

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

**OPERATION OF LIGHTWEIGHT TACFIRE
AN/PYC-1 (BCT) AND AN/PSC-2 (DCT)
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, US 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 Lightweight TACFIRE with the SINGGARS family of ground radios. It is necessary that the operator be properly trained in the operation of the lightweight TACFIRE and SINGGARS. The Lightweight TACFIRE (LTACFIRE) consists of five(5) systems as follows:
 - Battlefield Command Terminal (BCT), AN/PYC-1
 - Digital Communication Terminal (DCT), AN/PSC-2
 - Battery Computer System (BCS), AN/GYK-29 (V)
 - TACFIRE Digital Message Device (DMD), AN/PSG-2
 - Fire Support Team Digital Message Device (FIST DMD), AN/PSG-5

For interfacing information and procedures for operating the BCS, DMD, or FIST DMD refer to TB 11-5820-890-10-8, TB 11-5820-890-10-9, and TB 11-5820-890-10-10.

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

2. Application - Radio Sets. The radio sets covered by this technical bulletin are ANIVRC-87, ANNVRC-87A, ANVRC-88, ANVRC-88A, ANIVRC-89, AN/VRC-89A, AN/VRC-90, AN/VRC-90A, AN/VRC-91, AN/VRC-91A, AN/VRC-92, 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 11-7025-279-12&P	1 March 1992	Operator's Manual, Lightweight TACFIRE
TM 11-5820-890-10-1	1 September 1992	SINGGARS ICOM Ground Combat Net Radio
TM 11-5820-890-10-3	1 September 1992	SINGGARS NON-ICOM Ground Combat Net Radio

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4. Equipment Setup/Operation. Assemble and install the radio set and lightweight TACFIRE 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 lightweight TACFIRE to the radio set. Once voice communication has been established, connect the lightweight TACFIRE as described in the following paragraph.

5. **Cabling Instructions (FSK).** The following figure illustrates the typical configuration for the connection between the radio set and the lightweight TACFIRE.

- Connect W4 cable from RT AUD/DATA connector to mounting adapter DATA A J5 connector.
- Connect lightweight TACFIRE data cable from lightweight TACFIRE J1 connector to mounting adapter AUD/DATA A J3 connector.
- Connect handset H-250/U to RT AUD/FILL connector.
- Connect PSG-2/PSG-5 to RT (refer to TB 11-5820-890-10-9 and TB 11-5820-8900-10).
- if using a manpack or single radio mount, or connecting directly to RT AUD/DATA, connect W32 cable (lightweight TACFIRE) to TACFIRE magic cable (CX-13402) and connect to RT AUD/DATA.
- Figure shows lightweight TACFIRE connected to lower radio (RT-A).
- Lightweight TACFIRE may be connected to upper radio (RT-B) if desired.

