

# CHAPTER 1

## INTRODUCTION

### Section I. GENERAL

#### 1. Scope of Manual

*a.* This manual contains the theory of operation, and the instructions and data necessary for field maintenance (higher echelon repair) of Radio Sets AN/PRC-8, -9, and -10 (fig. 1). Theory explaining the system functioning of auxiliary equipment used with these sets also is presented.

*b.* Except for differences pertaining to frequency, Radio Sets AN/PRC-8, -9, and -10 are identical in structure, function, and detailed circuit arrangement. With the above exception, all three sets are treated as one and are referred to as "the radio set." Radio Receiver-Transmitters RT-174/PRC-8, RT-175/PRC-9, and RT-176/PRC-10 (major components of radio sets) are treated similarly and are referred to as "the receiver-transmitter."

#### 2. Forms and Records

The following forms will be used for reporting unsatisfactory conditions of Army materiel

and equipment and when performing preventive maintenance:

*a.* DD Form 6, Report of Damaged or Improper Shipment, will be filled out and forwarded as prescribed in SR 745-45-5 (Army), Navy Shipping Guide, Article 1850-4 (Navy) and AFR 71-4 (Air Force).

*b.* DA Form 468, Unsatisfactory Equipment Report, will be filled out and forwarded to the Office of the Chief Signal Officer as prescribed in SR 700-45-5.

*c.* DD Form 535, Unsatisfactory Report, will be filled out and forwarded to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio, as prescribed in SR 700-45-5 and AF TO 00-35D-54.

*d.* DA Form 11-239, Second and Third Echelon Maintenance Check List for Signal Corps Equipment (Radio Communication, Direction Finding, Carrier, Radar) will be prepared in accordance with instructions on the back of the form (fig. 26).

*e.* Use other forms and records as authorized.

### Section II. DESCRIPTION AND DATA

#### 3. Purpose and Use

The radio set is a portable receiver-transmitter which is used to provide frequency-modulated (fm) radio communication. It is powered by a battery and is carried by the operator. It also may be used in vehicular, airplane, or semipermanent ground installations where an electronic power supply is used instead of the battery to power the set. Provision also is made for homing use, remote operation, and unattended relay operation. For operat-

ing details, see TM 11-612, Radio Sets AN/PRC-8, AN/PRC-9, and AN/PRC-10.

#### 4. Technical Characteristics

##### *a. General.*

Frequency range:

Radio Set AN/PRC-8.....20.0 to 27.9 mc.

Radio Set AN/PRC-9.....27.0 to 38.9 mc.

Radio Set AN/PRC-10....38.0 to 54.9 mc.

Number of tubes.....16.

Type of modulation.....Frequency.

Type of transmission.....Voice.

Power source-----Battery BA-279/U  
 or Amplifier-  
 Power Supply  
 AM-598/U (not  
 supplied).

Antenna AT-272/PRC-----3 feet long; semi-  
 rigid steel tape.

Antenna AT-271/PRC-----10 feet long; multi-  
 section whip tape.

Tuning-----Single calibrated dial  
 continuously tunes  
 both transmitter  
 and receiver.

Calibration-----Built-in calibrator  
 (two Crystal Units  
 CR-18/U, 1 mc  
 and 4.3 mc), pro-  
 vides 1-mc calibra-  
 tion points  
 throughout oper-  
 ating range.

Weight (including compo-  
 nents and battery). 26 pounds.

*b. Transmitter.*

Power output:  
 Radio Set AN/PRC-8-----1.2 watts.  
 Radio Set AN/PRC-9-----1.0 watt.  
 Radio Set AN/PRC-10-----0.9 watt.

Oscillator-----Electron coupled  
 Hartley, with  
 automatic fre-  
 quency control.

Microphone input impedance...150 ohms.

Distance range-----5 miles. (May be 3  
 to 12 miles, de-  
 pending on anten-  
 na used and siting  
 conditions.)

*c. Receiver.*

Type-----Superheterodyne,  
 fm.

Sensitivity-----0.5 microvolt with  
 2.5 milliwatts out-  
 put, 15-kilocycle  
 deviation, and a  
 10-decibel signal-  
 to-noise ratio.

Selectivity-----80 kc at 6 db down.

Output impedance-----600 ohms.

Type of reception-----Fm.

Intermediate frequency-----4.3 mc.

**5. Differences in Models**

Circuit changes have been made in Radio Sets AN/PRC-8, -9, and -10. For details of these circuit changes refer to the notes on the main schematic diagrams (figs. 51-54).