP

W1

CROSS-HEAD
SCREW

W1

ANTENNA
MATCHING
CAPACITOR

Change 2 2-48
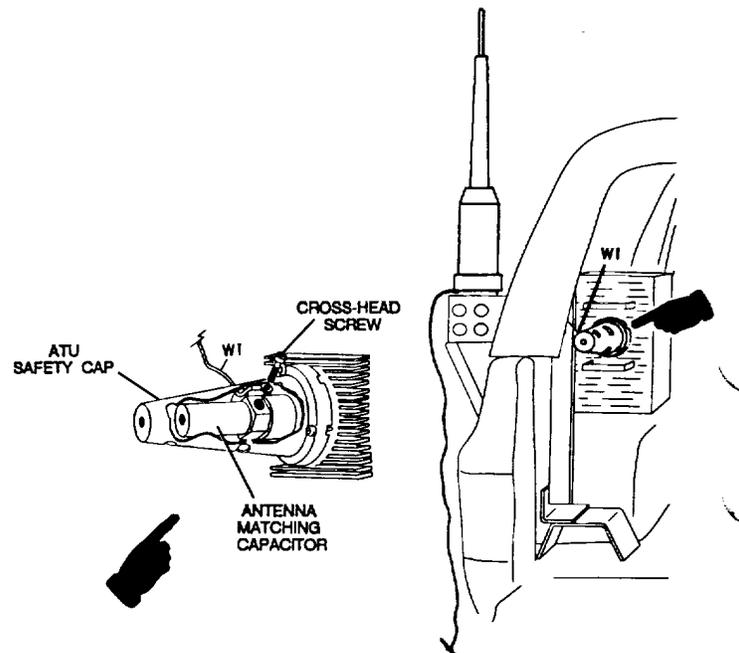
2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

(7) Installation of NVIS Antenna.

CAUTION

Prior to antenna installation, ensure power is off. Perform terminal
power-off sequence (para 2-8i).

INSTALLATION OF NVIS ANTENNA

ASSEMBLY

STEP
1   Open NVIS Antenna storage pack
and remove NVIS Antenna sections. Assem-
ble NVIS Antenna in accordance with the
instructions sewn on storage pack. Use
only as many mast sections as necessary
to raise antenna approx. 16 ft. 9 in high

STEP
2   Install NVIS Antenna Adapter on
Antenna Base and connect ground strap
to angle washer.
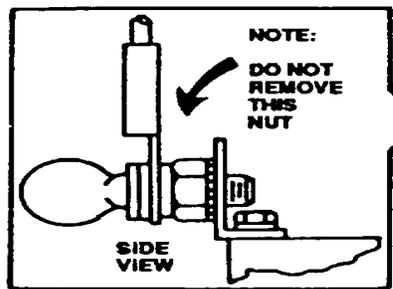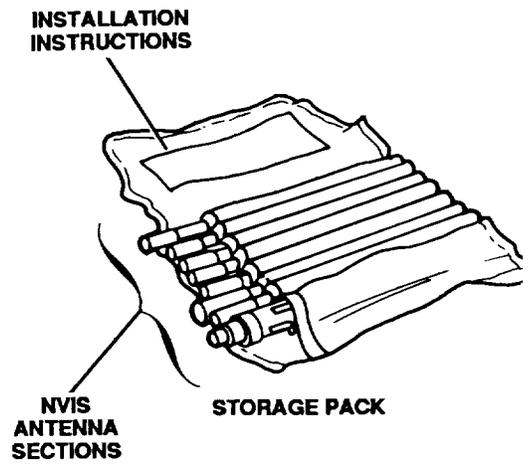
STEP
3   Install assembled NVIS Antenna
on NVIS Antenna Adapter. Anchor guys.

STEP
4   Move antenna cable W1 connection
thru outer slot of ATU safety cap to tip
of antenna matching capacitor.
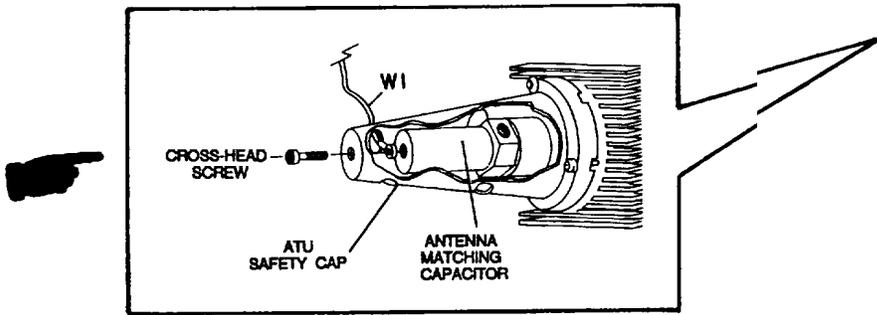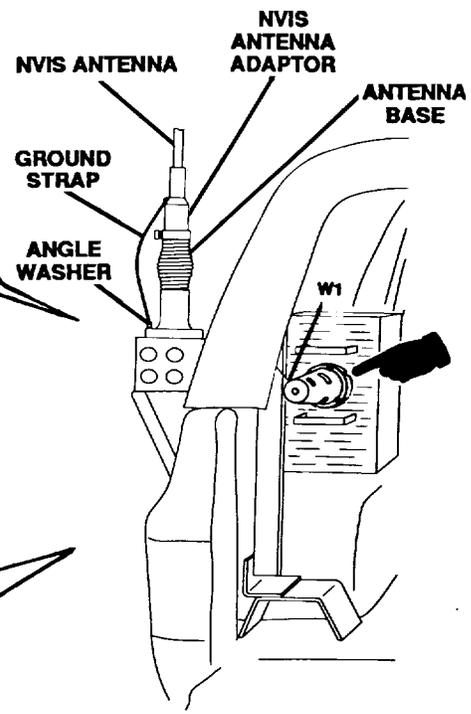
2-5. ASSEMBLY AND PREPARATION FOR USE (Cont.)

b. Manpack Configuration. Assembly and preparation for use for manpack operations include the following procedures:

• Configure for Manpack Operation.

• Configure Manpack for Secure Voice Operation.

(1) Configure for Manpack Operation.

| CONFIGURE MANPACK |

| ASSEMBLY |
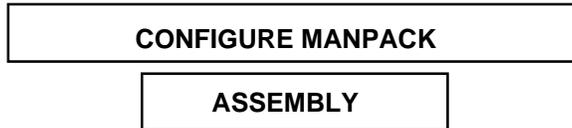
STEP
1 Set RT power ON-OFF switch to OFF. Set I/O Unit POWER ON switch to OFF (down position).
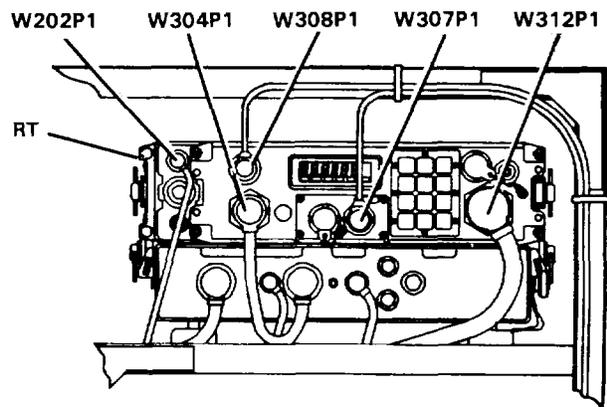
STEP
2 Disconnect cable plugs W202P1, W304P1, W308P1, W307P1, W312P1 and Handset (if required) from RT front panel. Place connector covers on connectors.

STEP
3 Loosen and free 4 clip latches securing Battery Case/ Charger to Vehicular Adapter. Remove the Battery Case/Charger by pulling rearwards from the equipment rack.
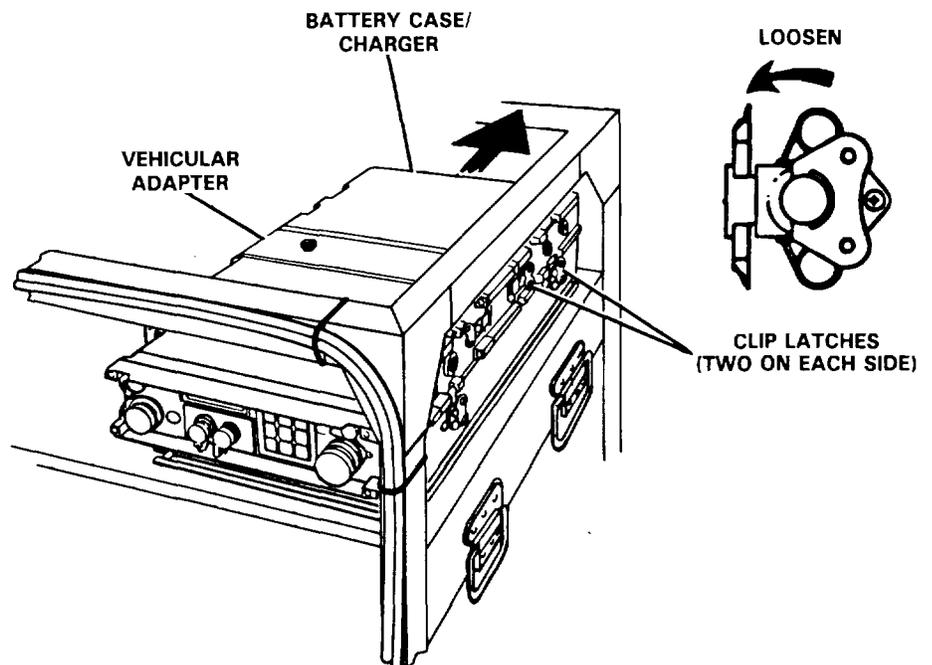
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

| CONFIGURE MANPACK (Cont.) |

| ASSEMBLY (Cont.) |

STEP

4   On Vehicular Adapter, loosen and free 4 clip latches. Remove the RT from Vehicular Adapter by lifting up and pulling forward.

VEHICULAR
ADAPTER

RT

CLIP LATCHES
(TWO ON EACH SIDE)
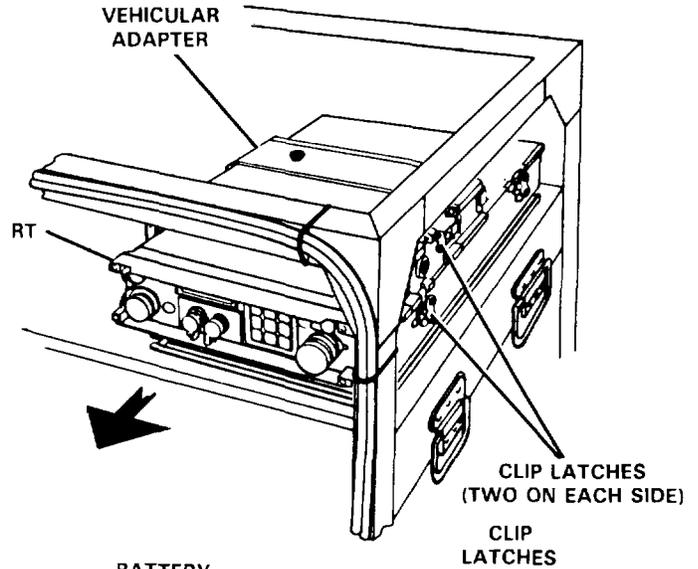
CLIP
LATCHES

STEP

5   Mount the Battery Case/Charger to rear of RT; secure unit by fastening 2 clip latches.

BATTERY
CASE/CHARGER

RT
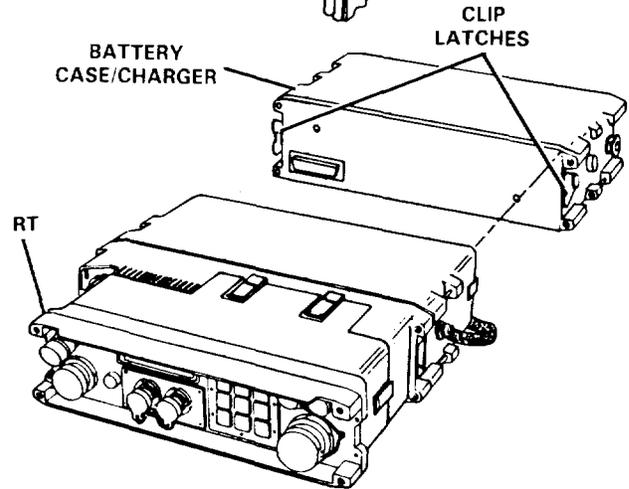
STEP

6   Connect Manpack Whip Antenna to antenna connector and connect Handset to AUDIO connector J1.
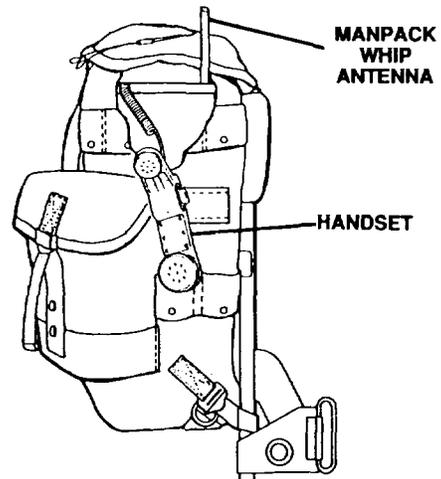
MANPACK
WHIP
ANTENNA

HANDSET

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE MANPACK (Cont.)

DISASSEMBLY AND REPLACEMENT IN RACK

STEP
1   On RT, set power ON-OFF
switch to OFF and disconnect
Handset and Manpack Whip Antenna.

STEP
2   Loosen and free 2 clip
latches disconnect Battery
Case/Charger from RT.
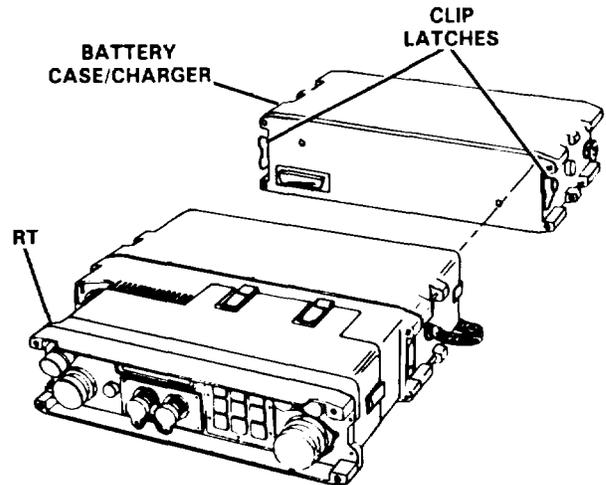
STEP
3   Mount RT to front of
Vehicular Adapter and secure
by fastening 4 clip latches.
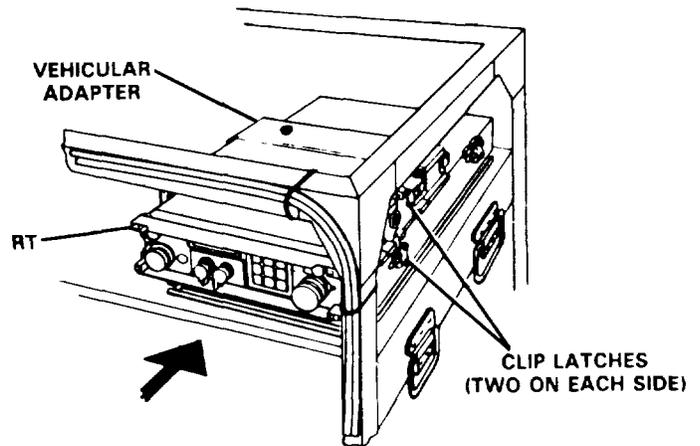
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE MANPACK (Cont.)

DISASSEMBLY AND REPLACEMENT
IN RACK (Cont.)

STEP
4   Mount Battery Case/Charger
to rear of Vehicular Adapter
and secure by fastening 4 clip
latches.
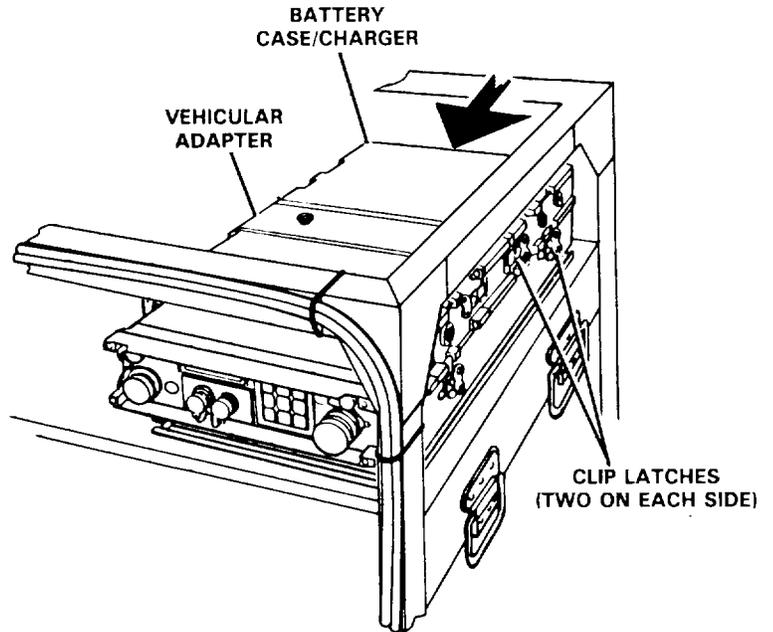
STEP
5   Make the following connections
to RT front panel:

Cable/plug	Connector
W202P1	DIP 50
W304P1	VEH ADPTR J2
W308P1	AUDIO J1
W307P1	SYNC J4
W312P1	REMOTE J6
Handset	KY J3

2-53
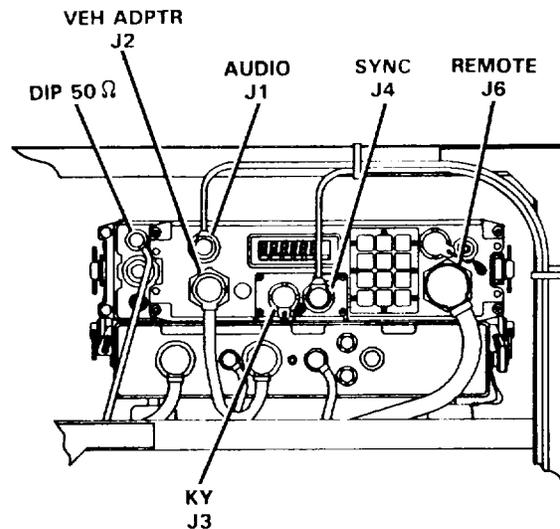
2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

(2) Configure Manpack for Secure Voice Operation.

CONFIGURE MANPACK FOR SECURE VOICE OPERATION

STEP
1   On TSEC/KY-65, pull out and set POWER switch to OFF/ZEROIZE. Ensure TT PS DC and AC ON-OFF switches are set to OFF (if Team Terminal is powered up, perform power off sequence (para 2-7i)).
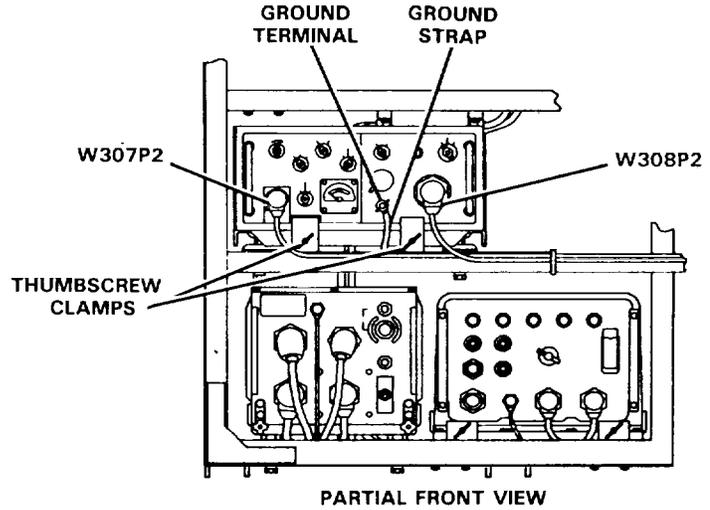
STEP
2   Disconnect cable plug W108P1 from POWER connector J1 on Z-AKE rear panel.

STEP
3   On TSEC/KY-65 front panel, disconnect cable plug W307P2 from HANDSET connector and cable plug W308P2 from RADIO connector. Disconnect ground strap from ground terminal.
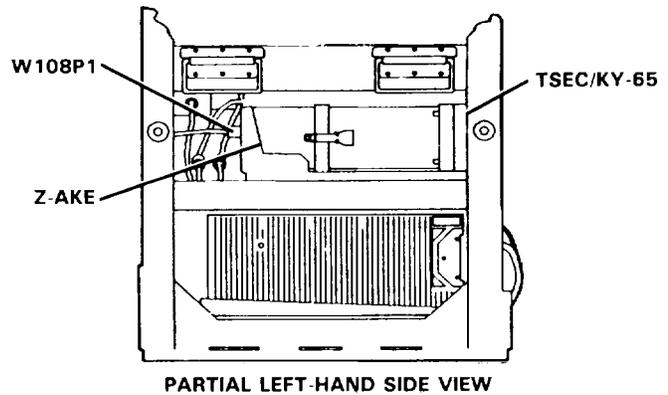
STEP
4   Loosen 2 thumbscrew clamps and remove TSEC/KY-65 with attached Z-AKE from rack assembly.

STEP
5   Loosen 2 spring latches and remove the Z-AKE from rear of TSEC/KY-65.
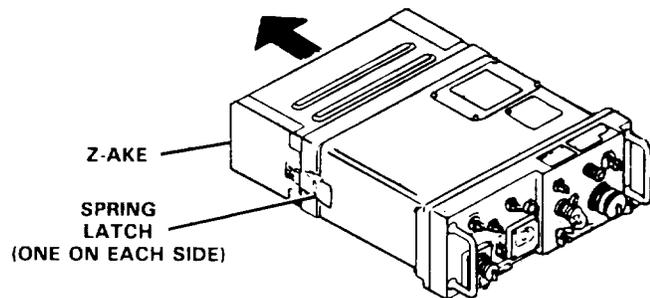
2-54

2-5.   ASSEMBLY AND PREPARATION FOR USE (Cont.)

CONFIGURE MANPACK FOR SECURE VOICE OPERATION (Cont.)

STEP
6   Mount Z-AKG to rear of TSEC/KY-65 and secure by fastening 2 spring latches. Interconnect cables W307 and W308 between TSEC/KY-65 and Manpack as follows:

Cable/plug	Connector
W307P1	SYNC J4 on Manpack
W307P2	HANDSET connector on TSEC/KY-65
W308P1	AUDIO J1 on Manpack
W308P2	RADIO connector on TSEC/KY-65
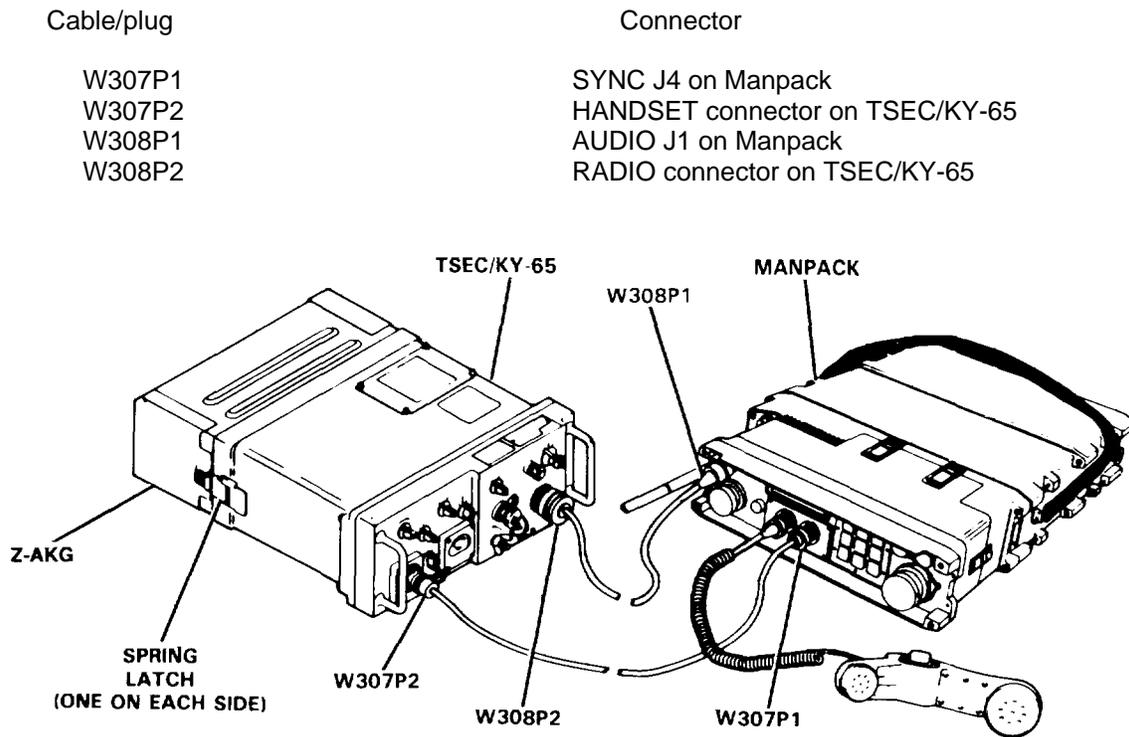
DISASSEMBLY AND REPLACEMENT IN RACK

STEP
1   On TSEC/KY-65, pull out and set POWER switch to OFF/ZEROIZE; on RT, set ON-OFF power switch to OFF.

STEP
2   Disconnect cables between TSEC/KY-65 and Manpack.

STEP
3   Reinstall TSEC/KY-65 in equipment rack in accordance with paragraph 2-5a(l).

2-6.   MANPACK OPERATING PROCEDURES

This paragraph contains procedures for you to understand and operate the Manpack. Manpack configuration procedures are provided in paragraph 2-5b. If Manpack operation will be initiated from a cold system, TOD for the RFO and TRANSEC variables for the ECCM must be loaded prior to removing the R/T from the terminal configuration.

a.   Manpack Turn On Procedure.

STEP
1   Place Manpack near front center of rack. Orient Manpack Whip Antenna away from obstruction (through opened vehicle door or window).

STEP
2   Remove cover from REMOTE connector J6 on RT. Connect W312P1 to REMOTE connector J6.

2-56
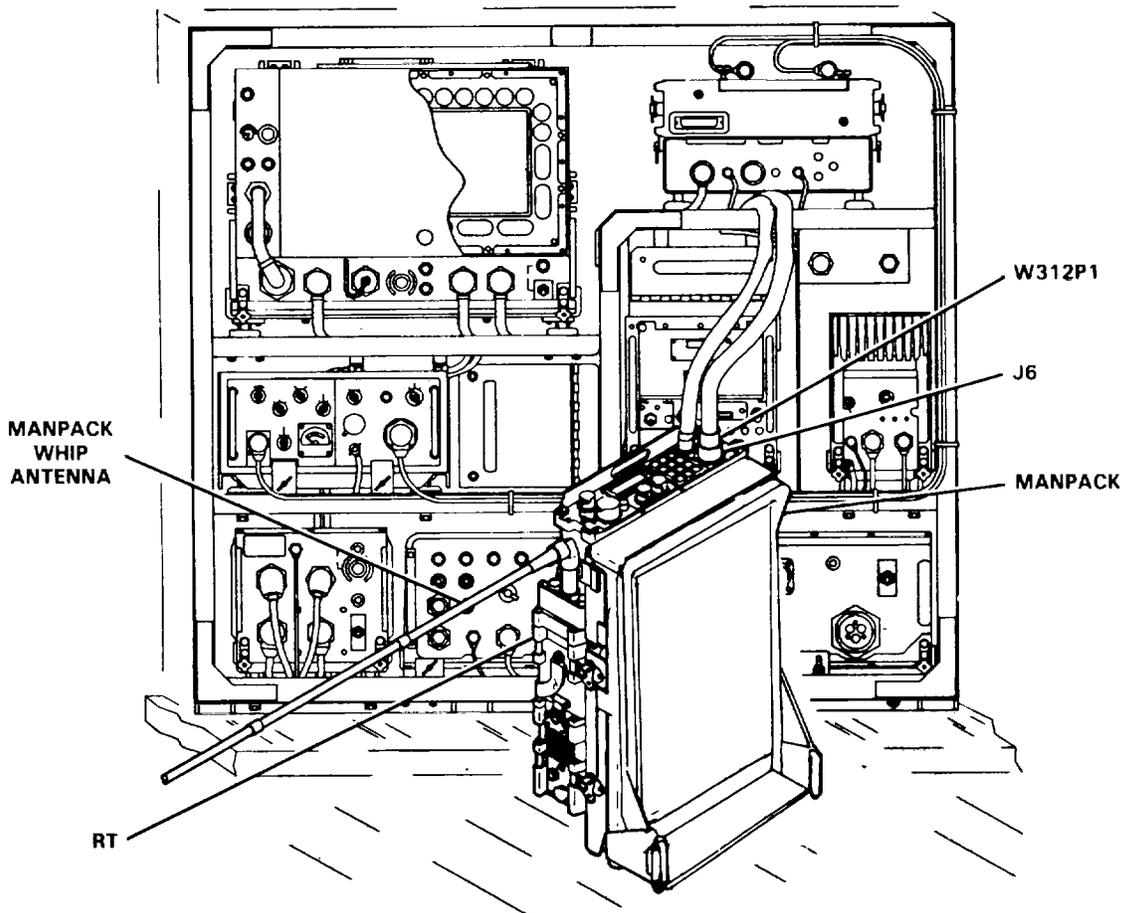
2-6.   MANPACK OPERATING PROCEDURES (Cont.)

MANPACK TURN ON PROCEDURE (Cont.)

STEP
  3   On Battery Case/Charger, Pull and set NORMAL-EXT. BAT. switch to NORMAL position.

STEP
  4   On RT, set power ON-OFF switch to ON (RT runs off-line BIT upon power-up).

STEP
  5   On I/O Unit, set POWER switch to ON (if terminal is powered off, perform terminal power on sequence (para 2-8a)).

STEP
  6   Initialize for ECCM voice operation (perform steps 1 through 13 of initialization procedures (para 2-8b)).

STEP
  7   Observe RT display for: [**A** LPR   USB]   When this occurs, set I/O Unit POWER switch to OFF.

STEP
  8   Disconnect W312P2 from REMOTE connector J6 on RT. Replace connector cover on J6.

STEP
  9   Insert R/T into carrying harness

STEP
  10   Operate Manpack as follows:

   •   Enable/Disable ECCM Mode (para 2-6h).

   •   Select manual frequency (para 2-6b).

   •   Load preset channels (para 2-6c).

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

$$\boxed{\textbf{MANPACK TURN ON PROCEDURE (Cont.)}}$$

- Select preset channels (para 2-6d).

- Fine tune as required (para 2-6e).

- Change sidebands as required (para 2-6f).

- Select power level (para 2-6g).

- Change TRANSEC variables (para 2-6i).

- Enable secure voice mode (para 2-6j).

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2-6.   MANPACK OPERATING PROCEDURES (Cont.)

b.   Selecting Manual Frequencies for Manpack.

This procedure shows you how to manually select operating frequencies. With your Manpack turned on, perform the following procedures:

NOTE

If you make a mistake while entering the frequency, clear the incorrect entry by pressing the

[2ND #] key and then the key. [7 CLR] For each incorrect digit. Then enter the correct number

and press enter. The RT display will show the new frequency.

**STEP
1**   Press the first number key of the new frequency.

Example [2↑] :

The display shows

**STEP
2**   Press the second number key of the new frequency.

Example [7 CLR] :

The display shows

**STEP
3**   Press the third number key of the new frequency.

Example [2↑] :

The display shows

2-59

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

| SELECTING MANUAL FREQUENCIES FOR MANPACK (Cont.) |

**STEP
4**   Press the fourth number key of the new frequency.

Example [5 ACT] :   [display shows frequency   LPR   USB]
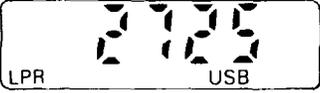
The display shows

**STEP
5**   Press the fifth number key of the new frequency (proceed to step 7 if new operating frequency contains only five digits).

Example [0 PST] :   [display shows frequency   LPR   USB]

The display shows

**STEP
6**   Press the sixth number key of the new frequency.

Example [0 PST] :   [display shows frequency   LPR   USB]

The display shows

**STEP
7**   Press the [ENT TST] key to set the operating frequency into the RT.

The display shows the decimal point.   Example: [display shows frequency   LPR   USB]

NOTE

The left-most digit will blink to indicate an invalid entry. To correct error, re-enter frequency.

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

c.   Loading Preset Channels into Manpack.

This procedure shows you how to load a preset channel into Manpack memory. The Manpack will accept 29 preset channel frequencies. In order to use a preset channel, each channel must be manually loaded into the Manpack memory.

STEP
1   Enter frequency numbers in accordance with first six steps of

SELECTING MANUAL FREQUENCIES procedure. Do not press [ENT/TST] key.
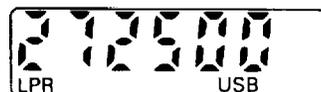
Example:

STEP
2   Press the [2ND/#] key and then press the [0/PST] key.

This display shows
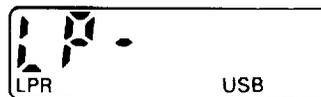
STEP
3   Now press the key number assigned to that preset channel.

Example [2↑] :
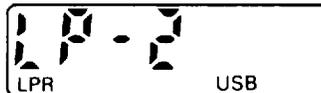
The display shows

STEP
4   Press the [ENT/TST] key to load the selected frequency into Manpack memory. The display will now show the frequency of the preset channel.

Example:

STEP
5   Repeat this procedure to preset up to 29 channels.

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

d.   Selecting Pre-Set Channels for Manpack.

After preset channels have been entered, tuning and operating on any of the preset channels may be accomplished as follows:

**STEP
1**   Press the [2ND #] key and then press the [0 PST] key.

The display shows ➔ | 2nd   LPR   USB |

and then ➔ | P-   LPR   USB |
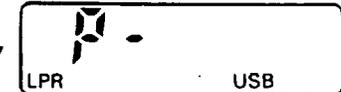
**STEP
2**   Enter desired preset channel number.

Example [2↑] : | P-2   LPR   USB |

The display shows ➔

Each time a number key is pressed, the display shows the number of the preset channel.

**STEP
3**   Press the [ENT TST] key. The Manpack is now tuned to the preset channel. The display shows the frequency of the preset channel.

Example: ➔ | 2 12500   MPR   USB |

NOTE

To recall last manually tuned frequency, select preset 0.

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

e.   Fine Tuning the Manpack.

STEP
1   To enter the fine tune mode, press the ⌷2ND#⌷ key and then the ⌷2↑⌷ key (if you wish to increase frequency) or ⌷3↓⌷ key (if you wish to decrease frequency).

The display shows → `2nd` LPR   USB

and then → `2.125000 TUN↑` LPR   USB
(to indicate tune up)

or this → `2.125000 TUN` LPR   USB
(to indicate tune down)
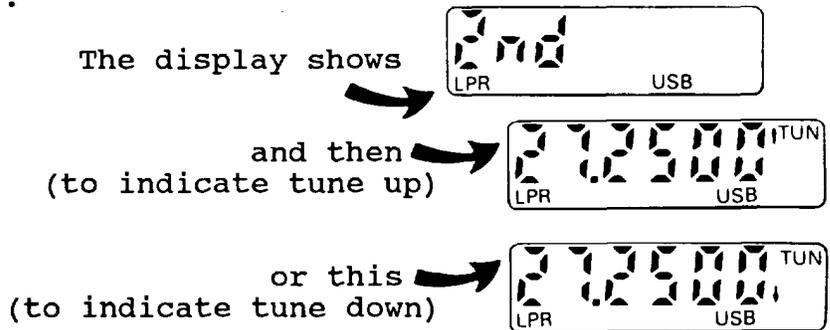
The TUN indicator on the display lights to show that the Manpack is in the fine tune mode and the ↑ or ↓ indicator lights to show that the Manpack is set to tune up or down respectively.

STEP
2   Hold down ⌷2↑⌷ or ⌷3↓⌷ key as required to fine tune the Manpack (the display shows 100 Hz increments/decrements while tuning).

STEP
3   Exit the fine tune mode by pressing the ⌷ENT TST⌷ key.

NOTE

If no key entries are made within 30 seconds, the Manpack automatically exits fine tune mode, reverts back to previous mode and turns off the display back-lighting.

The Manpack will not tune below 2.0000 MHz or above 29.9999 MHz.

2-6.   MANPACK OPERATING PROCEDURES (Cont.)

f.   Changing Sidebands for the Manpack.

Sideband indicator LSB (lower sideband) or USB (upper sideband) light to indicate present sideband setting. To change sideband setting proceed as follows:

STEP
1   Initiate sideband select mode by pressing the [2ND #] key and
then the [6 SB] key.

The display shows ➥ [Snd   LPR   USB]

and then ➥ (to indicate USB) [Snd   LPR   \|/ USB /|\]

or this ➥ (to indicate LSB) [Snd   LPR   \|/ LSB /|\]
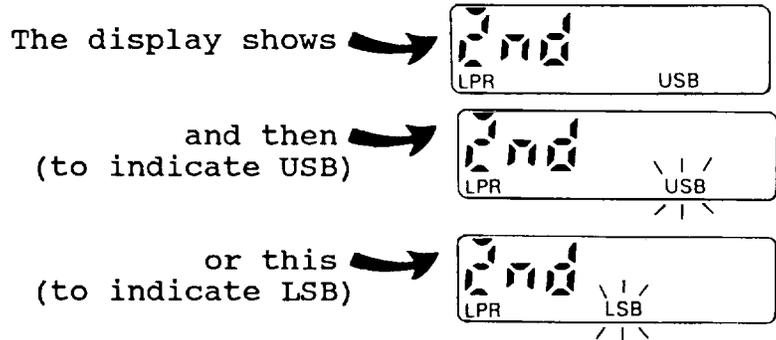
The LSB or USB indicator blink to indicate present sideband setting.

STEP
2   Press the [6 SB] key again to change sideband setting; LSB and
USB toggle with each depression of the [6 SB] key.

STEP
3   Exit sideband select mode by pressing [ENT TST] key. Sideband
indicator for the selected sideband remains lighted.

NOTE

If no key entries are made within 30 seconds, the Manpack automatically exits sideband select mode, reverts back to previous mode and turns off the display back-lighting.

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2-6.   MANPACK OPERATING PROCEDURES (Cont.)

g.   Select Power Output Level for Manpack.

STEP
1   Initiate the power select mode by pressing the [2ND #] key and

then the [4 PWR] key.

The display shows ➡

and then ➡
(to indicate low power)
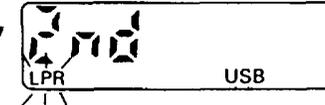
or this ➡
(to indicate high power)
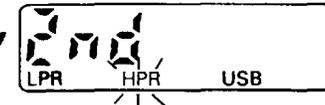
The power level indicator blinks to show the present power setting of the Manpack.

STEP
2   Press the [4 PWR] key to select desired power level. Selected

power level indicator blinks.

STEP
3   Exit power select mode by pressing the [ENT TST] key. The selected

power level indicator remains lighted.

NOTE

If no key entries are made within 30 seconds, the Manpack automatically exits power select mode, reverts back to previous mode and turns off the display backlighting.

2-6. MANPACK OPERATING PROCEDURES (Cont.)

h.   Enable/Disable Manpack ECCM Mode.

NOTE

Controller Terminal notifies when to enter ECCM mode.

TO ENABLE:

**STEP
1**   To enable ECCM mode, press the [2ND #] key and then the [5 ACT] key.

The display shows ➤ [Cnd   LPR   LSB]

and then ➤ [A   LPR   USB]

**STEP
2**   Press the [ENT TST] key. The displays shows ➤ [A   LPR   USB]

TO DISABLE:

**STEP
1**   To disable the ECCM mode, press the [2ND #] key and then press the [5 ACT] key.
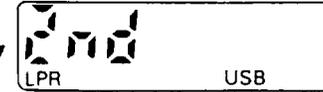
The display shows ➤ [Cnd   LPR   USB]

and then: ➤ [2.0000   LPR   USB]

**STEP
2**   Press the [ENT TST] key. The display shows the frequency setting now in memory.

example: ➤ [2.0000   LPR   USB]
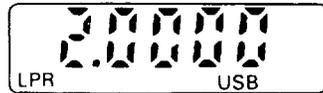
2-6.   MANPACK OPERATING PROCEDURES (Cont.)

i.   Changing/Loading TRANSEC Variables for Manpack.

NOTE

Fill device must not be connected while selecting variables.

**STEP
1**   Press the [2ND #] key and then press the [LOD] key.

The display shows ➔ [Cnd LPR   USB]

and then ➔ [LOd LPR   USB VAR]
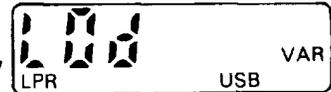
The VAR indicator on the display lights to show you have entered the
variable select mode.

**STEP
2**   Change variable by pressing the [2↑] key (for second variable).
The display shows:

➔ [LOd 2 LPR   USB VAR]

**STEP
3**   Now press the [ENT TST] key to exit the variable select mode. The
display VAR indicator goes off.

The display shows ➔ [LOAd LPR   USB]

and then ➔ [FILLEd LPR   USB]
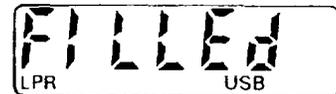
2-6.   MANPACK OPERATING PROCEDURES (Cont.)

j. Enable/Disable Manpack Secure Voice Mode.

Assembly procedures for the Manpack secure voice configuration are provided in paragraph 2-5b(2).

STEP
1   On TSEC/KY-65, set POWER switch to ON and set MODE switch to CIPHER. Load TSEC/KY-65 crypto variables (para 2-8b, step 4).

STEP
2   Operate Manpack in accordance with normal Manpack operating procedures (para 2-6a through para 2-6i).

STEP
3   To disable Manpack secure voice mode, set MODE switch on TSEC/KY-65 to PLAIN position or disconnect TSEC/KY-65 from Manpack and reinstall it in equipment rack (para 2-5a).
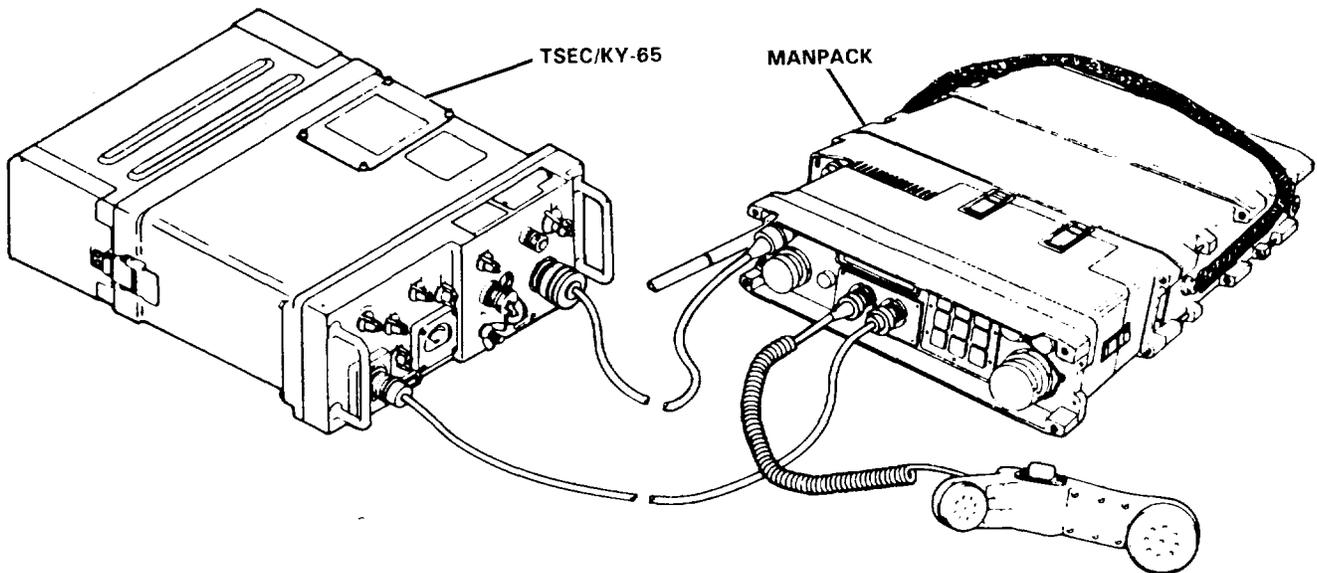
THIS COMPLETES MANPACK OPERATING PROCEDURES

2-7.   INITIAL ADJUSTMENTS, DAILY CHECKS AND SELF TEST

Automatic testing of the Team Terminal is initiated upon applying power to the I/O Unit. Refer to PMCS chart (para 2-4) for daily checks.

2-8.   TEAM TERMINAL OPERATING PROCEDURES

This paragraph contains procedures to help you understand and operate the Team Terminal when in the vehicular configuration. Separate procedures are provided for Manpack operation (para 2-8). The I/O Unit controls all data and voice functions in the Team Terminal vehicular configuration. Review the description and use of I/O Unit bezel keys (para 2-2). Perform the procedures listed in the Interval (column B) column of the preventive maintenance checks and services chart. If you are going to be operating in the nonsecure data mode, remove cables from TSEC/KG-84A and connect them to the KG-84 nonsecure bypass assembly (para 2-5a(3)). Step-by-step procedures for you to operate the Team Terminal are arranged as follows:

- POWER-ON SEQUENCE (para 2-8a) - These procedures are for applying power to the Team Terminal (vehicle battery or auxiliary power) and for powering-up individual equipments.

- INITIALIZATION (para 2-8b) - These procedures are for initializing the Team Terminal from a cold-start state. You will be instructed to load cryptographic and TRANSEC variables and then, using I/O Unit menu-driven procedures, select voice or data, transmit power level and operating mode, set the date and your geographic location, and enter initial frequency set.

- MESSAGE CREATION AND HANDLING (para 2-8c) - These procedures are for data message composition/transmission.

- SHOW MESSAGE (para 2-8d) - These procedures allow you to view the highest priority received message.

- OPERATIONAL SET-UP (para 2-8e) - These procedures allow you to change operating parameters while the Team Terminal is operating normally. Operational changes are made via a set-up menu.

- CHANGING TRANSEC VARIABLES (para 2-8f) - These procedures are for changing TRANSEC variable selection after the variables have been loaded. The TRANSEC variables are normally changed automatically. Do not change TRANSEC variables unless instructed by your controller.

- LEAVE NET (para 2-8g) - These procedures are for signing out of the data net.

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2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

- ZEROIZE (para 2-8h) - These procedures are for zeroizing the Team Terminal. This function zeroizes the COMSEC equipment including TSEC/KY-65, TSEC/KG-84A, and zeroizes the TRANSEC variables.

- POWER-OFF SEQUENCE (para 2-8i) - These procedures are for powering-off equipment.

- REMOTE DATA OPERATION (para 2-8j) - These procedures are for operating the Team Terminal when configured for remote data operations.

- REMOTE VOICE OPERATION (para 2-8k) - These procedures are for operating the Team Terminal when configured for remote voice operations.

- ERROR AND STATUS MESSAGES (App F) - Provides a listing and explanation of all error and status messages, you may encounter while operating the Team Terminal.

| WARNING |

When operating from a motor generator set, ground should be installed in the motor generator area. Generator ground, systems ground and fuel static ground must not be connected together.

| WARNING |

When operating the Team Terminal at halt, ground the vehicle. The angle washer located on the antenna base provides a convenient location to attach a ground strap.

NOTE

The Team Terminal may be configured to accept different sources of power. In all cases you will be instructed to place power switches to the ON positions. If a power switch trips, do not repeatedly reset; contact unit maintenance.

a. Power-On Sequence

STEP
  1   RFO RESET-OFF switch to OFF, if time-off-day (TOD) has already been loaded into the RFO. Set all other equipment power switches to OFF position.

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

POWER-ON SEQUENCE (Cont.)

STEP

2   Connect power source (vehicle power or auxiliary power) to Team Terminal.

- Vehicle Power - Start the vehicle.   (Connect vehicle input power cable W100 to PWR IN connector on TT PS). After the motor has begun to idle smoothly, set the DC ON-OFF switch on the TT PS to ON. The POWER indicator on the TT PS and the power ON indicator on the Vehicular Adapter light.

- Auxiliary Power - Connect 115 Vac input power cable W101 (CX-13373/G) or 230 Vac input power cable W102 (CX-13372/G) as applicable) to PWR IN connector on the TT PS. Start the motor generator. After the motor generator has stabilized to an even idle, set AC ON-OFF switch on the TT PS to ON. The POWER indicator on the TT PS and the power ON indicators on the Vehicular Adapter light.

TT PS   OUTPUT   W100   PWR IN
             VOLTAGE   CONNECTOR
             METER

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid black; text-align:center;">
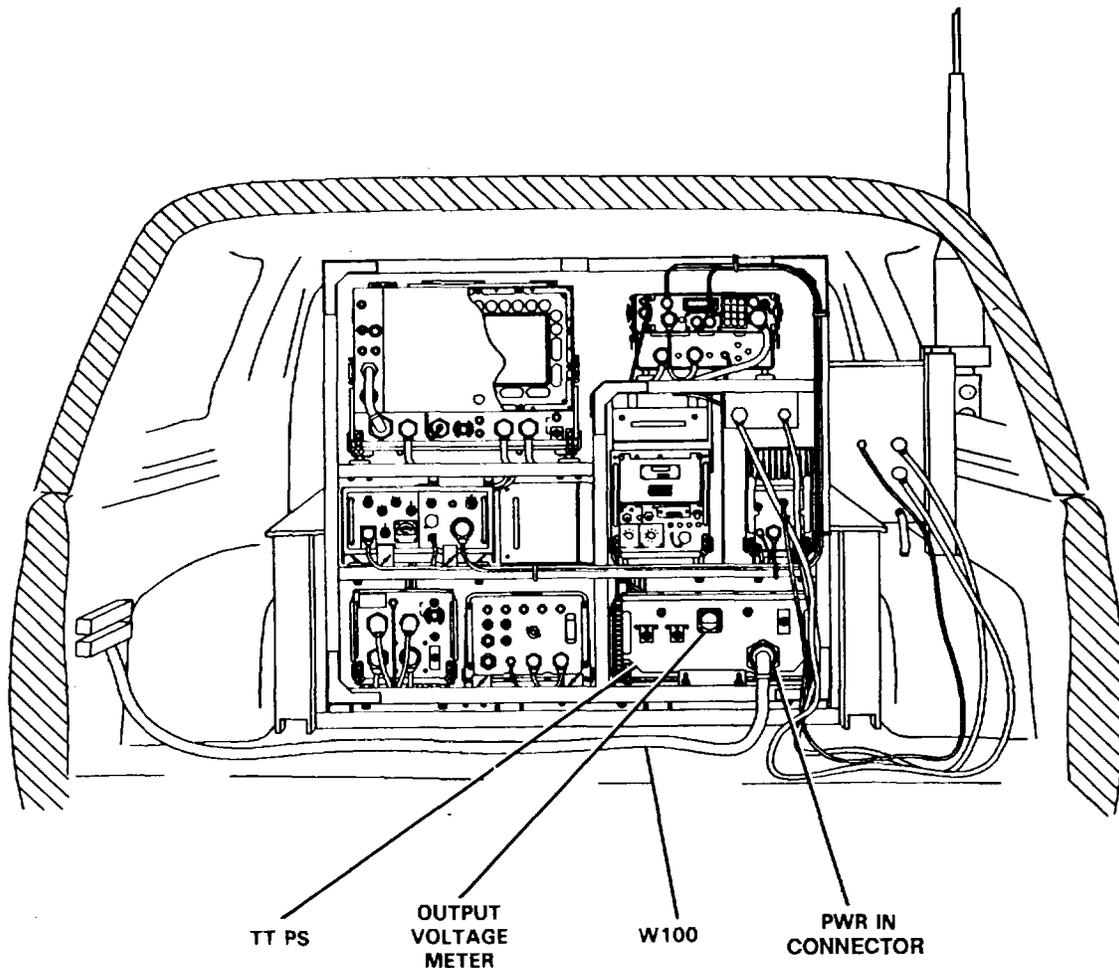
POWER-ON SEQUENCE (Cont)

</div>

STEP
 3   Check the TT PS output voltage level shown on the OUTPUT VOLTAGE meter. The voltage should be stable and should read between +26 and +30 Vdc.

STEP
 4   If vehicular power is used, set the RFO ON-OFF switch on the TT PS to ON. This will enable the RFO to remain powered-on and to retain TOD when the TT PS is powered-off.

NOTE

The RFO must remain powered-up after TOD has been obtained. If the RFO has been powered-down or if the power source has been interrupted, contact Mobile Maintenance Contact Team (MMCT) to obtain TOD. Navy personnel contact Chief Watch Officer. Air Force personnel contact Maintenance Control.

STEP
 5   If the RFO is in the powered-up state, proceed to step 6. Otherwise, proceed as follows:

- On RFO, set LAMPS switch to BRIGHT and set RESET-OFF switch to RESET. The EXT POWER indicator lights and the SET CLOCK indicator lights momentarily. The COLD OSC indicator lights to indicate internal oscillator is cold. Allow up to 30 minutes warmup for stabilizing internal oscillator (COLD OSC indicator goes out after warm-up period is over).

- Press BATT TEST switch and ensure BATTERY STATUS indicator lights (if the indicator does not light, contact genera support maintenance). Release BATT TEST switch.

- Contact MMCT or a Force Terminal to obtain TOD for the Team Terminal. Refer to Paragraph 3-11 for cable connection and loading procedure.

- When TOD is available to the Team Terminal, press and release the RCV TOD switch on the RFO. The SET CLOCK indicator lights. Upon receipt of a valid TOD, the SET CLOCK indicator will go off (the RFO FAULT indicator will light if TOD is not transferred within 7 seconds. The SET CLOCK indicator will light if the RFO loses TOD. If this occurs, repeat this step to reload the TOD.

- Set LAMPS switch for desired indicator lamp intensity (BRIGHT-DIM-OFF).

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2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid black; display:inline-block; padding:4px;">

POWER-ON SEQUENCE (Cont.)

</div>

STEP
6   On RN Modem, set PWR ON-OFF switch to PWR ON. The PWR ON indicator lights. The BIT indicator blinks for approximately 20 seconds during its BIT routine.

STEP
7   On TSEC/KG-84A (if configured for secure operations), set POWER ON-OFF switch to ON. The POWER indicator and the ALARM indicator light. The RN modem BIT indicator will light, and will not go out until KG-84A variable is loaded, and I/O is powered up and initialized.

STEP
8   Power-up the TSEC/KY-65.

- Pull out and set POWER switch to ON.

- Set and hold INT BAT-AUDIO-EXT BAT switch to EXT BAT. The meter on TSEC/KY-65 should indicate between +12.0 and +13.5 Vdc (external source voltage below +10.2 Vdc will cause TSEC/KY-65 to sound a battery fail alarm tone). Release INT BAT-AUDIO-EXT BAT switch.

- Connect Handset to KY connector on the RT. Turn the TSEC/KY-65 VOLUME control in a clockwise direction to a mid-range position.

- Set TSEC/KY-65 SYNC MODE switch to HF.

NOTE

Mechanical tuning of the ATU may be heard upon power up of the RT.

