TECHNICAL MANUAL

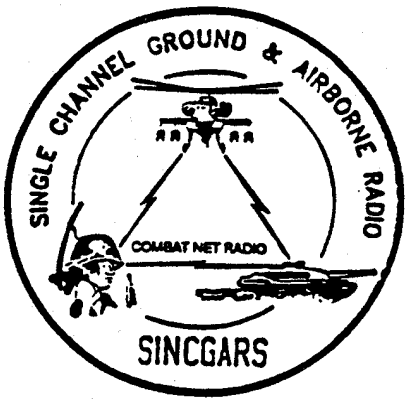
OPERATOR'S POCKET GUIDE

SINCGARS ICOM GROUND RADIOS RADIO SETS

MANPACK RADIO (AN/PRC-119A/D/F)(NSN: N/A) (EIC: N/A)

VEHICULAR RADIOS (AN/VRC-87A/D/F THRU AN/VRC-92A/D/F)

(NSN: N/A) (EIC: N/A)



Used with
Automated Net Control Device (ANCD);
Precision Lightweight GPS Receiver (PLGR);
Handheld Remote Control Radio Device (HRCRD)

Approved for public release; distribution is unlimited.

Headquarters, Department of the Army

1 December 1998

WARNING

LITHIUM BATTERY WARNINGS

Your manpack radio uses a lithium battery as the main power source. All SINCGARS radios use a lithium battery for the HUB, and the ANCD uses three 3-volt lithium batteries for power. Lithium batteries contain pressurized toxic, sulfur dioxide gas. Batteries *can* explode; treat them with CARE!

For safety's sake, follow these rules when handling lithium batteries:

Do NOT ABUSE LITHIUM BATTERIES IN ANY WAY.

Do NOT HEAT, SHORT CIRCUIT, CRUSH, PUNCTURE, OR CUT THEM.

Do NOT USE ANY LITHIUM BATTERY SHOWING SIGNS OF DAMAGE.

Do NOT TEST THEM FOR STATE OF CHARGE (MAINTAINER TASK ONLY).

Do NOT ATTEMPT TO RECHARGE LITHIUM BATTERIES.

Do NOT PLACE THEM IN ORDINARY TRASH; TURN IN USED BATTERIES TO UNIT SUPPLY, OR WHEN OPERATIONAL FOLLOW UNIT SOP REGARDING DISPOSAL.

Do NOT USE A HALON-TYPE FIRE EXTINGUISHER ON A LITHIUM FIRE. INCASE OF FIRE, DOUSE WATER, USE CO2 OR CLASS D EXTINGUISHER

Do NOT STORE BATTERIES IN UNUSED EQUIPMENT.

Do NOT STORE LITHIUM BATTERIES WITH OTHER HAZARDOUS MATERIALS.

Do NOT STORE LITHIUM BATTERIES NEAR FLAME OR HEAT.

If battery compartment becomes hot to touch, if it hisses or makes a burping sound, or if you smell an irritating gas:

TURN OFF EQUIPMENT

LET EQUIPMENT COOL FOR AT LEAST AN HOUR.

AFTER EQUIPMENT IS COOL, REMOVE BATTERY/BATTERIES.

INSTALL NEW BATTERY/BATTERIES; RESUME OPERATING.

If you experience a safety hazard or incident, notify your unit Safety Officer; file Form 368 (Product Quality Deficiency Report); and notify CECOM Safety Office, Ft. Monmouth, NJ (DSN 995-3112).

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CHAPTER 1

INTRODUCTION

1.1 PURPOSE:

To provide operators of SINCGARS manpack and vehicular RT'S including SIP/ASIP version radios with quick reference memory joggers to assist in task performance during training and operations. The primary goal is to prevent radio operators from having to memorize any tasks, steps, or other procedures. Through reference to this pocket guide, the properly trained SIP operator should be able to perform, without assistance, all *primary* operator tasks, and those *special* tasks for which especially trained.

1.2 SCOPE:

This pocket guide covers the five primary operator tasks and ten special tasks. Tasks are presented in flowchart format, with minimum essential explanation. In addition to normal SINCGARS tasks, SIP/ASIP specific, Special Operator's 9-10 tasks, this guide includes essential graphics, SINCGARS PMCS, Handheld Remote Control Radio Device (HRCRD) operations, and selected tasks pertaining to the Precision Lightweight GPS Receiver (PLGR). Operators are to refer to the SINCGARS Operator's Manual, TM 11-5820-890-10-8, and other appropriate TM's, when additional information is needed.

1.3 DESIGNATIONS:

SIP radio configurations carry a "D" designation. Unit authorized SIP radio configurations will receive only SIP components: RT-1523C/D and AM-7239C/D. ASIP radio configurations carry a "F" designation. Unit authorized ASIP radio configurations will receive only ASIP components: RT-1523E and AM-7239E. Other SINCGARS radios will carry a "A" designation.

1.4 AUXILIARY ITEMS:

The Automated Net Control Device (ANCD) and PLGR are considered to be authorized and employed in conjunction with SINCGARS.

1.5 REFERENCES:

TM 1-5810-394-14&P, ANCD Opr and Unit Maint
TM 11-5810-890-10-7, NCS Pocket Guide
TM 11-5820-890-10-8, SINCGARS Opr's Manual
TM 11-5825-291-13, PLGR Opns and Maint

1.6 ABBREVIATIONS:

ANCD	Automated Net Control Device
BPS	Bits Per Second
CID	Combat Identification
COMSEC	Communications Security
CT	Cipher Text
DTD	Data Transfer Device
EDM	Enhanced Data Mode
EXT	External
FH	Frequency Hopping
GPS	Global Positioning System
HRCRD	Handheld Remote Control Radio Device
ICOM	Integrated Communications Security
INC	Internet Controller
INTCM	Intercom
KEK	Key Encryption Key
LDE	Local Data Entry
N	New or Enhanced Data Mode
PCKT	Packet Data Mode
PLGR	Precision Lightweight GPS Receiver
PT	Plain Text
RCU	Remote Control Unit
RCU (RT)	SIP used as an RCU
SA	Situational Awareness
SIP	System Improvement Program
TEK	Traffic Encryption Key
TFOM	Time Figure of Merit
VAA	Vehicular Amplifier Adapter

