

# DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

## OPERATION OF AN/PSC-3 RADIO SET WITH SINGGARS GROUND RADIO SETS

Headquarters, Department of the Army, Washington, DC

1 APRIL 1993

### REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this technical bulletin. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and blank forms), direct to: Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-LT, Fort Monmouth, New Jersey 07703-5007. A reply will be furnished direct to you.

1. **Purpose.** This technical bulletin provides the information and procedures for operating the AN/PSC-3 with the SINGGARS ICOM family of ground radios. It is necessary that the operator be properly trained in the operation of the AN/PSC-3 and SINGGARS.

This technical bulletin is a supplement for the purpose of interperability.

2. **Application - Radio Sets.** The radio sets covered by this technical bulletin are AN/VRC-87A, AN/VRC-88A, AN/VRC-89A, AN/VRC-90A, AN/VRC-91A, and AN/VRC-92A.
3. **References.** Refer to the following technical publications for normal operation and maintenance of the equipment:

<u>PUBLICATION NUMBER</u>	<u>DATE</u>	<u>TITLE</u>
TM 11-5895-1180-10	15 January 1992	Operator's Manual, Radio Set AN/PSC-3
TM 11-5820-890-10-1	1 September 1992	SINGGARS ICOM Ground Combat Net Radio

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- Equipment Setup Operation.** Assemble and install the SINCGARS radio set and AN/PSC-3 individually per applicable technical manuals. Perform Preventive Maintenance Checks and Services (PMCS) and/or Built-In-Test (BIT) functions. Load all frequencies, hopsets, and variables into the radio set and establish voice communications before connecting the AN/PSC-3 to the SINCGARS radio set. Once voice communication has been established, connect the AN/PSC-3 as described in the following paragraph.
- Cable Instructions.** The following figure illustrates the connection between the SINCGARS radio set and the AN/PSG3 Radio Set.