STEP
9   On RT, set power ON-OFF switch to ON. The RT display

shows: [.00 LPR USB] for approximately one-half second. The RT

begins its BIT routine. The RT display shows the following:

[rEAdY LPR USB] (for approximately 2 seconds)

[00.0000 TUN CTN VAR LPR MPR HPR LSB USB FAIL] (for approximately 3 seconds)

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

POWER-ON SEQUENCE (Cont.)
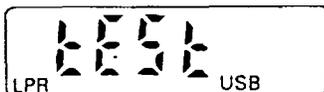
tESt   LPR ____ USB   (for approximately 40 seconds)

Upon successful completion of BIT, the RT display shows frequency

setting now in memory. Example: **2.0000** LPR   USB   If BIT was

unsuccessful, the RT display will show: **FAILEd** LPR   USB FAIL

NOTE

Upon initial power-up, the RT is automatically set to low power (LPR) and to upper sideband (USB).

NOTE

Upon power-up of the I/O Unit, the D/K assembly may briefly show (for one second or less) the message HOST LINK ATTEMPTING. This message occurs while the D/K assembly is attempting to establish communications with the processor in the controller assembly.

STEP
10   On I/O Unit, set POWER switch to ON.

- All indicators on the I/O Unit light and the alarm sounds for approximately two seconds and then automatically turn off (PWR indicator on D/K assembly and POWER indicator on controller assembly remain lighted.

- The D/K assembly shows "ENSURE ALL EQUIPMENT IS POWERED-ON AT THIS TIME"; proceed to initialization procedures (para 2-8b).

THIS COMPLETES TEAM TERMINAL POWER-UP PROCEDURES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

b. Initialization

INITIALIZATION

┌ ─ ─ ─ ─ ┐
  CAUTION
└ ─ ─ ─ ─ ┘

Do not activate bezel keys or screen touchpoints with any sharp item. Use fingers, gloves or other soft and rounded item. The touchpoints are more sensitive to activation with finger tips than the fleshy portion of the finger.

NOTE

The first four steps of initialization provide an option for you to run BIT on the D/K assembly via four test screens. If any fault conditions are observed, determine if you can continue operating with the fault; that is decide if the failed area of the display is critical to operation of the I/O Unit.

STEP
1   The D/K assembly shows the message ENSURE ALL EQUIPMENT IS POWERED-ON AT THIS TIME.

•   Check to ensure all equipment is powered-up.

•   Press NEXT MENU to continue.

```
RX MSG WAITING __   TOTAL __                        ID=XXXX           GO
------------------------------MESSAGES   TO   THE   OPERATOR----------------------------




                ENSURE   ALL   EQUIPMENT   IS

                POWERED - ON   AT   THIS   TIME.






                PRESS  [NEXT MENU]  TO CONTINUE .
```
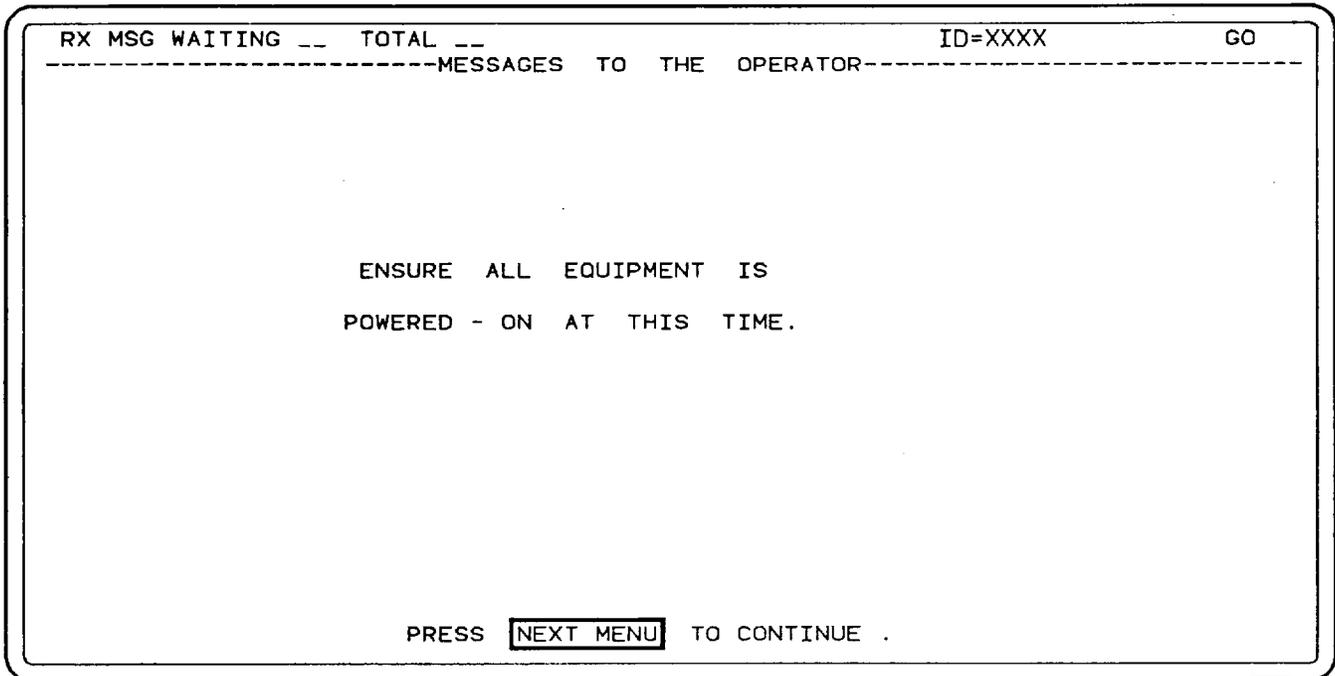
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

2   The D/K assembly shows the message FOR SECURE OPERATIONS, LOAD CRYPTO VARIABLES AT THIS
TIME.

- • For secure operations:

  - •• Load TSEC/KG-84A cryptographic variables (step 3).

  - •• Load TSEC/KY-65 cryptographic variables (step 4).

  - •• Load ECCM Module TRANSEC variables (step 5).

- • For nonsecure operations:

  - •• Ensure TSEC/KG-84A is removed from rack assembly and the KG-84 nonsecure bypass assembly
    is connected (para 2-5a(3)).

  - •• On TSEC/KY-65, set MODE switch to PLAIN position.

  - •• Load ECCM Module TRANSEC variables (step 5).

```
RX MSG WAITING __  TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE   GO
--------------------------MESSAGES  TO  THE  OPERATOR--------------------------




          FOR   SECURE   OPERATIONS,   LOAD   CRYPTO   VARIABLES

          AT   THIS   TIME .








                      PRESS  NEXT MENU  TO CONTINUE .
```
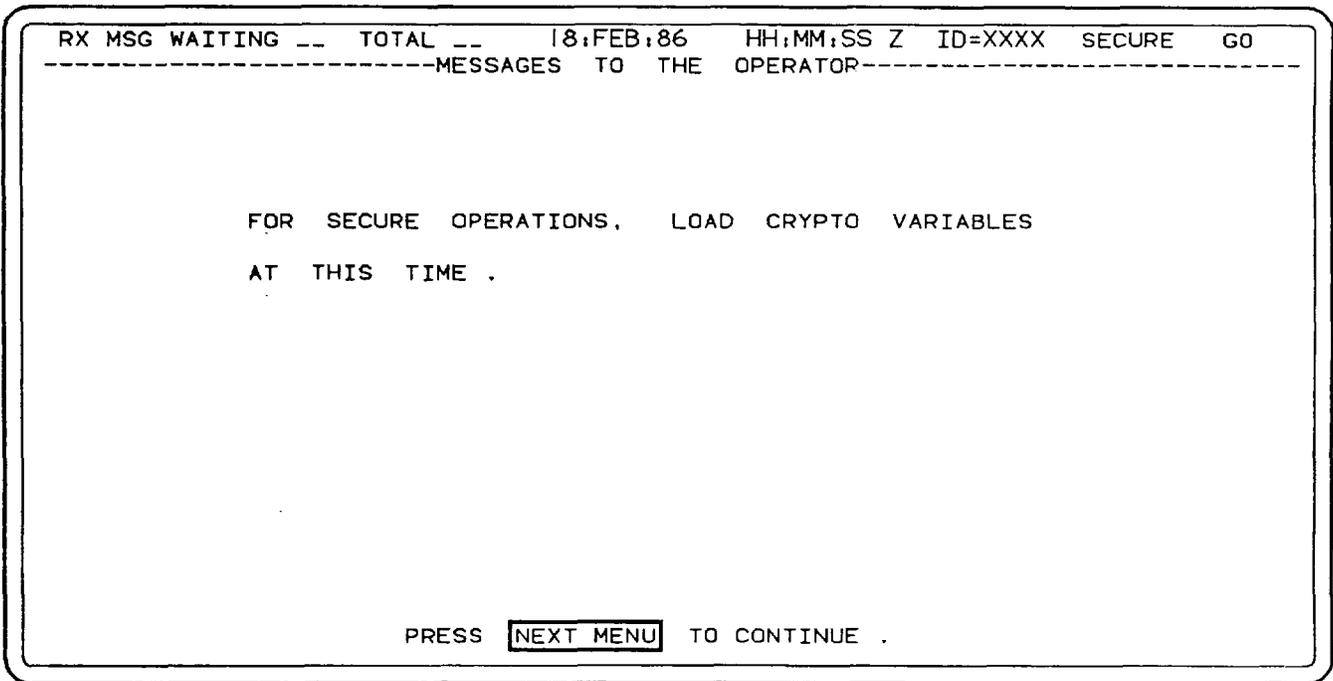
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
   3   Load TSEC/KG-84A cryptographic variables.

• Remove dust cover from FILL connector on TSEC/KG-84A. Connect General Purpose Tape Reader KOI-18 (fill device) to FILL connector using a fill cable.
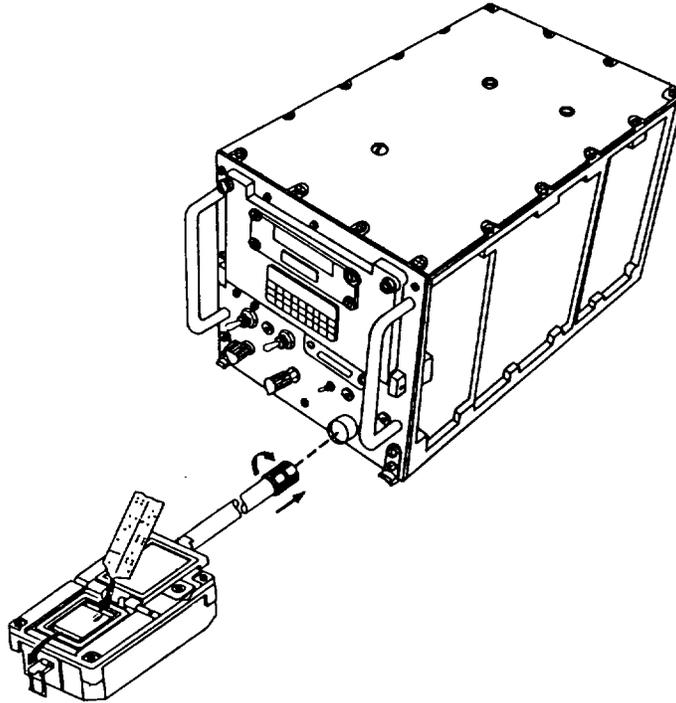
NOTE

The specified tape segment for the fill device is identified by the Communications Electronics Operating Instructions (CEOI) or other operational doctrine.

• On TSEC/KG-84A, pull outward and set ENABLE-ZEROIZE switch to ZEROIZE position. The POWER and the ALARM indicators go off. Return the switch to the ENABLE position. The POWER and the ALARM indicator come back on.

• Set MODE switch to LDU position.

• Push up momentarily and then release the INITIATE-IND TEST switch. Observe that the PARITY indicator blinks once. If it does blink once and remains off, proceed. If the PARITY indicator does not blink or remains lighted, repeat this step. Continual failure of the PARITY indicator to blink indicates a problem with the TSEC/KG-84A. Report the problem to unit maintenance.

2-77

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
  3   (Cont.)

- Set MODE switch to LDX position (switch remains in LDX position until all X registers to be filled are successfully filled).

- Set the X-VAR switch to 1.

- Push up momentarily and then release INITIATE-IND TEST switch. Observe that the PARITY indicator lights. If not, repeat this step. If the PARITY indicator still does not light, contact unit maintenance.

- Insert the specified tape segment into the fill device. Pull tape segment slowly and in one continuous motion through fill device. The PARITY indicator will go off if load is successful. If the variable load is not accepted, the PARITY indicator will remain lighted and the variable must be reloaded.

- Set the X-VAR switch to 2, 3, 4, as specified in the CEOI and load remaining variables (repeat the previous two steps).

- When all variables are loaded, set MODE switch to OPR. The ALARM indicator goes off and the FULL OPR indicator lights.

NOTE

If the ALARM indicator continues to light or if the FULL OPR indicator does not light, the TSEC/KG-84A is not in a secure state for operations. Secure communications cannot be initiated. Notify the Terminal Security Officer immediately.

- Disconnect the fill device from the FILL connector on the TSEC/KG-84A. Replace fill connector dust cover.

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

4 Load TSEC/KY-65 cryptographic variables.

- Remove FILL connector dust cover and connect fill device to FILL connector on TSEC/KY-65 using a fill cable.

- Set TSEC/KY-65 MODE switch to CIPHER. Listen for cryptoalarm cryptoalarm tone in Handset.

- Set TSEC/KY-65 FILL switch to position to be filled (1, 2, or 3).

- Insert tape leader into fill device.

- Turn TSEC/KY-65 DELAY OUT-DELAY IN-SIG CLR switch to SIG CLR position and release. The switch is spring loaded and will return to DELAY IN when released.

- Pull tape through fill device at a moderate rate. Crypto-alarm tone in the Handset should stop, indicating a successful fill.

- Repeat loading steps until all desired variables are loaded.

- Disconnect fill device from TSEC/KY-65 FILL connector. Replace cover on TSEC/KY-65 FILL connector.
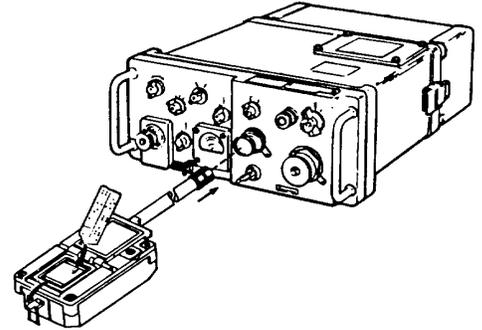
STEP

5 Load ECCM Module TRANSEC variables.

- On ECCM Module, remove connector cover from FILL connector. Connect fill device to FILL connector using fill cable. Insert tape leader into fill device.
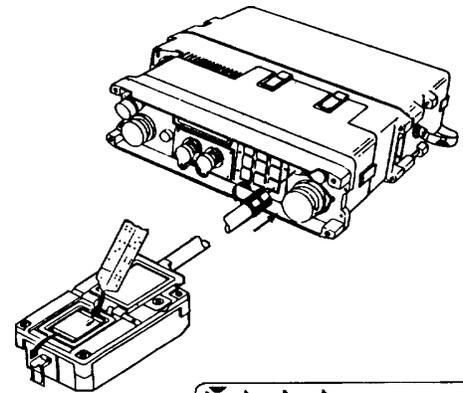
The ECCM Module display shows:

2-79
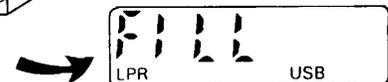
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
5   (Cont.)

● On ECCM Module keypad, press [2ND #] key and then press [LOD] key.

The ECCM Module display shows: ➡ [display: 2nd | LPR USB]

and then: ➡ [display: LOd | LPR USB VAR (blinking)]

The VAR indicator on ECCM Module blinks to show you have
entered load variable mode.

NOTE

You must pull paper tape through fill device within
10 seconds after completion variable number entry
(next step) for successful load.

● On ECCM Module keypad, press [LOD] key to load working vari

able or [2↑] key to load standby variable. The display shows

your selection. The VAR indicator lights.

Example: ➡ [display: LOd 1 | LPR USB VAR]

● Now press the [ENT TST] key.
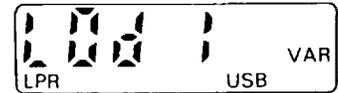
The ECCM Module display shows: ➡ [display: LOAd | LPR USB VAR]

● Pull the tape through fill device. The display indicates a
indicates a successful or an unsuccessful load. If load was
successful, the VAR indicator goes off and the display shows:

➡ [display: FILLEd | LPR USB]

If the load was unsuccessful, the VAR and the FAIL indicators
will light and the ECCM Module display will show:
Repeat the loading process.

➡ [display: FAILEd | LPR USB]

● Disconnect the fill device from FILL connector on ECCM Module
after successful load. Replace connector cover on FILL con-
nector.

● Press NEXT MENU to continue with initialization.

2-80

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

6   The D/K assembly shows the message DO YOU WISH TO PERFORM THE DISPLAY/KEYPAD TEST?. Press the YES touchpoint to proceed to the DISPLAY/KEYPAD test. Press the NO touchpoint to proceed to whole terminal BIT.

- If YES was selected, proceed to STEP 7.

  - If NO was selected, proceed to STEP 10.

```
 RX MSG WAITING __   TOTAL __      18:FEB:86    HH:MM:SS Z   ID=XXXX    SECURE    GO
 ---------------------------MESSAGES  TO  THE  OPERATOR----------------------------



                                                                ┌──────┐
                                                                │      │   YES
                                                                │      │
                                                                └──────┘
                    DO YOU WISH TO PERFORM THE

                    DISPLAY / KEYPAD TEST?
                                                                ┌──────┐
                                                                │      │   NO
                                                                │      │
                                                                └──────┘
```

2-81

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

6.1   Observe display and check for a diagonal straight line.

- If line is present, press PASS touchpoint. The display automatically proceeds to the next test.

- If line is not present, press FAIL touchpoint to indicate a failure. The display automatically proceeds to next test.
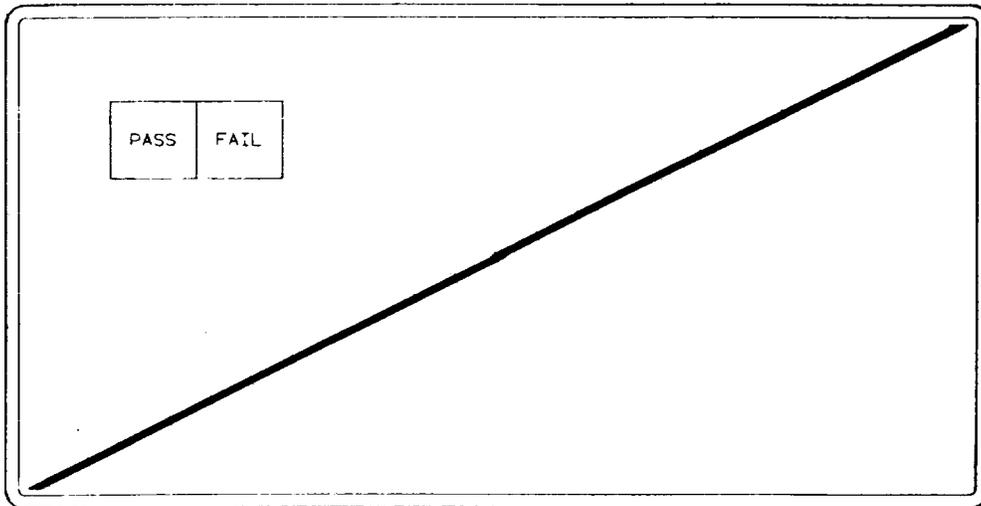
STEP

7   Observe that the D/K assembly is completely lighted. If lighted, press PASS touchpoint. If areas of the D/K assembly are not lighted to the extent that operation of the I/O Unit cannot continue, press FAIL touchpoint.

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid black; text-align:center">
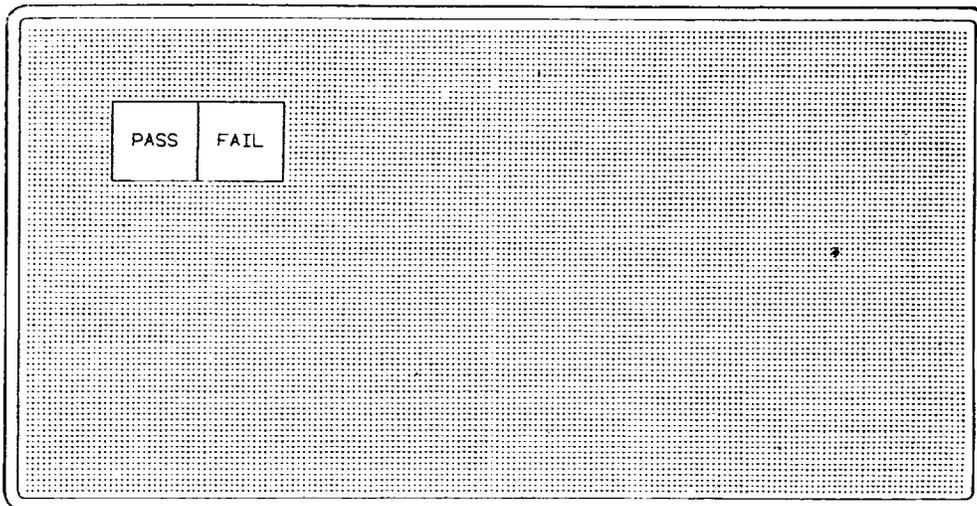
INITIALIZATION (Cont.)

</div>

STEP

8   The D/K assembly shows 66 lighted touchpoints. Press and release each touchpoint. Check that each touchpoint goes off as it is released. If any touchpoint fails to go off, depress any bezel key to indicate test failure.

DEPRESS ANY KEY ON BEZEL TO INDICATE TEST FAILURE

2-83
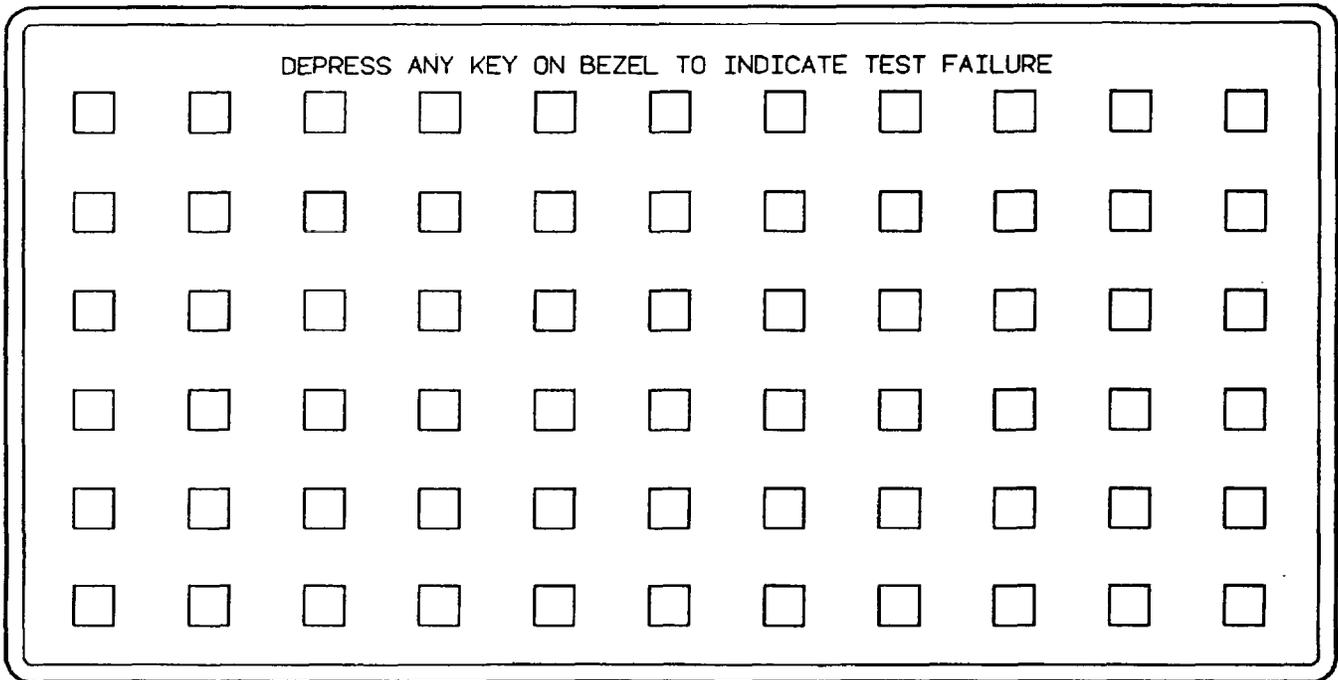
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

9   The D/K assembly shows 34 lighted squares around the edge of the display corresponding to each bezel function switch (bezel key). Select and depress each bezel key and observe that its corresponding lighted square goes off. If any lighted square fails to go off, press FAIL touchpoint.

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid">
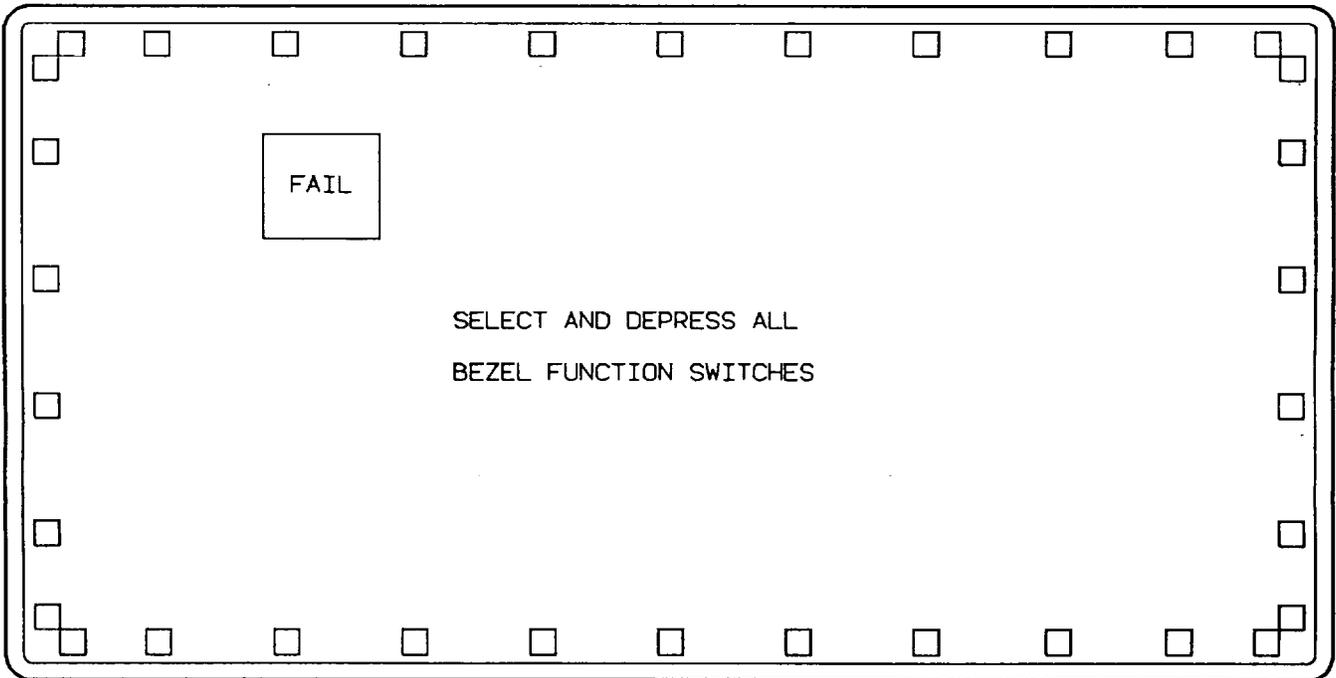
INITIALIZATION (Cont.)

</div>

NOTE

If any of the previous display test screens failed, the display will show the message DISPLAY/KEYPAD BIT FAULT. In addition, the I/O Unit FAULT and DSPL FAULT indicators will light and the audible alarm will sound (press ALARM RESET pushbutton on the I/O Unit to deactivate the alarm). Failure does not automatically prevent normal operation. You may proceed if the failed area of the screen is not critical to I/O Unit operation.

STEP

10   BUILT IN TEST (BIT) RUNNING. The message remains until BIT is completed (between 60 and 120 seconds) and then automatically advances to the next menu. If BIT detects any faults, a fault message will be displayed on the status line (i.e. RFO FAULT). Report faults to unit maintenance.

NOTE

During BIT, the RN Modem BIT fault indicator blinks and the RT display shows:

and then:

```
RX MSG WAITING __   TOTAL __                              ID=XXXX             GO
ANY FAULTS WILL BE REPORTED HERE .




                        BUILT IN TEST  ( BIT )  RUNNING


        .


```
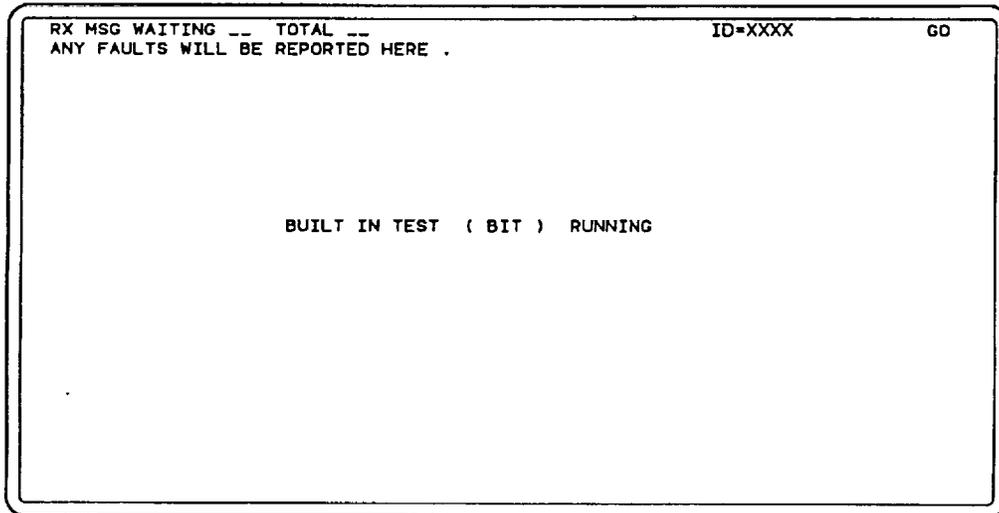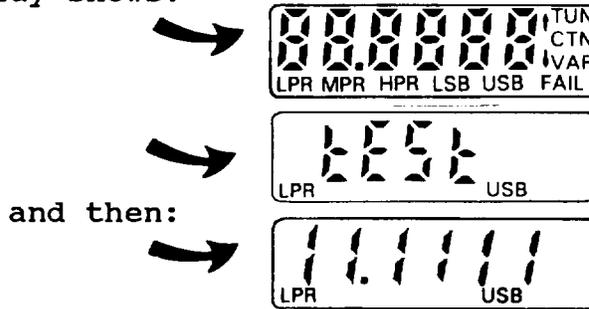
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid">
INITIALIZATION (Cont.)
</div>

STEP
11   Input your terminal ID number.

- Using the numbered touchpoints, shown on the D/K assembly, input four-digit terminal ID number (0513 - 1023) and then press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key. If incorrect, re-enter terminal ID number.

```
RX MSG WAITING __  TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX  SECURE   GO
-------------------------MESSAGES  TO  THE  OPERATOR-----------------------

                        TERMINAL  ID  NUMBER

     INPUT TERMINAL ID NUMBER ( 513 - 1023 ) :
                                                    _ _ _ _
     THEN  PRESS  [ENTER]
                                              +-------+-------+-------+
                                              |       |       |       |
                                              |   1   |   2   |   3   |
                                              |       |       |       |
                                              +-------+-------+-------+
                                              |       |       |       |
                                              |   4   |   5   |   6   |
                                              |       |       |       |
                                              +-------+-------+-------+
                                              |       |       |       |
                                              |   7   |   8   |   9   |
                                              |       |       |       |
                                              +-------+-------+-------+
                                                      |       |
              PRESS  [NEXT MENU]  TO CONTINUE .       |   0   |
                                                      +-------+
```

2-86

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

12   The D/K assembly shows MODE OF OPERATION menu. Select data mode by pressing DATA touchpoint or select voice mode by pressing VOICE touchpoint. The selected touchpoint lights. Press NEXT MENU bezel key to continue.

- If you selected VOICE, proceed to step 13.

- If you selected DATA, proceed to step 21.

```
RX MSG WAITING __   TOTAL __                  HH:MM:SS Z  ID=XXXX   SECURE    GO
-----------------------------MESSAGES  TO  THE  OPERATOR--------------------------

                         MODE  OF  OPERATION

              SELECT  ONE :


              +-------+
              |       |    DATA
              |       |
              +-------+




              +-------+
              |       |    VOICE
              |       |
              +-------+



              PRESS  [NEXT MENU]  TO CONTINUE .
```

2-87

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

```
┌─────────────────────────────────────────────┐
│              INITIALIZATION (Cont.)          │
└─────────────────────────────────────────────┘
```

STEP

13   The D/K assembly shows the VOICE MODE FREQUENCY SELECTION menu.

- To enable ECCM voice mode, input two-digit ECCM frequency code and then press ENTER bezel key. The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key and proceed to step 14. If incorrect, re-enter frequency code.

- To enable NON-ECCM voice mode, press HERE touchpoint. The HERE touchpoint lights to show your selection. Press NEXT MENU bezel key to continue and proceed to step 16.

```
┌──────────────────────────────────────────────────────────────────────────────┐
│  RX MSG WAITING __  TOTAL __     18:FEB:86   HH:MM:SS Z  ID=XXXX  SECURE   GO  │
│  ------------------------MESSAGES  TO  THE  OPERATOR------------------------   │
│                         VOICE MODE FREQUENCY SELECTION                         │
│  PRESS   ┌──────┐   FOR NON - ECCM.  OTHERWISE,  INPUT ECCM FREQUENCY CODE:    │
│          │ HERE │                         THEN PRESS  │ENTER│      _ _          │
│          │      │        PRESS  │NEXT MENU│  TO CONTINUE .                      │
│  ┌───┬───┼──────┼───┬───┬───┬───┴──┬───┬───┬───┬───┐                          │
│  │ I │ 2 │  3   │ 4 │ 5 │ 6 │  7   │ 8 │ 9 │ 0 │ - │                          │
│  ├───┼───┼──────┼───┼───┼───┼──────┼───┼───┼───┼───┤                          │
│  │ Q │ W │  E   │ R │ T │ Y │  U   │ I │ O │ P │ * │                          │
│  ├───┼───┼──────┼───┼───┼───┼──────┼───┼───┼───┼───┤                          │
│  │ A │ S │  D   │ F │ G │ H │  J   │ K │ L │ ? │ / │                          │
│  ├───────┼──────┼───┼───┼───┼──────┼───┼───┼───┼───┤                          │
│  │ SPACE │ Z    │ X │ C │ V │  B   │ N │ M │ , │ . │ : │                      │
│  └───────┴──────┴───┴───┴───┴──────┴───┴───┴───┴───┘                          │
└──────────────────────────────────────────────────────────────────────────────┘
```

2-88

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

14   The D/K assembly shows TRANSMITTER POWER LEVEL menu. Select power level.

•   Press touchpoint to select HIGH, MEDIUM, or LOW. The selected touchpoint lights.

•   Press NEXT MENU bezel key to continue.

```
 RX MSG WAITING __  TOTAL __              HH:MM:SS Z  ID=XXXX  SECURE   GO
 -------------------------MESSAGES  TO  THE  OPERATOR-------------------------
                        TRANSMITTER POWER LEVEL

          SELECT ONE:


             ┌───────┐
             │       │   HIGH
             │       │
             ├───────┤
             │       │   MEDIUM
             │       │
             ├───────┤
             │       │   LOW
             │       │
             └───────┘



                 PRESS  [NEXT MENU]  TO CONTINUE .
```

2-89

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid;text-align:center">
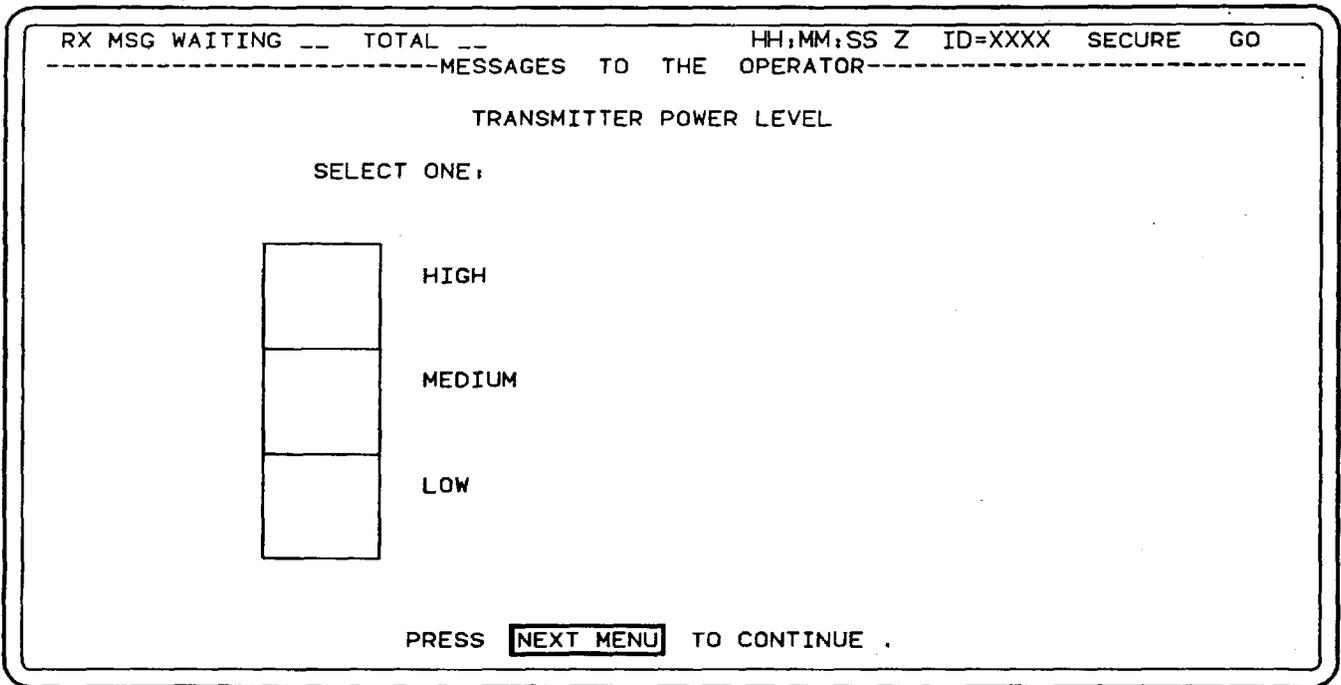
INITIALIZATION (Cont.)

</div>

STEP

15   The D/K assembly shows the message prompt ECCM VOICE MODE ENABLED. Initialization for ECCM voice operation is complete. Connect Handset to KY connector on RT and establish point-to-point or broadcast links utilizing standard radio procedures.

<div style="border:1px solid;text-align:center">

WARNINGI

</div>

Dangerous RF power levels exist on and around the antenna during operation. Do not stand closer than 40 inches to the antenna when transmitting. Failure to heed this warning may result in death or serious injury.

NOTE

To exit the voice mode and initialize the data mode, press the DATA MODE bezel key. This will start the data mode menu sequence (step 21).

```
 RX MSG WAITING __   TOTAL __              HH:MM:SS Z  ID=XXXX           GO
 ---------------------------MESSAGES  TO  THE  OPERATOR-----------------------



                             ECCM  VOICE  MODE  ENABLED
```

2-90
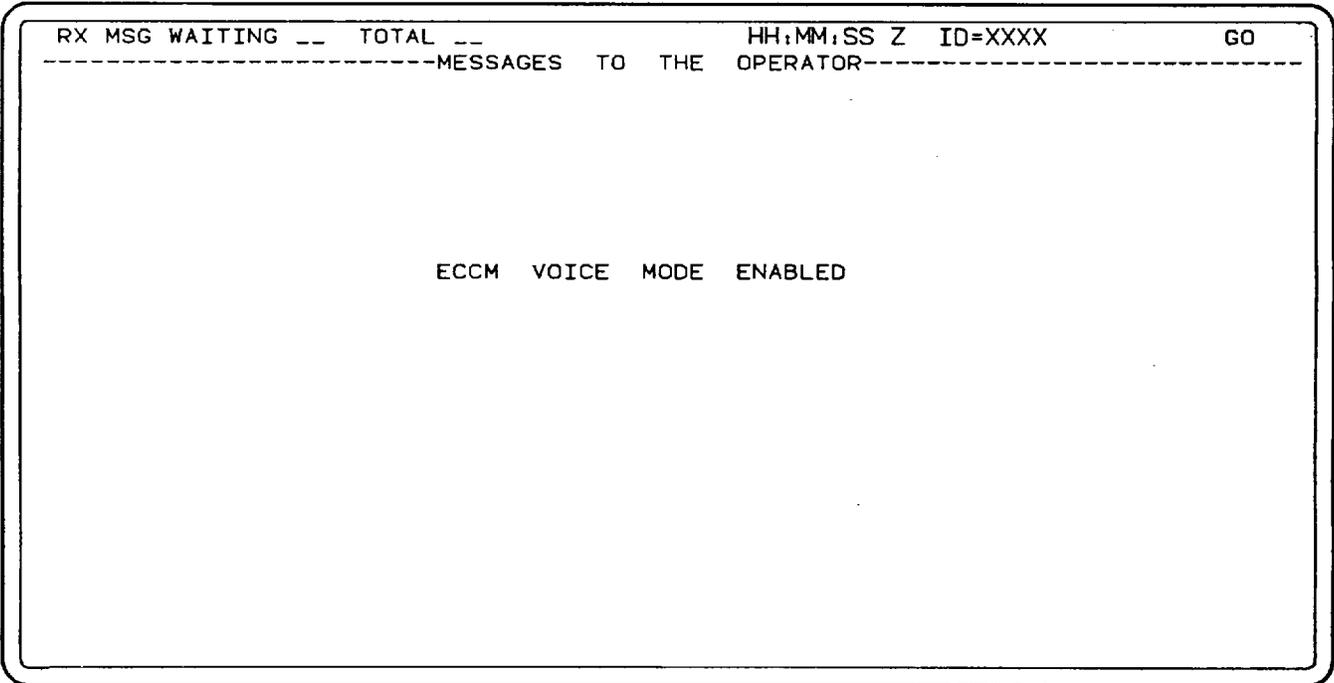
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

```
┌─────────────────────────────────────────────────────────┐
│                INITIALIZATION (Cont.)                   │
└─────────────────────────────────────────────────────────┘
```

STEP
16   The D/K assembly shows VOICE FREQUENCY ENTRY menu. Press touchpoint to select MANUAL FREQUENCY ENTRY or FREQUENCY CODE ENTRY. The selected touchpoint lights and the D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Press NEXT MENU bezel key.

- If you selected MANUAL FREQUENCY ENTRY, proceed to step 17.

- If you selected FREQUENCY CODE ENTRY, proceed to step 18.

```
  RX MSG WAITING __   TOTAL __              HH:MM:SS Z  ID=XXXX   SECURE   GO
  -------------------------MESSAGES   TO   THE   OPERATOR-----------------------
                          VOICE   FREQUENCY   ENTRY
               SELECT   ONE :

        ┌──────────┐
        │          │    MANUAL  FREQUENCY
        │          │    ENTRY
        └──────────┘

        ┌──────────┐
        │          │    FREQUENCY  CODE
        │          │    ENTRY
        └──────────┘

                    PRESS  [NEXT MENU]  TO CONTINUE .
```

2-91

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid black; text-align:center;">

INITIALIZATION (Cont.)

</div>

STEP

17   The D/K assembly prompts you to LOAD NEW FREQUENCY. To load new frequency:

- Press touchpoint to select UPPER SIDE BAND or LOWER SIDE BAND. The selected touchpoint lights.

- Using the numbered touchpoints, input the frequency. The frequency selection in MHz is shown on the D/K assembly. Press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key and proceed to step 19. If incorrect, re-enter.

```
 RX MSG WAITING __  TOTAL __            HH:MM:SS Z  ID=XXXX   SECURE   GO
-------------------------MESSAGES  TO  THE  OPERATOR------------------------
                       LOAD NEW FREQUENCY

            INPUT NEW FREQUENCY,  THEN PRESS   [ENTER]

                                       MHZ
                             _ _  _ _ _ _        ┌─────┬─────┬─────┐
                                                 │     │     │     │
       SELECT SIDEBAND:                          │  1  │  2  │  3  │
                                                 │     │     │     │
       ┌────────┐                                ├─────┼─────┼─────┤
       │        │     UPPER                      │     │     │     │
       │        │     SIDE                       │  4  │  5  │  6  │
       │        │     BAND                       │     │     │     │
       └────────┘                                ├─────┼─────┼─────┤
                                                 │     │     │     │
                                                 │  7  │  8  │  9  │
       ┌────────┐                                │     │     │     │
       │        │     LOWER                      ├─────┴─────┼─────┤
       │        │     SIDE                       │           │     │
       │        │     BAND  PRESS [NEXT MENU] TO CONTINUE .   0     │
       └────────┘                                │           │     │
                                                 └───────────┴─────┘
```

2-92

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

<div style="border:1px solid">

INITIALIZATION (Cont.)

</div>

STEP

18   The D/K assembly prompts you to LOAD NEW FREQUENCY CODE. To load frequency code:

- Input two-digit frequency code. The D/K assembly shows your selection. Press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key and proceed to step 19. If incorrect, re-enter frequency code.

```
RX MSG WAITING __  TOTAL __              HH:MM:SS Z  ID=XXXX  SECURE   GO
----------------------MESSAGES  TO  THE  OPERATOR------------------------
                     LOAD NEW FREQUENCY CODE

          INPUT  FREQUENCY  CODE:
          THEN  PRESS  [ENTER]      - -

                 PRESS  [NEXT MENU]  TO CONTINUE .
```

l	2	3	4	5	6	7	8	9	0	-
Q	W	E	R	T	Y	U	I	O	P	*
A	S	D	F	G	H	J	K	L	?	/
SPACE	Z	X	C	V	B	N	M	,	.	:

2-93

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
19   The D/K assembly shows the TRANSMITTER POWER LEVEL menu. Select transmitter power level:

• Press touchpoint to select HIGH, MEDIUM or LOW power level. The selected touchpoint lights.

• Press NEXT MENU bezel key to continue.

```
RX MSG WAITING __  TOTAL __                HH:MM:SS Z  ID=XXXX  SECURE   GO
---------------------------MESSAGES  TO  THE  OPERATOR-------------------------
                        TRANSMITTER POWER LEVEL

          SELECT ONE:


             ┌────────┐
             │        │  HIGH
             │        │
             ├────────┤
             │        │  MEDIUM
             │        │
             ├────────┤
             │        │  LOW
             │        │
             └────────┘


               PRESS  │NEXT MENU│  TO CONTINUE .
```

2-94
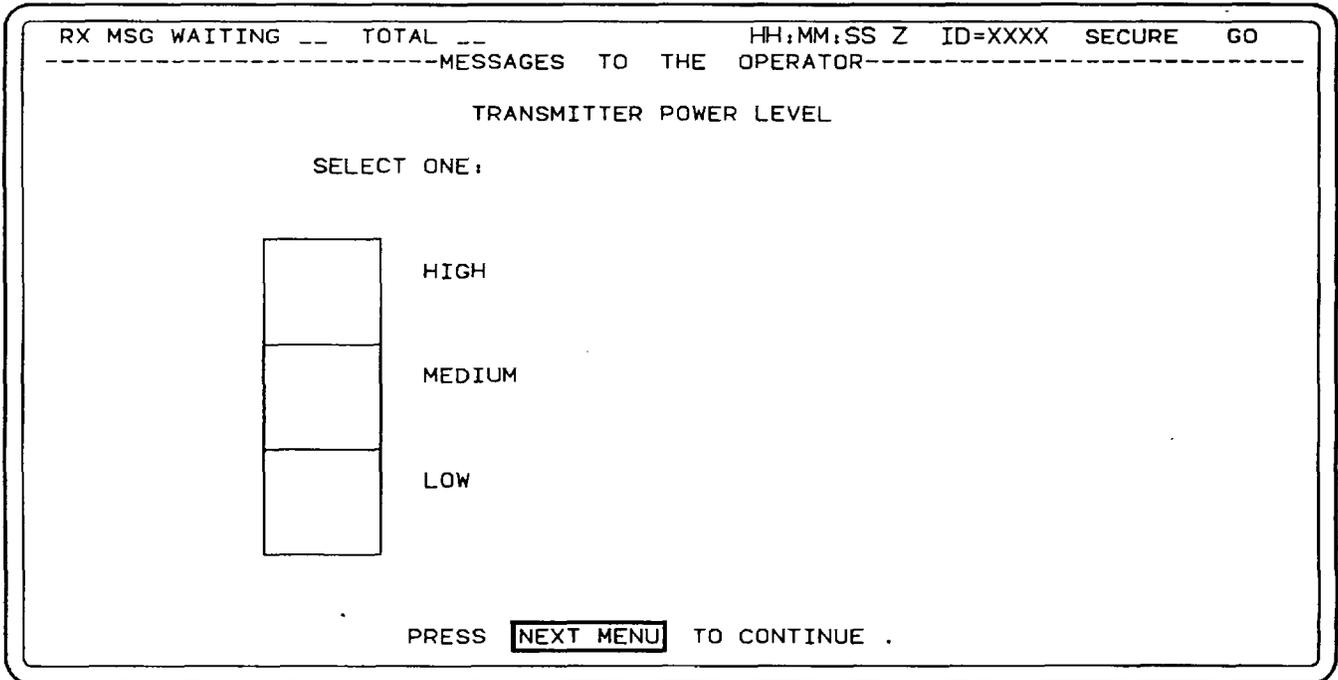
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
20   The D/K assembly shows the message prompt NON-ECCM VOICE MODE ENABLED. Initialization for NON-ECCM voice mode is complete. Connect Handset to KY connector on RT and establish point-to-point or broad-cast links utilizing standard radio procedures.

WARNING

Dangerous RF power levels exist on and around the antenna during operation. Do not stand closer than 40 inches to the antenna when transmitting. Failure to heed this warning may result in death or serious injury.

NOTE

To exit the voice mode and initialize the data mode, press the DATA MODE bezel key. This will start the data mode menu sequence (step 21).

```
 RX MSG WAITING __   TOTAL __                    HH:MM:SS Z   ID=XXXX            GO
 --------------------------MESSAGES   TO   THE   OPERATOR--------------------------




                     NON - ECCM   VOICE   MODE   ENABLED




```
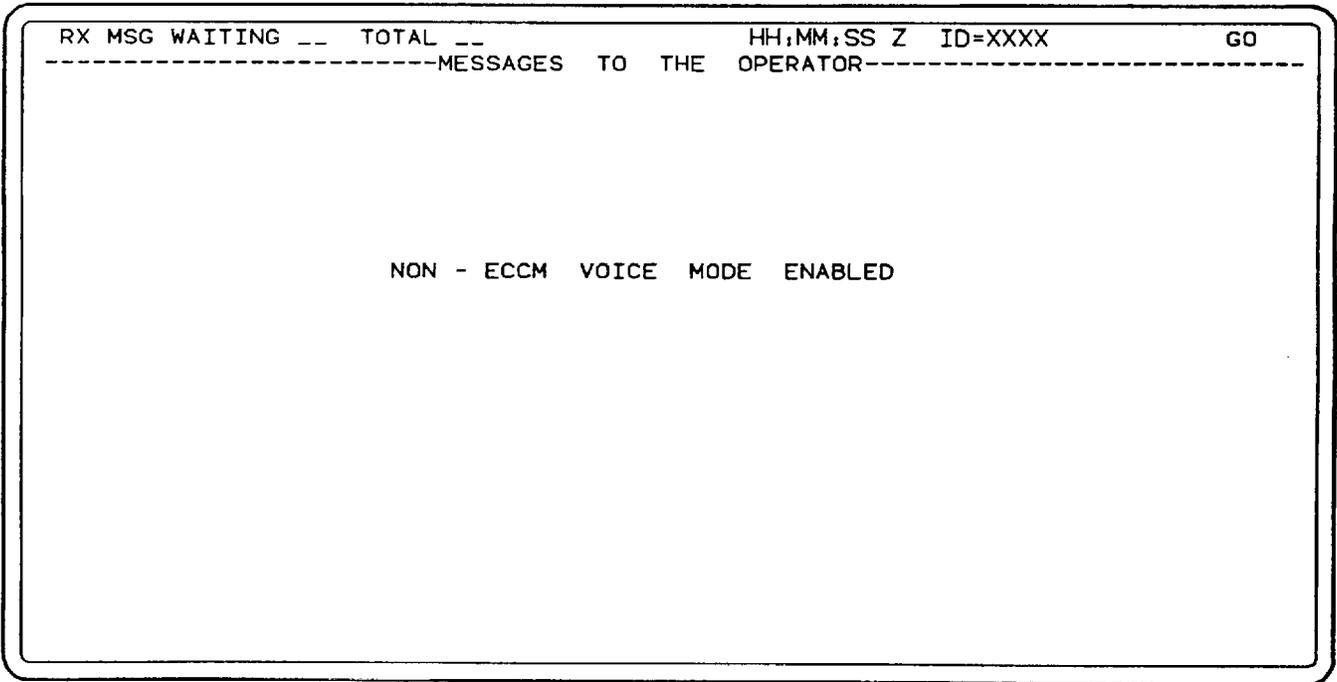
2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

21   The D/K assembly shows the SET DATE menu. Enter the date.

- Using numbered touchpoints, input two-digit number for YEAR, MONTH, and DAY. Press ENTER bezel key for each two-digit input.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entries. If correct, press NEXT MENU bezel key. If incorrect, re-enter the date.

```
RX MSG WAITING __   TOTAL __                HH:MM:SS Z  ID=XXXX  SECURE   GO
-----------------------------MESSAGES  TO  THE  OPERATOR-------------------------
                                 SET   DATE

      INPUT TWO DIGIT NUMBER,

      THEN   PRESS   [ENTER]
                                                        ┌────┬────┬────┐
                   YEAR:                                │ 1  │ 2  │ 3  │
                           _ _                          │    │    │    │
                                                        ├────┼────┼────┤
                   MONTH:                               │    │    │    │
                           _ _                          │ 4  │ 5  │ 6  │
                                                        ├────┼────┼────┤
                   DAY:                                 │    │    │    │
                           _ _                          │ 7  │ 8  │ 9  │
                                                        └────┼────┼────┘
                                                             │ 0  │
                   PRESS  [NEXT MENU]  TO CONTINUE .         │    │
                                                             └────┘
```

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

22   Enter your geographic location.

- Using keypad touchpoints, input your geographic location. The D/K assembly shows your input. Press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key. If incorrect, re-enter geographic location.

```
 RX MSG WAITING __  TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE    GO
-----------------------MESSAGES  TO  THE  OPERATOR-----------------------
                       GEOGRAPHIC LOCATION
          INPUT GEOGRAPHIC LOCATION:

            _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
                    THEN   PRESS   ENTER
              PRESS  NEXT MENU  TO CONTINUE
```

I	2	3	4	5	6	7	8	9	0	–
Q	W	E	R	T	Y	U	I	O	P	*
A	S	D	F	G	H	J	K	L	?	/
SPACE	Z	X	C	V	B	N	M	,	.	:

2-97

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

> **INITIALIZATION (Cont.)**

STEP

23   Select NON-ECCM data mode frequency.

- Using the keypad touchpoints, input two-digit frequency code. The D/K assembly shows your input. Press ENTER bezel key.

