NORMAL

MWO Effective Date is January 1993 and Completion Date is January 1997.

MWO 11-5821-260-30-2

MODIFICATION WORK ORDER

MODIFICATION OF RADIO SET AN/ARC-l15 FOR ANVIS LIGHTING PROGRAM

(NSN5821-01-935-5072) (EIC:JTL)

Headquarters, Department of the Army, Washington, DC

15 September 1993

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. 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 provided to you.

1. Purpose of Modification.

The purpose of this modification is to replace the existing front panel on the VHF AM Radio Set AN/ARC-l15 with a new panel designed in accordance with the requirements of the ANVIS Lighting Program. The existing panel is not ANVIS compatible and has created a potential safety of flight concern. All changes to the equipment are a result of the following Engineering Change Proposals (ECP): ANVIS Lighting Program in compliance with MIL-L-85762 or as otherwise described in SLPSOW3-Revision 4.

2. Priority.

This modification is classified NORMAL.

3. End Item To Be Modified.

Nomenclature	NSN	CAGE	Serial No
Radio Set AN/ARC-l15	5821-01-935-5072	80058	All

4. Assembly To Be Modified.

Not applicable.

5. Parts To Be Modified.

Not applicable.

6. Application.

a. Time Compliance Schedule. The effective date of this MWO is January 1993 and its completion date is January 1997.

b. Level of Maintenance. Aviation Intermediate Maintenance (AVIM) level is authorized to apply this MWO.

c. Applied By. Avionics Communications Equipment Repairer (MOS 68L) or equivalent.

d. Time Required. Time required for completion of modification application to one end item:

Work force/skills	Man-hours
1 Avionics Communications Equipment Repairer (MOS 68L) or equivalent to perform the mechanical/electrical modification.	0.5
1 Avionics Communications Equipment Repairer (MOS 68L) or equivalent to perform an operational functional test of the modified end item.	0.5
Total time required for a single application of this MWO is	1.0

7. Technical Publications Affected/Changed.

The following publications are affected by the application of this MWO:

a. TM 11-5821-260-12

b. TM 11-5821-260-30-1

c. TM 11-5821-260-24P

8. MWO Kits/Parts/andDisposition.

a. Kits/Parts/Required to Accompl ish MWO. The kit required to accomplish this MWO is:

(1) NSN: 1680-01-342-6485

(2) CAGE: 80063

(3) Weight: 0.5 lbs.

(4) Dimensions: 6“ x 7“ x 1“

(5) Cube: 42 cubic inches

(6) Security Classification: Unclassified

b. Contents of MWO Kit.

Item name	Part No./NSN	CAGE	Qty
1. Panel assembly	A3154365	80063	1
2. Identification plate	A3154368	80063	1

c. Bulk and Expendable material. Obtain the following materials from local stock or requisition through normal supply channels, as required:

	Nomenclature	NSN	CAGE	Qty
1.	Solder, Type SN60-WRAP-2 (Fed Spec QQ-S-571) AWG 26, QQ-W-00343 Type 2			As required
2.	Cleaning solvent			As required

d. Parts Disposition. The following parts are to be removed from the end item to be modified and returned to the Depot for disposition:

Indicating panel assembly, P/N SM-E-618092-1, NSN 5821-01-130-9922, CAGE 80063

NOTE

The front panel assembly of the AN/ARC-l15 consists of indicating panel assembly (P/N SM-E4518092-1) and the circuit board and lamp assembly (P/N SM-E-618092-2).

9. Tools. Special Tools. Jigs. and Fixtures Required.

a. Hand Tools. The following common hand tools are required for this modification:

(1) Allen head wrenches, 5/64 inch and 0.05 inch

(2) Phillips screwdriver

(3) Soldering iron, 30 watt with l/8-inch diameter tip

b. Test Equipemnt. The following test equipment is required to test the end item after the modification:

(1) Signal Generator AN/USM-44A

(2) Electronic Voltmeter ME-30A/U

(3) Electronic Voltmeter AN/USM-98

(4) Test Facilities Kit MK-994/AR

(5) Headset-Microphone H-101A/U

(6) Digital Readout Electronic Counter AN/USM-207A

(7) 50-ohm adapter (p/o AN/URM-145)

(8) Wattmeter AN/URM-120

(9) Signal Generator AN/URM-127

(10) Multimeter ME-26B/U

(11) Transmitter/regulator radio set assembly A2

c. Special Tools, Jigs, and Fixtures. Special tools, jigs, and fixtures are not required for this modification.

