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TM 9-1430-255-12/1

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL
MAINTENANCE MANUAL:

CHECK PROCEDURES:

LOW POWER ACQUISITION RADAR
SYSTEM

(IMPROVED NIKE-HERCULES AIR DEFENSE
GUIDED MISSILE SYSTEM) (U)

This copy is a reprint which includes current pages from Changes 1 through 7. Pages applying to all systems are inserted in proper numerical order in the manual. Pages which have different effectivities are inserted in the front of the manual. Read the instructions concerning these pages before using the manual.

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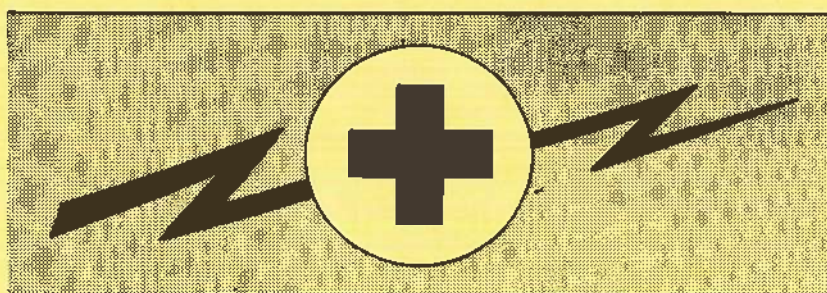
HEADQUARTERS, DEPARTMENT OF THE ARMY
AUGUST 1964

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WARNING



RA PD 404264

HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115-volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

EXTREMELY DANGEROUS POTENTIALS

greater than 500 volts exist in the following units:

Auxiliary acquisition control interconnecting group	Acquisition HV power supply
LOPAR auxiliary control-indicator	MT1 oscilloscope
Battery control console	LOPAR antenna-receiver-transmitter group
PPI	Acquisition modulator
PPI HV power supply	Acquisition receiver-transmitter
Precision indicator	Target radar control console
Director station group	B scope indicator
-1000v power supply	

Warning: Potentials less than 500 volts may cause death under certain conditions. Reasonable precautions should be taken at all times.

For artificial respiration, refer to FM 21-11.

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READ THESE INSTRUCTIONS CAREFULLY

1 (U). The pages held in front of this manual, listed below, are to be inserted in the manual after the applicable MWO has been applied or if the equipment in use is of the applicable production cut-in serial number or higher. Added or changed material on new pages is indicated by a vertical line in the page margin. Old pages removed from the manual are to be destroyed in accordance with AR 380-5.

Remove pages	Insert pages	Effectivity	
		MWO	Production cut-in Serial no.
RF radiation hazard warning	RF radiation hazard warning	9-1400-250-50/53	None
1,2	1,2	9-1430-251-30/37	K317
5,6	5,6	9-1430-251-30/39	All systems
17-20, 20.1	17-20, 20.1	9-1430-251-30/39	K317
33-36, 36.1, 37-40	33-40, 40.1-40.4	9-1430-251-30/37	K317
56-60	53-60, 60.1	9-1430-251-30/39	K317
77-86	77-83, 83.1, 84-86, 86.1-86.8	9-1430-251-30/37	K317
89-92	89-92	9-1430-254-30/1/8	System 1394
94.3, 94.4	94.3, 94.4	9-1430-251-30/37	K317

2 (U). Retain these instructions in the front of the manual for future reference.

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CONFIDENTIAL**WARNING****RADIO-FREQUENCY RADIATION HAZARD**

Radio-frequency radiations from radar antennas and associated equipment could present a potential hazard to battery personnel. The effect of RF radiation is not cumulative, but it could be hazardous. RF radiation heats the body tissues. When the intensity is high, the radiation may produce enough heat to damage the tissues permanently. Damage to the body tissue is not immediately apparent. Precautions should be taken to insure that personnel are not exposed to RF radiations of hazardous intensity levels.

A power level of 10 milliwatts per square centimeter, although not considered potentially hazardous, is stipulated by AR 40-583 as the maximum permissible exposure level for personnel subjected to RF radiation fields. Personnel should not be permitted to enter areas where they may be exposed to levels above 10 milliwatts per square centimeter.

A power density of 10 milliwatts per square centimeter is present along the axis of the transmitted beam at the following distances from Improved NIKE-HERCULES radar antennas. In each instance, the intensity rapidly diminishes as the distance is increased.

<u>ANTENNA</u>	<u>DISTANCE</u>
AJI High Power Acquisition Radar	
Systems 502 - 537 - Non-scanning	240 feet
Systems 502 - 537 - Rotating	33 feet
Systems 538 - 594 and 801 and above - Non-scanning	330 feet
Systems 538 - 594 and 801 and above - Rotating	60 feet
Low Power Acquisition Radar - Non-scanning	127 feet
Missile Tracking Radar - NIKE-AJAX Mode	126 feet
Target Tracking Radar - Wide Pulse Mode	230 feet

Transmitting antennas in the non-scanning mode should not be positioned so as to radiate into areas occupied by passive antennas. The resulting reflections may present a potential hazard to personnel working in the vicinity of the passive antennas.

The intensity of the beam from the target tracking radar in the narrow pulse mode, from the low power acquisition radar when rotating, from the missile tracking radar in the NIKE-HERCULES mode, and from the target ranging radar is inconsequential under operating conditions.

Access to the Mobile HIPAR antenna trailer and the roofs of the equipment vans should be prohibited during periods of radar operation.

This information is based upon average power outputs and may be used as a guide to prevent radio-frequency radiation hazards.

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TECHNICAL MANUAL

No. 9-1430-255-12/1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 20 August 1964**OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL:****CHECK PROCEDURES:****LOW POWER ACQUISITION RADAR SYSTEM (IMPROVED
NIKE-HERCULES AIR DEFENSE GUIDED MISSILE SYSTEM) (U)**

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*This manual supersedes TM 9-1430-250-12/2, 3 April 1961, including all changes. This manual, together with TM 9-1430-251-12/1, 20 August 1964, and TM 9-1430-256-12/1, 30 December 1964, supersedes TM 9-1430-251-20/2, 15 February 1961, including all changes, and TM 9-1430-252-20/2, 21 February 1961, including all changes.

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CHAPTER 1 (U)

INTRODUCTION

Section I (U). GENERAL

1 (U). Scope

a. This is one of a series of technical manuals on emplacement, operation, and maintenance of the Improved NIKE-HERCULES Air Defense Guided Missile System. Refer to DA PAM 310-2 and DA PAM 310-4 for a listing of publications indexes, administrative publications, forms and records publications, supply publications, and NIKE technical manuals.

b. This manual is published for the information and guidance of personnel responsible for adjusting and maintaining the low power acquisition radar (LOPAR) system of the Improved NIKE-HERCULES system after initial emplacement and during normal operation. Also included in this manual are nonperiodic and special checks to be performed upon initial emplacement as prescribed in TM 9-1430-251-10 or after replacement of repair parts.

c. (Deleted)

d. This manual is technically correct for all Improved NIKE-HERCULES systems provided the modification work orders (MWO's) in the remainder of this subparagraph have been incorporated.

- (1) 9-1400-250-50/5 provides anti-jam display (AJD) capabilities to the Improved NIKE-HERCULES acquisition radar systems (all systems).
- (2) 9-1400-250-50/28 provides facilities for connecting radar signal-simulator station AN/MPQ-T1 (T1 trainer) and adds functions for annual service practice to the Improved NIKE-HERCULES system. It also provides facilities and adds functions for system compatibility with the electronic counter-countermeasures console on Improved NIKE-HERCULES systems having auxiliary acquisition radar (AAR) (suffix serial numbers 001 through 158, 162, 163, 169, 180, 181,

184, 185, 192, and 196 through 198).

- (3) 9-1430-251-30/8 provides facilities for adding radar bomb-scoring equipment to the trailer-mounted director station (all systems).
- (4) 9-1430-251-30/11 modifies feedback circuit in target-designate control-indicator so acquisition range rate may be adjusted to desired limits (suffix serial numbers 001 through 093).
- (5) 9-1430-251-30/14 minimizes 400-cps beat frequency interference between AAR or high power acquisition radar (HIPAR) and the Improved NIKE-HERCULES system (suffix serial numbers 001 through 074).
- (6) 9-1430-251-30/16 improves tactical signaling and fire unit integration facility (FUIF) displays by adding VALIDITY switch and by adding BOTH switch position to control-indicator. Replaces HV connectors and eliminates safety hazard and capacitor failure in azimuth and range indicator (suffix serial numbers 001 through 128).
- (7) 9-1430-251-30/25 reduces zero-set drift in sweep generator and permits displacement of FUIF symbols from plan position indicator (PPI) center during checks and adjustments to allow use of cathode-ray tubes which are burned in the center (all systems).
- (8) 9-1430-251-30/27 facilitates azimuth alignment procedures, improves HIPAR target transfer time by reducing azimuth error, and eliminates distortion of the HIPAR presentation (suffix serial numbers 001 through 202).
- (9) 9-1430-251-30/29 equalizes video signal-to-noise ratio for LOPAR and HIPAR or AAR; eliminates need for

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PPI and B-scope readjustment each time the video input is switched; and eliminates resistor overload (suffix serial numbers 001 through 139).

- (10) 9-1430-251-30/35 facilitates azimuth alinement procedures, improves HIPAR target transfer time by reducing azimuth error, and eliminates distortion of the HIPAR presentation (suffix serial numbers 001 through 236).
- (11) 9-1430-251-30/37 relocates the ten EFS/HIPAR channel select switches and makes the director-computer group compatible with the HIPAR anti-jam improvements, replaces power output meter in auxiliary HIPAR control-indicator, and adds AAR control panel to systems with AAR capabilities (suffix serial numbers 001 through 316).
- (12) 9-1430-251-30/39 provides facilities for connecting the AN/GSA-77 battery terminal equipment in the director station trailer (suffix serial numbers 001 through 316).
- (13) 9-1430-254-30/1/8 prevents the LOPAR transmitter from being triggered by the radiated energy from HIPAR or similar radars and improves LOPAR AFC lock-on (all INH

systems with system serial numbers 1001 through 1393).

e. Refer to DA PAM 310-7 for all MWO's applicable to the equipment.

f. Differences among models of the Improved NIKE-HERCULES systems which affect this manual are described in (1) through (5) below.

- (1) The personnel heater in the trailer-mounted director station and trailer-mounted tracking station on systems 1001 through 1086 is replaced on systems 1087 and above with a new personnel heater.
- (2) The hydraulic control unit on systems 1001 through 1070 has been replaced with the electromechanical control box on systems 1071 and above.
- (3) On systems 1001 through 1021, the acquisition antenna pedestal has an azimuth scale around the top. On systems 1022 and above, the azimuth scale has been removed.
- (4) (Deleted)
- (5) In systems 1049 and above, fuse F1 in the director station group and fuses F64 and F65 in the radar power supply group are one ampere. Fuses F1, F64, and F65 are two amperes in systems 1048 and below.

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Check the presentation of the azimuth line and the range mark.</p> <p>a. On the target-designate control-indicator, depress and hold the azimuth switch.</p> <p>b. Adjust the INTENSITY knob on the PPI until the range mark and the steerable azimuth line are barely discernible.</p> <p>c. Rotate the azimuth switch.</p> <p style="padding-left: 40px;">The steerable azimuth line is controllable through 6400 mils.</p> <p>d. Alternately depress and release the azimuth switch.</p> <p style="padding-left: 40px;">The range mark on the steerable azimuth line coincides with the range circle.</p> <p style="padding-left: 40px;">The flashing azimuth line coincides with the steerable azimuth line.</p>	<p>Refer to figure 32.</p> <p>Adjust variable resistor R18 on the 4KC oscillator.</p> <p>Refer to figure 37.</p> <p>Rotate the housing of synchro resolver B1 in the target-designate control-indicator.</p> <p>Refer to figure 37.</p>
4.	<p>Check the presentation of the test symbol.</p> <p>a. On the PPI test panel, set the TEST switch to ZERO.</p> <p style="padding-left: 40px;">The PULSE GENERATOR indicator light flashes one to three times per second.</p> <p>b. On the PPI, rotate the SYMBOL INTENSITY knob until the flashing spot appears.</p> <p style="padding-left: 40px;">A flashing spot appears at the center of the PPI.</p> <p style="padding-left: 40px;">The flashing spot is centered on the face of the PPI.</p> <p><small>Note. On systems connected to FUIF or with BTE, omit steps 5 and 6, and proceed to step 7.</small></p>	<p>Adjust the GEN ADJUST variable resistor.</p> <p>Refer to figure 33.</p> <p>(1) Adjust variable resistor R12 on the PPI marker generator.</p> <p>(2) If the indication is still abnormal, perform the procedures in table 25.</p> <p>Adjust variable resistor R4 on both PPI DC amplifiers.</p> <p>Refer to figure 33.</p>
5.	<p>Check the range calibration in the X-axis.</p> <p>a. On the target-designate control-indicator, set the RANGE dial to 100,000 yards.</p> <p>b. On the PPI test panel, set the TEST switch to +X AXIS.</p> <p style="padding-left: 40px;">A flashing spot appears at 1600 mils.</p>	<p>Perform the procedures in table 66.</p>

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
5.	Continued	
	The range circle intercepts the flashing spot.	Adjust the X SLOPE ADJ variable resistor on the PPI sweep generator. Refer to figure 33.
	c. Set the TEST switch to -X-AXIS.	
	A flashing spot appears at 4800 mils.	Perform the procedure in table 66.
	The range circle intercepts the flashing spot.	(1) If the deviation is less than 1500 yards, adjust the X BAL variable resistor on the PPI sweep generator to correct one-half the error. (2) Repeat b and c above to eliminate interaction. (3) If the spot position deviates by more than 1500 yards, perform the procedures in table 25.
6.	Check the range calibration in the Y-axis.	
	a. On the PPI test panel, set the TEST switch to +Y-AXIS.	
	A flashing spot appears at 0 mil.	Perform the procedures in table 66.
	The range circle intercepts the flashing spot.	Adjust the Y SLOPE ADJ variable resistor on the PPI sweep generator. Refer to figure 33.
	b. Set the TEST switch to -Y-AXIS.	
	The flashing spot appears at 3200 mils.	Perform the procedures in table 66.
	The range circle intercepts the flashing spot.	(1) If the spot position deviates by less than 1500 yards, adjust the Y BAL variable resistor on the PPI sweep generator to correct one-half the error. (2) Repeat a and b above to eliminate interaction. (3) If the spot position deviates by more than 1500 yards, perform the procedures in table 25. Refer to figure 33.

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
7.	<p><i>Note.</i> Omit steps 7 and 8 below if the system is not connected to FUIF equipment or BTE.</p> <p>Check the range calibration of the coordinate data symbol.</p> <p>a. Have the computer operator energize the computer as prescribed in the power checks in TM 9-1430-251-12/1.</p> <p>a.1. Have the TTR operator energize the TTR system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p>a.2. Perform the procedures in (1) through (3) below on systems with BTE.</p> <p>(1) Set the STATIC TEST switch on the BTE to 3. A flashing foe symbol appears on the PPI at 1600 mils.</p> <p>(2) Set the STATIC TEST switch to 4. A flashing foe symbol appears on the PPI at 3200 mils.</p> <p>(3) Set the STATIC TEST switch to NORM.</p> <p><i>Note.</i> The daily range system checks and daily orientation checks must have been performed on the TTR before proceeding with the check.</p> <p>b. On systems with FUIF, set the system and the FUIF equipment in the back-to-back mode as prescribed in TM 11-5895-287-12 and connect a ground to terminal 48 in the auxiliary acquisition interconnecting box.</p> <p>b.1. On systems with BTE, perform the procedures below.</p> <p>(1) On the BTE set the left LOOP TEST switch to BTRY.</p> <p>(2) Set the right LOOP TEST switch to MAN.</p> <p>(3) On the tactical control-indicator, momentarily depress the LOCAL and FEW switches.</p> <p>c. Have the computer operator set the COMPUTER CONDITION switch on the computer control panel to ACTION.</p> <p>d. (Deleted)</p> <p>e. On the target-designate control-indicator, operate the DESIGNATE — ABANDON switch to DESIGNATE, and set the TRACK CROSS switch to ON.</p> <p>f. Have the target-tracking-radar (TTR) operator perform the procedures in (1) through (4) below.</p> <p>(1) Momentarily operate the ACQUIRE switch, and set the TEST switch to off (down).</p>	<p>Refer to TM 9-1430-580-14.</p> <p>Refer to TM 9-1430-580-14.</p>

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
7.	<p>Continued</p> <p>(2) Rotate the range, azimuth, and elevation handwheels to obtain indications of 100,000 yards in range, 1600 mils in azimuth, and 0 mil in elevation.</p> <p>(3) Deleted.</p> <p>(4) Depress the TRACKED switch.</p> <p>f.1. On systems connected to the missile master equipment, set the SYMBOL switch on the PPI to NORMAL. On systems connected to BIRDIE equipment, set the SYMBOL switch to BOTH.</p> <p>g. On the PPI test panel, set the TEST switch to NORMAL.</p> <p style="padding-left: 40px;">On the PPI, the electronic cross is within the foe symbol at 1600 mils.</p> <p>h. Have the TTR operator rotate the azimuth handwheel to obtain a slow aided rate in azimuth.</p> <p>i. Observe the presentation on the PPI.</p> <p style="padding-left: 40px;">The electronic cross remains within the foe symbol throughout 6400 mils of rotation.</p> <p>j. Return the TTR to normal operation.</p> <p>k. Set the COMPUTER CONDITION switch to STAND BY.</p> <p>l. Return the FUIF equipment to normal operation.</p> <p>l.1. On systems with BTE, set the left LOOP TEST switch to BTE. Set the right LOOP TEST switch to NORM.</p> <p>m. Remove the ground from terminal 48.</p> <p>n. Set the TRACK CROSS switch to OFF.</p>	<p>Perform the procedures in table 25.</p> <p>Perform the procedures in table 25.</p>
8.	<p>Check the coordinate data symbols.</p> <p><i>Note.</i> On systems not modified by DA MWO 9-1430-251-30/25, the spots will appear at the center of the PPI.</p> <p>a. On the PPI test panel, set the TEST switch to BATTERY.</p> <p style="padding-left: 40px;">A defocused spot appears at 3200 mils on the PPI.</p> <p>b. Set the TEST switch to FOE.</p>	<p>Refer to figure 33.</p>

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p>A small circle with a 30-degree arc missing from the bottom appears at 3200 mils on the PPI.</p> <p>c. Set the TEST switch to FRIEND.</p> <p>A semicircle, open at the bottom, appears at 3200 mils on the PPI.</p>	<p>Perform the procedures in table 25.</p> <p>Perform the procedures in table 25.</p>
9.	<p>Check the PPI expansion.</p> <p>a. On the PPI test panel, set the TEST switch to ZERO.</p> <p>A flashing spot appears at the center of the PPI.</p> <p>b. On the PPI, set the EXPANSION switch to ON.</p> <p>The flashing spot moves within 1 inch of the edge of the PPI.</p> <p>c. Turn the EXPANSION POSITION knob one complete turn.</p> <p>The flashing spot moves around the face of the PPI within 1 inch of the edge as the EXPANSION POSITION knob is rotated.</p> <p>d. On the PPI, set the EXPANSION switch to OFF.</p> <p>e. On the PPI test panel, set the TEST switch to NORMAL.</p>	<p>Refer to figure 33.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 25.</p>

Table 5 (C). Daily B-Scope-Indicator Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Prepare for the B-scope checks.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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Table 12 (C). Daily System Acquire Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p><i>h.</i> Observe the precision-indicator for 1 minute to detect any evidence of acquisition range drift.</p> <p align="center">No visible range drift is observed on the PI.</p>	<p>Perform the monthly acquisition range checks in table 52.</p>
3.	<p>Check the acquire accuracy in the X-axis.</p> <p><i>a.</i> Repeat step 2<i>g</i> above.</p> <p><i>b.</i> Have the TTR operator rotate the azimuth handwheel to obtain an indication of less than 1,600 mils on the azimuth dial. Operate the SLEW switch to obtain an indication of less than 50,000 yards on the TTR range dials.</p> <p><i>c.</i> Have the TTR operator operate and hold the ACQUIRE switch until the azimuth dial settles and the range dial "hunts" about the acquisition range setting.</p> <p align="center">On the precision-indicator, the electronic cross is superimposed on the acquisition range mark and the flashing azimuth line.</p> <p align="center">The target tracking radar azimuth is within the limits of 1,590 and 1,610 mils.</p> <p align="center">The target tracking radar range is within the limits of 99,750 and 100,250 yards.</p>	<p>Adjust control transformer B3 in the target-designate control-indicator.</p> <p align="center">Refer to figure 33.</p> <p>Perform the weekly level and orientation checks in table 17.</p> <p>Perform the monthly acquisition range checks in table 52.</p>
4.	<p>Check the range calibration in the Y-axis.</p> <p><i>a.</i> Have the TTR operator rotate the azimuth, elevation, and range handwheels to obtain indications of 0 mil in azimuth, 0 mil in elevation, and 100,000 yards in range.</p> <p><i>b.</i> Set the COMPUTER CONDITION switch on the computer control-panel to ACTION.</p> <p><i>c.</i> On the tactical control-indicator, set the plotting board condition switch to OPERATE, and observe the horizontal plotting board.</p> <p align="center">The target pen (present position) is at a point between 99,500 and 100,500 yards north in Y and between 500 yards east and 500 yards west in X.</p> <p><i>d.</i> Set the plotting board condition switch to STAND BY.</p> <p><i>e.</i> Set the COMPUTER CONDITION switch to STAND BY.</p>	<p>Perform the monthly plotting board checks in TM 9-1430-251-12/1.</p>

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Table 12 (C). Daily System Acquire Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Check the acquire accuracy in the Y-axis.</p> <p>a. Using the azimuth knob and the range handwheel on the target-designate control-indicator, superimpose the flashing azimuth line and the range circle over the electronic cross as observed on the precision-indicator.</p> <p>b. Have the TTR operator rotate the azimuth handwheel to obtain an indication greater than 0 mil on the azimuth dial. Operate the range SLEW switch to set the TTR range to more than 150,000 yards.</p> <p>c. Have the TTR operator operate and hold the ACQUIRE switch until the azimuth dials settle, and the range dial "hunts" about the acquisition range setting.</p> <p style="padding-left: 40px;">On the precision-indicator, the electronic cross is superimposed on the acquisition range mark and the flashing azimuth line.</p> <p style="padding-left: 40px;">The TTR azimuth is within the limits of 6,390 and 10 mils.</p> <p style="padding-left: 40px;">The TTR range is within the limits of 99,750 and 100,250 yards.</p> <p>d. Operate the DESIGNATE — ABANDON switch on the target-designate control-indicator to ABANDON.</p>	<p>Loosen the three mounting screws on control transformer B3 in the target-designate control-indicator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>Perform the weekly level and orientation checks in table 17.</p> <p>Perform the monthly acquisition range checks in table 52.</p>
5.1.	<p>Prepare for the target acquire checks.</p> <p>a. On the LOPAR control-indicator, rotate the RECEIVER GAIN knob fully clockwise (in AGC).</p> <p style="padding-left: 20px;"><i>Note.</i> On systems with AAR, omit b below and perform c.</p> <p>b. Energize the HIPAR through operate as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.</p> <p style="padding-left: 20px;">(1) Observe the indications on the HIPAR auxiliary control-indicator.</p> <p style="padding-left: 40px;">The DRIVE OVERLOAD RESET switch-indicator illuminates (white).</p> <p style="padding-left: 40px;">The TEST ENABLE switch-indicator illuminates (red).</p> <p style="padding-left: 40px;">The HIPAR READY indicator is extinguished.</p> <p style="padding-left: 40px;">The HIPAR ON indicator is illuminated (green).</p> <p style="padding-left: 40px;">The HIPAR OPERATE indicator illuminates (white).</p> <p style="padding-left: 20px;">(2) Observe the indication on the HIPAR control-indicator.</p>	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>

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Table 12 (C). Daily System Acquire Checks—Continued (U)

Step	Procedure	Corrective action
5.1.	Continued	
	<p>The HIPAR POWER indicator light is illuminated.</p> <p><i>Note.</i> Omit c below on systems with HIPAR.</p> <p>c. Energize the AAR through operate as prescribed in the appropriate TM and have the AAR operator condition the AAR for remote operation.</p> <p>The RADIATE READY indicator light illuminates 15 minutes after power has been applied to the AAR amplatron.</p> <p>d. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.</p>	<p>Perform the procedures in table 31.</p> <p>Refer to figure 53.</p>
6.	Perform the system acquire check.	
	<p>a. Designate, acquire, and automatically track a moving target with the target track radar.</p> <p>The electronic cross bisects the target as observed on the precision-indicator.</p> <p>The electronic cross bisects the target and is centered within the target-track antenna circle as observed on the B-scope.</p> <p>a.1. On the HIPAR auxiliary control-indicator, depress the TEST ENABLE switch-indicator.</p> <p>The TEST ENABLE switch-indicator illuminates (white).</p> <p>The HIPAR OPERATE indicator illuminates (green).</p> <p>a.2. Set the RADAR SELECT switch to HIPAR/AAR.</p> <p>a.3. Perform the procedures in (1) through (5) below on systems with HIPAR.</p> <p>(1) On the HIPAR control-indicator, depress the BASIC RECEIVER switch-indicator.</p> <p>The BASIC RECEIVER switch-indicator illuminates (green).</p>	<p>*(1) If off in azimuth, adjust synchro B4 on the target track azimuth-position transmitter.</p> <p>Refer to figure 32.</p> <p><i>Note.</i> If synchro B4 is adjusted, repeat steps 2 through 5 above.</p> <p>(2) If off in range, gain access to the acquisition-track synchronizer in the director station group and adjust the SYNC DELAY LONG PULSE variable resistor.</p> <p>Refer to figure 26.</p> <p>(1) Perform the procedures in table 5.</p> <p>(2) Repeat step 6.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>

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Table 12 (C). Daily System Acquire Checks—Continued (U)

Step	Procedure	Corrective action
6.	Continued	
	The STAGGER OFF switch-indicator is extinguished.	Refer to figure 3-56 in TM 9-1430-254-12/7.
	The JS ONLY RECEIVER and AJD RECEIVER switch-indicators illuminate (white).	Refer to figure 3-56 in TM 9-1430-254-12/7.
	(2) Adjust the GAIN knob on the HIPAR control-indicator to obtain a normal video presentation on the PPI.	
	(3) Observe the presentation on the PPI.	
	The center of the tracked video coincides with the electronic cross.	Perform the procedures in table 31.1.
	(4) Depress the AJD RECEIVER switch-indicator.	
	The center of the tracked video coincides with the electronic cross.	Perform the procedures in table 31.1.
	(5) Depress the STAGGER OFF switch-indicator.	
	The center of the tracked video coincides with the electronic cross.	Perform the procedures in table 31.1.
	a.4. Perform the procedures in (1) through (4) below on systems with AAR.	
	(1) On the AAR control-indicator, depress the RADIATE OFF switch and set mode switch S1 to NORMAL RECEIVER.	
	(2) Depress the RADIATE ON switch.	
	The RADIATE ON indicator light illuminates green.	Refer to figure 53.
	The RADIATE READY indicator light extinguishes.	Refer to figure 53.
	(3) Observe the presentation on the PPI.	
	The center of the tracked video coincides with the electronic cross.	Perform the procedures in table 31.1.
	(4) While observing the PPI, set mode switch S1 to ECCM POSITION 1, ECCM POSITION 2, and to CHAFF WEATHER.	
	The center of the tracked video coincides with the electronic cross for each video selected.	Perform the procedures in table 31.1.
	a.5. Operate the DESIGNATE — ABANDON switch to ABANDON.	
	a.6. Set the RADAR SELECT switch to LOPAR.	

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Table 12 (C). Daily System Acquire Checks—Continued (U)

Step	Procedure	Corrective action
6.	Continued a.7. On systems with HIPAR, depress the TEST ENABLE switch-indicator. ² a.8. On systems with AAR, depress the RADIATE OFF switch. ² a.9. On the LOPAR control-indicator, rotate the RECEIVER GAIN knob fully counterclockwise. ² b. Set the ACQ MARKS switch on the video and mark mixer to NOR. c. Set the TRACK CROSS switch on the target-designate control-indicator to OFF.	
7.	Deenergize the LOPAR transmitter. On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START, and depress the HV SUPPLY — OFF switch.	

²Omit this step if the checks in the succeeding tables are to be performed.

Table 13 (C). Daily SIF/IFF Checks (U)

Step	Procedure	Corrective action
1.	Prepare for the IFF checks. a. Perform the procedures in table 1. ¹ b. On the IFF control-indicator, observe the IFF ON indicator light. The IFF ON indicator light is illuminated. c. Set the ANT RPM switch to 10. ¹ <i>Note.</i> On systems with AAR, omit d and perform e below. d. Energize the HIPAR through operate as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2. ¹ The TEST ENABLE switch-indicator illuminates (red). The HIPAR POWER indicator light on the HIPAR control-indicator illuminates. <i>Note.</i> Omit e below on systems with HIPAR. e. Energize the AAR through operate as prescribed in the appropriate TM. ¹ The RADIATE READY indicator light illuminates 15 minutes after power has been applied to the AAR amplatron. f. On the PPI, set the RANGE switch to 50,000 and adjust the INTENSITY and GAIN knobs for a normal presentation.	Perform the procedures in table 59. Refer to figure 36. Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the procedures in table 31. Refer to figure 53.

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 13 (C). Daily SIF/IFF Checks—Continued (U)

Step	Procedure	Corrective action
1.	Continued	
	g. On the IFF control-indicator, set the GTC switch to SHORT.	
	h. Set the RADAR SELECT switch to LOPAR.	
2.	Check the IFF on the LOPAR.	
	a. On the IFF control-indicator, set the MODE switch to 2.	
	b. Rotate the IFF GAIN knob fully clockwise.	
	c. Set the CHOP switch to ON.	
	d. On the IFF auxiliary control-indicator, set the OPERATE — TEST switch to TEST and the MODE 2 CODE switch to 77.	
	e. On the IFF control-indicator, depress the CHALLENGE switch and adjust the PPI controls for optimum presentation. Readjust the IFF GAIN knob to obtain an optimum presentation of the IFF returns.	
	Eight simulated IFF return signals appear on the PPI.	Adjust the IFF VIDEO variable resistor on the video and mark mixer. Refer to figure 30.
	f. Release the CHALLENGE switch.	
	g. On the IFF auxiliary control-indicator, set the OPERATE — TEST switch to OPERATE and depress the CHALLENGE switch.	
	One simulated IFF return appears on the PPI.	Perform the procedures prescribed in the following manuals: TM 11-5895-207-10 TM 11-5895-207-20 TM 11-5895-208-10 TM 11-5895-208-20
	h. On the IFF control-indicator, set the MODE 2 CODE switches to 76.	
	No IFF returns are visible.	Refer to TM 11-5895-208-10.
	i. Release the CHALLENGE switch and set the CHOP switch to OFF.	
	j. On the PPI, set the RANGE switch to 250,000.	
	k. Check MODE 1 and MODE 3, in known operational codes, using targets of opportunity.	
	IFF returns from targets of opportunity appear on the PPI.	Refer to TM 11-5895-208-10.
	l. Set the CODE knobs to the correct operational settings.	