CHAPTER 2

GRAPHICS

2.1 RT-1523/A/B Keypads

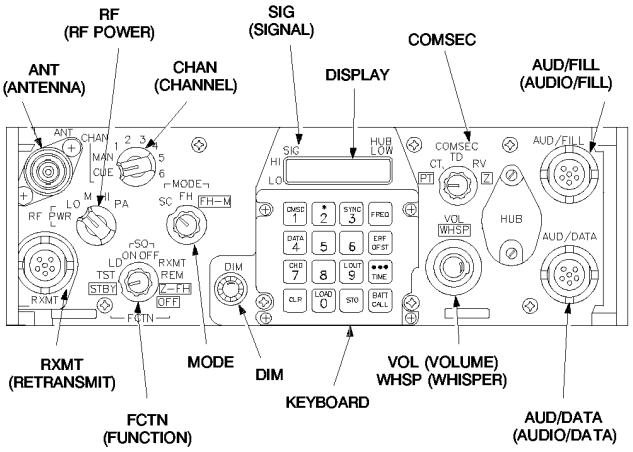


Figure none RT-1523/A/B FRONT PANEL

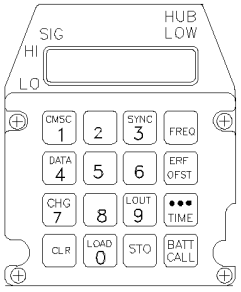


Figure none RT-1523/A/B KEYBOARD

2.2 RT-1523/C/D Keypads

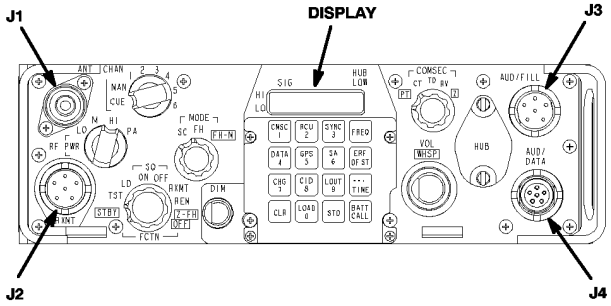


Figure none RT-1523/C/D (SIP) FRONT PANEL

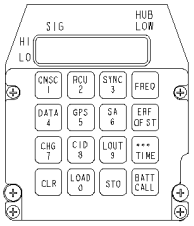


Figure none RT-1523/C/D (SIP) KEYBOARD

NOTES:

1. Four keys of SIP keypad are redesignated.
2. SA and CID keys are not used.
3. RCU key enables use of SIP RT as an RCU.
4. GPS key enables loading of GPS time.

2.3 RT-1523E Keypad

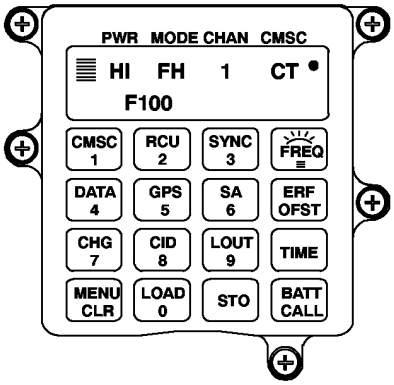


Figure none RT-1523E (ASIP) KEYBOARD

NOTES:

1. Six keys of ASIP keypad are redesignated.
2. SA, CID and GPS keys are not used.
3. RCU key enables use of ASIP RT as an RCU.
4. MENU key scrolls although MENU selections.
5. FREQ Backlight key controls backlight brightness. RT must be in SQ ON and CHG scrolls level.

2.4 RT-1523E Front Panel

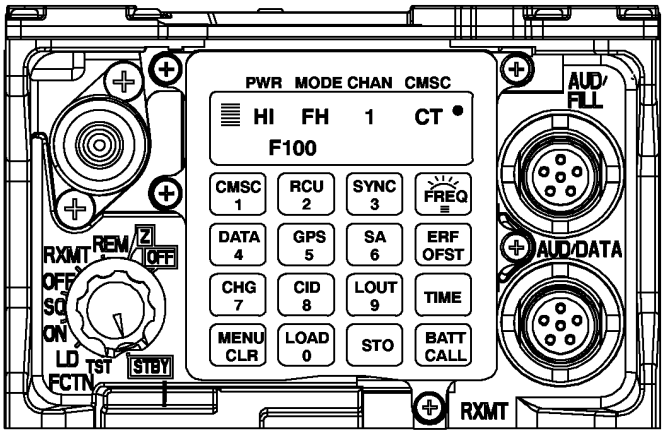


Figure none RT-1523E (ASIP) FRONT PANEL

2.5 ANCD Front View

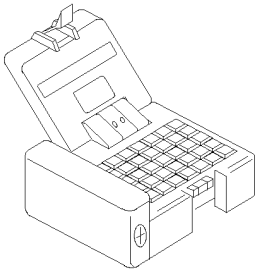


Figure none FRONT VIEW

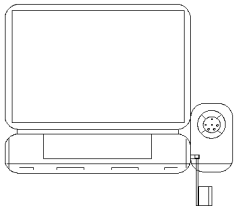


Figure none REAR VIEW (cover open)

2.6 ANCD Keypad

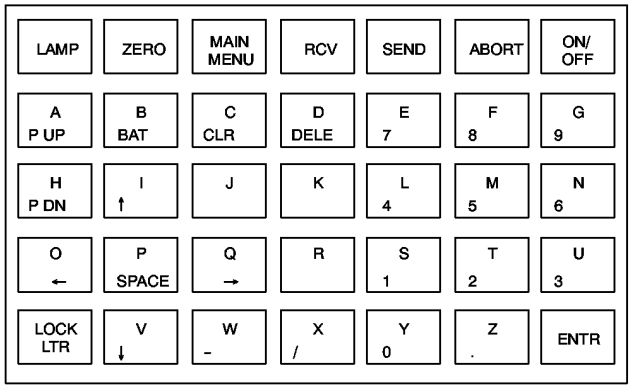


Figure none AUTOMATED NET CONTROL DEVICE. AN/CYZ-10

2.7 PLGR

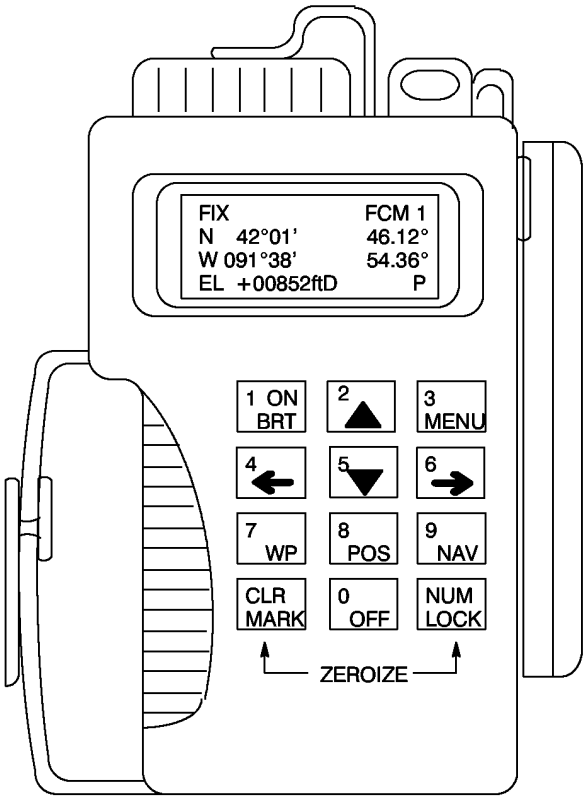


Figure none PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR)