10. Modification Procedure.

Before starting, familiarize yourself with the entire procedure in this paragraph. To minimize equipment off-line time, inventory the kit, identify parts, obtain required tools, and observe the location of parts to be installed.

a. Procedure.

(1) Loosen two setscrews in each of the following control knobs. Remove knobs and seals from their respective control shafts (see figure 1).

(a) The left MEGACYCLES control knob (item 1)

(b) The right MEGACYCLES control knob (item 2)

(c) The function selector control knob (item 3)

(d) AUDIO control knob (item 4)

(2) Remove four screws and lockwashers (H1, figure 1) from the indicating panel. Set screws and lockwashers aside for reuse during reassembly of end item.

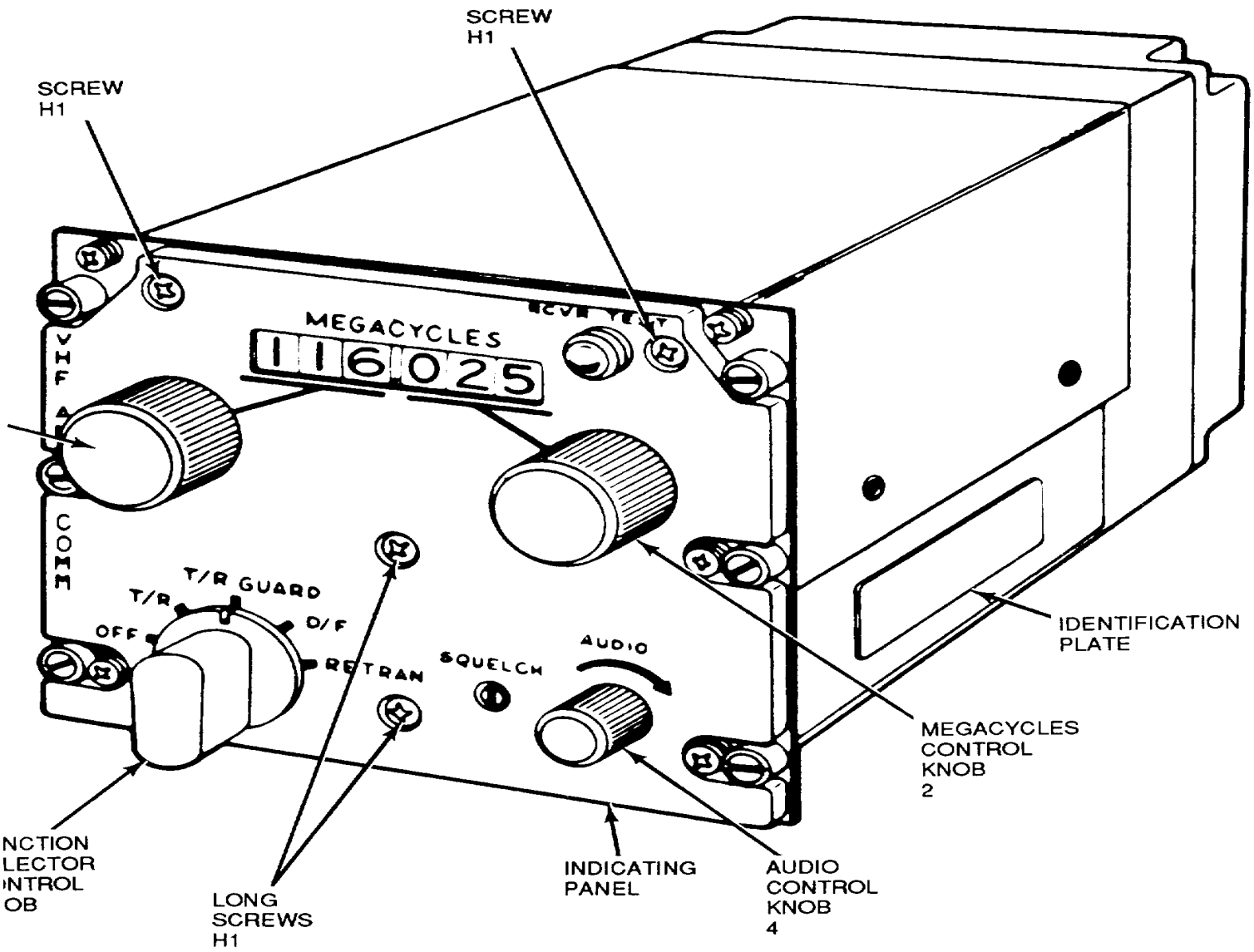

Figure 1. Location of Front Panel Controls and Attaching Hardware

(3) Carefully remove indicating panel from radio set chassis to expose internal wiring.

(4) Unsolder wire No. 001 from the terminal stud on the inside surface of the circuit board and lamp assembly. Tag and mark the wire.

(5) Unsolder wire No. 002 from the terminal stud on the inside surface of the circuit board and lamp assembly. Tag and mark the wire.

(6) Remove the indicating panel assembly and set aside for return to the Depot for disposition.

(7) Place new ANVIS panel assembly in close proximity to front of radio set to allow resoldering of the wires to the terminal studs.

(8) Solder wire No. 002 to one of the terminal studs on the rear surface of the ANVIS panel assembly. Wire can be soldered to either terminal stud.

(9) Solder wire No. 001 to the other terminal stud on the rear surface of the ANVIS panel assembly.

(l0) Carefully place or push wires 001 and 002 into the chassis recess as the ANVIS panel assembly is placed on the front chassis.

(11) Install the new ANVIS panel assembly to the radio set using four screws and lockwashers (H1, figure 1). Replace any missing or damaged screws or lockwashers. Use the two longer screws at the center and at the bottom of the indicating panel assembly.

NOTE

Position knobs as close to the panel surface as possible, but not to touch the panel surface nor interfere with knob movement. Ensure all setscrews are tight.

(12) Install knobs onto the following controls using two setscrews for each knob. Refer to figure 1.

(a) AUDIO control knob (item 4)

(b) The function selector control knob (item 3)

(c) The right MEGACYCLES control knob (item 2)

(d) The lefi MEGACYCLES control knob (item 1)

(13) Install new ANVIS identification plate to radio set aft of old identification plate. Do not remove old identification plate.

b. Operational Functional Tests. After the radio set has been modified, perform an operational functional test of the end item.

(1) Mate the transmitter/regulator radio set subassembly A2 to the radio set.

(2) Connect the test equipment as shown in figure 2.

(3) Adjust the dc power input to J28 on the test facility kit to 28 Vdc ±0.5.

(4) Perform the test procedures given in table 1.