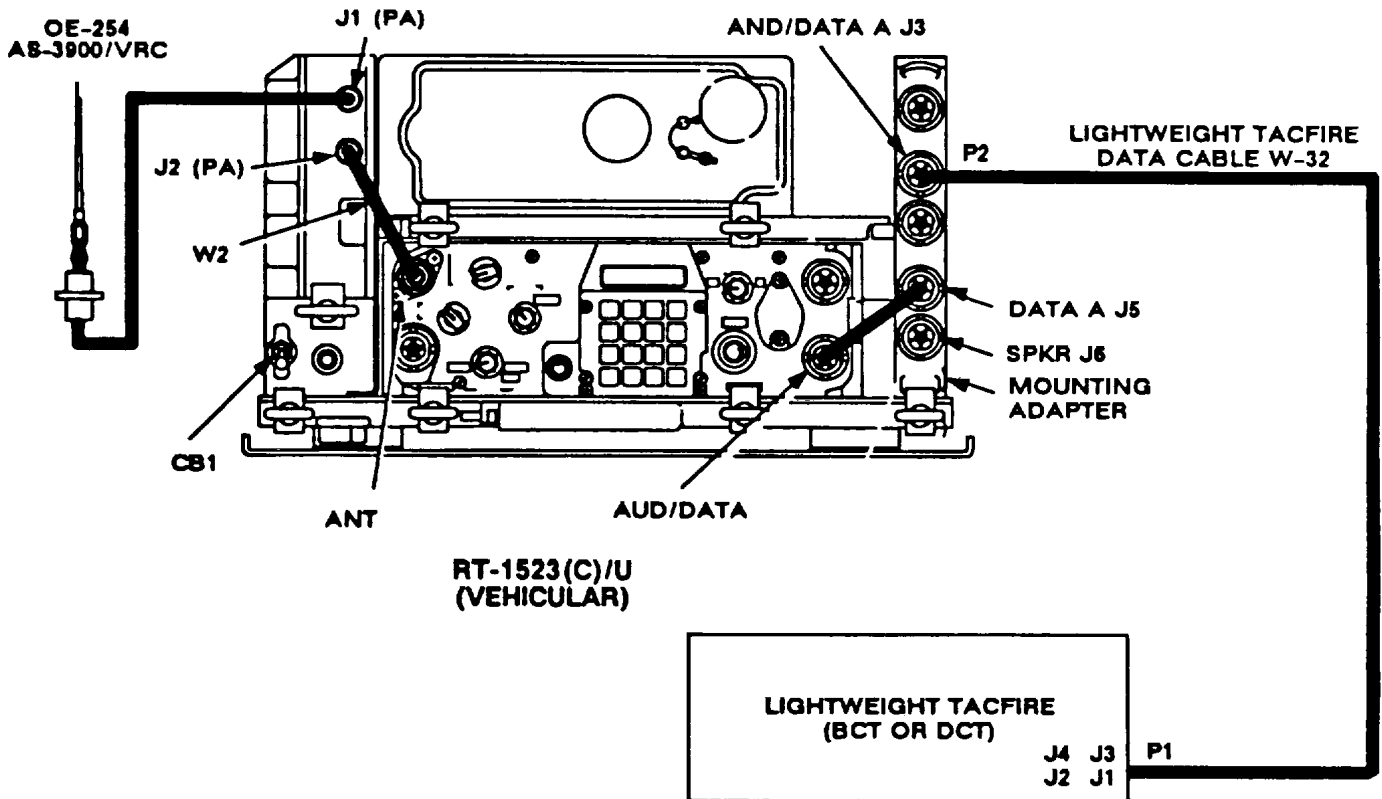


Figure 1. Cabling for Lightweight TACFIRE to SINCGARS Radio Set

6. **Switch Settings and Initialization.** The following tables provide the necessary switch settings and communication parameters for interoperability. Initialize the for communication as shown in Table 6-2. Verify the switch settings for both the radio and the lightweight TACFIRE; then establish communication on the net.

SWITCH	ICOM RADIO	NON-ICOM RADIO
FUNCTION	SQ ON	SQ ON
MODE	SC or FH	SC or FH
DATA	TF	AD2
COMSEC	CT	(TSEC/KY-57) ON
CT		
*	OFF	N/A

Table 6-1. SINGGARS Radio Set

TONE PAIR	1200/2400 Hz
XMIT BLOCK:	SINGLE
XMIT RATE:	1200
PREAMBLE:	.7 (1.4 or greater when operating with PSG-5)
KY:	OFF
MODEM:	-18 dbm

Table 6-2. Lightweight TACFIRE (Recommended)

7. **Cabling Instructions for RT to BCT (for BCT to BCT [16 kbps]).** The following figure illustrates the typical configuration for the connection between the RT-1523(C)/U and the lightweight TACFIRE.

- Connect lightweight TACFIRE data cable from lightweight TACFIRE J1 connector to RT AUD/DATA connector.
- Connect handset H-250/U to RT AUD/FILL connector.
- Figure shows lightweight TACFIRE connected to lower radio (RT-A).
- Lightweight TACFIRE may be connected to upper radio (RT-B) if desired.

