CHAPTER TWO
AN/WSC-6A(V)4 SYSTEM OVERVIEW

2.0 SYSTEM

The shipboard systems consist of the AN/WSC-6A(V)4 SHF SATCOM set and the AN/WSC-6(V)4 SHF SATCOM set. The AN/WSC-6A(V)4 SATCOM set includes the OZ-43(V)4/WSC-6(V) Radio Set Group and the OE-536/WSC-6A(V)4 Antenna Group (7 foot antenna). The AN/WSC-6(V)4 SHF SATCOM set includes the OZ-43(V)3/WSC-6(V) Radio Group and the OE-279(V)2/WSC Antenna Group (4 foot antenna). Figure 2.1 shows the major components of the AN/WSC-6A(V)4 SHF SATCOM Set. Table A.1 lists the component units of each of these equipment groups as described in this training guide.

2.1 PURPOSE

The SHF SATCOM set provides a shipboard capability for transmitting 7.9 to 8.4 GHz and receiving 7.25 to 7.75 GHz radio communications in the SHF range as part of the geostationary Defense Satellite Communications System (DSCS). When interfaced with a modem, the SHF SATCOM set provides near worldwide digital voice, Teletype (TTY) or digital data communications. Signals including TTY, secure voice, and high-speed data, are transmitted by the system to DSCS satellites, linking shipboard activities with other afloat commands and shore-based facilities. The DSCS satellites provide translation of transmitted signals to the corresponding down-link frequencies.

A modem provides modulation and demodulation interfacing between the radio set group and the digital voice, multiplex TTY, or digital data communication peripherals. The modem input and output are an aggregate data signal that is multiplexed or demultiplexed by the baseband equipment. In the transmit function, the modem converts transmit data input to a modulated Intermediate Frequency (IF) signal between 50 and 90 MHz, which is then up-converted to a SHF signal and power amplified to provide the transmit Radio Frequency (RF).

In the receive function, the radio set group provides conversion of the receive SHF signals to a IF signal between 50 and 90 MHz, which is demodulated by the modem to provide data and/or voice outputs.

Ship position information (earth coordinates) obtained from ship navigation personnel and satellite earth coordinates are manually entered into antenna group equipment units. The antenna group receives heading, roll, and pitch information from the ship's gyrocompass for platform stabilization. These inputs are used by the antenna group for acquisition of the satellite beacon (BCN). Upon acquisition of the satellite BCN by the Tracking Converter

(TCON), the antenna group automatically transfers to the autotrack mode and uses tracking error data from the radio set group TCON to maintain track.

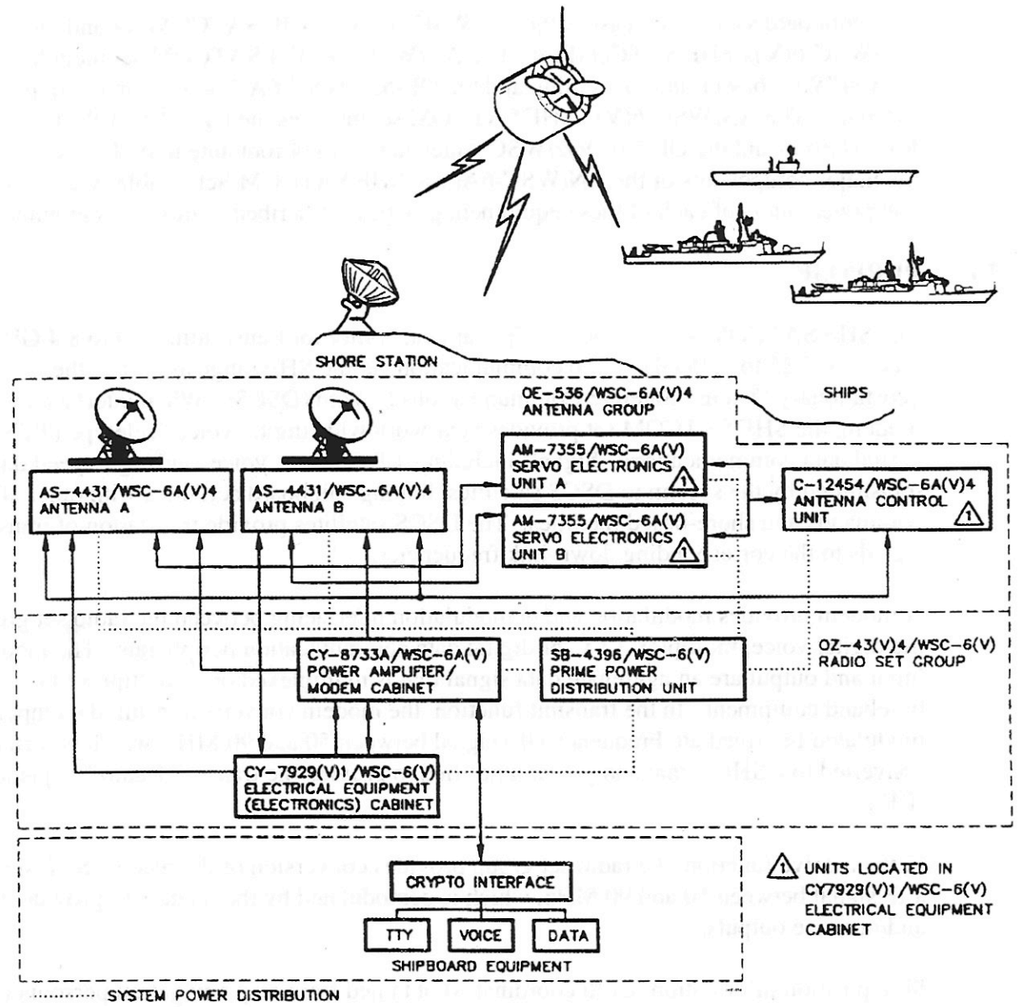

Figure 2.1 AN/WSC-6A(V)4 SHF SATCOM Set