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Table 13 (C). Daily SIF/IFF Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Check the IFF on the HIPAR or AAR.</p> <p>a. On the PPI, set the RANGE switch to 50,000.</p> <p>b. On systems with HIPAR, depress the TEST ENABLE switch-indicator.</p> <p style="padding-left: 40px;">The TEST ENABLE switch-indicator illuminates (white).</p> <p>c. On systems with AAR, depress the RADIATE OFF switch, then the RADIATE ON switch.</p> <p style="padding-left: 40px;">The RADIATE ON indicator light illuminates.</p> <p>d. Repeat step 2 above.</p> <p>e. Set the RADAR SELECT switch to LOPAR.</p> <p>f. Depress the TEST ENABLE switch-indicator on systems with HIPAR.</p> <p style="padding-left: 40px;">The TEST ENABLE switch-indicator illuminates (red).</p> <p>g. On systems with AAR, depress the RADIATE OFF switch.</p> <p style="padding-left: 40px;">The RADIATE READY indicator light illuminates.</p>	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 53.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 53.</p>

Table 14 (U). Daily Communication Checks (U)

Step	Procedure	Corrective action
1.	<p>Perform the interarea checks (white alert).</p> <p><i>Note.</i> Perform the procedures below in the director station and in the launching control group simultaneously.</p> <p>a. On the fuse and control panel at each telephone switchboard, set the WIRE—CABLE—RADIO switch to CABLE.</p> <p style="padding-left: 40px;">The CABLE indicator light at each telephone switchboard illuminates.</p> <p>b. On the tactical control-indicator, set the equipment status switch to WHITE.</p> <p style="padding-left: 40px;">The white status indicator light illuminates.</p> <p>c. Plug the operator's cord into the CABLE 1 line circuit and call the launching control switchboard operator. Repeat the procedure for the CABLE 2 and CABLE ADMIN line circuits.</p> <p style="padding-left: 40px;">An intelligible two-way voice communication exists.</p>	<p><i>Note.</i> The figure references below refer to TM 9-1425-250-12/1, unless otherwise indicated.</p> <p>Refer to figures 5-8 and 5-27.</p> <p>Refer to figure 39 in TM 9-1430-254-20/2.</p> <p>Refer to figures 5-9 and 5-28.</p>

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
1.	Continued	
	d. Set the WIRE—CABLE—RADIO switch at both switchboards to WIRE, and repeat the procedure in c above. The WIRE indicator light on both switchboards illuminates. An intelligible two-way voice communication exists.	Refer to figures 5-8 and 5-27. Refer to figures 5-9 and 5-28.
	e. Energize the radio sets as prescribed in (1) and (2) below.	
	(1) Perform the receiver operating adjustments.	
	(a) Set the POWER ON—OFF switch to ON. The POWER and STBY indicator lights illuminate.	Refer to TM 11-212-10.
	(b) Allow the equipment to warm up for 5 minutes.	
	(c) (Deleted)	
	(d) Set the OPEN—SQUELCH switch to SQUELCH. The noise is audible at the speaker.	Refer to TM 11-212-10.
	(e) Adjust the SENSITIVITY knob until the receiver indicator light just illuminates. The noise at the speaker ceases and the STBY indicator light illuminates.	Refer to TM 11-212-10.

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
1.	<p>Continued</p> <p>(f) Adjust the VOLUME knob for the desired audio level.</p> <p>(2) Perform the transmitter and telephone signal converter adjustments.</p> <p>(a) Set the FIL—ON-OFF switch to ON.</p> <p>The FIL indicator light illuminates.</p> <p>(b) Set the PLATE—ON-OFF switch to ON.</p> <p>The PLATE indicator light illuminates.</p> <p>(c) Set the POWER—ON-OFF switch on the telephone signal converter to ON.</p> <p>The POWER indicator light illuminates.</p> <p>f. Set the WIRE—CABLE—RADIO switch on both telephone switchboards to RADIO.</p> <p>The RADIO indicator light on both switchboards illuminates.</p> <p>g. Plug the operator's cord into the RADIO TECH line circuit and call the launching control switchboard operator. Repeat the procedure for the RADIO COMD line circuit.</p> <p>An intelligible two-way voice communication exists.</p> <p>h. Set the WIRE—CABLE—RADIO switch at both telephone switchboards to CABLE.</p>	<p>Refer to TM 11-212-10.</p> <p>Refer to TM 11-212-10.</p> <p>Refer to TM 11-212-10.</p> <p>Refer to figures 5-8 and 5-27.</p> <p>Refer to figures 5-9 and 5-28.</p>
2.	<p>Perform the command hot loop checks.</p> <p>a. On the tactical control-indicator, set the equipment status switch to YELLOW.</p> <p>The yellow equipment status indicator lights illuminate at the battery control console, target radar control console, launching control console, and at each HERCULES launching section control-indicator.</p> <p>b. Request selection of HERCULES launching section A by the launching control console operator and check that the party-line voice communication exists between the telephone stations listed below.</p> <p>Both telephone switchboard COMD LOOP line circuits.</p> <p>Launching control console, position 1 telephone station.</p> <p>HERCULES launching section A, station 1 mounted field telephone station.</p>	<p>Refer to figure 39 in TM 9-1430-254-20/2.</p> <p>Refer to figures 5-9 and 5-28.</p> <p>Refer to figure 5-29.</p> <p>Refer to figure 5-31.</p>

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Table 14 (U). Daily Communication Checks--Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	Acquisition radar operator's telephone station.	Refer to figure 5-10.
	Battery control officer's telephone station. (TECH switch must be turned down.)	Refer to figure 5-10.
	Target radar control console telephone station.	Refer to figure 5-19.
	Missile radar control console telephone station. (TECH switch must be turned down.)	Refer to figure 5-20.
	c. Request selection of HERCULES launching section B. Check that section B, station 1 mounted field telephone station is on the party line (command hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	d. Request selection of HERCULES launching section C. Check that section C, station 1 mounted field telephone station is on the party line (command hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	e. Request selection of HERCULES launching section D. Check that section D, station 1 mounted field telephone station is on the party line (command hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	f. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to WIRE.	
	The party line is still in operation.	Refer to figures 5-9 and 5-28.
	The WIRE indicator light at each telephone switchboard illuminates.	Refer to figures 5-9 and 5-28.
	g. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to RADIO.	
	The party line is still in operation.	Refer to figures 5-9 and 5-28.
	The RADIO indicator light at each telephone switchboard illuminates.	Refer to figures 5-9 and 5-28.
3.	Perform the technical hot loop check.	
	a. Request selection of HERCULES launching section A by the launching console operator and check that the party line voice communication exists between the telephone stations listed below.	

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
3.	Continued	
	Both telephone switchboard TECH LOOP line circuits.	Refer to figures 5-9 and 5-28.
	Launching control officer's telephone station. (TECH switch must be at TECH.)	Refer to figure 5-30.
	Computer operator's telephone station.	Refer to figure 5-11.
	Missile radar control console telephone station. (TECH switch must be set to TECH.)	Refer to figure 5-20.
	Battery control officer's telephone station. (TECH switch must be set to TECH.)	Refer to figure 5-10.
	HERCULES launching section A, station 2 mounted field telephone station.	Refer to figure 5-31.
	b. Request selection of HERCULES launching section B. Check that section B, station 2 mounted field telephone station is on the party line (technical hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	c. Request selection of HERCULES launching section C. Check that section C, station 2 mounted field telephone station is on the party line (technical hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	d. Request selection of HERCULES launching section D. Check that section D, station 2 mounted field telephone station is on the party line (technical hot loop).	
	An intelligible two-way voice communication exists.	Refer to figure 5-31.
	e. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to WIRE.	
	The party line is still in operation.	Refer to figures 5-9 and 5-28.
	f. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to CABLE.	
	The party line is still in operation.	Refer to figures 5-9 and 5-28.
4.	Perform the launching section alternate field wire pairs check.	
	a. Remove the two field wire pairs from the binding posts on the rear of the launching area radio sets, and connect the launching section alternate field wire pairs.	

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>b. Request the operator at each HERCULES launching section control-indicator to set the MANUAL ORDERS—ALERT SELECTOR switch to RED.</p> <p style="padding-left: 40px;">The command hot loop party line communication exists between station 1 of each launching section and the battery control officer's telephone station.</p> <p style="padding-left: 40px;">The technical hot loop party line voice communications exist between station 2 of each launching section and the computer operator's telephone station.</p> <p>c. Remove the launching section alternate field wire pairs from the binding posts in the rear of the radio sets, and connect the field wire pairs removed in a above.</p> <p>d. Restore the voice communications equipment to the standby condition.</p> <p>e. On the tactical control-indicator, set the equipment status switch to WHITE.</p>	<p>Refer to figures 5-26, 5-31, and 5-10.</p> <p>Refer to figures 5-31 and 5-11.</p>

Table 15 (U). Daily Pressurization and Dehumidification Checks (U)

Step	Procedure	Corrective action
1.	<p>Perform the procedures in table 1.¹</p> <p>Caution: If the equipment is deenergized overnight or longer, the pressurization or dehumidifier unit is changed or the pressurized section of the rotary coupler is opened, allow the pressurization and dehumidifier units to operate for 6 hours then perform the procedures in table 37.</p>	
2.	<p>Check the operation of the pressurization unit.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 15.</p> <p>b. On the PPI, set the INTENSITY and GAIN knobs fully counterclockwise.</p> <p>c. On the acquisition antenna pedestal, set the antenna disable switch to OFF.</p> <p style="padding-left: 40px;">The antenna rotation stops.</p> <p>d. Gain access to the compressor and check that the ON—OFF switch is set to ON.</p>	Refer to figure 19.

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>b. Set the EXPANSION and SYMBOLS switches to OFF and the RANGE switch to 150,000.</p> <p>c. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>d. Rotate the REC GAIN knob fully counterclockwise.</p> <p><i>Note.</i> Allow at least a 30-minute warm-up period before proceeding with the adjustments below.</p>	
3.	<p>Adjust the presentation of the azimuth line and the range mark.</p> <p>a. Adjust the INTENSITY knob on the PPI until a barely discernible sweep is visible. Adjust the GAIN knob for normal presentation of the range marks.</p> <p>b. Depress and hold the azimuth switch on the target-designate control-indicator, and adjust variable resistor R33 on the PPI video amplifier until the steerable azimuth line has the desired intensity. Release the azimuth switch. Repeat this procedure until interaction is eliminated.</p> <p>c. On the target-designate control-indicator, depress and hold the azimuth switch.</p> <p style="padding-left: 40px;">The acquisition range mark is barely visible.</p> <p>d. Release the azimuth switch.</p>	<p>Refer to figure 32.</p> <p>Warning: Voltages DANGEROUS TO LIFE are present on the rear of the PPI.</p> <p>Adjust the ACQ RANGE MARK variable resistor on the rear of the PPI.</p> <p>Refer to figure 31.</p>
4.	<p>Check the presentation of the test symbol.</p> <p>a. On the PPI test panel, in the auxiliary acquisition cabinet, set the TEST switch to ZERO.</p> <p style="padding-left: 40px;">The PULSE GENERATOR indicator light flashes one to three times a second.</p> <p>b. On the PPI, turn the SYMBOL INTENSITY knob to the midposition.</p>	<p>Adjust the GEN ADJUST variable resistor.</p> <p>Refer to figure 33.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>A flashing spot appears near the center of the PPI display.</p> <p>Warning: Voltage DANGEROUS TO LIFE are present on the rear of the PPI.</p> <p>c. Adjust the FOCUS variable resistor on the rear of the PPI to focus the flashing spot.</p>	<p>Turn the SYMBOL INTENSITY knob on the PPI and variable resistor R71 on the PPI marker generator to their midpositions. If the flashing spot is still not visible, rotate variable resistor R12 on the PPI marker generator fully counterclockwise; then rotate clockwise approximately 20 degrees past the point where the flashing spot appears.</p> <p>Refer to figure 31.</p> <p>Refer to figure 31.</p>
5.	<p>Balance the dc amplifiers.</p> <p><i>Note.</i> Pin 3 of electron tube V1 and the gray wire going to the terminal board near electron tube V1 have the same electrical potential. For easier access, use the gray wire.</p> <p>a. Connect a voltmeter between ground and pin 3 of electron tube VI on one of the PPI dc amplifiers.</p> <p>b. Adjust variable resistor R29 on the PPI dc amplifier to obtain a minimum indication on the voltmeter.</p> <p>c. Repeat a and b above for the other dc amplifier.</p> <p>d. Adjust variable resistor R4 on each of the dc amplifiers to center the flashing spot on the PPI.</p>	<p>Refer to figure 33.</p>
6.	<p>Perform the X-axis adjustments.</p> <p>On the modulation eliminator, set the Y OFF—NORM—X OFF switch to X OFF.</p> <p>A narrow vertical sweep line appears on the PPI.</p> <p>The vertical sweep line extends from 0 mil to 3200 mils.</p>	<p>Adjust the X ZERO SET variable resistor on the sweep generator.</p> <p>Refer to figure 33.</p> <p>Perform the mechanical adjustment of the PPI cathode-ray tube in table 66.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
6.	<p>Continued</p> <p>The vertical sweep line is centered and intercepts the flashing spot.</p>	<p>Adjust the CENTERING—X variable capacitor on the sweep generator.</p> <p>Refer to figure 33.</p>
7.	<p>Perform the Y-axis adjustments.</p> <p>a. On the modulation eliminator, set the Y OFF—NORM—X OFF switch to Y OFF.</p> <p>A narrow horizontal line appears on the PPI.</p> <p>The horizontal sweep line is centered and intercepts the flashing spot.</p> <p>b. On the modulation eliminator, set the Y OFF—NORM—X OFF switch to NORM.</p> <p>A normal rotating sweep appears on the PPI.</p> <p><i>Note.</i> Omit step 8 below and proceed to step 9 if the system has BTE or is connected to FUIF equipment.</p>	<p>Adjust the Y ZERO SET variable resistor on the sweep generator.</p> <p>Refer to figure 33.</p> <p>Adjust the CENTERING—Y variable capacitor on the sweep generator.</p> <p>Refer to figure 33.</p>
8.	<p>Perform the range calibration.</p> <p>a. On the target-designate control-indicator, check the drift in the range dials.</p> <p>The range drift is minimum.</p> <p>b. Rotate the range handwheel to obtain an indication of 100,000 yards on the RANGE dial.</p> <p>c. Adjust the GAIN knob on the PPI until the range circle is visible.</p> <p>d. On the PPI test panel, set the TEST switch to +X AXIS.</p> <p>The flashing spot appears at 1600 mils.</p>	<p>Perform the procedures in table 52, step 4.</p> <p>Refer to figure 31.</p> <p>Perform the adjustments in table 66.</p>

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Table 25 (C). Weekly PFI Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p><i>e.</i> Superimpose the steerable azimuth line on the flashing spot.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 1600 mils.</p> <p><i>f.</i> Set the TEST switch to —X-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 4800 mils.</p> <p><i>g.</i> Set the TEST switch to +Y-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 0 mil.</p> <p><i>h.</i> Set the TEST switch to —Y-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 3200 mils.</p>	<p>Adjust the X SLOPE ADJ variable resistor on the sweep generator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>(1) Adjust the X BAL variable resistor on the sweep generator to correct one-half of the error between the range circle and the flashing spot.</p> <p>(2) Repeat <i>e</i> and <i>f</i> above to minimize the error.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>Adjust the Y SLOPE ADJ variable resistor on the sweep generator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>(1) Adjust the Y BAL variable resistor on the sweep generator to correct one-half of the error between the range circle and the flashing spot.</p> <p>(2) Repeat <i>g</i> and <i>h</i> above to minimize the error.</p> <p style="padding-left: 40px;">Refer to figure 33.</p>
9.	<p>Perform the video and marks check.</p> <p><i>a.</i> Have the target-tracking-radar (TTR) operator energize the TTR as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p><i>b.</i> Have the TTR operator operate the range SLEW switch to set the TTR range to approximately 100,000 yards.</p> <p><i>c.</i> On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p>	

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
9.	Continued	
	d. Adjust the INTENSITY knob on the PPI until the sweep trace is barely visible.	
	The acquisition range mark is visible.	Refer to figure 33.
	The track electronic cross is visible.	(1) Perform the procedures in table 28.1.
		(2) Adjust variable resistor R15 on the video and mark mixer. If the indication is still abnormal, perform (3) and (4) below.
		Refer to figure 30.
		(3) On the acquisition-track synchronizer in the target-radar-control console, set the TEST switch to NORMAL.
		(4) Adjust the FREQ LOPAR variable resistor fully clockwise. Adjust the FREQ LOPAR variable resistor counterclockwise 10 degrees past the point where the electronic cross appears.
	The arc of the electronic cross is approximately 3/8 inch in length.	Adjust the WIDTH variable resistor on the video and mark mixer.
		Refer to figure 30.
	Only one track azimuth line appears on the electronic cross.	Adjust the GATE ADJ variable resistor on the mark generator in the target-radar-control console.
		Refer to figure 32.
	e. On systems with a HIPAR or AAR, set the RADAR SELECTED switch to HIPAR/AAR. On systems with a HIPAR, depress the TEST ENABLE switch-indicator.	
	f. Set the RANGE switch on the PPI to 350,000 for systems with a HIPAR or AAR (250,000 for systems without HIPAR).	

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
9.	Continued	
	g. On the target-designate control-indicator, rotate the range handwheel to obtain an indication on the RANGE dial to correspond with the RANGE switch setting in f above. If necessary, increase the PPI intensity.	
	The sweep disappears 3/16 inch beyond the range mark.	Adjust variable resistor R18 on the PPI video amplifier. Refer to figure 33.
	The range circle is at the edge of the PPI.	Adjust variable resistor R1 on each PPI dc amplifier. Refer to figure 33.
	The acquisition azimuth line extends to the edge of the scope.	Adjust the MARK LENGTH HIPAR (LOPAR) variable resistor on the precision mark generator in the percision-indicator. Refer to figure 35.
	g.1. Alternately depress and release the azimuth switch on the target-designate control-indicator.	
	The range mark on the steerable azimuth line coincides with the range circle.	Adjust variable resistor R18 on the 4-kc oscillator. Refer to figure 37.
	The flashing azimuth line is within 1/8 inch of the steerable azimuth line.	Rotate the housing of synchro B1 in the target-designate control-indicator. Refer to figure 33.
	g.2. Set the RADAR SELECTED switch to LOPAR.	
	h. Rotate the REC GAIN knob on the LOPAR control-indicator fully clockwise to the first positive stop (not in AGC).	
	i. Adjust the ACQ RG MARK variable resistor on the video and mark mixer for normal intensity of the acquisition range marks.	
	<i>Note.</i> If the acquisition range marks are too bright, they may obscure weak target signals.	
	j. Adjust the GAIN knob on the PPI so that the noise level is just visible.	
	Only one acquisition azimuth line should be visible for each revolution of the acquisition antenna.	Adjust the GATE ADJ variable resistor on the precision mark generator. Refer to figure 32.
	k. Set the TRACK CROSS switch to OFF.	
	<i>Note.</i> Omit steps 10 and 11 below if the system is not connected to FUIF equipment or without BTE.	

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Perform the range calibration of the coordinate data symbol.</p> <p><i>Note.</i> The range-calibrate and range-zero checks and adjustments on the target-tracking radar must be completed before performing this step.</p> <p>a. On the target-designate control-indicator, check the drift on the range dials.</p> <p style="padding-left: 40px;">The range drift is minimum.</p> <p>a.1. Perform the procedures in (1) through (3) below on systems with BTE.</p> <p style="padding-left: 40px;">(1) Set the STATIC TEST switch on the BTE to 3. A flashing foe symbol appears on the PPI at 1600 mils.</p> <p style="padding-left: 40px;">(2) Set the STATIC TEST switch to 4. A flashing foe symbol appears on the PPI at 3200 mils.</p> <p style="padding-left: 40px;">(3) Set the STATIC TEST switch to NORM.</p> <p>b. Have the computer operator energize the computer as prescribed in TM 9-1430-251-12/1.</p> <p>c. On systems connected to missile master equipment, set the SYMBOL switch on the PPI to NORMAL. On systems connected to BIRDIE equipment, set the SYMBOL switch to BOTH.</p> <p>d. On systems with FUIF, set the system and the FUIF equipment in the back-to-back mode and connect a ground to terminal 48 in the auxiliary acquisition interconnecting box.</p> <p>d.1. On systems with BTE, perform the procedures in (1) and (2) below.</p> <p style="padding-left: 40px;">(1) On the BTE set the left LOOP TEST switch to BTRY.</p> <p style="padding-left: 40px;">(2) Set the right LOOP TEST switch to MAN.</p> <p style="padding-left: 40px;">(3) On the tactical control-indicator, momentarily depress the LOCAL and FEW switches.</p> <p>e. (Deleted)</p> <p>f. Have the computer operator set the COMPUTER CONDITION switch on the computer control panel to ACTION.</p> <p>g. Operate the DESIGNATE — ABANDON switch on the target-designate control-indicator to DESIGNATE, and set the TRACK CROSS switch to ON.</p>	<p>Perform the procedures in table 52, step 4.</p> <p>Refer to TM 9-1430-580-14.</p> <p>Refer to TM 9-1430-580-14.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Continued</p> <p><i>h.</i> Have the TTR operator momentarily operate the ACQUIRE switch on the target-antenna-control group, and set the TEST switch to off (down).</p> <p><i>i.</i> Have the TTR operator rotate the range, azimuth, and elevation handwheels to obtain indications of 100,000 yards in range, 1600 mils in azimuth, and 0 mil in elevation.</p> <p><i>j.</i> Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross is superimposed on the foe symbol at 1600 mils.</p> <p><i>k.</i> Have the TTR operator depress the OFF TARGET switch, and rotate the azimuth handwheel to obtain an indication of 4800 mils on the azimuth dial.</p> <p><i>l.</i> Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the foe symbol.</p> <p><i>m.</i> Have the TTR operator depress the OFF TARGET switch, and repeat <i>i</i> through <i>l</i> above as required to eliminate interaction.</p> <p><i>n.</i> Have the TTR operator depress the OFF TARGET switch, rotate the azimuth handwheel to obtain an indication of 0 mil on the azimuth dial, and depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the foe symbol.</p>	<p>Adjust the X SLOPE ADJ variable resistor on the PPI sweep generator until the arc portion of the electronic cross is superimposed on the foe symbol. If the superimposed symbol and the arc do not appear at 1600 mils, note the displacement and perform the adjustments in table 66.</p> <p>Adjust the X BAL variable resistor on the PPI sweep generator to reduce the separation by one-half. Adjust the X ZERO SET variable resistor, if necessary, to bring the separation within the prescribed limits.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>Adjust the Y SLOPE ADJ variable resistor on the PPI sweep generator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Continued</p> <p><i>o.</i> Have the TTR operator depress the OFF TARGET switch, and rotate the azimuth handwheel to obtain an indication of 3200 mils on the azimuth dial.</p> <p><i>p.</i> Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the foe symbol.</p> <p><i>q.</i> Repeat <i>n</i> through <i>p</i> above as required.</p> <p><i>r.</i> On the target-designate control-indicator, operate the DESIGNATE — ABANDON switch to ABANDON.</p> <p><i>r.1.</i> Set the TRACK CROSS switch to OFF.</p> <p><i>s.</i> Set the COMPUTER CONDITION switch to STAND BY.</p> <p><i>t.</i> Return the FUIF equipment to normal operation.</p> <p><i>u.</i> On systems with BTE, set the left LOOP TEST switch to BTE. Set the right LOOP TEST switch to NORM.</p> <p><i>v.</i> Remove the ground from terminal 48.</p> <p><i>Note.</i> Omit step 11 below for systems not connected to FUIF or without BTE.</p>	<p>Adjust the Y BAL variable resistor on the PPI sweep generator to reduce the separation by one-half. Adjust the Y ZERO SET variable resistor, if necessary, to bring the separation within the prescribed limits.</p>
11.	<p>Perform the coordinate data symbols check.</p> <p><i>Note.</i> In <i>a</i> through <i>c</i> below the symbols will appear at the center of the PPI on systems without MWO 9-1430-251-80/25 applied.</p> <p><i>a.</i> On the PPI, set the SYMBOLS switch to OFF.</p>	

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Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
2.1.	<p>Continued</p> <p>b. Energize the AAR through operate as prescribed in the appropriate TM. Have the AAR operator set the AAR into the remote mode of operation.</p> <p>(1) On systems with an ECCM console, set the LOCAL—AAR CONT AUTO switch to LOCAL.</p> <p style="padding-left: 40px;">The AAR CONT ACT indicator light illuminates.</p> <p style="padding-left: 40px;">The RADIATE READY indicator light illuminates 15 minutes after power has been applied to the AAR amplatron.</p> <p>(2) On the rear of the acquisition control-indicator, set the ACQUISITION RADAR switch to LOPAR ONLY.</p> <p>(3) Depress the RADIATE OFF switch, then the RADIATE ON switch.</p> <p style="padding-left: 40px;">The RADIATE ON indicator light illuminates.</p>	<p>Refer to figure 53.</p> <p>Refer to figure 53.</p> <p>Refer to figure 53.</p>
3.	<p>Prepare for the video level adjustment.</p> <p>a. Perform the following procedure on the LOPAR control-indicator.</p> <p>(1) Set the ANT RPM switch to 10.</p> <p>(2) Set the AJD—OFF switch to OFF.</p> <p>(3) Set the JS ONLY—OFF switch to OFF.</p> <p>(4) Set the MTI switch to OFF.</p> <p>(5) Set the PROC—IS switch to off (center).</p> <p>(6) Rotate the REC GAIN knob to the first positive stop (not in AGC).</p> <p>(7) Operate the DOWN/SCAN—UP switch to DOWN/SCAN to obtain a minimum indication on the ANT ELEV indicator.</p> <p>b. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.</p> <p>c. On the video and mark mixer, set the switches as indicated below.</p> <p>(1) Set the ACQ MARKS switch to OFF.</p> <p>(2) Set the MARKS switch to NORM.</p> <p>(3) Set the NORM—ATBM switch to NORM.</p> <p>d. On the video and mark mixer, set the variable resistors listed in (1) through (6) below to midposition.</p> <p>(1) ACQ RG MK</p> <p>(2) R15</p> <p>(3) R43</p> <p>(4) R61</p>	

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Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
3.	Continued	
	(5) R85	
	(6) HIPAR/AAR	
	e. Using a T-connector, sync an oscilloscope to connector J22 in the director station group (HIPAR/AAR or LOPAR preknock).	
4.	Perform the video level adjustments.	
	a. Using the oscilloscope, monitor the B-scope and PI video at the rear of connector J10 on the video and mark mixer.	
	The video signal peaks are at least 3 volts.	Adjust variable resistor R61 on the video and mark mixer.
	The signal-to-noise ratio is at least 3 to 1.	Refer to figure 30. Refer to figure 30.
	b. On the video and mark mixer, set the NORM—ATBM switch to ATBM.	
	c. Set the RADAR SELECT switch to HIPAR/AAR	
	c.1. Perform the following procedures on systems with a HIPAR.	
	(1) Depress the TEST ENABLE switch-indicator.	
	The TEST ENABLE switch-indicator illuminates (white).	Refer to figure 3-56 in TM 9-1430-254-12/7.
	(2) On the HIPAR control-indicator, depress the AJD RECEIVER switch-indicator.	
	The AJD RECEIVER switch-indicator illuminates (green).	Refer to figure 3-56 in TM 9-1430-254-12/7.
	c.2. On systems with AAR, set mode switch S1 to NORMAL RECEIVER.	
	d. Connect the oscilloscope to the rear of connector J11 on the video and mark mixer. Adjust the oscilloscope to operate on internal sync.	
	The noise level of the signal is equal to that present in a above.	Adjust variable resistor R85 on the video and mark mixer.
	The signal-to-noise ratio is at least 3 to 1.	Refer to figure 30. Refer to figure 30.
	e. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.	
	f. On the video and mark mixer, set the NORM—ATBM switch to NORM.	
	g. Connect the oscilloscope to the rear of connector J7 on the video and mark mixer and adjust the oscilloscope to operate on external sync.	

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Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>The noise level of the signal is equal to that present in <i>a</i> above.</p> <p>The signal-to-noise ratio is at least 3 to 1.</p> <p>h. On the IFF control-indicator, set the RADAR SELECT switch to HIPAR/AAR.</p> <p>The noise level of the signal is equal to that present in <i>a</i> above.</p> <p>The signal-to-noise ratio is at least 3 to 1.</p> <p>i. Set the RADAR SELECT switch to LOPAR.</p> <p>j. On systems with an ECCM console, set the ACQUISITION RADAR switch on the rear of the acquisition control-indicator to AAR.</p>	<p>Adjust variable resistor R43 on the video and mark mixer. Refer to figure 30.</p> <p>Refer to figure 30.</p> <p>Adjust the HIPAR/AAR VID variable resistor. Refer to figure 30.</p> <p>Refer to figure 30.</p>
5.	<p>Perform the PPI video adjustments.</p> <p>a. On the LOPAR control-indicator, set the MTI switch to 360.</p> <p>b. On the MTI oscilloscope, insure that the MTI CKT TEST switch is set to 10.</p> <p>c. On the PPI, set the RANGE switch to 250,000 and adjust the INTENSITY knob until the sweep trace is barely visible.</p> <p>d. Adjust the PPI GAIN knob to obtain a normal presentation of MTI video (Clutter video within the MTI region is attenuated and moving targets are observed in the clutter area.).</p> <p>The MTI presentation on the PPI extends to the desired range.</p> <p>The noise in the bypass region is barely discernible.</p> <p>No sharp definition is observed between the MTI and bypass regions.</p>	<p>Adjust the 360° RANGE variable resistor on the electronic gate. Refer to figure 30.</p> <p>Adjust the BY PASS VID GAIN variable resistor on the fast AGC amplifier. Refer to figure 30.</p> <p>Adjust the SW BAL variable resistor on the electronic gate. Refer to figure 30.</p>
	<p>e. Set the MTI switch to OFF.</p> <p>f. Have the TTR operator energize the TTR through low voltage as prescribed in the power checks in TM 9-1430-256-12/1 and set the TTR range to 150,000 yards.</p>	

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Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
5.	Continued <i>g.</i> On the video and mark mixer, set the ACQ MARKS switch to ON. <i>h.</i> On the video and mark mixer, adjust variable resistor R15 until the track electronic cross has the desired intensity. <i>i.</i> On the target-designate control-indicator, rotate the range handwheel to obtain an indication of 100,000 yards on the RANGE dial. <i>j.</i> On the video and mark mixer, adjust the ACQ RG MARK variable resistor until the acquisition range circle is barely visible on the PPI.	
6.	Deenergize the LOPAR transmitter.² Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch. <i>Note.</i> Omit step 7 below and perform 8 on systems with AAR.	
7.	Release control of the HIPAR. On the HIPAR auxiliary control-indicator, depress the TEST ENABLE switch-indicator. <p style="text-align: center;">The TEST ENABLE switch-indicator illuminates (red).</p>	Refer to figure 3-56 in TM 9-1430-254-12/7.
8.	Deenergize the AAR transmitter. On systems with AAR, depress the RADIATE OFF switch. <p style="text-align: center;">The RADIATE READY indicator light illuminates.</p>	Refer to figure 53.

