

JOB SHEET: HF Systems Week Eight 8-1-3

TITLE: Setting-Up the HF Unclassified Voice System

OBJECTIVES: Upon completion of this job sheet you will be able to:

- A. Employ the AN/WRC-1 as a means of Transmitting and Receiving HF Voice Communications
- B. Operate the SB-863/SRT Transmitter Transfer Switchboard and SB-973/SRR Receiver Transfer Switchboard as they are employed in the HF Voice Communication System
- C. Operate the C-1138/UR Radio Set Control as it is employed in the HF Voice Communications System
- D. Establish Communications utilizing the HF Unclassified Voice System with a station similarly equipped

We have now reached the point where we have acquired the necessary skill to obtain communications over a great distance by utilizing the AN/WRC-1 SSB Radio Set from a local position. However, this skill limits the operator to one position, directly in front of the equipment being utilized. Since radio is the "Voice of Command" and as such must serve in many situations, both tactical and administrative, we must have a means to control our equipment from positions located throughout the ship. In obtaining this capability it becomes necessary to employ switchboards and control devices. The system we are about to utilize is simple in content yet very vital to the accomplishment of a ships mission.

I. AN/WRC-1 SSB Radio Set

A. Transmit (T-827/URT HF Transmitter and AM-3007/URT RF Amplifier)

- LSB +2
USB -2
FSK -2
1. T-827/URT - Using MHZ controls, KHZ controls, and CPS switch select desired operating frequency:
 - a. Allow for 2KHZ frequency being supplied by FSK unit if Frequency Shift Keying is to be employed on operating frequency.
 - b. When transmitting ISB, USB or LSB the T-827/URT should be tuned to the Suppressed Carrier Frequency.
 2. T-827/URT - Set transmitter MODE SELECTOR switch at AM position.
 3. T-827/URT - Set LOCAL/REMOTE switch at LOCAL position.
 4. AM-3007/URT - Check line voltage indication on AMPLIFIER METER. Notify Watch Supervisor if voltage indication is consistently high or too low.
 5. AM-3007/URT - If no line voltage indication appears on AMPLIFIER METER proceed as follows:

- a. Check fuse indication lamps to ensure no fuse has blown
 - b. Ensure primary power CIRCUIT BREAKER is at the ON position
 - c. Ensure primary power SELECTION SWITCH is at the AC/INT BAT position.
6. AM-3007/URT - Set ANT CPLR BYPASS switch to NORMAL position.
 7. AM-3007/URT - Consult Antenna Coupler Tuning Chart for appropriate antenna to be utilized.
 8. AM-3007/URT - Hold ANT CPLR LOAD control at LO for required number of flashes of ANT CPLR TUNE indicator listed in LOAD column of chart.
 9. AM-3007/URT - Hold ANT CPLR TUNE control at position indicated on chart for required number of flashes of ANT CPLR TUNE indicator.
 10. AM-3007/URT - Set RF OUTPUT METER switch at 100W REFL
 11. AM-3007/URT - Hold RF OUTPUT TUNE/OPERATE switch at TUNE and minimize indication of RF OUTPUT meter by adjusting ANT CPLR TUNE control (HI and LO) and ANT CPLR LOAD control (HI and LO) alternately. This process should be repeated until meter indication nulls (\emptyset).
 12. AM-3007/URT - Set RF OUTPUT METER switch at 30W REFL position.
 13. AM-3007/URT - Hold RF OUTPUT TUNE/OPERATE switch at TUNE and minimize indication of RF OUTPUT meter by adjusting ANT CPLR TUNE control (HI and LO) and ANT CPLR LOAD control (HI and LO) alternately. This process should be repeated until meter indication nulls (\emptyset).
 14. AM-3007/URT - Set RF OUTPUT METER switch at 100W FWD
 15. T-827/URT - Place Transmitter MODE SELECTOR switch to desired mode of transmission.
 16. T-827/URT - If transmitter is to be utilized from a remote position, set LOCAL/REMOTE switch at REMOTE.