- After the first frequency code has been entered, the D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Press NEXT MENU bezel key or continue entering up to 12 frequency codes.

```
RX MSG WAITING __   TOTAL __     18:FEB:86    HH:MM:SS Z   ID=XXXX   SECURE    GO
-------------------------MESSAGES  TO  THE  OPERATOR-------------------------
                              FREQUENCY ENTRY
                INPUT FREQUENCY CODE, THEN PRESS  ENTER

 I.     2.      3.      4.      5.      6.      7.      8.      9.     10.     II.     12.
        __      __      __      __      __      __      __      __      __      __      __
                       PRESS  NEXT MENU  TO CONTINUE .
```

I	2	3	4	5	6	7	8	9	0	-
Q	W	E	R	T	Y	U	I	O	P	*
A	S	D	F	G	H	J	K	L	?	/
SPACE	Z	X	C	V	B	N	M	,	.	:

2-8.   TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP
24   Select ECCM data mode (HOPSET) frequency.

- Using the keypad touchpoints, input two-digit frequency code. The D/K assembly shows your input.
  Press ENTER bezel key.

- After the first frequency code has been entered, the D/K assembly shows the message prompt PRESS
  NEXT MENU TO CONTINUE. Press NEXT MENU bezel key or continue entering up to 12 frequency
  codes.

```
RX MSG WAITING __   TOTAL __     18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO
------------------------MESSAGES  TO  THE  OPERATOR--------------------------
                              HOPSET ENTRY
              INPUT FREQUENCY CODE, THEN PRESS  [ENTER]

  1.     2.     3.     4.    5.    6.    7.     8.     9.    10.    11.    12.
  --     --     --     --    --    --    --     --     --     --     --     --
                      PRESS [NEXT MENU]  TO CONTINUE .
```

1	2	3	4	5	6	7	8	9	0	-
Q	W	E	R	T	Y	U	I	O	P	*
A	S	D	F	G	H	J	K	L	?	/
SPACE	Z	X	C	V	B	N	M	,	.	:

2-8. **TEAM TERMINAL OPERATING PROCEDURES (Cont.)**

<table>
<tr><td align="center">**INITIALIZATION (Cont.)**</td></tr>
</table>

STEP
25 Select cryptographic variable.

- Press touchpoint to select VARIABLE 1, VARIABLE 2, VARIABLE 3, or VARIABLE 4. The selected touchpoint lights.

- Press NEXT MENU bezel key to continue.

```
 RX MSG WAITING __   TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO
-----------------------------MESSAGES  TO  THE  OPERATOR------------------------

                          CRYPTO VARIABLE SELECTION


       SELECT ONE:

          ┌────────┐
          │        │         VARIABLE  1
          │        │
          ├────────┤
          │        │         VARIABLE  2
          │        │
          ├────────┤
          │        │         VARIABLE  3
          │        │
          ├────────┤
          │        │         VARIABLE  4
          │        │
          │        │         PRESS │NEXT MENU│  TO CONTINUE .
          └────────┘
```

2-100

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

26 Select data operating mode.

- Press touchpoint to select NON-ECCM, TRAINING, or ECCM. The selected touchpoint lights.

- Press NEXT MENU bezel key to continue.

```
RX MSG WAITING __  TOTAL __     18:FEB:86    HH:MM:SS Z   ID=XXXX   SECURE    GO
---------------------------MESSAGES   TO   THE   OPERATOR--------------------------

                          MODE   SELECTION

           SELECT ONE :


              ┌───────┐
              │       │      NON - ECCM
              │       │
              ├───────┤
              │       │      TRAINING
              │       │
              ├───────┤
              │       │      ECCM
              │       │
              └───────┘



                    PRESS  │NEXT MENU│  TO CONTINUE .
```

**2-101**
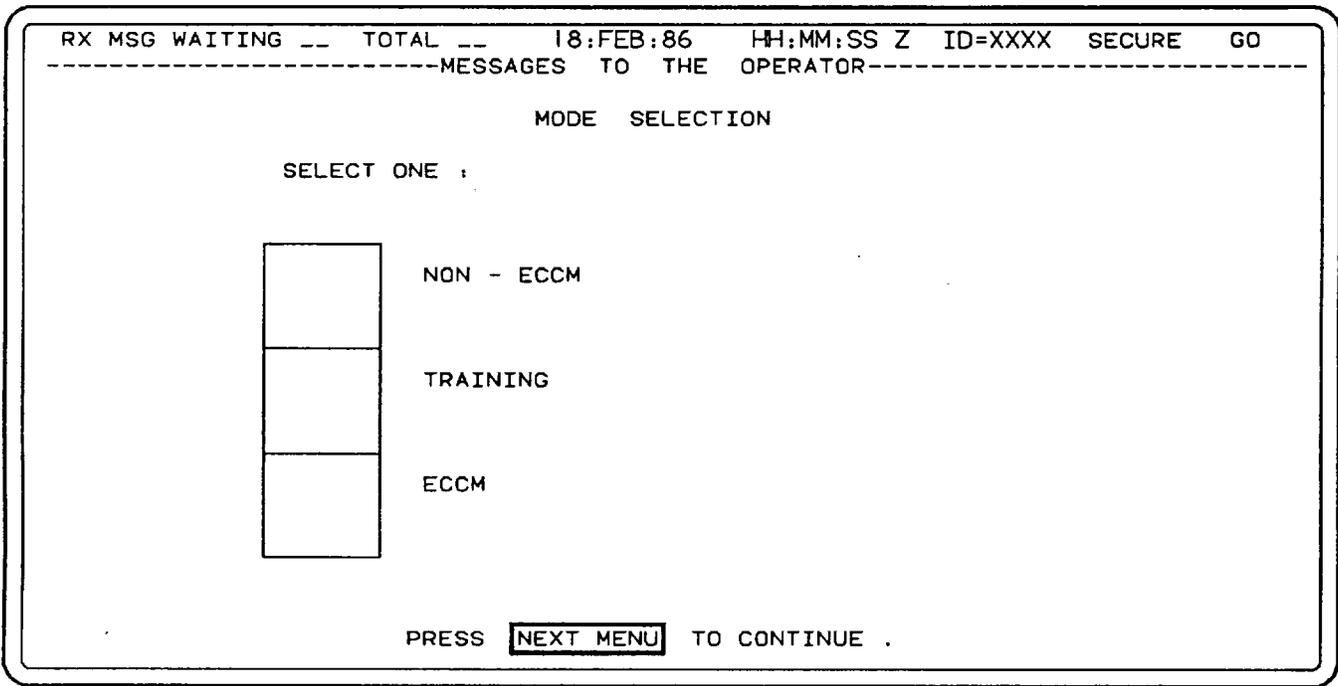
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

~~INITIALIZATION (Cont.)~~

STEP

27   Enter the message destination.

- Using the numbered touchpoints, input four-digit destination terminal ID number (0001 - 1023). The D/K assembly shows your input. Press ENTER bezel key.

- Using the numbered touchpoints, input destination I/O number (0 - 5). The D/K assembly shows your input. Press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entries. If correct, press NEXT MENU bezel key. If incorrect, re-enter message destination.

```
 RX MSG WAITING __  TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE   GO
 -------------------------------MESSAGES  TO  THE  OPERATOR-----------------------

                              MESSAGE DESTINATION

   INPUT DESTINATION TERMINAL ID NUMBER ( I - I023 ) :
                                                          _ _ _ _
   THEN PRESS  [ENTER]
                                                 +------+------+------+
                                                 |      |      |      |
                                                 |  I   |  2   |  3   |
                                                 |      |      |      |
   INPUT DESTINATION I/O ID NUMBER ( 0 - 5 ) :   +------+------+------+
                                            _    |      |      |      |
   THEN PRESS  [ENTER]                           |  4   |  5   |  6   |
                                                 |      |      |      |
                                                 +------+------+------+
                                                 |      |      |      |
                                                 |  7   |  8   |  9   |
                                                 |      |      |      |
                                                 +------+------+------+
                                                        |      |
                                                        |  0   |
           PRESS  [NEXT MENU]  TO CONTINUE .            |      |
                                                        +------+
```
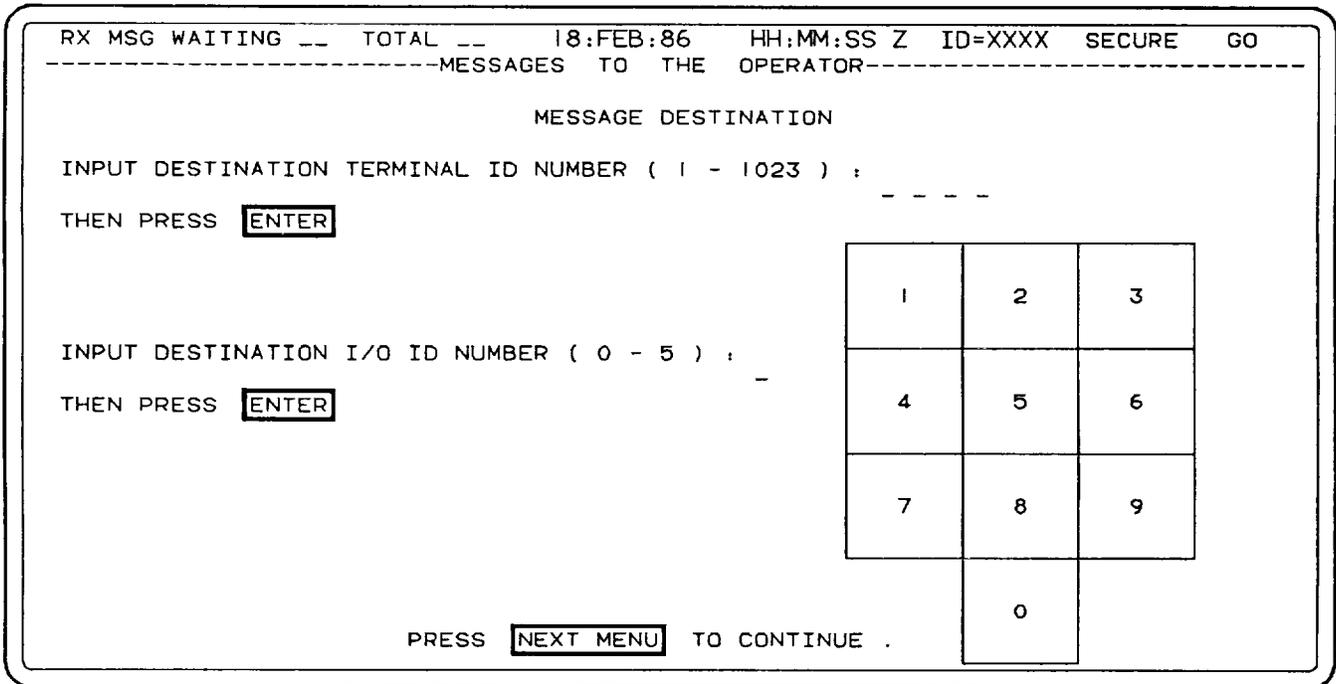
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

28 Select transmitter power level.

- Press touchpoint to select HIGH, MEDIUM, or LOW power level. The selected touchpoint lights.

- Press NEXT MENU bezel key to continue.

```
┌──────────────────────────────────────────────────────────────────────┐
│  RX MSG WAITING __  TOTAL __     18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO  │
│  ------------------------------MESSAGES  TO  THE  OPERATOR------------------------│
│                        TRANSMITTER POWER LEVEL                         │
│              SELECT ONE:                                               │
│                   ┌──────────┐                                        │
│                   │          │   HIGH                                 │
│                   ├──────────┤                                        │
│                   │          │   MEDIUM                               │
│                   ├──────────┤                                        │
│                   │          │   LOW                                  │
│                   └──────────┘                                        │
│                                                                        │
│                   PRESS  │NEXT MENU│  TO CONTINUE .                    │
└──────────────────────────────────────────────────────────────────────┘
```

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

29   Enter subnet number.

- Using the numbered touchpoints, input three-digit subnet number (001 - 144). The D/K assembly shows your input. Press ENTER bezel key.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Check your entry. If correct, press NEXT MENU bezel key. If incorrect, re-enter the subnet number.

```
RX MSG WAITING __   TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE    GO
-------------------------MESSAGES  TO  THE  OPERATOR-------------------------

                              SUBNET  NUMBER

     INPUT SUBNET NUMBER ( I - 144 ) :
                                           _ _ _
     THEN PRESS   ENTER

                                              ┌──────┬──────┬──────┐
                                              │  I   │  2   │  3   │
                                              │      │      │      │
                                              ├──────┼──────┼──────┤
                                              │  4   │  5   │  6   │
                                              │      │      │      │
                                              ├──────┼──────┼──────┤
                                              │  7   │  8   │  9   │
                                              │      │      │      │
                                              ├──────┼──────┼──────┤
                    PRESS  NEXT MENU  TO CONTINUE .   │  0   │
                                              └──────┴──────┴──────┘
```

2-104
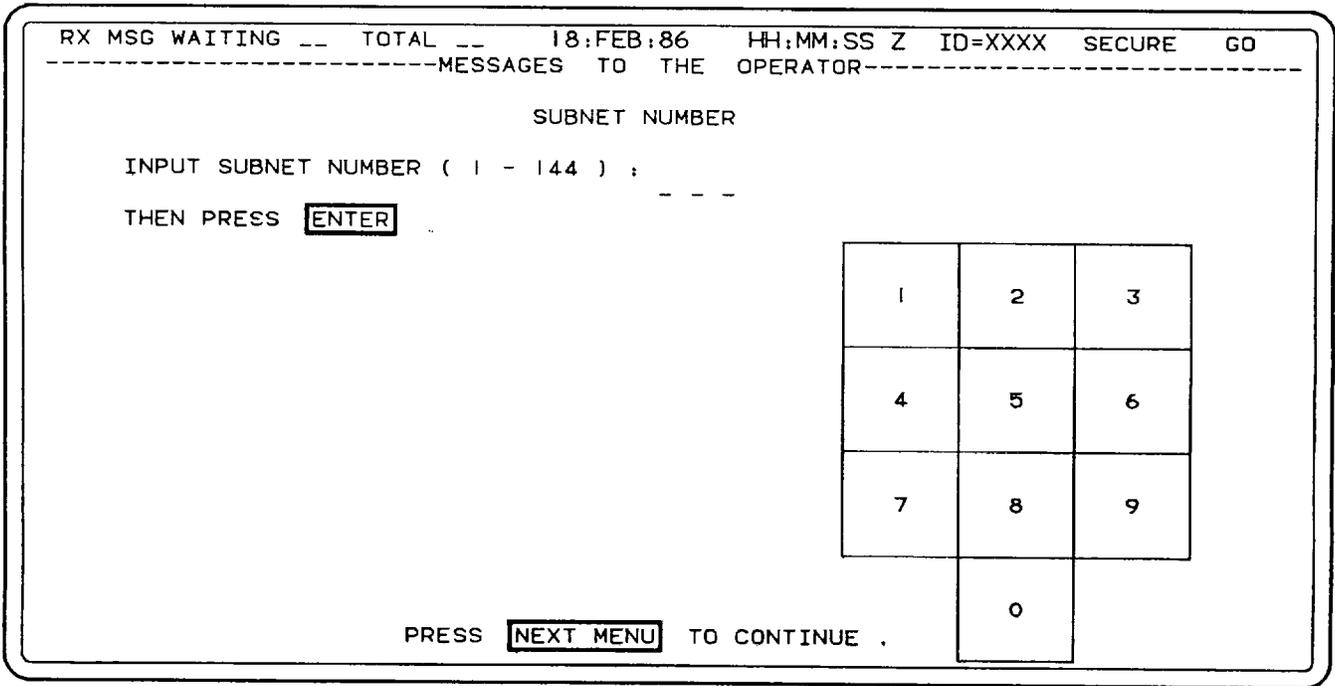
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

INITIALIZATION (Cont.)

STEP

30   To begin signing into the net, press NEXT MENU bezel key. The D/K assembly will advance to the main menu (para 2-7c) and show the status message NETWORK SIGN IN PENDING. When your I/O Unit is recognized and signed into the subnet, the D/K assembly will show the status message SIGNED INTO NETWORK. Refer to message creation and handling procedures (para 2-8c).

WARNING

Dangerous RF power levels exist on and around the antenna during operation. Do not stand closer than 40 inches to the antenna when transmitting. Failure to heed this warning may result in death or serious injury.

NOTE

To exit the data mode and initialize the voice mode, press the VOICE MODE bezel key. This will start the voice mode menu sequence (step 13).

```
RX MSG WAITING __   TOTAL __     18:FEB:86    HH:MM:SS Z   ID=XXXX    SECURE    GO
----------------------------MESSAGES  TO  THE  OPERATOR----------------------------




              TO  BEGIN  SIGNING  INTO  THE  NET,

                   PRESS  [NEXT MENU]
```
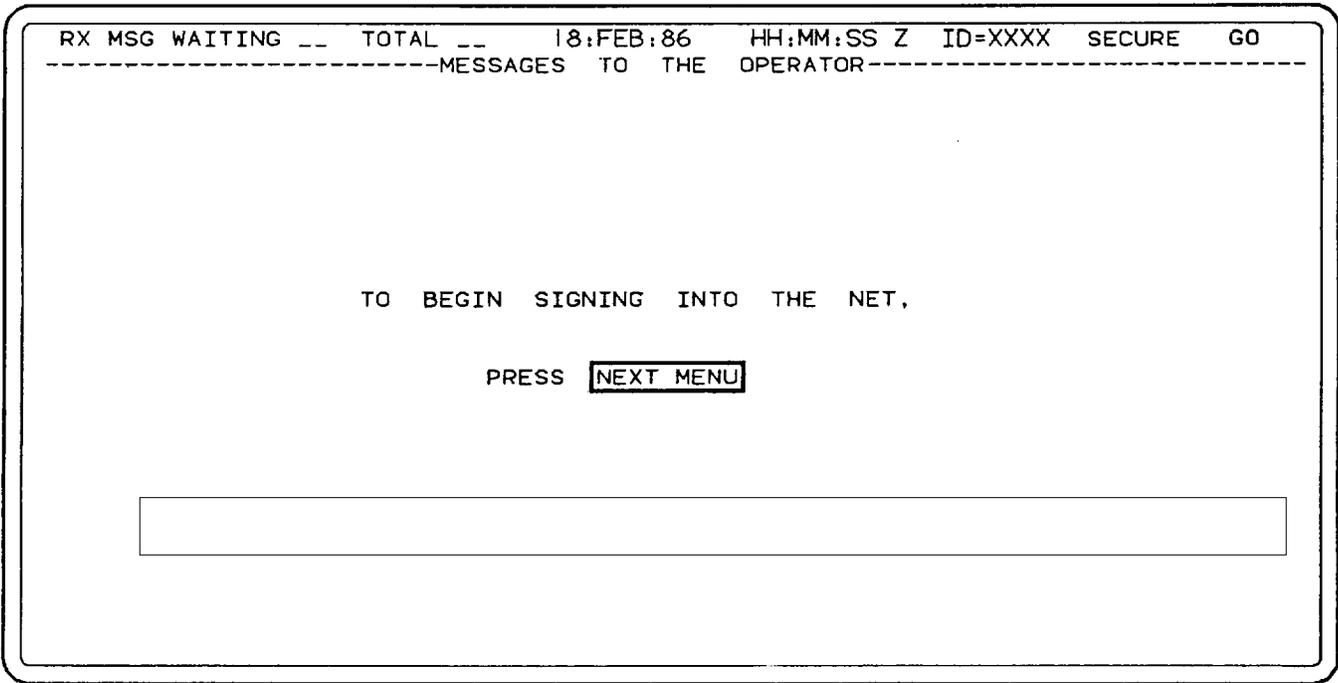
THIS COMPLETES INITIALIZATION PROCEDURES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

c. Message Creation and Handling

The main menu allows you to select a canned message, select the message in the edit buffer, or you can compose a new message. Upon message selection, the message is retrieved and displayed on the screen for composition, review, and transmission.

STEP
1 Select type of message to be processed.

- If you wish to recall a canned message or if you wish to compose/edit from a canned message for subsequent transmission, press RECALL CANNED MESSAGE DIRECTORY touchpoint and then press NEXT MENU to continue. Proceed to step 2.

- If you wish to recall your last edited message, press RECALL LAST EDITED MESSAGE touchpoint and then press NEXT MENU to continue. Proceed to step 3 for compose/edit procedure.

- If you wish to create a new message, press CREATE NEW MESSAGE touchpoint and then press NEXT MENU to continue. Proceed to step 3 for compose/edit procedure.

```
RX MSG WAITING __  TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX  SECURE   GO
-----------------------------MESSAGES  TO  THE  OPERATOR------------    IN  NET
                            MAIN MENU

         SELECT ONE :


                        RECALL CANNED MESSAGE DIRECTORY


                        RECALL LAST EDITED MESSAGE


                        CREATE NEW MESSAGE



                 PRESS  [NEXT MENU]  TO CONTINUE .
```
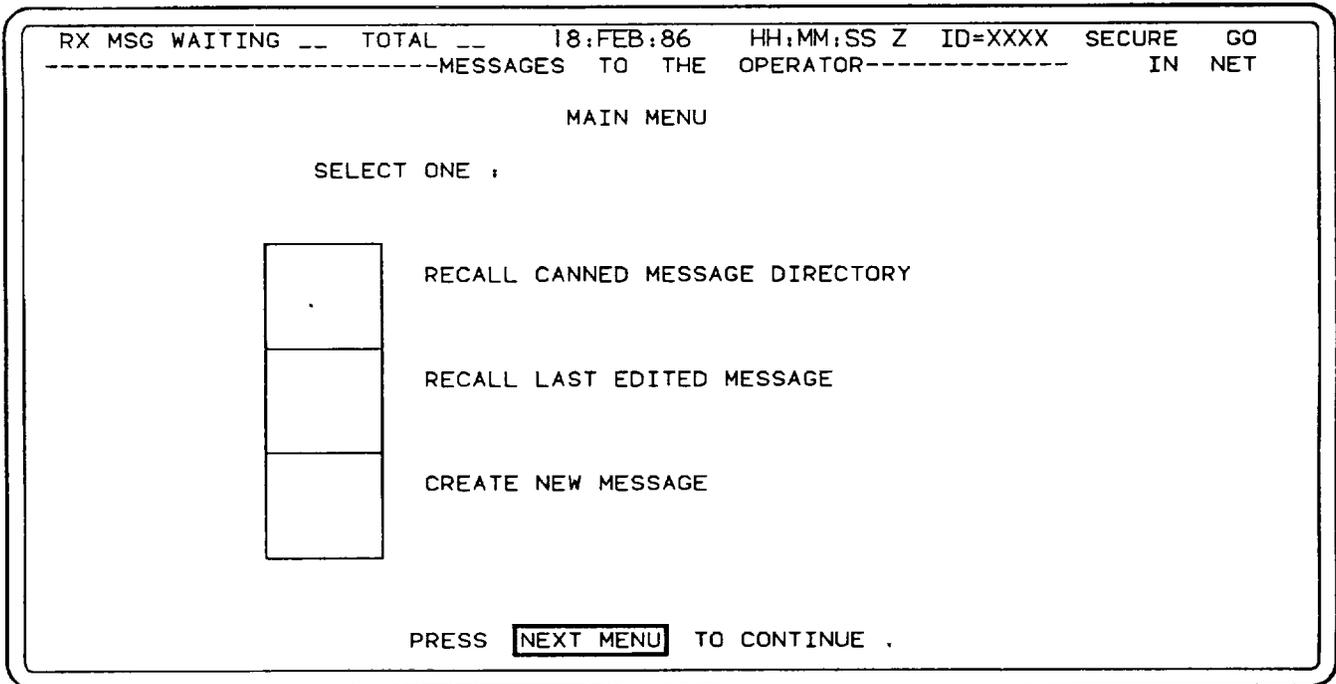
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

MESSAGE CREATION AND HANDLING (Cont.)

STEP

2 Select canned message.

- Press touchpoint for the canned message you wish to recall. The selected touchpoint lights.

- The D/K assembly shows the message prompt PRESS NEXT MENU TO CONTINUE. Press NEXT MENU bezel key.

```
 RX MSG WAITING __   TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE    GO
 ------------------------MESSAGES   TO   THE   OPERATOR------------------------
                         CANNED MESSAGE DIRECTORY
               SELECT ONE :

               COMPANY  C  REPORT


               SUPPLY   REQUEST


               DUTY   ROSTER


               EQUIPMENT   REPORT


               RECONNAISSANCE  REPORT

                  PRESS  NEXT MENU  TO CONTINUE .
```

2-107
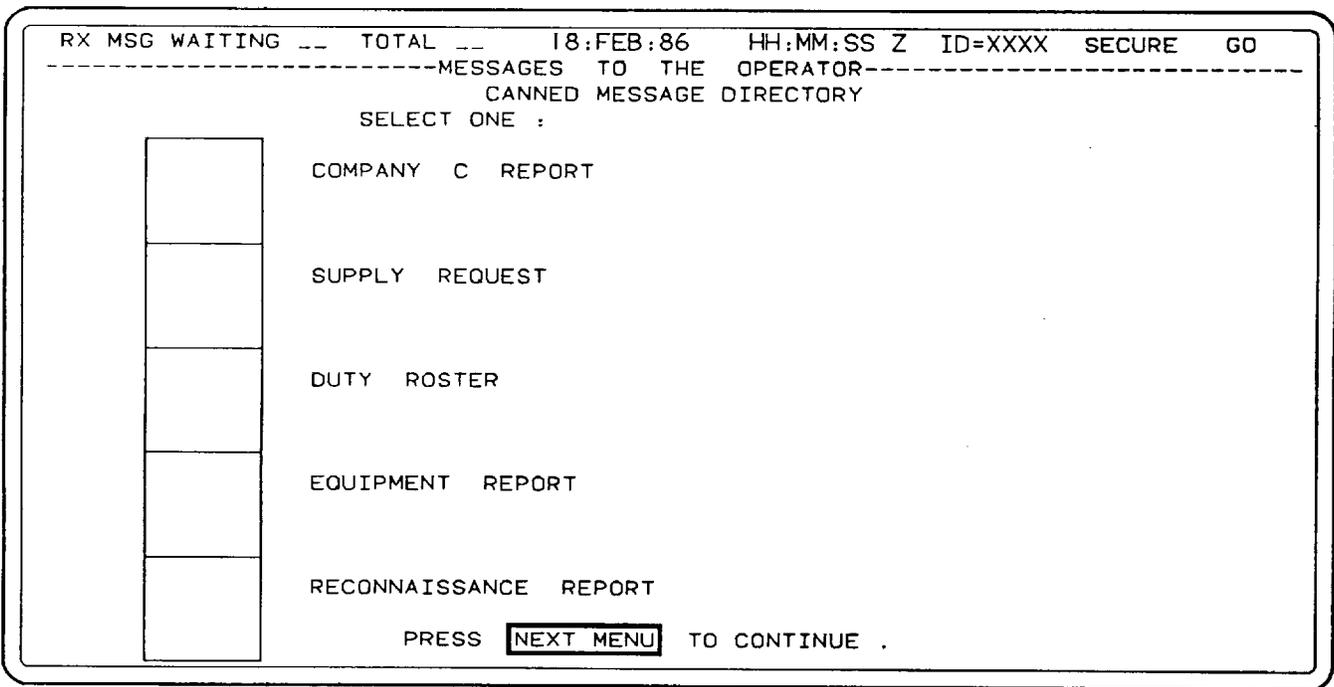
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

> **MESSAGE CREATION AND HANDLING (Cont.)**

STEP

3   Using the keyboard-type touchpoints on the D/K assembly, compose/edit the message (the message is displayed above the keypad touchpoint area). When in compose/edit mode, the following bezel edit keys are enabled:

- INSERT - Use to insert a new character where the cursor is currently positioned. All character inputs are inserted at the position of the cursor until the INSERT bezel key is pressed a second time (INSERT ON will be shown on the D/K assembly when INSERT mode is activated).

- DELETE - Use to delete the character from the current position. All characters to the right of the cursor will move to the left.

- ROLL UP, ROLL DOWN - Use to scroll the screen up or down one half page (four lines) at a time.

- ↑↓ - Use to move cursor up or down the screen one line at a time.

- ← → - Use to move the cursor left or right.

- ENTER - Moves cursor to next line or new line.

```
RX MSG WAITING __   TOTAL __      18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO
--------------------------MESSAGES  TO  THE  OPERATOR--------------------------
         [ - - - - - - - MESSAGE  COMPOSITION  AREA - - - - - - - ]


         PRESS  [XMT]  TO TRANSMIT  OR  PRESS  [NEXT MENU]  TO GO TO MAIN MENU.
```

1	2	3	4	5	6	7	8	9	0	-
Q	W	E	R	T	Y	U	I	O	P	*
A	S	D	F	G	H	J	K	L	?	/
SPACE	Z	X	C	V	B	N	M	,	.	:

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

MESSAGE CREATION AND HANDLING (Cont.)

STEP
4   Press XMT bezel key to transmit your message or press NEXT MENU to return to the main menu. Your message is stored and can be recalled by selecting RECALL LAST EDITED MESSAGE from the main menu (step 1).

NOTE

The transmission sequence is guarded. This means the entire message must be displayed on the screen and reviewed prior to actual release for transmission. You can cancel the transmit function prior to actual release, by pressing Main MENU bezel key or the ABORT bezel key to return to main menu.

STEP
5   The D/K assembly shows the first page of your message. Review entire message.

- Press ROLL UP bezel key to roll through message for review.

- If message requires editing, press PRIOR MENU bezel key to return to the compose/edit screen (step 3) and edit your message.

- Maximum length of transmit or receive messages is 200 characters.

```
 RX MSG WAITING __   TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE   GO
------------------------------MESSAGES  TO  THE  OPERATOR-------------------------

THIS IS A SAMPLE MESSAGE TO SHOW WHAT THE OPERATOR WILL SEE WHEN GOING
THROUGH THE 'GUARD' SEQUENCE BEFORE TRANSMITTING A MESSAGE. THE ENTIRE MESSAGE
MUST BE DISPLAYED ON THE SCREEN BEFORE THE OPERATOR WILL BE ALLOWED TO
TRANSMIT THE MESSAGE OVER THE NET.




                        ROLL  THROUGH MESSAGE FOR REVIEW .
               IF MSG REQUIRES EDITING, PRESS  PRIOR MENU .
```
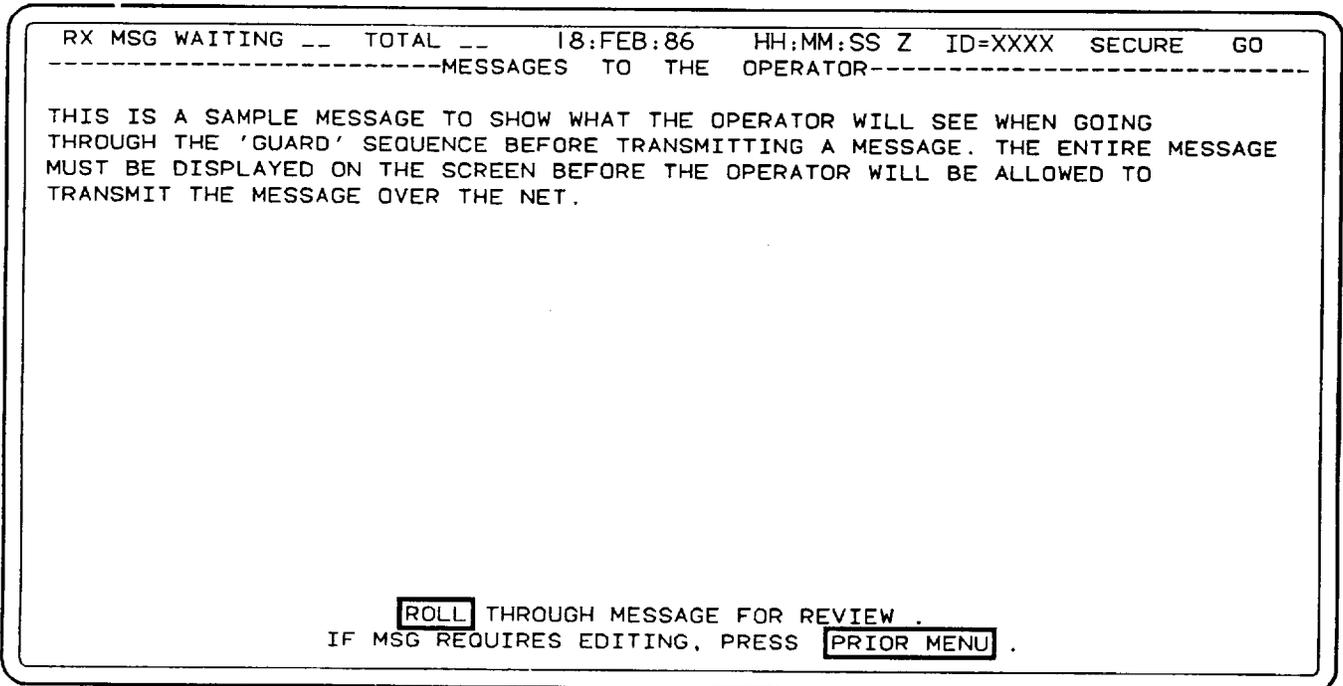
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

~~MESSAGE CREATION AND HANDLING (Cont.)~~

STEP
5 (Cont.)

- After entire message has been reviewed, the D/K assembly will prompt you to PRESS NEXT MENU TO CONTINUE. Press NEXT MENU bezel key.

```
 RX MSG WAITING __  TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE    GO
----------------------------MESSAGES  TO  THE  OPERATOR------------------------

THIS IS A SAMPLE MESSAGE TO SHOW WHAT THE OPERATOR WILL SEE WHEN GOING
THROUGH THE 'GUARD' SEQUENCE BEFORE TRANSMITTING A MESSAGE. THE ENTIRE MESSAGE
MUST BE DISPLAYED ON THE SCREEN BEFORE THE OPERATOR WILL BE ALLOWED TO
TRANSMIT THE MESSAGE OVER THE NET.




                          PRESS  NEXT MENU  TO CONTINUE .
                   · IF MSG REQUIRES EDITING, PRESS  PRIOR MENU .
```

2-110

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

MESSAGE CREATION AND HANDLING (Cont.)

STEP

6   The D/K assembly shows the MESSAGE SECURITY menu with the message ONLY TOUCHPOINTS ARE VALID (meaning you must first make a selection using the touchpoints before pressing any bezel key.

- Select message priority by pressing HIGH PRIORITY touchpoint or LOW PRIORITY touchpoint. The selected touchpoint lights.

- Select classification by pressing touchpoint for SECRET, CONFIDENTIAL, or UNCLASSIFIED. The selected touchpoint lights.

- Press NEXT MENU to guard the message.

- Press XMT bezel key to release message; the D/K assembly returns to the Main Menu (step 1).

```
RX MSG WAITING __  TOTAL __    I8:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE   GO
------------------------------MESSAGES  TO  THE  OPERATOR------------------------------
                            MESSAGE   PRIORITY

           SELECT  ONE:                              SELECT  ONE:


              ┌──────┐                            ┌──────┐
              │      │    HIGH                    │      │
              │      │    PRIORITY                │      │    SECRET
              └──────┘                            │      │
                                                  │      │
                                                  │      │    CONFIDENTIAL
                                                  │      │
              ┌──────┐                            │      │
              │      │    LOW                      │      │
              │      │    PRIORITY                 │      │    UNCLASSIFIED
              └──────┘                            └──────┘


                    PRESS  [XMT]  TO RELEASE MESSAGE .
```

THIS COMPLETES MESSAGE CREATION AND HANDLING PROCEDURES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

d. Show Message

```
┌─────────────────────────────┐
│                             │
│                             │
└─────────────────────────────┘
```

SHOW MESSAGE

NOTE

The I/O Unit audible alarm sounds and the MSG RECEIPT indicator lights upon receipt of a message. When activated, the audible alarm may be reset by pressing the ALARM RESET switch on the I/O Unit.

You cannot select which received message to view first. The D/K assembly chooses the highest priority message received which has not yet been read.

You can escape the show message function by pressing either MAIN MENU bezel key or ABORT bezel key without affecting the received message. The message is held in storage until deleted or overwritten.

STEP

  1   Press the SHOW MSG bezel key. The D/K assembly shows the highest priority received message and the message security.

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2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

SHOW MESSAGE (Cont.)

```
 RX MSG WAITING __   TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX   SECURE    GO
------------------------------MESSAGES   TO   THE   OPERATOR--------------------------
DD hhmmZ MMMYY
FROM TERMINAL #: ____  I/O _     MSG #: ___
CLASS:    INTG:    NEC:    PRC:



        <<<<<<   MESSAGES WILL BE DISPLAYED IN THIS AREA    >>>>>>




        READ                DELETE              PRINT
        NEXT                THIS                THIS
        MESSAGE             MESSAGE             MESSAGE
```

STEP

2   Press touchpoint to select one of the following:

- READ NEXT MESSAGE - The D/K assembly shows the next message. Priority is based on whether message has already been read, order of arrival (most recent messages) and precedence.

- DELETE THIS MESSAGE - The message shown on the D/K assembly is deleted. Then the D/K assembly shows the next message.

- PRINT THIS MESSAGE - The message shown on the D/K assembly is printed (if Team Terminal is configured for print operations).

THIS COMPLETES SHOW MESSAGE PROCEDURES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

    e. Operational Set-up

OPERATIONAL SET-UP

      The operational set-up function allows you to change any of the operational parameters for the Team Terminal after power-up initialization.

STEP

  1   Press the SET UP bezel key; the D/K assembly shows the SET UP MENU.

```
RX MSG WAITING __   TOTAL __     18:FEB:86   HH:MM:SS Z   ID=XXXX   SECURE   GO
-----------------------MESSAGES  TO  THE  OPERATOR---------------------------
                          SET  UP  MENU

        GEOGRAPHIC          CRYPTO                HOPSET
        LOCATION            VARIABLE              ENTRY


        POWER               VOICE                 NON - ECCM /
        LEVEL               FREQUENCY ENTRY       ECCM / TRAINING


        SUBNET              MANUAL                DATE
        NUMBER              FREQUENCY ENTRY


        MESSAGE             FREQUENCY
        DESTINATION         ENTRY



              PRESS  [NEXT MENU]  TO CONTINUE
```
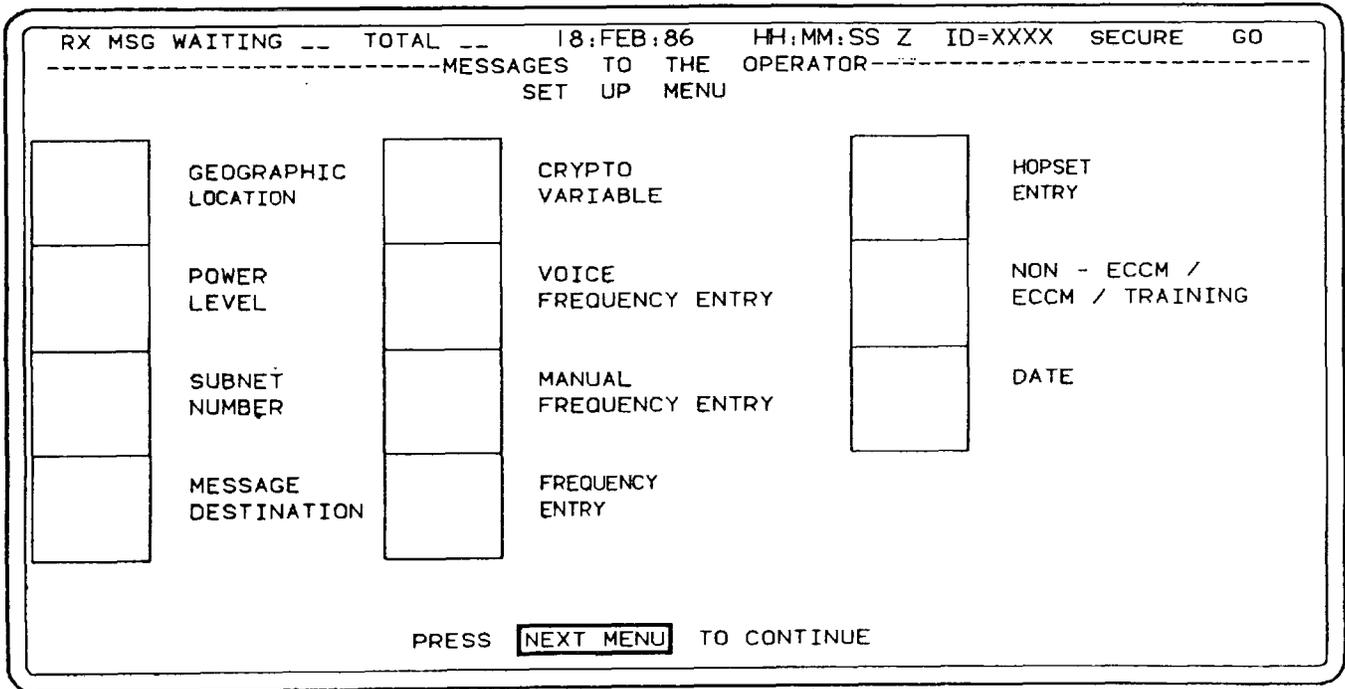
NOTE

      After operational parameters have been changed, the D/K assembly will return to the SET UP MENU. To exit operational set up at any time, press the MAIN MENU bezel key. Pressing the NEXT MENU bezel key before making a selection will cause the D/K assembly to return to the last menu prior to going into the set up mode.

Change 1 2-114

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

OPERATIONAL SET-UP (Cont.)

STEP

2   To change operational parameters, press touchpoint to make your selection and then press NEXT MENU to continue. Proceed to the applicable step in initialization procedures (para 2-8b).

- LOCATION   STEP 22

- POWER LEVEL   STEP 28

- MESSAGE DESTINATION   STEP 27

- SUBNET NUMBER   STEP 29

- CRYPTO VARIABLE   STEP 25

- VOICE FREQUENCY ENTRY   STEP 13

- MANUAL FREQUENCY ENTRY   STEP 17

- NON-ECCM DATA FREQUENCY ENTRY   STEP 23

- ECCM DATA FREQUENCY ENTRY   STEP 24

- NON-ECCM/ECCM/TRAINING   STEP 26

- DATE   STEP 21

THIS COMPLETES OPERATIONAL SET-UP PROCEDURES

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2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

f. Changing TRANSEC Variables

CHANGING TRANSEC VARIABLES

This procedure is for changing TRANSEC variable selection after the variables have been loaded (and more than one variable have been loaded in accordance with paragraph 2-7b, step 9). Do not perform this procedure unless instructed by your controller.

NOTE

Fill device must not be connected to ECCM Module while changing variables.

STEP
1   On ECCM Module, press the [2ND #] key and then the [LOD] key.

The ECCM Module display shows: ➔ `2nd` `LPR          USB`

and then: ➔ `LOd` `VAR` `LPR          USB`

The VAR indicator on the ECCM Module display lights to show you have entered the variable select mode.

STEP
2   Select variable by pressing the [2↑] key (for second variable).

The ECCM Module display shows: ➔ `LOd 2` `VAR` `LPR          USB`
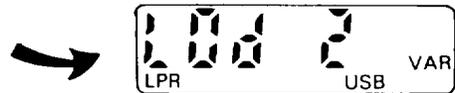
STEP
3   Now press the [ENT TST] key to exit the variable select mode. The display VAR indicator goes off and the ECCM Module display shows:

➔ `FILLEd` `LPR          USB`

THIS COMPLETES PREOCEDURES FOR CHANGING TRANSEC VARIABLES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

g. Leave Net Procedures

LEAVE NET PROCEDURE

STEP
1   Press LEAVE NET bezel key.

STEP
2   The D/K assembly shows the prompt message YOU HAVE PRESSED THE LEAVE NET KEY !! ARE YOU SURE YOU WANT TO SIGN OUT OF THE NET ?

- If you are sure you want to sign out of the net, press the YES touchpoint and then press the NEXT MENU bezel key to continue.

- If you do not want to sign out of the net, press the NO touchpoint and then press the NEXT MENU bezel key to continue. The D/K assembly returns to the last menu prior to entering the leave net mode.

```
RX MSG WAITING __  TOTAL __    18:FEB:86   HH:MM:SS Z  ID=XXXX  SECURE   GO
-------------------------MESSAGES  TO  THE  OPERATOR-------------------------




           YOU HAVE PRESSED THE LEAVE NET KEY !!            ┌──────┐
                                                           │      │  YES
              ARE YOU SURE YOU WANT TO                      └──────┘

              SIGN OUT OF THE NET ?

                                                           ┌──────┐
                                                           │      │  NO
                                                           └──────┘

                   PRESS  [NEXT MENU]  TO CONTINUE .
```
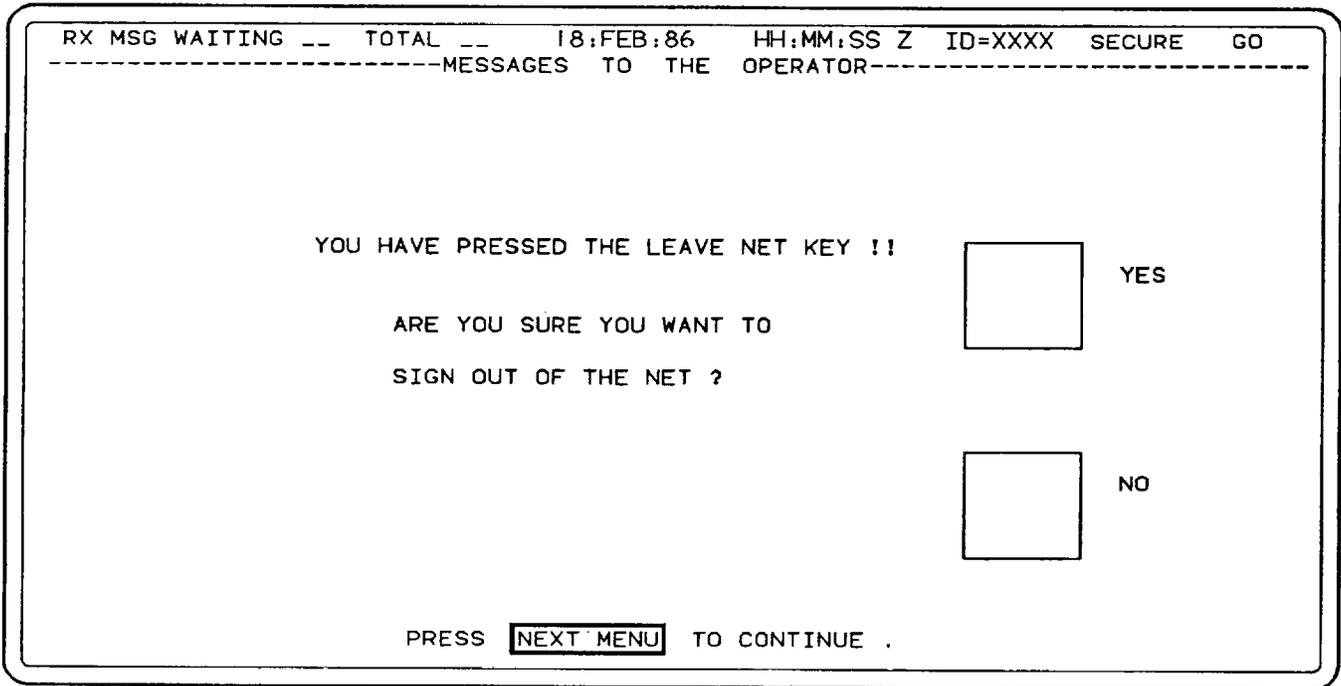
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

LEAVE NET PROCEDURE (Cont.)

STEP

2 (Cont.)

- The D/K assembly will show the message NETWORK SIGN OUT PENDING until the system signs the terminal out of the network.

```
RX MSG WAITING __  TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO
------------------------MESSAGES  TO  THE  OPERATOR--------------------------




                        NETWORK SIGN OUT PENDING



```
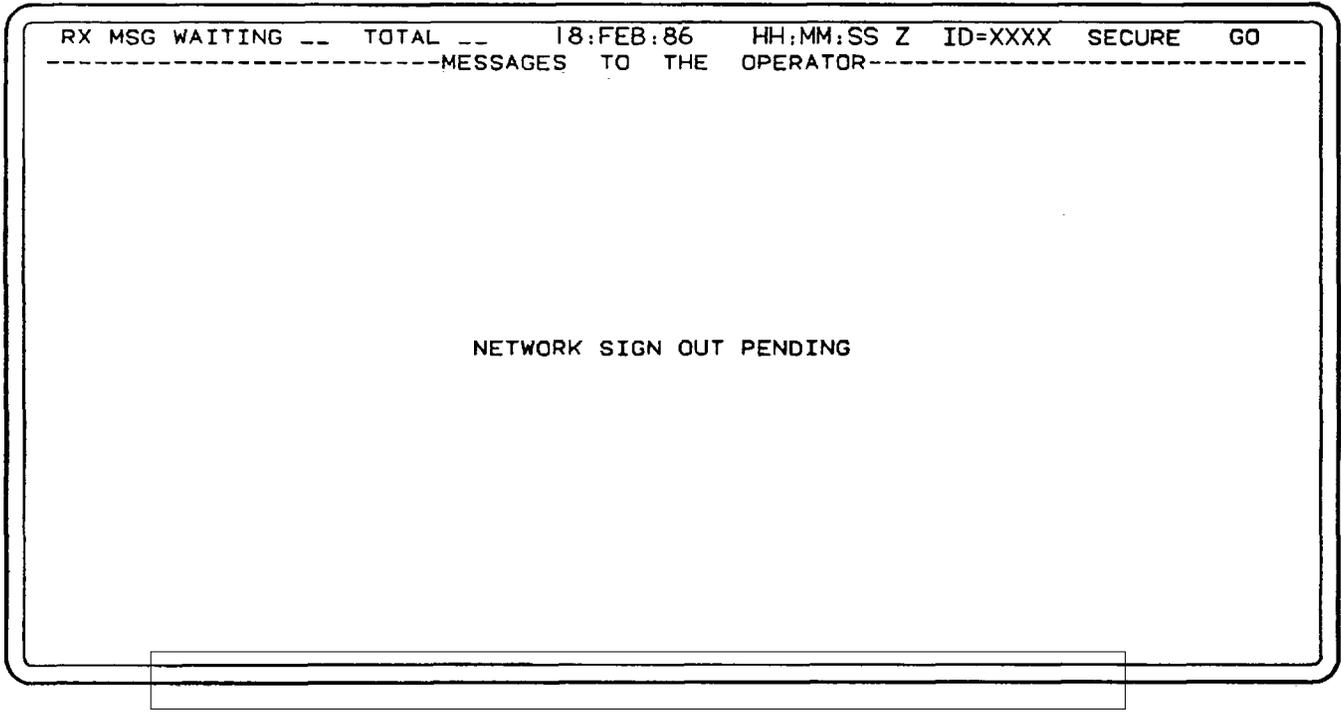
THIS COMPLETES LEAVE NET PROCEDURE

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

h. Zeroization Procedures

ZEROIZATION PROCEDURE

STEP
1   Press the ZEROIZE bezel key.

STEP
2   The D/K assembly shows the warning message YOU HAVE PRESSED THE ZEROIZE KEY !! ARE YOU SURE YOU WANT TO ZEROIZE THE TERMINAL ?

- If you want to zeroize the terminal, press the YES touchpoint and then press the NEXT MENU bezel key to continue. The D/K assembly shows the message prompt ZEROIZE IN PROCESS followed by ZEROIZE COMPLETE.

- If you do not want to zeroize the terminal, press the NO touchpoint and then press the NEXT MENU bezel key to continue. The D/K assembly returns to the last menu prior to pressing the ZEROIZE bezel key.

```
RX MSG WAITING __  TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX   SECURE    GO
-----------------------------MESSAGES  TO  THE  OPERATOR----------------------------


    ********************** WARNING ****************************

         YOU HAVE PRESSED THE ZEROIZE KEY!!        ┌──────┐
                                                   │      │  YES
         ARE YOU SURE YOU WANT TO                  │      │
                                                   └──────┘
         ZEROIZE THE TERMINAL ?

                                                   ┌──────┐
                                                   │      │  NO
                                                   │      │
                                                   └──────┘

              PRESS │NEXT MENU│  TO CONTINUE .
```
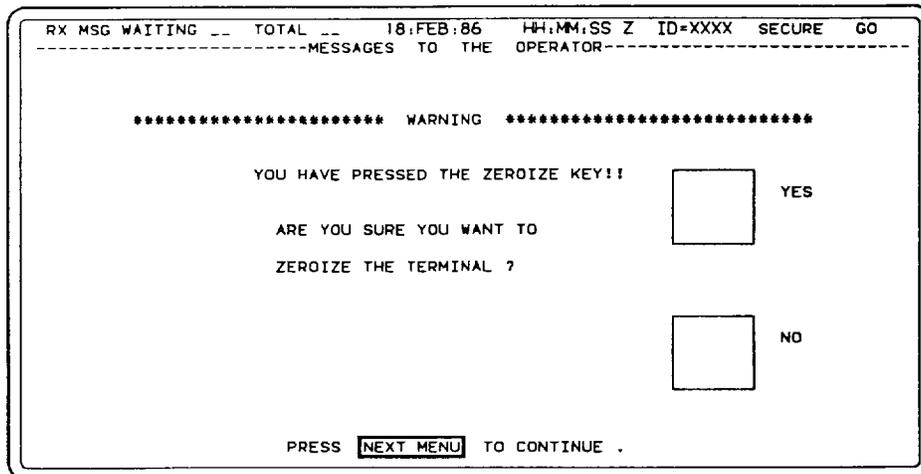
STEP
3   Complete zeroization of the terminal:

- On RT, press ZERO pushbutton switch.

- On TSEC/KG-84A, pull outward and set ENABLE-ZEROIZE switch to ZEROIZE position.

- On TSEC/KY-65, pull outward and set POWER switch to OFF/ ZEROIZE.

THIS COMPLETES ZEROIZATION PROCEDURE

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

   i. Power-Off Sequence

POWER-OFF SEQUENCE

**STEP
 1**   Zeroize Team Terminal in accordance with paragraph 2-7h.

**STEP
 2**   On I/O Unit, set POWER ON switch to off (down) position.

**STEP
 3**   On RT, set power ON-OFF switch to OFF.

**STEP
 4**   On TSEC/KG-84A, set POWER ON-OFF switch to OFF.

**STEP
 5**   On TSEC/KY-65, pull out and set POWER switch to OFF/ZEROIZE.

**STEP
 6**   On RN Modem, set PWR ON-OFF switch to OFF.

NOTE

   Any time the RFO is powered-off it will lose TOD. If the RFO loses TOD,
   the TOD must be reloaded before operations can continue. If this is a
   short term power-off and TOD cannot be obtained, you may want to keep
   the RFO powered up.

**STEP
 7**   If you want to keep the RFO powered up, proceed to step 8; Otherwise, set the RESET-OFF
switch on the RFO to OFF.

NOTE

   If you are using +24 Vdc power source, keep alive voltage can be applied
   to the RFO while the TT PS is powered off (via RFO ON-OFF switch on
   the TT PS).