CHAPTER 3

PRIMARY OPERATOR/PREPARATION TASKS

3.1 Preparation TASK 1: Select RT Preparation Settings from MENU

Table 3-1

SUBTASKS	ACTION	RESULTS
a. Set RT Volume	(1) Press MENU (2) Press Digit (1-9) for Vol Setting (0) for Whisper Mode	Press Menu to display Vol level Display reads WHSP if 0 selected
b. Set RT Channel	(1) Press MENU (until CHAN) (2) Press Digit (1-6) for Channel desired (0) for MAN (7) for CUE	Display reads (1-6), (Q) for CUE, (M) for Manual
c. Set RT Power	(1) Press MENU (until PWR) (2) Press CHG for desired PRW setting	Display reads (LO, M, HI, PA)
d. Set RT Mode	(1) Press MENU (until MODE (2) Press CHG for desired MODE	Display reads (SC, FH, FHM
e. Set COMSEC	(1) Press MENU (until CMSC) (2) Press CHG for desired CMSC setting	Display reads (PT, CT, TD, RV)
f. Set Backlight	(1) Place RT in SQ ON (2) Press FREQ/Backlight (3) Press CHG until desired setting	Backlight lights (4 settings Low to High, then OFF)
DEFAULT SETTINGS ARE: VOL (5), CHAN (1), PWR (LO), MODE (FH), COMSEC (CT)		

3.2 PRIMARY OPERATOR TASKS

Table 3-2

PRIMARY TASK 1:	*Load SC Frequencies into SINCGARS RT:* Required for Cold Start Net Opening, CUE and ERF method of late net entry, single channel communications, and SC frequency updates.
PRIMARY TASK 2:	*Load COMSEC/FH Data/Sync Time Using ANCD:* Required for Hot Start Net Opening, Cold Start net opening (less sync time), and COMSEC/FH Data updates (less sync time).
PRIMARY TASK 3:	*Perform Hot Start Net Opening:* Required when net has been down and is now to become operational at a prescribed time; and may be used when an individual operator has been out of the net for any reason and wishes to re-enter the net without resorting to CUE and ERF.
PRIMARY TASK 4:	*Perform, Passive Late Net Entry:* Required when RT sync time becomes more than 4 seconds but less than one minute off from net sync time; enables individual operator to re-enter net without action on the part of the NCS.
PRIMARY TASK 5:	*Obtain SOI Information from ANCD:* Required when SOI info on Nets, Suffixes, Pyro/Smoke, or Sign/Countersign is needed, may be used to view QREF related items in Group, Time Period, Set, Find, and Memo; used to obtain net ID of net not in loadset being used.

NOTE

ANCD displays are shown as dark bordered boxes. RT messages state "Display shows," without the dark border.

3.3 PRIMARY TASK 1: Load Single Channel Freq in SINCGARS RT

Table 3-3

SUBTASKS	ACTION	RESULTS
a. Prepare to perform task	(1) *Obtain* proper freqs from ANCD*	(Load CUE freq only if directed)**
	(2) *Set* RT controls: COMSEC to PT MODE to SC FCTN to Z-FH, TST, and then to LD CHAN to MAN, CUE, or 1-6	 RT display shown [GOOD] (or see unit maintainer)

*In units using secure, FH nets, operators normally load on a routine basis only a MAN SC frequency. CUE and CHAN 1-6 SC frequencies are loaded only as needed or directed.
**Only NCS and Alt NCS routinely load a CUE frequency.
***RT settings for RT-1523E are set via MENU.

SUBTASKS	ACTION	RESULTS
b. Load SC Freq	(1) *Press*: FREQ CLR XXXXX (Freq) STO	Display shows [00000] or [30000] Display shows [_ _ _ _ _] Display shows SC freq entered DIsplay blinks (data is stored)
	(2) *Repeat*: Step b-1 for each freq needed	(As directed by NCS or unit SOP)
	(3) *Set*: FCTN to SQ ON	Loading of SC freq is complete
*In units using secure, FH nets, operators normally load on a routine basis only a MAN SC frequency. CUE and CHAN 1-6 SC frequencies are loaded only as needed or directed. **Only NCS and Alt NCS routinely load a CUE frequency. ***RT settings for RT-1523E are set via MENU.		

3.4 PRIMARY TASK 2: *Load COMSEC/FH Data/Sync Time Using ANCD*[1]

[1] The ICOM Fill Procedure loads the radio with COMSEC keys, FH data, and sync time for all six SINCGARS channels.

NOTE

Set RT controls to CT, LD, FH, MAN, and DATA OFF (There is no requirement to clear a COMSEC alarm.) [2]

Table 3-4

1} select: Soi *Radio* sUpervisor	6} Set FCTN switch to LD on RT [↓]
2} *Send* Receive Database sEtup Comsec Time	7} Do you want to include time?**** (*Y*/N)
3} send to: *Radio* Ancd Stu Pc	8} Press [LOAD] on RT
4} select: ** *iCom* Nonicom Abn Rcu Haveq	9} Transfer in progress/ Transfer successful
5} Connect to RT AUD/FILL Connector ***[↓]	10} RT cannot accept time from ANCD
**Select "Rcu" to fill an RCU, C-11561, with COMSEC keys. Procedure is the same as that shown for "iCom." ***Throughout this manual, when [↓] appears in the lower right corner of a screen, you *must* press the down arrow to proceed. ****Load time as part of ICOM Fill during *net openings* and *Hot Start Late Net Entry* only, not net updates.	

[2] *RT settings for RT-1523E are set via MENU.*

3.5 PRIMARY TASK 3: *Perform Hot Start Net Opening*

Table 3-5

SUBTASK	ACTION	RESULT
a. Load RT with COMSEC/FH Date and Time*	(See section 3.4 for ICOM FIll)	COMSEC/FH data and time load into all 6 channels of the RT
b. Enter net	*Call* NCS in CT, FH and request to enter net	Hot Start net opening is complete*
* All SIP radios will accept time from an ANCD as part of a loadset and from a PLGR as a separate loading of time.		

3.6 PRIMARY TASK 4: *Perform Passive Late Net Entry (LNE)*

Table 3-6

SUBTASK	ACTION	RESULTS
Use Passive Method of Late Net Entry	(1) *Press*: FREQ SYNC	Display shows [F XXX] Display shows [LF XXX]
	(2) *Wait* for radio traffic to be heard (Do not press PTT)	Display shows [F XXX] ("L" is dropped)
	(3) *Call* NCS and re-enter net	Passive LNE is complete*
*If traffic is not heard for 3 minutes or so after using Passive Late Net Entry method, use the Hot Start procedure or CUE and ERF method.		

3.7 PRIMARY TASK 5: *Obtain SOI Information from ANCD*

(Assumes QREF has been loaded into Operator's ANCD)

1. To look at any of the QREF items, perform the following steps:

Table 3-7

select: *Soi* Radio sUpervisor
*qRef** Group Net sufX Pyro Tmpd Set C/s Find Memo
*Last item viewed appears in display.

2. QREF displays up to 40 items from Net, sufX, Pyro, or C/s available by scrolling. For each net stored as QREF items, the following information is available to the QREF user: net name, CUE frequency, MAN frequency, time period, call sign, net ID, and call word.

   To view items in Group, Tmpd, Set, Find, and Memo, as extensions of QREF entries, return to the main SOI menu and select the type of information needed. In viewing QREF or extension entries, be sure you have the correct time period selected.