²Omit this step if the checks in the succeeding tables are to be performed.

Table 29 (U). Weekly Interference Suppressor and Jam Strobe Gain Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 11.	

Table 30 (U). Weekly STC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1.¹	
2.	Perform the STC checks and adjustments. <i>a.</i> Perform the following procedures on the LOPAR control-indicator. (1) Set the MTI switch to OFF.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 30 (U). Weekly STC Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <ul style="list-style-type: none"> (2) Set the AJD—OFF switch to OFF. (3) Set the PROC—IS switch to off (center). (4) Rotate the STC knob fully clockwise. (5) Rotate the REC GAIN knob clockwise to the first positive stop (not in AGC). <p>a.1. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>b. Set the MTI CKT TEST switch on the MTI oscilloscope to 8.</p> <p style="padding-left: 40px;">The receiver noise just begins to appear at the extreme end of the sweep on the MTI oscilloscope.</p> <p>c. On the PPI, adjust the GAIN and INTENSITY knobs for a normal presentation.</p> <p>d. Adjust the STC knob slowly counterclockwise.</p> <p style="padding-left: 40px;">On the PPI, observe that the range at which noise appears decreases smoothly to zero.</p> <p>e. On the MTI oscilloscope, set the MTI CKT TEST switch to 10.</p>	<p>Adjust the DURATION variable resistor on the STC.</p> <p style="text-align: center;">Refer to figure 28.</p> <p style="text-align: right;">Refer to figure 28.</p>

⁷Omit this step if the checks in the preceding tables have been performed in sequence.

Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR) (U)

Step	Procedure	Corrective action
	<p><i>Note.</i> The LOPAR level and orientation checks as prescribed in table 17, the target tracking radar collimation checks as prescribed in TM 9-1430-256-12/1, and the complete PPI presentation checks and adjustments as prescribed in table 25 must have been completed prior to performing the checks below.</p>	
1.	<p>Prepare for the synchronization checks.</p> <ol style="list-style-type: none"> Perform the procedures in table 1.¹ On the LOPAR control-indicator, set the ANT RPM switch to 10.¹ Set the HV SUPPLY knob fully counterclockwise. Depress the HV SUPPLY—ON switch, and adjust the HV SUPPLY knob clockwise to obtain an indication of 30 milliamperes on the magnetron meter. On the LOPAR control-indicator, rotate the REC GAIN knob fully clockwise (in AGC). Energize the HIPAR system through operate as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2. <ol style="list-style-type: none"> Observe the indications on the HIPAR auxiliary control-indicator. 	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
1.	Continued	
	<p>The HIPAR READY indicator is extinguished.</p> <p>The HIPAR ON indicator is illuminated (green).</p> <p>The HIPAR OPERATE indicator is illuminated (white).</p> <p>The DRIVE OVERLOAD RESET switch-indicator is illuminated (white).</p> <p>The TEST ENABLE switch-indicator is illuminated (red).</p>	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>
	<p>(2) Observe the indication on the HIPAR control-indicator.</p> <p>The HIPAR POWER indicator light is illuminated.</p>	<p>Adjust the PWR SENS variable resistor on the alarm control until the HIPAR POWER indicator light illuminates.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>
	<p>f. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.</p> <p>g. On the PPI, adjust the INTENSITY and GAIN knobs for a well defined presentation.</p> <p>h. Have the TTR operator energize the TTR system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p>i. On the video and mark mixer, set the ACQ MARKS switch to ON.</p> <p>j. On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p> <p>The electronic cross appears on the PPI.</p>	<p>Refer to figure 32.</p>
	<p>k. On the HIPAR auxiliary control-indicator, depress the TEST ENABLE switch-indicator.</p> <p>The TEST ENABLE switch-indicator illuminates (white).</p> <p>The OPERATE switch-indicator illuminates (green).</p>	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>
	<p>l. Set the RADAR SELECT switch to HIPAR/AAR.</p> <p>m. On the HIPAR control-indicator, depress the BASIC RECEIVER switch-indicator.</p> <p>The BASIC RECEIVER switch-indicator illuminates (green).</p>	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
1.	Continued	
	The STAGGER OFF switch-indicator is extinguished.	Refer to figure 3-56 in TM 9-1430-254-12/7.
	The JS ONLY RECEIVER and AJD RECEIVER switch-indicators illuminate (white).	Refer to figure 3-56 in TM 9-1430-254-12/7.
	n. Rotate the HIPAR RECEIVER GAIN knob fully clockwise.	
	o. Set the RADAR SELECT switch to LOPAR.	

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
2.	<p>Check for coincidence of the range circles.</p> <p>On the IFF control-indicator, alternately set the RADAR SELECT switch from LOPAR to HIPAR/AAR.</p> <p>The LOPAR and HIPAR range circles coincide at 0, 1,600, 3,200, and 4,800 mils on the PPI.</p> <p>The range circle for the HIPAR presentation does not exhibit any distortion (ripple on the range mark or squaring of the sweep).</p>	<p>On the auxiliary resolver amplifier, adjust variable resistors R15 and R27.</p> <p>Refer to figure 33.</p> <p>a. On the filter assembly in the auxiliary acquisition control interconnecting group, set S1C to position 4 and S2L to position 5.</p> <p>b. Adjust S2L to reduce the distortion on the PPI.</p> <p>c. If the indication is still abnormal, set S1C to position 3 and repeat b above.</p> <p>d. If more than one combination of switch settings minimizes the distortion, set S1C and S2L to the combination that gives the lowest ratio of the S2L/S1C positions.</p> <p>Refer to figure 33.</p>
3.	<p>Check the azimuth orientation of the video.</p> <p>a. By alternately viewing the HIPAR and LOPAR presentations on the PPI, measure and record the amount and direction of azimuth displacement between the HIPAR and LOPAR video.</p> <p><i>Note.</i> It may be necessary to use the steerable azimuth line to determine the direction and amount of displacement.</p> <p>The HIPAR and LOPAR video presentations are displaced by 25 mils or less.</p> <p>b. Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a well defined presentation.</p> <p>c. With the RADAR SELECT switch set to LOPAR, designate a well defined stationary target.</p> <p>d. Have the TTR operator operate and hold the ACQUIRE switch until the range dials hunt about the designated coordinates.</p> <p>The designated video is in the center of the target-track antenna circle on the B-scope.</p> <p>e. Set the RADAR SELECT switch to HIPAR/AAR and observe the presentation on the B-scope.</p>	<p>Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 26.</p>

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
3.	Continued	
	The designated video remains at the same azimuth as that observed in <i>d</i> above.	Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly. Refer to figure 33.
	The target range for the LOPAR and HIPAR presentations is identical.	(1) Adjust the variable delay line in the auxiliary acquisition control interconnecting group. Refer to figure 26.
		(2) If the indication is still abnormal, perform the system timing checks in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.
	f. Set the RADAR SELECT switch to LOPAR and have the TTR operator acquire the designated target in automatic.	
	The electronic cross is centered over the target video on the precision indicator.	Perform the procedures in table 12.
	g. Set the RADAR SELECT switch to HIPAR/AAR, depress the REFRAME switch, and note the position of the video on the B-scope.	
	The electronic cross is directly centered over the HIPAR video in the center of the B-scope.	(1) To correct an error in azimuth, repeat <i>a</i> through <i>e</i> above.
		(2) To correct an error in range, repeat <i>e</i> above. If the indication is still abnormal, adjust the FREQ HIPAR variable resistor on the acquisition-track synchronizer. Refer to figure 46 in TM 9-1430-256-20/3.
	h. Have the TTR operator abandon the target and set the azimuth and elevation MAN—AID—AUTO switches to MAN. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.	
	i. Depress the REFRAME switch on the B-scope.	
	j. Have the TTR operator rotate the azimuth handwheel 225 mils clockwise.	
	The electronic cross remains within the target-track antenna circle.	Perform the procedures in table 63.
	k. Have the TTR operator rotate the azimuth handwheel 450 mils counterclockwise.	

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
3.	Continued The electronic cross remains within the target-track antenna circle.	Perform the procedures in table 63.
4.	Check the video synchronization. a. On the IFF control-indicator, alternately set the RADAR SELECT switch from LOPAR to HIPAR/AAR. Locate the most distant, clearly defined, stationary target presented on the PPI by both radar systems and record its position. Set the RADAR SELECT switch to HIPAR/AAR. b. Depress the AJD RECEIVER switch-indicator. The AJD RECEIVER switch-indicator illuminates (green). The STAGGER OFF switch-indicator illuminates (green). The video remains in the same position as recorded in <i>a</i> above. c. Depress and hold the STAGGER OFF switch-indicator. The STAGGER OFF switch-indicator illuminates (amber). The video remains in the same position as recorded in <i>a</i> above. d. Release the STAGGER OFF switch-indicator. e. Depress the JS ONLY RECEIVER switch-indicator. The JS ONLY RECEIVER switch-indicator illuminates (amber). The AJD RECEIVER switch-indicator illuminates (white). f. Have the HIPAR operator note and record the position of the STROBE RANGE GATE knob on the receiver group in the AJI HIPAR system, then set the knob fully counterclockwise. The ground clutter is displayed. g. Have the HIPAR operator return the STROBE RANGE GATE knob to the position recorded in <i>f</i> above.	Refer to figure 3-56 in TM 9-1430-254-12/7. Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the receiving subsystem check procedures as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2. Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the destagger circuits check procedures as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2. Refer to figure 3-56 in TM 9-1430-254-12/7. Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the strobe channel checks as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action																
5.	<p>Check the AJAC channel.</p> <p>a. On the HIPAR control-indicator, depress the AJD RECEIVER and the MANUAL CHANNEL SELECT switch-indicators.</p> <p style="padding-left: 40px;">The ADJ RECEIVER switch-indicator illuminates (green).</p> <p style="padding-left: 40px;">The STAGGER OFF switch-indicator illuminates (green).</p> <p style="padding-left: 40px;">The MANUAL CHANNEL SELECT switch-indicator illuminates (green).</p> <p>b. Have the HIPAR operator establish switch settings for the AJI HIPAR system as follows:</p> <table><tr><th>Switch</th><th>Setting</th></tr><tr><td>JS (73S12)</td><td>OFF</td></tr><tr><td>TEST-OPERATE (75S22)</td><td>TEST</td></tr><tr><td>WAVEGUIDE SWITCHING (75S17)</td><td>DUMMY LOAD</td></tr><tr><td>AJAC (75S26)</td><td>TEST</td></tr><tr><td>AJAC CHANNEL MODES (75S25)</td><td>BC CHECK</td></tr><tr><td>VIDEO PULSE SELECTOR (75S10)</td><td>AJAC</td></tr><tr><td>TIME BASE—TRIGGER SELECTOR (75A3S20)</td><td>EXT +</td></tr></table> <p><i>Note.</i> Have the AJI HIPAR operator check the indications that appear on the power control-indicator below.</p> <p>c. On the HIPAR control-indicator, depress the CHANNEL 1 switch-indicator.</p> <p style="padding-left: 40px;">The CHANNEL 1 switch-indicator illuminates (green).</p> <p style="padding-left: 40px;">On the oscilloscope on the power control indicator (PCI), the on-channel pulse (negative trigger) for channel 1 appears near the left edge of the sweep.</p> <p style="padding-left: 40px;">A positive pulse appears for each AJAC channel that is disabled (AJAC channel switches set to OFF on matrix assembly number 1—A4A1A1).</p> <p>d. Repeat the procedures in c above for the CHANNEL 2 through CHANNEL 10 switch-indicators.</p> <p style="padding-left: 40px;">The pertinent switch-indicator selected illuminates (green) when depressed.</p>	Switch	Setting	JS (73S12)	OFF	TEST-OPERATE (75S22)	TEST	WAVEGUIDE SWITCHING (75S17)	DUMMY LOAD	AJAC (75S26)	TEST	AJAC CHANNEL MODES (75S25)	BC CHECK	VIDEO PULSE SELECTOR (75S10)	AJAC	TIME BASE—TRIGGER SELECTOR (75A3S20)	EXT +	<p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Perform the daily check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.</p> <p>Perform the daily check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>
Switch	Setting																	
JS (73S12)	OFF																	
TEST-OPERATE (75S22)	TEST																	
WAVEGUIDE SWITCHING (75S17)	DUMMY LOAD																	
AJAC (75S26)	TEST																	
AJAC CHANNEL MODES (75S25)	BC CHECK																	
VIDEO PULSE SELECTOR (75S10)	AJAC																	
TIME BASE—TRIGGER SELECTOR (75A3S20)	EXT +																	

Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
5.	Continued	
	On the oscilloscope on the PCI, the on-channel pulse changes position to the right as each switch-indicator is depressed.	Perform the AJAC check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.
e.	On the HIPAR auxiliary control-indicator, depress the TEST ENABLE switch-indicator. The TEST ENABLE switch-indicator illuminates (red).	Refer to figure 3-56 in TM 9-1430-254-12/7.
f.	On the HIPAR control-indicator, depress the AJAC ALL CHANNEL switch-indicator. The AJAC ALL CHANNEL switch-indicator illuminates (green). Ten staircase waveforms appear on the oscilloscope on the PCI.	Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the AJAC check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.
g.	Have the HIPAR operator rotate the SWEEP knob (75R21) on the PCI to obtain the staircase waveform having the least number of steps in the center of the oscilloscope sweep. Two on-channel pulses appear on the sweep, one under the staircase waveform with the least number of steps and one under the waveform with next to the least number of steps.	Perform the AJAC check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.
h.	Rotate the SWEEP knob fully counterclockwise. <i>Note.</i> If none of the channels are locked out, lock out at least one channel on matrix assembly number 1 (A4A1A1). Return the switches to the normal condition at the completion of i below.	
i.	On the HIPAR control-indicator, depress the AJAC SELECTED CHANNEL switch-indicator. The AJAC SELECTED CHANNEL switch-indicator illuminates (green). The staircase waveforms disappear for each AJAC channel that is disabled.	Refer to figure 3-56 in TM 9-1430-254-12/7. Perform the AJAC check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.
j.	On the PCI, set the AJAC TEST ENABLE (75S26) switch to OPERATE.	
k.	On the HIPAR control-indicator, depress the AJAC ALL CHANNEL switch-indicator. Depress and hold the AJAC P-P CHANNEL switch-indicator. The AJAC P-P CHANNEL switch-indicator illuminates (green).	Refer to figure 3-56 in TM 9-1430-254-12/7.

Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>The staircase waveforms on the oscilloscope become unstable.</p> <p>l. Release the AJAC P-P CHANNEL switch-indicator.</p> <p>m. On the power control-indicator in the HIPAR building, operate and hold the HIGH VOLTAGE switch to LOWER until the POWER OUTPUT meter on the PCI indicates 5 kilowatts.</p> <p>The HIPAR POWER indicator light on the HIPAR control-indicator extinguishes.</p> <p>n. On the power control-indicator in the HIPAR building, operate the HIGH VOLTAGE switch to RAISE until the HIPAR POWER indicator light illuminates.</p> <p>The POWER OUTPUT meter on the PCI indicates a value between 8 and 11 KW.</p> <p>o. Set the HIPAR transmitter to the proper output power as prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2 and depress the TEST ENABLE switch-indicator.</p> <p>p. On the HIPAR control-indicator, depress the CHANNEL switch-indicators for the authorized transmitting channels.</p> <p>The switch-indicator depressed illuminates (green) and all other CHANNEL switch-indicators illuminate (white).</p> <p>The power meter indicates between 12.5 and 22.5 kw (lower scale) for each channel on HIPAR systems 537 and below.</p> <p>The power meter indicates a value greater than 20 KW (on the upper scale) for systems 538 and above and for mobile HIPAR.</p>	<p>Perform the AJAC check procedures prescribed in TM 9-1430-254-12/5 or TM 9-1430-257-12/2.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>(1) Gain access to the alarm control inside the acquisition control-indicator.</p> <p>(2) Operate the HIGH VOLTAGE switch until the POWER OUT meter indicates 10 KW.</p> <p>(3) Slowly adjust the PWR SENS variable resistor until the HIPAR POWER indicator light illuminates. Lock the control at this point.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p> <p>Refer to figure 3-56 in TM 9-1430-254-12/7.</p>

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
5.	Continued q. On the PPI, set the RANGE switch to 350,000. r. On the video and mark mixer, set the ACQ MARKS switch to NOR.	
6.	Check the adjustment of the PPI at maximum range. a. Rotate the range handwheel to obtain an indication of 350,000 on the RANGE dial on the target designate control-indicator. On the PPI, the sweep disappears $\frac{1}{4}$ inch beyond the range circle. The acquisition azimuth line extends to the edge of the PPI. b. Depress the TEST ENABLE switch-indicator. ² c. Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch. ²	Adjust variable resistor R18 on on the PPI video amplifier. Refer to figure 33. Adjust the MARK LENGTH HIPAR variable resistor on the precision mark generator. Refer to figure 32.

²Omit this step if the checks in the succeeding tables are to be performed.

Table 31.1 (C). Weekly Remote Synchronization Checks (LOPAR-AAR) (U)

Step	Procedure	Corrective action
1.	<p><i>Note.</i> The LOPAR level and orientation checks as prescribed in table 17, the target tracking radar collimation checks as prescribed in TM 9-1430-255-12/1, and the complete PPI presentation checks and adjustments as prescribed in table 25 must have been completed prior to performing the checks below.</p> <p>Prepare for the synchronization checks.</p> <p>a. Perform the procedures in table 1.¹</p> <p>b. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>c. Set the HV SUPPLY knob to START, depress the HV SUPPLY—ON switch, and adjust the HV SUPPLY knob to obtain an indication of 30 milliamperes on the MAGNETRON meter.</p> <p>d. On the LOPAR control-indicator, rotate the REC GAIN knob fully clockwise (in AGC).</p> <p>e. Energize the AAR through operate as prescribed in the appropriate TM. Have the AAR operator set the AAR into the remote mode of operation.</p> <p>The RADIATE READY indicator light illuminates 15 minutes after power has been applied to the AAR amplatron.</p> <p>f. On the AAR control-indicator, depress the RADIATE OFF switch, then the RADIATE ON switch.</p>	Refer to figure 53.

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 81.1 (C). Weekly Remote Synchronization Checks (LOPAR--AAR)—Continued (U)

Step	Procedure	Corrective action
1.	<p>Continued</p> <p>The RADIATE ON indicator light illuminates.</p> <p>g. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.</p> <p>h. On the PPI, adjust the INTENSITY and GAIN knobs to obtain a well defined presentation.</p> <p>i. Have the TTR operator energize the TTR system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p>j. On the video and mark mixer, set the ACQ MARKS switch to ON.</p> <p>k. On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p> <p>The electronic cross appears on the PPI.</p> <p>l. On the AAR control-indicator, set mode switch S1 to NORMAL RECEIVER and rotate the RANGE GATE DURATION variable resistor fully counterclockwise.</p>	<p>Refer to figure 53.</p>
2.	<p>Check for coincidence of the range circles.</p> <p>On the IFF control-indicator, alternately set the RADAR SELECT switch from LOPAR to HIPAR/AAR.</p> <p>The LOPAR and AAR range circles coincide at 0, 1,600, 3,200, and 4,800 mils on the PPI.</p> <p>The range circle for the AAR presentation does not exhibit any distortion (ripple on the range mark or squaring of the sweep).</p>	<p>On the auxiliary resolver amplifier, adjust variable resistors R15 and R27.</p> <p>Refer to figure 33.</p> <p>a. On the filter assembly in the auxiliary acquisition control interconnecting group, set S1C to position 4 and S2L to position 5.</p> <p>b. Adjust S2L to reduce the distortion on the PPI.</p> <p>c. If the indication is still abnormal, set S1C to position 3 and repeat b above.</p> <p>d. If more than one combination of switch settings minimizes the distortion, set S1C and S2L to the combination that gives the lowest ratio of the S2L/S1C positions.</p> <p>Refer to figure 33.</p>
3.	<p>Check the azimuth orientation of the video.</p> <p>a. By alternately viewing the AAR and LOPAR presentations on the PPI, measure and record the amount</p>	

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Table 31.1 (C). Weekly Remote Synchronization Checks (LOPAR-AAR)—Continued (U)

Step	Procedure	Corrective action
3.	<p>Continued</p> <p>and direction of azimuth displacement between the AAR and LOPAR video.</p> <p><i>Note.</i> It may be necessary to use the steerable azimuth line to determine the direction and amount of displacement.</p> <p>The AAR and LOPAR video presentations are displaced by 25 mils or less.</p> <p>b. Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a well defined presentation.</p> <p>c. With the RADAR SELECT switch set to LOPAR, designate a well defined stationary target.</p> <p>d. Have the TTR operator operate and hold the ACQUIRE switch until the range dials hunt about the designated coordinates.</p> <p>The designated video is in the center of the target-track antenna circle on the B-scope.</p> <p>e. Set the RADAR SELECT switch to HIPAR/AAR and observe the presentation on the B-scope.</p> <p>The designated video remains at the same azimuth as that observed in d above.</p> <p>The target range for the LOPAR and AAR presentations is identical.</p> <p>f. Set the RADAR SELECT switch to LOPAR and have the TTR operator acquire the designated target in automatic.</p> <p>The electronic cross is centered over the target video on the precision indicator.</p> <p>g. Set the RADAR SELECT switch to HIPAR/AAR, depress the REFRAME switch, and note the position of the video on the B-scope.</p> <p>The electronic cross is directly centered over the AAR video in the center of the B-scope.</p>	<p>Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 26.</p> <p>Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly.</p> <p>Refer to figure 33.</p> <p>(1) Adjust the variable delay line in the auxiliary acquisition control interconnecting group.</p> <p>Refer to figure 26.</p> <p>(2) If the indication is still abnormal, adjust delay line Z1101A in the AAR modulator.</p> <p>Perform the procedures in table 12.</p> <p>(1) To correct an error in azimuth, repeat a through e above.</p> <p>(2) To correct an error in range, repeat e above. If</p>

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Table 31 (C). Weekly Remote Synchronization Checks (LOPAR-HIPAR)—Continued (U)

Step	Procedure	Corrective action
3.	Continued	
	<p>the indication is still abnormal, adjust the FREQ HIPAR variable resistor on the acquisition-track synchronizer.</p> <p>Refer to figure 46 in TM 9-1430-256-20/3.</p> <p><i>h.</i> Have the TTR operator abandon the target and set the azimuth and elevation MAN—AID—AUTO switches to MAN. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.</p> <p><i>i.</i> Depress the REFRAME switch on the B-scope.</p> <p><i>j.</i> Have the TTR operator rotate the azimuth handwheel 225 mils clockwise.</p> <p style="padding-left: 40px;">The electronic cross remains within the target-track antenna circle.</p> <p><i>k.</i> Have the TTR operator rotate the azimuth handwheel 450 mils counterclockwise.</p> <p style="padding-left: 40px;">The electronic cross remains within the target-track antenna circle.</p>	<p>Perform the procedures in table 63.</p> <p>Perform the procedures in table 63.</p>
4.	Check the video synchronization.	
	<p><i>a.</i> On the IFF control-indicator, alternately set the RA-DAR SELECT switch from LOPAR to HIPAR/AAR. Locate the most distant, clearly defined, stationary target presented on the PPI by both radar systems and record its position.</p> <p><i>b.</i> On the AAR control-indicator, set mode switch S1 to ECCM POSITION 1.</p> <p style="padding-left: 40px;">The video remains in the same position as in <i>a</i> above.</p> <p><i>c.</i> Set mode switch S1 to ECCM POSITION 2.</p> <p style="padding-left: 40px;">The video remains in the same position as in <i>a</i> above.</p> <p><i>d.</i> Set mode switch S1 to CHAFF WEATHER.</p> <p style="padding-left: 40px;">The video remains in the same position as in <i>a</i> above.</p>	<p>Refer to figure 53.</p> <p>Refer to figure 53.</p> <p>Refer to figure 53.</p>
5.	Check the adjustment of the PPI at maximum range.	
	<p><i>a.</i> On the PPI, set the RANGE switch to 350,000.</p> <p><i>b.</i> On the video and mark mixer, set the ACQ MARKS switch to NOR.</p> <p><i>c.</i> Rotate the range handwheel to obtain an indication of 350,000 on the RANGE dial on the target-designate control-indicator.</p>	

CONFIDENTIAL*Table 31.1 (C). Weekly Remote Synchronization Checks (LOPAR-AAR)—Continued (U)*

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>On the PPI, the sweep disappears $\frac{1}{4}$ inch beyond the range circle.</p> <p>The acquisition azimuth line extends to the edge of the PPI.</p> <p>d. Set the RADAR SELECT switch to LOPAR.</p> <p>e. Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.</p> <p>f. On the AAR control-indicator, depress the RADIATE OFF switch.²</p>	<p>Adjust variable resistor R18 on the PPI video amplifier.</p> <p>Refer to figure 33.</p> <p>Adjust the MARK LENGTH HIPAR variable resistor on the precision mark generator.</p> <p>Refer to figure 32.</p>

²Omit this step if the checks in the succeeding tables are to be performed.

Table 32 (U). Weekly System Acquire Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 12.	

Table 33 (U). Weekly SIF/IFF Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 13.	

Table 34 (U). Weekly Communication Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 14.	

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Table 38 (U). Monthly Antenna Voltage, Current, and AFC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 19, steps 1 through 5.	
2.	<p>AFC modulator balance adjustment.</p> <p>a. At the acquisition receiver-transmitter, gain access to the acquisition AFC.</p> <p>b. Adjust the RELAY AMP ADJ variable resistor fully clockwise.</p> <p>c. Disconnect the IF input cable from J1 on the acquisition AFC.</p> <p>d. Adjust the MOD BAL variable resistor for no creep in the micrometer dials.</p> <p>e. Replace the coaxial cable to IF connector J1.</p> <p>Micrometer dials settle and remain steady.</p>	
3.	<p>Relay amplifier adjustment.</p> <p>a. Depress and hold the AUTO FREQ CONTROL—RELEASE switch.</p> <p>The micrometer dials start searching.</p>	<p>Repeat step 2.</p> <p>Turn RELAY AMP ADJ variable resistor R66 fully clockwise.</p> <p>Depress and hold the AUTO FREQ CONTROL—RELEASE switch and adjust RELAY AMP ADJ variable resistor slowly counterclockwise 1/8 turn past the point where the micrometer dials start to search.</p> <p>Refer to figure 29.</p>
	<p>b. Release the AUTO FREQ CONTROL—RELEASE switch.</p> <p>c. Set the antenna disable switch to OFF.</p> <p>d. Adjust the AFC ERROR SIGNAL variable resistor counterclockwise until the micrometer dials become unstable.</p> <p>e. Adjust the AFC ERROR SIGNAL variable resistor clockwise to a point where no instability in the micrometer dials is observed.</p> <p>f. Set the antenna disable switch to ON.</p>	
4.	Perform the procedures in table 19, step 6.	

CONFIDENTIAL*Table 39 (U). Monthly AFC Discriminator Checks (U)*

Step	Procedure	Corrective action
	Perform the procedures in table 20.	

Table 40 (U). Monthly Transmitter Frequency and Power Measurement Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 21 at the high and low ends of the band and at midband.	

*Table 41 (Deleted)**Table 42 (U). Monthly Receiver Sensitivity Check (U)*

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Prepare for the receiver sensitivity check at the antenna.</p> <ol style="list-style-type: none"> On the LOPAR control-indicator, rotate the REC GAIN knob clockwise to the first positive stop (not in AGC). Operate and hold the DOWN/SCAN—UP switch to obtain a maximum indication on the ANT ELEV dial. Set the PROC—IS switch to off (center). Set the AJD—OFF switch to OFF. Gain access to the control interconnecting group. Disconnect connector P54 from connector J24. At the director station group, disconnect the coaxial connector from connector J21. Connect a short jumper cable between connectors J19 and J21. <p><i>Note.</i> Refer to the manufacturer's instructions for operational procedures for the signal generator. Allow the signal generator to warm up for 30 minutes before performing this check.</p> <ol style="list-style-type: none"> Obtain signal generator TS-403/U or the equivalent. Use coaxial cable CG-92B/U to connect the output of the signal generator to connector J1 on the directional coupler in the acquisition receiver-transmitter. Obtain a test oscilloscope, and connect a coaxial cable between the input to the oscilloscope and the VIDEO connector on the acquisition RF power-supply control. On the oscilloscope, set the SYNC SELECTOR switch to EXTERNAL. Obtain T-connector UG/274, and connect it to the SYNC connector on the acquisition RF power-supply control. Connect a coaxial cable between the T-connector in <i>i</i> above and the SYNC connector on the oscilloscope. 	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 42 (U). Monthly Receiver Sensitivity Check—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	k. Connect a coaxial cable between the T-connector in <i>i</i> above and the SYNC connector on the signal generator.	
3.	Check the sensitivity of the main channel.	
	a. On the signal generator, perform the ZERO SET and POWER SET adjustments as outlined in the manufacturer's instructions. Set the SIGNAL FREQUENCY dial to 3,300 megacycles, the OUTPUT ATTEN knob to 0 db, and the SYNC SELECTOR switch to POS. Adjust the PULSE WIDTH knob to 1.5 microseconds. Turn the PULSE RATE knob fully clockwise, and adjust the PULSE DELAY knob to approximately 100 microseconds. Set the function switch to INT.	
	<i>Note.</i> In <i>b</i> below, insure that the preselector is not tuned to a sideband.	
	b. Manually tune the local oscillator micrometer dial to obtain a pulse of maximum amplitude on the oscilloscope.	
	c. While observing the pulse on the oscilloscope, adjust the OUTPUT ATTEN knob on the signal generator until the pulse amplitude is equal to the amplitude of the noise.	
	d. Record the indication on the OUTPUT ATTEN dial. Add this figure to the attenuation value stamped on the directional coupler and the attenuation of the signal generator output cable.	
	<i>Note.</i> The attenuation of cable CG-92B/U is a total of 1.25 db.	
	The total attenuation should be greater than 100 db.	Refer to figure 28.
	e. Repeat <i>a</i> through <i>d</i> above with the SIGNAL FREQUENCY dial on the signal generator set to 3100 and 3500 megacycles. Perform the ZERO SET and POWER SET adjustments after each frequency setting.	
4.	Check the sensitivity of the AJD channel.	
	a. On the LOPAR control-indicator, set the AJD—OFF switch to AJD.	
	b. Perform the procedures in step 3 above for the AJD channel.	

CONFIDENTIAL*Table 42 (U). Monthly Receiver Sensitivity Check—Continued (U)*

Step	Procedure	Corrective action
5.	Return the LOPAR to normal operation. a. Disconnect all the test cables from the acquisition receiver-transmitter. b. Connect connector P54 to connector J24 in the auxiliary acquisition control interconnecting group. c. Disconnect the jumper cable connected between connectors J19 and J21 in the director station group, and connect the coaxial connector to J21. d. On the LOPAR control-indicator, set the AJD—OFF switch to OFF.	

Table 43 (U). Monthly Antenna Coverage Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 2.	

Table 44 (U). Monthly Precision-Indicator Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 24.	

Table 45 (U). Monthly PPI Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 25.	