**STEP
 8**   If you are using +24 Vdc power source and you want to keep the RFO powered-up, set the
RFO ON-OFF switch on the TT PS to ON. Set POWER ON-OFF (AC and DC) switches on the TT
PS to OFF.

THIS COMPLETES POWER-OFF SEQUENCE

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

j. Remote Data Operation

REMOTE DATA OPERATION

Remote data operations allow the Team Terminal to function in the data mode with the D/K assembly removed from the rack and placed up to 20 feet from the rack. Procedures for configuring the Team Terminal for remote data operations are provided in paragraph 2-5a(4).

D/K ASSEMBLY

FRONT VIEW
(TYPICAL INSTALLATION)

REMOTE
CABLE

2-121
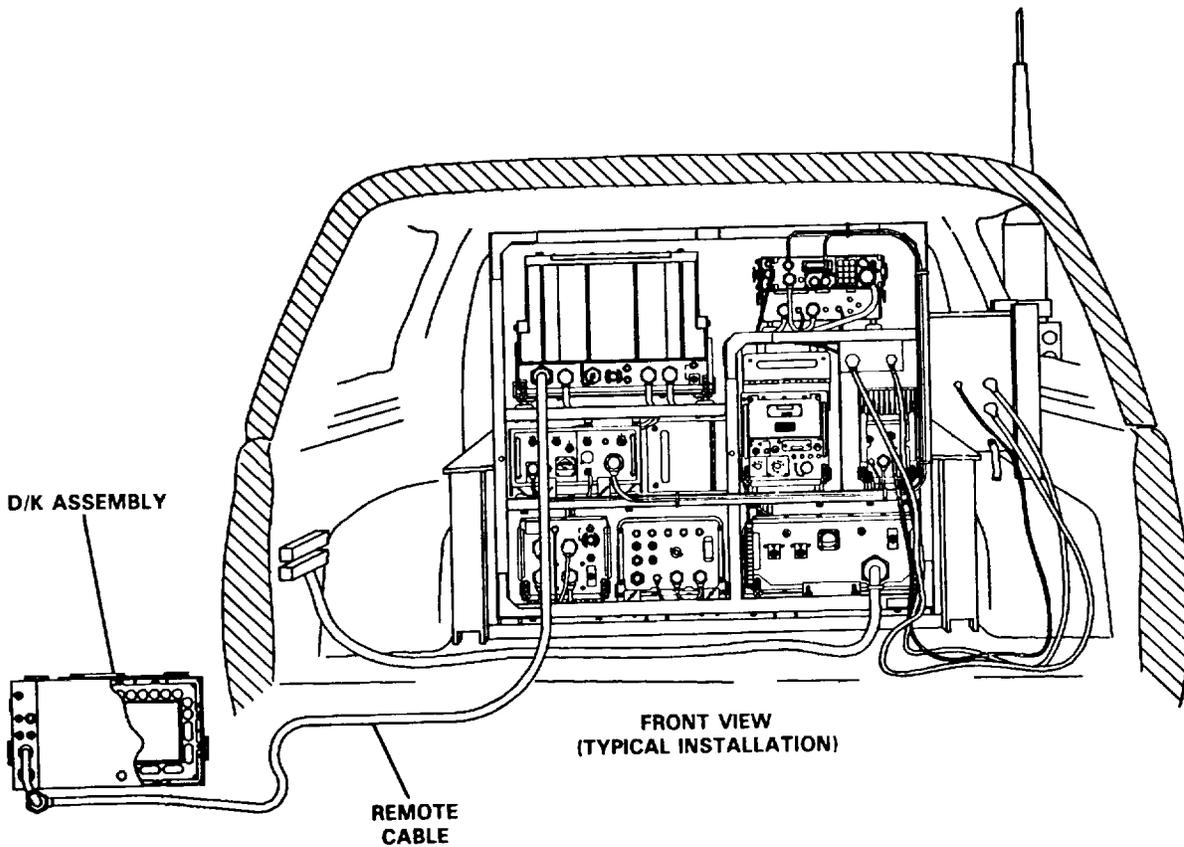
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

REMOTE DATA OPERATION (Cont.)

STEP
1   Perform the power-on sequence (para 2-8a).

STEP
2   Initialize the Team Terminal for data operations (para 2-8b).

STEP
3   Perform normal data operations from the remoted D/K assembly. Refer to the following procedures:

- Message creation and handling (para 2-8c)

- Show message (para 2-8d)

- Operational set-up (para 2-8e)

- Changing TRANSEC variables (para 2-8f)

- Leave net (para 2-8g)

- Zeroize (para 2-8h)

- Power-off sequence (para 2-8i)

THIS COMPLETES REMOTE DATA OPERATION PROCEDURES

2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

k. Remote Voice Operation

REMOTE VOICE OPERATION

Remote voice operations allow the Team Terminal to function in the voice mode from a distance of up to 1 mile. The ECCM Module is removed from the rack and used to control the Team Terminal. The Remote Control Set (includes R/E terminal and remote location) inter-faces the remoted ECCM Module with the Team Terminal. Procedures for configuring the Team Terminal for remote voice operation are provided in paragraph 2-5a(5).
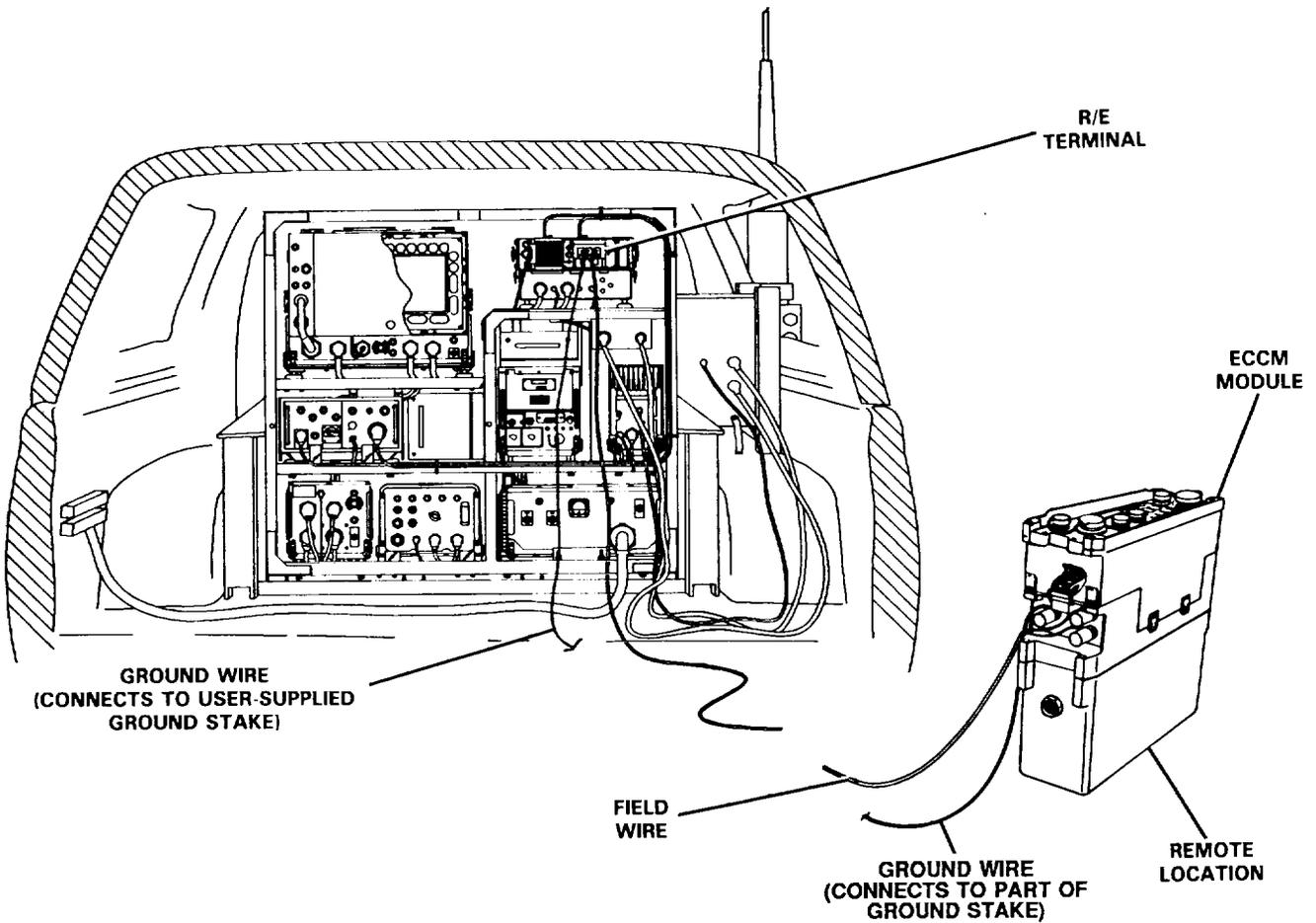
2-8. TEAM TERMINAL OPERATING PROCEDURES (Cont.)

> **REMOTE VOICE OPERATION (Cont.)**

STEP

1   Power-on the R/T. The BITE indicator on the R/E terminal lights upon power-up. The BITE indicator will remain lighted until the remote location is turned on (next step) and BIT is completed.

STEP

2   If not already on, power-on the RFO. If TOD is not already loaded into the RFO, refer to para 2-8a STEPS 4 and 5 and obtain TOD for the RFO.

STEP

3   Load ECCM TRANSEC variables (para 2-8b, STEP 5).

STEP

4   On remote location, set R/T-OFF-TEL. switch to R/T for radio communications or to TEL. for telephone communications.

NOTE

Any entry at Remote ECCM will cause noise in Handset for approximately 5 seconds. This is serial Data going to TT (normal).

- For telephone communications - Connect Handset to AUDIO connector on ECCM Module at remote location. On R/E terminal, connect Headset to AUDIO connector. Press CALL switch to signal a telephone call to operator at remote location. Adjust VOLUME control for desired audio level for communications with operator at remote location.

- For radio communications - Connect Handset to AUDIO connector on ECCM Module at remote location and establish communications by using the following Manpack operating procedures:

    •• Select manual frequency (para 2-6b).

    •• Load preset channels (para 2-6c).

    •• Select preset channels (para 2-6d).

    •• Fine tune as required (para 2-6e).

    •• Change sidebands as required (para 2-6f).

    •• Select power level (para 2-6g).

    •• Enable/Disable Manpack ECCM Mode (para 2-6h)

THIS COMPLETES PROCEDURES FOR REMOTE VOICE OPERATIONS

2-124

2-9. PREPARATION FOR MOVEMENT

Perform the following procedures only if you are preparing the Team Terminal for routine movement, shipment or storage. These procedures are not applicable for normal operation while in motion.

a. Turn-off all equipment power switches.

b. Recover Remote Control Set (if used) and stow in vehicle.

c. Contact unit maintenance to remove COMSEC equipment from equipment rack and return to crypto custodian.

d. Secure all components in their cases, racks, mountings, or holders.

e. Place all loose items in storage compartments.

f. Disconnect external ac power cable (if used) from TT PS PWR IN connector. Store cable in vehicle.

WARNING

Tie down the antenna when on routine movement to guard against injury to vehicle occupants due to accidental contact of antenna to high voltage power lines, and to pedestrians due to unrestrained movement of antenna.

g. Tie-down whip antenna. Refer to Antenna Tie-Down Procedures on the following page.

2-125

2-9. PREPARATION FOR MOVEMENT (Cont.)

ANTENNA TIE-DOWN PROCEDURES

WARNING

Ensure equipment power is off before touching antenna. If the antenna tie-down is required as part of the transition from stationary to mobile operations or vice versa,run BIT and shut the R/T power off before touching the antenna. After changing the antenna configuration, power on the R/T, refill TRANSEC variables, and run BIT to resume network activities

---

STEP

1 Slide insulator boot up Whip Antenna base section. On Antenna Base, pull outward on spring lock knob and at the same time pull upward on mount bar (this activates spring on Antenna Base).

WARNING

STEP
AN ANTENNA TIP CAP MUST BE IN PLACE ON THE
ANTENNA. WHEN TYINGDOWN THE ANTENNA, BE SURE
2 Slide insulator boot back over Antenna Base.
THE CAP IS THERE.

BE SURE TO TIE DOWN THE ANTENNA SO THE DISTANCE FROM THE
GROUND TO THE TIP CAP IS 7 FEET OR MORE.

DEATH OR SERIOUS INJURIES CAN RESULT WHEN TIP CAPS ARE NOT
USED, OR WHEN ANTENNAS ARE TIED DOWN TOO CLOSE TO THE
GROUND.

DEATH OR SERIOUS INJURIES CAN RESULT WHEN AN ANTENNA WHICH.
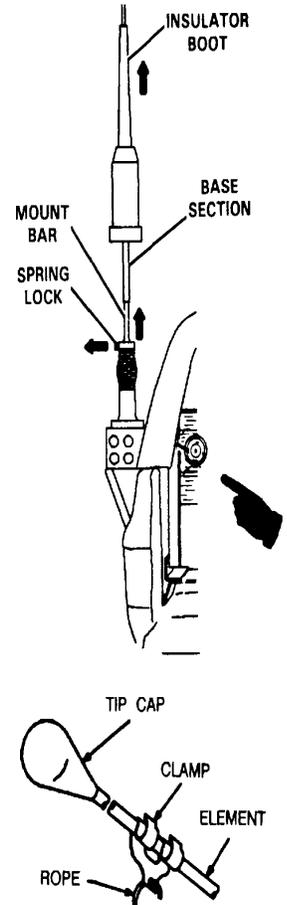
CAUTION
MAKE SURE CLAMP OR CLIP DOES NOT CUT INTO ANTENNA
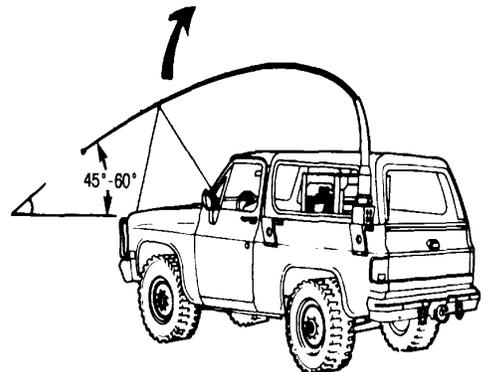
STEP

3 Slide the U-shaped clamp of tie-down

assembly to the middle of the top antenna section. Place the antenna under the clamp; it cannot spring out of this position.

STEP

4 Pull the antenna down until forms a 45-60 degree angle with the ground. The distance from the tip cap to the ground must be more than 7 feet. Secure the tie- down rope to vehicle front.

2-10.   OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES

Warning and operating instructions on decals are as follows:

a.   I/O Unit.

CAUTION

**UNIT WEIGHT 66LBS.
TWO-MAN LIFT**

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGS (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.

b.   RT.

CONTAINS
KGV-IO/TSEC

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.

2-10. OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES (Cont.)

c. RN Modem.
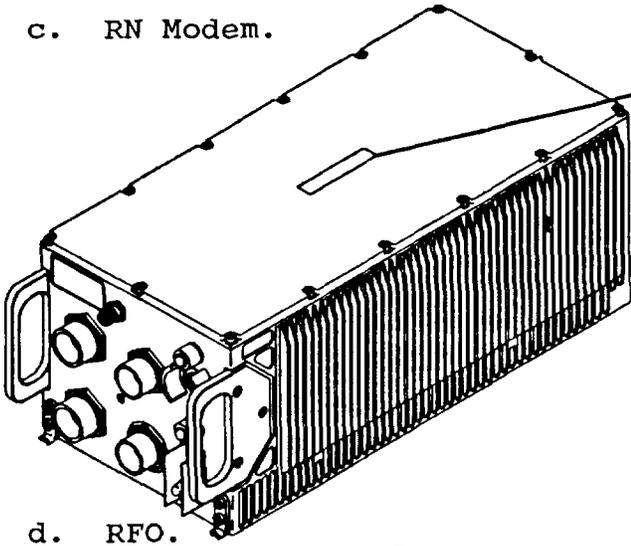
CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.

d. RFO.
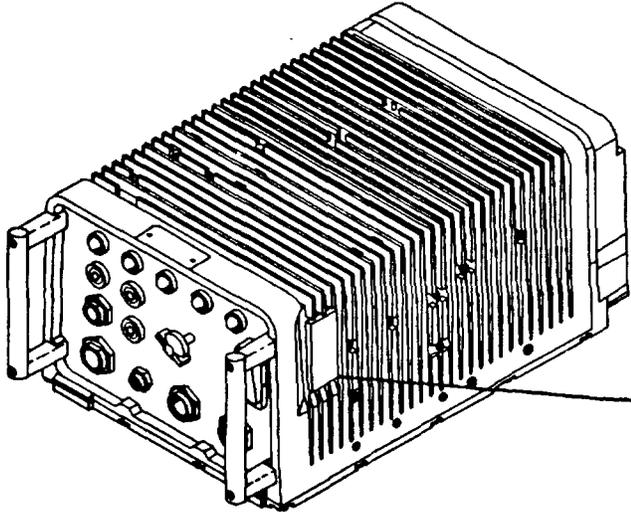
NOTE

Contact MMCT to remove batteries in RFO. Navy personnel contact chief watch officer. Air Force personnel contact Maintenance Control.

WARNING
REMOVE BATTERIES BEFORE
SHIPMENT OR INACTIVE STORAGE
OF 30 DAYS OR MORE

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.

RFO
(PARTIAL BOTTOM VIEW)

2-10.   OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES (Cont.)

e.   TT PS.

CAUTION

350 VOLTS
90 AMPS

CAUTION

UNIT WT. 62 POUNDS
NO STOP ON MTG. TRAY

CAUTION

350 VOLTS
90 AMPS

TT PS
(BOTTOM VIEW)

f.   ATU.

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGS (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.
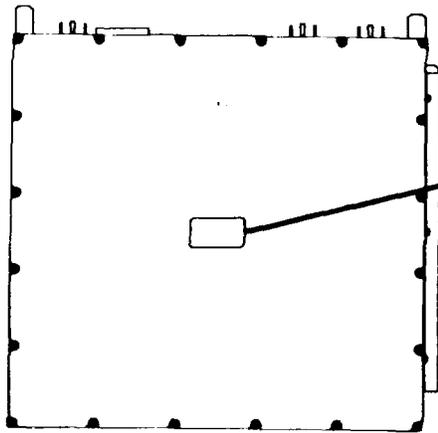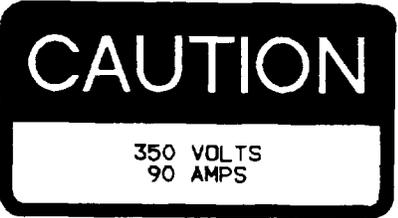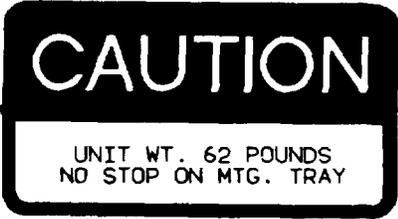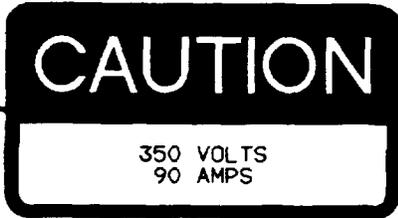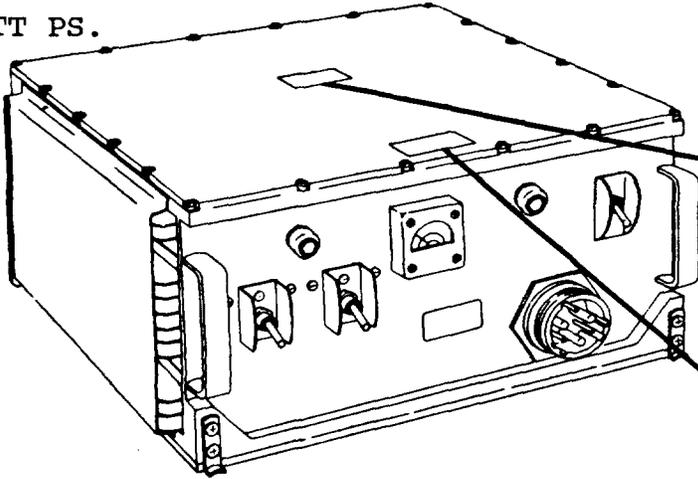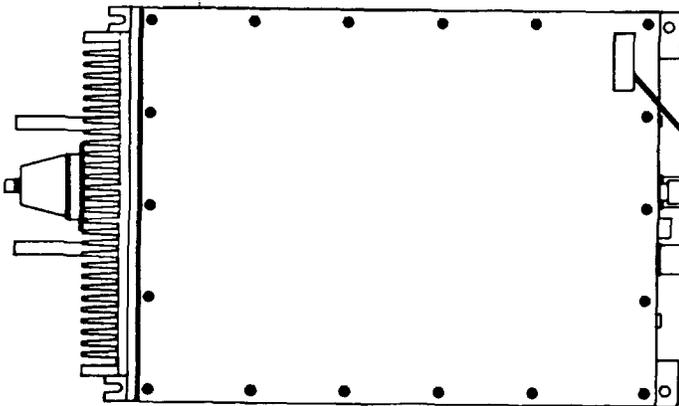
ATU
(TOP VIEW)
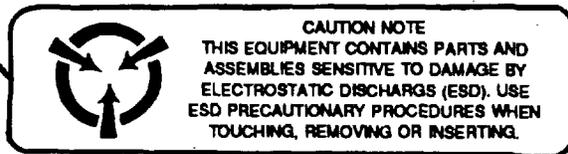
NOTE: ATU shown here without Safety Cap or Matching
Capacitor installed.

2-10. OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES (Cont.)

g. VA

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGS (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.
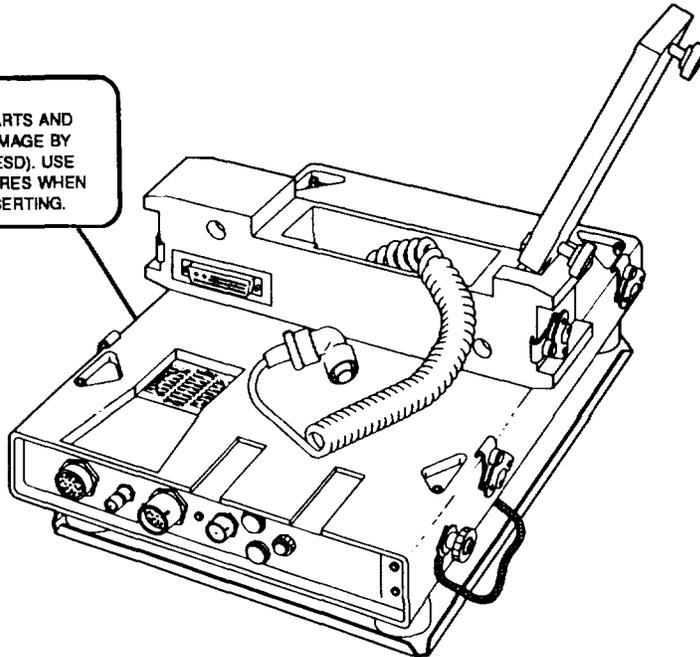
h. PA

CAUTION NOTE
THIS EQUIPMENT CONTAINS PARTS AND
ASSEMBLIES SENSITIVE TO DAMAGE BY
ELECTROSTATIC DISCHARGS (ESD). USE
ESD PRECAUTIONARY PROCEDURES WHEN
TOUCHING, REMOVING OR INSERTING.
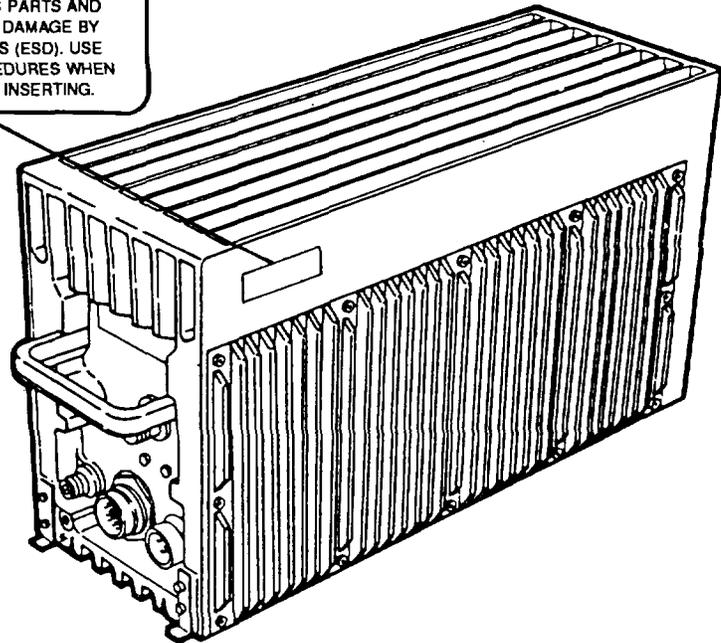
i. Remote Control Set.

j. TSEC/KY-65A. For operating instructions on decals and plates, refer to TM 11-5810-280-12 & P.

k. TSEC/KG-84A. For operating instructions on decals and plates, refer to TM 11-5810-308-12 & P.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-11. OPERATION IN UNUSUAL WEATHER

a. Cold climates (Extreme cold causes cables and wires to become hard, brittle, and hard to handle).

WARNING

Do not allow flesh to touch equipment during periods of extreme cold. Bare flesh can freeze and stick to the metal. Use gloves.

(1) Be careful when handling the cables and connecting them so that kinks and unnecessary loops will not result in permanent damage.

(2) Make sure that the binding posts and the connectors are free of frost, snow, and ice.

(3) Replace the covers on the receptacles.

(4) Replace the connector cover as soon as a cable is removed.

(5) Do not drag or place an open connector in the snow.

b. Hot Climates (in hot, dry climates, connectors, receptacles, and binding posts are subject to damage from dust and dirt).

WARNING

Metal surfaces can become extremely hot when exposed to short periods in the sun. Test the surface first, before grasping, or use gloves.

(1) Replace the covers on the connectors and the receptacles.

(2) Do not place an open connector on the ground.

c. Warm, Damp Climates (in warm, damp climates, the equipment is subject to damage from moisture and fungi). Wipe all moisture and fungi from the equipment with a lint-free cloth (item 1, Appendix E).

2-12. EMERGENCY PROCEDURES

a. Emergency Stop. To turn the equipment off in an emergency, set the TT PS POWER switch (AC or DC as applicable) to OFF.

Change 1 2-131

2-12.   EMERGENCY PROCEDURES (cont.) U

b.   Recovery After Emergency Stop.

(1)   Set all equipment power switches to OFF and perform normal power-on sequence procedure (para 2-7a).

(2)   Initialize the Team Terminal (para 2-7b) and resume normal operation.

2-13.   NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES

Refer to Chemical, Biological, and Radiological (CBR) Decontamination, TM 3-220 (changes 1,2) for detailed decontamination procedures for the materiel.

2-14.   JAMMING AND ECM PROCEDURES

An indication of jamming is a constant noise being received on your assigned frequency, making it difficult or impossible to maintain communications. To aid you in determining if you are the target of jamming, proceed as follows:

CAUTION

Do not transmit with the antenna disconnected or damage to the RT may occur.

a.   Disconnect W202P1 from the DIP 50 ohm connector on the RT.

b.   If noise continues, you may have a faulty RT; contact unit maintenance.

c.   If noise goes away, you may be the target of jamming. Report suspected jamming as soon as possible.

2-15.   LOADING TIME-OF-DAY

Refer to paragraph 3-11 if it is necessary to load TOD into your terminal.

CHAPTER 3

OPERATOR MAINTENANCE

Section I. LUBRICATION INSTRUCTIONS

There are no lubrication requirements for this equipment.

Section II. TROUBLESHOOTING PROCEDURES

3-1.   INTRODUCTION

Many problems occur which can be detected by visual inspection of the equipment. Repairs by the operator are limited to those which require no test equipment or tools. The following are actions you can take that could solve problems quickly and restore the Team Terminal to operation. In addition to these actions, a troubleshooting table is furnished to help you return the Team Terminal to operation.

     a.   Inspect your equipment for evidence of loose, damaged, missing or disconnected equipment. Replace faulty indicator lamps.

     b.   Make sure your power source is operating properly.

     c.   Use your natural senses. LOOK for damage. LISTEN for unusual noises. Electrical arcs may be heard as well as seen. If an LRU feels extremely hot or odors of overheating materials are present, notify unit maintenance. If operations permit, shut off LRUs which show evidence of overheating or arcing.

3-2.   OPERATOR'S TROUBLESHOOTING CHART

The chart lists the common malfunctions which you may find during operation or maintenance of the Team Terminal. Perform the test or inspection. Take corrective actions listed in the table. Report all fault messages and any lighted fail indicators to unit maintenance.

<div style="border:1px solid black; display:inline-block">

CAUTION

</div>

If switches (power ON/OFF/RESET) repeatedly trip or will not reset, contact unit maintenance immediately. Repeatedly resetting switches may cause further damage and equipment failures.

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

---

1.   TT PS WILL NOT POWER ON

Step 1. Observe for lighted POWER indicator on the TT PS.

Ensure DC (or AC) ON-OFF switch on TT PS is set to ON. Ensure input power cable is properly connected to PWR IN connector on TT PS and that source power is normal.

Step 2. On TT PS, observe for lighted FAULT indicator and check to ensure OUTPUT VOLTAGE meter reads between +26.0 and +30.0 Vdc.

Report fault to unit maintenance.

2.   I/O UNIT POWER ON INDICATOR WILL NOT LIGHT

Step 1. Check position of I/O Unit POWER switch.

Set I/O Unit POWER switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting proced ure (malfunction no. 1).

Step 3. Check for faulty I/O Unit POWER ON indicator.

Replace I/O Unit POWER ON indicator.

Step 4. Check cable connections to I/O Unit.

Make proper cable connections. If problem persists, contact unit maintenance.

3-2

3-2. OPERATOR'S TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

3. RT DISPLAY WILL NOT LIGHT

Step 1. Check position of RT power ON-OFF switch.

Set RT power ON-OFF switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

Step 3. Check cable connections to RT and Vehicular Adapter.

Make proper cable connections.

Step 4. Check for blown fuse (F1 and/or F2) on Vehicular Adapter.

Replace blown fuse(s). If problem persists, contact unit maintenance.

Step 5. Check for burned out power indicator lamp on Vehicular Adapter.

Replace burned out lamps as necessary.

4. RN MODEM PWR ON INDICATOR WILL NOT LIGHT

Step 1. Check position of RN Modem PWR ON-OFF switch.

Set RN Modem PWR ON-OFF switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

Step 3. Check for faulty RN Modem PWR ON indicator.

Replace RN Modem PWR ON indicator.

Step 4. Check cable connections to RN Modem.

Make proper cable connections. If problem persists, contact unit maintenance.

3-2.   OPERATOR'S TROUBLESHOOTING CHART (Cont.) '

MALFUNCTION
   TEST OR INSPECTION
         CORRECTIVE ACTION

---

5.   RFO EXT POWER INDICATOR WILL NOT LIGHT

Step 1. Check position of RFO RESET-OFF switch.

Set RFO RESET-OFF switch to RESET.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

Step 3. Check for faulty RFO EXT POWER indicator.

Replace RFO EXT POWER indicator.

Step 4. Check cable connections to RFO.

Make proper cable connections. If problem persists, contact unit maintenance.

6.   POWER ON INDICATOR ON PA WILL NOT LIGHT

Step 1. Check position of RT power ON-OFF switch.

Set RT power ON-OFF switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

Step 3. Check cable connections to PA, RT, and Vehicular Adapter.

Make proper cable connections. If problem persists, contact unit maintenance.

7.   VEHICULAR ADAPTER POWER ON INDICATOR WILL NOT LIGHT

Step 1. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

3-4

3-2.   OPERATOR'S TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 2. Check for faulty Vehicular Adapter power ON indicator.

Replace Vehicular Adapter power ON indicator.

Step 3. Check cable connections to Vehicular Adapter.

Make proper cable connections.

Step 4. Check for blown fuse (F1 and/or F2) on Vehicular Adapter.

Replace blown fuse(s). If problem persists, contact unit maintenance.

8.   TSEC/KG-84A POWER INDICATOR WILL NOT LIGHT

Step 1. Check position of TSEC/KG-84A POWER ON-OFF switch.

Set TSEC/KG-84A POWER ON-OFF switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

Step 3. Check for faulty TSEC/KG-84A POWER indicator.

Replace TSEC/KG-84A POWER indicator.

Step 4. Check cable connections to TSEC/KG-84A.

Make proper cable connections. If problem persists, contact unit maintenance.

9.   TSEC/KY-65 WILL NOT POWER ON (METER ON TSEC/KY-65 INDICATES NO POWER)

Step 1. Check position of TSEC/KY-65 POWER switch.

Pull out and set TSEC/KY-65 POWER switch to ON.

Step 2. Ensure TT PS is powered on.

Perform TT PS WILL NOT POWER ON troubleshooting procedure (malfunction no. 1).

3-2.   OPERATOR'S TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 3. Check cable connections to TSEC/KY-65.

Make proper cable connections. If problem persists, contact unit maintenance.

10.   UNABLE TO ESTABLISH COMMUNICATIONS (NO FAULT MESSAGES)

Step 1. Check to ensure sidetone audio is heard from Handset.

Set RT power ON-OFF switch to OFF and then back to ON. If problem persists, try using Headset.

Step 2. Press VOICE MODE bezel key on the I/O Unit and check initialization parameters.

Enter corrections/changes to initialization parameters.

Step 3. Attempt to establish communications with another operator.

Increase transmit power and/or try relocating vehicle. If problem persists, attempt to establish communications using the NVIS Antenna. If problem still persists, contact unit maintenance.

11.   MANPACK WILL NOT POWER-UP

Step 1. On RT, press $\boxed{\frac{\text{ENT}}{\text{TST}}}$ key and observe for lighted display.

Set RT power ON-OFF switch to OFF and then to ON again. Ensure NORMAL-EXT. BAT. switch on Battery Case/Charger is set to NORMAL.

Step 2.Check to ensure Battery Case/Charger is securely fastened to RT.

Return RT and Battery Case/Charger to rack and recharge Battery Case/Charger (para 3-8c).

Step 3. With RT mounted in rack, press $\boxed{\frac{\text{ENT}}{\text{TST}}}$ key and observe for lighted display.

Report problem to unit maintenance.

3-6

3-2.   OPERATOR'S TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

---

12.   MANPACK COMMUNICATIONS IN SECURE VOICE MODE INOPERATIVE

Step 1. Check cable connections between Manpack and TSEC/KY-65.

Connect cables in accordance with paragraph 2-5b(2).

Step 2. Check for correct control settings on TSEC/KY-65.

Set SYNC MODE switch to HF. Adjust VOLUME control to a mid-range position. If problem persists, re-load crypto variables (para 2-7b, step 8).

Step 3. On TSEC/KY-65, set and hold INT BAT-AUDIO-EXT BAT switch to EXT BAT and observe meter reading for +12.0 to +15.0 Vdc.

Report the problem to unit maintenance.

13.   NO REMOTE VOICE OPERATION

Step 1. Check for proper control settings.

On R/E, ensure power ON-OFF switch is set to ON. On remote location, ensure R/T-OFF-TEL switch is set to R/T for radio communications or to TEL for telephone communications.

Step 2. Inspect Team Terminal remote control configuration.

Ensure configuration is correct and components are securely mounted (para 2-5a(5)). Clean binding posts on remote location and R/E terminal. Ensure field wire is making good connection with binding posts. Ensure that earth ground is connected to GRD post on remote location and that earth ground is connected to GRD post on R/E terminal.

Step 3. On ECCM Module, press $\boxed{\frac{\text{ENT}}{\text{TST}}}$ key and observe for lighted display. T51

Recharge the remote location battery (para 3-8d). If problem persists, contact unit maintenance.

3-7

3-2. OPERATOR'S TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

14.   NO REMOTE DATA OPERATION

Step 1. Inspect Team Terminal configuration.

Ensure components are connected properly (para 2-5a(4)).

Step 2. Ensure Team Terminal is initialized for data operations.

Press I/O Unit DATA MODE bezel key and initialize Team Terminal for data mode.

3-8

Section III. MAINTENANCE PROCEDURES

3-3.   INTRODUCTION

Operator maintenance is limited to recharging the battery in the Remote Control Set, recharging the batteries in the Battery Case/ Charger, replacing lamps and fuses and keeping the equipment clean.

3-4.   INSPECTION

Inspect all components, assemblies and parts mounted in equipment rack to determine if the item is damaged or incomplete. If the item is damaged or incomplete, contact unit maintenance to replace/repair item.

3-5.   CHECKS/ADJUSTMENTS/ALIGNMENT

Operator maintenance does not require any checks, adjustments, or alignment.

3-6.   REMOVAL AND INSTALLATION

Operator maintenance does not require removal and installation of components.

3-7.   DISASSEMBLY AND ASSEMBLY

Operator maintenance does not require disassembly and assembly of components.

3-8.   REPAIRS

Operator repairs are limited to replacing lamps and fuses, recharging the batteries in the Battery Case/Charger, and recharging the battery in the Remote Control Set. Replacement of lamps in the PA, Remote Control Set, Battery Case/Charger, and Vehicular Adapter (with the exception of the power ON indicator lamp) requires disassembly of the unit; notify MMCT.

   a.   Replace defective lamps. To replace a lamp:

   (1)   Turn off power.

   (2)   Turn the lamp holder counterclockwise; pull the lamp holder out of the receptacle.

   (3)   Pull the defective lamp out of the holder.

   (4)   Push a replacement lamp into the holder until it seats properly.

   (5)   Replace the lamp holder in the receptacle; turn it clockwise as far as it will turn.

3-9

3-8. REPAIRS (Cont.)

      (6)   Slowly turn lense counterclockwise to open iris.

      (7)   Restore power.

  b. Replace defective fuses. To replace a fuse:

      (1)   Ensure power is off

      (2)   Turn the fuse cap holder counterclockwise; pull it straight out of the receptacle.

      (3)   Remove defective fuse from receptacle and place a good fuse in the receptacle.

      (4) Starting at the extreme counterclockwise position, snap the fuse into the receptacle; turn it as far clockwise as it will turn.

      (5)   Restore power.

  c. Recharge Batteries in Battery Case/Charger. The Batteries in the Battery Case/Charger are recharged automatically when the Battery Case/Charger is installed in the Vehicular Adapter (vehicular configuration). If you are operating in the Manpack configuration and need to recharge the batteries, proceed as follows:

      (1)   Disassemble the Manpack and mount the RT and Battery Case/Charger on the Vehicular Adapter. Refer to assembly and preparation for use procedures for manpack configuration (para 2-5b).

      (2)   Power up the Team Terminal (para 2-8a).

      (3)   On Battery Case/Charger, ensure NORMAL-EXT. BAT. switch is set to NORMAL. The EMERG. indicator on the Battery Case/Charger and the MP-BAT CHG indicator on the Vehicular Adapter light to indicate a battery recharge is in process. These indicators go off when the battery recharge is complete.

3-8. REPAIRS (Cont.)

d. Recharge Remote Location Battery

STEP
1 On Vehicular Adapter,
loosen two thumbscrews and open
charger cable compartment lid.
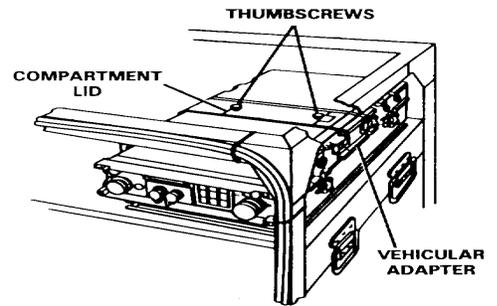
NOTE

The R/E terminal does not need to be connected to remote location to recharge battery.

STEP
2 Take charger cable out from its compartment and connect charger cable to PWR SUP. connector on the remote location.
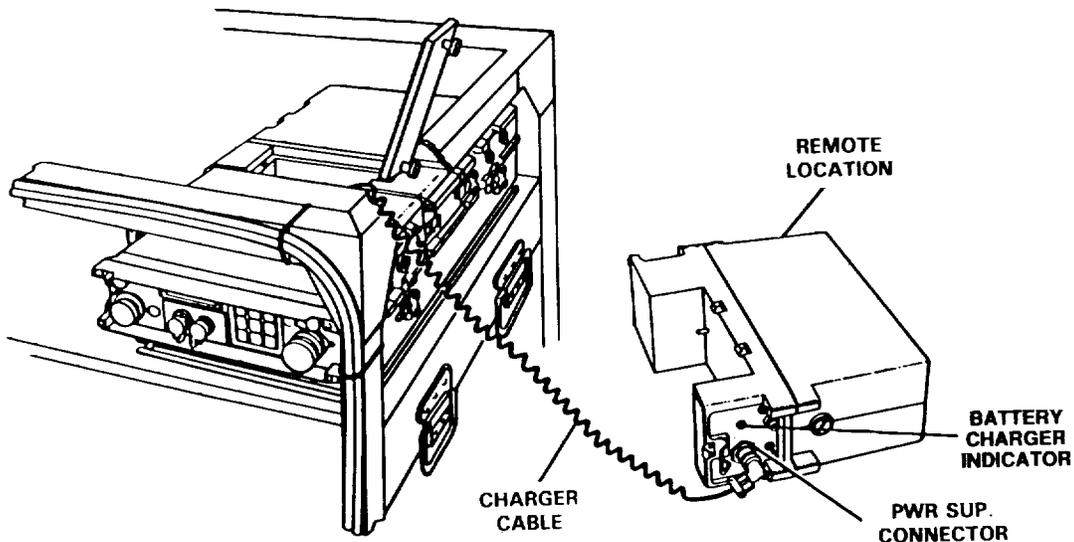
STEP
3 Power-up the Team Terminal (para 2-8a). Observe that the Vehicular Adapter is providing a charge via a lighted RCS - BAT CHG indicator on the Vehicular Adapter. Observe that the charge is in process via a lighted BAT CHG indicator on the Remote Location.

STEP
4 Upon completion of battery charge (BAT CHG indicator on the remote location is not lit) disconnect the charger cable from the remote location

STEP
5 Store charger cable in its compartment, close lid, and tighten two thumbscrews.

3-11

3-9.   CLEANING

<div style="text-align:center">

CAUTION

</div>

Never use scouring pads, steel wool, scouring powders, or harsh chemical agents, such
as lye solution when cleaning your equipment.

a.   Use a dry, clean, lint-free cloth, (item 1, Appendix E) or brush (item 2, Appendix E) to remove dust or dirt. If
needed, moisten the cloth or brush with a mild solution of detergent (or soap) and water.

b.   After cleaning, wipe dry with a clean cloth.

3-10.   TESTING

This paragraph provides procedures for initiating terminal off-line BIT and RT off-line BIT. All equipment performs
continuous on-line background self-test. Faults are indicated via I/O Unit with both visual and audible alarm. If faults are
indicated, Trouble Shoot IAW paragraph 3-2.

a.   Terminal Off-Line Bit.

<div style="text-align:center">

CAUTION

</div>

Do not activate bezel keys or screen touchpoints with any sharp item. Use of fingers,
gloves or other soft and rounded item is required. The touchpoints are more sensitive to
activation with finger tips than the fleshy portion of the finger.

STEP

1   With the Team Terminal powered-on, press the BIT bezel key on the D/K assembly to enable off-line BIT.

<div style="text-align:center">**Change 1 3-12**</div>

3-10.   TESTING (Cont.)

<div style="border:1px solid black; text-align:center">

TERMINAL OFF-LINE BIT (Cont.)

</div>

STEP

2   The D/K assembly shows the warning message PERFORMING BIT WILL TAKE THE TERMINAL OUT OF THE NET. ARE YOU SURE YOU WANT TO RUN BIT?

- If you are sure you want to run BIT, press the YES touch-point and then press NEXT MENU bezel key to continue. Proceed to step 3.

- If you do not want to run BIT, press the NO touchpoint and then press the NEXT MENU bezel key to continue. The D/K assembly shows the last menu shown prior to pressing the BIT bezel key.

```
RX MSG WAITING __   TOTAL __      18:FEB:86     HH:MM:SS Z  ID=XXXX   SECURE    GO
---------------------------MESSAGES   TO   THE   OPERATOR---------------------------



    ************************  WARNING  ************************

        PERFORMING  BIT  WILL  TAKE  THE  TERMINAL   ┌──────┐   YES
                                                     │      │
        OUT  OF  THE  NET.   ARE  YOU  SURE  YOU     │      │
                                                     └──────┘
        WANT  TO  RUN  BIT ?

                                                     ┌──────┐   NO
                                                     │      │
                                                     │      │
                                                     └──────┘


            PRESS  │NEXT MENU│ TO CONTINUE .
```

3-13
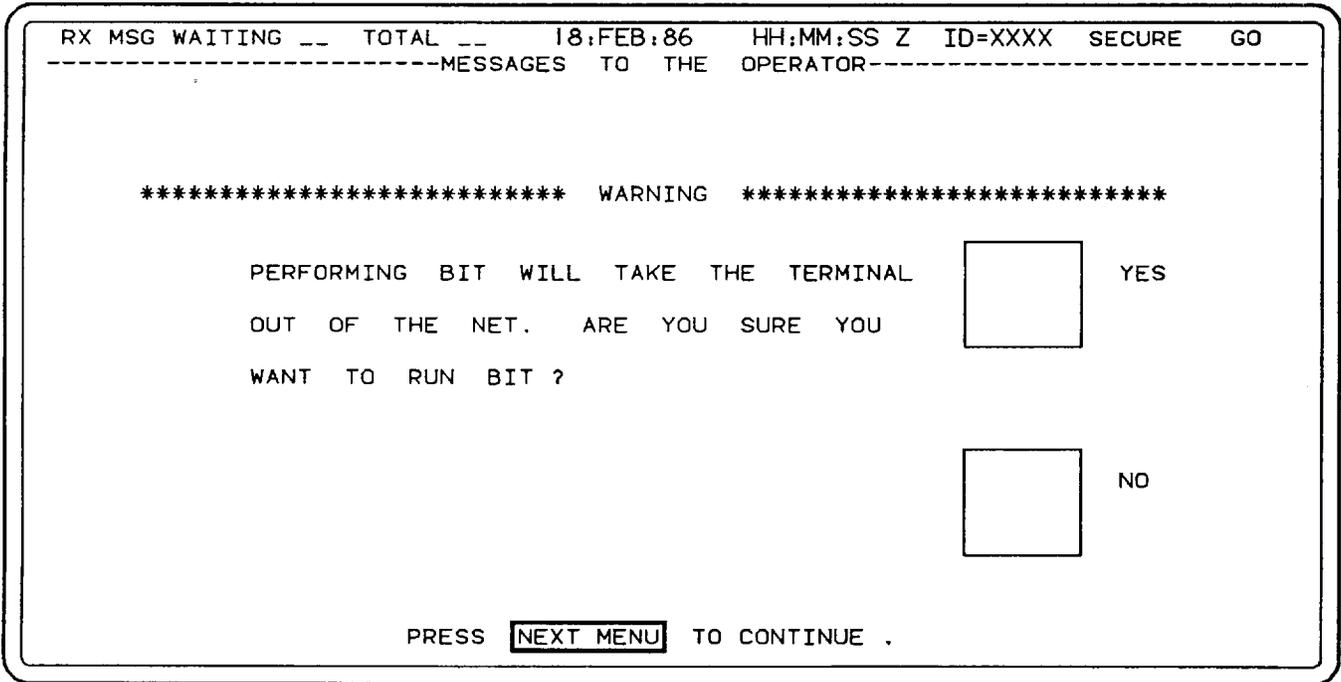
3-10.   TESTING (Cont.)

TERMINAL OFF-LINE BIT (Cont.)

STEP

3   The D/K assembly shows the message DO YOU WISH TO PERFORM THE DISPLAY/KEYPAD TEST?. Press the YES touchpoint to proceed to the DISPLAY/KEYPAD test. Press the NO touchpoint to proceed to whole terminal BIT.

- If YES was selected, proceed to STEP 4.

- If NO was selected, proceed to STEP 8.

```
 RX MSG WAITING __   TOTAL __     18:FEB:86    HH:MM:SS Z   ID=XXXX    SECURE    GO
 -------------------------------MESSAGES  TO  THE  OPERATOR--------------------------




                                                                      ┌──────┐
                                                                      │      │   YES
                                                                      │      │
                                                                      └──────┘
                    DO YOU WISH TO PERFORM THE

                    DISPLAY / KEYPAD TEST?

                                                                      ┌──────┐
                                      ·                               │      │   NO
                                                                      │      │
                                                                      └──────┘
```

3-14

3-10. TESTING (Cont.)

| **TERMINAL OFF-LINE BIT (Cont.)** |

NOTE

The next four steps provide instructions for you to run BIT on the D/K assembly via four test screens. If any fault conditions are observed, determine if you can continue operating with the fault; that is decide if the failed area of the display is critical to operation of the I/O Unit. Pressing the FAIL touchpoint will generate a system or I/O Unit fault.

STEP

4 Observe the D/K assembly and check for a diagonal straight line. If the line is present, press PASS touchpoint. If horizontal or vertical areas of the line are missing to the extent that operation of the I/O Unit cannot continue, press the FAIL touchpoint.

3-15

3-10.   TESTING (Cont.)

<div style="border:1px solid black; text-align:center;">
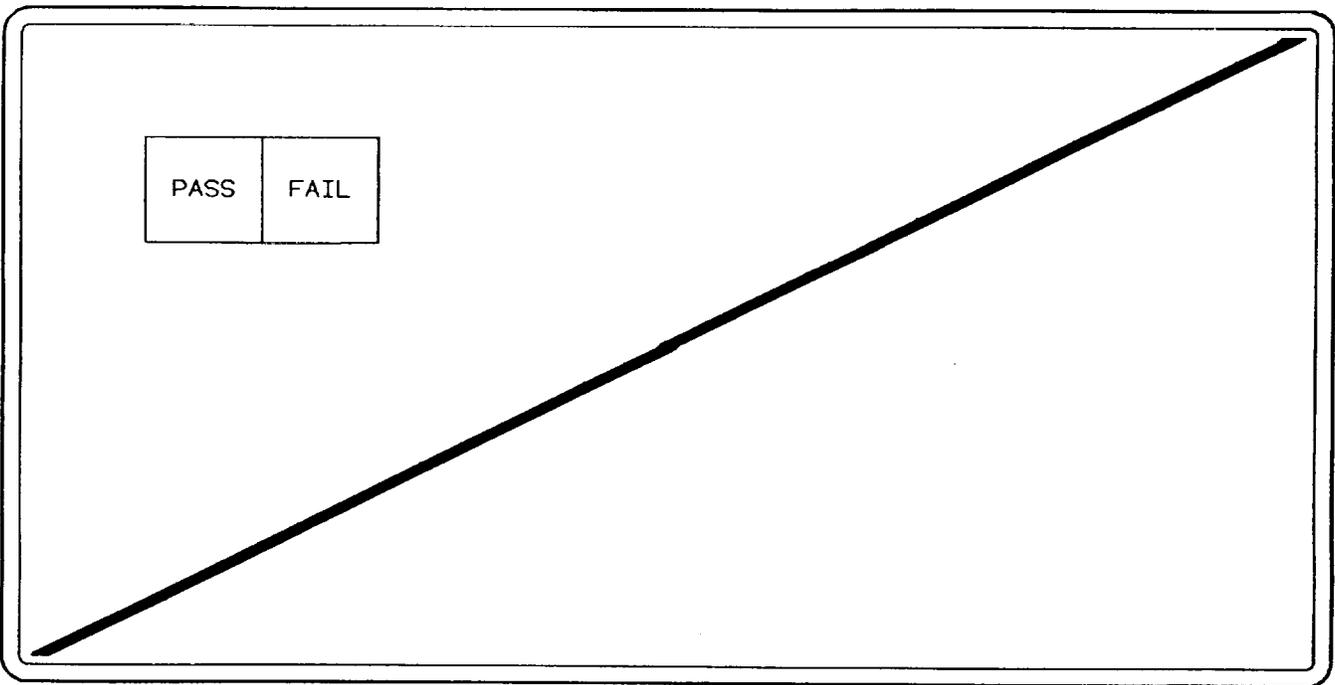
TERMINAL OFF-LINE BIT (Cont.)

</div>

STEP

5   Observe the D/K assembly and check that the display is completely lighted. If lighted, press PASS touchpoint. If areas of the D/K assembly are not lighted to the extent that operation of the I/O Unit cannot continue, press FAIL touchpoint.

3-16
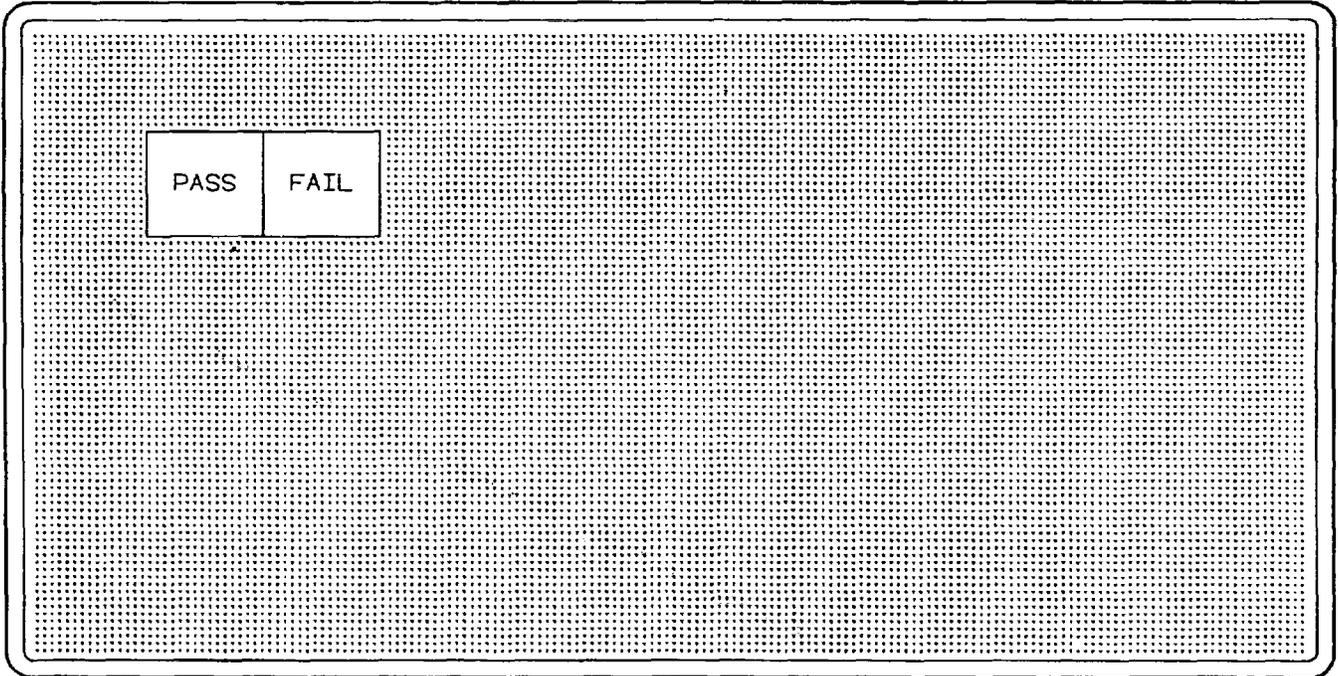
3-10.   TESTING (Cont.)

TERMINAL OFF-LINE BIT (Cont.)