3. Rules to remember in obtaining SOI information from the ANCD:

Table 3-8

ABORT	Causes ANCD to return to SOI menu
Arrow down (shown as [↓]	You must press the down arrow to go to the next screen
Arrow right/arrow left	Allows viewing of additional information and return
Arrow up/arrow down	Allows viewing of each item
DELETE	To delete SOI set, enter SOI, then Set, and press DELE key
ENTER (shown as [ENTR])	Causes activation of the entry you have selected
Hot keys	Capital letter of selection (eg, sufX). Allows direct shift from QREF to full SOI file category.
"J" key (for JUMP)	In Find, causes ANCD to continue search for next item
"K" key (for KEEP)	Causes item being viewed to be stored in QREF file
MAIN MENU	Returns you to SOI/RADIO/SUPERVISOR menu
PgUP/PgDN	Moves to top or bottom of list
ZERO (red button)	Used in combat emergency only; DO NOT use for deletions

4. Following are examples of the information which may be available in a full SOI information file.[6]
   a. GROUP: (Group)

Table 3-9

qRef *Group* Net sufX Pyro Tmpd Set C/s Find Memo
TO1 Set:52ID DEM 003 003 521ID SPT

   b. NET: (Net)

Table 3-10

qRef Group *Net* sufX Pyro Tmpd Set C/s Find Memo
TO6 1-4 FA BN W7T C81975 M74800 0424
TO6 1-4 FA BN W7T Callwrd: BULLDOG*
*Obtained by pressing right arrow. (Press left arrow to return.)

c. SUFFIX: (sufX)

Table 3-11

qRef Group Net *sufX* Pyro Tmpd Set C/s Find Memo
Commander 02 COFS/XO 27

d. PYRO: (Pyro)

Table 3-12

qRef Group Net sufX *Pyro* Tmpd Set C/s Find Memo
GREEN SMOKE** [↓/→]
Safe to land or drop supplies here**
**Meaning of signal is obtained by pressing right arrow. (Press left arrow to return.)

e. TIME PERIOD: (Tmpd)

Table 3-13

qRef Group Net sufX Pyro *Tmpd* Set C/s Find Memo
Enter Time Pd: => # #

f. SET: (Set)[3]

Table 3-14

qRef Group Net sufX Pyro Tmpd *Set* C/s Find Memo
select: *Choose* Send Receive
Scroll ↑/↓, press *ENTR* to select set [↓]
Set: (name/nr) Edn: (name/tp) *[ENTR]*

g. SIGN/CNTRSIGN: (C/s)[3]

[3] A set may be deleted by entering Set and pressing the DELE key on the ANCD.

Table 3-15

qRef Group Net sufX Pyro Tmpd Set *C/s* Find Memo
TO1 Sign: HARDWOOD Cntrsign: SNEAKER

h. FIND:[4] (Find)

Table 3-16

qRef Group Net sufX Pyro Tmpd Set C/s *Find* Memo
Find: Net nEtid Sfx Word Clsgn Grp gRp# Des Frq

i. MEMO:[5] (Memo)[4]

[4] FIND is used with full SOI file for quick location of item desired. If first item viewed is not the desired one, press "J" to cause ANCD to continue search.

Table 3-17

qRef Group Net sufX Pyro Tmpd Set C/s Find *Memo*
Memo: 1- 2- 3- 4-

56

5 Each of 4 Memos may be 6 lines of 22 spaces each. Memos will be included in transfer of SOI data (QREF or Full SOI File).

6 Once a time period has been selected, the same time period will appear each subsequent time the ANCD is turned on. Thus, you need to change the time period only when advancing to the next day. To change the time period, enter TMPD and make time period selection.

CHAPTER 4

SPECIAL OPERATOR TASKS

Table 4-18

SPEC TASK 1:	*Transfer COMSEC/FH Data, ANCD to ANCD:* Used when individual operators are required to load their own ANCD from a shared unit ANCD.
SPEC TASK 2:	*Transfer QREF SOI Information, ANCD to ANCD:* Used when individual operators are required to load their own ANCD from a shared unit ANCD.
SPEC TASK 3:	*Perform Cold Start Net Opening:* Provides NCS an alternate method of net opening, if desired. Net operators respond to NCS direction to receive and store ERF broadcast by the NCS.
SPEC TASK 4:	*Receive Net Update ERF from NCS:* Used when NCS needs to update some element of FH data using electronic transfer means. Operator requirements are similar to the Cold Start Net Opening.
SPEC TASK 5:	*Perform CUE & ERF Late Net Entry:* Required when sync time in RT is more than 60 seconds different from that of operational net. SIP radio allows up to 100 hours sync time difference for CUE and ERF late net entry.
SPEC TASK 6:	*Conduct RXMT Operations:* Used when one or more net stations are out of normal SINCGARS range, or an obstacle blocks line of sight communications. (SEE section))
SPEC TASK 7:	*Send an ERF as Part of RXMT Operation:* Used during RXMT operations when required to establish initial contact with distant station.
SPEC TASK 8:	*Change Net ID:* Used when contact with a non-loadset station is desired. Operator changes one, two, or all three digits of the net ID.

NOTE

*DATA RXMT: All date rates except PCKT may be RXMT with the following provisions.

1. SDM data, TF and AD1: No change to normal RXMT procedures. Radios do not have to be set in Data mode (data off). Mixed radios at RXMT site or outstations is permitted.
2. EDM Data: Radios at the RXMT site have to be set to the same EDM data rates as outstations. ONLY SIP radios can be used at the RXMT site and outstations.

SPEC TASK 9:	*Use SIP/ASIP RT as an RCU:* Used when remote control of a radio is required. A SIP/ASIP RT *cannot* be used in an RCU configuration when HRCRD is being used.
SPEC TASK 10:	*Send Data Via RS-232 Mode:* Used when data message is to be sent from one computer to another over a SINCGARS net using a commercial program containing widely used "Xmodem" file transfer protocol.

NOTE

*DATA RXMT: All date rates except PCKT may be RXMT with the following provisions.

1. SDM data, TF and AD1: No change to normal RXMT procedures. Radios do not have to be set in Data mode (data off). Mixed radios at RXMT site or outstations is permitted.
2. EDM Data: Radios at the RXMT site have to be set to the same EDM data rates as outstations. ONLY SIP radios can be used at the RXMT site and outstations.

4.1 SPECIAL TASK 1: *Transfer COMSEC/FH Data, ANCD to ANCD*

Table 4-19

SOURCE ANCD	TARGET ANCD
1} select: Soi *Radio* sUpervisor	1} select: Soi *Radio* sUpervisor
2} *Send* Receive Database sEtup Comsec Time	2} Send *Receive* Database sEtup Comsec Time
3} send to: Radio *Ancd* Stu Pc	3} receive: *Ancd* Cfd Stu Pc Mx
4} Loadset *Database** Time Key Eset Mwod	4} Loadset *Database* Time Key Eset Mwod
5} Do you want to include time? (*Y*/N)	5} Want to delete*** FH&COMSEC data? (*Y*/N)
6} Connect to ANCD and press [SEND](WAIT)**	6} Connect to ANCD and press [RCV)**
7} Transfer in progress/ Transfer successful	7} Transfer in progress/ Transfer successful

*You *must* enter "DATABASE" to proceed.
***DO NOT* press [SEND] until you are ready to press [RCV]. Then press [RCV] within about 20 seconds of pressing [SEND].
***You must enter "YES" to proceed.
NOTE: You can clear your ANCD of COMSEC/FH data by performing Target ANCD Steps 1-5, above, and pressing ABORT.