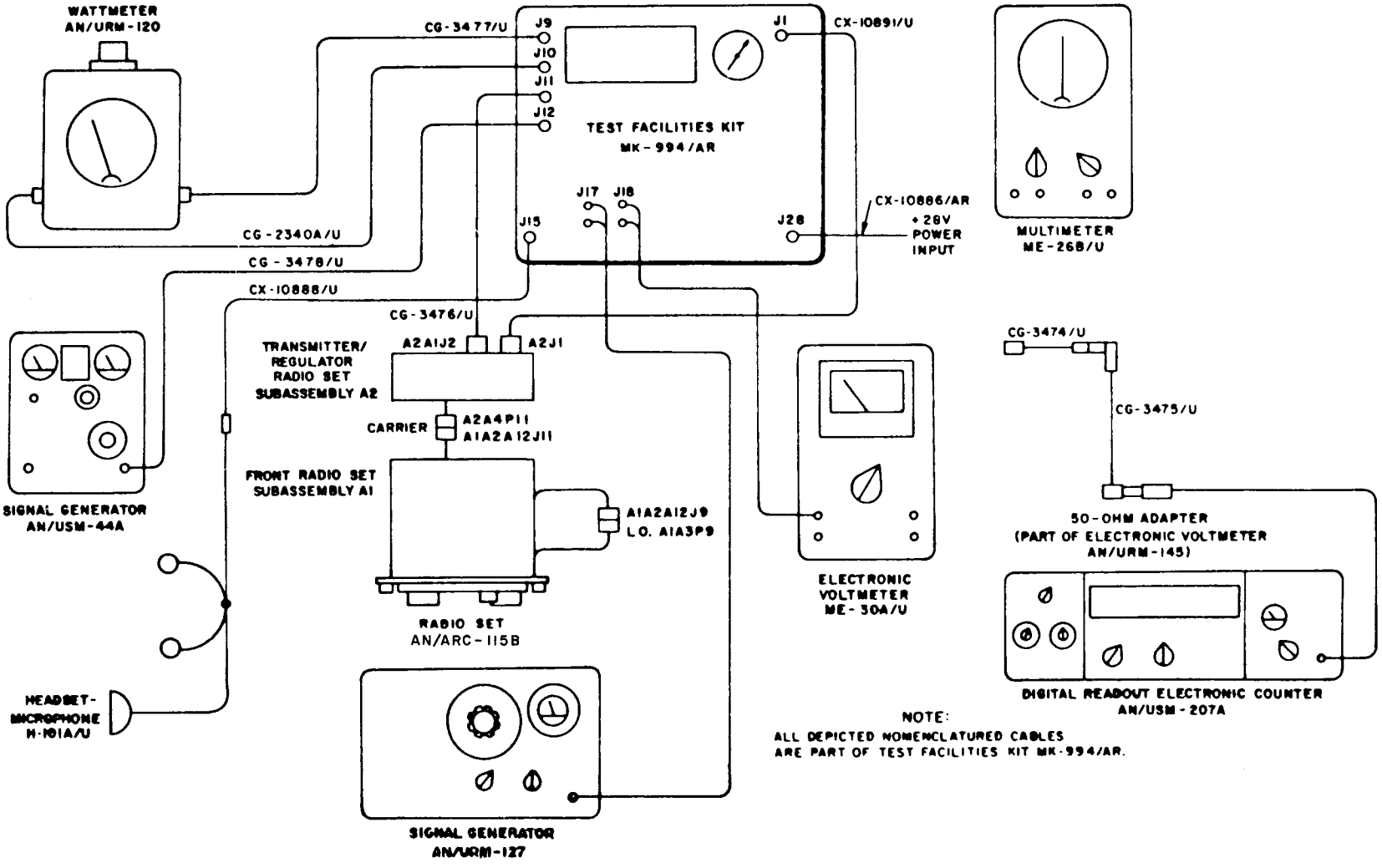

Figure 2. Radio Set Test Setup Diagram

Table 1. Radio Set Electrical Test

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
1	Set the maintenance kit switches as follows: ANTENNA FUNCTION switch: XCVR RADIO TEST switch: 6 COMM CONT NO. 1 selector switch: 1 COMM CONT NO. 1 monitor switch 3: ON COMM CONT VOL control: set to a comfortable level DC POWER circuit breaker: ON	Tune the radio set to 116.000 MHz and set the radio set function switch to T/R.	Listen to the headset while depressing the RCVR TEST push button and tune the radio set from 116.000 MHz to 149.975 MHz.	A tone is heard in headset throughout the radio set tuni range. **NOTE** In some cases, the test facility kit does not apply a full 28 Vdc to the panel lighting circuits. Because of this it may not be possible to see the panel light up ANVIS green under normal shop lighting conditions. It may be necessary to cover or shroud the equipment to verify the panel lighting circuit. Front panel lights up ANVIS green.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
2	Same as step 1.	Same as step 1.	**CAUTION** The maintenance kit HEADSETS 1 toggle switch keys the transmitter on. Do not tune the radio set while the transmitter is keyed on. Release the HEADSETS 1 toggle switch while tuning the radio set.	
			A. While holding maintenance kit HEADSETS 1 switch in TRANSMIT, speak into the microphone and listen to the headset earphone and observe the wattmeter.	**A.** A speaking sound is heard in the headset and the wattmeter indicates 9 watts (min).
			B. Tune the radio set to 140.000 MHz and repeat **A** above.	**B.** Same as **A** above.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