STEP

6   The D/K assembly shows 66 lighted touchpoints. Press and release each touchpoint; check that each touchpoint goes off as it is released. If any touchpoint fails to go off, depress any key on bezel to indicate test failure.

```
DEPRESS ANY KEY ON BEZEL TO INDICATE TEST FAILURE
```

3-17

3-10.   TESTING (Cont.)

TERMINAL OFF-LINE BIT (Cont.)

STEP

7   The D/K assembly shows 34 lighted squares around the edge of the display (one to correspond to each bezel function switch). Select and depress all bezel function switches and observe that each corresponding touchpoint goes off. If all touchpoints do not go off, press FAIL touchpoint.


```
FAIL


SELECT AND DEPRESS ALL

BEZEL FUNCTION SWITCHES
```

3-18
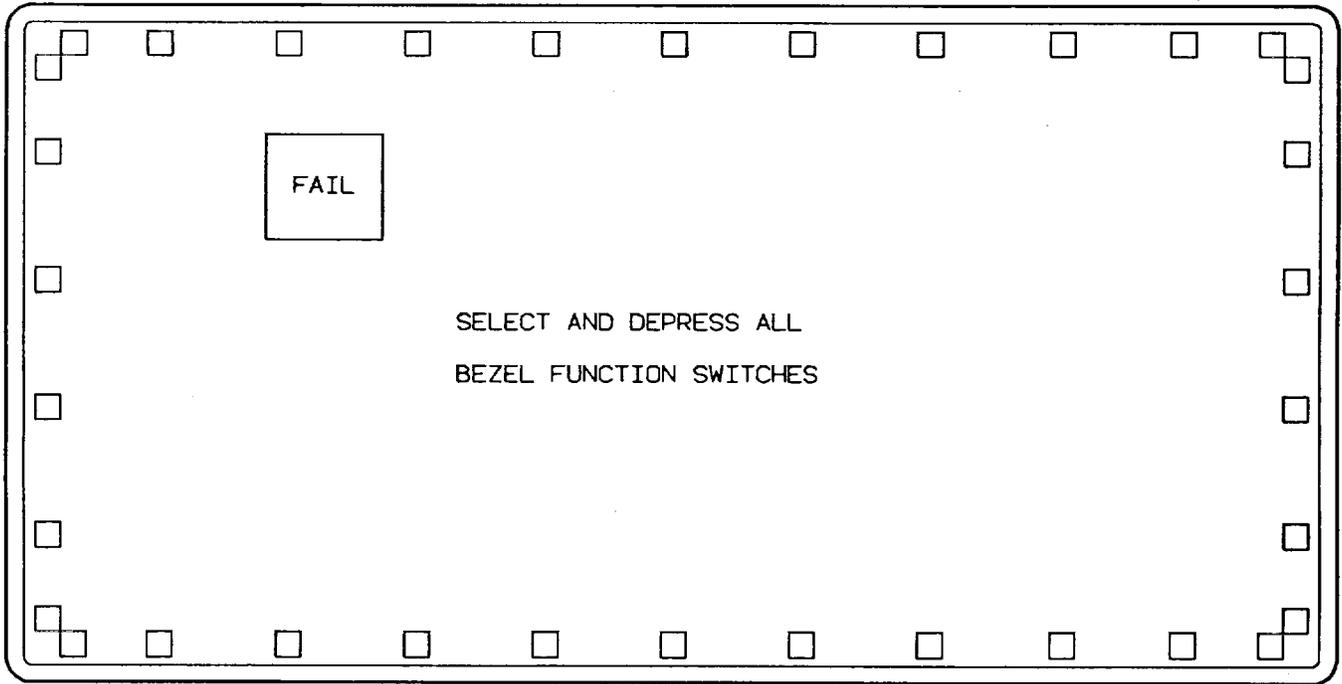
3-10. TESTING (Cont.)

TERMINAL OFF-LINE BIT (Cont.)

STEP

8   The D/K assembly shows the message BUILT IN TEST (BIT) RUNNING. The terminal completes the remaining portion of off-line BIT. If a fault is detected, a fault message will be displayed on the status line (i.e. RFO FAULT). Report faults to unit maintenance. After BIT is successfully completed, the D/K assembly will show the message: TO BEGIN SIGNING INTO THE NET, PRESS NEXT MENU.

```
RX MSG WAITING __  TOTAL __    18:FEB:86    HH:MM:SS Z  ID=XXXX  SECURE   GO
------------------------------MESSAGES   TO   THE   OPERATOR------------------------------




                   TO  BEGIN  SIGNING  INTO  THE  NET,

                          PRESS  NEXT MENU   .

●
```
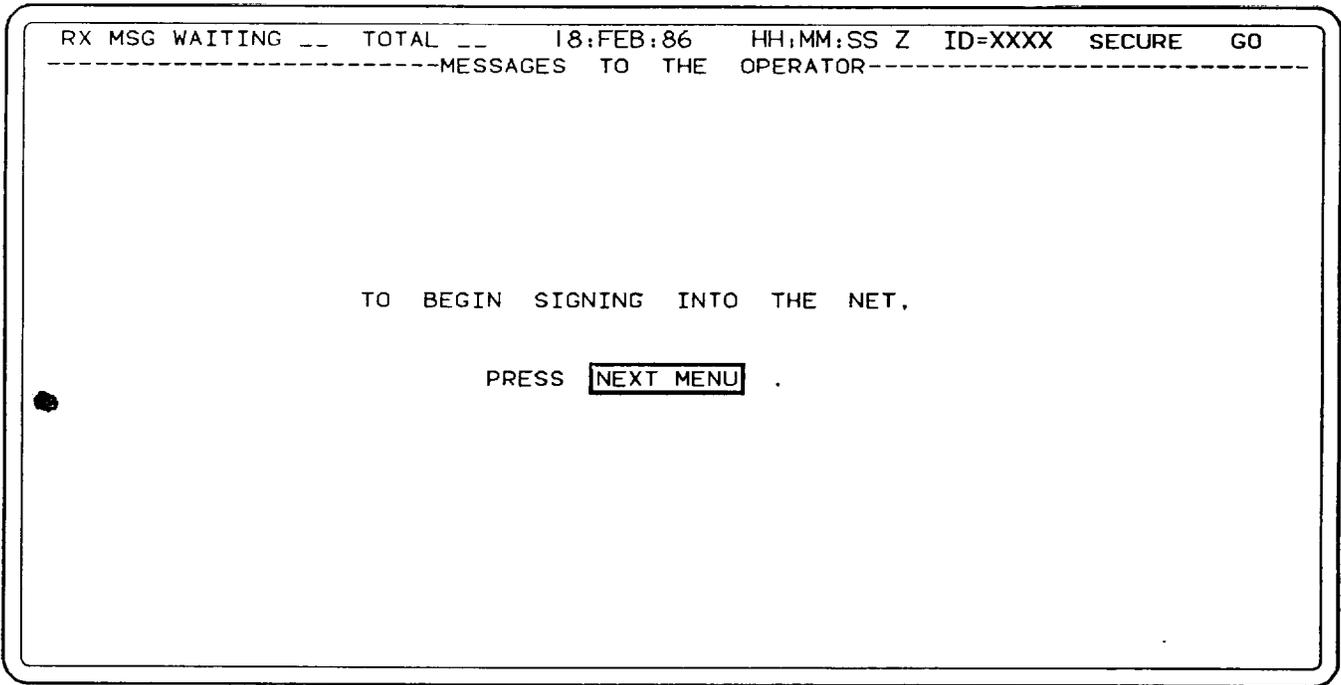
THIS COMPLETES TERMINAL OFF-LINE BIT PROCEDURES

3-19

3-10. TESTING (Cont.)

b. RT Off-line BIT.

(1) Initiate self-test by pressing [2ND #] key and then [ENT TST] key on the RT.

The display shows →

and then →

and then →
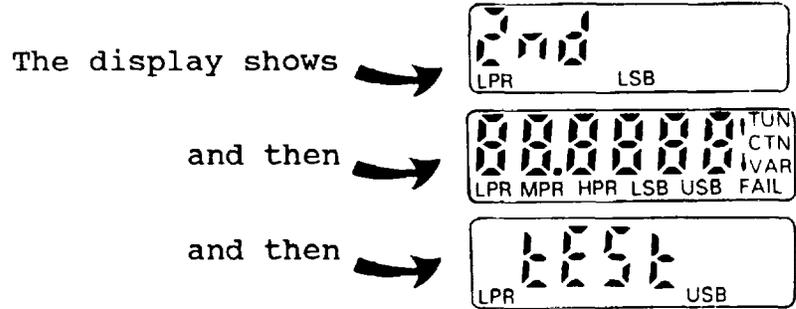
(2) Upon successful completion of BIT, the RT display shows the frequency setting now in memory.

Example: →

If BIT was unsuccessful, the RT display will show the message:

→

(3) Report any fault messages to unit maintenance.

3-11. TIMING MAINTENANCE

a. If the RFO has just been turned on, or if power is lost for more than 30 minutes (battery back-up time exceeded), Time-of-Day (TOD) must be loaded into the RFO. If MMCT is not available to load TOD, a RN Force Terminal, FAN Force Terminal, RN Team Terminal, or another RN RFO can provide a source for loading TOD. The illustration below shows a TOD time transfer cable.

CG-3883/G
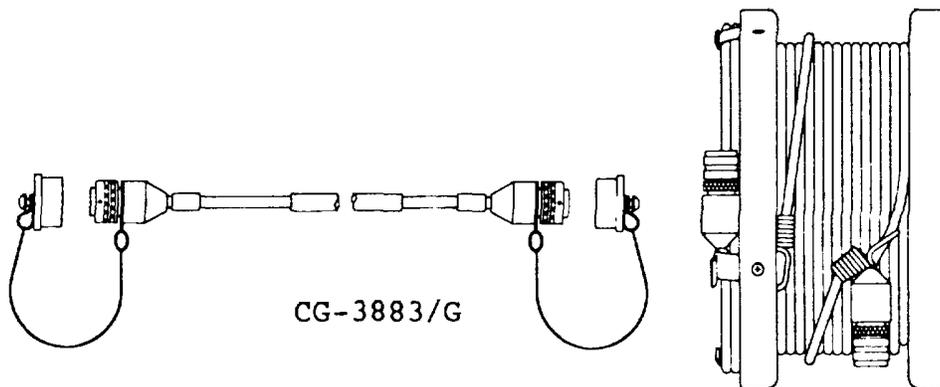
3-11. TIMING MAINTENANCE (Cont.)

b. Loading TOD - Force Terminal to Team Terminal RFO. Force Terminal must be situated so that the TOD time transfer cable will reach from the Force Terminal signal entry panel to Team Terminal RFO.

STEP
1 Switch RESET/OFF SWITCH ☐ 1 (under red cover on RFO) to RESET.

STEP
2 Using the Time Transfer Cable, connect TIME TRANSFER jack ☐ 2 of Team Terminal RFO to SEP TIME TRANSFER jack of Force Terminal.

STEP
3 Press and release RCV TOD Switch ☐ 3 on RFO to receive TOD. SET CLOCK indicator 5 comes on.

STEP
4 Press and release SEND TOD button ☐ 4 on Force Terminal SEP.

TIME
TRANSFER
CABLE
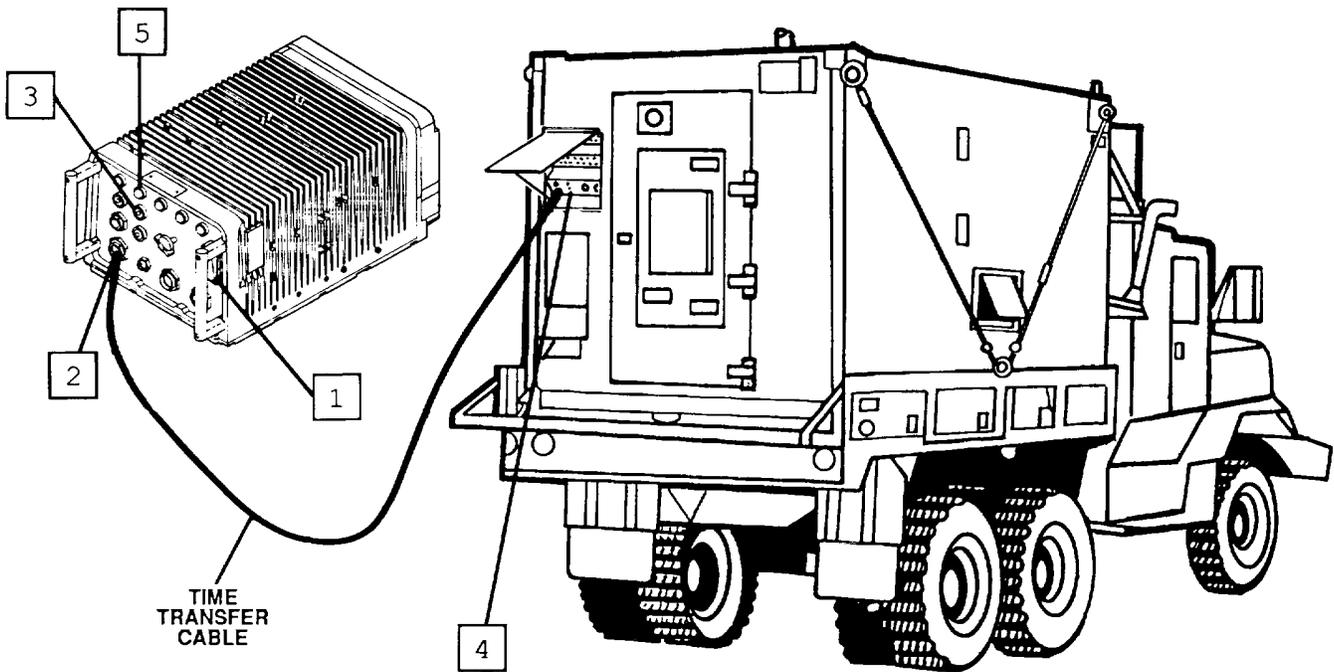
STEP
5 If SET CLOCK indicator light ☐ 5 goes out TOD load is successful. If it is not out after 10 seconds, but goes out after one minute, repeat steps 3-5. If SET CLOCK indicator still not out, refer RFO to maintenance.

STEP
6 Disconnect TOD source. This completes load TOD procedures.

3-11.   TIMING MAINTENANCE (Cont.)

c.   Loading TOD - General. To load TOD from one RFO to another is basically the same procedure as loading TOD Force Terminal to Team Terminal RFO. The difference is the connection is made between the TIME TRANSFER jacks on both RFOS. The SEP TIME TRANSFER jack is not used. The connection is made with a TOD transfer cable. When the connection has made, perform steps 3 through 6 of paragraph 3-11b.

Change 1 3-22

CHAPTER 4

UNIT MAINTENANCE

Section I. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4-1.   COMMON TOOLS AND TEST EQUIPMENT

a.   Army. For authorized common tools and test equipment, refer to Modified Table of Organization and Equipment (MTOE) applicable to your unit.

b.   Navy. Navy personnel refer to applicable Tables of Allowances (TA).

c.   Air Force. Air Force personnel refer to applicable Tables of Allowance (TA).

4-2.   SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools, TMDE, or support equipment and their purposes are listed in the Maintenance Allocation Chart, Appendix B.

4-3.   REPAIR PARTS

Repair parts used during unit maintenance are listed and illustrated in the Repair Parts and Special Tools List located in the TM 11-5895-1220-20P (Navy) EE160-RG-MIB-010/WI10-GRC215 (Air Force) TO 31R2-2GRC215-4.

Change 2 4-1

Section II. SERVICE UPON RECEIPT

4-4.   SITE REQUIREMENTS

a.   Antennas. Installation and use of antennas should not be near any tall metal objects or under heavy foliage.

b.   Generator Set. If a generator set is used for ac power, locate the generator set approximately 75 feet away from the Team Terminal. This will reduce noise interference. Do not run power lines parallel to signal cables. Select an area where the ground is firm, dry, and has good drainage for ground installation.

4-5.   SERVICE UPON RECEIPT OF MATERIEL

a.   Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, refer to paragraph 1-3 for instructions.

b.   Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c.   Check to see whether the equipment has been modified.

4-6.   INSTALLATION INSTRUCTIONS

A MK-2211/GRC-215 vehicle installation kit (installed by special installation team) provides the necessary material to allow the Team Terminal to be installed in various vehicle types. The vehicle installation kit provides mounting for the following:

- Equipment rack
- Antenna base mount.
- ATU mount.

4-7.   PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

The following procedures are performed before newly installed equipment is put into operation.

a.   Check Interconnections. An equipment hook-up chart is provided to check for proper interconnections. The equipment hook-up chart provides cable connections necessary for local secure and nonsecure operation. An explanation of the chart is as follows:

(1)   Cable Column - The cable column tells the cable number.

(2)   Cable Connector Column - This column tells you the cable connector number for the cable listed in the cable column. Hard-wired connections are identified with the abbreviation HW.

4-7. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Cont.)

    (3) Connected to Unit/Component Column - This column tells you to which unit or component each cable connector is connected.

    (4) Unit/Component Connector Column - This column tells you the unit or component connector number to which each cable must be connected.

  b. Checks of Initial Control Settings. Ensure all equipment power switches are set to OFF before applying power.

  c. Check Grounding. Ensure all ground straps for equipment mounts are connected and that the equipment rack is grounded to the vehicle before applying power.

  d. Check for firm seating and connection of all plug-in components.

CAUTION

Make all cable connections by hand. Do not use tools.

EQUIPMENT HOOK-UP FOR SECURE DATANOICE

Cable	Cable connector	Connect to Unit/ component	Unit/component connector
W100 (Vehicle power)	P1 Lug A Lug B	TT PS +12/24 Vdc DC Common	PWR IN J1 Vehicle Power Vehicle Power
W101 (115 Vac power cable)	P1 C E F	TT PS Chassis ground 115 Vac Neutral	PWR IN J1 115 Vac source 115 Vac source 115 Vac source
W102 (230 Vac power cable)	P1 C D F	TT PS Chassis ground 230 Vac Neutral	PWR IN J1 230 Vac source 230 Vac source 230 Vac source
W103	HW P1	Power Junction Unit TSEC/KG-84A	W103 J1
W104	HW P1	Power Junction Unit Vehicular Adapter	W104 POWER

4-3

4-7.   PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Cont.)

Cable	Cable connector	Connect to Unit/ component	Unit/component connector
		EQUIPMENT HOOK-UP FOR SECURE DATA/VOICE (Cont.)	
W105	HW J2	Power Junction Unit ATU Interface Panel	W105 W111P1 Connects J2 on ATU Interface
W106	HW P1	Power Junction Unit RFO	W106 PWR
W107	HW P1	Power Junction Unit PA	W107 J1
W108	HW P1	Power Junction Unit Z-AKE	W108 J1
W109	HW P1	Power Junction Unit RN Modem	W109 PWR IN J5
W110	HW P1	Power Junction Unit I/O Unit	WI10 POWER J1
W111	P1 P2	ATU Interface Panel ATU	J2 J3
W112	P1 HW	TT PS Mount Power Junction Unit	Fan W112
W201	P1 P2	PA ATU	J4 J2
W202	P1 P2	R/E PA	DIP 50 J3
W203	P1 P2	RFO CP1 (coaxial T)	10 MHZ OUT J1
W204	P1 P2	RN Modem CP2 (coaxial T)	FREQ STAND J2 J2

4-7.   PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Cont.)

EQUIPMENT HOOK-UP FOR SECURE DATANOICE (Cont.)

Cable	Cable connector	Connect to Unit/ component	Unit/component connector
W205	P1 P2	Vehicular Adapter CP2 (coaxial T)	10 MHZ J1
W301	HW P1	Control Junction Unit RFO	W301 SYSTEM INTERFACE
W302A	P1 P2	Vehicular Adapter PA	PA/ATU J2
W302B	P1 J1	Vehicular Adapter ATU Interface Panel	PA/ATU W303P1 Connects J1 on ATU Interface
W303	P1 P2	ATU Interface Panel ATU	J1 J1
W304	P1 P2	ECCM Module Vehicular Adapter	VEH ADPTR J2 FAST SYNTH
W305	P1 P2	I/O Unit TSEC/KG-84A	KG-84 DATA J4 RED I/O J3
W306	P1 P2	TSEC/KG-84A RN Modem	BLACK I/O J2 KG-84 J4
W307	P1 P2	ECCM Module TSEC/KY-65A	SYNC J4 HANDSET
W308	P1 P2	ECCM Module TSEC/KY-65A	AUDIO J1 RADIO
W309	P1 HW	I/O Unit Controller Assembly I/O Unit D/K assembly	DISPLAY PWR/SIG J5 HW
W310	P1 HW	I/O Unit Control Junction Unit	CONTROL DATA J2 W310

4-5

4-7.   PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Cont.) 41,

	EQUIPMENT HOOK-UP FOR SECURE DATANOICE (Cont.)		

Cable	Cable connector	Connect to Unit/ component	Unit/component connector
W311	P1 HW	RN Modem Control Junction Unit	CONTROL BUS J3 W311
W312A	P1 HW	ECCM Module Control Junction Unit	REMOTE J6 W312
W312B	P1 P2	ECCM Module RN Modem	REMOTE J6 RADIO J1I
W313	P1 J5 P2	I/O Unit Controller Assembly W309 (W313 used when remoting the D/K assembly)	DISPLAY PWR/SIG P1
W3000	J2 J3	KG-84A Nonsecure Bypass Assembly KG-84A Nonsecure Bypass J3 Assembly	J2
W1	Lug Lug	ATU Antenna mount	EI HW
HAND- SET	P1	ECCM Module	KY J3

4-6

4-7. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (Cont.)

EQUIPMENT HOOK-UP FOR NONSECURE DATA

Equipment hook-up for nonsecure data is the same as for secure data except the TSEC/KG-84A is removed from the equipment rack (para 2-5a(2) and the TSEC/KG-84A cables are connected to the KG-84A nonsecure bypass assembly. The chart shows the cable connections for nonsecure data operation.

Cable	Cable connector	Connect to Unit/ component	Unit/component connector
W103	P1	KG-84A nonsecure bypass assembly	J1
W305	P2	KG-84A nonsecure bypass assembly	J3
W306	P1	KG-84A nonsecure bypass assembly	J2

EQUIPMENT HOOK-UP FOR NONSECURE VOICE

To configure for nonsecure voice operations, disconnect TSEC/KY-65A from the Team Terminal by disconnecting cables W307 and W308 from the ECCM Module. Connect Handset to AUDIO connector on ECCM Module.

NOTE

An alternate means of obtaining nonsecure voice operations is to set the TSEC/KY-65A MODE switch to PLAIN position.

Section III.   UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-8.   INTRODUCTION

Unit preventive maintenance procedures help maintain the equipment in a serviceable condition. They include items to be checked and procedures for checking them. The checks and services described in the PMCS table (para 4-9) outline inspections that are to be made at specific monthly (M) and quarterly (Q) intervals.

4-8.   INTRODUCTION (Cont.)

a.   Routine Checks. The following items are not listed in the PMCS table and should be performed when required:

- Checking for frayed cables.

- Tightening loose screws or nuts.

- Cleaning and dusting.

- Checking for broken or dented equipment rack.

b.   Explanation of Columns.

(1)   Item number column. This column is used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

(2)   Interval column. This column specifies the frequency of the check, M for Monthly checks and Q for Quarterly checks.

(3)   Item to be inspected column. This column lists the item to which the procedure is to be applied.

(4)   Procedures column. This column describes the procedure by which the check is to be performed.

c.   Preventive maintenance checks and services for the items listed below should be done in accordance with applicable technical manuals:

- TSEC/KG-84A

- TSEC/KY-65A

- TM 11-5810-308-12 & P

- TM 11-5810-280-12 & P

d.   Instructions for Reporting and Correcting Deficiencies. If your equipment does not perform as required, refer to paragraph 4-10 for troubleshooting procedures. Report any malfunctions or failures on proper DA Form 2404, or refer to DA Pam 738-750.

NOTE

If your equipment must be in operation all the time, only do items that can be checked and serviced with-out disturbing operation. Make the complete checks and services when the equipment can be shut down.

4-8

4-9.   UNIT PMCS TABLE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Item No.	Interval		Item to be Inspected	Procedure
	M	Q		
1	●		End item equipment.	Inspect for completeness. Refer to COEI, appendix C.
2		●	Publications.	Check to see that all applicable publications are complete, serviceable, and current (including all current changes). (Army only)
3		●	Location of parts.	Check to see that all components are mounted or stored in assigned places, except those being used.
4		●	Modification work orders.	Check to see if any MWOs are needed for Team Terminal components. Check equipment to see if applicable MWOs have been applied and MWO number is stamped as required. Perform modification or request modification as applicable.
5	●		Grounding system.	Inspect all ground terminal connections. a. Clean ground connections. b. Contact intermediate general support maintenance if ground lead is cut, corroded, or broken.
6	●		Binding posts on Manpack Remote Control Set.	Clean binding posts with a soft bristle brush. Check to see that there is enough tension to hold wires.
7	●		Communications equipment perform-ance.	Initiate terminal off-line BIT (para 3-10a). If abnormal operation is found refer to troubleshooting procedures (para 4-10).

Section IV. TROUBLESHOOTING

4-10. INTRODUCTION

a.   Unit level troubleshooting procedures for the Team Terminal are simplified by both on-line and off-line BIT. Terminal on-line BIT provides continuous monitoring of system operational status. Terminal off-line BIT is initiated automatically upon power-up or by pressing the BIT bezel key on the I/O Unit (para 3-10a). The BIT isolates faults to individual components. Detected faults are indicated by the following:

- Fault messages shown on the D/K assembly (i.e. ATU FAULT, RFO FAULT, RN MODEM FAULT, etc.).

- Error codes displayed on the ECCM Module (i.e. 01, 02,).

- Lighted fault indicators on individual components.

b. Defects and corrective measures for items listed below are not in the troubleshooting chart. These are obvious and should be corrected as noted:

(1)   Checking and replacement of power indicator lamps.

(2)   Checking and resetting power ON-OFF switches.

(3)   Checking and replacing fuses.

(4)   Checking and replacing carrying harness if damaged or shows excessive wear.

NOTE

Check to be sure the operator has taken the necessary corrective actions before proceeding with unit troubleshooting. If corrective action consists of removal and replacement of an item, it is important that recent events leading up to the fault indication be reported to next higher maintenance (i.e. fault messages, error codes, recent menu selections, current operating mode, frequency selection, net status etc.).

4-10

4-11. UNIT TROUBLESHOOTING CHART

The troubleshooting chart lists common malfunctions which may be reported by the operator. Perform the test or inspection. Take the corrective action. Upon completion of corrective action and before returning the Team Terminal to service, initiate terminal off-line BIT (para 3-10a) to verify system operational status. If BIT does not precisely identify failure and/or you cannot find the malfunction listed in the troubleshooting chart, inspect for faulty rack assembly, antennas, cables, and cable connections. If you are unable to locate or correct fault, contact intermediate general support maintenance.

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

1.   LOSS OF POWER TO TERMINAL EQUIPMENT

Step 1.   Perform terminal power-off sequence (para 2-8i). On TT PS, set DC ON-OFF switch (or AC ON-OFF switch if auxiliary power is used) to ON. Observe that POWER indicator lights, that the FAIL indicator is off and that the OUTPUT VOLTAGE meter reads between +26.0 and +30.0 Vdc.

If incorrect, proceed to step 2. If correct, but the problem persists, replace the TT PS (para 4-17i). If problem still persists, contact intermediate general support maintenance.

Step 2.   Power off the TT PS and remove it part way (2 to 3 inches) from the power junction unit (para 4-17i). On TT PS, set DC ON-OFF switch (or AC ON-OFF switch) to ON. Observe that POWER indicator lights, that the FAULT indicator is off, and that the OUTPUT VOLTAGE meter reads between +26.0 and +30.0 Vdc.

If correct, but fault persists, contact intermediate general support maintenance. If incorrect, try another power source. If fault persists, replace the TT PS (para 4-17i).

Step 3.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, contact intermediate general support maintenance.

4-11

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

   MALFUNCTION
        TEST OR INSPECTION
               CORRECTIVE ACTION

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2.   D/K ASSEMBLY SHOWS THE MESSAGE: ATU FAULT

NOTE

Terminal off-line BIT automatically tunes the ATU to three test frequencies. Mechanical noise can be heard from the ATU during tuning sequence. Troubleshooting procedures may instruct you to listen for this evidence of ATU tuning for fault isolation purposes.

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message is repeated, proceed to step 2. If fault message is not repeated, return the Team Terminal to service.

Step 2.   Re-initiate terminal off-line BIT and check for mechanical tuning of the ATU.

If ATU tunes, proceed to step 3. If ATU does not tune, proceed to step 4.

Step 3.   Re-initiate terminal off-line BIT and listen for a key tone in Handset.

If key tone is heard, proceed to step 5. If key tone is not heard, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 4.   Disconnect W302P1 from PA/ATU connector on the Vehicular Adapter (this automatically enables the PA and ATU within the R/E and bypasses the external PA and ATU). Initiate off-line BIT on the RT (para 3-10b).

If RT off-line BIT passes, replace the ATU (para 4-17e). If RT off-line BIT fails, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 5.   Manually select several different frequencies (between =_ 2.0 and 29.9999 MHz) on the RT and attempt to establish communications with another operator.

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

If you can communicate on some frequencies, try relocating your vehicle and/or try reconfiguring the Whip Antenna (untie/tiedown antenna). If fault persists, use NVIS Antenna.

If you cannot communicate, replace Whip Antenna or try using NVIS Antenna. If fault persists, replace Antenna Cable W1. If fault still persists, contact intermediate general support maintenance.

Step 6.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, contact intermediate general support maintenance.

3.   D/K ASSEMBLY SHOWS THE MESSAGE: BLK FAULT - A1A6, A1A7, A1PS1

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return the Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND-MMI-010/WIl0-MX10819 (Air Force) TO 31R2- 2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

4. D/K ASSEMBLY SHOWS THE MESSAGE: RED/BLK INTERFACE FAULT - A1A5, A1A6, AIAIA1

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND- MMI-010/WI10-MX10819 (Air Force) TO 31R2-2GRC215-32.

4-13

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
 TEST OR INSPECTION
  CORRECTIVE ACTION

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

5.   D/K ASSEMBLY SHOWS THE MESSAGE: DISPLAY/KEYPAD BIT FAULT - A2

Step 1.   Initiate terminal off-line BIT (para 3-10a) and test the D/K assembly via the four test screens (para 3-10a, step 4 through step 7).

If the D/K assembly test screens pass, return the Team Terminal to service. If the D/K assembly test screens fail, set I/O Unit power ON-OFF switch to OFF and then to ON again and repeat step 1. If fault persists, record the fault and replace the D/K assembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND-MMI-010/Wll0-MX10819 (Air Force) T031R2-2GRC215-32.

Step 2.   Upon replacement of the D/K assembly, initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k).

6.   D/K ASSEMBLY SHOWS THE MESSAGE: DISPLAY/KEYPAD INTERFACE FAULT - A1A5

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND- MMI-010/WI10-MX10819 (Air Force) TO 31R2-2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

4-14

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

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7.   D/K ASSEMBLY SHOWS THE MESSAGE: ECCM FAULT

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message is repeated, proceed to step 2. If fault message is not repeated, return the Team Terminal to service.

Step 2.   Observe ECCM Module display for the message FAILED.

If the FAILED message is shown, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED). If the message is not shown, but problem persists, set RT power ON-OFF switch to OFF and then to ON again. Re-load ECCM Module TRANSEC variables (para 2-8b, step 5). If the problem still persists, remove RT from rack and replace ECCM Module (para 4-17a).

Step 3.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If problem persists, contact intermediate general support maintenance.

8.   D/K ASSEMBLY SHOWS THE MESSAGE: TP/UP INTERFACE FAULT - A1A2, A1A3

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return the Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND-MMI-010/WIl0-MX10819 (Air Force) TO 31R2- 2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

4-15

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

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9.   D/K ASSEMBLY SHOWS THE MESSAGE: HIGH SPEED SYNTHESIZER FAULT

   Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message is repeated, proceed to step 2. If fault message is not repeated, return the Team Terminal to service.

   Step 2.   Observe Vehicular Adapter for a lighted FAULT indicator.

   Replace Vehicular Adapter (para 4-17c) or contact intermediate general support maintenance to replace the high speed synthesizer contained in the Vehicular Adapter.

   Step 3.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message repeats, contact intermediate general support maintenance.

10.   D/K ASSEMBLY SHOWS THE MESSAGE: RED INTERFACE CARD FAULT - A1A5

   Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message does not repeat, return the Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND-MMI-010/WIl0-MX10819 (Air Force) TO 31R2- 2GRC215-32.

   Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

   If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

11.   D/K ASSEMBLY SHOWS THE MESSAGE: KG-84A FAULT

Step 1.   Ensure operator has loaded crypto variables. Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message is repeated, replace TSEC/KG-84A (para 4-17g). If fault message is not repeated, return the Team Terminal to service.

Step 2.   Upon replacement of TSEC/KG-84A, initiate terminal off-line BIT (para 3-10a) to verify repair.

If problem persists, contact intermediate general support maintenance.

12.   D/K ASSEMBLY SHOWS THE MESSAGE: KG-84A INTERFACE FAULT - A1A5

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return the Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EEll19-ND-MMI-010/WIl0-MX10819 (Air Force) TO 31R2- 2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

13.   D/K ASSEMBLY SHOWS THE MESSAGE: NO RESPONSE FROM ECCM FAULT

Step 1.   Ensure fill device is not connected to ECCM Module.

Disconnect fill device from ECCM Module.

4-17

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 2.   Initiate RT off-line BIT (para 3-10b).

If RT off-line BIT fails, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 3.   Initiate terminal off-line BIT (para 3-10a) and check that ECCM Module and RN Modem accept the command to run their BIT (i.e. ECCM Module shows test displays and RN Modem BIT indicator blinks).

If both units run BIT, remove the RT from rack and replace the ECCM Module (para 4-17a). If the ECCM Module does not run BIT but the RN Modem does run BIT, proceed to step 4.

Step 4.   Disconnect W311P2 from the CONTROL BUS connector on the RN Modem. Initiate terminal off-line BIT (para 3-10a) and check that ECCM Module accepts the command to run BIT (ECCM Module shows test displays).

If the ECCM Module runs BIT, replace the RN Modem (para 4-17h). If the ECCM Module does not run BIT, remove the RT from rack and replace the ECCM Module (para 4-17a).

Step 5.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, contact intermediate general support maintenance.

14. D/K ASSEMBLY SHOWS THE MESSAGE: NO 10KHZ AT ECCM FAULT

Step 1.   Initiate RT off-line BIT (para 3-10b).

If RT off-line BIT fails, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 2.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message is not repeated, return the Team Terminal to service. If fault message is repeated, check for proper connections to the RT and to the Vehicular Adapter. If fault persists, remove the RT from the rack and replace the ECCM Module (para 4-17a).

4-18

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 3.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, contact intermediate general support maintenance.

15.   D/K ASSEMBLY SHOWS THE MESSAGE: PA FAULT

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message is repeated, proceed to step 2. If fault message is not repeated, return the Team Terminal to service.

Step 2.   While observing the FAIL and the VSWR indicators on the PA, initiate terminal off-line BIT (para 3-10a).

If only the FAIL indicator on the PA lights, replace the PA (para 4-17d). If the VSWR indicator lights first and then the FAIL indicator lights, proceed to step 3.

Step 3.   Manually enter several other operating frequencies (between 2.0000 and 29.9999 MHz) and check to see if the PA VSWR indicator lights and then the FAIL indicator lights.

If the fault continues when using other frequencies:

- Check for proper connections to PA, ATU, and Whip Antenna.
- Try using the NVIS Antenna.
- If fault persists, replace the PA and/or ATU (para 4-17d & e).

If the fault does not continue when using other frequencies:

- Check condition of Whip Antenna (check for damage, ensure all antenna sections are present and securely connected).
- Try using the NVIS Antenna.
  Continue operation and report the fault to intermediate general support maintenance.

4-19

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 4.   After maintenance action, initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, contact intermediate general support maintenance.

16. D/K ASSEMBLY SHOWS THE MESSAGE: RECEIVER/EXCITER FAULT

Step 1.   Observe ECCM Module display for the message: FAILED.

If the FAILED message is shown, proceed to step 2. If the FAILED message is not shown, replace the RT (para 4-17a).

Step 2.   Initiate RT off-line BIT (para 3-10b); check to see if the FAILED message reappears on the ECCM Module display.

If the FAILED message reappears, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 3.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message repeats, contact intermediate general support maintenance.

17. D/K ASSEMBLY SHOWS THE MESSAGE: RECEIVER/EXCITER PA FAULT

Step 1.   Observe ECCM Module display for the message: FAILED.

If the FAILED message is shown, proceed to step 2. If the FAILED message is not shown, replace the RT (para 4-17a).

Step 2.   Initiate RT off-line BIT (para 3-10b); check to see if the FAILED message reappears on the ECCM Module display.

If the FAILED message reappears, proceed to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 3.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message repeats, contact intermediate general support maintenance.

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

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18.   D/K ASSEMBLY SHOWS THE MESSAGE: RFO FAULT

   Step 1.   Observe for lighted FAULT indicator on RFO.

   Replace the RFO (para 4-17j).

   Step 2.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message repeats, contact intermediate general support maintenance.

19.   D/K ASSEMBLY SHOWS THE MESSAGE: RN MODEM FAULT

   Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message is repeated, proceed to step 2. If fault message is not repeated, return the Team Terminal to service.

   Step 2.   On the RN Modem, disconnect all cables except W109 and W204. Press the BIT initiate switch and observe BIT fault indicator.

   If BIT fault indicator does not light, contact intermediate general support maintenance. If BIT fault indicator lights, fault isolate and replace faulty RN Modem subassembly; refer to TM 11-5895-1307-24 (Navy) EE163-HK-MMI-O10/WlIO-MD1204 (Air Force) TO 31R2-4-585-2.

   Step 3.   On the RN Modem, press the BIT initiate switch and observe BIT fault indicator to verify repair.

   If the BIT fault indicator still lights, replace the RN Modem (para 4-17h).

   Step 4.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

   If fault message repeats, contact intermediate general support maintenance.

4-21

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

20.   D/K ASSEMBLY SHOWS THE MESSAGE: TP FIFO BIT FAULT - A1A3

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND- MMI-010/WI10-MX10819 (Air Force) TO 31R2-2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

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Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

If fault message does not repeat, return Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND- MMI-010/WI10-MX10819 (Air Force) TO 31R2-2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

22.   D/K ASSEMBLY SHOWS THE MESSAGE: UP FIFO BIT FAULT - A1A2

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for repeat of fault message.

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

If fault message does not repeat, return Team Terminal to service. If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EE119-ND- MMI-010/Wl10-MX10819 (Air Force) TO 31R2-2GRC215-32.

Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

23.   ECCM MODULE SHOWS THE MESSAGE: FAILED

Step 1.   On ECCM Module, press [ENT / TST] key and observe display for an error code.

If error code is:	Do the following:
01	Perform troubleshooting procedure for malfunction no. 15.
02	Perform troubleshooting procedure for malfunction no. 2.
03 through 09	Not used in this application.
10	Check for proper cable connections between RN Modem and RT. Ensure RN Modem is ON and passes BIT.
11	ECCM Module does not contain TRANSEC variables. Load TRANSEC variables (para 2-8b, step 5).
12	ECCM Module has not received a valid TOD. Re-initialize terminal (para 2-8b).

4-23

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
      TEST OR INSPECTION
            CORRECTIVE ACTION

If error
code is: Do the following:

13   RT only allowing voice modes. Initialize terminal for data mode (para 2-8b).

14   Remove fill device from FILL connector on ECCM Module.

15 and 16   Not displayed.

17   Check for proper cable connections between RN Modem, RT, and Vehicular Adapter. Initiate BIT on RT (para 3-10b). If problem persists, replace the RN Modem (para 4-17h). If problem still persists, replace the Vehicular Adapter (para 4-17c).

18 and 19   Not used in this application.

20 through 49   On RT, cycle power OFF/ON. If RT passes BIT, re-initialize terminal. If RT fails BIT, record error code, remove RT from rack and replace ECCM Module (para 4-17a).

50   Record error code. Replace RT (para 4-17a). Initiate BIT on RT (para 3-10b). If problem persists replace ECCM (para 4-17a).

51   Replace the Vehicular Adapter (para 4-17c) or contact intermediate general support maintenance to replace the high speed synthesizer.

52 through 55   On RT, cycle power OFF/ON. If RT passes BIT, re-initialize terminal. If RT fails BIT, record error code, remove RT from rack and replace ECCM Module (para 4-17a).

4-24

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

If error code is:	Do the following:
56	Record error code. Remove RT from rack and replace ECCM Module (para 4-17a). Initiate BIT on RT (para 3-lo0b). If problem persists, replace the RT.
57	Record error code and replace the RT (para 4-17a).
58 through 69	Not used in this application.
70	Perform RT off-line BIT (para 3-10b). If FAILED message is not repeated, return the RT to service. If the FAILED message is repeated, press the ENT key and observe ECCM Module display for an error code.

- If error code 70 is repeated, record the error code and the present operating frequency (if possible) and replace the RT (para 4-17a).

- If any other error code is shown, perform the applicable corrective action.

71	Perform terminal off-line BIT (para 3-10) to verify operation of the I/O Unit.

- If BIT detects an I/O Unit fault, isolate and replace faulty I/O Unit subassembly; refer to TM 11- 5895-1322-24 (Navy) EEll19- ND-MMI-010/WllO-MX10819 (Air Force) TO 31R2-2GRC215-32.

- If BIT does not detect fault, replace the I/O Unit (para 4-17k). If problem persists, replace the RFO (para 4-17j).

4-25

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
     TEST OR INSPECTION
          CORRECTIVE ACTION

If error
code is: <u>Do the following:</u>

- If problem persists further, replace ECCM (para 4-17a).

72   Perform RT off-line BIT (para 3-10b). If FAILED message is not
repeated, return the RT to service. If the FAILED message is repeated,
press the ENT key and observe ECCM Module display for an error code.

- If error code 72 is repeated, rerecord the error code and the present
operating frequency (if possible) and replace the RT (para 4-17a).

- If any other error code is shown, perform the applicable corrective
action.

73 and 74   Perform terminal off-line BIT (para 3-10) to verify operation of the I/O
Unit.

- If BIT detects an I/O Unit fault, isolate and replace faulty I/O Unit
subassembly; refer to TM 11-5895-1322-24 (Navy) EE119- ND-MMI-
010/Wl10-MX10819 (Air Force) TO 31R2-2GRC215-32.

- If BIT does not detect fault, replace the I/O Unit (para 4-17k).

- If problem persists, replace ECCM (para 4-17a).

75 and 76   Not used in this application

77   Perform BIT on ECCM, para 3-10b. If problem persists, replace ECCM
(para 4-17a).

4-26

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

            If error
            <u>code is:</u>   <u>Do the following:</u>

            78 and 79   Not used in this application.

  Step 2.   Initiate RT off-line BIT (para 3-10b).

          If BIT passes, return the Team Terminal to service.

          If BIT failed, press ⌈ENT⌉⌊TST⌋ key on ECCM Module, record fault code and contact intermediate general support maintenance.

24. D/K ASSEMBLY APPEARS TO BE LOCKED-UP (WILL NOT ADVANCE TO NEXT MENU); NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY

  Step 1.   On the I/O Unit, press and release the BIT-RESET switch and attempt to re-initialize Team Terminal (para 2-7b).

          If fault continues, replace the I/O Unit (para 4-17k) and proceed to step 2. If fault does not continue, return the Team Terminal to service.

  Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

          If problem persists, contact intermediate general support maintenance.

25. THE D/K ASSEMBLY DOES NOT DISPLAY CHARACTERS PROPERLY OR BEZEL KEYS DO NOT FUNCTION PROPERLY; NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY

  Step 1.   Initiate terminal off-line BIT (para 3-10a) and test the D/K assembly via the four test screens.

          If the D/K assembly passes the test, return Team Terminal to service. If the D/K assembly fails the test, note the fault and replace the D/K assembly; refer to TM 11-5895-1322-24 (Navy) EEll19-ND-MMI-010/WllO-MX10819 (Air Force) TO 31R2-2GRC215-32.

  Step 2.   Upon replacement of the D/K assembly, initiate terminal off-line BIT (para 3-10a) to verify repair.

          If fault persists, replace the I/O Unit (para 4-17k).

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

26.   **CANNOT RECEIVE OR TRANSMIT IN SECURE DATA MODE (VOICE MODE NORMAL AND NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY)**

Step 1.   Ensure the Team Terminal has been properly initialized for the secure data mode (para 2-8b). Initiate terminal off-line BIT (para 3-10a) and observe the D/K assembly for any fault messages.

If the D/K assembly shows a fault message, proceed to the applicable troubleshooting procedure in this table. If no fault messages are shown, proceed to step 2.

Step 2.   Bypass the TSEC/KG-84A using the KG-84 nonsecure bypass assembly (para 2-5a) and initialize the Team Terminal for the nonsecure data mode. Attempt to establish communications with another operator (receiving terminal must be in nonsecure mode).

If you are able to establish nonsecure data communications, replace the TSEC/KG-84A (para 4-17g) and proceed to step 3. If you cannot establish nonsecure data communications, proceed to the troubleshooting procedure for malfunction no.

Step 3.   Upon replacement of TSEC/KG-84A, initialize the Team Terminal for the secure data mode and attempt to establish communications with another operator. If problem persists, contact intermediate general support maintenance.

27.   **CANNOT RECEIVE OR TRANSMIT IN NONSECURE DATA MODE (VOICE MODE NORMAL AND NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY)**

Step 1.   Ensure the Team Terminal has been properly initialized for the nonsecure data mode (para 2-8b). Initiate terminal off-line BIT (para 3-10a) and observe the D/K assembly for any fault messages.

If the D/K assembly shows a fault message, proceed to the applicable troubleshooting procedure in this table. If no fault messages are shown, proceed to step 2.

Step 2.   Check for faulty RN Modem.

Replace RN Modem (para 4-17h). If problem persists, replace

4-28

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

---

the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

28. CANNOT RECEIVE OR TRANSMIT IN SECURE VOICE MODE (NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY)

    Step 1.   Ensure the Team Terminal has been properly initialized for the secure voice mode (para 2-8b). Initiate terminal off-line BIT (para 3-10a) and observe the D/K assembly for any fault messages.

                If the D/K assembly shows a fault message, proceed to the applicable troubleshooting procedure in this chart.

    Step 2.   Disconnect W308P1 from RT and connect Handset to AUDIO connector of RT. Attempt to establish communications with another operator.

                If you are able to establish nonsecure voice communications, replace faulty TSEC/KY-65 or Z-AKE as applicable (refer to TM 11-5810-280-12 & P for maintenance procedures). If problem persists, contact intermediate general support maintenance.

                If you are unable to establish nonsecure voice communications, proceed to the troubleshooting procedure for malfunction no. 29 (CANNOT RECEIVE OR TRANSMIT IN NONSECURE VOICE MODE).

29. CANNOT RECEIVE OR TRANSMIT IN NONSECURE VOICE MODE (NO FAULT MESSAGES SHOWN ON THE D/K ASSEMBLY)

    Step 1.   Ensure the Team Terminal has been properly initialized for the nonsecure voice mode (para 2-8b). Initiate terminal off-line BIT (para 3-10a) and observe the D/K assembly for any fault messages.

                If the D/K assembly shows a fault message, proceed to the applicable troubleshooting procedure in this table. If no fault messages are shown, proceed to step 2.

4-29

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

Step 2.   Check for faulty Handset (or Headset if used).

        Replace Handset (or Headset if used). If problem persists, contact intermediate general support maintenance.

30.   UNABLE TO POWER-UP MANPACK

Step 1.   Check to ensure that Battery Case/Charger is securely mounted to RT and check for proper control settings.

        Tighten clip latches on Battery Case/Charger. On RT, set power ON-OFF switch to ON. On Battery Case/ Charger, set NORMAL-EXT. BAT. switch to NORMAL.

Step 2.   Check for faulty Battery Case/Charger; BAT CHG LED on front of Vehicular Adapter should be lit to indicate battery charging.

        Replace Battery Case/Charger; refer to Manpack disassembly procedures (para 2-5b(l)). Check BAT CHG LED, if not lit replace Vehicular Adapter (para 4-17c).

31.   MANPACK COMMUNICATIONS IN SECURE VOICE MODE INOPERATIVE

Step 1.   Check cable connections between Manpack and TSEC/KY-65.

        Connect cables in accordance with paragraph 2-5b(2).

Step 2.   Check for correct control settings on TSEC/KY-65.

        Set SYNC MODE switch to HF. Adjust VOLUME control to a mid-range position. If fault persists, re-load crypto variables (para 2-8b. step 4).

Step 3.   On TSEC/KY-65, set and hold INT BAT-AUDIO-EXT BAT to EXT BAT and observe meter reading for +12.0 to +13.5 Vdc.

        Replace TSEC/KY-65 (para 2-5b(2)). If fault persists, contact intermediate general support maintenance.

32.   CANNOT RECEIVE OR TRANSMIT IN MANPACK SECURE OR NONSECURE MODE (NO FAULT CODE SHOWN ON RT DISPLAY)

Step 1.   Check for faulty RT.

        Remove RT from rack and replace ECCM Module (para 2-5b(1)). If problem persists, replace the RT.

4-30

4-11. UNIT TROUBLESHOOTING CHART (Cont.)

MALFUNCTION
   TEST OR INSPECTION
      CORRECTIVE ACTION

Step 2.   Check for faulty Battery Case/Charger; BAT CHG LED on front of Vehicular Adapter should be lit to indicate battery charging.

Replace Battery Case/Charger; refer to Manpack disassembly procedures (para 2-5b(l)). Check BAT CHG LED, if not lit replace Vehicular Adapter (para 4-17c).

Step 3.   Check for faulty Handset.

Replace Handset. If problem persists, replace Manpack Whip Antenna.

33.   UNABLE TO OPERATE IN REMOTE VOICE CONFIGURATION

Step 1.   Observe ECCM Module display for the message: FAILED.

Refer to the troubleshooting procedure for malfunction no. 23 (ECCM MODULE SHOWS THE MESSAGE: FAILED).

Step 2.   Observe for lighted BITE indicator on R/E terminal. LED lit indicates a malfunction.

Refer to assembly and preparation for use procedures for remote voice operations (para 2-5a(5)) and replace R/E. If problem persists, replace Remote Control Set.

Step 3.   Inspect equipment hook-up to ensure Team Terminal is properly configured for remote voice operations (para 2-5a(5)).

Configure Team Terminal for remote voice operations. Check for proper cable connections. If fault persists, contact intermediate general support maintenance.

34.   UNABLE TO OPERATE IN REMOTE DATA CONFIGURATION

Step 1.   Initiate terminal off-line BIT (para 3-10a) and observe D/K assembly for fault message.

Refer to applicable troubleshooting procedure and perform corrective action.

4-31

4-11.   UNIT TROUBLESHOOTING CHART (Cont.)

___

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

___

    Step 2.   Inspect equipment hook-up to ensure Team Terminal is properly configured for remote data operations (para 2-5a(4)).

                Configure Team Terminal for remote data operations. Tighten cable connections.

    Step 3.   Re-initialize Team Terminal for data mode. Replace remote cable. If problem persists, contact intermediate general support maintenance.

35.   D/K ASSEMBLY SHOWS THE MESSAGE: POWER SUPPLY FAULT - A1PS1

    Step 1.   Initiate terminal off-line BIT (para 3-l0a) and observe D/K assembly for fault message. If fault message does not repeat, return the Team Terminal to service.

                If fault message repeats, set I/O Unit power ON-OFF switch to OFF and then to ON again. If fault persists, replace faulty I/O Unit subassembly; refer to TM 11-5895-1322-24 (Navy) EEll19-ND-MMI-010/Wll0-MX10819 (Air Force) TO 31R2-2GRC215-32.

    Step 2.   Initiate terminal off-line BIT (para 3-10a) to verify repair.

                If fault persists, replace the I/O Unit (para 4-17k). If replacement of the I/O Unit does not correct the problem, contact intermediate general support maintenance.

36.   DURING NVIS OPERATION D/K ASSEMBLY SHOWS THE MESSAGE: ATU FAULT; OR ATU FAILS TO TUNE; OR HIGH VSWR INDICATED DURING NVIS OR AFTER RETURN TO NORMAL WHIP OPERATION.

    Step 1.   Disconnect RF input cable from PA J3. Check Antenna Matching Capacitor attached to El terminal of ATU. For NVIS operation the W1 rf cable should be connected to the tip-end of the capacitor.   For AS-3809/G whip operation, W1 should be connected to the side of the capacitor. Ensure connection is correct, and screw is tight. If in NVIS mode, and ATU will not tune, or high VSWR is indicated, replace capacitor.

    Step 2.   Re-connect RF input cable to PA J3. Initiate terminal off-line BIT (para 3-10a) to verify repair. If fault persists, replace the ATU (para 4-17e). If replacement of the ATU does not correct the problem, contact intermediate general support maintenance.

Section V. UNIT MAINTENANCE PROCEDURES

4-12. INTRODUCTION

This section contains maintenance procedures which are the responsibility of unit maintenance as authorized by the Maintenance Allocation Chart (MAC); refer to appendix B.

4-13. GROUND HANDLING

a. Equipment data, including component weights and dimension, are provided in paragraph 1-13. Some component weight limits are greater than one person lift. When removing/installing components, observe personnel lift warnings marked on equipment labels and stated in this manual.

b. This equipment contains electrostatic sensitive devices (ESD) items. Refer to paragraph 4-16 for guidelines to handle, transport, and store ESD items.

c. Prior to removing or installing a component, ensure that power to the component has been turned off. Cables disconnected with voltage present may arc or short. This can produce damage to the equipment.

4-14. OPERATIONAL CHECK

To check the operational condition of the Team Terminal, perform terminal off-line BIT (para 3-10a).

4-15. INSPECTION OF INSTALLED ITEMS

Inspect all components, assemblies and parts mounted in equipment rack to determine if the item is damaged or incomplete to the extent that it should be replaced/repaired.

4-16. ELECTROSTATIC DISCHARGE HANDLING PROCEDURES

All Team Terminal equipment contains certain static-sensitive solid state devices which are subject to damage from electrostatic discharge. Effective control of electrostatic discharge is maintained only through continuous strict observance of the following maintenance procedures.

a. Any maintenance requiring disassembly of the equipment must be performed at an approved work station. The work station must include a grounded surface and grounded wrist strap in accordance with DOD-HDBK-263.

b. All maintenance personnel must have completed training in the handling of static-sensitive devices before working on this equipment. Maintenance personnel must wear the grounded wrist strap and be at an approved work station when performing maintenance.

4-16. ELECTROSTATIC DISCHARGE HANDLING PROCEDURES (Cont.)

c.   The static sensitive subassemblies or circuit cards must be stored in approved electrostatic free material when not installed in the equipment.

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS

a.   RT.

REMOVAL AND REPLACEMENT OF RT

REMOVAL

STEP
 1   Perform terminal power-off sequence (para 2-8i).

STEP
 **2**   Disconnect cable plugs W202P1, W304P1, W308P1, W307P1, W312P1, and handset (if required) from RT front panel. Place connector covers on connectors.