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Table 52 (C). Monthly Acquisition Range Checks—Continued (U)

Step	Procedure	Corrective action
5.	Continued d. On the target-designate control-indicator, set the MAN—AID switch to MAN and then to AID. Repeat c above for counterclockwise rotation. e. Set the MAN—AID switch to MAN.	
6.	Perform the slew-rate check. a. On the target-designate control-indicator, operate the SLEW switch to IN. The rate of change is between 29,500 and 40,500 yards per second. b. Operate the SLEW switch to OUT. The rate of change is the same as a above but the direction is reversed. c. Replace the dust cover on motor B4.	Refer to figure 32. Refer to figure 32.

Table 53 (U). Monthly System Acquire Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 12.	
2.	Prepare for the aided checks. a. On the target-designate control-indicator, operate the DESIGNATE—ABANDON switch to DESIGNATE. b. Set the MAN—AID switch to MAN. c. Have the target tracking radar (TTR) operator set the range MAN—ACQUIRE AID—TRACK AID—AUTO and azimuth MAN—AID—AUTO switches on the target antenna control group to MAN. d. Operate the ACQUIRE switch. <i>Note. The target tracking radar range balance checks must be performed prior to performing steps 3 and 4 below.</i>	
3.	Perform the aided checks. a. Set the acquisition- and target-tracking radars to the same range. b. On the target-designate control-indicator, set the MAN—AID switch to AID. The RANGE dial remains stationary. c. On the target antenna control group, set the MAN—ACQUIRE AID—TRACK AID—AUTO switch to ACQUIRE AID, and operate the ACQUIRE switch.	Perform the procedures in table 52.

CONFIDENTIAL**G7***Table 53 (U). Monthly System Acquire Checks—Continued (U)*

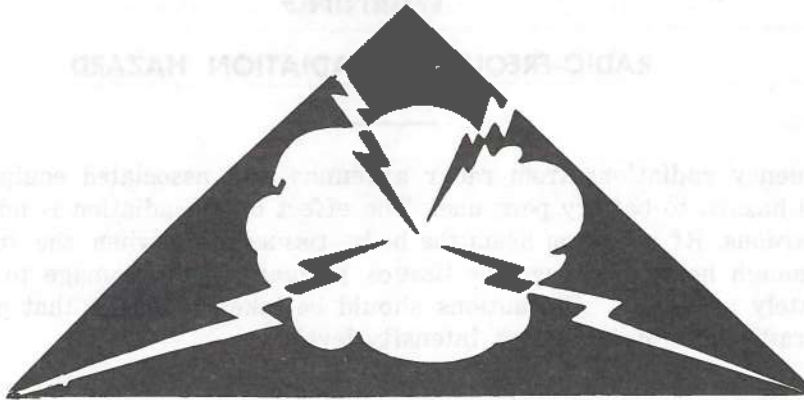
Step	Procedure	Corrective action
3.	<p>Continued</p> <p>The range rate on the range indicator dials at the target radar control console is zero.</p> <p>d. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.</p> <p>e. On the target-designate control-indicator, set the MAN—AID switch to MAN.</p> <p>f. Position the acquisition range to approximately 200,000 yards and the target range to approximately 50,000 yards.</p> <p>g. Set the MAN—AID switch to AID, and rotate the acquisition range handwheel three turns counterclockwise.</p> <p>The acquisition range decreases at a constant rate.</p> <p>h. On the target antenna control group, set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to ACQUIRE AID, and operate the ACQUIRE switch.</p> <p>The target range will slew to just beyond the acquisition range; reverse, and the range handwheel will drive to set up a target radar range rate equal to the acquisition radar range rate.</p> <p>i. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.</p> <p>j. On the target-designate control-indicator, set the MAN—AID switch to MAN.</p>	<p>While holding the ACQUIRE switch, adjust the DRIFT variable resistor on the acquire aid amplifier in the left-rear of the target antenna control group.</p> <p>Refer to figure 52 in TM 9-1430-256-20/3.</p> <p>Refer to figure 32.</p> <p>While holding the ACQUIRE switch, adjust the RANGE variable resistor on the target range coupling resistor assembly in the target antenna control group.</p> <p>Refer to figure 52 in TM 9-1430-256-20/3.</p>

Table 54 (U). Monthly Remote Synchronization Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 31 (LOPAR—HIPAR) or perform the procedures in table 31.1 (LOPAR—AAR).	

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W A R N I N G



RA PD 461691

RADIATION HAZARD

This equipment contains the following radioactive tubes.

OA2

OA2WA

OB2

5651

6626

Refer to TM 3-261 for safety information relative to shipping, storage, handling, and disposal of radioactive tubes.

FIRST AID FOR RADIOACTIVE CONTACT

The following first aid procedure for wounds caused by anything coated with a radioactive particle material represents the only reasonable first aid treatment which would possibly be available.

a. Stimulation of mild bleeding by normal pressure about the wound and by use of suction cups.

WARNING: Do not suck the wound by mouth. The wound must be washed with soap and flushed with plenty of clear water.

b. If the wound is of the puncture type, or the opening is quite small, an incision should be made to promote free bleeding and to facilitate cleaning and flushing of the wound.

c. Evacuate patient to a medical facility where monitoring of the wound can be accomplished. All such wounds should be examined by a medical officer.

d. For wounds involving the extremities, pending medical attention, place a lightly constricting band (tourniquet) 2 to 4 inches closer to the heart than the site of the wound. The band should be tight enough to halt the flow of blood in superficial blood vessels but not tight enough to stop the pulse (arterial flow).

CLEANING SURFACES ON WHICH TUBES HAVE BEEN BROKEN

Wet Method. Put on rubber or plastic gloves. Pick up large fragments with forceps then, using a wet cloth, wipe across the area. Make one wipe at a time and fold cloth in half, using the clean side for wiping each time. When cloth becomes too small, discard and start again with a clean piece of cloth. Care must be taken not to rub the radioactive particles into the surface being cleaned by using a back and forth motion. All debris and cloths used for cleaning should be sealed in a container such as a plastic bag, heavy waxed paper, ice cream carton, or glass jar for disposal.

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WARNING

RADIO-FREQUENCY RADIATION HAZARD

Radio-frequency radiations from radar antennas and associated equipment could present a potential hazard to battery personnel. The effect of rf radiation is not cumulative but it could be hazardous. Rf radiation heats the body tissues and when the intensity is high, may produce enough heat to damage the tissues permanently. Damage to the body tissue is not immediately apparent. Precautions should be taken to insure that personnel are not exposed to rf radiations of hazardous intensity levels.

A power level of 10 milliwatts per square centimeter, although not considered potentially hazardous, is stipulated by AR 40-583 as the maximum permissible exposure level for personnel subjected to rf radiation fields. Personnel should not be permitted to enter areas where they may be exposed to levels above 10 milliwatts per square centimeter.

A power intensity of 10 milliwatts per square centimeter is present along the axis of the transmitted beam at the following distances from IMPROVED NIKE-HERCULES radar antennas. In each instance, the intensity rapidly diminishes as the distance is increased.

ANTENNA	DISTANCE
High power Acquisition Radar-Non Scanning	430 feet
High Power Acquisition Radar-Scanning	33 feet
Low Power Acquisition Radar-Non Scanning	125 feet
Missile Tracking Radar-NIKE-AJAX Mode	255 feet
Target Tracking Radar-Wide Pulse Mode	355 feet

Transmitting antennas in the non-scanning mode should not be positioned so as to radiate into areas occupied by passive antennas. The resulting reflections may present a potential hazard to personnel working in the vicinity of the passive antennas.

The intensity of the beam from target tracking radar in the narrow pulse mode, from the low power acquisition radar when scanning, the missile tracking radar in the NIKE-HERCULES mode, and the target ranging radar is inconsequential under operating conditions.

This information is based upon average power outputs and may be used as a guide to prevent radio-frequency radiation hazards.

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*TM 9-1430-255-12/1

TECHNICAL MANUAL

No. 9-1430-255-12/1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 20 August 1964**OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL:****CHECK PROCEDURES:****LOW POWER ACQUISITION RADAR SYSTEM (IMPROVED
NIKE-HERCULES AIR DEFENSE GUIDED MISSILE SYSTEM) (U)**

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*This manual supersedes TM 9-1430-251-12/2, 3 April 1961, including all changes. This manual also supersedes chapter 2 of TM 9-1430-251-20/2, 15 February 1961; and tables I and VII of TM 9-1430-252-20/2, 21 February 1961.

This manual, together with TM 9-1430-251-12/1, 20 August 1964, and TM 9-1430-256-12/1, 30 December 1964, supersedes TM 9-1430-251-20/2, 15 February 1961, and TM 9-1430-252-20/2, 21 February 1961, including all changes, in their entirety.

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CHAPTER 1 (U)

INTRODUCTION

Section I (U). GENERAL

1 (U). Scope

a. This is one of a series of technical manuals on emplacement, operation, and maintenance of the Improved NIKE-HERCULES Air Defense Guided Missile System. Refer to DA PAM 310-2 and DA PAM 310-4 for a listing of publications indexes, administrative publications, forms and records publications, supply publications, and NIKE technical manuals.

b. This manual is published for the information and guidance of personnel responsible for adjusting and maintaining the low power acquisition radar (LOPAR) system of the Improved NIKE-HERCULES system after initial emplacement and during normal operation. Also included in this manual are nonperiodic and special checks to be performed upon initial emplacement as prescribed in TM 9-1430-251-10 or after replacement of repair parts.

c. (Deleted)

d. This manual is technically correct for all Improved NIKE-HERCULES systems provided the modification work orders (MWO's) in the remainder of this subparagraph have been incorporated.

- (1) 9-1400-250-50/5 provides anti-jam display (AJD) capabilities to the Improved NIKE-HERCULES acquisition radar systems (all systems).
- (2) 9-1400-250-50/28 provides facilities for connecting radar signal-simulator station AN/MPQ-T1 (T1 trainer) and adds functions for annual service practice to the Improved NIKE-HERCULES system. It also provides facilities and adds functions for system compatibility with the electronic counter-countermeasures console on Improved NIKE-HERCULES systems having auxiliary acquisition radar (AAR) (suffix serial numbers 001 through 158, 162, 163, 169, 180, 181, 184, 185, 192, and 196 through 198).
- (3) 9-1430-251-30/8 provides facilities for adding radar bomb-scoring equipment to the trailer-mounted director station (all systems).
- (4) 9-1430-251-30/11 modifies feedback circuit in target-designate control-indicator so acquisition range rate may be adjusted to desired limits (suffix serial numbers 001 through 093).
- (5) 9-1430-251-30/14 minimizes 400-cps beat frequency interference between AAR or high power acquisition radar (HIPAR) and the Improved NIKE-HERCULES system (suffix serial numbers 001 through 074).
- (6) 9-1430-251-30/16 improves tactical signaling and fire unit integration facility (FUIF) displays by adding VALIDITY switch and by adding BOTH switch position to control-indicator. Replaces HV connectors and eliminates safety hazard and capacitor failure in azimuth and range indicator (suffix serial numbers 001 through 128).
- (7) 9-1430-251-30/25 reduces zero-set drift in sweep generator and permits displacement of FUIF symbols from plan position indicator (PPI) center during checks and adjustments to allow use of cathode-ray tubes which are burned in the center (all systems).
- (8) 9-1430-251-30/27 facilitates azimuth alignment procedures, improves HIPAR target transfer time by reducing azimuth error, and eliminates distortion of the HIPAR presentation (suffix serial numbers 001 through 202).
- (9) 9-1430-251-30/29 equalizes video signal-to-noise ratio for LOPAR and HIPAR or AAR; eliminates need for

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PPI and B-scope readjustment each time the video input is switched; and eliminates resistor overload (suffix serial numbers 001 through 139).

- (10) 9-1430-251-30/35 facilitates azimuth alinement procedures, improves HIPAR target transfer time by reducing azimuth error, and eliminates distortion of the HIPAR presentation (suffix serial numbers 001 through 236).
- (11) 9-1430-251-30/39 provides facilities for connecting the AN/GSA-77 battery terminal equipment in the director station trailer (suffix serial numbers 001 through 316).
- (12) 9-1430-254-30/1/8 prevents the LOPAR transmitter from being triggered by the radiated energy from HIPAR or similar radars and improves LOPAR AFC lock-on (all INH systems with system serial numbers 1001 through 1393).

e. Refer to DA PAM 310-7 for all MWO's applicable to the equipment.

f. Differences among models of the Improved NIKE-HERCULES systems which affect this manual are described in (1) through (5) below.

- (1) The personnel heater in the trailer-mounted director station and trailer-mounted tracking station on systems 1001 through 1086 is replaced on systems 1087 and above with a new personnel heater.
- (2) The hydraulic control unit on systems 1001 through 1070 has been replaced with the electromechanical control box on systems 1071 and above.
- (3) On systems 1001 through 1021, the acquisition antenna pedestal has an azimuth scale around the top. On systems 1022 and above, the azimuth scale has been removed.
- (4) (Deleted)
- (5) In systems 1049 and above, fuse F1 in the director station group and fuses F64 and F65 in the radar power supply group are one ampere. Fuses F1, F64, and F65 are two amperes in systems 1048 and below.

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2 (U). Maintenance Allocation

In general, the prescribed maintenance responsibilities of the organizational maintenance technician and operator apply as reflected in the allocation of tools and repair parts in TM 9-1430-250-15P/2/1, TM 9-1430-250-15P/2/2, TM 9-1430-250-15P/9/1, and TM 9-1430-250-15P/9/2 pertaining to this equipment. Normally, operator maintenance may be performed only under the supervision of a trained organizational maintenance technician. When the repair, modification, or adjustment is beyond the scope of the organizational maintenance technician, the supporting maintenance unit should be informed so that personnel with suitable tools and equipment can be provided.

3 (U). Nomenclature

A cross-reference index of technical manual and official nomenclature for items of the radar

course directing central of the Improved NIKE-HERCULES system is provided in TM 9-1430-251-12/3, TM 9-1430-255-12/2, TM 9-1430-256-12/2, and TM 9-1430-254-12/6.

4 (U). Forms, Records, and Reports

Refer to TM 38-750 for instructions on the use and completion of all forms required for operating and maintaining the equipment.

5 (U). Report of Equipment Publication Improvements

Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to: Commanding General, U. S. Army Missile Command, ATTN: AMSMI-SMPT (NMP), Redstone Arsenal, Alabama 35809.

Section II (U). PURPOSE**6 (U). General**

a. Periodic and nonperiodic checks are required on all electronic equipment for optimum operation. The check procedures contained in chapter 2 are those required to completely align the low power acquisition radar system after initial emplacement.

b. TM 9-1430-251-10 contains those checks and adjustments to be performed at the time of emplacement. TM 9-1430-253-12/4 provides the normal operating positions for all switches and controls prior to energizing the system.

7 (U). Theory Behind Checks

The theory behind these checks is that an adjustment need not be performed if the result of a particular check falls within the specified tolerances. However, if an adjustment is required, an effort should be made to obtain a

zero tolerance and eliminate the necessity of making that adjustment frequently. The frequency of a particular check and adjustment is determined mostly by the drift due to certain components in a circuit; however, if there is a noticeable increase in that frequency, corrective action must be taken to remove the malfunction and return the equipment to a normal operating condition. The theory of operation pertaining to the circuit involved in a particular check is described in TM 9-1430-250-20/5, with references to TM 9-1430-254-20/2. For access procedures and operating instructions, refer to TM 9-1430-253-12/4. Location information pertaining to the assemblies mentioned in this manual is given in the locational diagrams in the applicable functional schematic manuals. Corrective maintenance instructions are contained in TM 9-1430-253-12/4.

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CHAPTER 2 (C)

LOW-POWER ACQUISITION-RADAR-SYSTEM CHECK PROCEDURES

Section I (U). GENERAL

8 (U). Scope

a. This chapter contains daily, weekly, monthly, nonperiodic, and special checks in tabular form. Performance of the daily, weekly, monthly, and nonperiodic checks will insure that the equipment is capable of reliable operation. The special checks will be used to determine if the equipment is operating correctly when a part is replaced. Failure to perform the checks at the intervals specified may result in inefficient operation or failure of the equipment to perform its required function at a critical moment.

b. Connection of the AN/MPQ-T1 trainer will affect the performance of checks in some instances. Before performing any check procedures on the LOPAR, insure that the trainer is deenergized below the STANDBY condition. If a check does not fall within the specified tolerances after an adjustment is made, manually disconnect the trainer cables and repeat the adjustment to determine the source of the malfunction.

9 (U). Contents

a. The material in this chapter is grouped in 73 tables. The contents of the tables are described in *b* below. The steps in each table should be performed in sequence. All major items, assemblies, and subassemblies are identified by TM nomenclature. Proper use of the check procedures tables is described in (1) and (2) below.

Note. All corrective action adjustments in the daily, weekly, and monthly tables that are preceded by an asterisk and all check procedures contained in the nonperiodic and special check procedures tables must be performed by a maintenance technician.

- (1) In using the tables, first perform the operation described in the Procedure column and observe the indication. If the indication is within the tolerances specified, proceed to the next operation.

If the indication is not within the specified tolerances, perform the adjustment given in the Corrective action column. If the adjustment does not correct the indication or if an adjustment is not given, the maintenance technician should refer to the functional schematic figure reference provided in the Corrective action column. Adjustments which are required at more frequent intervals than specified by the check procedures indicate a malfunction.

- (2) In localizing a trouble, the maintenance technician should use the appropriate functional schematic diagram. References to the functional schematic diagrams are listed in the Corrective action column to aid in isolating causes of a trouble. If the applied troubleshooting techniques indicate that the probable cause is a component listed in TM 9-1430-250-12P/2/1, TM 9-1430-250-12P/2/2, TM 9-1430-250-12P/9/1, or TM 9-1430-250-12P/9/2, replace the component. If the component is not listed, its repair or replacement is reserved for supporting maintenance personnel. When the trouble has been corrected, proceed to the next step.

b. A description of the contents of each section in this chapter is given in (1) through (5) below.

- (1) *Section II. Daily Check Procedures.* This section contains the steps to be followed when performing daily checks. These steps must be performed in the sequence listed to determine the complete LOPAR system reliability. However, each check is written so that it may be performed

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independently for maintenance convenience or other purposes.

(2) *Section III. Weekly Check Procedures.*

This section contains the steps to be followed when performing weekly checks. These steps must be performed in the sequence listed to determine the complete LOPAR system reliability. However, each check is written so that it may be performed independently for maintenance convenience or other purposes.

(3) *Section IV. Monthly Check Procedures.*

This section contains the steps to be followed when performing monthly checks. These steps must be performed in the sequence listed under the supervision of a qualified maintenance technician to determine the complete LOPAR system reliability. However, each check is written so that it may be performed inde-

pendently for maintenance convenience or other purposes.

(4) *Section V. Nonperiodic Check Procedures.*

This section contains checks that do not have to be performed at periodic intervals. These checks will be performed by a qualified maintenance technician upon initial emplacement as prescribed in TM 9-1430-251-10 or when trouble is suspected in the part of the system to which they apply.

(5) *Section VI. Special Check Procedures.*

This section contains checks which are to be performed by a maintenance technician upon initial emplacement as prescribed in TM 9-1430-251-10 or when a component is replaced. These checks will determine if the system is functioning correctly after replacement.

c. All schematic references throughout this chapter refer to TM 9-1430-254-20/2 unless otherwise indicated.

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TM 9-1430-255-12/1

Section II(C). DAILY CHECK PROCEDURES*Table 1 (U). Daily Power Checks (U)*

Step	Procedure	Corrective action
1.	<p>Check the line voltage.</p> <p><i>Note.</i> The primary power checks are performed with the MAIN POWER switch set to off (down).</p> <p>a. On the acquisition-power-control panel, set the PHASE switch to C.</p> <p>On systems operating with two engine generators or motor generators, the LINE VOLTS meter indicates 120 volts.</p> <p>On systems operating with a single engine generator or motor generator, the LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts.</p> <p>b. Set the PHASE switch to B, then to A.</p> <p>At each position, the LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts.</p>	<p>Adjust the ADJUST PHASE C knob.</p> <p>Refer to figure 16.</p> <p>(1) For systems 1097 and above, set the VOLTAGE ADJ switch on the rear of the acquisition-power-control panel to OUT, and perform the phase adjustments on the radar-power-control-indicator in the trailer-mounted tracking station, regardless where the neutral system is grounded.</p> <p>(2) On systems 1001 through 1096, terminal 2 of the ADJUST PHASE C variable resistor must be disconnected for single-generator operation. Perform the phase adjustments in the trailer-mounted tracking station.</p> <p>Refer to figure 16.</p> <p>Refer to figure 16.</p>
2.	<p>Apply power to the LOPAR.</p> <p>a. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.</p> <p>b. On the acquisition-power-control panel, set the MAIN POWER switch to ON. Set the EQPT VENT switch behind the acquisition-power-control panel to on (up).</p>	

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Table 1 (U). Daily Power Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	<p>All fuse-indicator lights are extinguished.</p> <p>The tactical indicator lights on the battery-signal panel-indicator, target-track indicator assembly, and missile control-indicator group illuminate. The equipment-cooling fan is energized.</p> <p>The EXHAUST TEMPERATURE meter in the equipment-cooling cabinet indicates approximately 75 degrees after a 30-minute warm-up period. Adjust the damper and shutter lever, if necessary, to obtain an indication as close as possible to this value.</p>	<p>Refer to figure 16.</p> <p>Refer to figure 17.</p>
	<p>c. (Deleted)</p> <p>d. Set the TRACK TRANSMITTER FILAMENT switch to off (down).</p> <p>The TRACK TRANSMITTER FILAMENTS indicator light is extinguished.</p>	<p>Refer to figure 19.</p>
	<p>e. Set the PRESENTATION POWER, BARBETTE AC POWER, and BARBETTE DC switches to ON.</p> <p>All fuse-indicator lights remain extinguished except two of the +1550V fuse-indicator lights.</p> <p>The INTLK and HIGH VOLTS—PRE-HEAT indicator lights illuminate.</p> <p>The PLATE VOLTS — READY indicator light illuminates in 20 to 30 seconds.</p> <p>The HIGH VOLTS — HOT indicator light illuminates within the limits of 4 minutes 45 seconds and 5 minutes 15 seconds.</p>	<p>Refer to figure 16.</p> <p>Perform the procedures in table 57.</p> <p>*Adjust variable resistor R11 on the 20-30-second delay timer clockwise to increase time or counterclockwise to decrease time.</p> <p>Refer to figure 23.</p> <p>Refer to figure 24.</p>
	<p>f. Set the PLATE VOLTS switch to on (up).</p> <p>The PLATE VOLTS — READY indicator light extinguishes.</p> <p>The PLATE VOLTS — ON indicator light illuminates.</p> <p>All three +1550V fuse-indicator lights illuminate.</p>	<p>Refer to figure 22.</p>

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Table 1 (U). Daily Power Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	The HV SUPPLY—READY indicator light on the LOPAR auxiliary control-indicator and the HIGH VOLTAGE—READY indicator light on the acquisition-power-control panel illuminate.	
3.	Perform the final ac power adjustment.	
	a. On the acquisition-power-control panel, set the PHASE switch to C.	
	On systems operating with two engine generators or motor generators, the LINE VOLTS meter indicates 120 volts.	Adjust the ADJUST PHASE C knob. Refer to figure 16.
	On systems operating with a single engine generator or motor generator, the LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts.	On systems operating with a single engine generator or motor generator, phase adjustments are made in the trailer-mounted tracking station. Refer to figure 16.
	b. Set the PHASE switch to B, then to A.	
	The LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts at each position.	Refer to figure 16.
4.	Perform the dc power checks.	
	a. Rotate the INTENSITY and GAIN knobs on the PI and PPI fully counterclockwise.	
	b. On the LOPAR auxiliary control-indicator, set the INDICATOR HV switch to ON.	
	The INDICATOR HV indicator light illuminates.	Refer to figure 24.
	The three +1550V fuse-indicator lights on the acquisition-power-control panel are extinguished.	

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Table 1 (U). Daily Power Checks—Continued (U)

Step	Procedure	Corrective action
4.	Continued	
	c. Set the VOLTS CHECK switch to the positions indicated below. Check that at each position, the meter indication is within the segment specified.	
(1)	—250 3/4	Perform (2) below and recheck. Refer to figure 19.
(2)	—320 3/4	Adjust the V ADJ SEC 2 (— or +) variable resistor on the $\pm 320v$ or $+220v$ power supply. Refer to figure 19.
(3)	+150B 3/4	Perform (4) below and recheck. Refer to figure 19.
(4)	+220B 3/4	Adjust the V ADJ SEC 1 (+) variable resistor on the $\pm 320v$ or $+220v$ power supply. Refer to figure 19.
(5)	+250 3/4	Perform (7) below and recheck. Refer to figure 19.
(6)	+220A 3/4	Adjust the V ADJ SEC 1 (+) variable resistor on the $\pm 320v$ or $+220v$ power supply. Refer to figure 19.
(7)	+320B 3/4	Adjust the V ADJ SEC 2 (— or +) variable resistor on the $\pm 320v$ or $+220v$ power supply. Refer to figure 19.
(8)	+175 1/2	Refer to figure 19.
(9)	+270 1/2	Refer to figure 19.
(10)	—28 1/4	*Move the secondary tap of transformer T3 on the $+270v$, $-28v$, and $+75v$ or $+175v$ power supply. Refer to figure 19.
(11)	+1550 1/4	Refer to figure 19.
(12)	+150A 3/4	Refer to figure 19.
(13)	OFF	

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Table 2 (U). Daily Antenna-Coverage Checks (U)

Step	Procedure	Corrective action										
1.	Perform the procedures in table 1. ¹											
2.	Perform the azimuth-coverage checks.											
	a. On the LOPAR control-indicator, set the ANT RPM switch to 5. The LOPAR antenna rotates between 5 and 6 rpm.	Refer to figure 38.										
	b. Set the ANT RPM switch to 10. The LOPAR antenna rotates between 10 and 12 rpm.	Refer to figure 38.										
	c. Set the ANT RPM switch to 15. The LOPAR antenna rotates between 15 and 18 rpm.	Refer to figure 38.										
	d. Set the ANT RPM switch to 10.											
3.	Perform the elevation-coverage checks.											
	a. Operate and hold the ANT ELEV switch to UP until a maximum indication is obtained on the ANT ELEV indicator. The ANT ELEV dial indicates approximately 390 mils.	Refer to figure 38.										
	b. Set the ANT ELEV switch to DOWN/SCAN. The ANT ELEV dial indicates a value between 35 and 40 mils at the lower limit and reverses automatically to the upper limit as indicated by one of the established scan conditions below.	Perform the antenna-elevation-scan-condition adjustment in table 58.										
	<table><tr><td>Condition</td><td>Upper limit</td></tr><tr><td>1</td><td>360 mils</td></tr><tr><td>2</td><td>196 mils</td></tr><tr><td>3</td><td>270 mils</td></tr><tr><td>4</td><td>360 mils</td></tr></table>	Condition	Upper limit	1	360 mils	2	196 mils	3	270 mils	4	360 mils	Refer to figure 38.
Condition	Upper limit											
1	360 mils											
2	196 mils											
3	270 mils											
4	360 mils											
	c. Set the ANT ELEV switch to the center position. Automatic elevation scanning stops.	Refer to figure 38.										

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 3 (U). Daily Precision-Indicator Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	On the LOPAR control-indicator, set the ANT RPM switch to 10. ¹	
3.	On the video and mark mixer, set the MARKS switch to TEST and the ACQ MARKS switch to ON. ²	
4.	Adjust the INTENSITY knob on the precision-indicator clockwise until the trace is visible. The precision-indicator sweep should occur once for each antenna revolution.	Perform the weekly precision-indicator adjustment in table 24.
5.	Adjust the GAIN knob until the marks are clearly visible. The acquisition azimuth and range lines bisect under the etched lines on the precision-indicator.	Perform the weekly precision-indicator adjustments in table 24.
6.	On the video and mark mixer, set the MARKS switch to NOR. ³	

¹Omit this step if the checks in the preceding tables have been performed in sequence.²The ACQ MARKS switch is present only on systems that are modified by MWO 9-1430-251-30/29.³Omit this step if the checks in the succeeding tables are to be performed.

Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Prepare for the PPI checks. a. On the LOPAR control-indicator, set the ANT RPM switch to 10. ¹ b. Perform the following procedures on the PPI. (1) Set the EXPANSION SWITCH to OFF. (2) Set the SYMBOLS switch to OFF. (3) Set the RANGE switch to 250,000. (4) Rotate the GAIN, INTENSITY, and SYMBOL INTENSITY knobs fully counterclockwise. c. On the target-designate control-indicator, set the MAN—AID switch to MAN, the RANGE dial to 40,000, and the TRACK CROSS switch to ON.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 4 (C). Daily Plan Position Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Check the presentation of the azimuth line and the range mark.</p> <p>a. On the target-designate control-indicator, depress and hold the azimuth switch.</p> <p>b. Adjust the INTENSITY knob on the PPI until the range mark and the steerable azimuth line are barely discernible. Release the azimuth switch.</p> <p>b.1. Adjust the PPI GAIN knob to obtain a normal presentation of the range circle.</p> <p>c. Depress and rotate the azimuth switch.</p> <p style="padding-left: 40px;">The steerable azimuth line is controllable through 6,400 mils.</p> <p>d. Alternately depress and release the azimuth switch.</p> <p style="padding-left: 40px;">The range mark on the steerable azimuth line coincides with the range circle within $\frac{1}{8}$ inch.</p> <p style="padding-left: 40px;">The flashing azimuth line coincides with the steerable azimuth line.</p>	<p>Refer to figure 32.</p> <p>Adjust variable resistor R18 on the 4-kc oscillator.</p> <p>Refer to figure 37.</p> <p>Rotate the housing of synchro resolver B1 in the target-designate control-indicator.</p> <p>Refer to figure 37.</p>
4.	<p>Check the presentation of the test symbol.</p> <p>a. On the PPI test panel, set the TEST switch to ZERO.</p> <p style="padding-left: 40px;">The PULSE GENERATOR indicator light flashes one to three times per second.</p> <p>b. On the PPI, rotate the SYMBOL INTENSITY knob until the flashing spot appears.</p> <p style="padding-left: 40px;">A flashing spot appears at the center of the PPI.</p> <p style="padding-left: 40px;">The flashing spot is centered on the face of the PPI.</p> <p><i>Note.</i> On systems connected to FUIF or with BTE, omit steps 5 and 6 below, and proceed to step 7.</p>	<p>Adjust the GEN ADJUST variable resistor.</p> <p>Refer to figure 33.</p> <p>(1) Adjust variable resistor R12 on the PPI marker generator.</p> <p>(2) If the indication is still abnormal, perform the procedures in table 25.</p> <p>Adjust variable resistor R4 on both PPI DC amplifiers.</p> <p>Refer to figure 33.</p>
5.	<p>Check the range calibration in the X-axis.</p> <p>a. On the target-designate control-indicator, set the RANGE dial to 100,000 yards.</p> <p>b. On the PPI test panel, set the TEST switch to +X-AXIS.</p> <p style="padding-left: 40px;">A flashing spot appears at 1,600 mils.</p>	<p>Perform the procedures in table 66.</p>

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Table 4 (C). Daily Plan Position Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>The range circle intercepts the flashing spot.</p> <p>c. Set the TEST switch to —X-AXIS.</p> <p>A flashing spot appears at 4,800 mils.</p> <p>The range circle intercepts the flashing spot.</p>	<p>Adjust the X SLOPE ADJ variable resistor on the PPI sweep generator.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 66.</p> <p>(1) If the deviation is less than 1,500 yards, adjust the X BAL variable resistor on the PPI sweep generator to correct one-half the error.</p> <p>(2) Repeat <i>b</i> and <i>c</i> to eliminate interaction.</p> <p>(3) If the spot position deviates by more than 1,500 yards, perform the procedures in table 25.</p>
6.	<p>Check the range calibration in the Y-axis.</p> <p>a. On the PPI test panel, set the TEST switch to +Y-AXIS.</p> <p>A flashing spot appears at 0 mil.</p> <p>The range circle intercepts the flashing spot.</p> <p>b. Set the TEST switch to —Y-AXIS.</p> <p>The flashing spot appears at 3,200 mils.</p> <p>The range circle intercepts the flashing spot.</p>	<p>Perform the procedures in table 66.</p> <p>Adjust the Y SLOPE ADJ variable resistor on the PPI sweep generator.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 66.</p> <p>(1) If the spot position deviates by less than 1,500 yards, adjust the Y BAL variable resistor on the PPI sweep generator to correct one-half the error.</p> <p>(2) Repeat <i>a</i> and <i>b</i> to eliminate interaction.</p> <p>(3) If the spot position deviates by more than 1,500 yards, perform the procedures in table 25.</p> <p>Refer to figure 33.</p>

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
	<p><i>Note.</i> Omit steps 7 and 8 below if the system is not connected to the FUIF equipment.</p>	
7.	<p>Check the FUIF range calibration.</p> <p>a. Have the computer operator energize the computer as prescribed in the power checks in TM 9-1430-251-12/1.</p> <p>a.1. Have the TTR operator energize the TTR system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p><i>Note.</i> The daily range system checks and daily orientation checks must have been performed on the TTR before proceeding with the check.</p> <p>b. Set the system and the FUIF equipment in the back-to-back mode as prescribed in TM 11-5895-287-12.</p> <p>c. Have the computer operator set the COMPUTER CONDITION switch on the computer control-panel to ACTION.</p> <p>d. Connect a ground to terminal 48 in the FUIF inter-connecting box.</p> <p>e. On the target-designate control-indicator, operate the DESIGNATE — ABANDON switch to DESIGNATE, and set the TRACK CROSS switch to ON.</p> <p>f. Have the target-tracking-radar (TTR) operator perform the procedures in (1) through (4) below.</p> <p>(1) Momentarily operate the ACQUIRE switch, and set the TEST switch to off (down).</p> <p>(2) Rotate the range, azimuth, and elevation handwheels to obtain indications of 100,000 yards in range, 1600 mils in azimuth, and 0 mil in elevation.</p> <p>(3) Deleted.</p> <p>(4) Depress the TRACKED switch.</p> <p>f.1. On systems connected to the Missile Master equipment, set the SYMBOL switch on the PPI to NORMAL. On systems connected to "Birdie" equipment, set the SYMBOL switch to BOTH.</p> <p>g. On the PPI test panel, set the TEST switch to NORMAL.</p> <p style="padding-left: 40px;">On the PPI, the electronic cross is within the FUIF symbol at 1600 mils.</p> <p>h. Have the TTR operator rotate the azimuth handwheel to obtain a slow aided rate in azimuth.</p>	<p>Perform the procedures in table 25.</p>

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Table 4 (C). Daily Plan-Position-Indicator (PPI) Checks—Continued (U)

Step	Procedure	Corrective action
7.	<p>Continued</p> <p>i. Observe the presentation on the PPI.</p> <p style="padding-left: 40px;">The electronic cross remains within the FUIF symbol throughout 6400 mils of rotation.</p> <p>j. Return the TTR to normal operation.</p> <p>k. Set the COMPUTER CONDITION switch to STAND BY.</p> <p>l. Return the FUIF equipment to normal operation.</p> <p>m. Remove the ground from terminal 48.</p> <p>n. Set the TRACK CROSS switch to OFF.</p>	Perform the procedures in table 25.
8.	<p>Check the FUIF symbols.</p> <p><small>Note. On systems not modified by DA MWO 9-1430-251-30/25, the FUIF spots will appear at the center of the PPI.</small></p> <p>a. On the PPI test panel, set the TEST switch to BATTERY.</p> <p style="padding-left: 40px;">A defocused spot appears at 3200 mils on the PPI.</p> <p>b. Set the TEST switch to FOE.</p> <p style="padding-left: 40px;">A small circle with a 30-degree arc missing from the bottom appears at 3200 mils on the PPI.</p> <p>c. Set the TEST switch to FRIEND.</p> <p style="padding-left: 40px;">A semicircle, open at the bottom, appears at 3200 mils on the PPI.</p>	<p>Refer to figure 33.</p> <p>Perform the procedures in table 25.</p> <p>Perform the procedures in table 25.</p>
9.	<p>Check the PPI expansion.</p> <p>a. On the PPI test panel, set the TEST switch to ZERO.</p> <p style="padding-left: 40px;">A flashing spot appears at the center of the PPI.</p> <p>b. On the PPI, set the EXPANSION switch to ON.</p> <p style="padding-left: 40px;">The flashing spot moves within 1 inch of the edge of the PPI.</p> <p>c. Turn the EXPANSION POSITION knob one complete turn.</p> <p style="padding-left: 40px;">The flashing spot moves around the face of the PPI within 1 inch of the edge as the EXPANSION POSITION knob is rotated.</p> <p>d. On the PPI, set the EXPANSION switch to OFF.</p> <p>e. On the PPI test panel, set the TEST switch to NORMAL.</p>	<p>Refer to figure 33.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 25.</p>

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Table 5 (C). Daily B-Scope-Indicator Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Prepare for the B-scope checks. a. On the LOPAR control-indicator, set the ANT RPM switch to 10. ¹	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 5 (C). Daily B-Scope-Indicator Checks--Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>b. Have the target-tracking-radar operator energize the target-tracking radar system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p>c. Have the target-tracking-radar operator set the INDICATOR HV switch on the target-tracking-radar console to ON.</p> <p>d. Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a well defined presentation.</p> <p>The B-scope-indicator sweep should occur once per acquisition-antenna revolution.</p>	Refer to figure 31.
3.	<p>Check the range coverage.</p> <p>a. Adjust the FOCUS variable resistor on the lower-right side of the B-scope indicator for best overall presentation, and depress the REFRAME switch.</p> <p>The target-track-antenna circle is within 1/4 inch of the center vertical graticule on the B-scope presentation.</p> <p>b. Rotate the range handwheel on the target-antenna control group until the range dials indicate 0 yard.</p> <p>The zero range graticule bisects the target-track-antenna circle within 1/8 inch on the B-scope indicator.</p> <p>c. Rotate the range handwheel to obtain an indication of 200,000 yards on the range dials.</p> <p>The 200,000 yard range graticule bisects the target-track-antenna circle within 1/8 inch on the B-scope indicator.</p>	<p>Perform the procedures in table 26.</p> <p>Perform the procedures in table 26.</p> <p>Perform the procedures in table 26.</p>
4.	<p>Check the azimuth coverage.</p> <p>a. Rotate the azimuth handwheel on the target-antenna control group clockwise to increase the indication on the azimuth dials by 533 mils.</p> <p>The target-track-antenna circle appears under the extreme right-azimuth grid-line on the B-scope indicator.</p>	

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Table 5 (C). Daily B-Scope-Indicator Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>b. Depress the REFRAME switch and rotate the azimuth handwheel counterclockwise to decrease the indication on the azimuth dials by 533 mils.</p> <p style="padding-left: 40px;">The target-track-antenna circle appears under the extreme left-azimuth grid-line on the B-scope indicator.</p> <p>c. Rotate the INTENSITY and GAIN knobs on the B-scope indicator fully counterclockwise, and set the IND HV switch on the target-track-control power supply to off (down).</p>	Perform the procedures in table 26.

Table 6 (C). Daily Acquisition Range and Azimuth Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Check the manual operation of the range handwheel.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>b. On the target-designate control-indicator, set the MAN—AID switch to MAN, and rotate the range handwheel clockwise.</p> <p style="padding-left: 40px;">The RANGE dial indication increases.</p> <p>c. Rotate the range handwheel counterclockwise.</p> <p style="padding-left: 40px;">The RANGE dial indication decreases.</p>	<p>Refer to figure 32.</p> <p>Refer to figure 32.</p>
3.	<p>Check the slew operation of the range handwheel.</p> <p>a. Hold the range SLEW switch to IN.</p> <p style="padding-left: 40px;">The RANGE dial indication decreases to 10,000 yards.</p> <p>b. Hold the range SLEW switch to OUT.</p> <p style="padding-left: 40px;">The RANGE dial indication increases to beyond 348,000 yards.</p> <p>c. Release the SLEW switch.</p>	<p>Refer to figure 32.</p> <p>Refer to figure 32.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 6 (C). Daily Acquisition Range and Azimuth Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Check the aided operation.</p> <p>a. Set the range MAN—AID switch to AID.</p> <p>b. Rotate the range handwheel four turns counterclockwise.</p> <p style="padding-left: 40px;">The RANGE dial indication decreases in range.</p> <p>c. Set the range MAN—AID switch to MAN, then to AID.</p> <p>d. Rotate the range handwheel four turns clockwise.</p> <p style="padding-left: 40px;">The RANGE dial indication increases in range beyond 348,000 yards.</p> <p>e. Set the range MAN—AID switch to MAN.</p> <p style="padding-left: 40px;">No visible range drift is observed on the RANGE dial.</p>	<p>Refer to figure 32.</p> <p>Refer to figure 32.</p> <p>Perform the procedures in table 52, step 4.</p>

Table 7 (U). Daily Magnetron and AFC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Check the operation of the magnetron.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>a.1. On the LOPAR auxiliary control-indicator, position the HV SUPPLY knob to START.</p> <p>b. Depress the HV SUPPLY—ON switch.</p> <p style="padding-left: 40px;">The HV SUPPLY—ON indicator light illuminates.</p> <p style="padding-left: 40px;">Caution: If arcing occurs, reduce the current until the arcing stops. After a short wait, increase the current again.</p> <p>c. Adjust the HV SUPPLY knob slowly clockwise for an indication of 30 milliamperes on the MAGNETRON meter.</p> <p style="padding-left: 40px;">The LOPAR POWER indicator light is illuminated.</p> <p style="padding-left: 40px;">Arcing does not occur as the magnetron current is increased.</p> <p style="padding-left: 40px;"><i>Note.</i> As the frequency is changed, readjust the HV SUPPLY knob for proper indication.</p>	<p>Refer to figure 24.</p> <p>Refer to figure 27.</p> <p>(1) Perform the procedures in table 15.</p> <p>(2) If the indication is still abnormal, refer to figure 27.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 7 (U). Daily Magnetron and AFC Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Perform the AFC lock-on check</p> <p>a. On the LOPAR control-indicator, operate the MAG FREQ switch to obtain a midfrequency indication on the MAG FREQ meter.</p> <p>b. Adjust the INTENSITY and GAIN knobs on the PPI to obtain a normal presentation.</p> <p>c. Rotate the REC GAIN knob on the LOPAR control-indicator fully clockwise.</p> <p>d. Depress and hold the AFC RELEASE switch-indicator until the switch-indicator blinks.</p> <p>The AFC RELEASE switch-indicator illuminates during the search cycle, then extinguishes when the AFC locks on, and the video presentation returns to the PPI.</p>	Repeat step d. If the indication persists, perform the procedures in table 19, step 6.
4.	<p>Perform the AFC tracking check.</p> <p>a. Operate the MAG FREQ switch first to DEC, then to INC.</p> <p>The MAG FREQ meter decreases to the lower limit, then increases to the upper limit.</p> <p>The AFC remains locked on and video is present on the PPI throughout the frequency range.</p> <p>The LOPAR POWER indicator light remains brightly illuminated.</p>	Refer to figure 27.
	<p>b. Operate the MAG FREQ switch to return the LOPAR to the assigned frequency.</p>	Perform the AFC adjustments in table 19, step 6.
5.	<p>Deenergize the LOPAR transmitter.</p> <p>a. Rotate the INTENSITY and GAIN knobs on the PPI fully counterclockwise.</p> <p>b. Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.</p> <p>c. Set the ANT RPM switch to OFF.</p>	Refer to figure 27.
		Refer to figure 27.

Table 8 (U). Daily Receiver-Sensitivity Checks (U)

Step	Procedure	Corrective action
1.	<p>Perform the procedures in table 1.¹</p> <p><i>Note.</i> The magnetron must be deenergized for this check. To minimize external interference, increase the antenna-beam elevation to a point where least clutter appears on the PPI.</p>	
2.	<p>Rotate the REC GAIN and STC knobs on the LOPAR control-indicator fully counterclockwise. Set the PROC — IS switch to off (center), the AJD — OFF switch to OFF, and set the NOISE GEN switch on the LOPAR auxiliary control-indicator to MAIN ADJ.</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 8 (U). Daily Receiver-Sensitivity Checks—Continued (U)

Step	Procedure	Corrective action
3.	Adjust the REC GAIN knob on the LOPAR control-indicator to obtain an indication of 100 on the NOISE meter on the LOPAR auxiliary control-indicator.	Perform the MTI checks and adjustments in table 10. Refer to figure 28.
4.	Set the NOISE GEN switch to MAIN MEAS. The NOISE meter indicates 48 or less.	Perform the procedures in table 41. If the indication is still abnormal, perform the procedures in table 62.
5.	Set the NOISE GEN switch to AUX ADJ.	
6.	Perform step 3 above.	
7.	Set the NOISE GEN switch to AUX MEAS. The NOISE meter indicates 48 or less.	Perform the procedures in table 41. If the indication is still abnormal, perform the procedures in table 62.
8.	Set the NOISE GEN switch to OFF.	

Table 9 (U). Daily Strobe-Channel Checks (U)

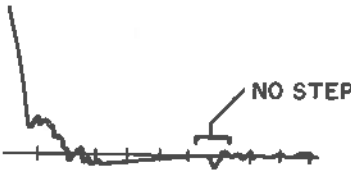
Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹ <i>Note. The magnetron must be deenergized for this check.</i>	
2.	On the auxiliary acquisition control-indicator, set the jam-strobe-alinement switch to CAL. The gain meter indicates 0.	Adjust the CAL variable resistor. Refer to figure 28.
3.	Set the jam-strobe-alinement switch to AUX ADJ. The gain meter indicates -15 micro-amperes.	Adjust the AUX ADJ variable resistor. Refer to figure 28.
4.	Set the jam-strobe-alinement switch to MAIN ADJ. The gain meter indicates 0.	Adjust the MAIN ADJ variable resistor. Refer to figure 28.
5.	Depress the MAIN ADJ — SENSITIVITY CHK switch. The gain meter indicates 10 micro-amperes or more.	Refer to figure 28.
6.	Set the jam-strobe-alinement switch to OPERATE.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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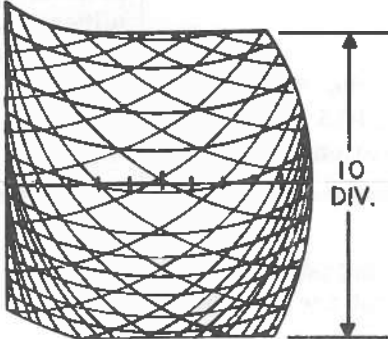
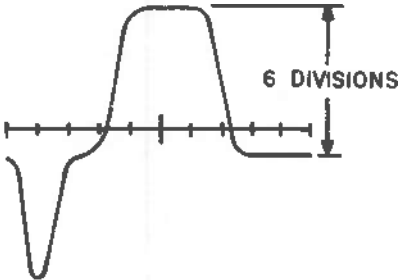
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Table 10 (U). Daily MTI Check (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Prepare for the MTI check. <ol style="list-style-type: none"> On the LOPAR control-indicator, set the ANT RPM switch to 5 and set the DOWN/SCAN—UP switch to UP until a maximum indication is obtained on the ANT ELEV indicator. Rotate the REC GAIN knob fully counterclockwise. Set the MTI switch to 360° and the AJD switch to OFF. Set the INTENSITY and GAIN knobs on the PPI fully counterclockwise. 	
3.	Energize the LOPAR system through operate. ¹ <ol style="list-style-type: none"> On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START and depress the HV SUPPLY—ON switch. Adjust the HV SUPPLY knob clockwise to obtain an indication of 30 milliamperes on the MAGNETRON meter. 	
4.	Check the carrier level. <ol style="list-style-type: none"> On the LOPAR control-indicator, set the PROC—IS switch to off (center). On the MTI oscilloscope, set the MTI CKT TEST switch to 1. <p>The CARRIER LEVEL meter indicates 1.25 (center line).</p> On the LOPAR control-indicator, set the PROC—IS switch to PROC. <p>The CARRIER LEVEL meter indicates 1.25 (center line).</p> Set the PROC—IS switch to off (center). <p>No step appears at the end of the MTI range on the MTI oscilloscope presentation.</p>  	<p>Adjust the CHANN 2 CARR LEVEL ADJ variable resistor on the delay line driver. Refer to figure 30.</p> <p>Adjust the CHANN 1 CARR LEVEL ADJ variable resistor on the delay line driver, and repeat <i>a</i> through <i>c</i> above to eliminate interaction. Refer to figure 30.</p> <p>Adjust the SW BAL variable resistor on the electronic gate. Refer to figure 30.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 10 (U). Daily MTI Check—Continued (U)

Step	Procedure	Corrective action
5.	<p>Calibrate the MTI oscilloscope.</p> <p>On the MTI oscilloscope, set the MTI CKT TEST switch to 2.</p> <p>The waveform is 10 divisions in amplitude.</p> 	<p>Adjust the GAIN knob on the MTI oscilloscope.</p> <p>Refer to figure 30.</p>
6.	<p>Check the amplitude of the test pulse.</p> <p>On the MTI oscilloscope, set the MTI CKT TEST switch to 3.</p> <p>The test pulse has an amplitude of 6 divisions.</p> 	<p>Adjust variable resistor R1 (located on the upper-right sliding frame between connectors J44 and J45).</p> <p>Refer to figure 30.</p>
7.	<p>Check the AGC voltages.</p> <p>a. On the LOPAR control-indicator, set the REC GAIN knob fully clockwise past the first positive stop (in AGC).</p> <p>b. On the MTI oscilloscope, set the MTI CKT TEST switch to 6.</p>	


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Table 10 (U). Daily MTI Check—Continued (U)

Step	Procedure	Corrective action
7.	<p>Continued</p> <p>c. Obtain a voltmeter and connect the positive test lead to the AGC TEST test point on the fast AGC amplifier; connect the negative test lead to any convenient ground point.</p> <p style="padding-left: 40px;">The voltmeter indicates 20 volts.</p> <p>d. Remove the positive test lead from the AGC TEST test point and connect it to the BIAS test point. Measure and record the meter indication.</p> <p style="padding-left: 40px;">The voltmeter indication is between 27 and 40 volts.</p> <p>e. On the LOPAR control-indicator, adjust the REC GAIN knob counterclockwise just past the first positive stop (not in AGC).</p> <p style="padding-left: 40px;">The voltmeter indication is identical to that recorded in d above.</p> <p>f. Remove the voltmeter.</p>	<p>Adjust the AGC ADJ variable resistor on the fast AGC amplifier.</p> <p style="padding-left: 40px;">Refer to figure 28.</p> <p style="padding-left: 40px;">Refer to figure 28.</p> <p>Adjust the IF GAIN ADJ variable resistor on the fast AGC amplifier.</p> <p style="padding-left: 40px;">Refer to figure 28.</p>
8.	<p>Check the cancellation ratio.</p> <p>a. On the LOPAR control-indicator, set the REC GAIN knob fully clockwise past the first positive stop (in AGC).</p>	

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Table 10 (U). Daily MTI Check—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p>b. Operate the ANT ELEV scan switch to DOWN/SCAN and obtain a minimum indication on the ANT ELEV indicator.</p> <p>c. On the MTI oscilloscope, set the MTI CKT TEST switch to 10 and observe the presentation.</p> <p>The cancelled pulse has minimum pips at the leading and trailing edges not greater than 2 divisions (peak-to-peak).</p> 	<p>(1) Adjust the MTI delay network on the MTI trigger pulse video amplifier.</p> <p>(2) Perform the MTI checks in table 28.</p>
8.1.	<p>Check the presentation on the PPI.</p> <p>a. Adjust the INTENSITY and GAIN knobs on the PPI to obtain a normal presentation of MTI video.</p> <p>The noise in the bypass region is barely discernible.</p> <p>No sharp definition is observed between the MTI and bypass regions.</p> <p>b. On the LOPAR control-indicator, set the MTI switch to OFF.</p>	<p>Adjust the BY PASS VID GAIN variable resistor on the fast AGC amplifier.</p> <p>Refer to figure 30.</p> <p>Adjust the SW BAL variable resistor on the electronic gate.</p> <p>Refer to figure 30.</p>
9.	<p>Deenergize the LOPAR transmitter.²</p> <p>Perform the procedures in table 7, step 5.</p>	

²Omit this step if the checks in the succeeding tables are to be performed.

Table 11 (U). Daily Interference Suppressor and Jam Strobe Gain Checks (U)

Step	Procedure	Corrective action
1.	<p>Energize the LOPAR system through operate.¹</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 10.</p> <p>b. Perform the procedures in table 7, steps 1 and 2.</p>	
2.	<p>Prepare the system for the check.</p> <p>a. Perform the procedures in table 10.¹</p> <p>b. (Deleted)</p> <p>c. Set the PROC—IS switch to IS and the AJD—OFF switch to OFF.</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 11 (U). Daily Interference Suppressor and Jam Strobe Gain Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	d. Adjust the GAIN and INTENSITY knobs on the PPI to obtain a well defined presentation.	
3.	Adjust the gain of the interference suppressor.	
	a. On the acquisition interference suppressor, adjust variable resistor R8 fully counterclockwise.	
	a.1. On the acquisition interference suppressor, adjust variable resistor R48 to midrange.	
	b. While observing the presentation on the PPI, have an assistant adjust variable resistor R8 for optimum presentation of video.	
	c. Adjust variable resistor R48 until a barely discernible noise level is observed on the PPI.	
4.	Check the processor video.	
	<i>Note.</i> If excessive smearing is observed in a below, set the PROC—IS switch to IS and repeat step 3 above, adjusting R8 and R48 for a lower level of video and noise.	
	a. On the LOPAR control-indicator, set the PROC—IS switch to PROC.	
	Clear and well-defined target video is observed on the PPI with no tendency of background noise to smear.	(1) Adjust variable resistors R35 and R37 on the acquisition interference suppressor fully counterclockwise.
	<i>Note.</i> Processed video appears as enlarged IS video.	Refer to figure 30.
		(2) On the MTI oscilloscope, set the MTI CKT TEST switch to 10, and adjust variable resistor R37 clockwise until the PPI presentation begins to smear and then counterclockwise until the PPI shows no tendency to smear.
		Refer to figure 30.
		(3) Adjust variable resistor R35 slowly clockwise until the presentation on the PPI begins to smear. Adjust R35 slowly counterclockwise until the PPI shows no tendency to smear.
		Refer to figure 30.

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Table 11 (U). Daily Interference-Suppressor and Jam-Strobe-Gain Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>b. On the LOPAR control-indicator, set the ADJ—OFF switch to AJD, and operate the PROC—IS switch.</p> <p style="padding-left: 40px;">The target contrast should increase when the PROC — IS switch is set to either PROC or IS.</p> <p>c. On the LOPAR control-indicator, set the PROC—IS switch to OFF (center) and perform the jam strobe gain adjustments as prescribed in (1) and (2) below.</p> <p style="padding-left: 40px;">(1) Remove coaxial connector P122 from connector J2 on the fast AGC amplifier.</p> <p style="padding-left: 80px;">Normal noise background is observed on the PPI.</p> <p style="padding-left: 40px;">(2) Connect coaxial connector P122 to J2 on the fast AGC amplifier.</p> <p>d. On the LOPAR control-indicator, set the AJD—OFF switch to OFF.</p>	<p>Perform the antenna-voltage, current, and AFC checks and adjustments in table 19; the AFC discriminator adjustment in table 20; and repeat the procedures in tables 9 and 11.</p> <p style="padding-left: 40px;">Refer to figure 30.</p> <p>Adjust JS GAIN variable resistor R53 on the electronic gate.</p> <p style="padding-left: 40px;">Refer to figure 30.</p>
5.	<p>Deenergize the LOPAR transmitter.²</p> <p>Perform the procedures in table 7, step 5.</p>	

²Omit this step if the checks in the succeeding tables are to be performed.

Table 12 (C). Daily System-Acquire Checks (U)

Step	Procedure	Corrective action
1.	<p>Prepare for the system-acquire checks.</p> <p style="padding-left: 40px;"><i>Note.</i> The daily target-track-radar checks should be completed prior to performing this check.</p> <p>a. Energize the LOPAR system through operate as prescribed in table 7, steps 1 and 2.¹</p> <p>b. Have the computer operator energize the computer as prescribed in the power checks in TM 9-1430-251-12/1.</p> <p>c. At the trailer-mounted tracking station, energize the target-tracking radar system through operate as prescribed in TM 9-1430-256-12/1.</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 12 (C). Daily System-Acquire Checks—Continued (U)

Step	Procedure	Corrective action
1.	<p>Continued</p> <p>d. (Deleted)</p> <p>e. (Deleted)</p> <p>f. On the PPI, set the SYMBOLS switch to OFF.</p> <p>g. Set the RANGE switch to 250,000 and the TRACK CROSS switch on the target-designate control-indicator to ON.</p> <p>h. Set the acquisition range to 100,000 yards.</p> <p>i. On the video and mark mixer, set the PI MARKS switch to TEST.¹</p> <p>j. On the LOPAR control-indicator, turn the REC GAIN knob fully counterclockwise.</p>	<p>Refer to figure 30.</p> <p>Refer to figure 30.1.</p>
2.	<p>Check the range calibration in the X-axis.</p> <p>a. On the target-designate control-indicator, operate the DESIGNATE—ABANDON switch to DESIGNATE.</p> <p style="padding-left: 40px;">The green TARGET—DESIGNATED indicator light on the battery-control console illuminates.</p> <p style="padding-left: 40px;">The green DESIGNATE indicator light on the target-radar-control console illuminates, and the designate buzzer sounds.</p> <p>b. Have the TTR operator rotate the azimuth and elevation handwheels to obtain indications of 1600 mils in azimuth and 0 mil in elevation. Rotate the range handwheel to obtain an indication of 100,000 on the RANGE dial.</p> <p>c. Set the COMPUTER CONDITION switch on the computer-control panel to ACTION.</p> <p>d. Set the plotting-board-condition switch on the tactical control-indicator to OPERATE and observe the indication on the horizontal plotting board.</p> <p style="padding-left: 40px;">The target pen (present position) is at a point between 99,500 and 100,500 east in the X coordinate and between 500 yards south and 500 yards north in the Y coordinate.</p> <p>e. Set the plotting-board-condition switch to STAND BY.</p>	<p>(1) Perform the monthly plotting-board checks in TM 9-1430-251-12/1.</p> <p>(2) Perform the orientation checks in TM 9-1430-256-12/1.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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Table 12 (C). Daily System-Acquire Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>f. Set the COMPUTER CONDITION switch to STAND BY.</p> <p>g. Using the azimuth knob and the range handwheel on the target-designate control-indicator, superimpose the flashing azimuth line and the range circle over the electronic cross as observed on the precision-indicator.</p> <p>The RANGE dial on the target-designate control-indicator indicates 100,000 yards.</p> <p>The flashing azimuth line on the PPI appears between 1575 and 1625 mils.</p>	<p>Perform the monthly acquisition range checks in table 52.</p> <p>Perform the weekly level and orientation checks in table 17.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 12 (C). Daily System-Acquire Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p><i>h.</i> Observe the precision-indicator for 1 minute to detect any evidence of acquisition-range drift.</p> <p align="center">No visible range drift is observed on the PI.</p>	<p>Perform the monthly acquisition range checks in table 52.</p>
3.	<p>Check the acquire accuracy in the X-axis.</p> <p><i>a.</i> Repeat step 2<i>g</i> above.</p> <p><i>b.</i> Have the TTR operator rotate the azimuth handwheel to obtain an indication of less than 1600 mils on the azimuth dial. Operate the SLEW switch to obtain an indication of less than 50,000 yards on the TTR range dials.</p> <p><i>c.</i> Have the TTR operator operate and hold the ACQUIRE switch until the azimuth dial settles and the range dial "hunts" about the acquisition range setting.</p> <p align="center">On the precision-indicator, the electronic cross is superimposed on the acquisition range mark and the flashing azimuth line.</p> <p align="center">The target-tracking-radar azimuth is within the limits of 1590 and 1610 mils.</p> <p align="center">The target-tracking-radar range is within the limits of 99,750 and 100,250 yards.</p>	<p>Adjust control transformer B3 in the target-designate control-indicator.</p> <p align="center">Refer to figure 33.</p> <p>Perform the weekly level and orientation checks in table 17.</p> <p>Perform the monthly acquisition range checks in table 52.</p>
4.	<p>Check the range calibration in the Y-axis.</p> <p><i>a.</i> Have the TTR operator rotate the azimuth, elevation, and range handwheels to obtain indications of 0 mil in azimuth, 0 mil in elevation, and 100,000 yards in range.</p> <p><i>b.</i> Set the COMPUTER CONDITION switch on the computer-control panel to ACTION.</p> <p><i>c.</i> On the tactical control-indicator, set the plotting-board-condition switch to OPERATE, and observe the horizontal plotting board.</p> <p align="center">The target pen (present position) is at a point between 99,500 and 100,500 yards north in Y and between 500 yards east and 500 yards west in X.</p> <p><i>d.</i> Set the plotting-board-condition switch to STAND BY.</p> <p><i>e.</i> Set the COMPUTER CONDITION switch to STAND BY.</p>	<p>Perform the monthly plotting-board checks in TM 9-1430-251-12/1.</p>

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Table 12 (C). Daily System-Acquire Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Check the acquire accuracy in the Y-axis.</p> <p>a. Using the azimuth knob and the range handwheel on the target-designate control-indicator, superimpose the flashing azimuth line and the range circle over the electronic cross as observed on the precision-indicator.</p> <p>b. Have the TTR operator rotate the azimuth handwheel to obtain an indication greater than 0 mil on the azimuth dial. Operate the range SLEW switch to set the TTR range to more than 150,000 yards.</p> <p>c. Have the TTR operator operate and hold the ACQUIRE switch until the azimuth dials settle, and the range dial "hunts" about the acquisition range setting.</p> <p style="padding-left: 40px;">On the precision-indicator, the electronic cross is superimposed on the acquisition range mark and the flashing azimuth line.</p> <p style="padding-left: 40px;">The TTR azimuth is within the limits of 6390 and 10 mils.</p> <p style="padding-left: 40px;">The TTR range is within the limits of 99,750 and 100,250 yards.</p> <p>d. Operate the DESIGNATE—ABANDON switch on the target-designate control-indicator to ABANDON.</p>	<p>Loosen the three mounting screws on control transformer B3 in the target-designate control-indicator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>Perform the weekly level and orientation checks in table 17.</p> <p>Perform the monthly acquisition range checks in table 52.</p>
6.	<p>Perform the system-acquire check.</p> <p>a. Designate, acquire, and automatically track a moving target with the target track radar.</p> <p style="padding-left: 40px;">The electronic cross bisects the target as observed on the precision-indicator.</p>	<p>* (1) If off in azimuth, adjust synchro B4 on the target track azimuth-position transmitter.</p> <p style="padding-left: 40px;">Refer to figure 32.</p> <p style="padding-left: 40px;"><i>Note.</i> If synchro B4 is adjusted, repeat steps 2 through 5.</p> <p>(2) If off in range, gain access to the acquisition-track synchronizer in the director station group and adjust the SYNC DELAY LONG PULSE variable resistor.</p> <p style="padding-left: 40px;">Refer to figure 26.</p>

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Table 12 (C). Daily System-Acquire Checks—Continued (U)

Step	Procedure	Corrective action
6.	Continued The electronic cross bisects the target and is centered within the target track antenna circle as observed on the B scope. b. Set the PI MARKS switch on the video and mark mixer to NOR. c. Set the TRACK CROSS switch on the target-designate control-indicator to OFF.	(1) Perform the procedures in table 5. (2) Repeat step 6 above.
7.	Deenergize the LOPAR transmitter. On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START, and depress the HV SUPPLY—OFF switch.	