4.2 SPECIAL TASK 2: *Transfer QREF SOI Information, ANCD to ANCD*

Table 4-20

SOURCE ANCD	TARGET ANCD
1} select: *Soi* Radio sUpervisor	1} select: *Soi* Radio sUpervisor
2} qRef Group Net sufX Pyro Tmpd *Set* C/s Find Memo	2} qRef Group Net sufX Pyro Tmpd *Set* C/s Find Memo
3} select: Choose *Send* Receive	3} select: Choose Send *Receive*
4} Scroll (↑/↓) and press ENTR to select Set [↓]	4} receive from: *Ancd* Pc Broadcast Stu
5} Set: (name/nr) Edn: (name/tp) [*ENTER*]	5} Connect ANCD to ANCD [↓]
6} Do you want to transfer QREF? (*Y*/N)	6} Press [*RCV*] to receive**
7} send to: *ANCD* Pc Broadcast Stu	7} Processing Please wait (shows number sent)
8} Connect ANCD TO ANCD [↓]	8} Receive operation was successful [↓]
9} Press [*SEND*] to send (WAIT)**	
10} Processing Please wait (shows % of bytes sent)	
11} Sending of SOI data is completed [↓]	

*You *must* select YES.
**DO NOT press SEND until ready to press RCV.
Then press [RCV] within 20 seconds.

4.3 SPECIAL TASK 2(Alt): *Transfer Full SOI Information, ANCD to ANCD*[7]

[7] Special Task 2 enables the Opr to download quick reference (QREF) file containing up to 40 data items. The QREF gives the Opr easy and quick access to selected items of SOI information. Special Task 2 (Alt) enables those Oprs who need more SOI information than is contained in the QREF to download the complete SOI information file in addition to, or in lieu of, the QREF.

Table 4-21

SOURCE ANCD	TARGET ANCD
1} select: *Soi* Radio sUpervisor	1} select: *Soi* Radio sUpervisor
2} qRef Group Net sufX Pyro Tmpd *Set* C/s Find Memo	2} qRef Group Net sufX Pyro Tmpd *Set* C/s Find Memo
3} select: Choose *Send* Receive	3} select: Choose Send *Receive*
4} Scroll (↑/↓) and press ENTR to select Set [↓]	4} receive from: *Ancd* Pc Broadcast Stu
5} Set: (name/nr) Edn: (name/tp) *[ENTR]*	5} Connect ANCD to ANCD [↓]
6**} Do you want to transfer QREF?*** (Y/*N*)	6} Press [*RCV*] to receive****
7**} Want to specify groups to send?*** (Y/*N*)	7} Processing Please wait (shows no. of bytes sent)
8**} Want to specify a time pd to send? (Y/*N*)	8} Receive operation was successful [↓]
9**} Want to specify a Smoke/Pyro data? (*Y*/N)	
10} send to: Ancd Pc Broadcast Stu	
11} Connect ANCD to ANCD [↓]	
12} Press [*SEND*] to send (WAIT)***	
13} Processing Please wait (shows % of bytes sent)	
14} Sending of SOI data is completed	

**Screen appears only when related data is stored in the ANCD.
***You *must* enter NO to transfer full SOI.
****DO NOT press [SEND] until ready to press [RCV]. Then press [RCV] within 20 seconds of pressing [SEND].

4.4 PRIMARY TASK 3: *Perform Cold Start Net Opening*

Table 4-22

SUBTASK	ACTION	RESULTS
a. Prepare radio to receive an ERF	(1) *Load* MAN (SC) freq into RT	(See section 3.3)
	(2) *Load* RT with COMSEC/FH data	(See section 3.4)
	(3) *Set*: *** FCTN to LD COMSEC to CT* CHAN to MAN MODE to FH	Display shows [COLD] (ready)
b. Receive and store ERF	(1) *Standby* until NCS sends ERF	N/A
	(2) *Note* Signal Display activate	Display shows [HF XXX]
	(3) *Press*: STO	Display shows [STO __]
	(4) *Press*: X (1-6)	Display shows [STO X]; blinks
c. Check communications	(1) *Set*: CHAN to X FCTN to SQ ON	N/A
	(2) Call or respond to NCS**	Cold Start net opening is complete

*Net may open in PT if COMSEC is not a consideration.
**If contact with NCS fails, standby on MAN channel for NCS call.
***RT settings for RT-1523E are set via MENU.

4.5 PRIMARY TASK 4: *Receive Net Update ERF from NCS*

Table 4-23

SUBTASK	ACTION	RESULTS
a. Prepare to receive net update	(1) *Stay* on net operational channel	N/A
	(2) *Set*: FCTN to LD	N/A

*NCS will direct the channel for storage of ERF. When update becomes effective, this channel becomes new net operational channel.
**It is assumed that the Opr had the same COMSEC key loaded in channels 1 thru 5/6.

SUBTASK	ACTION	RESULTS
b. Receive and store net update	(1) *Standby* for NCS to send ERF	N/A
	(2) *Note* Signal Display activation	Display shows [HF XXX]
	(3) *Press*: STO	Display shows [STO __]
	(4) *Enter*: X (1-6)*	Display shows [STO X]; blinks
c. Check communications	(1) *Set*: CHAN to X FCTN to SQ ON	N/A
	(2) *Call* or respond to NCS	Net update ERF is complete**
*NCS will direct the channel for storage of ERF. When update becomes effective, this channel becomes new net operational channel. **It is assumed that the Opr had the same COMSEC key loaded in channels 1 thru 5/6.		

4.6 SPECIAL TASK 5: *Perform CUE & ERF Late Net Entry*

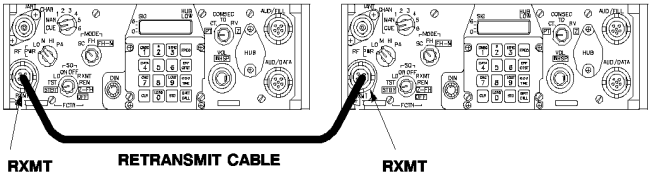
Table 4-24

SUBTASK	ACTION	RESULTS
Use CUE and ERF Method of LNE*	(1) *Load*: CUE freq (and MAN if not loaded)	(See section 3.3)
	(2) *Set*: COMSEC to PT	(RT must be in PT to send CUE)
	(3) *Press*: PTT (4-5 sec)	(Press PTT, but do not talk)
	(4) *Set*: (at once) COMSEC to CT	(NCS/Alt NCS will answer in CT)
	(5) *Wait*: For answer	N/A
	(6) *Repeat*: Every 15 seconds until NCS answers	(CUE goes through only if net is quiet)
	(7) *Request*: NCS send you an ERF	(Go to MAN when NCS directs)
	(8) *Receive & store*: ERF when sent	(See section 3.6)
	(9) *Re-enter*: net	CUE & ERF LNE is complete
*An operator having a loaded ANCD and access to GPS time may elect to re-enter the net by use of the Hot Start procedure.		