W202P1 W304P1 W308P1 W307P1 W312P1

RT

PARTIAL FRONT VIEW
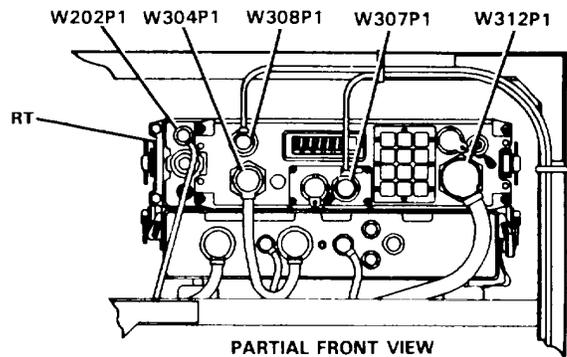
STEP
 3   On Vehicular Adapter, loosen and free 4 clip latches. Remove RT from Vehicular Adapter by lifting up and forward.

VEHICULAR ADAPTER

LOOSEN

RT

CLIP LATCHES (TWO ON EACH SIDE)
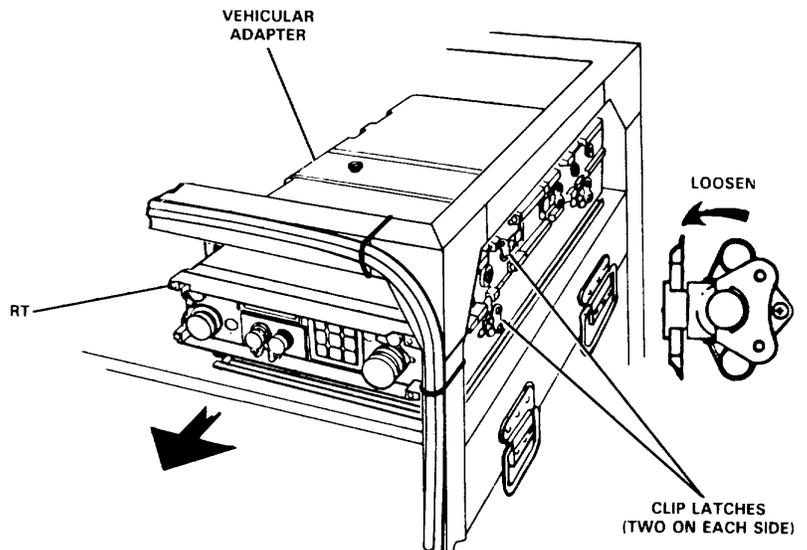
**4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)**

> **REMOVAL AND REPLACEMENT OF RT (Cont.)**

> **REMOVAL (Cont.)**

STEP
  4   If maintenance action
requires removal of ECCM Module
or R/E, disassemble the RT by
loosening 7 spring latches
(2 located on top and bottom,
2 on left-hand side and 1 on
right-hand side). Pull ECCM
Module forward and away from
the R/E.
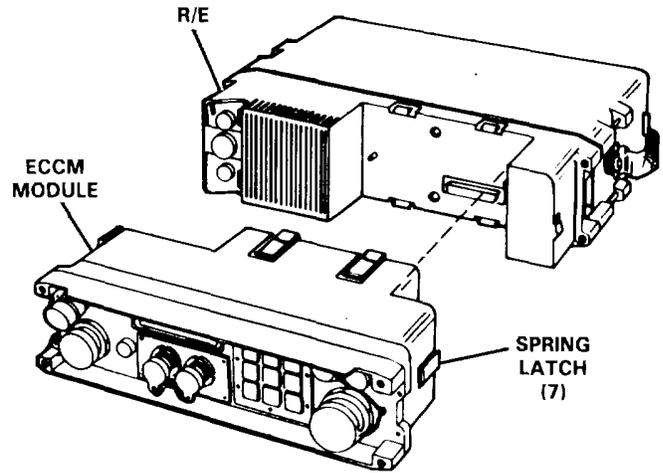
> **REPLACEMENT**

STEP
  1   Ensure terminal is
powered-off and that RT power
ON-OFF switch is set to OFF.

STEP
  2   If maintenance action
requires replacement of ECCM
Module, mount ECCM Module onto
the R/E and secure by fastening
7 spring latches.
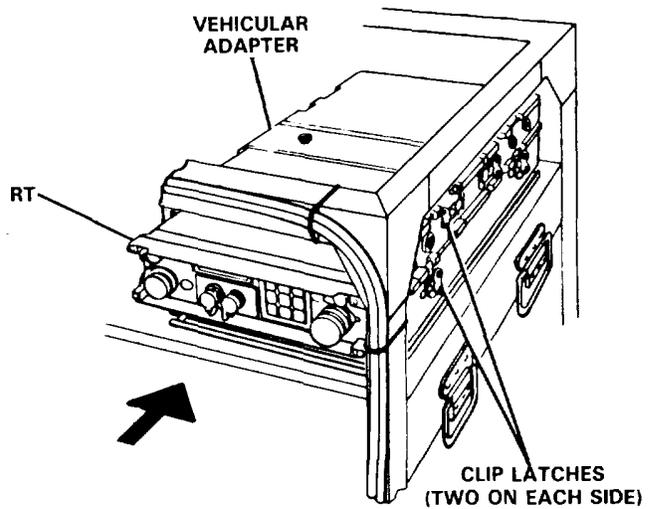
STEP
  3   Mount RT on the Vehicular
Adapter and secure by fastening
4 clip latches.

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)

REMOVAL AND REPLACEMENT OF RT

REPLACEMENT (Cont.)

STEP
4   Remove connector covers and
connect cables to RT as follows:

Cable/plug	RT connector
W202P1	DIP 50o
W304P1	VEH ADPTR J2
W308P1	AUDIO J1
W307P1	SYNC J4
W312P1	REMOTE J6
HANDSET	KY J3
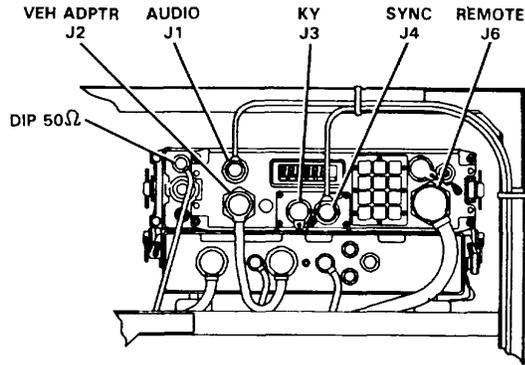
b.   Battery Case/Charger.

REMOVAL AND REPLACEMENT OF BATTERY CASE/CHARGER

REMOVAL

STEP
1   Perform terminal power-off sequence
(para 2-8i).

STEP
2   Loosen 4 clip latches securing Battery
Case/Charger to Vehicular Adapter.

STEP
3   Pull Battery Case/Charger rearward
from Vehicular Adapter.
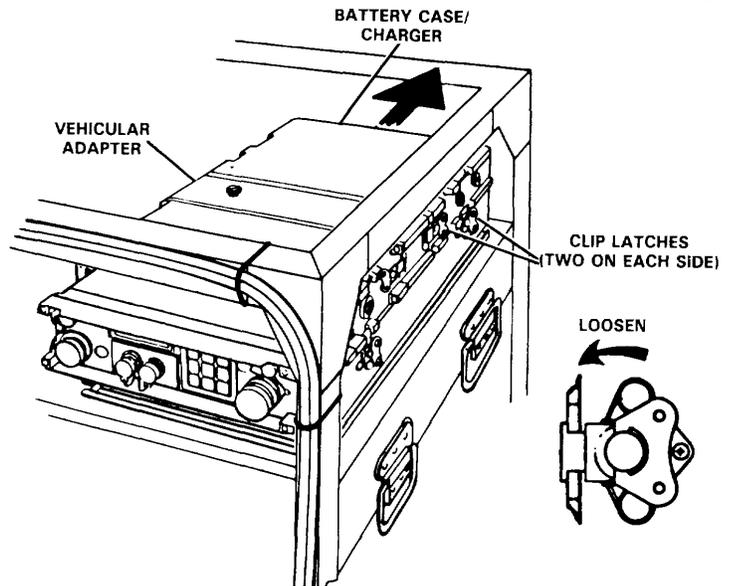
4-36

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)

REMOVAL AND REPLACEMENT OF BATTERY CASE/CHARGER (Cont.)

| REPLACEMENT |
|---|

STEP
  1   Ensure terminal is powered-off.

STEP
  2   Mount Battery Case/Charger to rear of Vehicular Adapter

STEP
  3   Secure by tightening 4 clip latches.

        c.   Vehicular Adapter. Tool kit, Electronic Equipment TK-101/G is required to remove and replace the Vehicular Adapter.

REMOVAL AND REPLACEMENT OF VEHICULAR ADAPTER

REMOVAL

STEP
  1   Perform terminal power-off sequence (para 2-8i). Remove RT from Vehicular Adapter (para 4-17a) and then remove Battery Case/Charger from Vehicular Adapter (para 4-17b).

STEP
  2   On Vehicular Adapter, disconnect ground strap from GRD post. Disconnect cable plugs W104P1, W205P1, W304P2, and W302P1 from front panel of Vehicular Adapter. Place connector covers on connectors
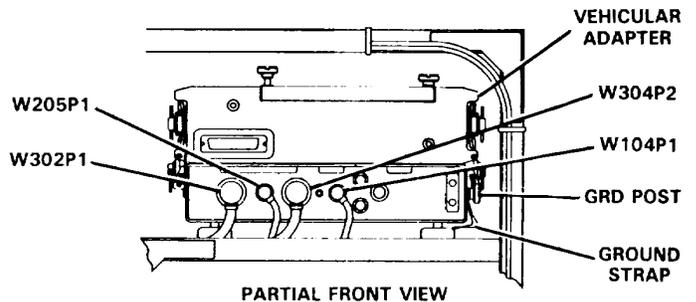
PARTIAL FRONT VIEW

4-37

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)

REMOVAL AND REPLACEMENT OF VEHICULAR ADAPTER (Cont.)

REMOVAL (Cont.)

STEP
3   Loosen 4 captive mounting bolts securing
the Vehicular Adapter to its shock mount base.
Remove the Vehicular Adapter from shock
mount base.
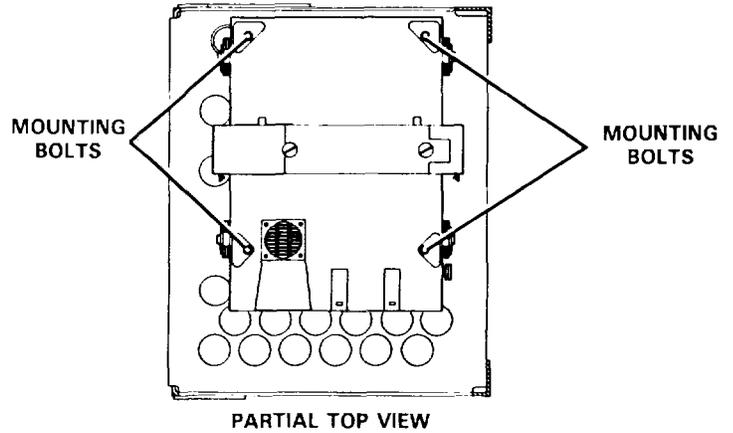
NOTE

Removal of shock mount base (step 4) is not required unless it is damaged. The new
Vehicular Adapter can be removed from its shock mount base and mounted to old shock
mount base. The faulty Vehicular Adapter can be mounted to new shock mount base for
shipment.

STEP
4   If removal of shock
mount base is required (due
to mechanical damage), remove
and retain 4 cross-head screws
and flatwashers. Remove shock
mount base from rack.
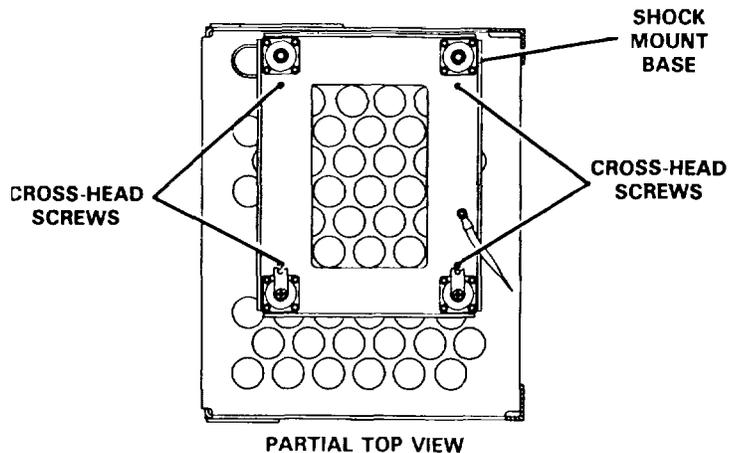
REPLACEMENT

STEP
1   Ensure terminal is powered off. Remove replacement Vehicular Adapter from its shock mount base by loosening
4 captive mounting bolts.

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)

REMOVAL AND REPLACEMENT OF VEHICULAR ADAPTER (Cont.)

REPLACEMENT (Cont.)

STEP
2   If shock mount base requires replacement, place shock mount base on rack and align holes for mounting. Secure shock mount base to rack by tightening 4 cross-head screws, flatwashers retained in removal step 4.

STEP
3   Place Vehicular Adapter on its shock mount base and tighten 4 captive mounting bolts.

STEP
4   On Vehicular Adapter, reconnect ground strap to GRD post. Connect cable plugs to Vehicular Adapter front panel as follows:

Cable/plug	Vehicular Adapter connector
W104P1	POWER
W205P1	10 MHz IN
W304P2	FAST SYNTH
W302P1	PA/ATU

STEP
5   Replace Battery Case/Charger on rear of Vehicular Adapter (para 4-17b) and then replace RT on front of Vehicular Adapter (para 4-17a).

4-39

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (Cont.)

   d.   PA.   Tool Kit, Electronic Equipment TK-101/G is required to remove and replace the PA.

REMOVAL AND REPLACEMENT OF PA

REMOVAL

STEP
1   Perform terminal power-off
sequence (para 2-8i).

STEP
2   On front panel of PA,
disconnect (in sequence) cable
plugs W20lP1, W202P2, W302P2,
and W107Pl from connectors J4,
J3, J2, and Jl respectively.

STEP
3   Using 1/4 in. socket-tip
wrench, remove and retain ground
terminal hex nut and lockwasher.
Remove ground strap from ground
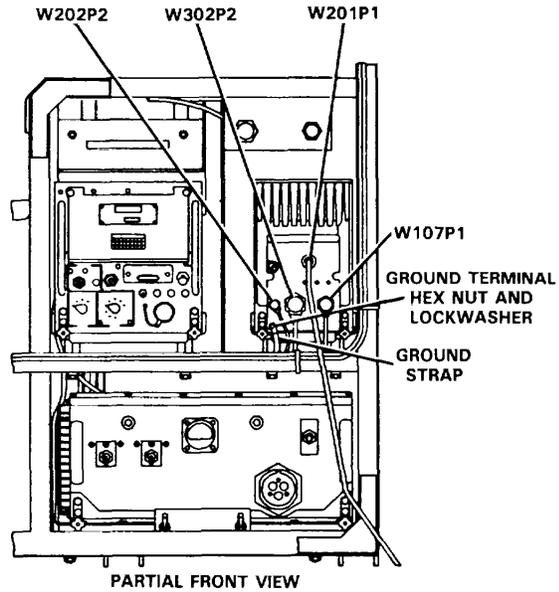
STEP
4   Loosen 2 clamp bolt assemblies
to free PA from its mount.

   ● Loosen knobs.

   ● Slide collars off of hold down hooks and
     allow clamp bolt assembly to fall free of
     PA. Remove PA from its mount.

PARTIAL FRONT VIEW

PARTIAL FRONT VIEW
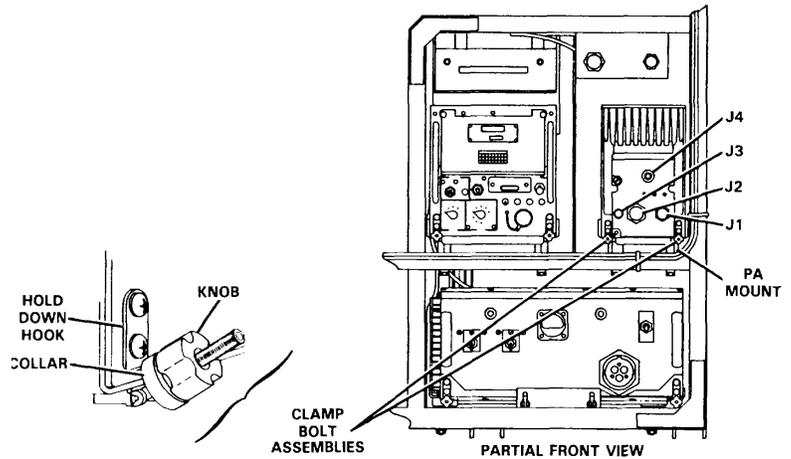
4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS   (Cont.)

REMOVAL AND REPLACEMENT OF PA (Cont.)

REPLACEMENT

STEP
  1   Ensure terminal is powered-off.

STEP
  2   Place PA on its mount and secure PA by tightening 2 clamp bolt assemblies as follows:

- Slide collars onto hold down hooks on PA.

- Tighten knobs.

STEP
  3   Connect cables to PA front panel in the following sequence:

Cable/plug	PA connector
W107 P1	J1
W302 P2	J2
W202 P2	J3
W201 P1	J4

STEP
  4   Using 1/4 in. socket-tip wrench, secure ground strap to ground terminal with hex nut and lockwasher (retained in step 3 of removal procedure).

4-41

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS   (Cont.)

e.   ATU. Tool Kit, Electronic Equipment TK-101/G is required to remove and replace the ATU.

REMOVAL AND REPLACEMENT OF ATU

REMOVAL

WARNING

Two-person lift required. Failure to use two-person lift may cause personal injury.

STEP
1   Perform terminal power-off
sequence (para 2-8i).

STEP
2   On front panel of ATU,
disconnect cable plugs WlllP2,
W201P2, and W303P2 from connectors
J3, J2, and J1 respectively.
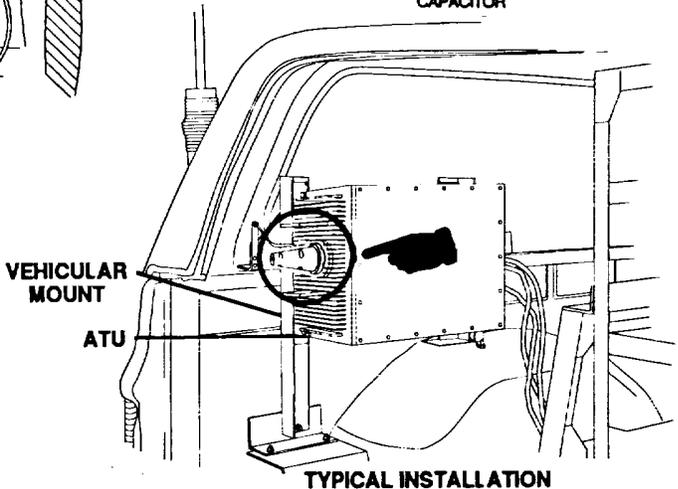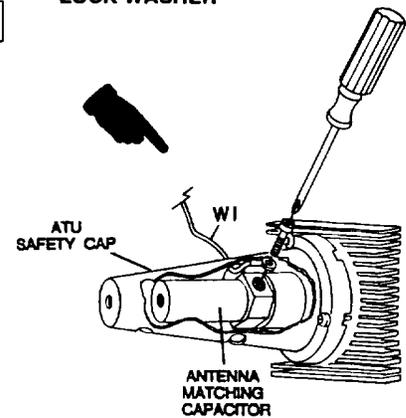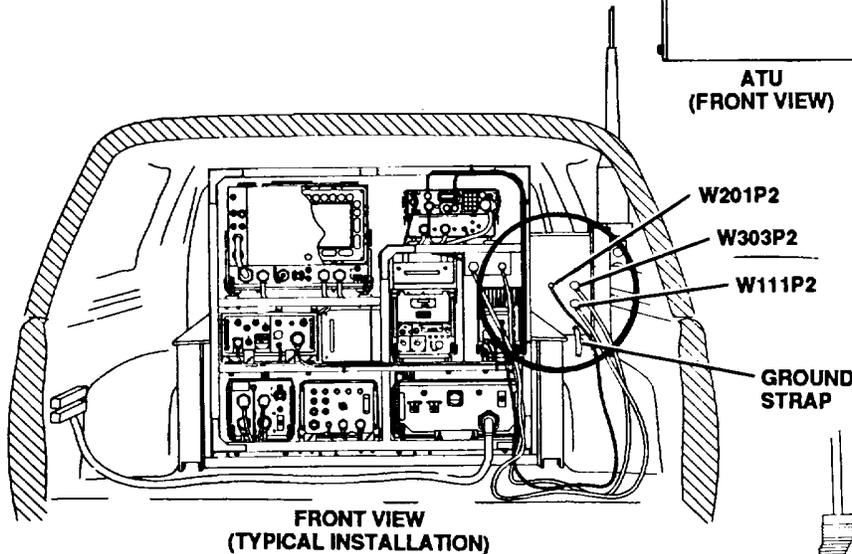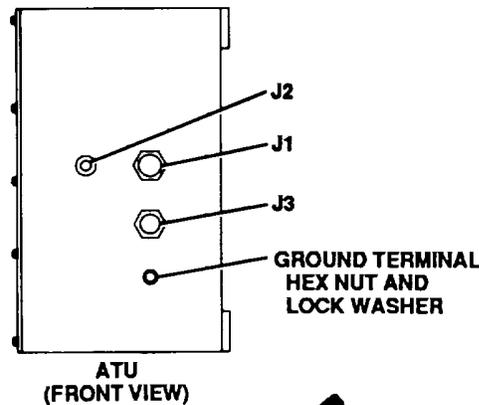
J2

J1

J3

GROUND TERMINAL
HEX NUT AND
LOCK WASHER

ATU
(FRONT VIEW)

W201P2

W303P2

W111P2

GROUND
STRAP

ATU
SAFETY CAP

W1

ANTENNA
MATCHING
CAPACITOR

FRONT VIEW
(TYPICAL INSTALLATION)

STEP
3   Using 1/4 in. socket-tip wrench, remove and
retain ground terminal hex nut and lockwasher.
Disconnect ground strap.

STEP
4   Using cross-tip screwdriver, carefully remove
and retain cross-head screw securing antenna cable
W1 to antenna matching capacitor. Then pull W1 out
of the safety cap.

VEHICULAR
MOUNT

ATU

TYPICAL INSTALLATION

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

| REMOVAL AND REPLACEMENT OF ATU (Cont.) |

| REMOVAL (Cont.) |

STEP
5 Using 5/16 in. and 1/2 in. deep well socket wrench, remove and retain 4 mounting bolts, lockwashers and flatwashers. Remove ATU from vehicular mount.
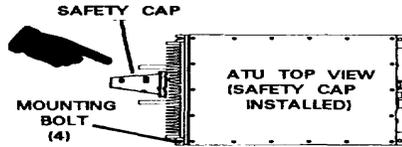
STEP
6 Remove the ATU Safety Cap. Refer to para. 4-17o. Next remove the matching capacitor by unscrewing it off the ATU insulator El. Retain both items.
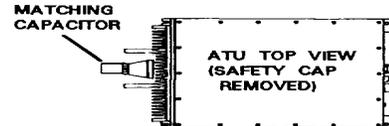
| REPLACEMENT |

| WARNING |

Unit is heavy. Failure to use two-person lift can result in personal injury.

STEP
1 On the replacement ATU, attach the antenna matching capacitor by screwing it directly onto ATU insulator El (position the 'nut' end of the capacitor against the antenna insulator). Tighten securely. Next install the ATU Safety Cap. Refer to para. 4-17o.

STEP
2 Ensure Terminal is powered-off.

STEP
3 Place ATU onto vehicle mount. Align mounting holes and secure ATU to vehicle mount by tightening 4 bolts, flatwashers, and lockwashers (retained in removal step 5).
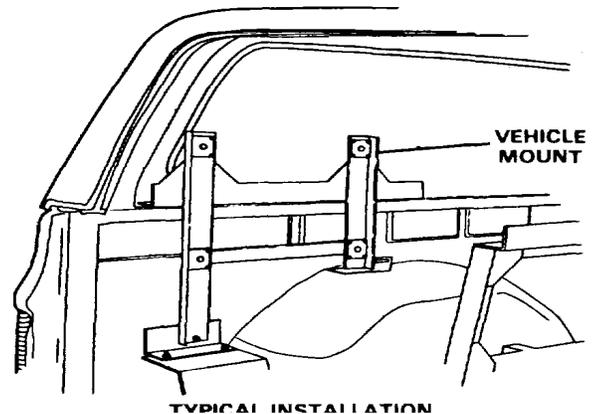
STEP
4 Insert antenna cable W1 through the appropriate slot in the ATU Safety Cap and using a cross-tip screwdriver, secure W1 to the antenna matching capacitor by tightening the cross-head screw (retained in removal step 4)

Change 2 4-43

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS (Cont.)

| REMOVAL AND REPLACEMENT OF ATU (Cont.) |

| REPLACEMENT (Cont.) |

STEP
5   Using 1/4 in. socket-tip wrench, secure ground strap to ground terminal with hex nut and lockwasher (retained in removal step 3).

STEP
6   Connect cables to front panel of ATU as follows:

Cable/plug	ATU connector
W111P2	J3
W201P2	J2
W303P2	J1

f.   TSEC/KY-65A.

| REMOVAL AND REPLACEMENT OF TSECIKY-65A |

| REMOVAL |

STEP
1   Perform terminal power-off sequence (para 2-8i).

STEP
2   On TSEC/KY-65A front panel, disconnect cable plug W307P2 from HANDSET connector and cable plug W308P2 from RADIO connector. Loosen wing nut and remove ground strap from ground terminal (retain lockwasher).

PARTIAL FRONT VIEW

Change 2 4-44

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS (Cont.)

<div style="text-align:center">
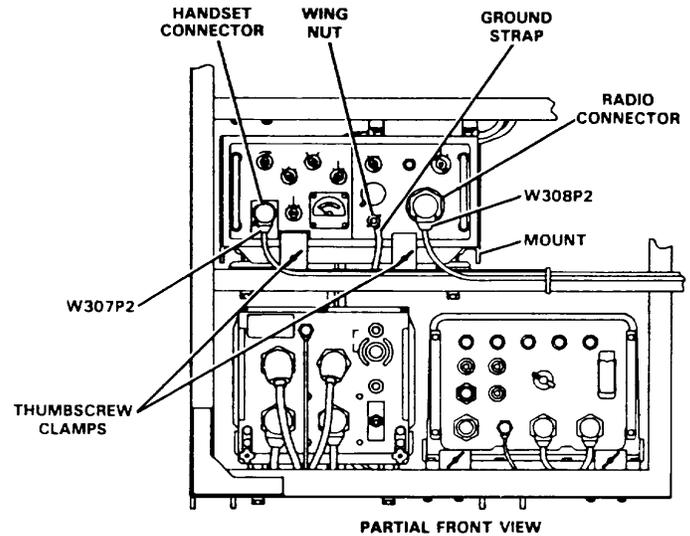
REMOVAL AND REPLACEMENT OF TSEC/KY-65 (Cont.)

REPLACEMENT (Cont.)

</div>

STEP
  3   Loosen 2 thumbscrew clamps and remove
TSEC/KY-65 with attached Z-AKE from Crack part way.

STEP
  4   Disconnect cable plug W108P1 from POWER
connector J1 on Z-AKE rear panel. Remove TSEC/KY-65
with Z-AKE from rack.

STEP
  5   To remove Z-AKE from TSEC/KY-65, loosen 2 clip
latches and pull Z-AKE away from TSEC/KY-65.

<div style="text-align:center">

REPLACEMENT

</div>
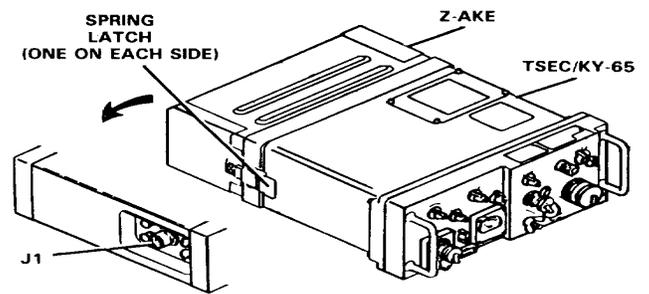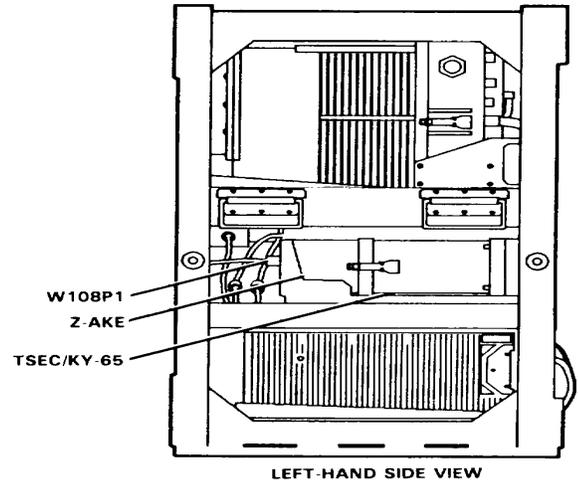
STEP
  1   Ensure terminal is powered-off.

STEP
  2   If Z-AKE is not installed, connect Z-AKE to rear of TSEC/KY-65 and secure by fastening 2 clip latches.

<div style="text-align:center">

4-45

</div>

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS (Cont.)

| REPLACEMENT (Cont.) |

STEP
3   Place TSEC/KY-65 on its rack mount part way. Connect cable plug W108P1 to POWER connector J1 on rear of Z-AKE.

STEP
4   Slide TSEC/KY-65 into its rack mount, taking care not to crimp cables. Secure by tightening 2 thumbscrew clamps.

STEP
5   Connect cables to TSEC/KY-65 as follows:

Cable/plug	TSEC/KY-65 connector
W307P2	HANDSET
W308P2	RADIO
Ground Strap	Ground Terminal

  g.   TSEC/KG-84A. Tool kit, Electronic Equipment TK-101/G is required to remove and replace TSEC/KG-84A.

| REMOVAL AND REPLACEMENT OF TSEC/KG-84A |

| REMOVAL |

STEP
1   Perform terminal power-off sequence (para 2-8i).
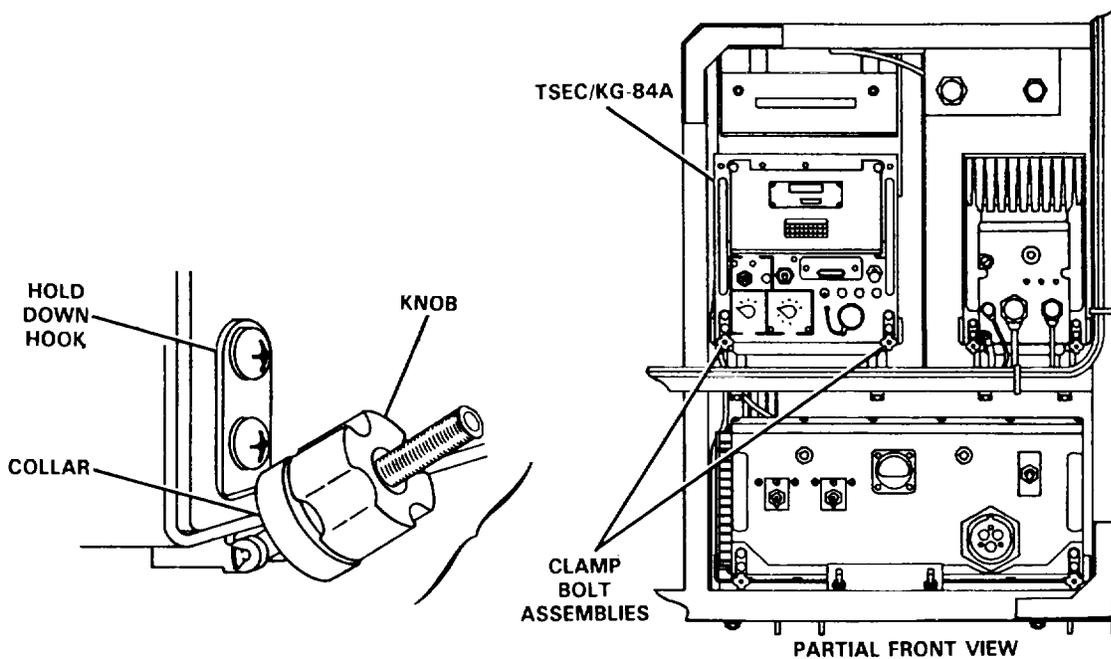
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

> **REMOVAL AND REPLACEMENT OF TSEC/KG-84A (Cont.)**

> **REPLACEMENT (Cont.)**

STEP
2   Loosen 2 clamp bolt assemblies to free TSEC/KG-84A from its mount.

- Loosen knobs.

- Slide collars off of hold down hooks and allow clamp bolt assembly to fall free of TSEC/KG-84A.

STEP
3   On rear panel of TSEC/KG-84A, disconnect cable plugs W103P1, W306P1, and W305P2 and then disconnect ground strap by loosening GND terminal hex nut.
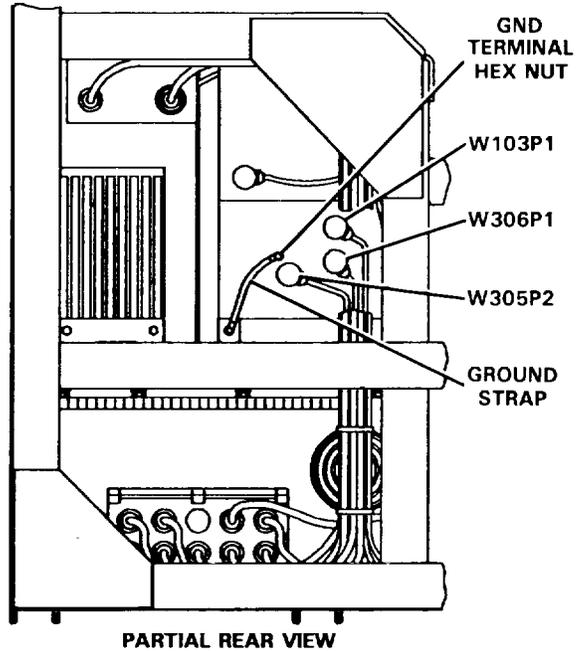
STEP
4   Remove TSEC/KG-84A from its mount.

> **REPLACEMENT**
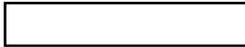
STEP
1   Ensure terminal is powered-off. On TSEC/KG-84A, ensure POWER ON-OFF switch is set to OFF.

STEP
2   Compare KG-84 STRAPPING CHART with chart on right-hand side of TSEC/KG-84A. Ensure correct strapping is installed. Installed straps are indicated with a check mark in box on chart. If strapping is incorrect, notify MMCT.

4-47

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OFTSEC/KG-84A (Cont.)

REPLACEMENT (Cont.)

KG-84A STRAPPING CHART

BD-	PLUG	FUNCTION	STRAPPING			
A1	P2 P3	ETCT	[ ] BAL	J6-J7 J8-J9	[X] UNBAL:	J5-J6 J9-J10
	P4 P5	XMTCTRL/CTTR	[ ] BAL:	J12-J13 J15-J16	[X] UNBAL:	J11-J12 J14-J15
	P6	INTERFACE	[X] KG-84A:	J17A	[ ] KG-84:	J17B
A2	P2 P3	TCTC	[ ] BAL:	J6-J7 J9-J10	[X] UNBAL:	J5-J7 J8-J10 I
	P4	CLK LOCK	[ ] DSBL:	J20-J22	[X] ENBL:	J21-J22
	P5 P7	CTCD/CTRS	[ ] BAL:	J15-J16 J12-J13	[X] UNBAL	J14-J16 J11-J13
	P6	CTCD/CTRS	[X] KG-84A:	J18-J19	[ ] KG-84:	J17-J18
A5	P2	TIME OUT	[ ] DSBL:	J8-J9	[X] ENBL:	J9-J10
	P3	VUX	[ ] DSBL:	J5-J7	[X] ENBL:	J5-J6
	P4	FILL SELECT	[X] KG-84A:	J11-J12	[ ] KG-84:	J12-J13
A6	P2	U UPDATE	[X] ENBL:	J7-J8	[ ] DSBL:	J8-J9
	P2 P3	REDI/O	[ ] BAL:	J14 J15	[X] UNBAL	J6 J7
	P4	STEP PULSE	[ ] SGL:	J8-J9	[X] DBL:	J9-J10
	P5	TX CLOCK	[X] CONT:	J11-J12	[ ] GATED	J12-J13

Change 1 4-48

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

<div align="center">

REMOVAL AND REPLACEMENT OF ATU (Cont.)

REPLACEMENT (Cont.)

</div>

STEP

3 Check battery installation date written on front panel of TSEC/KG-84A. Replace battery when more than 90 days old. Notify MMCT.
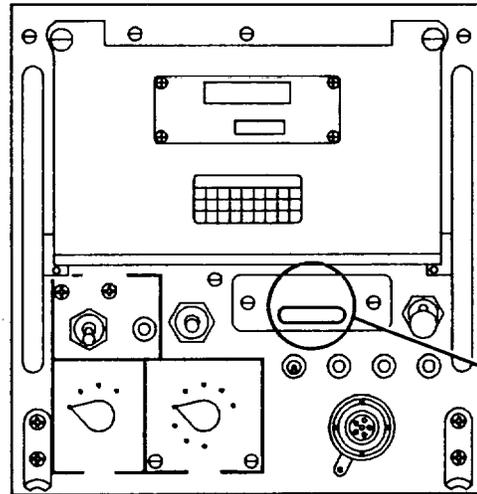
FRONT VIEW

STEP

4 Slide TSEC/KG-84A to its stationary position on its mount and secure by tightening 2 clamp bolt assemblies as follows:

- Slide collars onto hold down hooks on TSEC/KG-84A.

- Tighten knobs.

PARTIAL FRONT VIEW

4-49
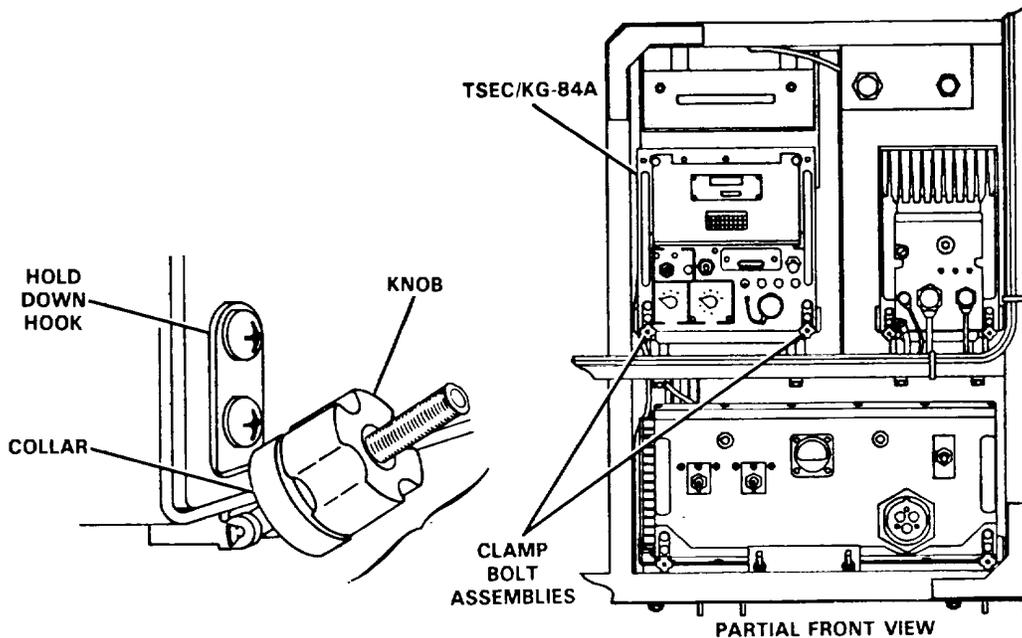
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OFTSEC/KG-84A (Cont.)

REPLACEMENT (Cont.)

STEP
5 Secure ground strap to rear panel of TSEC/ KG-84A by tightening GND terminal hex nut.

STEP
6 Make the following cable connections:

TSEC/KG-84A Cable/plug	Connector
W103P1 W306P1 W305P2	POWER J1 BLACK I/O J2 RED I/O J3

STEP
7 Make the following control settings (these settings should remain except for variations that are defined and permitted by operating directives):

Switch	**Position**
CLOCK:	1
DATA MODE:	2
DATA RATE (TX AND RX):	4
TOGGLE SWITCHES (A-B):	B
STEP PULSE INTVL:	1
TTY MODE	5
INTFC:	1
DATA LENGTH:	SYNC
SYNC MODE:	4
COMM MODE:	2
+8/+0 SWITCH:	+0

PARTIAL REAR VIEW
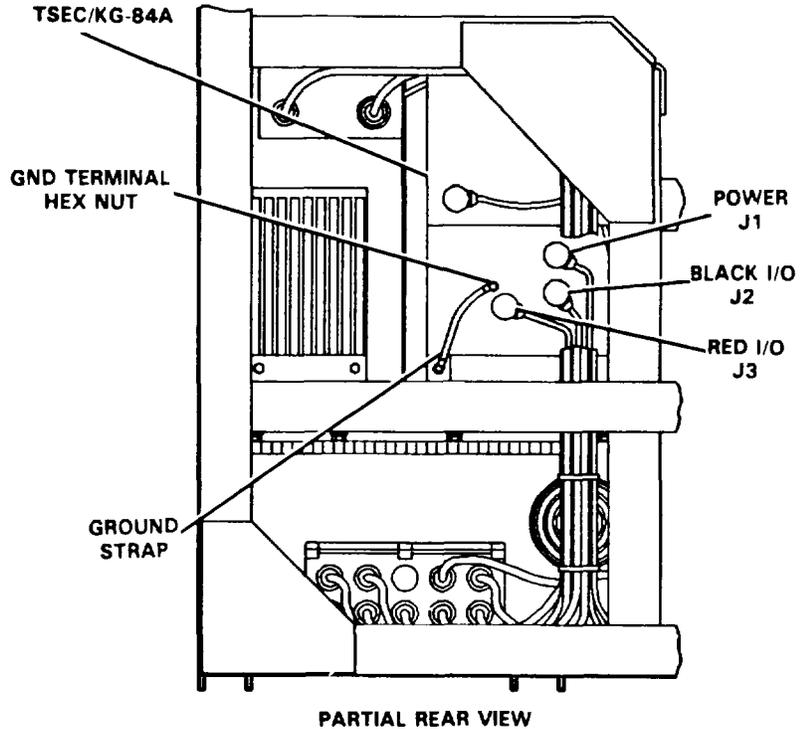
4-50

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

h.   RN Modem.

REMOVAL AND REPLACEMENT OF RN MODEM

REPLACEMENT (Cont.)

STEP
1   Perform terminal power-off sequence (para 2-8i).

STEP
2   On front panel of RN Modem, disconnect cable plugs W204P1, W312P2, W311P1, W306P2, and W109P1 from connectors J2, J1, J3, J4, and J5 in that order.

W204P1

RN MODEM

W312P2

W306P2
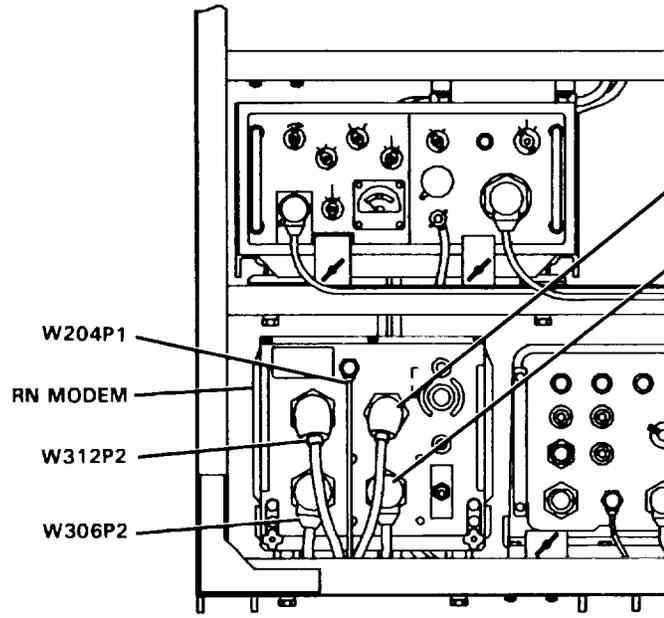
PARTIAL FRONT VIEW

STEP
3   Loosen 2 clamp bolt assemblies to free RN Modem from its mount.

• Loosen knobs.

• Slide collars off of hold down hooks and allow clamp bolt assembly to fall free of RN Modem.

COLLAR

KNOB

HOLD DOWN HOOK

CLAMP BOLT ASSEMBLIES

J4

MOUNT

COLLAR

KNOB

.D
/N
)K

CLAMP BOLT ASSEMBLIES

J2

J1

J4

MOUNT

CLAMP BOLT ASSEMBLIES

4-51
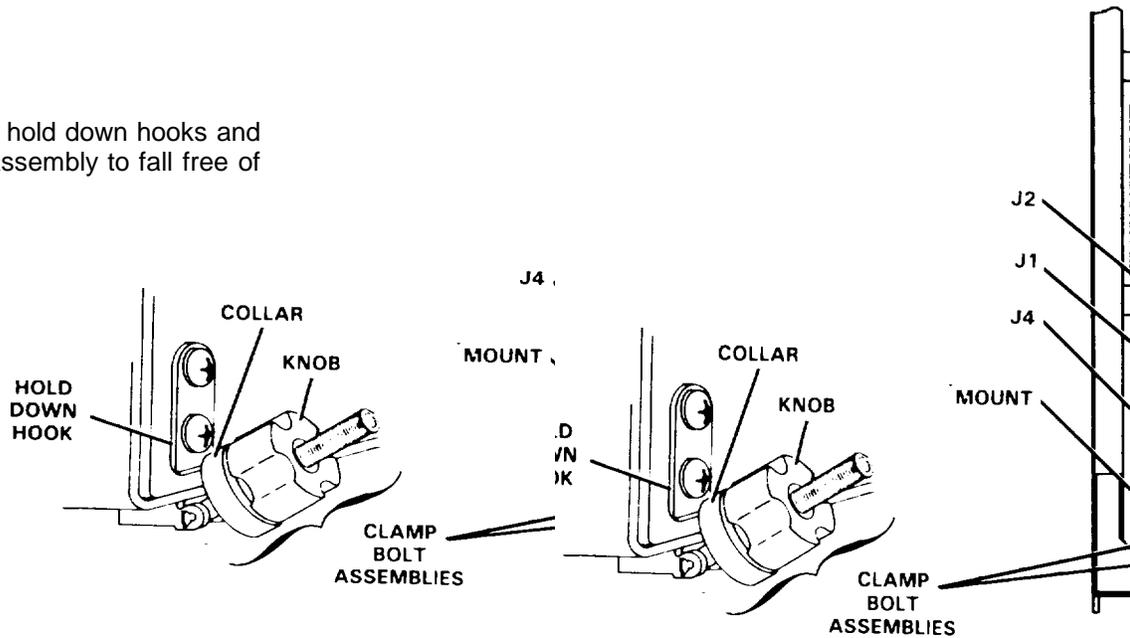
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF RN MODEM (Cont.)

REPLACEMENT (Cont.)

STEP
4 Remove RN Modem from its rack mount.

REPLACEMENT

STEP
1 Ensure terminal is powered-off. On RN Modem, ensure PWR ON-OFF switch is set to OFF.

STEP
2 Place RN Modem on its rack mount.

STEP
3 Secure RN Modem to its rack mount by tightening 2 clamp bolt assemblies as follows:

- Slide collars onto hold down hooks on RN Modem.

- Tighten knobs.

STEP
4 Connect cables to front panel of RN Modem.

Cable/plug	RN Modem connector
W204P1	FREQ STAND J2
W312P2	RADIO J1
W3llP1	CONTROL BUS J3
W306P2	KG-84 J4
W109P1	PWR IN J5

4-52

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

    i. TT PS

<div style="text-align:center">

REMOVAL AND REPLACEMENT OF TT PS (Cont.)

REPLACEMENT (Cont.)

WARNING

</div>

The TT PS weighs 62 lbs. There is no stop on mounting tray. Two-person lift required. Failure to use two-person lift may cause personal injury.

STEP
  1   Perform terminal power-off sequence (para 2-8i).

STEP
  2   On the TT PS, disconnect vehicle input power cable W100 (or applicable ac power cable W101/W102) from PWR IN connector.

STEP
  3   Loosen 2 thumbscrews and allow clamp to fall free of TT PS. To prevent possible mechanical binding, loosen thumbscrews evenly (that is, do not loosen one thumbscrew all the way before loosening the other thumbscrew).

STEP
  4   Loosen two clamp bolt assemblies to free TT PS from its mount.

      •   Loosen knobs.

      •   Slide collars off of hold down hooks and allow clamp bolt assembly to fall free Remove TT PS from its mount.
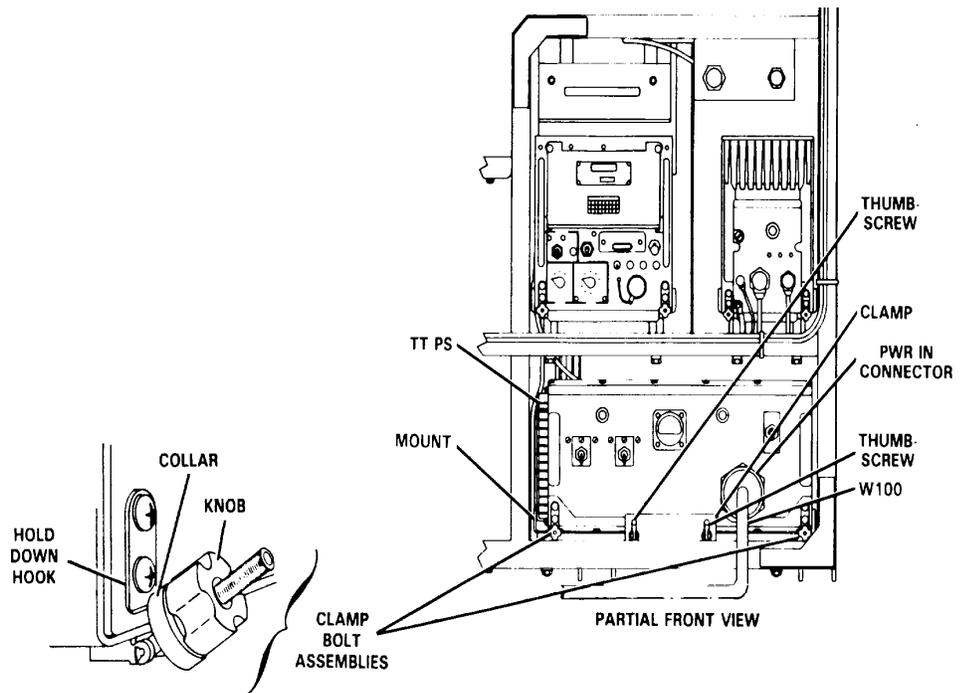
<div style="text-align:center">**4-53**</div>

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF TT PS(Cont.)

REPLACEMENT (Cont.)

STEP
1   Ensure terminal is powered-off. On the TT PS, ensure DC (or AC as applicable) ON-OFF switch is set to OFF.

STEP
2   Place the TT PS on its mount and slide to the rear; ensure TT PS connector P1 (located on rear of TT PS) interfaces with connector J1 on power junction unit.

REAR VIEW
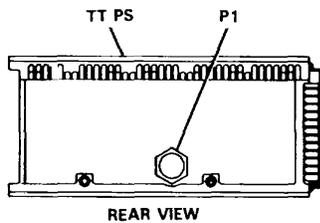
STEP
3   Tighten 2 clamp bolt assemblies as follows:

- Slide collars onto hold down hooks on TT PS.

- Tighten knobs.

STEP
4   Lift clamp in place and tighten 2 thumbscrews. To prevent possible mechanical binding, tighten thumbscrews evenly (that is, do not tighten one thumbscrew all the way before tightening the other thumbscrew).

PARTIAL FRONT VIEW

STEP
5   On TT PS, connect vehicle input power cable W100 (or user supplied auxiliary power cable) to PWR IN connector.

4-54
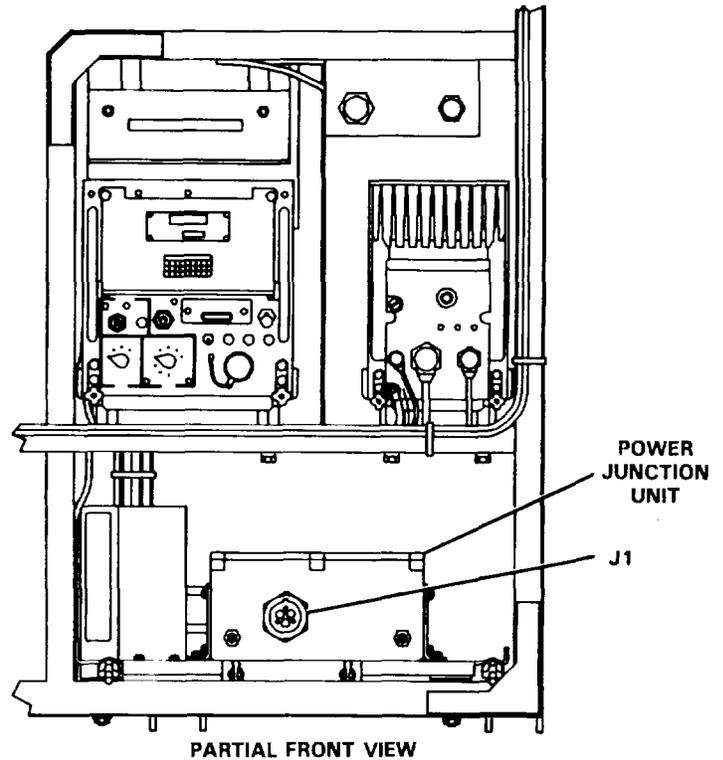
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS (Cont.)

j. RFO.

| REMOVAL AND REPLACEMENT OF RFO (Cont.) |

| REMOVAL |

| WARNING |

The RFO weighs 40 lbs. Two-person lift required. Failure to use two-person lift may cause personal injury.

NOTE

If you want to retain TOD while RFO is removed from the rack, leave the RESET-OFF switch in the RESET position. This enables keep-alive batteries in the RFO to retain TOD for approximately 15 minutes.

STEP
1   Perform terminal power-off sequence (para 2-8i).

STEP
2   On RFO front panel, disconnect cable plugs W106P1, W203P1, and W301P1 from +27 VDC POWER connector, 10 MHZ OUT connector, and SYSTEM INTERFACE connector in that order.

STEP
3   Loosen 2 thumbscrew clamps on lower front of RFO and allow to fall free of unit.