3	Same as step 1.	Same as step 1.	Set the radio set function switch to T/R GUARD, adjust the am. generator for the following signal applied to maintenance kit connector J12, and listen to the headset: Frequency: 121.500 MHz Amplitude: 36 Vrms Modulation: 1 kHz, 30%	The 1-kHz modulating tone is heard in the headset.
4	Same as step 1.	Same as step 1.	Measure the dc power supply voltages at the following test points with the Vtvm:	
			A. A1A2A12A2TP7	**A.** +5.0 Vdc ±0.5 V.
			B. A1A2A12A2TP8	**B.** +9.0 Vdc ±0.9 V.
			C. A1A2A12A2TP5	**C.** +15.00 Vdc ±01.5 V.
			D. A1A2A12A2TP9	**D.** +18.0 Vdc ±1.8 V.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
5	Same as step 1.	Same as step 1.	**CAUTION** The maintenance kit HEADSETS 1 toggle switch keys the transmitter on. Do not tune the radio set while the transmitter is keyed on. Release the HEADSETS 1 toggle switch while tuning the radio set. Set and hold the maintenance kit HEADSETS 1 switch in TRANSMIT and measure the dc power supply voltage at the following test points with the Vtvm: **A.** A1A2A12A2TP6 **B.** A1A2A12A2TP2	**A.** +9.0 Vdc ±0.9 V. **B.** +18.0 Vdc ±1.8 V.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
6	Same as step 1.	Same as step 1.	**A.** Set the maintenance kit RADIO TEST switch to position 2 and set the radio set function switch to RETRAN. Adjust the am. generator for the following output to maintenance kit connector J12: Frequency: 116.000 MHz Amplitude: 50 Vrms Modulation: 1 kHz, 30%	**A.** None.
			B. Adjust the AUDIO control until the amplitude of the retransmit audio output signal at maintenance kit connector J18 is 2.75 Vrms.	**B.** None.
			C. Observe the maintenance kit CONTROL SIGNAL lamp.	**C.** The CONTROL SIGNAL lamp lights.