4.7 SPECIAL TASK 6: *Conduct Retransmission (RXMT) Operations*

Table 4-25

SUBTASK	ACTION	RESULTS
a. Prepare for RXMT mission*	(1) Obtain: SC/FH data for RXMT	N/A
	(2) Load: RXMT radios	Ready to operate at RXMT site
b. Establish comm from RXMT site	(3) Move: To RXMT site	N/A
	(1) Call: NCS on F1 using Radio-C	Radio-A has comm to Radio-C on F1
	(2) Call: Radio-B using Radio-D	(RXMT crew may have to relocate
	(3) Send: ERF to Radio-B if required	Syncs Radio-B with Radio-D
c. Initiate Radio-A to Radio-B comm	(1) Install: RXMT cable Radio-C to -D	Required for RXMT operation
	(2) Set: Radio-C to FH and -D to FH-M	Radio-A and -D serve NCS role
	(3) Request: Radio-A call -B via RXMT	N/A (Perform Step 4 at once)
	(4) Set: Radio-C&D FCTN to RXMT	RXMT operation is ongoing*
*See figure none for identification of RTs and net IDs and frequency. **Mixed mode RXMT (FH-SC/SC-FH) is slower than FH mode RXMT.		



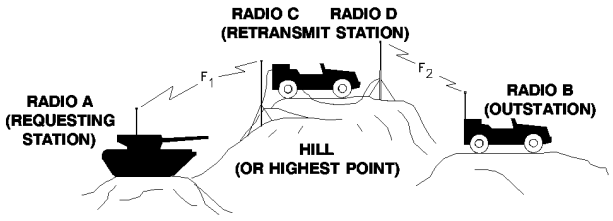


Figure none RETRANSMISSION GRAPHIC

1. An RXMT station operating in EDM mode will pass both EDM and SDM data traffic, as well as voice messages.
2. For RXMT of RS-232 data, both RXMT radios must be set to the data rate used for RS-232 data transfer. Transfer of data by RS-232 mode through an RXMT station requires a longer time than FH only RXMT or point-to-point RS-232 traffic.
3. Mixed mode RXMT (SC to FH, FH to SC) of data traffic can be passed in SDM mode only, not in EDM mode.

NOTE

4.8 SPECIAL TASK 7: *Send an ERF as Part of RXMT Operation*

Table 4-26

SUBTASK	ACTION	RESULTS
a. Obtain data to be sent by ERF	*Load*: data into Radio-D	Prepares Radio-D to send an ERF
b. Contact receiving station	*Alert*: Radio-B that ERF is to be sent	N/A
c. Send ERF	(1) *Set*: Radio-D to LD and FH-M	Required for sending an ERF
	(2) *Press*: LOAD	Display shows [Hld_]
	(3) *Enter*: Chan where data stored	Display shows [HD xxx]
	(4) *Press*: ERF	Display shows [SEND]
	(5) *Set*: FCTN to SQ ON	Display is cleared
d. Check communications	(1) *Wait*: for Radio-B to store ERF	(20-30 sec should be adequate)
	(2) *Call*: Radio-B to confirm ERF	(Sending of ERF is complete)

4.9 SPECIAL TASK 8: *Change Net ID*

Table 4-27

SUBTASK	ACTION	RESULTS
a. Set proper RT controls	(1) *Set*:* FCTN to LD CHAN to 1-6 (chan in which data is stored)	
b. Enter new Net ID in RT	(2) *Press*: FREQ CLR ID numbers (3) STO	Display shows: [F XXX] Display shows: [F _ _ _] Display shows: [F XXX] Display blinks; net ID is stored
c. Resume normal communications	(3) *Set*: FCTN to SQ ON CHAN to 1-6 (as desired)	New Net ID is now available for use
*The SIP radio allows a change of all three digits of a net ID with the MODE switch set to FH or FH-M.		

4.10 SPECIAL TASK 9: *Use SIP RT as an RCU*

Table 4-28

STEP	ACTION	RESULTS
1	Load RT & RCU(RT) with proper data	Prepares SIP RTs for remote operations*
2	Install wire link from RCU(RT) to Rem radio	(See TM 11-5820-890-10-8 for setup instructions)
3	Set REM RT FCTN switch to REM position	Enables RCU(RT) to control Rem radio
4	Set RCU(RT) FCTN switch to SQ ON	(LD, SQ OFF, and RXMT may also be used)
5	Set RCU(RT) DATA to any option	N/A
6	Press [RCU] key on RCU(RT); select "RCU"	"RT," "RCU," "EXT," and "LDE" show in RT display
7	Wait 7 sec; then note RCU(RT) display blink	SIP RT is now ready to perform as an RCU(RT)
8	Set RCU(RT) FCTN to REM position ***	Enables RCU(RT) Opr to call remote radio by wire
9	Press RCU(RT) CALL key & PTT at same time; hold for 4 to 7 seconds	Produces ring tone and CALL message at Rem RT; oprs can talk on orderwire
10	Set RCU(RT) FCTN to SQ ON	Remoted radio is now controlled by RCU(RT)

*For use of a SIP RT as either a manpack RCU or a manpack remoted radio, Battery Box CY-8523A/B is reqired. ASIP requires a two wire adapter.
**RCU, C-11561, may be used for remote control of a SIP radio for voice and SDM data only, not for EDM data.
****RCU(RT) COMSEC must be set to PT to talk over the orderwire.*

4.11 SPECIAL TASK 10: *Use SIP RT to Send Data Via RS-232 Mode*

Table 4-29

STEP	ACTION	RESULTS
1	Load PC with commercial comm S/W*	Use any SW program offering "Xmodem"
2	Connect PC to SIP RT AUD/DATA port	RS-232 method does not require SW in SIP VAA
3	Alert net data is to be sent via RS-232 mode	If not fixed, coordinate data rate is to be used**
4	Select data rate to be used for RS-232 data***	Sending and receiving RTs must use same data rate
5	Prepare data message or load PC with data	N/A

*Both sending and receiving stations must use the same or compatible communications programs.
**Depending upon the distance between sending and receiving stations, any one of four enhanced data rates may be used for RS-232 traffic: 1200N, 2400N, 4800N, and 9600N.
***To select data rate, select RS-232 at SIP RT, press ENTER on PC, and note data rate displayed on PC screen.
****If voice mode has priority of use on your net, it may be necessary to wait for a quiet period to send data messages. (Pressing PTT will *not* interrupt data flow except to your radio.)