STEP
4   Remove RFO from its mount.
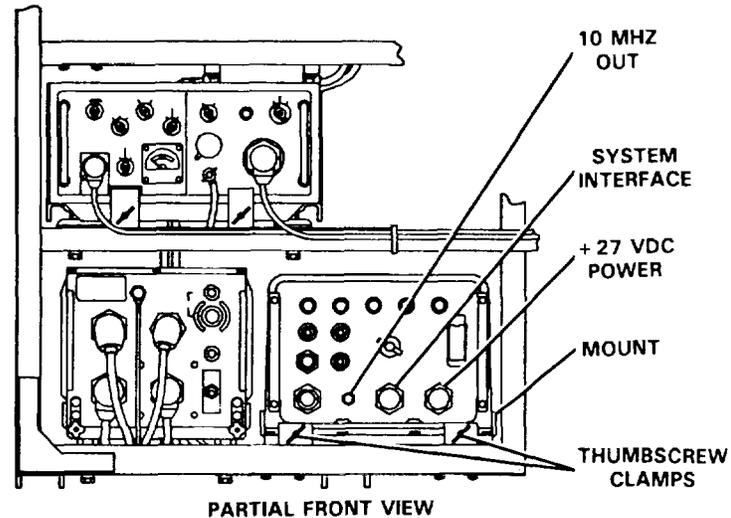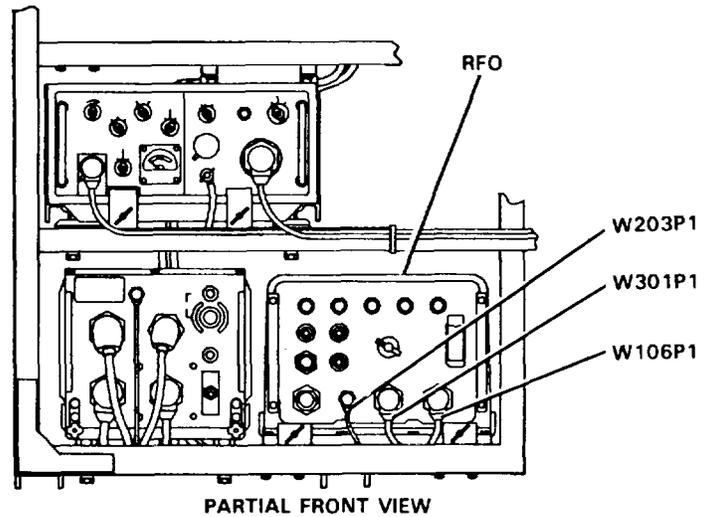
4-55

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

| REMOVAL AND REPLACEMENT OF ATU (Cont.) |

| REPLACEMENT (Cont.) |

NOTE

The RESET-OFF switch on the replacement RFO may have been set to the RESET position to retain TOD. If this is the case, do not set RESET-OFF switch to OFF position.

STEP
 1   Ensure terminal is powered-off. On RFO, ensure RESET-OFF switch is set to OFF.

STEP
 2   Place RFO on its mount.

STEP
 3   Secure RFO to its mount by tightening 2 thumbscrew clamps.

STEP
 4   Connect cables to RFO front panel as follows:

Cable/plug	RFO connector
W106PI	+27 VDC POWER
W203P1	10 MHZ OUT
W301P1	SYSTEM INTERFACE

4-56

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF I/O UNIT

REMOVAL

WARNING

The I/O Unit weighs 50 lbs. Two-person lift required. Failure to use two-person lift may cause personal injury.

STEP
1   Perform terminal power-off sequence (para 2-8i).

STEP
2   On I/O Unit front panel, disconnect WllOP1, W305P1, and W310P1 from POWER J1 connector, KG-84 DATA J4 connector, and CONTROL DATA J2 connector respectively.
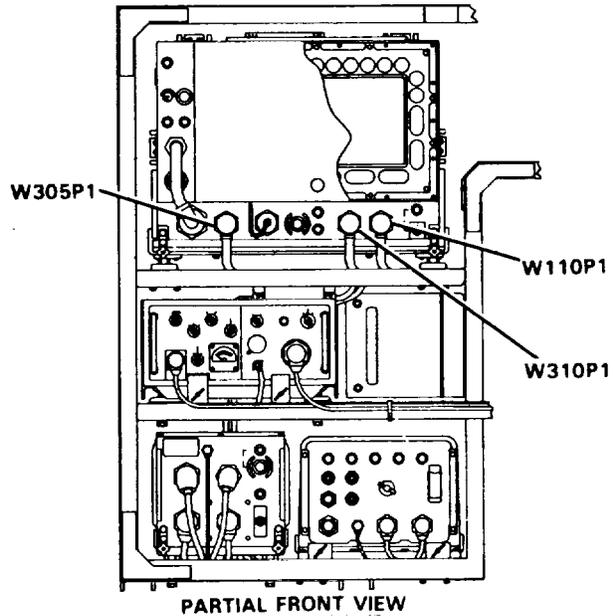
STEP
3   Loosen 2 clamp bolt assemblies to free I/O Unit from its mount.

- Loosen knobs.

- Slide collars off of hold down hooks and allow clamp bolt assembly to fall free of I/O Unit.

4-57
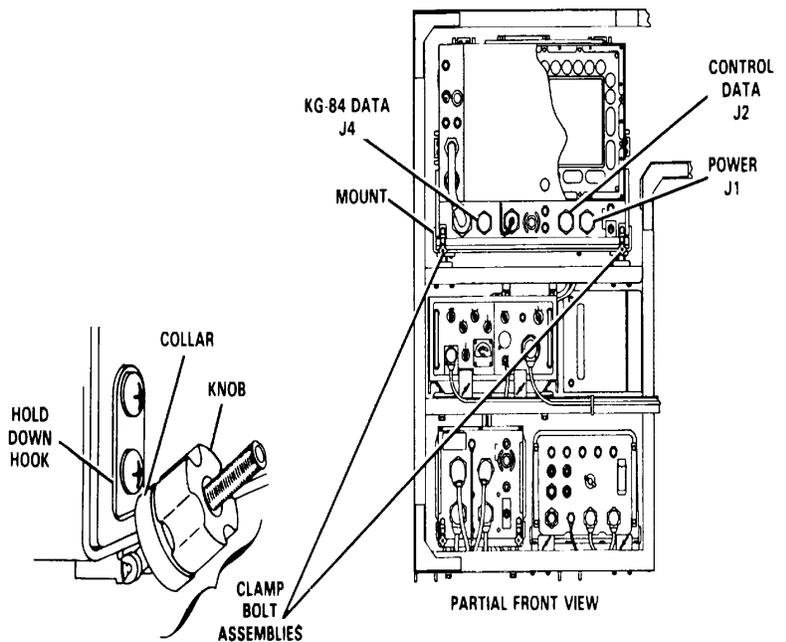
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

| REMOVAL AND REPLACEMENT OF I/O UNIT (Cont.) |

| REMOVAL (Cont.) |

STEP
4   Remove I/O Unit from its mount.

| REPLACEMENT |

STEP
1   Ensure terminal is powered-off. On I/O Unit, ensure POWER ON switch is set to off (down) position.

STEP
2   Place I/O Unit on its mount.

STEP
3   Secure I/O Unit to its mount by tightening 2 clamp bolt assemblies as follows:

•   Slide collars onto hold down hooks on I/O Unit.

•   Tighten knobs.

STEP
4   Connect cables to I/O Unit front panel.

Cable/plug	I/O Unit connector
W11OP1	POWER J1
W205P1	KG-84 DATA J4
W310P1	CONTROL DATA J2

4-58

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF WHIP ANTENNA

REMOVAL

I. Whip Antenna

STEP
1   Perform terminal power-off sequence (para 2-8i).

STEP
2   Slide insulator boot above the Whip Antenna base section. Remove the base section (turn counterclockwise) from the Antenna Base.

STEP
3   Disassemble 4 sections of the Whip Antenna.
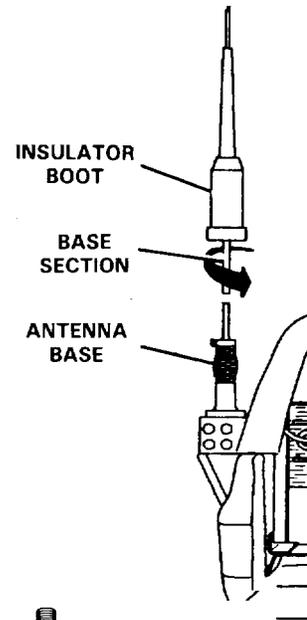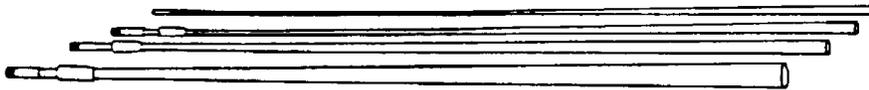
STEP
4   Loosen 4 captive screws securing antenna mount access cover. Remove access cover.

STEP
5   Using 1/2 in. socket wrench, remove and retain hex nut securing antenna cable W1 to Antenna Base.
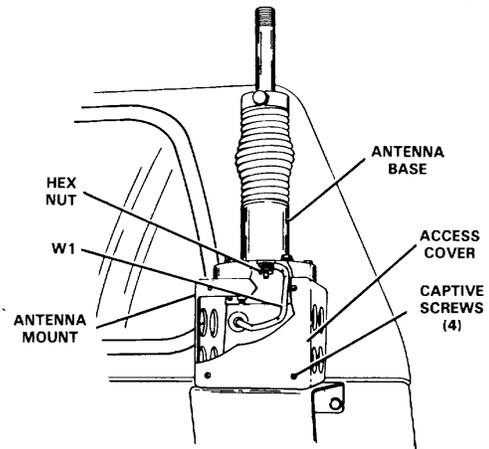
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF WHIP ANTENNA (Cont.)

REMOVAL (Cont.)

STEP
6   Using 9/16 in.   Socket wrench, remove and retain 4 mounting bolts, lockwashers and flatwashers.   Remove Antenna Base from antenna mount.

REPLACEMENT
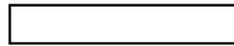
STEP
1   Using 9/16 in.   socket wrench, secure Antenna Base to antenna mount by tightening 4 mounting bolts, lockwashers and flatwashers retained in removal step 6.

STEP
2   Using 1/2 in. socket wrench, secure antenna cable W1 to Antenna Base by tightening hex nut retained in removal step 5.

STEP
3   Secure access cover to antenna mount by tightening 4 captive screws.

STEP
4   Assemble 4 sections of the Whip Antenna. Slide the insulator boot onto base section. Place the large threaded butt of the base section on Antenna Base and turn clockwise until secure. Do not over-tighten.
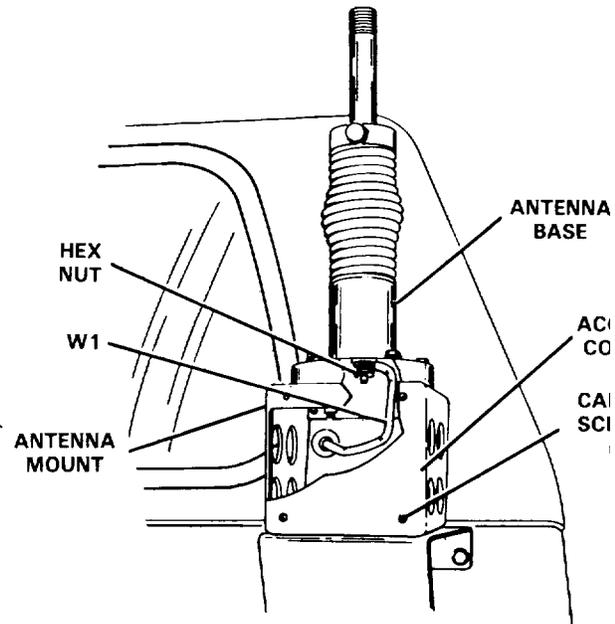
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

| REMOVAL AND REPLACEMENT OF WHIP ANTENNA (Cont.) |

| REPLACEMENT (Cont.) |

STEP
  5   Pull the antenna insulator boot over the spring section of the Antenna Base.

        m. Antenna Cable W1. Tool Kit, Electronic Equipment TK-101/G is required to remove and replace Antenna Cable W1.

| REMOVAL AND REPLACEMENT OF ANTENNA CABLE W1 |

| REMOVAL |

STEP
  1   Perform terminal power-off sequence (para 2-8i).

STEP
  2   Loosen 4 captive screws securing antenna mount access cover. Remove access cover.

STEP
  3   Using 1/2 in. socket wrench, remove and retain hex nut securing antenna cable W1 to Antenna Base.

4-61
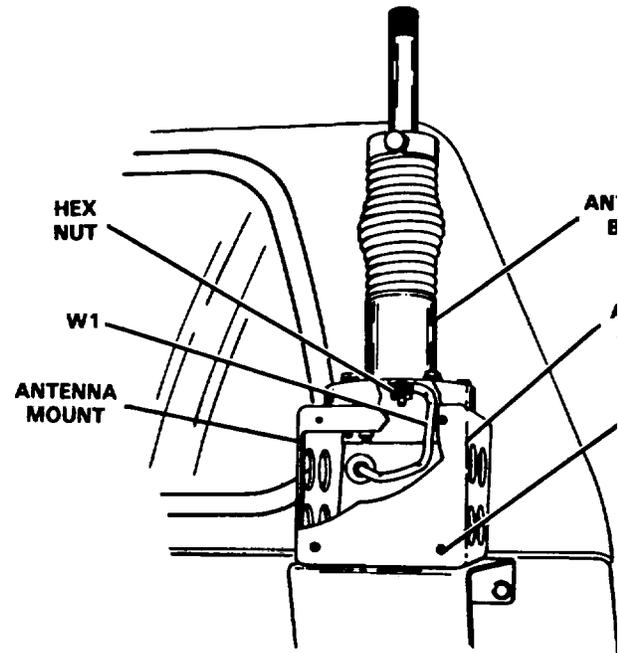
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF ANTENNA CABLE W1 (Cont.)

REMOVAL (Cont.)

STEP
4 Using cross-tip screwdriver, remove and retain cross-head screw securing antenna cable W1 to antenna matching capacitor on ATU. Carefully pull W1 out of the safety cap and then through vehicle wall and remove.
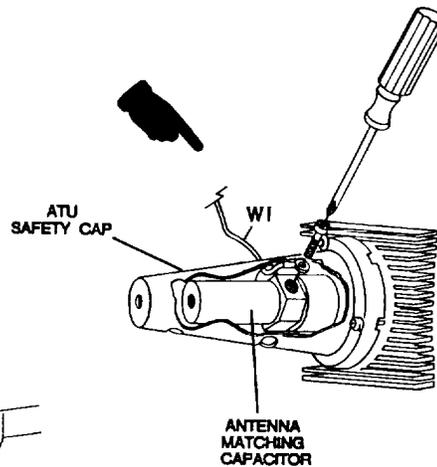
NOTE: Illustration shows connection to Matching Capacitor for whip antenna operation.
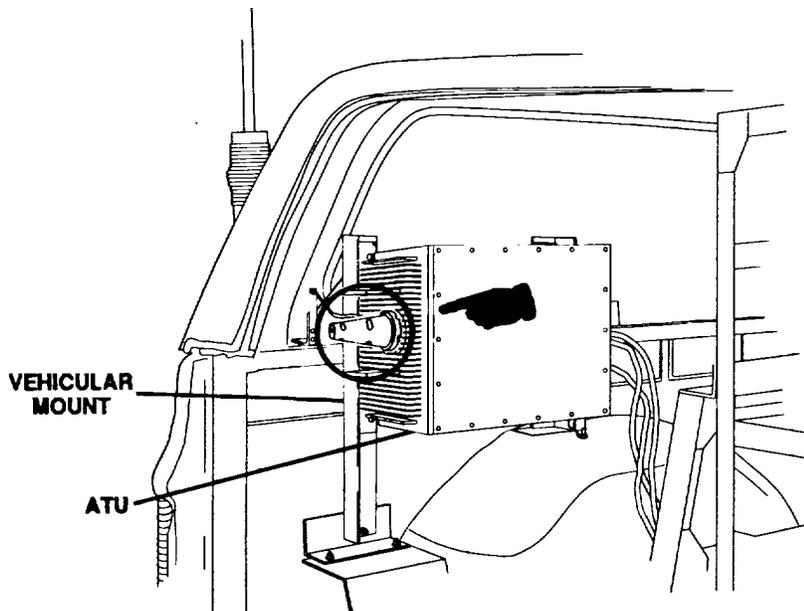
REPLACEMENT

STEP
1 Insert antenna cable W1 through the appropriate slot in the ATU Safety Cap and secure to the antenna matching capacitor on the ATU by tightening cross-head screw (retained in removal step 4).

STEP
2 Route antenna cable W1 through vehicle wall to Antenna Base. Using 1/2 in. socket wrench, secure antenna cable W1 to Antenna Base by tightening hex nut (retained in removal step 3).

STEP
3 Secure access cover to antenna mount by tightening 4 captive screws.

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

n.   Battery Case/Charger Batteries. Key set, socket head (metric) is required to remove and replace batteries in the battery case/charger.

| REMOVAL AND REPLACEMENT OF BATTERIES |

| REMOVAL |

| CAUTION |

This equipment contains components that are sensitive to damage by ESD. Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

STEP
1   Loosen four captive hex head screws ⃞1 in the Battery Case/Charger using 5mm hexagonal wrench.

FRONT VIEW
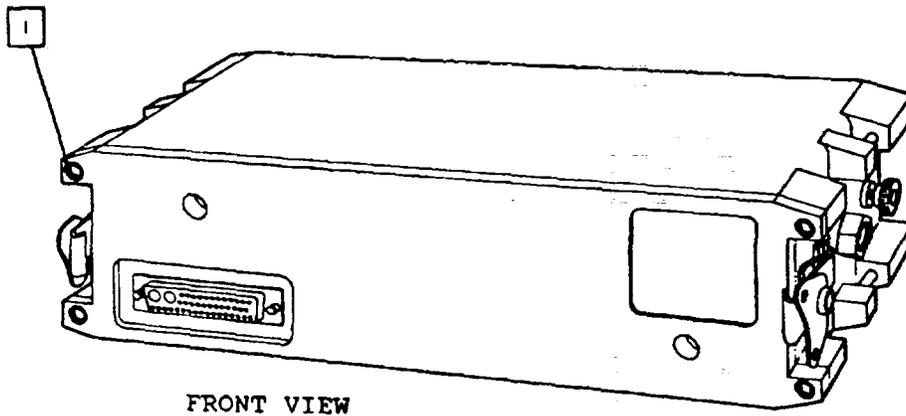
STEP.
2   Lift cover ⃞2 and carefully tilt back
STEP
3   Disconnect connectors J2 and J3 ⃞3 from batteries⃞4
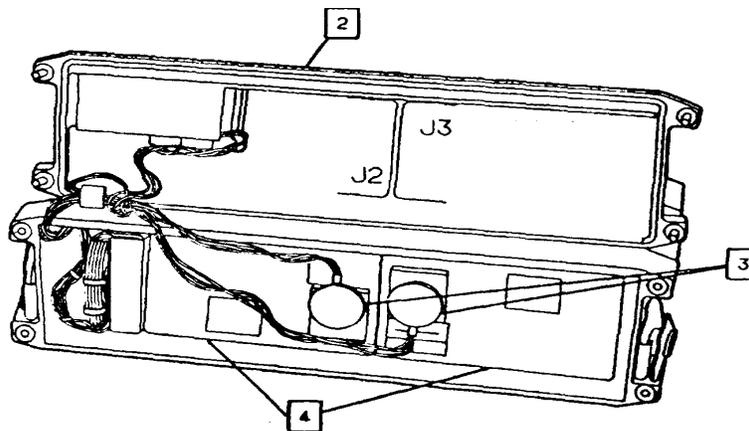
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF BATTERIES (Cont.)

REMOVAL (Cont.)

NOTE

Observe orientation of batteries 4 and position of connectors J2 and J3 before removing batteries.

STEP

4 Remove batteries 4 from Battery Case/Charger 5 .
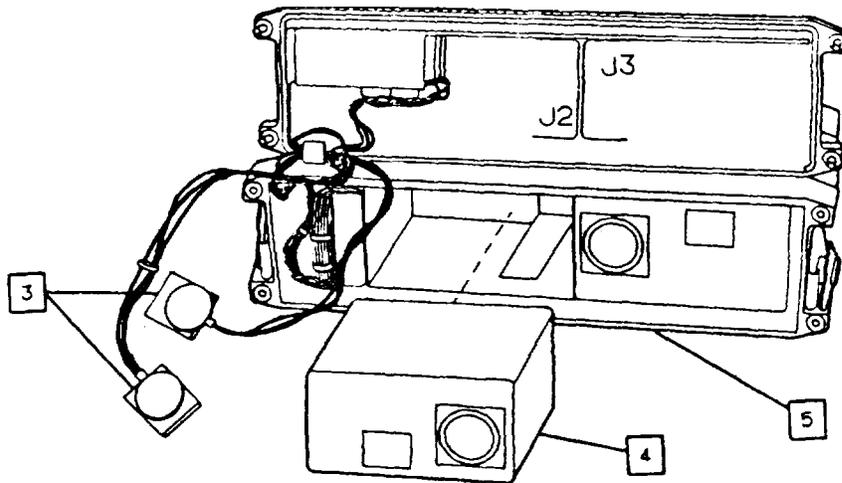
REPLACEMENT

STEP

1 Install batteries 4 into Battery/Case Charger 5

STEP

2 Reconnect connectors J2 and J3 3 to batteries 4

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

REMOVAL AND REPLACEMENT OF BATTERIES (Cont.)

REPLACEMENT (Cont.)

STEP

3   Carefully align cover ⬚2 with mounting holes on the Battery/Case Charger ⬚5 and secure by tightening four captive hex head screws ⬚1 .
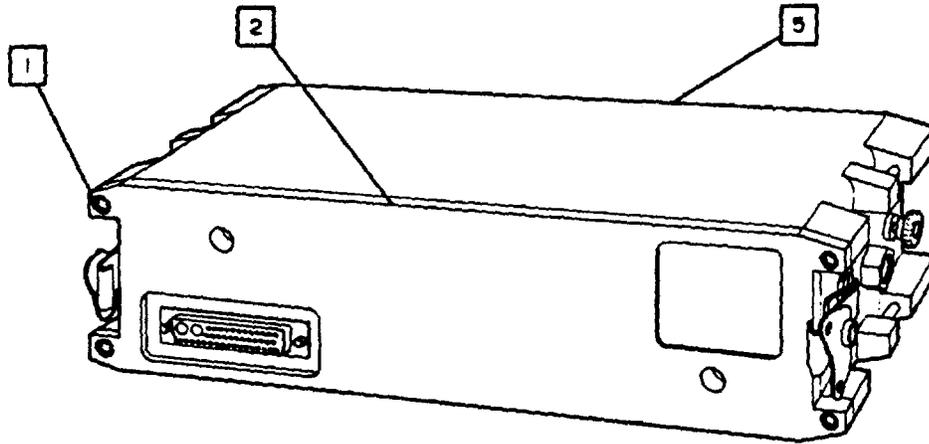
FRONT VIEW

Change 2 4-65

4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONETS

o. ATU Safety Cap and Matching Capacitor. Tool Kit, Electronic Equipment TK-101/G is required to install or remove the ATU safety cap or matching capacitor.

<div style="text-align:center;border:1px solid;display:inline-block">

INSTALLATION OF ATU SAFETY CAP

</div>

NOTE

The ATU Safety Cap is supplied with attaching hardware.

Once installed, the Safety Cap is not required to be removed during normal operation. When changing antenna configurations (i.e. whip to NVIS or vice versa), access holes have been provided in the Safety Cap to facilitate reconnection of antenna cable W1.

Prior to ATU SAFETY CAP installation, ensure power is off. Perform Terminal power-off sequence in accordance with para. 2-8i.

STEP
1   Remove the antenna cable W1 connection to the antenna matching capacitor. Retain the crosshead screw.
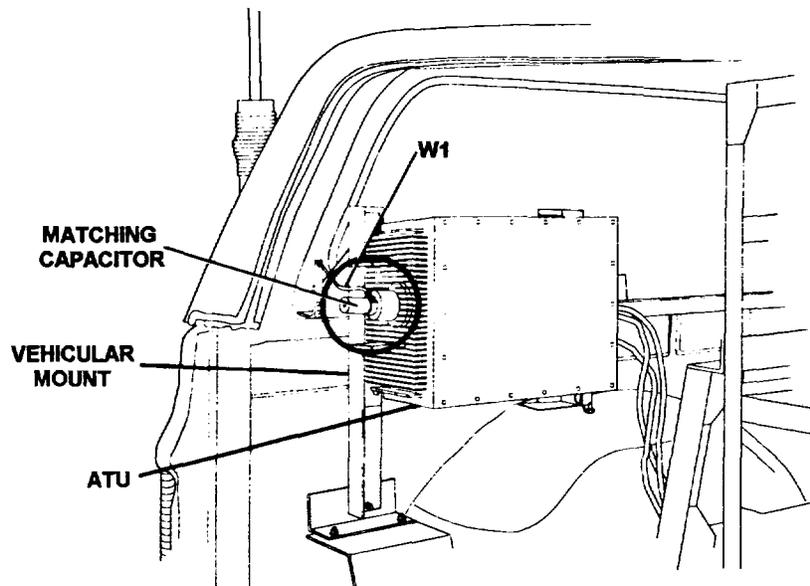
Change 2 4-66

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (con't)

INSTALLATION OF ATU SAFETY CAP (Cont)

NOTE

If an antenna matching capacitor is not already installed, it is recommended it be installed now so that the ATU safety cap will not have to be removed and re-installed later. Remove antenna cable W1 and attach the antenna matching capacitor by screwing it directly onto the existing antenna insulator. There are threaded holes at both ends of the matching capacitor. Position the 'nut' end of the capacitor against the antenna insulator

STEP

2   Attach 3ea screws, lock washers, and flat washers supplied with the ATU safety cap to the pre-threaded holes in the cap. The lockwasher should be placed between the screw head and the flat washer.
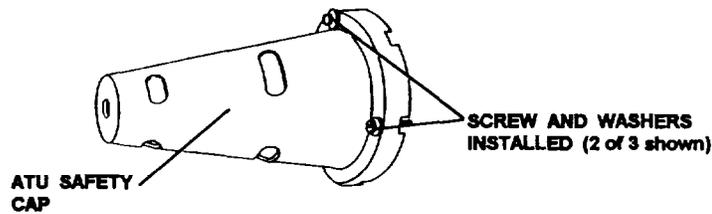
STEP

3   Temporarily position the safety cap over the matching capacitor and up against the ATU so that one of the three inner slots on the cap is over the inner screw hole of the matching capacitor. Identify those 3 screws securing the capacitor tuning assembly to the ATU frame that coincide with those on the safety cap.
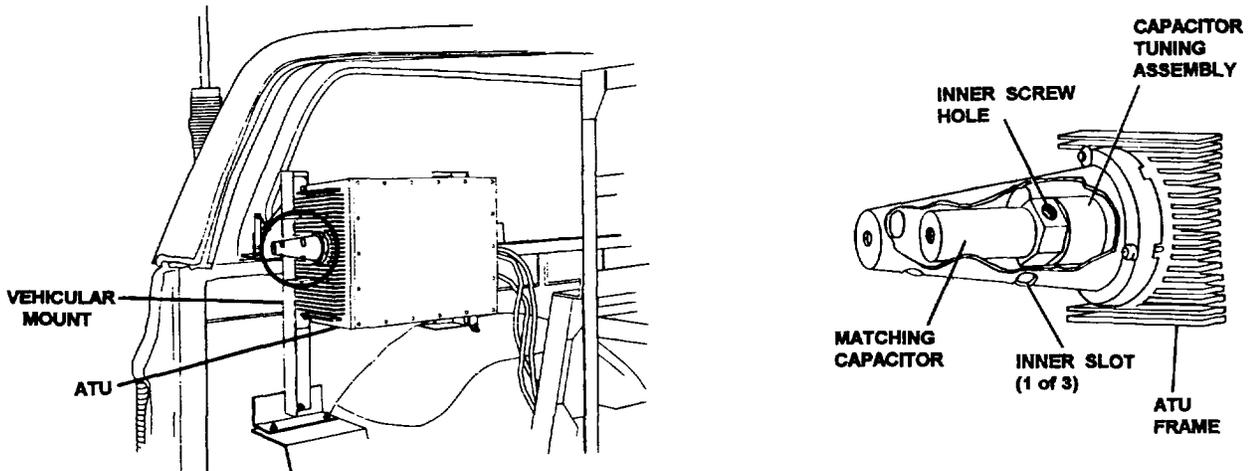
Change 2 4-67

1 4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (con't)

<div align="center">

INSTALLATION OF ATU SAFETY CAP (Cont.)

</div>

STEP

4 Remove and retain three of the six screws (identified in in step 3) securing the tuning capacitor assembly to the outer frame of the ATU.
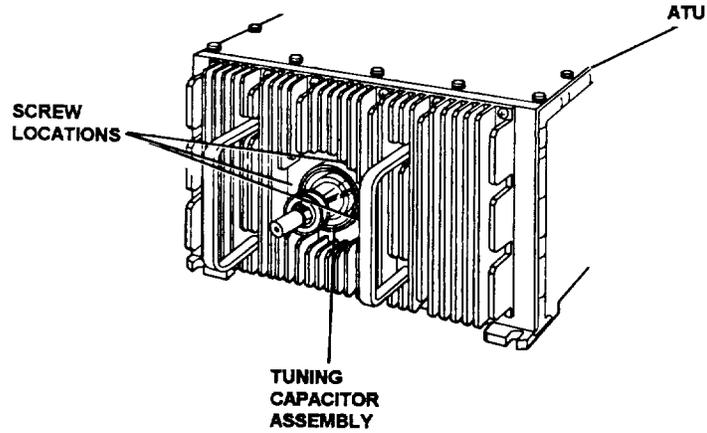
STEP

5 Position the Cap over the end of the matching capacitor and fasten securely to the ATU frame using the three captive screws on the cap.
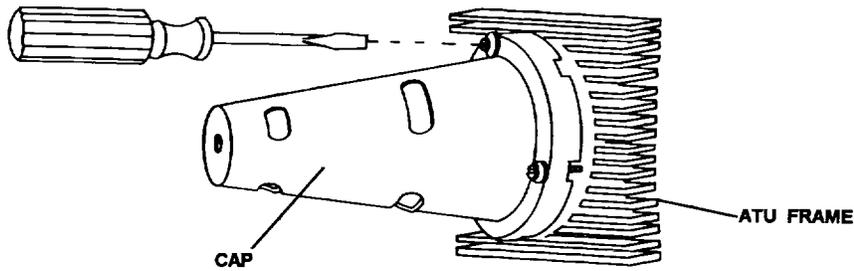
<div align="center">

Change 2 4-68

</div>

4-17.   REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (con't)

INSTALLATION OF ATU SAFETY CAP (Cont.)

STEP
6   Insert Antenna Cable (W1) into the outer slot for NVIS operation or the inner slot for whip operation. Using a screw driver, secure antenna cable (W1) to the matching capacitor using existing screw.
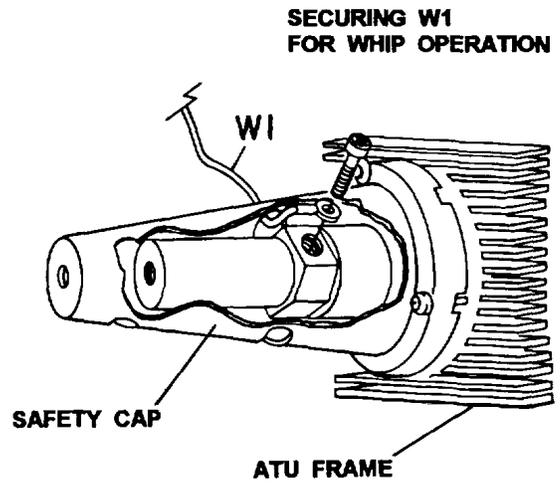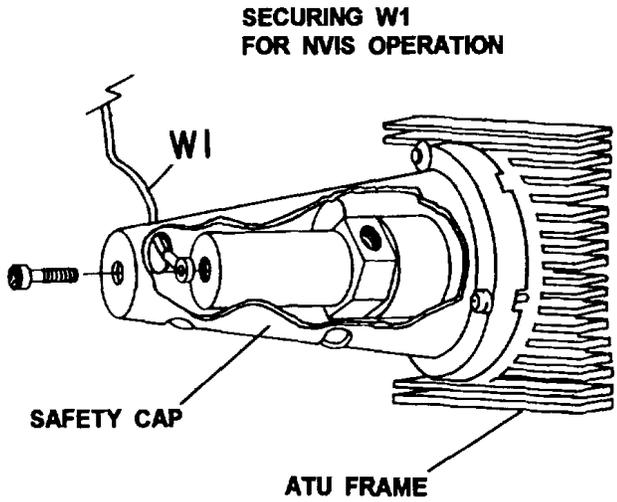
REMOVAL OF ATU SAFETY CAP

STEP
1   Perform Terminal power-off sequence (para 2-8i).

STEP
2   Using a cross-tip screwdriver, remove and retain cross-head screw securing antenna cable W1 to antenna matching capacitor on ATU. Carefully pull W1 out of the safety cap.

Change 2 4-69
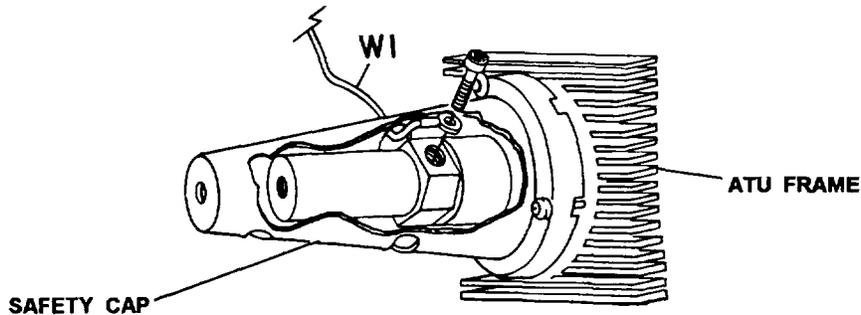
4-17. REMOVAL AND REPLACEMENT OF MAJOR COMPONENTS (con't)

<div style="border:1px solid black; display:inline-block; padding:4px;">

REMOVAL OF ATU SAFETY CAP (Cont.)

</div>

STEP

3 Using a screwdriver, remove and retain the 3 screws securing the safety cap to the ATU. This will free the safety cap from the ATU frame.
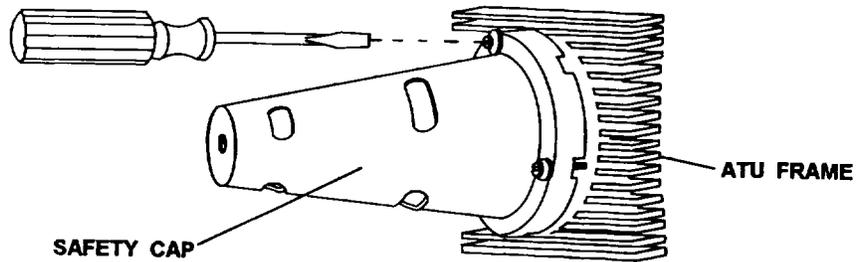
STEP

4 After the cap is removed, secure the 3 screws retained during cap installation (step 4 above) into the 3 vacant holes. This will completely secure the antenna tuning assembly to the ATU frame.

4-18. CLEANING

<div style="border:2px solid black; display:inline-block; padding:4px;">

CAUTION

</div>

Never use steel wool, scouring pads or powders, or harsh chemical agents, such as lye solution when cleaning your equipment.

Use a dry, clean, lint-free cloth, (item 1, Appendix E) or brush (item 2, Appendix E) to remove dust or dirt. If needed, moisten the cloth or brush with a mild solution of detergent or soap and water. After cleaning, wipe dry with a clean cloth.

Section VI.   PREPARATION FOR STORAGE OR SHIPMENT

4-19.   GENERAL

> **WARNING**
>
> Before shipment or inactive storage of 30 days or more, contact MMCT to remove batteries in the RFO or ECCM Module. Navy personnel contact Chief Watch Officer. Air Force personnel contact Maintenance Control.

     a.   Army. Before placing equipment in administrative storage, insure that equipment is operational. If operational, put into storage using appropriate corrosion control techniques. When removing from storage, again perform operational tests and Unit PMCS (if available) to determine mission capability.

     b.   Navy. Refer to NAVSUP PUB 503.

     c.   Air Force. Refer to AFM 66-267 (storage) and AFR 67-31 (shipment).

4-20.   MARKING

The marking on the exterior of the container shall be in accordance with MIL-STD-129H.

Change 2 4-71/(4-72 blank)

APPENDIX A

REFERENCES

A-1.   SCOPE

This appendix lists all publications that are referenced in this manual or that contain information applicable to the maintenance of the Team Terminal.

A-2.   PUBLICATIONS

Chemical, Biological, and Radiological (CBR)
     Decontamination.. .... TM 3-220

Consolidated Index of Army Publications and
     Blank Forms...DA PAM 25-30

Destruction of Army Electronics Materiel to Prevent
     Enemy Use...TM 750-244-2

Electrostatic Discharge Control Handbook
     for Protection of Electrical and Electronic
     Parts, Assemblies and Equipment
     (Excluding Initiated Explosive Devices)... DOD-HDBK-263

Hand Receipt Covering Content of Components
     of End Item (COEI), Basic Issue Items (BII),
     and Additional Authorization List (AAL) for
     Radio Set AN/GRC-215 (NSN 5895-01-156-0456).. TM 11-5895-1220-10-HR

Intermediate Direct Support and General
     Support Maintenance Manual for
     Radio Set AN/GRC-215 (NSN 5895-01-156-0456)...TM 11-5895-1220-34
                                                                                               EE160-RG-INM-010/WІІ0-GRC215
                                                                                                                 TO 31R2-2GRC215-2

Issue of Ships Maintenance and
     Material Managements (3-M) Manual.............. .... OPNAVINST 4790.4A

Maintenance Data Collection System..AFM 66-267

Naval Supply Publication 2002 Navy Stock
     List of Publications and Forms........................ ....…............NAVSUP 2002

Operator's, Organizational, Direct Support, and
     General Support Maintenance Manual for
     (Including Repair Parts and Special Tools List)I
     Antenna AS-2259/GR(NSN 5985-00-106-6130)....…..TM 11-5985-379-14&P

Change 2 A-1

A-2.   PUBLICATIONS (Cont.)

Operator's and Organizational Maintenance Manual
    (Including Repair Parts and Special Tools List)
    for Communications Security Equipment TSEC/KG-84A
    (NSN 5810-01-146-3260)...TM 11-5810-308-12&P

Operator's and Organizational Maintenance Manual
    (Including Repair Parts and Special Tools List)
    for Cryptographic Speech Equipment TSEC/KY-65
    (NSN 5810-01-050-2501), AC/DC Power Supply
    Z-AKE/TSEC (NSN 6310-01-050-9536), and Battery Pack
    Assembly Z-AKG/TSEC (NSN 5810-01-050-2498)...TM 11-5810-280-12&P

Operator's and Organizational Maintenance Manual
    for Communications Security Equipment KOI-18/TSEC,
    General Purpose Tape Reader, KYK-13/TSEC, Electronic
    Transfer Device, KYX-15/TSEC, Net Control Device,
    and KYX-15A/TSEC, Net Control Device..TM 11-5810-292-12

Operating and Troubleshooting Guide
    for Regency NetVol.2
    Communications Terminals AN/TRC-179(V)l & 3
    and Radio Set AN/GRC-215.................... .... TB 11-5895-1218-12-2
                                                                                    Navy EE150-LQ-OMI-020/AN/TRC179Vl
                                                                                    Air Force TO 31R2-2TRC179-21-2

Packing Instructions................................ .... NAVSUP PUB 503

Packing, Packaging and Handling
    of Electronic Equipment.. MIL-E-17555H

Preservation, Packaging, and Packing of Military
    Supplies and Equipment Volume 2.................... .... NAVSUP PUB 503

Release for Shipment of Ground Communication
    Electronic Cryptographic Equipment.. AFR 67-31

Reporting of Item and Packing Discrepancies......SECNAVINST 4355.18

Reporting of Transportation Discrepancies
    and Shipment................................... ....NAVSUPINST 4610.33C

Safety Measures to be Observed when Installing and
    Using Whip Antennas, field-type Masts, Towers, Antennas,
    and Metal Poles that are used with Communication, Radar,
    and Direction Finder Equipment..…...........TB 43-0129

System Network Manager Planning Guide
    for Regency Net (S)Vol.1
    Communications Terminals AN/TRC-179(V)1 & 3
    and Radio Set AN/GRC-215............ ....TB 11-5895-1218-12-1
                                                                                    Navy EE150-LQ-OMI-030/(S)AN/TRC179V1
                                                                                    Air Force TO 31R2-2TRC179-21-1 '--

A-2. PUBLICATIONS (Cont.)

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

Unit Maintenance Repair Parts and Special Tools
     List for Radio Set AN/GRC-215
     (NSN 5895-01-156-0456).. TM 11-5895-1220-20P
                                                     EE160-RG-MIB-010/Wl10-GRC215
                                                              TO 31R2-2GRC215-4

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Modem, Digital Data MD-1204/G
     (NSN 5895-01-210-5235)..TM 11-5895-1307-24
                                                   EE163-HK-MMI-010/Wl10-MD1204
                                                      TO 31R2-4-585-2

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Converter CV-3968/GRC-215...TM 11-5895-1309-24
     (NSN 5895-01-205-0654)   EE162-FG-MMI-010/Wl10-CV3968
                                                    TO 31R2-2GRC215-22

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Oscillator, Frequency Reference 0-1836/G
     (NSN 5895-01-205-0643)..TM 11-5895-1312-24
                                                   EE169-KL-MMI-010/Wl10-01836
                                                   TO 31R2-4-564-2

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Controller, Receiver-Transmitter C-11670/G
     (NSN 5895-01-205-0662)..TM 11-5895-1315-24
                                                   EE005-FG-MMI-010/Wl10-C11670G
                                                     TO 31R2-4-567-2

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Receiver-Transmitter, Radio RT-1511/GRC-215
     (NSN 5895-01-205-6180)..TM 11-5895-1318-24
                                                   EE150-LS-MMI-010/Wl10-RT1511
                                                  TO 31R2-2GRC215-42

Unit, Intermediate Direct Support, and
     General Support Maintenance Manual for
     Amplifier, Power AM-7301/GRC-215
     (NSN 5895-01-205-0884)..TM 11-5895-1319-24
                                                   EE020-FH-MMI-010/Wll0-AM7301
                                                  TO 31R2-4-574-2

A-2.   PUBLICATIONS (Cont.)

Unit, Intermediate Direct Support, and
    General Support Maintenance Manual for
    Power Supply PP-8170/GRC-215
    (NSN 5895-01-205-0824)..TM 11-5895-1320-24
        EE010-JM-PLD-010/WI10-PP8170
        TO 31R2-2GRC215-62

Unit, Intermediate Direct Support, and
    General Support Maintenance Manual for
    Input-Output Unit MX-10819/GRC-215
    (NSN 5895-01-205-0655)..TM 11-5895-1322-24
        EEI19-ND-MMI-010/WI10-MX10819
        TO 31R2-2GRC215-32

Unit, Intermediate Direct Support, and
    General Support Maintenance Manual for
    Coupler, Antenna CU-2351/GRC-215
    (NSN 5895-01-205-0878)..TM 11-5895-378-24
        EE111-LM-MMI-010/WI10-CU2351
        TO 31R2-4-579-2

Unit, Intermediate Direct Support, and
    General Support Maintenance Manual for
    Mounting Base, Electrical Equipment
    MT-6452/GRC-215
    (NSN 5895-01-207-8991)..TM 11-5895-1321-24
EE005-LC-MMI-010/WI10-MT6452
TO 31R2-2GRC215-52

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1.   GENERAL

This appendix provides a summary of the maintenance operations for Radio Set AN/GRC-215. It authorizes levels of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2.   MAINTENANCE FUNCTION

Maintenance functions will be limited to and defined as follows:

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 and to detect incipient failure 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 (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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

e.   Aline. 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 equipment 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, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

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

B-1

i.   <u>Repair</u>. The application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachin-   M ing, or resurfacing) to restore serviceability to an item by correc-ting specific damage, fault, malfunction, or failure in a part, sub-assembly, module (component or assembly), end item, or system.

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

k.   <u>Rebuild</u>. Consists of those services/action 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 equipments/components.

B-3.   COLUMN ENTRIES

a.   <u>Column 1, Group Number</u>. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b.   <u>Column 2, Component/Assembly</u>. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c.   <u>Column 3, Maintenance Functions.</u> Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d.   <u>Column 4, Maintenance Level</u>. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level 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 level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each category. The number of task-hours specified by the work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time 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. Sub-columns of column 4 are as follows:

UNIT

C - Operator/Crew
O - Organizational/Unit

INTERMEDIATE

F - Direct Support
H - General Support
L - Specialized Repair Activity (SRA)

DEPOT

D - Depot

e.   Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f.   Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4.   TOOL AND TEST EQUIPMENT REQUIREMENTS (Sect. III)

a.   Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b.   Maintenance Level. The codes in this column indicate the maintenance level allocated to use the tool or test equipment.

c.   Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d.   National/NATO Stock Number. This column lists the National/ NATO stock number of the specific tool or test equipment.

e.   Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5.   REMARKS (Sect. IV)

a.   Reference Code. This code refers to the appropriate item in section II, column 6.

b.   Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

B-3

Section II. MAINTENANCE ALLOCATION CHART

FOR

RADIO SET AN/GRC-215

(1)	(2)	(3)	(4)					(5)	(6)
GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE LEVEL					TOOLS AND EQUIPMENT	REMARKS
			C	O	F	H	D		
00	Radio Set AN/GRC-215 (A3023743)	Install Test Repair Calibrate Test Repair Overhaul		0.1 0.5		2.0 0.5 1.0 1.0 120.0		2 12 1,11,13,14,19 8,9 3-6 2,10,11,19,20	V A,B A C D TBD
01	Antenna Assembly AS-3809/G (A3034093) E2	Install Replace Repair	0.3	0.5 0.1				1	E
02	Receiver/Transmitter, Radio RT-1511/GRC-215 (A3023795) A1	Replace Repair		0.1				1	F
03	Mounting Base, Elect. Equipment MT-6452/GRC-215 (A3023796) A2	Replace0.21 Repair							G
04	Amplifier, Power AM-7301/GRC-215 (A30O23797) A3	Replace Repair		0.1				1	H
05	Battery Case/Charger (A3023798) A14	Replace Repair Test Repair		0.05 0.1		1.0 1.0		11,14 3-6,18 2,7,10,14,18	I J
0501	Battery Case Assembly Repair (A3030350) A14A1					1.0			K
050101	Circuit Card Assembly, Battery Case (A3031535) A14A1A1	Replace Repair				0.5 1.0		2,18	K
06	Coupler, Antenna CU-2351/GRC-215 (A3023799) A4	Replace Repair		0.2				1	L
07	Converter CV-3968/GRC-215 (A3023801) A13	Replace Repair		0.05					M
07	Harness, Electrical (A3023804)	Replace Repair		0.05		0.5		2	
08	Modem, Digital Data MD-1204/G (A3023769) A8	Replace Repair		0.1					N
09	Power Supply PP-8170/GRC-215 (A3023808) A9	Replace Repair		0.1				1	O

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

RADIO SET AN/GRC-215

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
10	Oscillator, Reference Frequency 0-1836/G (A3023762) A10	Replace Repair		0.1				1	 P
11	Rack/Pallet Assembly (A3023810) All	Test Repair				1.0 1.0		3 2,15,16	
1101	Power Junction Assy. (A3023815) A11A1	Repair				1.0		2,15,16	K
1102	Mount, Controller (A3023816)	Replace Repair				0.5 1.0		2 2	
1103	Mount, RFO (A3023817)	Replace Repair				0.5 1.0		2 2	
1104	Mount, Modem (A3023818)	Replace Repair				0.5 1.0		2 2	
1105	Mount Assy., PDU (A3023952)	Replace Repair				0.5 1.0		2 2	
1106	Control Junction Unit (A3028234) AllA2	Repair				1.0		2,15,16	K
1107	Bypass Assy., KG-84A (A3029355)	Repair				0.5		2	
1108	Plenum Assembly, Fan (A3032075)	Repair				1.0		2	
1109	Stowage Box Assembly (A3078159)	Repair				0.5		2	
12	I/O Unit MX-10819/GRC-215 (A3023811) A12	Replace Repair	0.1						 Q
13	Vehicle Installation Kit MK-2211/GRC-215 (A3023812)	Repair	0.5						
14	Cable Assembly, Power, Elec. CX-13348/GRC-215 (A3023949)	Replace Test Repair		0.1		0.5 0.5		1 3 2	
15	Adapter, Antenna MX-9313/GR	Install Replace	0.1	0.1					
16	Antenna, NVIS AS-2259/GR	Install Replace Repair	0.5	0.5				1,17 1,17	 R

SECTION II. MAINTENANCE ALLOCATION CHART

FOR

RADIO SET AN/GRC-215

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
17	TSEC/Battery Pack Z-AKGITSEC	Replace Repair		0.1					T
18	Key Generator, Electronic TSEC/KG-84A	Replace Repair		0.1				1	S
19	COMSEC Device TSEC/KY-65A	Replace Repair		0.1					T
20	AC/DC Power Supply TSEC Z-AKE/TSEC Assy.	Replace Repair		0.1					T
21	Cable Assembly and Reel CG-3883/G (A3034219)	Replace Repair Test		0.05 0.1 0.05				1 3	

SECTIN III. TOOL AND TEST EQUIPMENT REQUIREMENTS

FOR

RADIO SET AN/GRC-215

REF. CODE	MAINT. LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL* NUMBER
1	0	Tool Kit TK-101/G	5180-00-064-5178	
2	H	Tool Kit, Elec. TK-17 (Incl. Metric)	5180-01-195-0855	JENSEN JTK-17RM
3	H	Multimeter, Digital AN/USM-486	6625-01-145-2430	FLUKE 8050A-01
4	H	Oscilloscope AN/USM-488	6625-01-187-7847	TEK 2235L
5	H	Power Supply PP-8202/G *	6130-00-160-0827	HP-6274B
6	H	Test Set, Battery Set TS-4253/GRC-215	6625-01-263-5488	MX 950577-801
7	H	Maintenance Kit, PCB MX-10897/G	5895-01-267-9473	Pace Model RNR PIN 8007-0117
8	O,H	Cable Assembly (TOD) and Reel CG-3883/G (50 ft.)	5995-01-326-0142	A3034219
9	H	Receiver, Radio R-2171/TRC **	5820-01-097-2501	MX-1102TR
10	H	Repair Kit, PCB MK-772/U	5999-00-757-7042	
11	O,H	Static Control Service Kit	4940-01-168-2044	3M 8012
12	0	Multimeter, Digital AN/PSM-45A	6625-01-265-6000	FLUKE 27/FM
13	0	Screwdriver Set, Torque (1-30 in-lb)	5120-00-127-2525	EDP 85002-00
14	O,H	Key Set, Socket Head (Metric)	5120-01-112-9599	
15	H	Removal Tool, Buss Terminal	5120-01-097-5219 5120-01-232-0023	DEUTSCH CTJ-R06 CTJ-R12
16	H	Insertion/Removal Tools, Pin *** (as appropriate)		
17	C,O	Hammer, Hand 2.5 lb.	5120-00-203-4856	EMHART 102DG
18	H	Workstation, Static	4940-01-087-3458	3M 8021
19	O,H	Pliers, Slip-Joint	5120-00-624-8065	
20	H	Puller, Fuse (Type I)	5120-00-224-9453	
		* PP-8214/G provides identical capability when source power is 230V, 50 cycle. Air Force use only.	6130-00-150-0028	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

FOR

RADIO SET AN/GRC-215

REF. CODE	MAINT. LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL* NUMBER
		** Timing Unit, Signal TD-1436/G provides identical TOD source during periods of satellite non-availability or denial.	6625-01-274-5052	
		*** Wire/contact tools for size 20, 16, and 12 wire.		
		Size 20	5120-00-915-4587	Deutsch M15570-20 M83723/31-20
		Size 16	5120-00-915-4588	Deutsch M15570-16 M83723/31-16
		Size 12	5120-00-132-5451	Deutsch 81515-12 MS3160-

SECTION IV. REMARKS

FOR

RADIO SET AN/GRC-215

REFERENCE CODE	REMARKS
A	Unit maintenance fault isolates and replaces defective 0-1836/G, PP-8170/GRC-215, AM-7301/GRC-215, CU-2351/GRC-215, C-11670/G, M/P Receiver-Exciter A3023805, TSEC/KY-65, TSEC/KG- 84A, Z-AKE/TSEC, Z-AKG/TSEC, MT-6452/GRC-215, Battery Case/ Charger A3023798 and fault isolates and replaces defective subassemblies/CCAs in the MD-1204/G and MX-10819/GRC-215. Unit maintenance also replaces the following non-repairable components: AS-3805/GRC-215, H-251/U, and H-356/G. Replaces rechargeable batteries (BB-590) in Converter and Battery Case Charger.
B	Built-In-Test (BIT) utilized to fault isolate to faulty LRU/subassembly.
C	Current GPS Time of Day (TOD) required to be entered into the 0-1836/G quarterly. In addition, the Rubidium Oscillator in 0-1836/G must be replaced every two years and calibrated at the SRA/depot. CG-3883/G required when obtaining TOD from another RFO.
D	General support repairs Rack/Pallet Assembly and Battery Case/Charger A3023798. G.S. also replaces and repairs cables. Extent of repair of some cables limited to availability of spare wire/pins already included in the connector. MMCT fault isolates the MT-6452/GRC-215 and replaces the Vehicle Adapter A3023796 and Fast Synthesizer A3024340. MMCT may also fault isolate the M/P Receiver/Exciter A3023805 and replace Front Panel, Synthesizer, RF Translator, and Audio Assembly subassemblies as determined by BIT.
E	Repair by replacement of Antenna elements AT-1039/U, AT-1040/U, AT-1041/U, AT-1042/U, and Base AB-1335/G.
F	Refer to TM 11-5895-1318-24 for Maintenance Allocation.
G	Refer to TM 11-5895-1321-24 for Maintenance Allocation.
H	Refer to TM 11-5895-1319-24 for Maintenance Allocation.
I	Repair limited to replacement of batteries.
J	Repair to piece part level.

Section IV. REMARKS

FOR

RADIO SET AN/GRC-215

REFERENCE CODE	REMARKS
K	Repair/test as part of next higher assembly.
L	Refer to TM 11-5895-378-24 for Maintenance Allocation.
M	Refer to TM 11-5985-1309-24 for Maintenance Allocation.
N	Refer to TM 11-5895-1307-24 for Maintenance Allocation.
0	Refer to TM 11-5895-1320-24 for Maintenance Allocation.
P	Refer to TM 11-5895-1312-24 for Maintenance Allocation.
Q	Refer to TM 11-5895-1322-24 for Maintenance Allocation.
R	Refer to TM 11-5895-379-14 for Maintenance Allocation.
S	Refer to TM 11-5810-308-23 for Maintenance Allocation.
T	Refer to TM 11-5810-280-12 for Maintenance Allocation
U	Does not include Base section.
V	Installation kit MK-2211/GRC-215 provides the necessary hardware to mount the AN/GRC-215 into a vehicle. Two pull-up tools for installation of rivets and a #45 TORX wrench is also required. Refer to TM 11-5895-1220-34.

Change 1 B-10

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the Team Terminal to help you inventory items required for safe and efficient operation.

C-2. GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. The listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are minimum essential items required to place the Team Terminal in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Team Terminal during operation and whenever it is transferred between property accounts. The illustra-tions will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/ MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS

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

a.   Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b.   Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisition purposes.

c.   Column (3) - Description. Indicates the federal item name and, if required, a minimum description to identify and locate the item.

