

# DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

## OPERATION OF AN/TPQ-36, FIREFINDER, 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/TPQ-36 with the SINGGARS family of ground radios. It is necessary that the operator be properly trained in the operation of the AN/TPQ-36 and SINGGARS. This technical bulletin is a supplement for the purpose of interoperability.
2. **Application - Radio Sets.** The radio sets covered by this technical bulletin are AN/VRC-90, and AN/VRC-90A.
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 11-5840-354-10	15 September 1991	Radar Set, AN/TPQ-36
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 AN/TPQ-36 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.
5. **Cabling Instructions.** The following figure illustrates the typical configuration for the connection between the radio set and the AN/TPQ-36.
  - Connect W4 cable from RT AUD/DATA connector to mounting adapter DATA A J5 connector.
  - Connect AN/TPQ-36 data cable to mounting adapter AUD/DATA connector A J3.
  - Connect handset H-250/U to RT AUD/FILL connector.

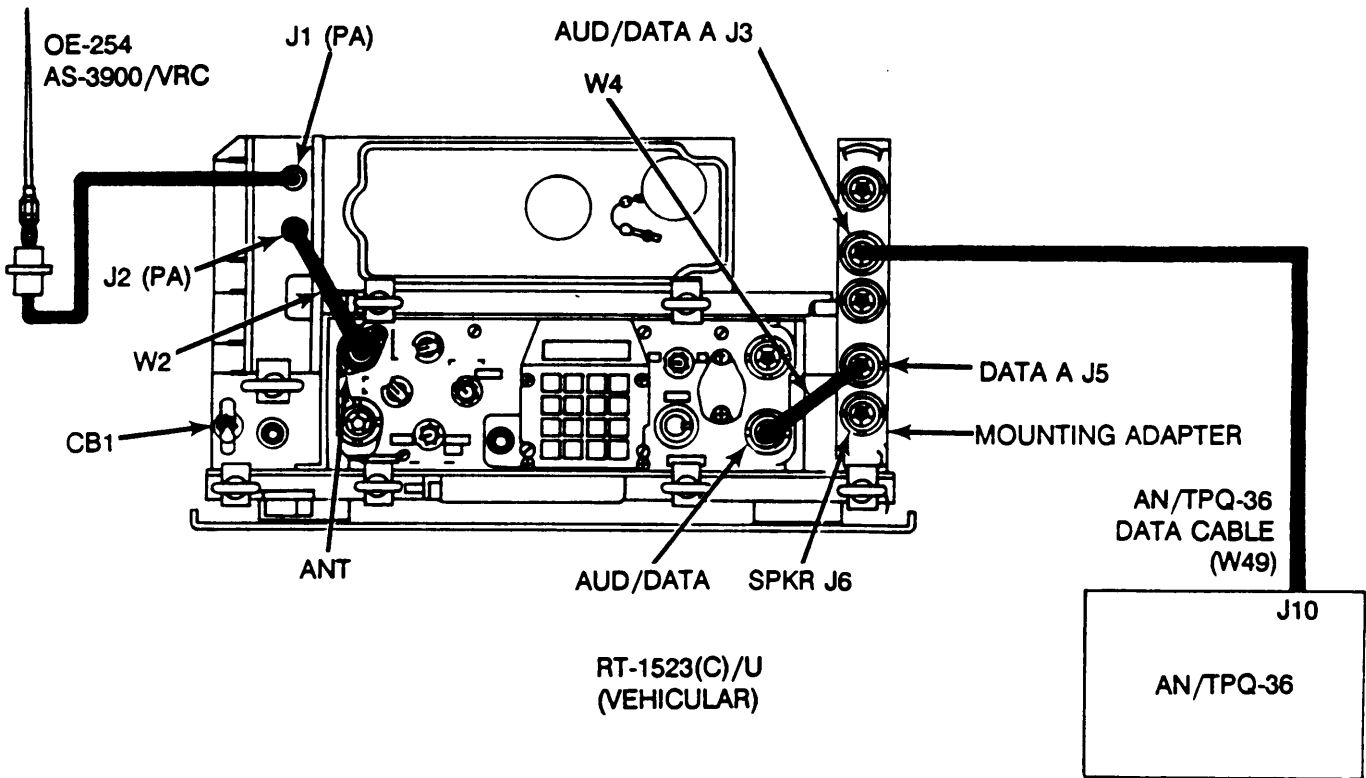


Figure 1. Cabling for AN/TPQ-36 to SINGARS Radio Set

6. **Switch Settings and Initialization.** The following table provides the necessary switch settings and communication parameters for interoperability. Verify the switch settings for the radio. The Communications Data selections in the AN/TPQ-36 do not change from those normally selected when using the VRC-12 family radios.

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

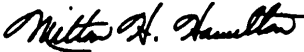
Table 6-1. SINCGARS Radio Set

7. **System Troubleshooting Procedures.** These steps will assist you in identifying 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 OK and the problem may be at the distant net station.
  - **CHECK SYSTEM CONFIGURATION.** Verify proper cabling, initialization and subscriber parameters, radio set and AN/TPQ-36 switch settings, etc.
  - **NOTIFY MAINTENANCE.** If the problem cannot be isolated, notify unit maintenance personnel and inform your NCS of your communication problem.

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FIGURE NO.

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# THE METRIC SYSTEM AND EQUIVALENTS

## WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches  
 1 Kilometer = 1000 Meters = 0.621 Miles

## WEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces  
 1 Kilogram = 1000 Grams = 2.2 lb.  
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

## LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

## SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches  
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet  
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

## CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches  
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

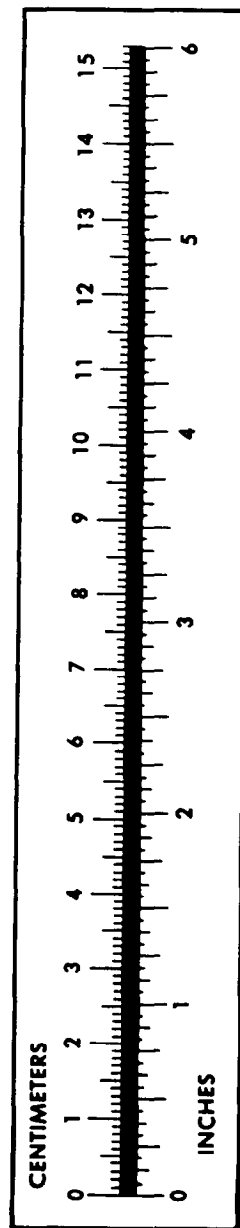
## TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

## APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



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