STEP	ACTION	RESULTS
6	Check to ensure net is clear of traffic	Need clear net to ensure data goes through****
7	Follow comm SW procedures to send/receive RS-232 data	Control is from computer; SIP radio serves as data communications carrier

*Both sending and receiving stations must use the same or compatible communications programs.
**Depending upon the distance between sending and receiving stations, any one of four enhanced data rates may be used for RS-232 traffic: 1200N, 2400N, 4800N, and 9600N.
***To select data rate, select RS-232 at SIP RT, press ENTER on PC, and note data rate displayed on PC screen.
****If voice mode has priority of use on your net, it may be necessary to wait for a quiet period to send data messages. (Pressing PTT will *not* interrupt data flow except to your radio.)

CHAPTER 5

PLGR TASKS

5.1 PLGR TASK 1: *"Obtain Date and GPS Zulu Time from PLGR"*

Table 5-30

SUBTASKS	ACTION	RESULTS
a. Place PLGR into operation	(1) Press PLGR [ON] key	Power is applied to the PLGR
	(2) Observe PLGR perform self-test	No action required of operator
b. Select proper screen and TFOM	(1) At end of self-test, note this screen * >>>	FIX** FOM 5 18T MGRS-New WK 82223e 63528n EL-00027m "/# P
	(2) Press down arrow on PLGR, and note this screen >>>	2124:43Z TFOM 4*** 25-12-95 SUN Speed too slow GS < 1mph "/# P
c. Read date and time from PLGR screen	(1) Read date as 25-12-95****	N/A
	(2) Read time as 2124, 43 sec, Zulu	PLGR Task 1, Obtaining Date & Time, completed

*In this section, PLGR screens are shown in double lined boxes.
**A battery powered PLGR will automatically go to standby as soon as satellites have been acquired.
***Time Figure of Merit (TFOM) of 8 or less indicates that PLGR is tracking at least one satellite and GPS time is accurate.
****When the date read from the PLGR is entered into the ANCD, it is automatically converted to the two-digit Julian Date needed for SINCGARS sync time.

5.2 PLGR TASK 2: *"Manually Load PLGR Date and Zulu Time Into ANCD"*

Table 5-31

SUBTASKS	ACTION	RESULTS
a. Determine GPS date and Zulu time	(1) Perform PLGR Task 1 as shown above	N/A
	(2) Read date and time from PLGR (with TFOM of 8 or less)	2124:32Z TFOM 4 25-12-95 MON Speed too slow GS < 1mph "/# P
b. Prepare ANCD for	(1) Turn ANCD ON	select: Soi Radio *sUpervisor*
	(2) Enter SUPERVISOR	Are you authorized to use this feature? (*Y*/N)
	(3) Respond YES	Warning - This could cause data loss [#]
	(4) Press down arrow [↓]	Are you sure you want to continue? (*Y*/N)
	(5) Respond YES	Appl *Date* Time Setup Util Bit (MAIN)
c. Load new date and time	(1) Enter DATE	Date is Mon 12-25-1995 New mm-dd-yy:
	(2) Enter new date as mm-dd-yy	Date is Mon 12-25-1995 New mm-dd-yy:12-26-95
	(3) Press ENTR	Appl Date *Time* Setup Util Bit (MAIN)
	(4) Enter TIME	Time is 14:53:27 New hh:mm:ss:
	(5) Enter new time as hh:mm:ss	Time is 14:53:27 New hh:mm:ss:21:25:00
	(6) When PLGR reads 25:00,ENTR	*Appl* Date Time Setup Util Bit {MAIN}
	(7) Enter APPL	SOI RADIO *RDS*
	(8) Enter RDS	Select:** Soi Radio sUpervisor

*Enter one minute beyond PLGR time and wait until PLGR seconds reach 00 to press ENTR on ANCD. Because the ANCD requires time to load, you may find that pressing ENTR on the ANCD when PLGR time reads :59 gives you a more accurate entry.
**To check the accuracy of your ANCD time entry, enter RADIO, then TIME. You can then read ANCD time in running format and compare it with running time in the PLGR. If the two times are more than one second different, reload PLGR time into your ANCD.

5.3 PLGR TASK 3: *Electronically Load PLGR Date and Time into RT"*

Table 5-32

SUBTASKS	ACTION	RESULTS
a. Prepare PLGR for task	(1) Turn PLGR ON	N/A
	(2) Observe PLGR perform self-test	N/A
	(3) Note this PLGR screen >>>	FIX** FOM 5 18T MGRS-New WK 82223e 63528n EL-00027m "/# P
	(4) Press PLGR MENU key twice; note this screen >>>	DATA-XFR SV-SEL DOP-CALC ALERTS SINCGARS KOI-18 <more>P
	(5) Press PLGR right arrow 4 times to highlight SINCGARS	DATA-XFR SV-SEL DOP-CALC ALERTS *SINCGARS* KOI-18 <more>P
	(6) Press PLGR down arrow to select SINCGARS	SINCGARS Start time fill ACTIVATE QUIT
	(7) Press left arrow to highlight ACTIVATE (Do *NOT* press [#] yet)	SINCGARS Start time fill *ACTIVATE* QUIT
b. Prepare RT for transfer	(1) Connect PLGR to RT AUD/FILL	N/A
	(2) Set RT FCTN to LD	N/A
c. Perform date/time transfer from PLGR to RT	(1) Press PLGR down arrow to select ACTIVATE	SINCGARS Press LOAD key on radio QUIT
	(2) Press LOAD on SIP RT	SINCGARS time fill successful QUIT
	(3) Press PLGR down arrow to select QUIT	Date/time transfer is completed

5.4 PLGR TASK 4: *"Load PLGR Key from ANCD Into PLGR"*

Table 5-33

SUBTASK	ACTION	RESULT
a. Prepare PLGR	(1) Turn PLGR ON	N/A
	(2) Observe PLGR self-test	N/A
	(3) Note when this screen appears >>>	FIX FOM 5 18T MGRS-New WK 82223e 63528n EL-00027m "/# P
	(4) Connect W4 to PLGR, but *NOT* to ANCD yet	N/A
b. Prepare ANCD	(1) Turn ANCD ON	Select: Soi Radio sUpervisor
	(2) Enter RADIO	Send Receive Database sEtup Comsec Time
	(3) Enter COMSEC	vG Ld Rv Ak Mk vU
	(4) Enter LD	Select: Tek Kek
	(5) Enter TEK, press PgDN;ENTR	*Select key* qUit (name/number)
	(6) Press PgUP/DN to view, then ENTR	Select key *qUit* (PLGR key name XMT
		Connect ANCD to RT
	(7) Enter QUIT	(WAIT)* [↓]
c. Load key	(1) Press [↓], Do *not* connect to RT*	Press [LOAD] on RT**
	(2) Now connect W4 to ANCD	Key loaded

*Do not connect W4 to ANCD until directed to do so by the ACTION column. Sequence of task requires that you connect W4 to PLGR, select key to be transferred, and then connect the W4 to the ANCD. When you connect the W4 to the ANCD, the PLGR key is immediately transferred.
**Ignore this reference to the RT; only the ANCD and PLGR are involved in this task.

CHAPTER 6

HRCRD OPERATIONS

6.1 GENERAL:

The HRCRD is used with the SINCGARS manpack radio, AN/PRC-119A/D/F, and dismount kits of vehicular radios AN/VRC-88A/D/F and -91A/D/F.