B. Receive (R-1051/URR Radio Receiver)

1. Using MHZ controls, KHZ controls, CPS switch, and VERNIER control select desired operating frequency. Frequency selected will be displayed in small windows above MHZ and KHZ controls. (When the CPS switch is set at 000, the R-1051/URR operates at the frequency selected with the MHZ and KHZ controls. The operating frequency can be increased in 100 CPS steps above that selected by the MHZ and KHZ controls by rotating the CPS switch from its 000 position to the 900 position. With the CPS switch at the VERNIER position, the VERNIER control may be used to vary the operating frequency from 0 to 1000 CPS above the operating frequency selected with the MHZ and KHZ controls).
2. Set MODE SELECTOR switch at desired mode of operation.
3. Rotate RF GAIN control fully clockwise

4. Depending on mode of operation selected, connect headset to USB PHONES jack or LSB PHONES jack on front panel. (NOTE: USB PHONES jack is to be utilized for all modes of reception other than LSB or ISB/LSB)
5. Depending on mode of operation selected, adjust USB PHONE LEVEL or LSB PHONE LEVEL control to a comfortable earphone level.
6. If receiver output is to be utilized from a remote position or with ancillary equipment, the line level must be adjusted to preclude signal distortion. To adjust line level place USB LINE LEVEL switch or LSB LINE LEVEL switch, as appropriate, to 0 DB position. Using applicable LINE LEVEL control, adjust LINE LEVEL METER for a mid-scale reading.
7. When CW is being received, adjust BFO FREQ control to vary pitch of received signal.
8. When receiving from a transmitter that is not tuned to exact same frequency as the R-1051/URR, use VERNIER control to tune-in received signals.
9. During short periods of shut down, place the MODE SELECTOR switch at STD BY. This eliminates the need for frequency standard warm-up prior to resuming normal operation. To shut down the R-1051/URR set the MODE SELECTOR switch at OFF.

II. Switchboards

A. SB-863/SRT Transmitter Transfer Switchboard

1. Locate the Transmitter or Trunkline desired on the engraved nameplate located in the upper center of the front panel. Ascertain its position number assignment.
2. Locate remote station or Trunkline desired on far right or left side nameplates.
3. Turn rotary selector switch corresponding to the desired remote station or Trunkline to position number of transmitter or Trunkline desired.
4. NOTE: Position 20 enables transfer from one SB-863/SRT to another in cases where there are more transmitters than one SB-863/SRT can accommodate.

B. SB-973/SRR Receiver Transfer Switchboard

1. Locate the Receiver or Trunkline desired on the engrave nameplate located in the upper center of the front panel. Ascertain its position number assignment.

2. Locate remote station or Trunkline desired on far right or left side nameplates.
3. Turn rotary selector switch corresponding to the desired remote station or Trunkline to position number of receiver or trunkline desired.
4. NOTE: Position "X" enables transfer from one SB-973/SRR to another in cases where there are more receivers than one SB-973/SRR can accomodate.

III. C-1138/UR Radio Set Control

A. TRANSMITTER OFF-ON switch

1. To energize the controlled transmitter press the START button momentarily. This energizes the starting relay in the Transmitter and the POWER INDICATOR is illuminated.
2. To de-energize the transmitter press the STOP button. This shorts the starting relay coil in the transmitter, de-energizing the starting relay and the POWER INDICATOR.

B. TRANSMITTER INPUT circuits

1. Depending upon what type of emission is being utilized, the operator may use a handset, chestset or microphone.
2. The operator must actuate the push-to-talk switch on the microphone, handset or chestset he is using. This energizes the CARRIER ON indicator on the C-1138/UR indicating that the transmitter is in use.

C. EARPHONE LEVEL control

1. Controls the volumn of the receiver being utilized.
2. The EARPHONE level control is adjusted by each operator to suit his own listening habits.

V. Establishing Communications

- A. Having performed the above steps, insert handset into handset connector of C-1138/UR Radio Set Control
- B. Establish communications utilizing proper voice procedure with distant station. (NOTE: Voice Call Signs will be assigned for purpose of station identification. At no time shall unauthorized voice procedure be utilized on any voice circuit).