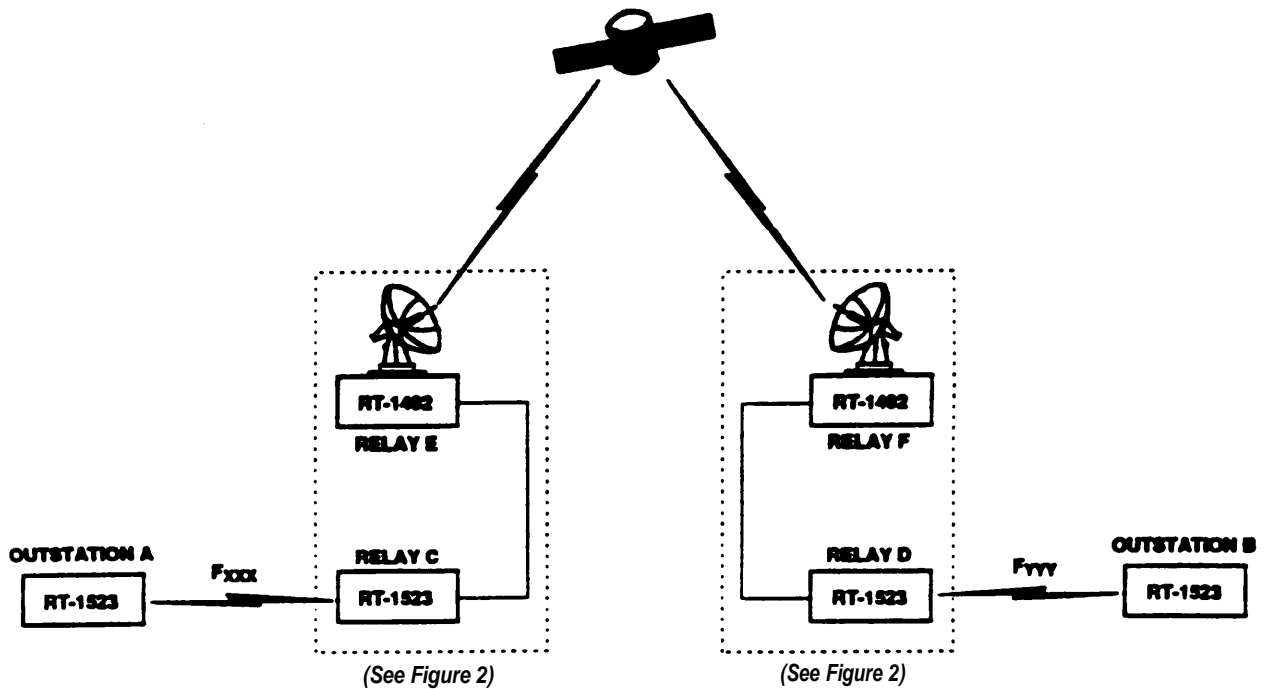


Figure 1

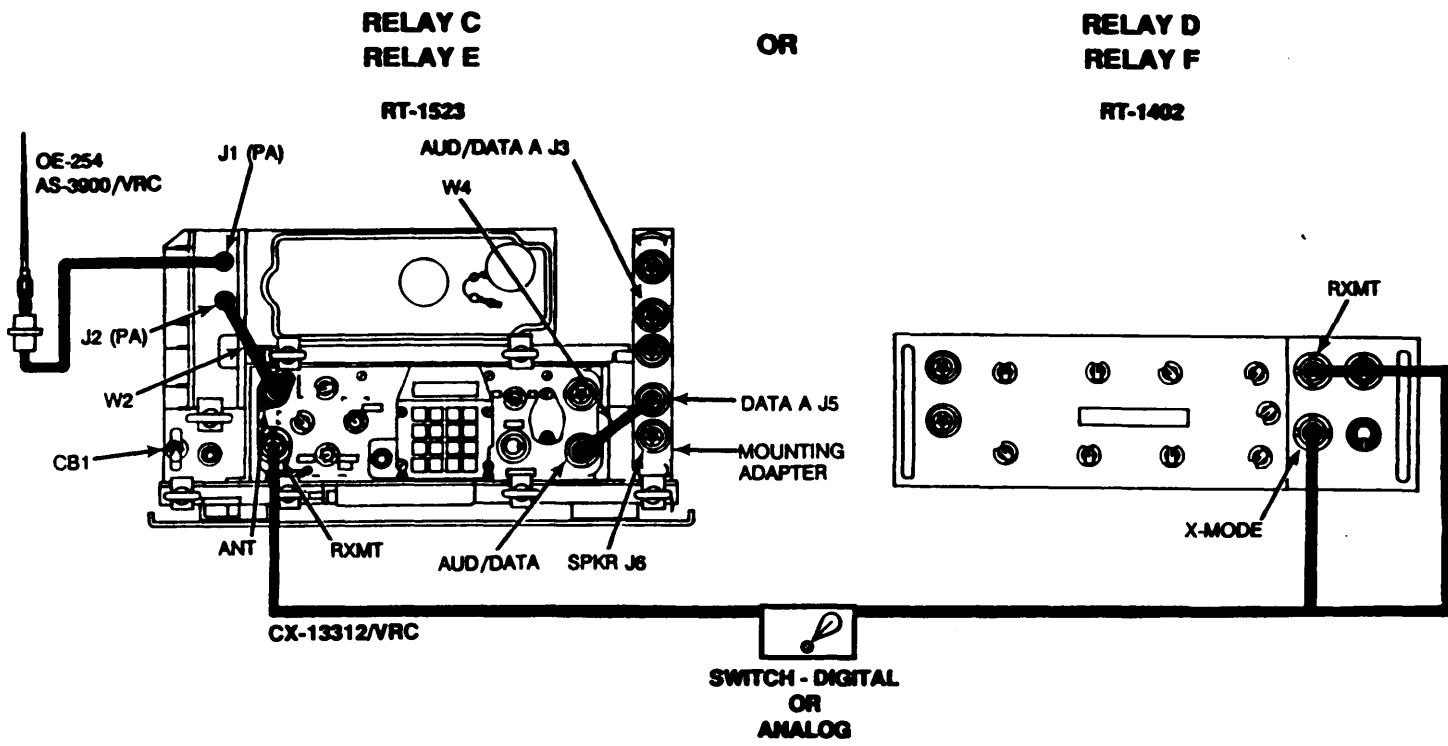


Figure 2

6. **Switch Settings and Initialization.** The following tables provide the necessary switch settings and communication parameters for interopeperability. Verify the switch settings for both the SINCGARS radio and the AN/PSC-3, then establish communication on the net.

**SINGLE CHANNEL**

OUT A & B	SC/PT VOICE	SC/PT DATA	SC/CT VOICE	SC/CT DATA
COMSEC	PT	PT	TD	TD
MODE	SC	SC	SC	SC
FCTN	SQ ON	SQ ON	SQ ON	SQ ON
DATA	OFF	AS RQD	OFF	AS RQD
FREQ	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY
RF	AS RQD	AS RQD	AS RQD	AS RQD
.	OFF	OFF	OFF	OFF

RELAY C & D	SC/PT VOICE	SC/PT DATA	SC/CT VOICE <sup>(1)</sup>	SC/CT DATA <sup>(1)</sup>
COMSEC	PT	PT	PT	PT
MODE	SC	SC	SC	SC
FCTN	RXMT	RXMT	RXMT	RXMT
DATA	OFF	OFF	OFF	OFF
FREQ	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY
RF	AS RQD	AS RQD	AS RQD	AS RQD
.	OFF	OFF	OFF	OFF
CX-13312/VRC	ANALOG	DIGITAL	DIGITAL	DIGITAL