6.2 RADIO CONTROL

Using the HRCRD, a manpack radio operator can control the Channel, RF Power, Mode, and COMSEC functions of the radio, without requiring access to the RT. RT FCTN switch must be set to REM for HRCRD to be functional.

6.3 VOLUME

The level of audio volume at the HRCRD can be adjusted by use of the thumb wheel on the side of the HRCRD.

6.4 BACK LIGHT

The HRCRD back light can be turned on with one press of the round light button. A second press of the light button turns the back light off.

6.5 CABLING

The cable of the HRCRD forms a "Y," with one end connected to the RT AUD/DATA or AUD/FILL port. The other end is connected to the 6-pin connector on Battery Box CY-8523C or the AUX connector of the RT-1523E. This battery box is required for use of the HRCRD in normal manpack radio configuration.

6.6 RT KEYPAD

Access to the RT Front Panel is required whenever it is necessary to change the FCTN switch, to adjust audio volume at the RT, and to change the light level in the RT display.

6.7 VEHICULAR USE

Although the HRCRD is intended for use with manpack radios, it can be employed with vehicular configurations that do not include a control-monitor. To do so, connect one end of the "Y" cable to the RT (A position) AUD/DATA or AUD/FILL port and the other end to J9 connector (C-M) at the rear of the VAA.

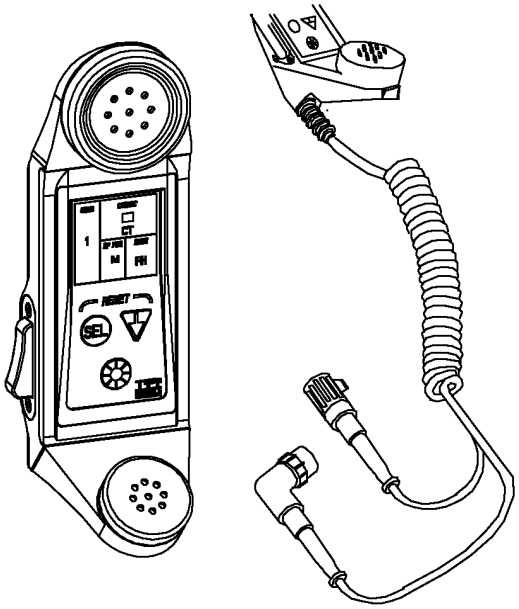


Figure none HRCRD

CHAPTER 7

PMCS FOR SINCGARS RADIOS

7.1 SINCGARS RADIOS

Table 7-34

ITEM/WHEN	CHECK/SERVICE	NMC* IF:
1. (B,D,A)** *Controls*: (Front of RT and on VAA)	a. Cracked/broken? b. Loose? c. Frozen? d. Missing?	Any RT or VAA control is missing or does not function properly***
2. (B,D,A) *Cables*: (W2, RF, W4, and PA Pwr)	a. Missing? b. Installed properly? c. Connectors tight? d. Obvious damage?	Any cable is missing or damaged and cannot be used
3. (B,D,A) *Antennas*: (Manpack short and long; vehicular regular and SLPA)	a. Installed properly? b. Grounded? c. Broken parts? d. Missing parts? e. Tips and tiedowns present?	a. b. Antenna is not grounded c. Part broken and cannot be used d. Part is missing
4. (B) *Power*: Manpack Vehicular Manpack or vehicular	a. Main battery present? b. Vehicle power available? c. Move COMSEC from Z to PT, adjust DIM, move FCTN from OFF to Z-FH, and check that RT display lights?	a. Missing; and cannot be replaced b. No vehicle power and cannot be corrected c. RT display does not light
5. (B) *Self-Test*:	a. With FCTN in Z-FH display shows [GOOD]? b. Set COMSEC to CT; check to see that alarm will clear? c. Set FCTN to TST; at end of self-test display shows [GOOD]?	a. Display does not show [GOOD] b. COMSEC alarm will not clear c. Self-test ends with display other than [GOOD]

*Non Mission Capable and reportable under The Army Maintenance System (TAMMS).
**Before, During, and After Operations checks and services.
*** "Does not function properly" means item cannot be used in operating the radio.

ITEM/WHEN	CHECK/SERVICE	NMC* IF:
6. (B) *Keypad*:	With RT set to CT, SC, LD, and CHAN as shown below: a. Press FREQ, CLR, and enter frequency: **CUE** 31000 **MAN** 32000 **CHAN 1** 43000 **CHAN 2** 54000 **CHAN 3** 65000 **CHAN 4** 76000 **CHAN 5** 87000 **CHAN 6** 87975 b. Press STO for each frequency entered	a. Any test frequency (0-9) cannot be entered into the RT b. Any test frequency cannot be stored in RT
7. (B) *Data Loading*: (SC freq, COMSEC key, FH data, sync time)	a. Load SC frequency b. Load COMSEC key c. Load FH data d. Load sync time	a. SC freq will not load b. COMSEC key will not load c. FH data will not load d. Sync time will not load
8. (B,D,A) *Comm Check*: (Voice/data in SC/FH modes; PT/CT and RXMT, as required by mission)	a. Check sidetone b. Check voice comm in SC-PT and FH-CT (check SQ OFF in SC) c. If data comm to be used, check using mission-related data device d. If RXMT to be used, check in mission-related modes	a. Sidetone not heard b. No voices comm in SC-PT or FH-CT c. No data comm using mission-related data device d. No RXMT capability in mission-related modes

*Non Mission Capable and reportable under The Army Maintenance System (TAMMS).
**Before, During, and After Operations checks and services.
*** "Does not function properly" means item cannot be used in operating the radio.

7.2 HRCRD

Table 7-35 HANDHELD REMOTE CONTROL RADIO DEVICE (HRCRD) PREVENTATIVE MAINTENANCE CHECKS AND SERVICES

CHECK/SERVICE	OPERATOR PROCEDURE	NOT FULLY MISSION CAPABLE IF:*
CONTROLS: *(B,D,A)*	To control radio functions, press [SEL] until the required function is highlighted (CHAN; COMSEC; RF PWR; MODE). Then press the [DOWN ARROW] until specific item you need appears in the display.	
LIGHT *(B,D,A)*	To turn backlight on, press the light button. To turn the light off, press the light button a second time.	
VOLUME *(B,D,A)*	To change the level of audio volume, rotate the volume control knob on the side of the HRCRD to reach desired level.	
CABLE *(B,D,A)*	a. Check for proper installation. b. Check for tightness of connectors. c. Check for obvious damage to cable.	
CONNECTORS: *(B,D,A)*	a. Check for obvious damage to connectors. b. Check for missing O-rings. c. Check for bent/broken pins.	
COMM CHECK: *(B,D,A)*	a. Check for sidetone. b. Check voice comm.	a. Cannot transmit or receive.

Before (B), During (D), After (A)

NOTE

HRCRD IS MISSION CAPABLE AS LONG AS TRANSMIT AND RECEIVE FUNCTIONS ARE OPERABLE. If controls are not functioning, place radio function switch to normal operating position (SQ ON)/LD) and change functions via keypad/switches