Table 1. Radio Set Electrical Test — **Continued**

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
7	**Same as step 1.**	Same as step 1 except that the radio set function switch is set to RETRAN.	**A. Adjust the audio generator for the following signal applied to maintenance kit connector J17:** Frequency: 1 kHz Amplitude: 2.75 Vrms	**A. None.**
			B. Set the maintenance kit switches as follows and listen to the headset: COMM CONT NO. 1 selector switch: ICS Receiver monitor switch 3: ON RADIO TEST switch: 4	**B.** A tone is heard in the headset.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
8	Same as step 1.	Same as step 1.	Measure the main receiver local oscillator frequency at radio set connector A1A2A12J9 with the counter, when the radio set is tuned to the following frequencies:	
			A. 116.025 MHz	A. 135.925 MHz ±3 kHz.
			B. 120.425 MHz	B. 140.325 MHz ±3 kHz.
			C. 132.675 MHz	C. 152.575 MHz ±3 kHz.
			D. 145.950 MHz	D. 165.850 MHz ±3 kHz.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
9	Same as step 1.	Same as step 1.	**CAUTION** The maintenance kit HEADSETS 1 toggle switch keys the transmitter on. Do not tune the radio set while the radio set is keyed on. Release the HEADSETS 1 toggle switch while tuning the radio set.	
			A. Hold the maintenance kit HEADSETS 1 switch in TRANSMIT, and measure the carrier frequency at A1A2A12J11.	A. 116.000 MHz.
			B. Release the maintenance kit HEADSETS 1 switch.	B. None.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
10	Same as step 1.	Same as step 1.	Set the radio set function switch to D/F and set the maintenance kit RADIO TEST switch to position 8. Set the maintenance kit DC POWER circuit breaker to OFF. Measure the homing enable line continuity from maintenance kit connector J18 to ground with the multimeter.	5 ohms (max).

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
11	Same as step 1.	Same as step 1.	**A.** Adjust the am. generator for the following output applied to maintenance kit connector J12: Frequency: 116.000 MHz Amplitude: 50 Vrms Modulation: 1 kHz, 30%	**A.** None.
			B. Adjust the AUDIO control until the amplitude of the main receiver output signal at maintenance kit connector J18 is 2.75 Vrms.	**B.** 2.75 Vrms.
			C. Remove the 1 kHz of modulation.	**C.** 10 dB down (min).