C-1

The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs for different models of this equipment, the model is shown under the "Usable On" heading in this column. These codes are identified as:

Code	**Used On**
____	_____
____	_____
____	_____

    d.   Column (4) - Unit of measure (U/M).   Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

    e.   Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II.   COMPONENTS OF END ITEM
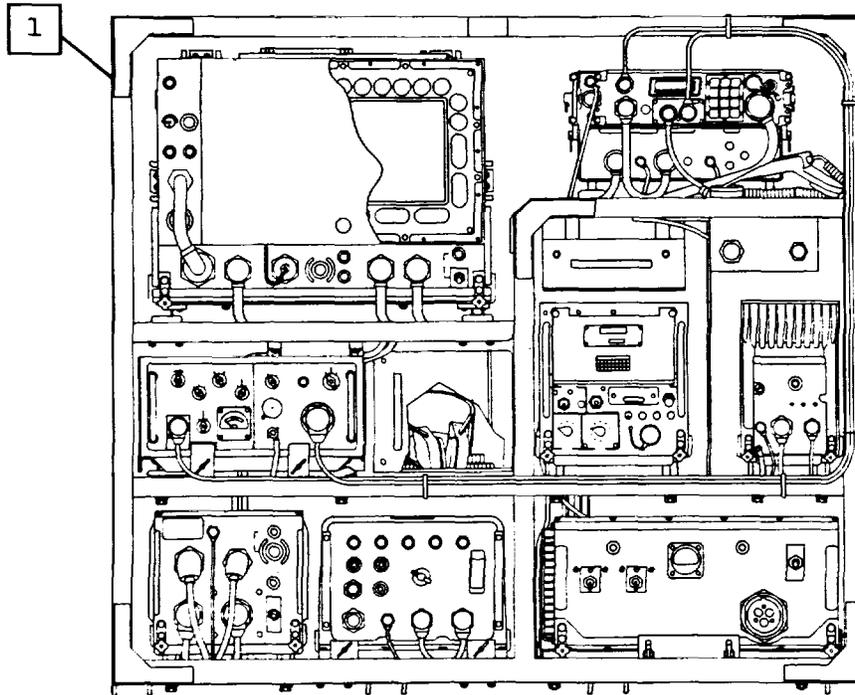
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
1	5895-01-156-0456 (80063) A3023743 CONSISTING OF:	RADIO SET, AN/GRC-215		EA	1

Section II.   COMPONENTS OF END ITEM (Cont.)
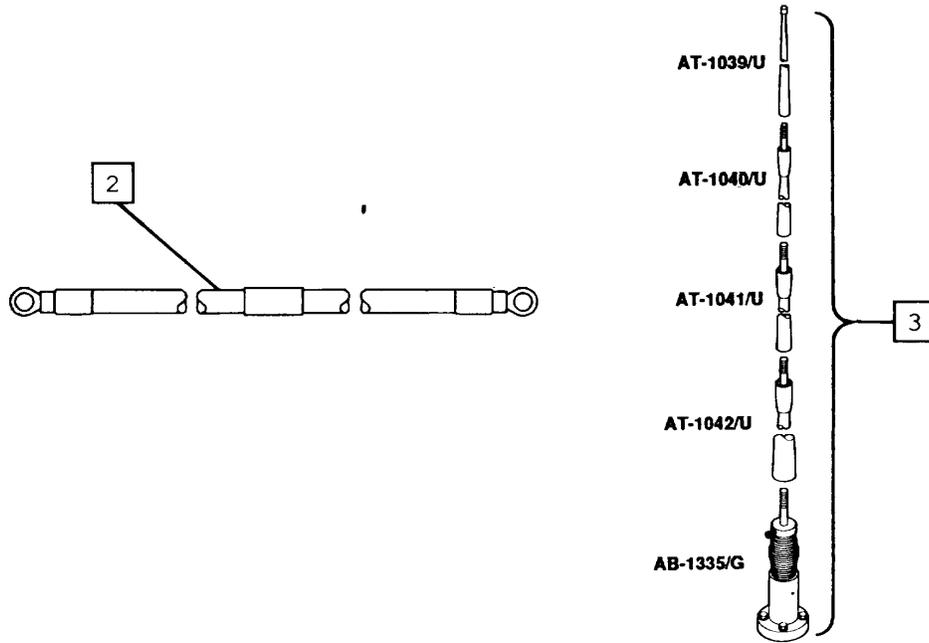
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
2	5995-01-267-4411	CABLE ASSEMBLY, RF CG-3873/GRC-215 (80063) A3023794		EA	1
3	5985-01-263-9901	ANTENNA ASSEMBLY AS-3809/G (80063) A3034093 consisting of:		EA	1
	5985-01-267-2752	BASE, ANTENNA AB-1335/G (80063) A3023749		EA	1
	5985-00-733-6042	ANTENNA ELEMENT AT-1039/U (80058)		EA	1
	5985-00-733-6043	ANTENNA ELEMENT AT-1040/U (80058)		EA	1
	5985-00-733-6044 (80058)	ANTENNA ELEMENT AT-1041/U		EA	1
	5985-00-733-6045 (80058)	ANTENNA ELEMENT AT-1042/U		EA	1

Section II.   COMPONENTS OF END ITEM (Cont.)
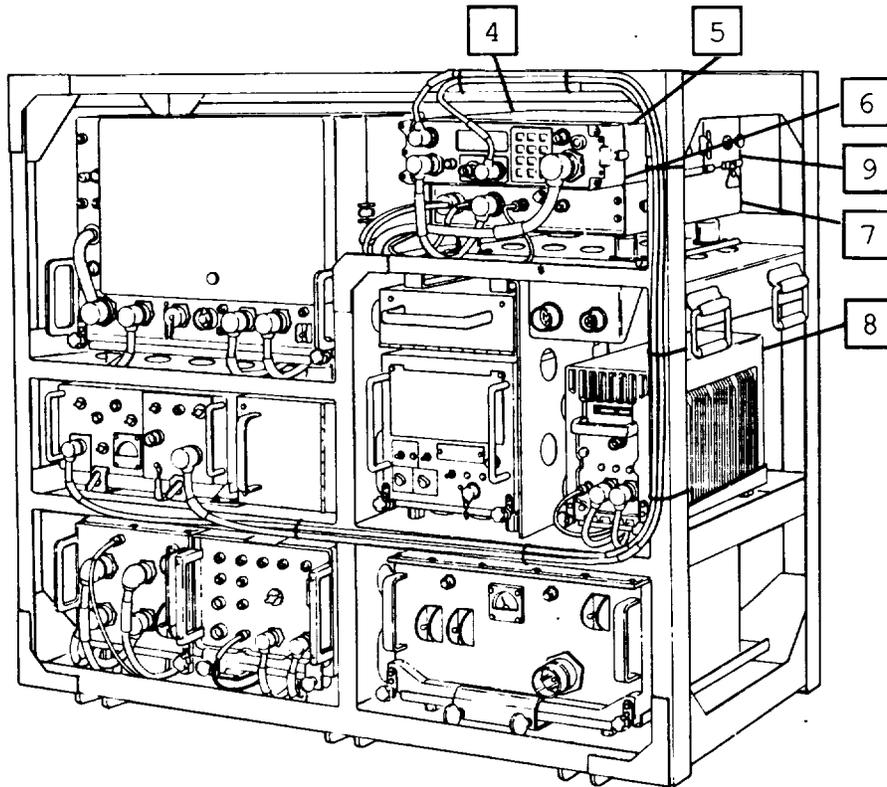
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
4	5895-01-278-8919	RECEIVER-TRANSMITTER, RT-1511/GRC-215 (80063) A3023795 consisting of:		EA	1
5	5895-01-205-6180	RECEIVER-EXCITER (80063) A3023805 and		EA	1
6	5895-01-205-0662	CONTROLLER, RECEIVER- TRANSMITTER (C-11670/G) (80063) A3023813		EA	1
7	5895-01-207-8991	MOUNTING BASE, ELECTRICAL EQUIPMENT MT-6452/GRC-215 (80063) A3023796		EA	1
8	5895-01-205-0884	AMPLIFIER, POWER AM-7301/GRC-215 (80063) A3023797		EA	1
9	6130-01-212-3264	BATTERY CASE, CHARGER (80063) A3023798		EA	1
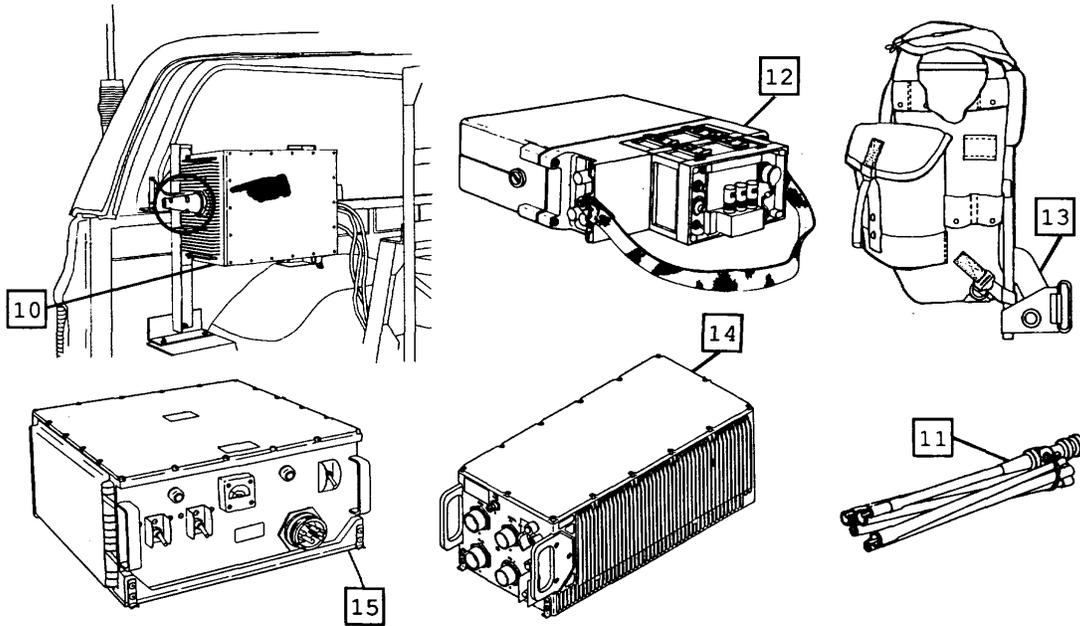
Section II.   COMPONENTS OF END ITEM (Cont.)

(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
10	5895-01-205-0878	COUPLER, ANTENNA CU-2351/GRC-215 (80063) A3023799		EA	1
11	5985-01-207-8989	ANTENNA ASSEMBLY AS-3805/GRC-215 (80063) A3023800		EA	1
12	5895-01-205-0645	CONVERTER CV-3968/GRC-215 (80063) A3023801		EA	1
13	5999-01-278-5202	HARNESS ASSEMBLY, CARRYING (ALICE PACK) (80063) A3023804		EA	1
14	5895-01-210-5235	MODEM, DIGITAL DATA MD-1204/G (80063) A3023769		EA	1
15	5895-01-205-0824	POWER SUPPLY PP-8170/GRC-215 (80063) A3023808		EA	1

Section II.   COMPONENTS OF END ITEM (Cont.)
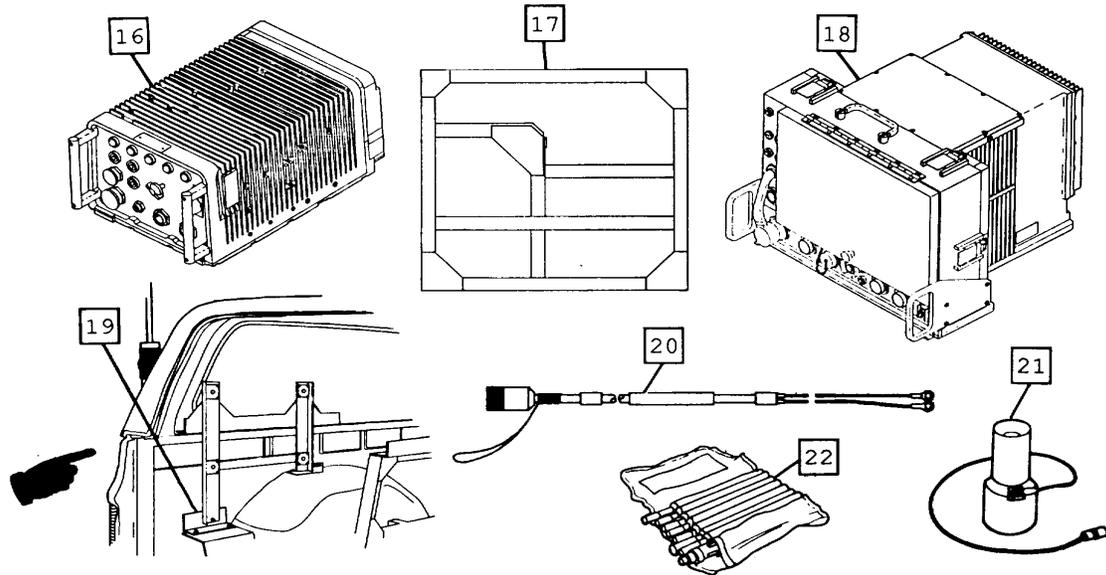
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
16	5895-01-205-0643	OSCILLATOR, FREQUENCY REFERENCE 0-1836/G (80063) A3023762		EA	1
17	5975-01-278-5197	RACK ASSEMBLY (80063) A3023810		EA	1
18	5895-01-205-0655	INPUT-OUTPUT UNIT, MX-10819/GRC-215 (80063) A3023811		EA	1
19	5895-01-274-4938	INSTALLATION KIT, VEHICLE MK-2211/GRC-215 (80063) A3023812		EA	1
20	5895-01-207-9086	CABLE ASSEMBLY, POWER, ELECTRICAL CX-13348/ GRC-215 (80063) A3023949		EA	1
21	5985-00-172-6518	ADAPTER, HF ANTENNA MX-9313/GR (80058)		EA	1
22	5985-00-106-6130	ANTENNA ASSEMBLY, NVIS AS-2259/GR (80058)		EA	1

Change 1 C-6
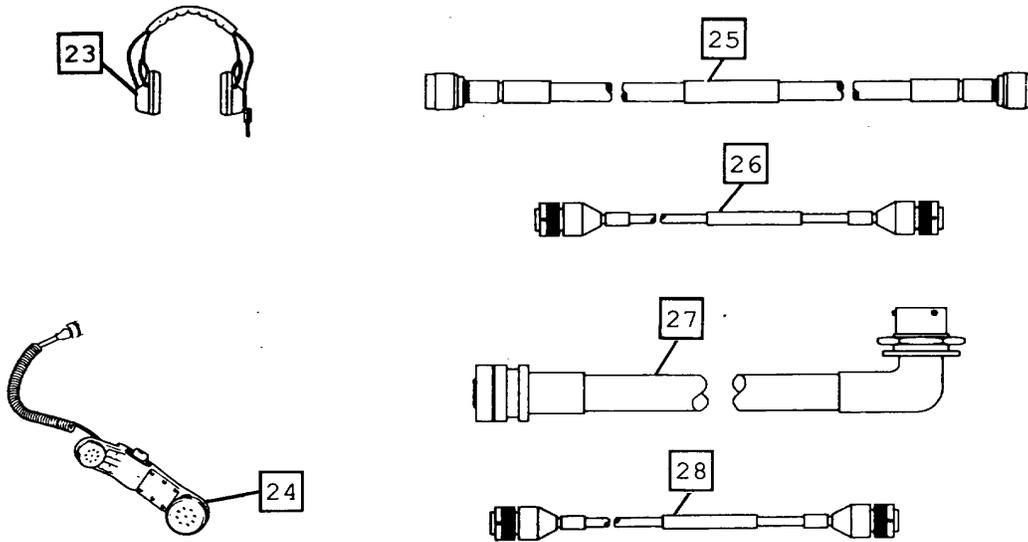
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
23	5965-01-182-3384	HEADSET, H-251A/U (80058)		EA	1
24	5965-01-233-8607	HANDSET, H-356/G (80063)		EA	1
25	5995-01-267-4410	CABLE ASSEMBLY, RADIO FREQUENCY CG-3872/GRC-215 (80063) A3028987		EA	1
26	5995-01-267-4408	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-13349/GRC-215 (80063) A3029102		EA	1
27	5995-01-267-4407	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-13350/GRC-215 (80063) A3029111		EA	1
28	5995-01-267-4405	CABLE ASSEMBLY, POWER, ELECTRICAL CX-13352/GRC-215 (80063) A3028986		EA	1

Section II.   COMPONENTS OF END ITEM (Cont.)
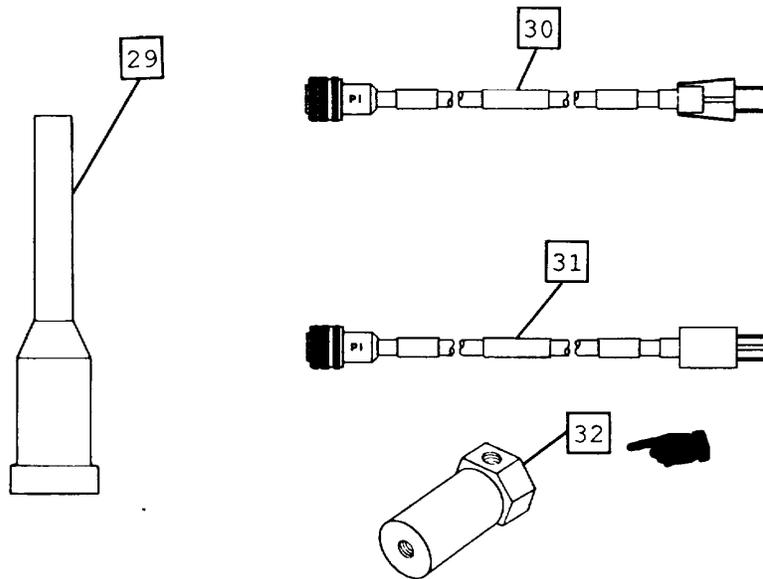
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
29		BOOT, DUST AND MOISTURE (80063) A3035320		EA	1
30	5995-01-308-5379	CABLE ASSEMBLY, POWER, 230V ELECTRICAL CX-13372/GRC-215 (80063) A3078203		EA	1
31	5995-01-326-5355	CABLE ASSEMBLY, POWER, 115V ELECTRICAL CX-13373/GRC-215 (80063) A3078204		EA	1
32		CAPACITOR (80063) A3086683		EA	1

Change 1 C-8

Section II. COMPONENTS OF END ITEM (Cont.)
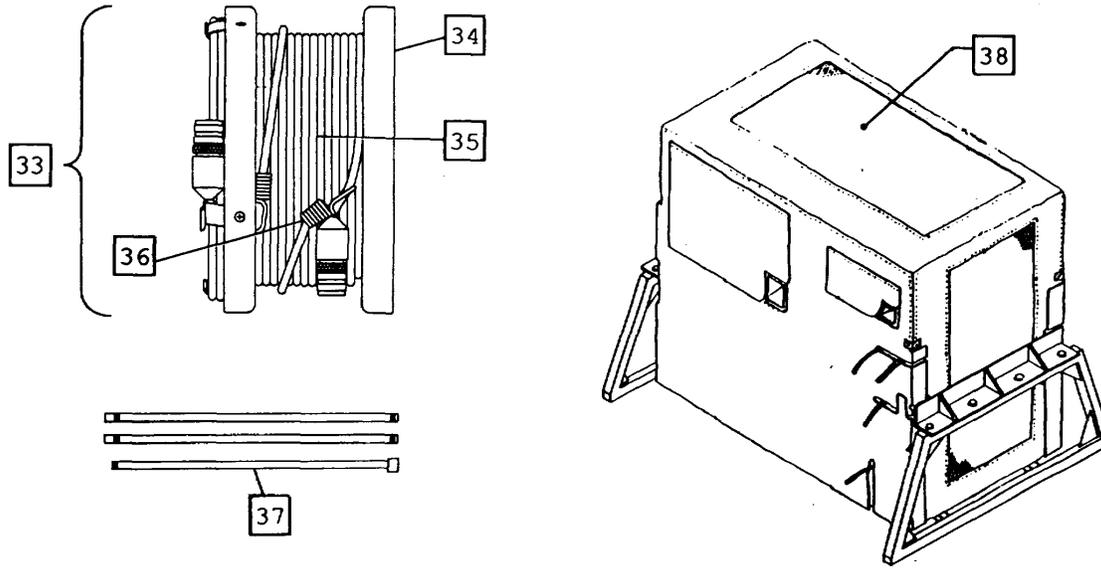
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
33	5995-01-326-0142	Cable Assembly and Reel, CG-3883/G (80063) A3034219 consisting of:		EA	1
34		Reel, Cable 80063) A3034262		EA	1
35		Cable Assembly, Time of Day (80063) A3034218		EA	1
36		Cord Assembly, Shock (80063) A3034508-1		EA	1
37	5975-00-878-3791	Rod Assembly, Ground (81349), MILR11461		EA	3
38	NOT ASSIGNED	Cover, Blackout-Team Terminal (80063) A3086812		EA	1

Change 1 C-9
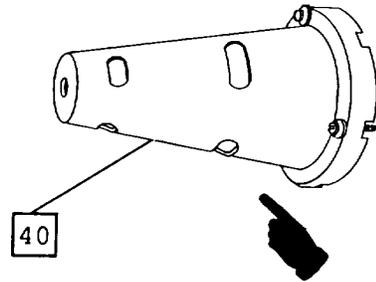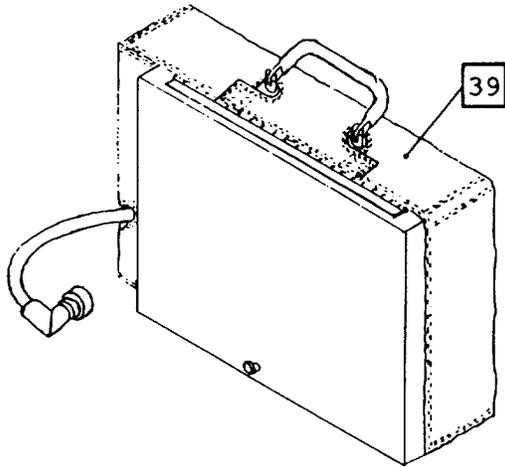
(1) ILLUS NUMBER	(2) NATO STOCK NUMBER	(3) DESCRIPTION (FSCM) and Part Number	Usable On Code	(4) U/M	(5) QTY Rqr
39	NOT ASSIGNED	Cover, Blackout-Remote I/O Controller (80063) A3034117		EA	1
40	NOT ASSIGNED	Cap, Electrical (80063) A3172948		EA	1

Section III.   BASIC ISSUE ITEMS

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER		USABLE ON CODE	(3) U/I	(4) QTY RECM
	OPERATOR'S AND UNIT MAINTENANCE MANUAL FOR RADIO SET AN/GRC-215 TM 11-5895-1220-12			EA	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists additional items you are authorized for the support of the Team Terminal.

D-2. GENERAL

This list identifies items that do not have to accompany the Team Terminal and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you. If the item you require differs between serial numbers of the same model, effective serial numbers are shown in the last line of the description. If item required differs for different models of this equipment, the model is shown under the "Usable on" heading in the description column. These codes are identified as:

Code   Used On

_____   _____

_____   _____

_____   _____

D-1

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER USABLE ON CODE	(3) U/I	(4) QTY AUTH
5810-01-050-2498	BATTERY CASE Z-AKG/TSEC (98230) ON501300	EA	1
5810-01-146-3260	COMMUNICATIONS SECURITY EQUIPMENT TSEC/KG-84 (98230) 0N278636	EA	1
5810-01-236-5245	SPEECH SECURITY EQUIPMENT TSEC/KY-65A (98230) 0N500902	EA	1
6130-01-050-9536	POWER SUPPLY, AC/DC Z-AKE/TSEC (98230) ON501400	EA	1
5810-01-026-9620	TAPE READER, GENERAL PURPOSE KOI-18/TSEC (98230) ON190315	EA	1
5810-01-066-7587	CABLE, FILL (3FT) (98230) 0N512424 (FUW KOI-18/TSEC)	EA	1
5820-00-437-2353	CAP, ANTENNA TIP (80063), SC-C-446180	EA	1
4020-00-908-6416	ANTENNA TIE-DOWN KIT (80063), SC-C-208747	EA	1

APPENDIX E

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE

    This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Team Terminal. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/ Durable Items.

E-2. EXPLANATION OF COLUMNS

    a. Column(l)- Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. E").

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

        <u>UNIT</u>

    C - Operator/Crew
    O - Organizational/Unit

        <u>INTERMEDIATE</u>

    F - Direct Support
    H - General Support
    L - Specialized Repair Activity (SRA)

        <u>DEPOT</u>

    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 Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

E-1

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/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C,O	8305-00-205-3496	CLOTH, COTTON CHEESECLOTH (CCCC 440, 81348)	Ea
2	C,O	6340-00-906-3666	BRUSH, SOFT BRISTLED (15335001099)	Ea
3	0	6140-01-063-3918	BATTERY, NI-CAD BB-590/U -or-	Ea
4	0	6135-01-036-3495	BATTERY BA-5590/U	Ea
5	0	6135-00-801-3493	BATTERY BA-1372/U	Ea
6	0	5920-00-931-0593	FUSE, CARTRIDGE	Ea
7	0	5920-00-938-7660	FUSE, CARTRIDGE	Ea
8	0	6340-00-965-1381	LAMP, INCANDESCENT #382 ON501538	Ea

Change 1 E-2

APPENDIX F ▊

**ERROR, STATUS MESSAGES
AND ECCM FAULT CODES**

Following is a list of messages you may see on the D/K assembly. These messages in-form you of errors you have made entering data, component failures, and the operational status of the I/O Unit. If the message notifies you of a component error (these messages end with the word FAULT), note the message, and report it to unit maintenance. Component failure messages automatically print if the Team Terminal configuration includes a printer. Messages displayed on the status line (second line) remain on the screen until you clear them. To clear a message from the status line, press the CLEAR STAT bezel key.

The following Error and Status messages are arranged alphabetically starting with the first letter of the message. For those faults requiring Unit maintenance "action", refer to paragraph 4-11, Unit Troubleshooting Chart.

A PREVIOUS TRANSMIT MESSAGE WAS LOST

Explanation: You transmitted a message when the transmission queue was full. The new message had a higher priority than one of the other messages in the queue. To make room for the new, higher priority message, the system deleted a lower priority message in the queue.

Action: None. The deleted message cannot be recovered.

ABORT - INVAL KEY

Explanation: While reviewing a message before transmission, you pressed a key that displayed another screen or you pressed the ABORT bezel key. This stopped the transmission sequence.

Action: If you wish to transmit the message, begin the transmission sequence again by recalling the last edited message on the COMPOSE/EDIT screen (para 2-7c, step 1).

Change 1 F-1

ABORT - INVAL MSG

Explanation: You did not perform the steps to transmit a message in the exact sequence specified on the screen. This aborted the transmission sequence.

Action: Begin the transmission sequence again by recalling the last edited message on COMPOSE/EDIT screen (para 2-7c, step 1).

ABORT - PRIOR MENU

Explanation: By pressing the PRIOR MENU bezel key, you indicated that you wanted to change a message before transmission. This stopped the transmission sequence.

Action: Begin the transmission sequence again by recalling the last edited message on COMPOSE/EDIT screen (para 2-7c, step 1).

ABORT- SEC PARAMS

Explanation: Either the system did not accept the message security parameters or a component failure occurred.

Action: 1. Press the ABORT bezel key to abort the transmission BIT sequence. Begin the transmission sequence again by recalling the last edited message on the COMPOSE/EDIT screen (para 2-7c, step 1).

2. If the message appears again, run BIT which will sign you out of the subnet.

3. Report the problem to unit maintenance (para 4-11).

ALL SECRET MSGS PENDING TRANSMIT LOST

Explanation: Team Terminal went from secure mode to nonsecure mode. All secret messages pending transmission are automatically deleted from queue.

Action: 1. Tighten connections to TSEC/KG-84A and try to continue.

2. Report the problem to unit maintenance (para 4-11).

ATU FAULT

Explanation: The system detected a fault in the ATU. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP 1). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.
2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

CAN NOT SIGN OUT- NOT SIGNED IN

Explanation: Appears if you attempt to sign out of the network before the network has recognized and signed your terminal into the subnet. Any transmit composed/ edited messages awaiting transmission are still in the queue.

Action: None. Informational message only.

BLK FAULT - A1A6, A1A7, A1PS1

Explanation: The system detected a fault in the 110 Unit. The K/D displays the message FA-TAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP I). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

RED/BLK INTERFACE FAULT-AIA5, AIA6, AIA1A1

Explanation: The system detected a fault in the I/O0 Unit so the terminal cannot control the RT, RN Modem, and RFO. The K/D displays the message FATAL FAULT DE-TECTED

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP 1). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4- 1).

DISPLAY/KEYPAD BIT FAULT - A2

Explanation: This message appears if you pressed the FAIL touch point during any of the display test screens (para 2-7b, step 1).

Action: 1. Determine if you can continue operating with the fault; that is, decide if the failed area of the display is critical to operation of the I/O Unit

2. Report the problem to unit maintenance (para 4-11).

DISPLAY/KEYPAD INTERFACE FAULT-A1A5

Explanation: The system detected a fault in the interface between the D/K assembly and the processor within the controller assembly.

Action: 1. Try to continue operating the O10 Unit. If the D/K assembly responds, continue operation, and report the fault to unit maintenance.

2. If the D/K assembly does not respond, contact unit maintenance (para 4-11).

ECCM FAULT

Explanation: The system detected a fault in the ECCM Module. Selecting ECCM or data operating mode before loading TRANSEC variables will also cause this fault to appear.

Action: 1. If there is a fault in the ECCM Module, the K/D displays the message FATAL i=' - FAULT DETECTED. Press NEXT MENU to continue to the next menu to per-form BIT sequence. All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

    o   Try to continue operation.

    o   Report the problem to unit maintenance (para 4-11).

2. If you want to operate in ECCM or data mode, but did not load the TRANS-EC variables, power-off the terminal (para 2-7i) and then power-up the terminal (para 2-7a). Initialize the terminal (para 2-7b). Ensure TRANSEC variables load properly (para 2-7b, step 9).

TP/UP INTERFACE FAULT- A1A2, A1A3

Explanation: The system detected a fault in the trusted processor (TP)/untrusted processor (UP) interface within the I/O Unit.

Action: 1. Try to continue operation.

2. If the D/K assembly acts abnormally, press the BIT bezel key. If the D/K assembly responds, continue to operate.

3. If the D/K assembly does not respond, the unit cannot operate normally. Re-' port the problem to unit maintenance (para 4-11).

GO

Explanation: Team Terminal ready for operation.

Action: None.

HIGH SPEED SYNTHESIZER FAULT

Explanation: The system detected a fault in the high speed synthesizer contained in the Vehicular Adapter. The K/D displays the message FATAL- FAULT DETEC'T'ED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP 1). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).'

Change 1 F-4

INCORRECT FREQ CODES -NET LINK LOST

Explanation: The frequency codes you selected do not match the ones your subnet controller is using. Either you made an error entering the data or you missed an update that the controller issued.

Action: 1. Check your COMMUNICATIONS ELECTRONICS OPERATOR INSTRUC-TIONS Handbook to be sure you entered the correct frequency codes.

2. If you entered the correct frequency codes, the controller updated the data and your terminal failed to receive the message. Try to contact the controller operator for current subnet frequency codes.

RED INTERFACE CARD FAULT- A1A5

Explanation: The system detected a fault within the I/O Unit. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP 1). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. If the D/K assembly acts abnormally, press the BIT bezel key. If the D/K assembly responds, continue to operate.

4. If the D/K assembly does not respond, the unit cannot operate normally. Re-port the problem to unit maintenance (para 4-11).

INVALID FIELD ENTRY

Explanation: You entered data out of the required range (e.g., XX if the range was AA to TR), the wrong type of data (e.g., alpha when numeric was required), or pressed a key before you entered the required data for the menu.

Action: Re-enter the data.

INVALID KEY

Explanation: This can appear on any menu except the transmission sequence menus. It means you pressed a key that is inactive for the current menu.

Action: Follow the instructions on the menu to determine which keys are valid.

KG-84A FAULT

Explanation: The system detected a fault in the TSEC/KG-84A or you did not load TSEC/ KG-84A cryptographic variables.

Action: 1. If you are operating in the secure data mode, TSEC/KG-84A cryptographic variables must be loaded. Power-off the Team Terminal and then re-initialize the Team Terminal for secure data mode (para 2-7b).

o   Secure operations require the TSEC/KG-84A to be operational. If you do not need to operate in the secure mode, remove TSEC/KG-84A and hookup KG-84A nonsecure bypass assembly (para 2-5a(3)). The receiving terminal must also be operating without a TSEC/KG-84A.

o   Report the problem to unit maintenance (para 4-11).

KG-84A INTERFACE FAULT - A1A5

Explanation: The system detected a fault in the TSEC/KG-84A data link to the network. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perfona BIT sequence. Perform the BIT sequence as prompted by the K/D display. (para 2-7b STEP 1). All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operating the I/O Unit.

3. If the D/K assembly does not respond, press the BIT bezel key (this will cause your I/O Unit to leave the network). Perform the steps to run the BIT and sign into the network again (para 2-7b).

4. Report the problem to unit maintenance (para 4-11).

MESSAGE # XXX QUEUED FOR TRANSMISSION

Explanation: Appears at the end of the transmission sequence. All the necessary steps to transmit a message were completed and the message is in queue, waiting to be re-leased by the system.

Action: None. Informational only.

MSG XXX OVERWRITTEN

Explanation: A new message was added to the transmission queue when the queue was full. The new message had a higher priority than one of messages in the queue. To make room for the new higher priority message, the system deleted a lower priority message in the queue.

Action: None. Informational only.

NET CONNECTION LOST-SIGN IN PENDING

Explanation: Communication was lost with your terminal controller. Your terminal automatically tries to restore communication with the controller.

Action: Until your terminal re-establishes communication with the controller, you can only perform operations not requiring communication with the network (e.g., composing and editing messages). To help re-establish communications, select a higher power level on the TRANSMITTER POWER LEVEL menu. Return to the TRANSMITTER LEVEL menu using the operational set up mode (para 2-7e).

NET OPERATIONAL CHANGES PENDING

Explanation: Indicates that your terminal controller is changing the operational parameters of your I/O Unit (e.g., mode, frequencies).

Action: None. The changes occur automatically. You may wish to determine the changes made by accessing the SET UP Menu (para 2-7e) and then selecting one of the initialization menus. The initialization menus appear with the new settings displayed.

NETWORK SIGN IN PENDING

Explanation: You pressed the NEXT MENU bezel key on the SIGNING INTO THE SUBNET screen. This message appears to notify you that the system has not yet signed your I/O Unit into the network.

Action: None. You may compose and edit messages until the SIGNED INTO NETWORK message appears, notifying you that your I/O unit is signed into the network.

NO 10KHZ AT ECCM FAULT

Explanation: The system detected continuity problem with the 10 kHz signal. The BIT sequence menu appears, to begin running BIT, answer prompts.

Action: 1. Tighten cables W203 and W205. Perform BIT again.
2. Report the problem to unit maintenance (para 4-11).

NO GO

Explanation: Appears when BIT is running.

Action: None.

NO RESPONSE FROM ECCM FAULT

Explanation: The ECCM Module is not responding to commands from the I/O Unit.

Action: 1. Check to ensure that ECCM Module is powered-up and that fill device is not connected to FILL connector on ECCM Module.

2. Report the problem to unit maintenance (para 4-11).

NON SECURE MODE- SECRET MSG, NOT QUEUED

Explanation: TSEC/KG-84A is not connected or is inoperative. Secret message is not queued for transmit.

Action: 1. Inspect for proper installation of TSEC/KG-84A (para 2-5a(2)).

2. Tighten connections to TSEC/KG-84A and try to continue.

3. Report the problem to unit maintenance (para 4-11).

NON-SECURE

Explanation: Team Terminal configured for nonsecure data operations.

Action: None.

PA FAULT

Explanation: The system detected a fault in the PA. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

POWER SUPPLY FAULT - A1PS1

Explanation: The system detected a fault in the I/O Unit power supply.

Action: 1. Try to continue operation.

2. Report the problem to unit maintenance (para 4-11).

PRESS A TOUCHPOINT

Explanation: This is an informational message. It appears on the MESSAGE SECURITY menu (para 2-7c step 6) to tell you that you must first select message priority and classification before pressing any bezel key.

Action: Press one of the touchpoints to make your selection.

PRINTER NOT OPERATIONAL

Explanation: Either a printer is not connected to the I/O Unit, or the terminal detected a fault in the printer, connectors, or lines.

Action: 1. If a printer is present, check to be sure it is powered- on. Also check the connectors and line 2. If the printer, connectors, and lines appear operational, continue operation and report the problem to unit maintenance (para 4-11).

PTR DSBL

Explanation: Printer disabled.

Action: None.

PTR ENBL

Explanation: Printer enabled.

Action: None.

RECEIVE MESSAGE QUEUE NEARLY FULL

Explanation: Appears when the total number of received messages (read and unread) in message queue reaches about 75 percent of the queue's capacity.

Action: 1. Press the SHOW MSG key to see the messages in the queue. Delete messages that need not remain in queue (para 2- 7d).

2. I f you do not delete messages in the queue, the system deletes overflow messages. It keeps the highest precedence messages first, followed by the latest received messages.

RECEIVER/EXCITER FAULT

Explanation: The system detected a fault in the R/E. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

RECEIVER/EXCITER PA FAULT

Explanation: The system detected a fault in the PA contained in the R/E.

Action: 1. The BIT sequence menu appears, to begin running BIT, answer prompts. Your previous entries on the menus remain intact.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

RFO FAULT

Explanation: The system detected a fault in the RFO. The K/D displays the message FATAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

2. Try to continue operation.

3. Report the problem to unit maintenance (para 4-11).

RFO HAS NEW TIME

Explanation: The RFO has received a new TOD.

Action: Press NEXT MENU to continue to the next menu to perform BIT sequence. All previous entries on the menus remain intact, when the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

RN MODEM FAULT

Explanation: The system detected a fault in the RN Modem. The K/D displays the message FA-TAL FAULT DETECTED.

Action: 1. Press NEXT MENU to continue to the next menu to perform BIT sequence. All previous entries on the menus remain intact, wheh the BIT function is completed, the STATUS DISPLAY will indicate SIGN-IN PENDING. You will continue to receive messages. You cannot transmit a message until sign-in is completed.

 2. Try to continue operation.

 3. Report the problem to unit maintenance (para 4-11).

ROLLED TO END

Explanation: On the REVIEW MESSAGE screen (para 2-7c, step 5) or the SHOW MESSAGE screen (para 2-7d, step 2), you pressed the ROLL UP bezel key until the end of the message was displayed.

Action: Continue operation. Follow instructions on the screen.

ROLLED TO TOP

Explanation: On the REVIEW MESSAGE screen (para 2-7c, step 5) or the SHOW MESSAGE screen (para 2-7d, step 2), you pressed the ROLL DOWN bezel key until the top of the message was displayed.

Action: Press the ROLL UP bezel key to review the message or follow the instructions on the screen.

SECURE

Explanation: Team Terminal configured for secure data operations.

Action: None.

SIGNED INTO NETWORK

Explanation: Appears when your I/O Unit is recognized and signed into the subnet.

Action: None. Informs you that your I/O Unit can now communicate with the subnet you specified on the SUBNET NUMBER menu (para 2-7b, step 34).

SIGNED OUT OF NETWORK

Explanation: Appears on the LEAVE NET menu after the NETWORK SIGN OUT PENDING message. You pressed NEXT MENU bezel key on the LEAVE NET menu and received the pending message until the system signed out your I/O Unit from the network. Then the SIGNED OUT OF NETWORK message appeared to inform you that your I/O Unit stopped communications with network.

Action: None. Information only. The I/O Unit can be powered-off without losing transmit messages.

THIS TRANSMIT MESSAGE WAS NOT QUEUED

Explanation: You tried to add a message to a full transmission queue and the new message has a lower or same priority than the messages in the queue; therefore, the message was not added.

Action: Wait for the transmission queue to empty by periodically trying to add the message to the queue.

TP FIFO BIT FAULT - A1A3

Explanation: The system detected a fault in the TP first-in-firstout (FIFO) circuit within the 1/0 Unit.

Action: 1. Try to continue operation.

2. If the D/K assembly acts abnormally, press the BIT bezel key. If the D/K assembly responds, perform the initialization steps again and sign into the network (para 2-7b). Your previous entries on the menus remain intact and are displayed again, so that all you need to do is verify them. If the D/K assembly does not respond, the unit cannot operate normally.

3. Report the problem to unit maintenance (para 4-11).

TRANSMIT MESSAGE ON QUEUE

Explanation: Appears at the end of the transmission sequence. You completed all the necessary steps to transmit a message and the message is in queue, waiting to be released by the system.

Action: None. Informational only.

TTIO TO CIU MESSAGE OVERFLOW FAULT

Explanation: The system detected a fault in the message transfer interface between the Team Terminal (TT) Input/Output (I/O) and the Control Interface Unit (CIU).

Action: 1.   Press the [BIT] bezel key. The Built-In Test (BIT) sequence begins and the PERFORM DISPLAY/KEYPAD TEST screen appears.

2.   After BIT has completed, perform the initialization steps required to sign into network. The previous menu entries remain intact.

3.   Report the problem to unit maintenance (para 4-1 1).

UP BIT FAULT- A1A2

Explanation: The system detected a fault in the untrusted processor (UP) contained in the I/O Unit.

Action: 1. Try to continue operation.

2. If the D/K assembly acts abnormally, press the BIT bezel key. Perform the initialization steps again and sign into the network (para 2-7b). Your previous en-tries on the menus remain intact and are displayed again, so that all you need to do is verify them.

3. Report the problem to unit maintenance (para 4-11).

Change 1 F-11

UP FIFO ISIT FAULT-A1A2

Explanation: The system detected a fault in the UP contained in the I/O Unit.

Action: 1. Try to continue operation.

2. If the D/K assembly acts abnormally, press the BIT bezel key. If the D/K assembly responds, perform the initialization steps again and sign into the network W (para 2-7b). Your previous entries on the menus remain intact and are displayed again, so that all you need to do is verify them. If the D/K assembly does not respond, the unit cannot operate normally.

3. Report the problem to unit maintenance (para 4-11).

WRONG KEY FOR MENU

Explanation: This message could appear on any screen during the transmission sequence. It means that you pressed a key other than the one required in the sequence, but transmission was not aborted.

Action: Follow the instructions on the menu.

-A2 REV 004- UNTRUSTED PROCESSOR

Explanation: Indicates the version of operational software running in the terminal at this time.

Action: None. Informational only.

-A3 REV 004- TRUSTED PROCESSOR

Explanation: Indicates the version of operational software running in the terminal at this time.

Action: None. Informational only.

Change 1 F-12

ECCM FAULT CODE TABLES

The following ECCM fault codes are those that can appear on the ECCM front panel display should a fault occur. When the ECCM module shows "FAILED", press the ENT/IST key and the error code will be displayed.

NOTE

The recommended course of "action" for each ECCM error code has been abbreviation for these tables. Refer to the Unit Troubleshooting Chart para 4-11, item 23, for detailed troubleshooting procedures.

Change 1 F-13

The following abbreviations are used in the tables:

- ATU   Antenna Tuning Unit
- BIT   Built-In Test
- BLK   Black
- CIU   Control Interface Unit
- CUP   Crypto Microprocessor
- DK   Display/KeyPad
- ECCM   Electronic Counter-Counter Measures
- FIFO   First In/First Out
- FREQ   Frequency
- FT   Force Terminal
- HSS   High-Speed Synthesizer
- INVAL   Invalid
- KG   Refers to the TSEC/KG-84A device
- LSG   Linear Sequence Generator
- MP   Manpack
- MSG   Message
- MUP   Main Microprocessor
- NET   Network
- PA   PowerAmplifier
- PARAMS   Parameters
- P/P S   Pre/Post Selector
- PS   Power Supply
- PUP   Peripheral Microprocessor
- RAM   Random Access Memory
- RFO   Reference Frequency Oscillator
- ROM   Read-Only Memory
- SEC   Security
- TOD   Time-of-day
- TP   Trusted Processor
- TT   Team Terminal
- UP   Untrusted Processor
- USART   Universal Synchronous/Asynchronous Receiver-Transmitter
- VA   Vehicular Adapter

Change 1 F-14

The codes in Table F-1 appear when equipment other than the Electronic Counter--- Counter- Measures (ECCM) or radio is faulted. Before replacing units, run BIT to clear the problem.

ECCM Code	Explanation	Mode After Fault	Action
01	PA has a fault	N/A	Run BIT. Check cables. Replace PA.
02	ATU has a fault	N/A	Run BIT. Check cables. Replace ATU.
03 - 09	Reserved		

Table F-1. ECCM Fault Codes (Group I)

***NOTE**: Only replace equipment if BIT does not clear problem.

The codes in Table F-2 appear when operational faults occur. Operational faults result from improperly installed equipment or procedural errors. Recheck connections and try to continue operations.

ECCM Code	Explanation	Mode After Fault	Action
10	Invalid attempt to change to data mode. System thinks modem is not attached.	Voice	Check cables and modem connections. Retry.
11	Invalid mode change without a variable.	Voice	Fill the ECCM. Retry.
12	Invalid mode change without a TOD.	Voice	Supply valid TOD to ECCM. Retry.
13	Invalid mode change in MP config-uration.	Voice	MP only allowed Voice modes. Retry.
14	Invalid cryptovarible change re-quest.	N/A	Remove fill device. Retry.
15	Fill in Progress.		Successful fill.
16	Zeroize Command.		Successful zeroize.
17	Modem or HSS disconnect during data mode operation.	Voice	Check modem to ECCM connection (FT/TT). Check ECCM to VA Connection (TT).
18-19	Reserved		

Table F-2. ECCM Fault Codes (Group II)

The codes in Table F-3 appear when ECCM hardware faults occur. If running BIT does not clear the problem, replace the unit.

ECCM Code	Explanation	Mode After Fault	Action
20	Internal ECCM communication fault (MUP/PUP)	N/A	Cycle R/E power off/on. Reload variables. Run BIT. Replace ECCM.
21	CUP RAM fault	N/A	Run BYT Replace ECCM.
22	CUP ROM checksum fault	N/A	Run BIT. Replace ECCM.
23	Internal ECCM communication fault (MUP/CUP)	Voice	Run BIT- Replace ECCM.
24	Internal ECCM communication Timeout	Voice	Run BIT. Replace ECCM.
25	Internal audio fault	N/A	Run BIT. Replace ECCM.
26	MUP RAM fault	N/A	Run BIT. Replace ECCM.
27	MUP ROM checksum fault	N/A	Run BIT. Replace ECCM.
28	PUP RAM fault	N/A	Run BIT. Replace ECCM.
29	PUP ROM checksum fault	N/A	Run BIT. Replace ECCM.
30	Modem USART fault	N/A	Run BIT. Replace ECCM.
31	CIU USART fault	N/A	Run BIT. Replace ECCM.
32	Low Battery indicator (MP only)	N/A	Notify MMCT to replace batteries. Reload variables.

Table F-3. ECCM Fault Codes (Group I)

*NOTE: Only replace equipment if BIT does not clear problem.

Change 1 F-16

The codes in Table F-4 appear when security faults occur. Unless the unit has been zeroized or the fill variable has been loaded, the unit should be immediately replaced to ensure security integrity.

Table F-4. ECCM Fault Codes (Group IV)			
ECCM Code	Explanation	Mode After Fault	Action
33-39	Reserved		
40	LSG fault	Voice	Replace ECCM.
41	KGV-10 fault	Voice	Replace ECCM.
42	Fill attempt unsuccessful	Voice	Check cable. Retry. Replace fill device. If problem continues, replace ECCM
43	Unable to zeroize ECCM	Voice	Push the zeroize switch.
44-49	Reserved		

The codes in Table F-5 appear when Man Pack/Team Terminal (MP/IT) errors occur, which require replacement of the radio.

Table F-5. ECCM Fault Codes (Group V)			
ECCM Code	Explanation	Mode After Fault	Action
*50	10 kHz not present	N/A	Defective R/E or ECCM. Replace radio.
51	Radio module fault	N/A	Replace HSS (FT) or vehicular adapter (TT).
52	MP radio PA fault	N/A	Defective R/E. Replace radio.
53	MP radio PA fault	N/A	Defective R/E. Replace radio.
54	MP radio synthesizer fault	N/A	Defective R/E. Replace radio.
55	MP radio translator fault	N/A	Defective R/E. Replace radio.
56	Unable to report MP status	N/A	Defective R/E or ECCM. Replace radio.
*57	Unable to tune ATU	N/A	Replace radio.

*NOTE: These faults may also occur in the Force Terminal.

Change 1 F-17

The codes in Table F-6 appear for various reasons. BIT should be attempted to clear the problem. If problem continues, replace the radio or follow the directions for the specific fault.

Table F-6. ECCM Fault Codes (Group VII)			
ECCM Code	Explanation	Mode After Fault	Action
70	MP or TT radio fault	N/A	Run BIT. Replace radio if necessary.
71	Unable to set TOD	Voice	Run BIT. Check cables, replace RFO.
72	Radio did not tune	N/A	Run BIT. Replace ECCM and / or radio.
73	Invalid data received from CIU	N/A	Run BIT. Check CIU, check cables.
74	Attempted to change to invalid hopset	N/A	Run BIT. Replace frequency tape.
75	Software debugging code	N/A	Run BIT. Replace ECCM and / or radio.
76	Software debugging code	N/A	Cycle R/E power off/on. Reload variables. Run BIT. Replace ECCM and / or radio.
77	Software debugging code	N/A	Run BIT. Replace ECCM and / or radio.

GLOSSARY

Section I. ABBREVIATIONS

A

AAL .... Additional Authorization List
AC .... Alternating Current
ATU .... Antenna Tuning Unit

B

BAT CHG .... Battery Charge
BAT TEST .... Battery Test
BII .... Basic Issue Items
BIT .... Built In Test
BITE .... Built In Test Equipment
BTRY INSTLD .... Battery Installed

C

CBR .... Chemical, Biological, and Radiological
CCA .... Circuit Card Assembly
CEOI .... Communications Electronics Operating Instructions
CHGR .... Charger
CIU .... Control Interface Unit
COEI .... Components of End Item
COMSEC .... Communications Security
CONT .... Controller
CLR .... Clear
CTN .... Continuous Tone

D

DC .... Direct Current
DEL .... Delete
DIP .... Dipole
DISREP ....
.... Discrepancy in Shipment Report
D/K .... Display/Keypad
DSBL .... Disable
DSPL ....
.... Display

E

ECCM .... Electronic Counter-Countermeasures
EIR .... Equipment Improvement Recommendations
EMERG .... Emergency
EMP .... Electromagnetic Pulse
ENBL .... Enable
ENT .... Enter
ESD .... Electrostatic Discharge

GLOSSARY-1

E   (Cont.)

EXT BAT .... External Battery
EXT POWER.. External Power

F

FAST SYNTH .... Fast Synthesizer
FIFO .... First-In-First-Out
FREQ.. Frequency
FREQ STAND .... Frequency Standard
FSCM .... Federal Supply Code for Manufacture
FSK.. Frequency Shift Key C

G

GND..Ground
GRD...Ground
H
HF.. High Frequency
HPR .... High Power
HR .... Hand Receipt
HW .... Hard-Wired
Hz .... Hertz

I

IAW.. In Accordance With
ID .... Identification
INSRT...Insert
INTFC ....Interface
INVAL .... Invalid
I/O...Input/Output

L

LOD ....Load
LPR..Low Power
LRU .... Line Replaceable Unit
LSB...Lower Sideband

M

MAC..Maintenance Allocation Chart
MC .... Maintenance Control
MDCS ....Maintenance Data Collection Subsystem
MHz ....Megahertz
MODEM..Modulator/Demodulator
MMCT...Mobile Maintenance Contact Team
MP ....Manpack
MPR...Medium Power

GLOSSARY - 2

M (Cont.)

MSG ....Message
MWO .... Maintenance Work Order

N

NBC ....Nuclear, Biological, and Chemical
NCS ....Network Control Station
NET .... Network
NI.. Numerical Index
NSN .... National Stock Number
NVIS ....Near Vertical Incidence Skywave (antenna)

0

OSC..Oscillator

P

PA... Power Amplifier
PARAMS ....Parameters
PMCS .... Preventive Maintenance Checks and Services
PST.. Preset
PTR .... Printer
PTT.. Push-To-Talk (switch)
PWR .... Power
PWR/SIG... Power/Signal
PWR SUP...Power Supply

R

RCS .... Remote Control Set
R/E..Receiver/exciter
RF... Radio Frequency
RFO ....Reference Frequency Oscillator
RN ....Regency Net
ROD.. Report of Discrepancy
RT...Receiver-Transmitter
RX..Receive

S

SALT..Satellite Action Logic Transfer
SB.. Sideband
SPAC.. Space
SSB .... Single Sideband
STAT .... Status
SYNC... Synchronize

GLOSSARY - 3

T

TEL...Telephone
TMDE .... Test, Measurement, and Diagnostic Equipment
TOD...Time of Day
TP..Trusted Processor
TRANS ....Transfer
TRANSEC ....Transmission Security
TST...Test
TT PS ....Team Terminal Power Supply
TUN ....Tune
TX .... Transmit

U

U/M .... Unit of Measurement
UNBAL.. Unbalanced
UP..Untrusted Processor
USB ....Upper Sideband

V

VAR .... Variable
VEH ADPTR ....Vehicular Adapter
VOL .... Volume
VSWR... Voltage Standing Wave Ratio

X

XMT.. Transmit

Section II. DEFINITION OF UNUSUAL TERMS

ABORT - To cut short or break off an action, operation, or procedure.

AUDIO - Frequencies which can be heard by the human ear, usually between 15 Hz and 20 kHz.

COLD START - Bringing the system into operation by applying power and performing all initialization procedures.

COMSEC EQUIPMENT - Communication Security Equipment TSEC/KG-84A or TSEC/KY-65 used for encryption/decryption of messages.

DEMODULATE - To recover the wave with which the carrier was originally modulated.

FREQUENCY SHIFT KEYING (FSK) - A form of frequency modulation in which the modulating wave shifts the output frequency between predetermined values.

HERTZ - A unit of frequency equal to one cycle per second.

GLOSSARY-4

INITIALIZE - To set up, or adjust, an electronic device for its basic initial operating mode.

INTERFACE - A device or equipment making possible inter-operation between two circuits or systems.

KEEP-ALIVE VOLTAGE - A dc voltage that maintains a circuit during short-term power interruptions.

MANPACK - Man-portable equipment set.

MODE - A particular functional arrangement or condition, i.e., receive mode which sets up circuits into particular conditions to receive as opposed to transmit mode which arranges functional circuits into different conditions.

MODEM - Modulator/demodulator. A device that modulates and demodulates signals transmitted over communications circuits.

MODULATE - To vary the amplitude or frequency of a wave by impressing one wave on another wave.

ON-LINE BACKGROUND SELF-TEST - Automatic self-testing of the system which takes place while the system is powered-up.

PROPAGATION - The travel of electromagnetic waves between two points.

QUEUE - A list of messages waiting for service (waiting to be read and/or transmitted).

REAL-TIME CLOCK - A clock that indicates the passage of actual time.

SKIP ZONE - An inherent characteristic of radio-wave propagation, using whip antennas. It is the point where the ground-wave signal becomes unusable and the skywave signal starts to become usable.

SKYWAVE - Radio-waves effected by the earth's outer atmosphere.

SYNTHESIZER - A device that can generate a number of frequencies for multichannel communications equipment.

TOUCHPOINT - Transparent touch-activated switches located on the D/K assembly.

TRICHLOROTRIFLUOROETHANE - A cleaning solution.

GLOSSARY 5/ (GLOSSARY -6 blank)

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