Table 13 (C). Daily SIF/IFF Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	On the IFF control-indicator, observe the IFF ON indicator light. The IFF ON indicator light is illuminated.	Perform the procedures in table 59. Refer to figure 36.
3.	Set the ANT RPM switch to 10. ¹	
4.	On the PPI, set the RANGE switch to 50,000, and adjust the INTENSITY and GAIN knobs for a normal presentation.	
5.	On the IFF control-indicator, set the MODE switch to 2.	
6.	Rotate the IFF GAIN knob fully clockwise.	
7.	Set the CHOP switch to ON.	
8.	On the IFF auxiliary control-indicator, set the OPERATE—TEST switch to TEST and the MODE 2 CODE switch to 77.	
9.	On the IFF control-indicator, depress the CHALLENGE switch and, adjust the PPI controls for optimum presentation. Eight simulated IFF return signals appear on the PPI.	Adjust the IFF VIDEO variable resistor on the video and mark mixer. Refer to figure 30.
10.	Release the CHALLENGE switch.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 13 (C). Daily SIF/IFF Checks—Continued (U)

Step	Procedure	Corrective action
11.	On the IFF auxiliary control-indicator, set the OPERATE—TEST switch to OPERATE and depress the CHALLENGE switch. One simulated IFF return appears on the PPI.	Perform the procedures prescribed in the following manuals: TM 11-5895-207-10 TM 11-5895-207-20 TM 11-5895-208-10 TM 11-5895-208-20
11.1.	On the IFF control-indicator, set the MODE 2 CODE switches to 76. No IFF returns are visible.	Refer to TM 11-5895-208-10.
12.	Release the CHALLENGE switch and set the CHOP switch to OFF.	
13.	On the IFF control-indicator, set the MODE switch to 3.	
13.1.	On the PPI, set the RANGE switch to 250,000.	
14.	Set the OPERATE—TEST switch to TEST and depress the CHALLENGE switch. IFF returns from targets of opportunity appear on the PPI.	Repeat step 11 above.
15.	Release the CHALLENGE switch and set the OPERATE—TEST switch to OPERATE.	
16.	Energize the HIPAR or AAR through low voltage as prescribed in the appropriate TM.	
17.	On the HIPAR auxiliary control-indicator, depress the TEST—ENABLE switch-indicator.	
18.	On the IFF control-indicator, set the RADAR SELECT switch to HIPAR/AAR.	
19.	Perform steps 4 through 15 above.	
20.	Set the RADAR SELECT switch to LOPAR.	
21.	Depress the TEST—ENABLE switch-indicator.	

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Table 14 (U). Daily Communication Checks (U)

Step	Procedure	Corrective action
1.	Perform the interarea checks (white alert).	<i>Note.</i> The figure references below refer to TM 9-1430-251-12, unless otherwise indicated.
	a. On the fuse and control panel at each telephone switchboard, set the WIRE—CABLE—RADIO switch to CABLE. The CABLE indicator light at each telephone switchboard illuminates.	Refer to figure 41.
	b. On the tactical control-indicator, set the equipment-status switch to WHITE. The white status-indicator light illuminates.	Refer to figure 39 in TM 9-1430-254-20/2.
	c. Plug the operator's cord into the CABLE 1 line circuit, and call the launching-control-switchboard operator. Repeat the procedure for the CABLE 2 and CABLE ADMIN line circuits. An intelligible two-way voice communication exists.	Refer to figure 39.
	d. Set the WIRE—CABLE—RADIO switch at both switchboards to WIRE, and repeat the procedure in c above, using the FLD WIRE instead of the CABLE line circuits. The WIRE indicator light on both switchboards illuminates. An intelligible two-way voice communication exists.	Refer to figure 41. Refer to figure 39.
	e. Energize the radio sets as prescribed in (1) and (2) below.	
	(1) Perform the receiver operating adjustments.	
	(a) Set the POWER ON—OFF switch to ON. The POWER and STBY indicator lights illuminate.	Refer to TM 11-212-10.
	(b) Allow the equipment to warm up for 5 minutes.	
	(c) Turn the SENSITIVITY knob fully clockwise.	
	(d) Set the OPEN—SQUELCH switch to SQUELCH. The noise is audible at the speaker.	Refer to TM 11-212-10.
	(e) Adjust the SENSITIVITY knob counterclockwise until the squelch circuit just operates. The noise at the speaker ceases and the STBY indicator light illuminates.	Refer to TM 11-212-10.

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
1.	Continued	
	(f) Adjust the VOLUME knob for the desired audio level.	
	(2) Perform the transmitter and telephone signal-converter adjustments.	
	(a) Set the FIL—ON-OFF switch to ON. The FIL indicator light illuminates.	Refer to TM 11-212-10.
	(b) Set the PLATE—ON-OFF switch to ON. The PLATE indicator light illuminates.	Refer to TM 11-212-10.
	(c) Set the POWER—ON-OFF switch on the telephone-signal converter to ON. The POWER indicator light illuminates.	Refer to TM 11-212-10.
	f. Set the WIRE—CABLE—RADIO switch on both telephone switchboards to RADIO. The RADIO indicator light on both switchboards illuminates.	Refer to figure 41 in TM 9-1400-251-12.
	g. Plug the operator's cord into the RADIO TECH line circuit, and call the launching-control switchboard operator. Repeat for the RADIO COMD line circuit. An intelligible two-way voice communication exists.	Refer to figure 39.
	h. Set the WIRE—CABLE—RADIO switch at both telephone switchboards to CABLE.	
2.	Perform the command hot-loop checks.	
	a. On the tactical control-indicator, set the equipment-status switch to yellow. The yellow-equipment-status indicator lights illuminate at the battery-control console, target-radar-control console, launching-control console, and at each HERCULES launching-section control-indicator.	Refer to figure 39 in TM 9-1430-254-20/2.
	b. Request selection of HERCULES launching section A by the launching-control-console operator.	
	c. Check that the party-line voice communication exists between the telephone stations listed in (1) through (7) below.	
	(1) Both telephone switchboard COMD LOOP line circuits.	Refer to figure 39.
	(2) Launching-control console, position 1 telephone station.	Refer to figure 40.
	(3) HERCULES launching section A, station 1 mounted-field-telephone station.	

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>(4) Acquisition-radar operator's telephone-station.</p> <p>(5) Battery - control - officer's telephone - station. (TECH switch must be turned down.)</p> <p>(6) Target-radar control-console telephone-station.</p> <p>(7) Missile-radar control-console telephone-station. (TECH switch must be turned down.)</p> <p>d. Request selection of HERCULES launching section B, and check that section B, station 1 mounted-field-telephone station is on the party line (command hot loop). An intelligible two-way voice communication exists.</p> <p>e. Request selection of HERCULES launching section C, and check that section C, station 1 mounted-field-telephone station is on the party line (command hot loop). An intelligible two-way voice communication exists.</p> <p>f. Request selection of HERCULES launching section D, and check that section D, station 1 mounted-field-telephone station is on the party line (command hot loop). An intelligible two-way voice communication exists.</p> <p>g. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to WIRE. The party line is still in operation. The WIRE indicator light at each telephone switchboard illuminates.</p> <p>h. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to RADIO. The party line is still in operation. The RADIO indicator light at each telephone switchboard illuminates.</p>	
3.	<p>Perform the technical-hot-loop check.</p> <p>a. Request selection of HERCULES launching section A by the launching-console operator.</p> <p>b. Check that the party line voice communication exists between the telephone stations listed in (1) through (6) below.</p> <p>(1) Both telephone switchboard TECH LOOP line circuits.</p>	<p>Refer to figure 39.</p> <p>Refer to figure 40.</p>

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Continued</p> <p>(2) Launching - control - officer's telephone-station. (TECH switch must be at TECH.)</p> <p>(3) Computer-operator's telephone-station.</p> <p>(4) Missile-radar control-console telephone-station. (TECH switch must be set to TECH.)</p> <p>(5) Battery - control - officer's telephone - station. (TECH switch must be set to TECH.)</p> <p>(6) HERCULES launching section A, station 2 mounted-field-telephone station.</p> <p>c. Request selection of HERCULES launching section B, and check that section B, station 2 mounted-field-telephone station is on the party line (technical hot loop).</p> <p style="padding-left: 40px;">An intelligible two-way voice communication exists.</p> <p>d. Request selection of HERCULES launching section C, and check that section C, station 2 mounted-field-telephone station is on the party line (technical hot loop).</p> <p style="padding-left: 40px;">An intelligible two-way voice communication exists.</p> <p>e. Request selection of HERCULES launching section D, and check that section D, station 2 mounted-field-telephone station is on the party line (technical hot loop).</p> <p style="padding-left: 40px;">An intelligible two-way voice communication exists.</p> <p>f. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to WIRE.</p> <p style="padding-left: 40px;">The party line is still in operation.</p> <p>g. Set the WIRE—CABLE—RADIO switch at each telephone switchboard to CABLE.</p> <p style="padding-left: 40px;">The party line is still in operation.</p>	<p>Refer to figures 39 and 40.</p> <p>Refer to figures 39 and 40.</p> <p>Refer to figures 39 and 40.</p> <p>Refer to figures 39 and 40.</p> <p>Refer to figures 39 and 40.</p>
4.	<p>Perform the launching-section alternate field-wire-pairs check.</p> <p>a. Remove the two field-wire pairs from the binding posts on the rear of the launching-area radio sets, and connect the launching-section alternate field-wire pairs.</p>	<p>Refer to figures 39 and 40.</p>

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Table 14 (U). Daily Communication Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>b. Request the operator at each HERCULES launching-section control-indicator to set the MANUAL ORDERS—ALERT SELECTOR switch to RED.</p> <p style="padding-left: 40px;">The command-hot-loop party line communication exists between station 1 of each launching section and the battery-control-officer's telephone-station.</p> <p style="padding-left: 40px;">Technical hot-loop party line voice communications exist between station 2 of each launching section and the computer-operator's telephone-station.</p> <p>c. Remove the launching-section alternate field-wire pairs from the binding posts in the rear of the radio sets, and connect the field-wire pairs removed in a above.</p> <p>d. Restore the voice communications equipment to the standby condition.</p> <p>e. On the tactical control-indicator, set the equipment-status switch to WHITE.</p>	Refer to figure 43.

Table 15 (U). Daily Pressurization and Dehumidification Checks (U)

Step	Procedure	Corrective action
1.	<p>Perform the procedures in table 1.¹</p> <p><i>Caution:</i> If the equipment is deenergized overnight or longer, the pressurization or dehumidifier unit is changed, or the pressurized section of the rotary coupler is opened, allow the pressurization and dehumidifier units to operate for 6 hours then perform the procedures in table 37.</p>	
2.	<p>Check the operation of the pressurization unit.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 15.</p> <p>b. On the PPI, set the INTENSITY and GAIN knobs fully counterclockwise.</p> <p>c. On the acquisition-antenna pedestal, set the antenna-disable switch to OFF.</p> <p style="padding-left: 40px;">The antenna rotation stops.</p> <p>d. Gain access to the compressor and set the ON—OFF switch to ON.</p>	Refer to figure 19.

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 15 (U). Daily Pressurization and Dehumidification Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>The power indicator light illuminates. The compressor stops when the PRESS meter indicates a value within the limits of 13 to 17. Record the indication.</p> <p>e. On the compressor, set the ON—OFF switch to OFF, and set the antenna-disable switch on the acquisition-antenna pedestal to ON. Allow a 3-minute time-lapse before proceeding.</p> <p>f. Set the antenna-disable switch to OFF.</p> <p>The PRESS meter indication on the compressor has not decreased more than 5 psi from the value recorded in d above.</p> <p>g. On the compressor, set the ON—OFF switch to ON.</p>	<p>Refer to figure 38.</p> <p>Refer to figure 38.</p>
3.	<p>Check the operation of the dehumidifier.</p> <p>a. Gain access to the dehumidifier, and check that the 115V-400 CPS—ON and 28V DC—ON indicator lights are illuminated.</p> <p>b. Observe the HUMIDITY INDICATOR.</p> <p>The HUMIDITY INDICATOR is blue.</p> <p>c. On the acquisition-antenna pedestal, set the antenna-disable switch to ON.</p> <p>d. Set the ANT RPM switch to OFF.</p>	<p>Allow the dehumidifier to operate for two full cycles (6 hours), and recheck that the HUMIDITY INDICATOR is blue. If the procedure is still abnormal, perform the procedures in table 37.</p>

CONFIDENTIAL**C4****Section III (C). WEEKLY CHECK PROCEDURES***Table 16 (U). Weekly Power Checks (U)*

Step	Procedure	Corrective action
	Perform the procedures in table 1.	

Table 17 (U). Weekly Level and Orientation Checks (U)

Step	Procedure	Corrective action
1.	<p>Check the level of the LOPAR.</p> <p>a. On the acquisition-antenna pedestal, set the antenna-disable switch to OFF.</p> <p>b. Observe the air bubbles in the leveling vials on the acquisition-orientation levels.</p> <p>c. Manually rotate the acquisition antenna through 6400 mils.</p> <p style="text-align: center;">The bubbles in the leveling vials do not move more than 2 divisions.</p>	<p>(1) Rotate the antenna until one level vial is parallel to a line connecting two antenna-leveling jacks. On one of the two legs, turn the jack handle until the vial is level. Turn the third jack handle to level the other level vial.</p> <p>(2) Repeat <i>b</i> and <i>c</i> above.</p>
2.	<p>Perform the orientation checks.</p> <p>a. Raise the peepsight and hairline bracket in the acquisition level to the vertical position.</p> <p>b. Rotate the acquisition antenna until the hairline is centered on the known datum point.</p> <p><small>Note. If the known datum point is not available, use the sighting telescope on the target-track antenna-receiver-transmitter group to orient the acquisition antenna. Ascertain that the target- and missile-tracking radar systems have been oriented, and proceed to <i>d</i> below.</small></p> <p>c. At the orient compartment, check the azimuth-dial indication.</p> <p style="text-align: center;">The azimuth dial indicates the azimuth of the known datum point plus 3200 mils ± 5 mils.</p>	<p>(1) Release the DIAL drive lock by pushing inward and turning the T-wrench not more than one-half turn counterclockwise. Hold the antenna with the hairline bracket centered on the known datum point or reticle target. Push upward, and turn the DIAL ADJUST knob until the azimuth indicates within 5 mils of the known azimuth plus 3200 mils.</p>

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Table 17 (U). Weekly Level and Orientation Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	<p>(2) Release the DIAL ADJUST knob.</p> <p>Caution: Make certain that the DIAL ADJUST knob has returned to its original (down) position. If it remains engaged with the dial, pull it down manually. The lock should also spring back to its original position. Pull it out manually if it sticks. Extensive damage can occur if the acquisition antenna group is operated with this shaft engaged.</p> <p>(3) Secure the DIAL drive lock by pushing inward and turning the T-wrench clockwise.</p>
	<p>d. Install the reticle-level target so that it faces the hairline bracket. Reverse the position of the sighting telescope, and manually rotate the target-track antenna to align the telescope crosshairs with the hairline bracket.</p> <p>e. Manually rotate the acquisition antenna to center the hairline bracket on the vertical lines of the reticle-level target.</p> <p>The acquisition azimuth dial indicates the azimuth of the target-track antenna plus 3200 mils ± 5 mils.</p>	<p>Release the DIAL drive lock by pushing inward and turning the T-wrench not more than one-half turn counterclockwise. Hold the antenna with the hairline bracket centered on the reticle target. Push upward, and turn the DIAL ADJUST knob until the azimuth indicates within 5 mils of the known azimuth plus 3200 mils. Release the DIAL ADJUST knob. Secure the DIAL drive lock by pushing inward and turning the T-wrench clockwise.</p>

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Table 17 (U). Weekly Level and Orientation Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>f. Perform the procedures in table 1.¹</p> <p>g. On the LOPAR control-indicator, set the ANT RPM switch to 10.</p> <p>h. Manually rotate the antenna until the azimuth dial indicates 0.</p> <p>i. On the PPI, adjust the GAIN knob until a radial sweep appears.</p> <p style="text-align: center;">The radial sweep is at 0 mil.</p> <p>j. On the LOPAR control-indicator, set the ANT RPM switch to OFF.</p> <p>k. On the acquisition-antenna pedestal, set the antenna-disable switch to ON.</p>	<p>At the orient compartment, rotate the body of resolver B2.</p> <p>Refer to figure 33.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 18 (U). Weekly Pressurization and Dehumidifier Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 15.	

Table 19 (U). Weekly Antenna-Voltage, Current, and AFC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Perform the dc voltage checks.</p> <p>a. On the acquisition RF power-supply control, set the TEST 1 switch to the positions indicated below, and observe that the indications on the TEST 1 meter are within the specified limits.</p> <p style="text-align: center;">Position 2 — 144 to 156 volts Position 3 — 240 to 260 volts Position 4 — 240 to 260 volts Position 5 — 250 to 290 volts Position 6 — 305 to 335 volts</p> <p><i>Note.</i> When the TEST 1 switch is in position 6, the HIGH VOLTS—HOT indicator light on the acquisition-power-control panel must be illuminated.</p> <p>b. Set the TEST 1 switch to OFF.</p>	<p>Refer to figure 19.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 19 (U). Weekly Antenna Voltage, Current, and AFC Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Perform the modulator-capsule-voltage check.</p> <p>On the modulator control-indicator, set switch S1 to THY-RES VOLTAGE FS 10V.</p> <p>Meter M1 indicates the value marked on the tube base and/or glass envelope of the modulator tube.</p>	<p>Adjust the INCREASE knob.</p> <p>Refer to figure 27.</p>
4.	<p>Energize the LOPAR system through operate.</p> <p>Perform the procedures in table 7, step 2.</p> <p>Warning: Potentially dangerous radiation levels are present when the transmitter is energized.</p>	
5.	<p>Perform the reverse-current-diode check.</p> <p>a. On the modulator control-indicator, set switch S1 to INVERSE CURRENT (FS 100 MA).</p> <p>Meter M1 indicates a value greater than 0 but less than 60 milliamperes.</p> <p>b. Set switch S1 to OFF.</p>	<p>Refer to figure 27.</p>
6.	<p>Perform the AFC and crystal current checks.</p> <p>a. At the acquisition RF power supply control, operate the MAG FREQ switch to obtain an indication of 8 on the magnetron tuning drive dial. Depress and hold the AUTO FREQ CONTROL—RELEASE switch until the HUNT indicator light blinks.</p> <p>The AFC search continues until it locks on as indicated by the stop of the micrometer dials.</p> <p>The AUTO FREQ CONTROL — HUNT indicator light flickers or is extinguished.</p> <p>b. Set the TEST 2 switch to 8.</p> <p>The TEST 2 meter indicates a value between 3 and 6 microamperes.</p> <p>c. Set the TEST 2 switch to 9.</p> <p>The TEST 2 meter indicates 1 milliampere.</p>	<p>(1) Perform the procedures in table 38.</p> <p>(2) Perform the procedures in table 62, steps 2 and 3.</p> <p>Refer to figure 29.</p> <p>Adjust the AFC pickup probe on the directional coupler.</p> <p>Refer to figure 29.</p> <p>Using both hands, one on either side of the local oscillator cavity, loosen the large knurled nut, and adjust the slide bar to obtain the proper indication. Tighten the large knurled nut.</p> <p>Refer to figure 28.</p>

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Table 19 (U). Weekly Antenna Voltage, Current, and AFC Checks—Continued (U)

Step	Procedure	Corrective action
6.	<p>Continued</p> <p>d. Set the RCVR TEST switch to MAIN and the TEST 2 switch to 10.</p> <p style="padding-left: 40px;">The TEST 2 meter indicates 1 milliamperere.</p> <p>e. Set the RCVR TEST switch to AUX.</p> <p style="padding-left: 40px;">The TEST 2 meter indicates 1 milliamperere.</p> <p>f. Set the TEST 2 switch to OFF.</p>	<p>Adjust the main signal crystal-pickup probe on the right side of the local oscillator cavity.</p> <p style="padding-left: 40px;">Refer to figure 28.</p> <p>Adjust the auxiliary signal crystal-pickup probe on the left side of the local oscillator cavity.</p> <p style="padding-left: 40px;">Refer to figure 28.</p>
7.	<p>Deenergize the LOPAR transmitter.²</p> <p>Perform the procedures in table 7, step 5.</p>	

²Omit this step if the checks in the succeeding tables are to be performed.*Table 20 (U). Weekly AFC Discriminator Adjustments (U)*

Step	Procedure	Corrective action
1.	<p>Energize the LOPAR system through operate.¹</p> <p>Perform the procedures in table 7, steps 1 and 2.</p>	
2.	<p>Prepare the LOPAR system for the AFC discriminator adjustment.</p> <p>a. Disconnect the coaxial connector from connector J21 in the director station group, and connect a short jumper cable between connectors J19 and J21.</p> <p>b. On the LOPAR control-indicator, set the AJD—OFF switch to OFF, the PROC—IS switch to off (center), and the MTI switch to OFF.</p> <p>c. On the LOPAR control-indicator, rotate the REC GAIN knob fully clockwise past the first positive stop (in AGC).</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 20 (U). Weekly AFC Discriminator Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>Warning: Potentially dangerous radiation levels are present when the transmitter is energized.</p> <p>d. On the acquisition antenna pedestal, set the antenna disable switch to OFF.</p> <p>e. At the acquisition receiver-transmitter, connect an oscilloscope to the VIDEO connector on the acquisition RF power supply control.</p>	
3.	<p>Perform the AFC discriminator checks.</p> <p>a. Manually rotate the acquisition antenna until a well defined stationary target is observed on the oscilloscope. Insure that the antenna does not move from this position.</p> <p>b. Set the AUTO FREQ CONTROL—MOTOR EXC switch to OFF.</p> <p>c. Manually tune the local oscillator micrometer dial until the target obtained in a above is of maximum amplitude.</p> <p>d. Record the indication of the micrometer dials.</p> <p>e. Set the AUTO FREQ CONTROL—MOTOR EXC switch to ON and allow the AFC to lock-on. Record the micrometer dial indication.</p> <p><i>Note.</i> Insure that the AFC is locked on the correct frequency.</p> <p>Compare the indications observed in d and e. There should not be a difference of more than one division between the two indications.</p>	<p>(1) On the acquisition AFC, adjust variable transformer T5 until the indication on the micrometer dials is the same as that observed in d above. Repeat step 3.</p> <p>Refer to figure 28.</p> <p>(2) If the indication is still abnormal, perform the procedures in table 62.</p>
	<p>f. Disconnect the oscilloscope from the VIDEO connector.</p> <p>g. On the acquisition antenna pedestal, set the antenna disable switch to ON.</p>	

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Table 20 (U). Weekly AFC Discriminator Checks—Continued (U)

Step	Procedure	Corrective action
3.	Continued h. Remove the jumper cable that is connected between connectors J19 and J21 in the director station group. i. Connect the coaxial cable to connector J21.	
4.	Deenergize the LOPAR transmitter.² Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.	

²Omit this step if the checks in the succeeding tables are to be performed.

Table 21 (U). Weekly Transmitter Frequency and Power Measurement Checks (U)

Step	Procedure	Corrective action
1.	Energize the LOPAR system through operate.¹ a. On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START and depress the HV SUPPLY—ON switch. b. Adjust the HV SUPPLY knob clockwise to obtain an indication of 30 milliamperes on the MAGNETRON meter. c. Operate the ANT ELEV switch to UP/SCAN to obtain a maximum indication on the ANT ELEV indicator. d. Set the antenna disable switch on the acquisition antenna pedestal to OFF.	
2.	Perform the transmitter frequency checks. Warning: Potentially hazardous radiation levels are present when the transmitter is energized. a. On the frequency and power meter, turn the BALANCE—COARSE knob and the BALANCE—FINE knob fully counterclockwise. Set the POWER switch to ON. b. Disconnect the cable from the attenuator located on the top rear of the frequency and power meter and connect to the FREQ METER—IN connector. c. Connect the cable clipped to the front of the frequency and power meter between the FREQ METER—OUT and MEAS PWR connector. d. If the frequency is to be checked, adjust the MEAS FREQ knob for a maximum dip to the right on the meter. Use the frequency-to-dial-indication conversion chart on the cover of the frequency and power meter to obtain the transmitted frequency. e. If the acquisition radar is to be set to a predetermined frequency, perform the procedures in f through i below.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 21 (U). Weekly Transmitter Frequency and Power Measurement Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>f. Adjust the MEAS FREQ knob for the desired indication on the MEAS FREQ dial. (The frequency-to-dial-indication conversion chart is located on the frequency and power meter cover.)</p> <p>Caution: Maintain the meter indication below midscale with the BALANCE—COARSE knob. If the meter indication is sudden or beyond full scale, release the GALV SENS switch.</p> <p>g. Depress and hold the GALV SENS switch. The meter indicates 2 milliwatts.</p> <p>h. Intermittently operate the MAG FREQ switch to obtain a peak indication on the meter.</p> <p>i. Release the GALV SENS switch.</p>	<p>Adjust the BALANCE—FINE knob.</p> <p>Refer to figure 27.</p>
3.	<p>Perform the transmitter power measurements.</p> <p>a. Set the POWER switch on the frequency and power meter to OFF.</p> <p>b. Disconnect the cable connected between the FREQ METER—OUT connector and the MEAS PWR connector and clip to the front of the frequency and power meter.</p> <p>c. Disconnect the cable connected to the FREQ METER—IN connector and connect to the MEAS PWR connector.</p> <p>d. On the frequency and power meter, turn the BALANCE—COARSE and BALANCE—FINE knobs fully counterclockwise. Set the POWER switch to ON.</p> <p>e. Adjust the BALANCE—COARSE knob until the meter deflects to maximum and returns to zero. If the meter indication is greater than zero and not more than 0.5 milliwatt, depress the GALV SENS switch and adjust the BALANCE—FINE knob for 0 indication on the meter. Release the GALV SENS switch.</p> <p>f. Set the TEST switch to MEAS and record the meter indication.</p> <p>g. Set the POWER switch to OFF.</p> <p>h. Disconnect the cable from the MEAS PWR connector and connect to the attenuator on the top rear of the frequency and power meter.</p> <p>i. Repeat the procedures in d through h above.</p> <p>j. Subtract the indication obtained in f above from the indication obtained in i above. Convert this value to average power using the conversion chart located on the frequency and power meter cover.</p>	

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Table 21 (U). Weekly Transmitter Frequency and Power Measurement Checks—Continued (U)

Step	Procedure	Corrective action
3.	Continued The average power indication exceeds 530 watts. <i>k.</i> Rotate the BALANCE—COARSE and FINE knobs fully clockwise. <i>l.</i> Set the POWER switch to OFF. <i>m.</i> Set the antenna disable switch to ON.	Refer to figure 27.
4.	Deenergize the LOPAR transmitter. Set the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.	

Table 21.1 (U). Weekly Acquisition Range and Azimuth Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 6.	

Table 22 (U). Weekly Receiver Sensitivity Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 8.	

Table 23 (U). Weekly Antenna Coverage Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 2.	

Table 24 (U). Weekly Precision-Indicator Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1.¹	
2.	Prepare for the precision-indicator checks. <i>a.</i> On the LOPAR control-indicator, set the ANT RPM switch to 10. <i>b.</i> Adjust the INTENSITY and GAIN knobs on the PPI for a clear presentation. <i>c.</i> Adjust the INTENSITY knob on the precision-indicator until the sweep trace is visible. <i>d.</i> Set the ACQ MARKS switch on the video and mark mixer to TEST, and the TRACK CROSS switch on the target-designate control-indicator to ON. <i>d.1.</i> Set the range MAN—AID switch on the target-designate control-indicator to MAN. No visible range drift is observed in the LOPAR range system.	

Perform the procedures in table 52, step 4.