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
12	Same as step 1.	Same as step 1.	**A.** Set the radio set function switch to T/R GUARD and adjust the am. generator for the following output applied to maintenance kit connector J12: Frequency: 121.500 MHz Amplitude: 36 Vrms Modulation: 1 kHz, 30%	**A.** None.
			B. Adjust the AUDIO control until the amplitude of the guard receiver output signal at maintenance kit connector J18 is 2.75 Vrms.	**B.** 2.75 Vrms.
			C. Remove the 1 kHz of modulation.	**C.** 10 dB down (min).

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
13	Same as step 1.	Same as step 1.	**A.** Set the maintenance kit ANTENNA FUNCTION switch to HOMING BALANCE and set the radio set function switch to D/F. Adjust the am. generator for the following output signal applied to maintenance kit connector J12: Frequency: 116.000 MHz Amplitude: 50 Vrms Modulation: 1 kHz, 30%	**A.** None.
			B. Observe the homing on-off indicator in the lower left-hand corner of maintenance kit HOMING/ADF/ GYRO indicator.	**B.** The homing on-off indi indicates all black.

Table 1. Radio Set Electrical Test — Continued

Step No.	Test equipment control settings	Equipment under test control settings	Test procedure	Performance standard
13 (Cont)			C. Reduce the am. generator amplitude to 6.0 Vrms. Increase the amplitude from 6.0 Vrms to 18 Vrms and observe the station passage meter in the left-hand portion of maintenance kit HOMING/ADF/ GYRO meter.	C. The station passage pointer moved downward as the am. generator amplitude is increased.

11. Calibration Requirements.

Not applicable.

12. Weight and Balance Data.

Weight and balance are not significantly affected.

13. Quality Assurance Requirements.

The MWO must satisfy the quality assurance requirements of the following:

TM 750-2454	Direct Support, General Support: Quality Control Inspector's Inspection Criteria

14. Recording and Reporting of the Modification.

a. DA Form 2408-5. DA Form 2408-17. or DA Form 2409. Record the modification on DA Form 2408-5, Equipment Modification Record, when multiple form assembled Equipment Logbook is applicable, or DA Form 2409, Equipment Maintenance Log (Consolidated), or DA Form 2408-17, Aircraft Inventory Record, as indicated in DA Pam 738-750.

b. Completion of DA Form 2407. Maintenance Request.

(1) The serial number to be reported in block 2 must be in the serial range stated in paragraph 3 above.

(2) The NSN for the end items to be reported in block 6 and block 20h must be the same as the NSN shown in paragraph 3 above.

(3) The Unit Identification Code (UIC) to be reported in block lc must be the six character code that is put on the Unit/Organization shown in block la. (Normally, this will be the code that is put on the Unit/Organization Morning Report.)

(4) List by NSN the number of kits used to accomplish this MWO using block 20 and/or block 35. If more space is needed, use DA Form 2407-1 Continuation Sheet.

(5) After completing the form, mail the NMP copy (Copy 2) to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-PP, Fort Monmouth, New Jersey 07703-5007 (MWO Coordinator). Mail the Control Copy (Copy 3) to: Commander, US Army Depot System Command, ATTN: DRSDS-PM, Chambersburg, PA 17201, for PAC 98 (Non-AIF Field Activities). Forward the Organizational Copy (Copy 4) as directed by the local commander.

C. DA Form 2408 and 2408-9. When the application of this MWO results in the change of NSN to an end item designated in paragraph 3 of this MWO, Loss and Gain Form 2408-9 will be initiated. After completing the forms, mail the NMP copy (Copy 1) to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-PP, Fort Monmouth, New Jersey 07703-5007 (MWO Coordinator). Mail the Control Copy (Copy 2) to: Commander, US Army Maintenance Management Center, ATTN: DRXMD-MD, Lexington, KY 40511. The Logbook Copy (Copy 3) will be placed in the logbook per DA Pam 738-750.

d. Identification Data The NSN of this equipment becomes NSN 5821-01-327-8839. The nomenclature of this equipment becomes Radio Set AN/ARC-l15B.

15. Product Improvement Proposal Number (PIP).

This MWO is authorized by PIP number (N/A).

16. Modification Identification.

Not applicable.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
05059

Distribution:

To be distributed in accordance with DA Form 12-36-E, block 9522, requirements for MWO 11–5821-260–30–2.

☆U.S. GOVERNMENT PRINTING OFFICE: 1993 - 710-084/80307

PIN: 071627-000