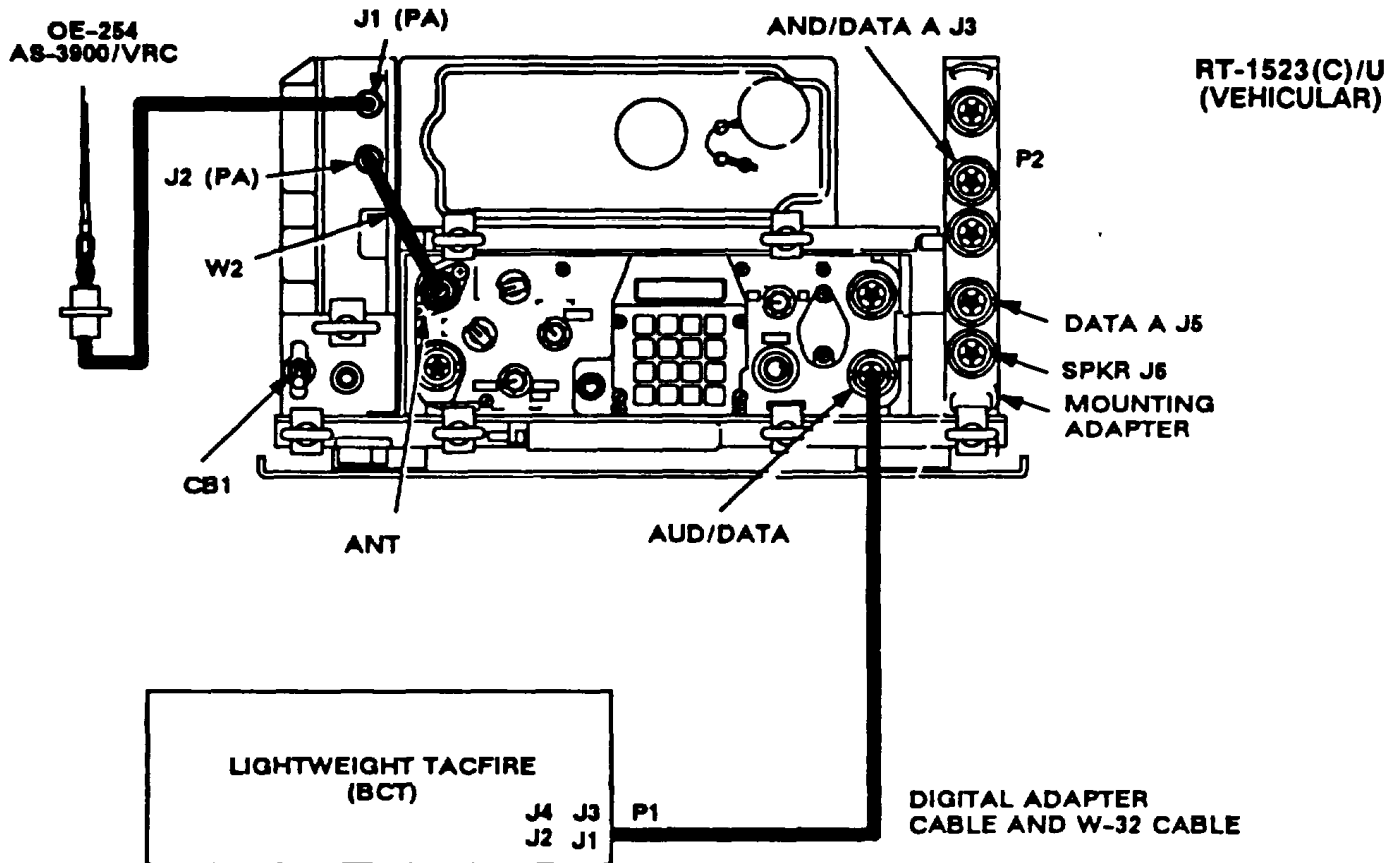


Figure 2. Cabling for Lightweight TACFIRE to SINCGARS Radio Set

8. **Operation Instruction for BCT to BCT (16 kbps).** Set the following parameters: Set BCT and RT data rates to 16 kbps and set BCT KY switch to ON. The remaining switch settings are the same as described in paragraph 6. Tone Pair N/A in 16K.

9. **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.
 - CHECK SYSTEM CONFIGURATION. Verify proper cabling, initialization and subscriber parameters, radio set and lightweight TACFIRE switch settings, etc.
 - NOTIFY MAINTENANCE. If the problem cannot be isolated, notify unit maintenance personnel and inform your NCS of your communication problem.

10. **Remote Control Operations.** The Remote Control Unit (RCU) C-11561 may be used in place of the RT in a SINCGARS radio system to allow the radio set and antenna to be placed at distances up to 4 km from the local system. Interoperability between the lightweight TACFIRE and the RCU is the same when the lightweight TACFIRE is connected to an RT. Table 8-1 provides the switch settings for the radio set and the RCU for remote control operation.

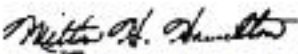
SWITCH	RCU	RADIO SET
FUNCTION	SO ON	REM
MODE	SC or FH	N/A
DATA	TF	N/A
COMSEC	CT	PT
OFF	N/A	

Table 8-1. RCU Settings for Remote Operation

By Order of the Secretary of the Army:

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