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 24 (U). Weekly Precision-Indicator Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	e. Adjust the GAIN knob on the precision-indicator until the acquisition range and azimuth marks appear.	
	<p align="center">The marks on the precision-indicator are sharply focused.</p>	<p>Adjust the FOCUS knob inside the precision-indicator.</p> <p align="center">Refer to figure 31.</p>
3.	Check the centering of the precision-indicator sweep.	
	a. Observe the presentation on the precision-indicator.	
	<p align="center">The base of the sweep is at the bottom of the display.</p>	<p>Adjust the VERT CENT control knob inside the precision-indicator.</p>
	<p align="center">The acquisition range mark is under the horizontal etched line on the face of the precision-indicator.</p>	<p>Adjust variable resistor R2 on the range sweep generator.</p> <p align="center">Refer to figure 35.</p>
	<p align="center">The vertical sweep fills the precision-indicator aperture.</p>	<p>Adjust the GATE LENGTH variable resistor on the acquisition range generator.</p> <p align="center">Refer to figure 32.</p>
	<p align="center">The acquisition-azimuth mark is centered in the precision-indicator display.</p>	<p>Adjust the H CENT control knob inside the precision-indicator.</p>
	<p align="center">The precision-indicator sweep is centered and fills the precision-indicator aperture.</p>	<p>(1) Adjust the AZ BLANK ADJ variable resistor on the precision-video-amplifier fully counterclockwise.</p> <p align="center">Refer to figure 31.</p>
		<p>(2) Simultaneously, adjust the AZ BLANK ADJ variable resistor on the precision - video - amplifier and the BAL ADJ variable resistor on the azimuth sweep generator mixer stage to obtain the desired indication.</p> <p align="center">Refer to figure 35.</p>

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Table 24 (U). Weekly Precision-Indicator Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Check the range coverage of the precision-indicator.</p> <p>a. Using the PPI as a guide, adjust the azimuth knob on the target-designate control-indicator, and rotate the range handwheel until the horizontal portion of the electronic cross is at the top edge of the precision-indicator aperture.</p> <p>b. Record the indication on the RANGE dial.</p> <p>c. Repeat <i>a</i> and <i>b</i> above for the bottom edge of the aperture.</p> <p style="text-align: center;">The difference between the two range indications is within the limits of 24,000 and 26,000 yards.</p>	Repeat the procedure in step 3 above.
5.	<p>Check the azimuth coverage of the precision-indicator.</p> <p>a. Adjust the azimuth knob until the radial portion of the electronic cross is at the right side of the precision-indicator aperture.</p> <p>b. Record the position of the steerable azimuth line on the PPI.</p> <p>c. Repeat the procedures in <i>a</i> and <i>b</i> above for the left edge of the precision-indicator aperture.</p> <p style="text-align: center;">The difference between the two indications is within the limits of 450 and 600 mils.</p> <p>d. On the video and mark mixer, set the PI MARKS switch to NOR.</p> <p>e. On the target-designate control-indicator, set the TRACK CROSS switch to OFF.</p>	<p>Adjust the AZ ADJ variable resistor on the azimuth sweep generator mixer stage, and repeat step 3. It may be necessary to readjust the H CENT control knob on the precision-indicator.</p> <p style="text-align: center;">Refer to figure 35.</p>

Table 25 (C). Weekly PPI Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Prepare for the PPI checks.</p> <p>a. On the PPI, turn the GAIN, INTENSITY, and SYMBOL INTENSITY knobs fully counterclockwise.</p>	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>b. Set the EXPANSION and SYMBOLS switches to OFF and the RANGE switch to 150,000.</p> <p>c. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹</p> <p>d. Rotate the REC GAIN knob fully counterclockwise.</p> <p><i>Note.</i> Allow at least a 30-minute warm-up period before proceeding with the adjustments below.</p>	
3.	<p>Adjust the presentation of the azimuth line and the range mark.</p> <p>a. Adjust the INTENSITY knob on the PPI until a barely discernible sweep is visible. Adjust the GAIN knob for normal presentation of the range marks.</p> <p>b. Depress and hold the azimuth switch on the target-designate control-indicator, and adjust variable resistor R33 on the PPI video amplifier until the steerable azimuth line has the desired intensity. Release the azimuth switch. Repeat this procedure until interaction is eliminated.</p> <p>c. On the target-designate control-indicator, depress and hold the azimuth switch.</p> <p style="padding-left: 40px;">The acquisition range mark is barely visible.</p> <p>d. Release the azimuth switch.</p>	<p>Refer to figure 32.</p> <p>Warning: Voltages DANGEROUS TO LIFE are present on the rear of the PPI.</p> <p>Adjust the ACQ RANGE MARK variable resistor on the rear of the PPI.</p> <p>Refer to figure 31.</p>
4.	<p>Check the presentation of the FUIF spot.</p> <p>a. On the PPI test panel, in the auxiliary acquisition cabinet, set the TEST switch to ZERO.</p> <p style="padding-left: 40px;">The PULSE GENERATOR indicator light flashes one to three times a second.</p> <p>b. On the PPI, turn the SYMBOL INTENSITY knob to the midposition.</p>	<p>Adjust the GEN ADJUST variable resistor.</p> <p>Refer to figure 33.</p>

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>A flashing spot appears near the center of the PPI display.</p> <p>Warning: Voltage DANGEROUS TO LIFE are present on the rear of the PPI.</p> <p>c. Adjust the FOCUS variable resistor on the rear of the PPI to focus the flashing spot.</p>	<p>Turn the SYMBOL INTENSITY knob on the PPI and variable resistor R71 on the PPI marker generator to their mid-positions. If the flashing spot is still not visible, rotate variable resistor R12 on the PPI marker generator fully counterclockwise; then rotate clockwise approximately 20 degrees past the point where the flashing spot appears.</p> <p>Refer to figure 31.</p> <p>Refer to figure 31.</p>
5.	<p>Balance the dc amplifiers.</p> <p><i>Nota.</i> Pin 3 of electron tube V1 and the gray wire going to the terminal board near electron tube V1 have the same electrical potential. For easier access, use the gray wire.</p> <p>a. Connect a voltmeter between ground and pin 3 of electron tube VI on one of the PPI dc amplifiers.</p> <p>b. Adjust variable resistor R29 on the PPI dc amplifier to obtain a minimum indication on the voltmeter.</p> <p>c. Repeat a and b above for the other dc amplifier.</p> <p>d. Adjust variable resistor R4 on each of the dc amplifiers to center the flashing spot on the PPI.</p>	<p>Refer to figure 33.</p>
6.	<p>Perform the X-axis adjustments.</p> <p>On the modulation eliminator, set the Y OFF—NORM—X OFF switch to X OFF.</p> <p>A narrow vertical sweep line appears on the PPI.</p> <p>The vertical sweep line extends from 0 mil to 3200 mils.</p>	<p>Adjust the X ZERO SET variable resistor on the sweep generator.</p> <p>Refer to figure 33.</p> <p>Perform the mechanical adjustment of the PPI cathode-ray tube in table 66.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
6.	<p>Continued</p> <p>The vertical sweep line is centered and intercepts the flashing spot.</p>	<p>Adjust the CENTERING—X variable capacitor on the sweep generator.</p> <p>Refer to figure 33.</p>
7.	<p>Perform the Y-axis adjustments.</p> <p>a. On the modulation eliminator, set the Y OFF—NORM—X OFF switch to Y OFF.</p> <p>A narrow horizontal line appears on the PPI.</p> <p>The horizontal sweep line is centered and intercepts the flashing spot.</p> <p>b. On the modulation eliminator, set the Y OFF—NORM—X OFF switch to NORM.</p> <p>A normal rotating sweep appears on the PPI.</p> <p><small>Note. Omit step 8 below and proceed to step 9 if the system is connected to FUIF equipment.</small></p>	<p>Adjust the Y ZERO SET variable resistor on the sweep generator.</p> <p>Refer to figure 33.</p> <p>Adjust the CENTERING—Y variable capacitor on the sweep generator.</p> <p>Refer to figure 33.</p>
8.	<p>Perform the range calibration.</p> <p>a. On the target-designate control-indicator, check the drift in the range dials.</p> <p>The range drift is minimum.</p> <p>b. Rotate the range handwheel to obtain an indication of 100,000 yards on the RANGE dial.</p> <p>c. Adjust the GAIN knob on the PPI until the range circle is visible.</p> <p>d. On the PPI test panel, set the TEST switch to +X AXIS.</p> <p>The flashing spot appears at 1600 mils.</p>	<p>Perform the procedures in table 52, step 4.</p> <p>Refer to figure 31.</p> <p>Perform the adjustments in table 66.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p><i>e.</i> Superimpose the steerable azimuth line on the flashing spot.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 1600 mils.</p> <p><i>f.</i> Set the TEST switch to —X-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 4800 mils.</p> <p><i>g.</i> Set the TEST switch to +Y-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 0 mil.</p> <p><i>h.</i> Set the TEST switch to —Y-AXIS.</p> <p style="padding-left: 40px;">The range circle intercepts the flashing spot at 3200 mils.</p>	<p>Adjust the X SLOPE ADJ variable resistor on the sweep generator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>(1) Adjust the X BAL variable resistor on the sweep generator to correct one-half of the error between the range circle and the flashing spot.</p> <p>(2) Repeat <i>e</i> and <i>f</i> above to minimize the error.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>Adjust the Y SLOPE ADJ variable resistor on the sweep generator.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>(1) Adjust the Y BAL variable resistor on the sweep generator to correct one-half of the error between the range circle and the flashing spot.</p> <p>(2) Repeat <i>g</i> and <i>h</i> above to minimize the error.</p> <p style="padding-left: 40px;">Refer to figure 33.</p>
9.	<p>Perform the video and marks check.</p> <p><i>a.</i> Have the target-tracking-radar (TTR) operator energize the TTR as prescribed in the power checks in TM 9-1430-256-12/1.</p> <p><i>b.</i> Have the TTR operator operate the range SLEW switch to set the TTR range to approximately 100,000 yards.</p> <p><i>c.</i> On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p>	

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
9.	Continued	
	d. Adjust the INTENSITY knob on the PPI until the sweep trace is barely visible.	
	The acquisition range mark is visible.	Refer to figure 33.
	The track electronic cross is visible.	(1) Perform the procedures in table 28.1.
		(2) Adjust variable resistor R15 on the video and mark mixer. If the indication is still abnormal, perform (3) and (4) below.
		Refer to figure 30.
		(3) On the acquisition-track synchronizer in the target-radar-control console, set the TEST switch to NORMAL.
		(4) Adjust the FREQ LOPAR variable resistor fully clockwise. Adjust the FREQ LOPAR variable resistor counterclockwise 10 degrees past the point where the electronic cross appears.
	The arc of the electronic cross is approximately 3/8 inch in length.	Adjust the WIDTH variable resistor on the video and mark mixer.
		Refer to figure 30.
	Only one track azimuth line appears on the electronic cross.	Adjust the GATE ADJ variable resistor on the mark generator in the target-radar-control console.
		Refer to figure 32.
	e. On systems with a HIPAR or AAR, set the RADAR SELECTED switch to HIPAR/AAR. On systems with a HIPAR, depress the TEST ENABLE switch-indicator.	
	f. Set the RANGE switch on the PPI to 350,000 for systems with a HIPAR or AAR (250,000 for systems without HIPAR).	

Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
9.	Continued	
	g. On the target-designate control-indicator, rotate the range handwheel to obtain an indication on the RANGE dial to correspond with the RANGE switch setting in f above. If necessary, increase the PPI intensity.	
	The sweep disappears 3/16 inch beyond the range mark.	Adjust variable resistor R18 on the PPI video amplifier. Refer to figure 33.
	The range circle is at the edge of the PPI.	Adjust variable resistor R1 on each PPI dc amplifier. Refer to figure 33.
	The acquisition azimuth line extends to the edge of the scope.	Adjust the MARK LENGTH HIPAR (LOPAR) variable resistor on the precision mark generator in the percision-indicator. Refer to figure 35.
	g.1. Alternately depress and release the azimuth switch on the target-designate control-indicator.	
	The range mark on the steerable azimuth line coincides with the range circle.	Adjust variable resistor R18 on the 4-kc oscillator. Refer to figure 37.
	The flashing azimuth line is within 1/8 inch of the steerable azimuth line.	Rotate the housing of synchro B1 in the target-designate control-indicator. Refer to figure 33.
	g.2. Set the RADAR SELECTED switch to LOPAR.	
	h. Rotate the REC GAIN knob on the LOPAR control-indicator fully clockwise to the first positive stop (not in AGC).	
	i. Adjust the ACQ RG MARK variable resistor on the video and mark mixer for normal intensity of the acquisition range marks.	
	<i>Note.</i> If the acquisition range marks are too bright, they may obscure weak target signals.	
	j. Adjust the GAIN knob on the PPI so that the noise level is just visible.	
	Only one acquisition azimuth line should be visible for each revolution of the acquisition antenna.	Adjust the GATE ADJ variable resistor on the precision mark generator. Refer to figure 32.
	k. Set the TRACK CROSS switch to OFF.	
	<i>Note.</i> Omit steps 10 and 11 below if the system is not connected to FUIF equipment.	

Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Perform the FUIF range-calibration checks.</p> <p><i>Note.</i> The range-calibrate and range-zero checks and adjustments on the target-tracking radar must be completed before performing this step.</p> <p>a. On the target-designate control-indicator, check the drift on the range dials.</p> <p style="padding-left: 40px;">The range drift is minimum.</p> <p>b. Have the computer operator energize the computer as prescribed in TM 9-1430-251-12/1.</p> <p>c. On systems connected to Missile Master equipment, set the SYMBOL switch on the PPI to NORMAL. On systems connected to BIRDIE equipment, set the SYMBOL switch to BOTH.</p> <p>d. Set the system and the FUIF equipment in the back-to-back mode.</p> <p>e. Connect a lead between ground and terminal 48 in the FUIF interconnecting box.</p> <p>f. Have the computer operator set the COMPUTER CONDITION switch on the computer-control panel to ACTION.</p> <p>g. Operate the DESIGNATE — ABANDON switch on the target-designate control-indicator to DESIGNATE, and set the TRACK CROSS switch to ON.</p> <p>h. Have the TTR operator momentarily operate the ACQUIRE switch on the target-antenna-control group, and set the TEST switch to off (down).</p> <p>i. Have the TTR operator rotate the range, azimuth, and elevation handwheels to obtain indications of 100,000 yards in range, 1600 mils in azimuth, and 0 mil in elevation.</p> <p>j. Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross is superimposed on the FUIF symbol at 1600 mils.</p> <p>k. Have the TTR operator depress the OFF TARGET switch, and rotate the azimuth handwheel to obtain an indication of 4800 mils on the azimuth dial.</p>	<p>Perform the procedures in table 52, step 4.</p> <p>Adjust the X SLOPE ADJ variable resistor on the PPI sweep generator until the arc portion of the electronic cross is superimposed on the FUIF symbol. If the superimposed symbol and the arc do not appear at 1600 mils, note the displacement and perform the adjustments in table 66.</p>

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Table 25 (C). Weekly PPI Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Continued</p> <p><i>l.</i> Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the FUIF symbol.</p> <p><i>m.</i> Have the TTR operator depress the OFF TARGET switch, and repeat <i>i</i> through <i>l</i> above as required to eliminate interaction.</p> <p><i>n.</i> Have the TTR operator depress the OFF TARGET switch, rotate the azimuth handwheel to obtain an indication of 0 mil on the azimuth dial, and depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the FUIF symbol.</p> <p><i>o.</i> Have the TTR operator depress the OFF TARGET switch, and rotate the azimuth handwheel to obtain an indication of 3200 mils on the azimuth dial.</p> <p><i>p.</i> Depress the TRACKED switch.</p> <p style="padding-left: 40px;">The electronic cross remains superimposed on the FUIF symbol.</p> <p><i>q.</i> Repeat <i>n</i> and <i>o</i> above as required.</p> <p><i>r.</i> On the target-designate control-indicator, operate the DESIGNATE — ABANDON switch to ABANDON.</p> <p><i>r.1.</i> Set the TRACK CROSS switch to OFF.</p> <p><i>s.</i> Set the COMPUTER CONDITION switch to STAND BY.</p> <p><i>t.</i> Return the FUIF equipment to normal operation.</p> <p><i>Note.</i> Omit step 11 below for systems not connected to FUIF.</p>	<p>Adjust the X BAL variable resistor on the PPI sweep generator to reduce the separation by one-half. Adjust the X ZERO SET variable resistor, if necessary, to bring the separation within the prescribed limits.</p> <p>Refer to figure 33.</p> <p>Adjust the Y SLOPE ADJ variable resistor on the PPI sweep generator.</p> <p>Refer to figure 33.</p> <p>Adjust the Y BAL variable resistor on the PPI sweep generator to reduce the separation by one-half. Adjust the Y ZERO SET variable resistor, if necessary, to bring the separation within the prescribed limits.</p>
11.	<p>Perform the FUIF symbols check.</p> <p><i>Note.</i> In <i>a</i> through <i>c</i> below the FUIF symbols will appear at the center of the PPI on systems without MWO 9-1430-251-30/25 applied.</p> <p><i>a.</i> On the PPI, set the SYMBOLS switch to OFF.</p>	

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Table 25 (C). Weekly PPI Checks—Continued (U)

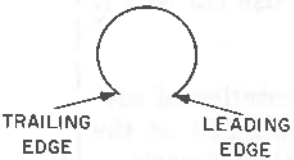
Step	Procedure	Corrective action
11.	<p>Continued</p> <p>a.1. On the PPI test panel, set the TEST switch to BATTERY.</p> <p>A defocused spot appears at 3200 mils and approximately 100,000 yards.</p> <p>b. Set the TEST switch to FOE.</p> <p>A 1/4-inch circle with approximately a 30-degree arc missing from the bottom appears at 3200 mils and approximately 100,000 yards.</p>  <p>c. Set the TEST switch to FRIEND.</p> <p>The upper half of a circle appears at 3200 mils and approximately 100,000 yards.</p>	<p>Adjust the SYMBOL INTENSITY knob on the PPI.</p> <p>Refer to figure 31.</p> <p>(1) The leading edge is adjusted with variable resistor R49.</p> <p>Refer to figure 33.</p> <p>(2) The trailing edge is adjusted with variable resistor R71.</p> <p>Refer to figure 33.</p> <p>(3) Adjust variable resistor R27 to correct the symbol circularity.</p> <p>Refer to figure 33.</p> <p>(4) The size is adjusted by variable resistors R30 and R74.</p> <p>Refer to figure 33.</p> <p>Refer to figure 33.</p>
12.	<p>Check the PPI expansion.</p> <p>a. Set the TEST switch to ZERO.</p> <p>b. Set the EXPANSION switch on the PPI to ON, and turn the EXPANSION POSITION knob one complete turn.</p> <p>The flashing spot moves around the face of the PPI in synchronism with the rotation of the EXPANSION POSITION knob, remaining within 1 inch of the edge of the scope throughout one revolution.</p>	<p>Adjust the DIAMETER EXP ADJ variable resistor and the CENTER EXP ADJ variable resistor so that the flashing spot appears one-half inch from the edge of the PPI at 0 and 3200 mils.</p> <p>Refer to figure 33.</p>
	<p>c. Set the EXPANSION switch on the PPI to OFF, the TEST switch on the PPI test panel to NORMAL.</p> <p>d. Set the SYMBOLS switch on the PPI to NORMAL for systems connected to MISSILE MASTER.</p> <p>e. Set the SYMBOLS switch to BOTH for systems connected to BIRDIE equipment.</p>	

Table 26 (C). Weekly B-Scope Checks (U)

Step	Procedure	Corrective action
	<i>Note.</i> The checks in this table are to be performed by a maintenance technician.	
1.	Perform the procedures in table 1. ¹	
2.	Prepare for the B-scope checks.	
	<ul style="list-style-type: none"> a. Have the target-tracking-radar (TTR) operator energize the target-tracking radar system through low voltages as prescribed in the power checks in TM 9-1430-256-12/1. b. On the LOPAR control-indicator, set the ANT RPM switch to 10.¹ c. Set the IND HV switch on the target-track-control power supply to on (up). d. Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a well defined presentation. e. Rotate the REC GAIN knob fully clockwise (in AGC). 	
3.	Perform the 4-kc adjustments.	
	<ul style="list-style-type: none"> a. Using a test oscilloscope, obtain a presentation of several cycles of the 4-kc signal at test point TP1 on the mark generator in the target-radar-control console. <ul style="list-style-type: none"> The signal rises smoothly to a maximum amplitude and drops smoothly to a minimum amplitude with each revolution of the acquisition antenna. 	<p>Adjust the 4KC ADJ variable resistor on the mark generator to obtain the lowest null without overmodulation.</p> <p>Refer to figure 32.</p>
	<ul style="list-style-type: none"> b. Using the test oscilloscope, obtain a presentation of several cycles of the 4-kc signal at test point TP1 on the azimuth blank generator. <ul style="list-style-type: none"> The signal rises smoothly to a maximum amplitude and drops smoothly to a minimum amplitude with each revolution of the acquisition antenna. 	<p>Adjust the CARRIER NULL variable resistor on the azimuth blank generator to obtain the lowest null without overmodulation.</p> <p>Refer to figure 31.</p>
	<ul style="list-style-type: none"> c. Disconnect the oscilloscope. 	
4.	Check the sweep on the B-scope.	
	<ul style="list-style-type: none"> a. On the B-scope indicator, adjust the GAIN and INTENSITY knobs for a normal presentation. 	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p>The presentation on the B-scope extends slightly beyond the graticules on the extreme right and extreme left of the B-scope indicator.</p> <p>b. Using the test oscilloscope, monitor the sawtooth signal at pin 8 of V1 on the range B-scope sweep amplifier.</p> <p>The sawtooth signal is 1340 microseconds wide.</p>	<p>Adjust the BLANK ADJ variable resistor on the azimuth-blank generator.</p> <p>Refer to figure 31.</p> <p>Adjust the RANGE ADJ variable resistor on the B-scope video amplifier.</p> <p>Refer to figure 31.</p>
5.	<p>Check the symbol presentation on the B-scope.</p> <p>a. Adjust the INTENSITY knob until the sweep is barely visible.</p> <p>b. Depress the REFRAME switch.</p> <p>The target-track-antenna circle is visible on the B-scope presentation and is clear and stable.</p> <p>The target-track-antenna symbol is a closed circle 1/4 inch in diameter.</p>	<p>(1) Adjust the SYMBOL INT ADJ variable resistor on the B-scope video amplifier for the desired intensity.</p> <p>Refer to figure 31.</p> <p>(2) Adjust the FOCUS variable resistor on the right side of the B-scope indicator for optimum symbol clarity.</p> <p>Refer to figure 31.</p> <p>(3) Adjust variable resistor R5 on the B-scope marker generator for optimum stability of the target-track-antenna circle.</p> <p>Refer to figure 34.</p> <p>(1) Adjust variable resistor R41 on the B-scope marker generator for the proper diameter.</p> <p>(2) Adjust variable resistor R15 on the B-scope marker generator for a closed circle.</p>

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Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>No tails are observed on the target-track-antenna circle.</p>	<p>(3) Adjust variable capacitor C17 on the B-scope sweep amplifier for optimum circularity of the target-track-antenna circle.</p> <p>Refer to figure 34.</p> <p>Adjust variable resistors R25 and R46 on the B-scope marker generator.</p> <p>Refer to figure 31.</p>
6.	<p>Prepare for the coverage checks.</p> <p>a. On the B-scope modulation-eliminator, operate the SWP—ZERO switch to ZERO.</p> <p>The vertical range sweep is of nearly uniform intensity.</p> <p>b. Restore the SWP—ZERO switch to NORMAL, and adjust the INTENSITY and GAIN knobs on the B-scope indicator for a well defined presentation.</p> <p>c. At the video and mark mixer in the director station group, set the PI MARKS switch to TEST.</p> <p>d. On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p> <p>e. On the target-antenna-control group, operate the ACQUIRE switch.</p> <p>The target-tracking radar slews to the designated coordinates of the acquisition radar, and the electronic cross appears on the B-scope.</p>	<p>Refer to figure 34.</p> <p>Refer to figure 34.</p>
7.	<p>Perform the range checks.</p> <p>a. At the target-antenna-control group, operate the range SLEW switch to obtain an indication of 0 yard on the range dials.</p> <p>b. Connect a VTVM TS-505A/U between the RG INPUT test point on the azimuth- and range-position amplifier and ground.</p> <p>The VTVM indicates within the limits of 18 to 34 volts.</p> <p>c. On the target-antenna-control group, operate the range SLEW switch to obtain an indication of 200,000 yards on the range dials.</p>	<p>Refer to figure 34.</p>

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Table 26 (C). Weekly B Scope Checks—Continued (U)

Step	Procedure	Corrective action
7.	<p>Continued</p> <p>The VTVM indicates a value within the limits of 145 to 150 volts.</p> <p>d. Operate the range SLEW switch to obtain an indication of 100,000 yards on the range dials.</p> <p>e. Connect the VTVM to the RG OUTPUT test point.</p> <p>The VTVM indicates 0 volt.</p> <p>f. Operate the range SLEW switch to obtain an indication of 0 yard on the range dials.</p> <p>The VTVM indicates -10 volts.</p> <p>g. Operate the range SLEW switch to obtain an indication of 200,000 yards on the range dials.</p> <p>The VTVM indicates within the limits of 9.6 and 10.4 volts.</p> <p>h. On the B-scope indicator, operate the REFRAME switch.</p> <p>i. On the target-antenna-control group, operate the range SLEW switch to obtain an indication of 100,000 yards on the range dials.</p> <p><i>Note.</i> Pin 3 of electron tube V1 and the gray wire going to the terminal board near electron tube V1 have the same electrical potential. For easier access use the gray wire.</p> <p>j. Connect the VTVM to pin 3 of electron tube V1 on the range (left) B-scope sweep amplifier.</p> <p>The VTVM indicates 2.5 volts.</p> <p>The target-track-antenna circle appears midway between the 80,000- and 120,000-range graticules.</p>	<p>Refer to figure 34.</p> <p>Adjust the RG ZERO SET variable resistor on the azimuth- and range-position amplifier.</p> <p>Refer to figure 34.</p> <p>(1) Adjust the RG GAIN variable resistor on the azimuth- and range-position transmitter.</p> <p>(2) Repeat the procedures in e and f above as necessary to eliminate interaction.</p> <p>Refer to figure 34.</p> <p>Refer to figure 34.</p> <p>Adjust the ZERO SET variable resistor on the range B-scope sweep amplifier.</p> <p>Refer to figure 34.</p> <p>Adjust the DC BAL variable resistor on the range B-scope sweep amplifier.</p> <p>Refer to figure 34.</p>

Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
7.	Continued	
	<p>k. Operate the range SLEW switch to obtain an indication of 0 yard on the range dials.</p> <p style="padding-left: 40px;">The zero range graticule bisects the target-track-antenna circle within $\frac{1}{8}$ inch on the B-scope indicator.</p>	Adjust the GAIN SET variable resistor on the range (left) B-scope sweep amplifier. Refer to figure 34.
	<p>l. Operate the range SLEW switch to obtain an indication of 200,000 yards on the range dials.</p> <p style="padding-left: 40px;">The 200,000 yard range graticule bisects the target-track-antenna circle within $\frac{1}{8}$ inch on the B-scope indicator.</p> <p><i>Note.</i> It may be necessary to repeat k and l above as necessary to eliminate interaction between the DC BAL variable resistor adjusted at 100,000 yards and the GAIN SET variable resistor adjusted at 0 yard and 200,000 yards.</p>	Adjust the GAIN SET variable resistor on the range (left) B-scope sweep amplifier. Refer to figure 34.
	<p>m. Operate the range SLEW switch to obtain an indication of 0 yard on the range dials.</p> <p style="padding-left: 40px;">The arc of the electronic cross is positioned in the center of the target-track-antenna circle.</p>	Adjust variable resistor R7 on the B-scope sweep generator. Refer to figure 34.
	<p>n. Operate the range SLEW switch to obtain an indication of 200,000 yards on the range dials.</p> <p style="padding-left: 40px;">The arc of the electronic cross remains in the center of the target-track-antenna circle.</p>	Adjust variable resistor R1 on the B-scope sweep generator. Refer to figure 34.
	o. Repeat m and n above to eliminate interaction.	
8.	Perform the azimuth checks.	
	a. On the B-scope modulation-eliminator, set the POS—ZERO switch and the SWP—ZERO switch to ZERO.	Refer to figure 34.
	<p>b. Obtain a VTVM and connect it to the AZ OUTPUT test point on the azimuth- and range-position amplifier.</p> <p style="padding-left: 40px;">The VTVM indicates 0 volt.</p> <p><i>Note.</i> Pin 8 of electron tube V1 and the gray wire going to the terminal board near electron tube V1 have the same electrical potential. For easier access use the gray wire.</p>	Adjust the AZ. ZERO SET variable resistor on the azimuth- and range-position amplifier. Refer to figure 34.

Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
8.	Continued c. Connect the VTVM to pin 3 of electron tube V1 on the azimuth (right) B-scope sweep amplifier. The VTVM indicates 2.5 volts.	Adjust the ZERO SET variable resistor on the azimuth B-scope sweep amplifier. Refer to figure 34.

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Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p>The center vertical graticule bisects the target-track-antenna circle.</p> <p>The vertical line is parallel to the center vertical graticule of the B-scope.</p> <p>d. On the B-scope modulation-eliminator, set the SWP—ZERO switch and the POS—ZERO switch to NORMAL.</p> <p>e. Operate and hold switch S1 on the synchro assembly, and rotate the gear train so that the center vertical graticule on the B-scope indicator bisects the target-track-antenna circle.</p> <p>f. Rotate the gear train 30 degrees to the right (2 divisions marked on the gear). Release switch S1.</p> <p>g. Connect the VTVM to the AZ OUPUT test point on the azimuth- and range-position amplifier.</p> <p>The VTVM indicates 10 volts.</p> <p>The extreme right vertical graticule bisects the target-track-antenna circle.</p> <p>h. Operate and hold switch S1 on the synchro assembly, and rotate the gear train 60 degrees to the left (4 divisions marked on the gear). Release switch S1.</p> <p>The VTVM indicates a value within the limits of -9.6 and -10.4 volts.</p> <p>The extreme left vertical graticule bisects the target-track-antenna circle within one-eighth inch.</p> <p>i. On the B-scope modulation-eliminator, set the SWP—ZERO switch to ZERO.</p>	<p>Adjust the DC BAL variable resistor on the azimuth B-scope sweep amplifier.</p> <p>Refer to figure 34.</p> <p>Perform the mechanical adjustment of the B-scope-indicator cathode-ray tube in table 67.</p> <p>Adjust the AZ GAIN variable resistor on the azimuth- and range-position amplifier.</p> <p>Refer to figure 34.</p> <p>Adjust the GAIN SET variable resistor on the azimuth (right) B-scope sweep amplifier.</p> <p>Refer to figure 34.</p> <p>Repeat e through h above.</p>

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Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Continued</p> <p>The range sweep line appears under the center vertical graticule on the B-scope indicator.</p> <p><i>j.</i> Set the SWP—ZERO switch to NORMAL.</p> <p><i>k.</i> On the B-scope indicator, operate the REFRAME switch.</p> <p>The center vertical graticule bisects the target-track-antenna circle.</p>	<p>Adjust variable resistor R24 on the B-scope sweep generator.</p> <p>Refer to figure 34.</p> <p>Adjust the worm gear on the synchro assembly.</p>
9.	<p>Energize the LOPAR system through operate.</p> <p>Perform the procedures in table 20, step 1.</p>	
10.	<p>Check the acquire accuracy of the B-scope.</p> <p><i>a.</i> Adjust the GAIN knob on the PPI to obtain a well defined presentation.</p> <p><i>b.</i> On the PPI, select a small, well defined stationary target.</p> <p><i>c.</i> Using the controls on the target-designate control-indicator, set the steerable azimuth line and the range circle over the target on the PPI, and operate the DESIGNATE—ABANDON switch to DESIGNATE.</p> <p><i>d.</i> Have the TTR operator operate and hold the ACQUIRE switch until the range dials "hunt" about the range setting of the range circle.</p> <p>The designated target is bisected by the center vertical graticule on the B-scope indicator.</p> <p>The target-track-antenna circle remains bisected by the center vertical graticule.</p> <p>The electronic cross is superimposed over the designated target.</p>	<p>Loosen the three socket-head screws securing resolver B3 in the synchro assembly. Rotate the housing of resolver B3 to position the target under the center vertical graticule.</p> <p>Repeat step 8<i>k</i> above.</p> <p>Perform the procedures in table 12, step 6.</p>

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Table 26 (C). Weekly B-Scope Checks—Continued (U)

Step	Procedure	Corrective action
10.	<p>Continued</p> <p><i>e.</i> Rotate the azimuth handwheel 445 mils clockwise to position the target-track-antenna circle between the last two vertical graticules on the right side of the B-scope indicator.</p> <p align="center">The electronic cross is within the target-track-antenna circle.</p> <p><i>f.</i> Depress the REFRAME switch, and rotate the azimuth handwheel 445 mils counterclockwise to position the target-track-antenna circle between the last two vertical graticules on the left side of the B-scope indicator.</p> <p align="center">The electronic cross is within the target-track-antenna circle.</p> <p><i>g.</i> On the B-scope indicator, operate the REFRAME switch.</p> <p><small>Note. When the REFRAME switch is operated, an error of approximately one-fourth inch may be noted in the position of the target-track-antenna circle on the B-scope indicator. This condition is considered normal and is due to the required slack in the gear train in the synchro assembly.</small></p> <p><i>h.</i> On the video and mark mixer, set the PI MARKS switch to NOR.</p> <p><i>i.</i> On the target-designate control-indicator, set the TRACK CROSS switch to OFF.</p> <p><i>j.</i> Adjust the GAIN knob on the B-scope indicator and the PED ADJ variable resistor on the B-scope video amplifier for optimum video presentation.</p> <p><i>k.</i> Adjust the SYMBOL INT ADJ variable resistor on the B-scope video amplifier for desired intensity of the target-track-antenna circle.</p> <p><i>l.</i> Disconnect the VTVM, secure the B-scope indicator, and set the IND HV switch on the target-track-control power supply to OFF.</p>	<p>Adjust the SWP AMP variable resistor on the B-scope modulation-eliminator.</p> <p align="center">Refer to figure 34.</p> <p>(1) Adjust the SWP AMP variable resistor on the B-scope modulation-eliminator.</p> <p>(2) Repeat <i>e</i> and <i>f</i> above to minimize interaction.</p> <p align="center">Refer to figure 34.</p> <p align="center">Refer to figure 31.</p> <p align="center">Refer to figure 31.</p>
11.	<p>Deenergize the LOPAR transmitter.</p> <p>On the LOPAR auxiliary control-indicator, rotate the HV SUPPLY knob fully counterclockwise to the START position, and depress the HV SUPPLY—OFF switch.</p>	

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Table 27 (U). Weekly Strobe Channel Check (U)

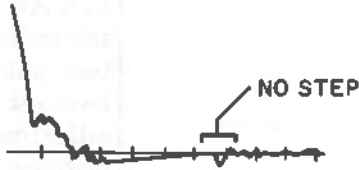
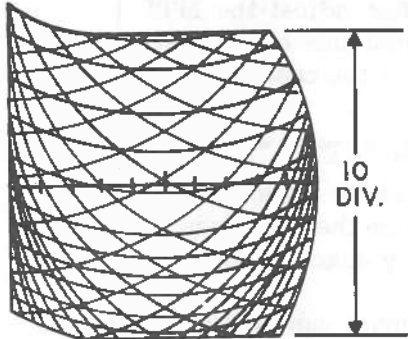
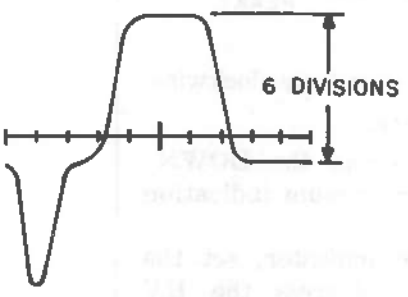
Step	Procedure	Corrective action
	Perform the procedures in table 9.	