RELAY E & F <sup>(2)</sup>	
MODE	X2
CALL	RCV
FCTN	SAT
FREQ	UPLINK/DOWNLINK
DSPLY	AS RQD
OFFSET	AS RQD
SQUELCH	APP. 9 O' CLOCK <sup>(3)</sup>

**TABLE 1**

- NOTE 1: In SC/CT there is no capability to monitor retransmission/relay traffic. Putting COMSEC switch to CT will disable the retransmission function.
- NOTE 2: Once set up, there is no need to change the settings of E & F.
- NOTE 3: Squelch at 9 o'clock is a starting position and can be moved slightly. Too little and you won't key the RT and too much you get a constant PTT.

### FREQUENCY HOPPING

OUT A & B	FH/PT VOICE	FH/PT DATA	FH/CT VOICE	FH/CT DATA
COMSEC	PT	PT	TD	TD
MODE	FH	FH	FH	FH
FCTN	SQ ON	SQ ON	SQ ON	SQ ON
DATA	OFF	AS RQD	OFF	AS RQD
FREQ	FXXX/FYYY (1)	FXXX/FYYY (1)	FXXX/FYYY (1)	FXXX/FYYY (1)
RF	AS RQD	AS RQD	AS RQD	AS RQD
.	OFF	OFF	OFF	OFF

RELAY C & D	FH/PT VOICE	FH/PT DATA	FH/CT VOICE	FH/CT DATA
COMSEC	PT (2)	PT (2)	PT (2)	PT (2)
MODE	FH	FH	FH	FH
FCTN	RXMT	RXMT	RXMT	RXMT
DATA	OFF	OFF	OFF	OFF
FREQ	FXXX/FYYY (1)	FXXX/FYYY (1)	FXXX/FYYY (1)	FXXX/FYYY (1)
RF	AS RQD	AS RQD	AS RQD	AS RQD
.	OFF	OFF	OFF	OFF
CX-13312/VRC	DIGITAL	DIGITAL	DIGITAL	DIGITAL

RELAY E & F (3)	
MODE	X2
CALL	RCV
FCTN	SAT
FREQ	UPLINK/DOWNLINK
DSPLY	AS RQD
OFFSET	AS RQD
SQUELCH	APP. 9 O' CLOCK (4)

TABLE 2

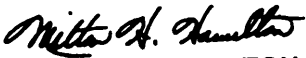
- NOTE 1: Outstation A and Relay C must be in FH Sync and Outstation B and Relay D must be in FH Sync. The Net ID maybe the same or different. In order to utilize the same Net ID/Frequency, Outstation A and Relay C, E must be physically separated by 50-75 miles from Relay D, F and Outstation B.
- NOTE 2: Should there be a requirement to monitor traffic at the retransmit/relay location put COMSEC switch to CT.
- NOTE 3: Once set up, there is no need to change the settings of E & F.
- NOTE 4: Squelch at 9 o'clock is a starting position and can be moved slightly. Too little and you won't key the RT and too much you get a constant PTT.

7. **Data Devices.** Numerous data devices can be connected to outstations A and B. Each have technical bulletins describing their interoperability and connectivity to SINCGARS. Should a data device be used, the data rate should be set the same at all the RT-1523s.
  
8. **System Troubleshooting Procedures.** These steps will assist you in isolating faulty system components when you have a problem communicating in a net using data transmission. These procedures assume that the net and secure FH voice communication has been established. If you are unable to communicate using data transmission, do the following troubleshooting steps in the order provided.
  - **CHECK LOCAL RADIO.** Use the data on the FH voice net to determine that the radio net is operating.
  
  - **CHECK WITH OTHER NET MEMBERS.** Do you have data communication with some stations but not others? The other station may be out of range, temporarily off the air, or has not checked into the net. If data communication can be established with another station, your system is probably O.K. and the problem may be at the distant net station.
  
  - If you are attempting to use the same Net ID or Single Channel Frequency, Relay C, E and Outstation A must be physically separated from Relay D, F and Outstation B by a minimum of 50 to 75 miles.
  
  - **CHECK SYSTEM CONFIGURATION.** Verify proper cabling, initialization and subscriber parameters, radio set and AN/PSC-3 switch settings, etc. Of special concern is the squelch setting on the RT-1402.
  
  - **NOTIFY MAINTENANCE.** If the problem cannot be isolated, notify unit maintenance personnel and inform your NCS of your communication problem.

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