Table 28 (C). Weekly MTI Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	<p>Prepare the LOPAR for the MTI checks.</p> <p>a. Perform the following procedures on the LOPAR control-indicator.</p> <p>(1) Set the ANT RPM switch to OFF.</p> <p>(2) Set the MTI switch to 360°.</p> <p>(3) Set the AJD—OFF switch to OFF.</p> <p>(4) Rotate the REC GAIN knob fully counterclockwise.</p> <p>(5) Rotate the STC knob fully counterclockwise.</p> <p>(6) On the STC, adjust the FLAT variable resistor fully counterclockwise.</p> <p>b. Obtain a well defined, properly centered presentation on the MTI oscilloscope by performing (1) through (4) below.</p> <p>(1) Set the NORMAL-ATBM switch on the video and mark mixer to NORMAL.</p> <p>(2) On the MTI oscilloscope, set the MTI CKT TEST switch to 1.</p> <p>(3) Adjust the INTENSITY knob until a sweep is visible on the face of the cathode-ray tube.</p> <p>(4) Adjust the FOCUS knob for a properly focused sweep, and adjust the HOR POS knob until the end of the MTI range is visible.</p>	
3.	<p>Check the MTI carrier level.</p> <p>a. (Deleted)</p> <p>b. On the LOPAR control-indicator, set the PROC—IS switch to off (center).</p> <p style="padding-left: 40px;">The CARRIER LEVEL meter on the MTI oscilloscope indicates 1.25 (center line).</p> <p>c. Set the PROC—IS switch to PROC.</p> <p style="padding-left: 40px;">The CARRIER LEVEL meter indicates 1.25 (center line).</p>	<p>Adjust the CHANN 2 CARR LEVEL ADJ variable resistor on the delay line driver.</p> <p style="padding-left: 40px;">Refer to figure 30.</p> <p>(1) Adjust the CHANN 1 CARR LEVEL ADJ variable resistor on the delay line driver.</p> <p>(2) Repeat b and c above to eliminate interaction.</p> <p style="padding-left: 40px;">Refer to figure 30.</p>


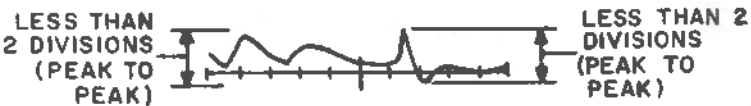
¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 28 (C). Weekly MTI Checks—Continued (U)

Step	Procedure	Corrective action
3.	<p>Continued</p> <p>d. Set the PROC—IS switch to off (center). There is no step at the end of the MTI range.</p> 	<p>Adjust the SW BAL variable resistor on the electronic gate. Refer to figure 30.</p>
4.	<p>Check the amplitude of the test pulse.</p> <p>a. Set the MTI CKT TEST switch to 2, and observe the MTI oscilloscope. The waveform is 10 divisions in amplitude.</p>  <p>b. Set the MTI CKT TEST switch to 3, and observe the MTI oscilloscope. Position the waveform by adjusting the VERT POS knob. The test pulse has an amplitude of 6 divisions.</p> 	<p>Adjust the GAIN knob on the MTI oscilloscope. Refer to figure 30.</p> <p>Adjust variable resistor R1, located in the director station group on the upper-right sliding frame, between connectors J44 and J45. Refer to figure 26.</p>
5.	<p>Check the MTI delay.</p> <p>a. Set the MTI CKT TEST switch to 4. b. On the acquisition-track synchronizer, check that the TEST switch is set to NORMAL.</p>	

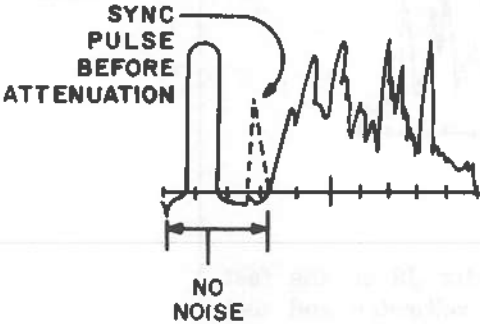
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Table 28 (C). Weekly MTI Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>The negative test pulse locks into the positive test pulse.</p> 	<p>Adjust the FREQ LOPAR variable resistor on the acquisition-track synchronizer fully clockwise. Adjust the FREQ LOPAR variable resistor counterclockwise until the negative test pulse locks into the positive test pulse, and continue the adjustment approximately 10 degrees farther and lock.</p> <p>Refer to figure 26.</p>
6.	<p>Check for the pip cancellation.</p> <ol style="list-style-type: none"> Set the MTI CKT TEST switch to 5. On the delay-line driver, adjust the MOD ADJ variable resistor fully counterclockwise. On the trigger pulse video amplifier, adjust the MTI delay network to minimize the amplitude of the pips at the leading and trailing edges of the cancelled test pulse. <p><i>Note.</i> The cancellation area of the test pulse can best be determined by first setting the MTI CKT TEST switch to 6 and then to 5.</p> <ol style="list-style-type: none"> On the delay-line driver, adjust variable capacitor C16 on the oscillator network to minimize the amplitude of the pips at the leading and trailing edges of the cancelled test pulse. Repeat <i>c</i> and <i>d</i> above until optimum cancellation is obtained. The resultant waveform should be equal to or less than the values indicated below.  <ol style="list-style-type: none"> Adjust the MOD ADJ variable resistor fully clockwise. 	
7.	<p>Energize the LOPAR through operate.</p> <ol style="list-style-type: none"> Set the ANT RPM switch to 5 and the DOWN/SCAN—UP switch to UP for a maximum indication on the ANT ELEV indicator. On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START, depress the HV SUPPLY—ON switch, and adjust the HV SUPPLY knob to obtain an indication of 30 milliamperes on the MAGNETRON meter. On the LOPAR control-indicator, rotate the REC GAIN knob fully clockwise past the first positive stop (in AGC). 	

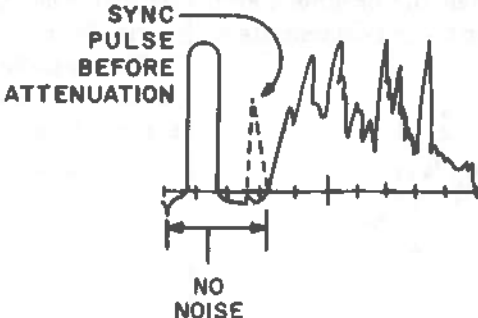
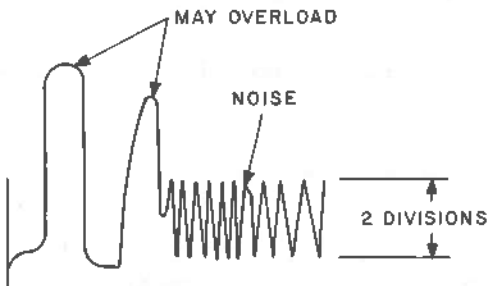
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Table 28 (C). Weekly MTI Checks—Continued (U)

Step	Procedure	Corrective action
8.	<p>Check the AGC voltages.</p> <p>a. Set the MTI CKT TEST switch to 6, and observe the waveform on the MTI oscilloscope.</p> <p>There is no noise between the preknock and sync pulses and the sync pulse is attenuated.</p>  <p>Adjust the GATE LENGTH variable resistor on the fast AGC amplifier. Optimum adjustment results in apparent attenuation of the sync pulse.</p> <p>Refer to figure 28.</p> <p>b. Connect the positive test lead of a voltmeter to the AGC TEST test point on the fast AGC amplifier and the negative test lead to any convenient ground point.</p> <p>The voltmeter indicates 20 volts.</p> <p>Adjust the AGC ADJ variable resistor on the fast AGC amplifier.</p> <p>Refer to figure 28.</p> <p>c. Remove the positive test lead from the AGC TEST test point, and connect it to the BIAS test point. Record the voltmeter indication.</p> <p>The voltmeter indicates a value between the limits of 27 and 40 volts.</p> <p>Refer to figure 28.</p> <p>d. On the LOPAR control-indicator, rotate the REC GAIN knob counterclockwise just past the first positive stop (not in AGC).</p> <p>The voltmeter indicates the same value as that measured in c above.</p> <p>Adjust the IF GAIN ADJ variable resistor on the fast AGC amplifier.</p> <p>Refer to figure 28.</p> <p>e. Disconnect the test leads and remove the multimeter or VTVM.</p>	
9.	<p>Check the STC FLAT adjustment.</p> <p>a. Remove connector P15 from connector J3 on the fast AGC amplifier.</p>	

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Table 28 (C). Weekly MTI Checks—Continued (U)

Step	Procedure	Corrective action
9.	<p>Continued</p> <p>On the MTI oscilloscope, there is no noise between preknock and sync, and the sync pulse is attenuated.</p>  <p>NO NOISE</p> <p>b. Connect connector P15 to connector J3 on the fast AGC amplifier, and remove the voltmeter and test leads.</p> <p>c. Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.</p>	<p>Adjust the FLAT variable resistor on the STC, located behind the acquisition control-indicator.</p> <p>Refer to figure 28.</p>
10.	<p>Check the MTI noise level.</p> <p>a. On the LOPAR control-indicator, rotate the REC GAIN knob fully clockwise (in AGC).</p> <p>a.1. Set the MTI CKT TEST switch to 7 and observe the MTI oscilloscope.</p> <p>The noise level is 2 divisions.</p>  <p>b. On the LOPAR control-indicator, operate the DOWN/SCAN—UP switch to DOWN/SCAN for a minimum indication on the ANT ELEV indicator.</p> <p>b.1. Set the HV SUPPLY knob to START, depress the HV SUPPLY—ON switch, and adjust the HV SUPPLY knob to obtain an indication of 30 milliamperes on the MAGNETRON meter.</p> <p>c. Set the MTI CKT TEST switch on the MTI oscilloscope to 8.</p> <p><i>Note.</i> If the video and mark mixer has been replaced, adjust variable resistors R85 and R61 fully clockwise and adjust variable resistor R43 to mid-position. The procedures in table 28.1 must be performed after the MTI checks are completed.</p>	<p>Adjust the MOD ADJ variable resistor on the delay-line driver.</p> <p>Refer to figure 30.</p>

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Table 28 (C). Weekly MTI Checks—Continued (U)

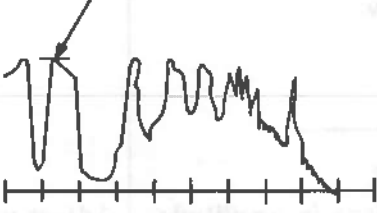
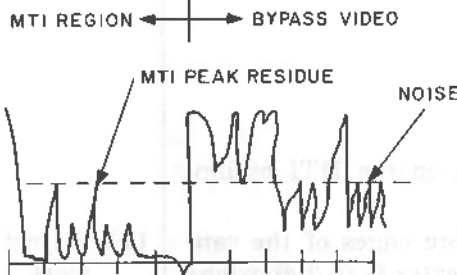
Step	Procedure	Corrective action
10.	<p>Continued</p> <p>d. Rotate the MTI VIDEO variable resistor on the MTI video amplifier fully counterclockwise; then adjust clockwise until limiting occurs on the positive portion of the test pulse.</p> <p>e. Adjust the GAIN knob on the MTI oscilloscope to adjust the amplitude of the limited test-pulse for a convenient number of vertical divisions.</p> <p>REFERENCE LEVEL (LIMITING)</p>  <p>f. Set the MTI CKT TEST switch to 9.</p> <p>On the MTI oscilloscope, the amplitude of the MTI peak residue is equal to one-half the number of reference divisions set in e above.</p> <p>MTI REGION ← → BYPASS VIDEO</p>  <p><i>Note.</i> It may be necessary to operate the ANT ELEV switch to UP for a maximum indication to establish the noise level in the bypass region.</p> <p>The noise in the bypass region is equal to one-half the number of reference divisions in e above.</p> <p>There is no step at the end of the MTI region.</p>	<p><i>Note.</i> If the test pulse appears cancelled, adjust the 360° RANGE variable resistor until the normal test pulse appears.</p> <p>Refer to figure 30.</p> <p>Adjust the MTI VIDEO variable resistor on the MTI video amplifier.</p> <p>Refer to figure 30.</p> <p>Adjust the BY PASS VID GAIN variable resistor on the fast AGC amplifier.</p> <p>Refer to figure 30.</p> <p>Adjust the SW BAL variable resistor on the electronic gate.</p> <p>Refer to figure 30.</p>
11.	(Deleted)	
12.	<p>Perform the cancellation ratio check.</p> <p>a. (Deleted)</p>	

Table 28 (C). Weekly MTI Checks—Continued (U)

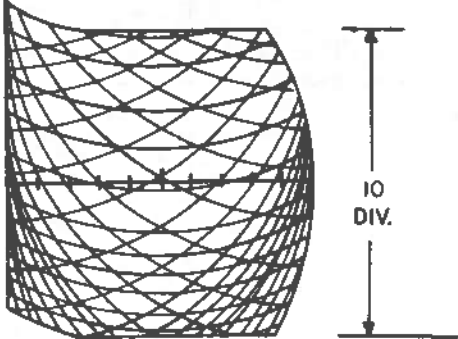
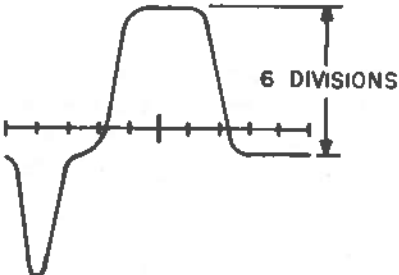
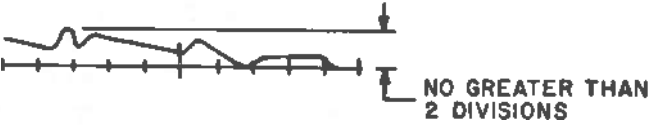
Step	Procedure	Corrective action
12.	<p>Continued</p> <p>b. Set the MTI CKT TEST switch to 2, and adjust the GAIN knob on the MTI oscilloscope for a waveform of 10 divisions in amplitude.</p>  <p>10 DIV.</p> <p>c. Set the MTI CKT TEST switch to 3.</p> <p>The test pulse is 6 divisions in amplitude.</p>  <p>6 DIVISIONS</p> <p>d. (Deleted)</p> <p>e. (Deleted)</p> <p>f. Set the MTI CKT TEST switch on the MTI oscilloscope to 10.</p> <p>The leading and trailing edges of the cancelled pulse are not greater than 2 divisions (peak to peak).</p>  <p>NO GREATER THAN 2 DIVISIONS</p> <p>g. (Deleted)</p> <p>h. (Deleted)</p> <p>i. On the LOPAR control-indicator, set the MTI switch to OFF.</p>	<p>Adjust variable resistor R1 located in the director station group on the upper-right sliding frame between connectors J44 and J45.</p> <p>Refer to figure 26.</p> <p>(1) Adjust the MTI delay network on the trigger-pulse video-amplifier.</p> <p>Refer to figure 30.</p> <p>(2) Adjust variable capacitor C16 on the oscillator network on the delay-line driver.</p> <p>Refer to figure 30.</p> <p>(3) Repeat (1) and (2) above to minimize the cancelled residue.</p>

Table 28 (C). Weekly MTI Checks—Continued (U)

Step	Procedure	Corrective action
13.	Deenergize the LOPAR transmitter. ² Perform the procedures in table 7, step 5.	

²Omit this step if the checks in the succeeding tables are to be performed.

Table 28.1 (U). Weekly Video Level Adjustments (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 28. ¹	
2.	Energize the LOPAR system through operate. ¹ Perform the procedures in table 7, steps 1 and 2.	
2.1	Energize the auxiliary radar through operate. Energize the HIPAR or AAR through operate as prescribed in the appropriate TM.	
3.	Prepare for the video level adjustment. <ul style="list-style-type: none"> a. Perform the following procedure on the LOPAR control-indicator. <ul style="list-style-type: none"> (1) Set the ANT RPM switch to 10. (2) Set the AJD—OFF switch to OFF. (3) Set the JS ONLY—OFF switch to OFF. (4) Set the MTI switch to OFF. (5) Set the PROC—IS switch to off (center). (6) Rotate the REC GAIN knob to the first positive stop (not in AGC). (7) Operate the DOWN/SCAN—UP switch to DOWN/SCAN to obtain a minimum indication on the ANT ELEV indicator. b. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR. c. On the video and mark mixer, set the switches as indicated below. <ul style="list-style-type: none"> (1) Set the ACQ MARKS switch to OFF. (2) Set the MARKS switch to NORM. (3) Set the NORM—ATBM switch to NORM. d. On the video and mark mixer, set the variable resistors listed in (1) through (6) below to midposition. <ul style="list-style-type: none"> (1) ACQ RG MK (2) R15 (3) R43 (4) R61 (5) R85 (6) HIPAR/ARR. 	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
3.	Continued	
	e. Using a T-connector, sync an oscilloscope to connector J22 in the director station group (HIPAR/AAR or LOPAR preknock).	
4.	Perform the video level adjustments.	
	<i>Note.</i> All controls and indicators are located on the video and mark mixer.	
	a. Using the oscilloscope, monitor the B-scope and PI video at the rear of connector J10 on the video and mark mixer.	
	The video signal peaks are 3 volts with a signal-to-noise ratio of at least 3 to 1.	Adjust variable resistor R61 on the video and mark mixer. Refer to figure 30.
	b. On the video and mark mixer, set the NORM-ATBM switch to ATBM.	
	c. Set the RADAR SELECT switch to HIPAR/AAR.	
	d. Connect the oscilloscope to the rear of connector J11 on the video and mark mixer. Adjust the oscilloscope to operate on internal sync.	
	The noise level of the signal is equal to that present in a above and the signal-to-noise ratio is at least 3 to 1.	Adjust variable resistor R85 on the video and mark mixer. Refer to figure 30.
	e. On the IFF control-indicator, set the RADAR SELECT switch to LOPAR.	
	f. On the video and mark mixer, set the NORM-ATBM switch to NORM.	
	g. Connect the oscilloscope to the rear of connector J7 on the video and mark mixer and adjust the oscilloscope to operate on external sync.	
	The noise level of the signal is equal to that present in a above and the signal-to-noise ratio is at least 3 to 1.	Adjust variable resistor R43 on the video and mark mixer. Refer to figure 30.
	h. On the IFF control-indicator, set the RADAR SELECT switch to HIPAR/AAR.	
	The noise level of the signal is equal to that present in a above and the signal-to-noise ratio is at least 3 to 1.	Adjust the HIPAR/AAR VID variable resistor. Refer to figure 30.
	i. Set the RADAR SELECT switch to LOPAR.	
5.	Perform the PPI video adjustments.	
	a. On the LOPAR control-indicator, set the MTI switch to 360.	
	b. On the MTI oscilloscope, insure that the MTI CKT TEST switch is set to 10.	

Table 28.1 (U). Weekly Video Level Adjustments—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>c. On the PPI, set the RANGE switch to 250,000 and adjust the INTENSITY knob until the sweep trace is barely visible.</p> <p>d. Adjust the PPI GAIN knob to obtain a normal presentation of MTI video (Clutter video within the MTI region is attenuated and moving targets are observed in the clutter area).</p> <p style="padding-left: 40px;">The MTI presentation on the PPI extends to the desired range.</p> <p style="padding-left: 40px;">The noise in the bypass region is barely discernible.</p> <p style="padding-left: 40px;">No sharp definition is observed between the MTI and bypass regions.</p> <p>e. Set the MTI switch to OFF.</p> <p>f. Have the TTR operator energize the TTR through low voltage as prescribed in the power checks in TM 9-1430-256-12/1 and set the TTR range to 150,000 yards.</p> <p>g. On the video and mark mixer, set the ACQ MARKS switch to ON.</p> <p>h. On the video and mark mixer, adjust variable resistor R15 until the track electronic cross has the desired intensity.</p> <p>i. On the target-designate control-indicator, rotate the range handwheel to obtain an indication of 100,000 yards on the RANGE dial.</p> <p>j. On the video and mark mixer, adjust the ACQ RG MARK variable resistor until the acquisition range circle is barely visible on the PPI.</p>	<p>Adjust the 360° RANGE variable resistor on the electronic gate.</p> <p style="padding-left: 40px;">Refer to figure 30.</p> <p>Adjust the BY PASS VID GAIN variable resistor on the fast AGC amplifier.</p> <p style="padding-left: 40px;">Refer to figure 30.</p> <p>Adjust the SW BAL variable resistor on the electronic gate.</p> <p style="padding-left: 40px;">Refer to figure 30.</p>
6.	<p>Deenergize the LOPAR transmitter.²</p> <p>Perform the procedures in table 7, step 5.</p>	

²Omit this step if the checks in the succeeding tables are to be performed.

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Table 29 (U). Weekly Interference-Suppressor and Jam-Strobe-Gain Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 11.	

Table 30 (U). Weekly STC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1.¹	
2.	Perform the STC checks and adjustments. a. Perform the following procedures on the LOPAR control-indicator. (1) Set the MTI switch to OFF. (2) Set the AJD—OFF switch to OFF. (3) Set the PROC—IS switch to off (center). (4) Rotate the STC knob fully clockwise. (5) Rotate the REC GAIN knob clockwise to the first positive stop (not in AGC). b. Set the MTI CKT TEST switch on the MTI oscilloscope to 8. The receiver noise just begins to appear at the extreme end of the sweep on the MTI oscilloscope. c. On the PPI, adjust the GAIN and INTENSITY knobs for a normal presentation. d. Adjust the STC knob slowly counterclockwise. On the PPI, observe that the range at which noise appears decreases smoothly to zero. e. On the MTI oscilloscope, set the MTI CKT TEST switch to 10.	Adjust the DURATION variable resistor on the STC. Refer to figure 28.

¹Omit this step if the checks in the preceding tables have been performed in sequence.

Table 31 (C). Weekly Remote Synchronization Checks (U)

Step	Procedure	Corrective action
	<i>Note.</i> The LOPAR level and orientation checks as prescribed in table 17, the target-tracking-radar collimation checks as prescribed in TM 9-1430-256-12/1, and the complete PPI presentation checks and adjustments as prescribed in table 26 must have been completed prior to performing the checks below.	
1.	Perform the procedures in table 1.¹	
2.	Prepare for the orientation checks. a. Energize the AAR or HIPAR system thorough operate as prescribed in the appropriate TM. b. Energize the target-tracking radar system through operate as prescribed in TM 9-1430-256-12/1.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 31 (C). Weekly Remote Synchronization Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>c. Energize the LOPAR through operate as prescribed in table 7, step 2.</p> <p>d. (Deleted)</p> <p>e. On the LOPAR control-indicator, rotate the REC GAIN knob clockwise to the first positive stop (not in AGC).</p> <p>f. On the target-designate control-indicator, set the TRACK CROSS switch to ON.</p> <p>g. On the video and mark mixer, set the MARKS switch to TEST.</p> <p>h. On the PPI, set the RANGE switch to 250,000, and adjust the PPI controls to obtain a normal operational presentation.</p> <p>i. On the target-designate control-indicator, rotate the range handwheel for an indication of 200,000 yards on the RANGE dial.</p> <p>j. Perform the procedure in (1) through (3) below on systems with HIPAR.</p> <p>(1) On the HIPAR auxiliary control-indicator, depress the TEST ENABLE switch-indicator.</p> <p style="padding-left: 40px;">The TEST ENABLE switch-indicator illuminates (white).</p> <p style="padding-left: 40px;">The HIPAR OPERATE switch-indicator illuminates (green).</p> <p>(2) On the HIPAR control-indicator, set the RECEIVER switch to NORMAL, CLUTTER GATE switch to NORMAL, and the DISPLAY switch to NORMAL.</p> <p>(3) Rotate the HIPAR RECEIVER GAIN knob fully clockwise.</p>	<p>Refer to figure 42 in TM 9-1430-254-20/5.</p>
3.	<p>Check for coincidence of the range circles.</p> <p>On the IFF control-indicator, alternately set the RADAR SELECT switch from LOPAR to HIPAR/AAR.</p> <p style="padding-left: 40px;">The LOPAR and HIPAR/AAR range circles coincide at 0, 1600, 3200, and 4800 mils on the PPI.</p> <p style="padding-left: 40px;">The range circle for HIPAR/AAR presentation does not exhibit any distortion (ripple on the range mark or squaring of the sweep).</p>	<p>On the auxiliary resolver amplifier, adjust variable resistors R15 and R27.</p> <p style="padding-left: 40px;">Refer to figure 33.</p> <p>a. On the filter assembly in the auxiliary acquisition interconnecting group, set S1C to position 4 and S2L to position 5.</p> <p>b. Adjust S2L to reduce the distortion on the PPI.</p>

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Table 31 (C). Weekly Remote Synchronization Checks—Continued (U)

Step	Procedure	Corrective action
3.	Continued	<p>c. If the indication is still abnormal, set S1C to position 3 and repeat (2) above.</p> <p>d. If more than one combination of switch settings minimizes the distortion, set S1C and S2L to the combination that gives the lowest ratio of the S2L/S1C positions.</p> <p>Refer to figure 33.</p>
4.	<p>Check the video intensity.</p> <p>Alternately view the HIPAR/AAR and LOPAR presentations on the PPI.</p> <p>The intensity and gain on the PPI do not require adjustment when switching from LOPAR to HIPAR/AAR.</p>	<p>On the video and mark mixer, adjust the HIPAR/AAR VIDEO variable resistor.</p> <p>Refer to figure 30.</p>
5.	<p>Check the azimuth orientation of the video.</p> <p>a. By alternately viewing the HIPAR/AAR and LOPAR presentations on the PPI, measure and record the amount and direction of azimuth displacement between the HIPAR/AAR and LOPAR video.</p> <p><i>Note.</i> It may be necessary to use the steerable azimuth line to determine the direction and amount of displacement.</p> <p>The HIPAR/AAR and LOPAR video presentations are displaced by 25 mils or less.</p> <p>a.1. Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a well-defined presentation.</p> <p>a.2. With the RADAR SELECT switch set to LOPAR, designate a well-defined stationary target.</p> <p>b. Have the TTR operator operate and hold the ACQUIRE switch until the range dials hunt about the designated coordinates.</p> <p>The designated video is in the center of the target track antenna circle on the B-scope.</p> <p>c. Set the RADAR SELECT switch to HIPAR/AAR and observe the presentation on the B-scope.</p> <p>The designated video remains at the same azimuth as that observed in b above.</p>	<p>Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly.</p> <p>Refer to figure 33.</p> <p>Perform the procedures in table 26.</p> <p>Adjust the HIPAR ZERO ADJUST knob on the differential resolver assembly.</p> <p>Refer to figure 33.</p>

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Table 31 (C). Weekly Remote Synchronization Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>The target range for the LOPAR and HIPAR/AAR presentations is identical.</p> <p><i>c.1.</i> Set the RADAR SELECT switch to LOPAR and have the TTR operator acquire the designated target in automatic.</p> <p>The electronic cross is centered over the target video on the precision indicator.</p> <p><i>d.</i> Set the RADAR SELECT switch to HIPAR/AAR and note the position of the video on the B-scope.</p> <p>The electronic cross is directly centered over the HIPAR/AAR video.</p> <p><i>e.</i> Perform the procedures in (1) through (7) below on systems with HIPAR. Observe the presentation on the PPI.</p> <p>(1) On the HIPAR control-indicator, set the DISPLAY switch to STAGGER OFF.</p> <p>The HIPAR video remains in the same position as that noted in <i>d</i> above.</p> <p>(2) On the HIPAR control-indicator, set the CLUTTER GATE switch to OFF.</p>	<p>(1) Adjust the variable delay line in the auxiliary acquisition-control interconnecting group.</p> <p>Refer to figure 26.</p> <p>(2) If the indication is still abnormal on systems with AAR, adjust delay line Z1101A in the AAR radar modulator.</p> <p>(3) If the indication is still abnormal on systems with HIPAR, perform the system timing checks in the HIPAR check procedures TM.</p> <p>Perform the procedures in table 12.</p> <p>(1) To correct an error in azimuth, repeat <i>a</i> through <i>c</i> above.</p> <p>(2) To correct an error in range, repeat <i>c</i> above. If the indication is still abnormal, adjust the FREQ HIPAR variable resistor on the acquisition-track synchronizer.</p> <p>Refer to figure 46 in TM 9-1430-256-20/3.</p> <p>Perform the HIPAR stagger checks.</p>

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Table 31 (C). Weekly Remote Synchronization Checks—Continued (U)

Step	Procedure	Corrective action
5.	<p>Continued</p> <p>The HIPAR video remains in the same position as that noted in <i>d</i> above.</p> <p>(3) Set the CLUTTER GATE switch to ALL RANGE.</p> <p>The HIPAR video remains in the same position as that noted in <i>d</i> above.</p> <p>(4) Set the CLUTTER GATE and DISPLAY switches to NORMAL.</p> <p>(5) On the HIPAR power control-indicator, operate the HIGH VOLTAGE switch to LOWER until the POWER OUTPUT meter on the HIPAR auxiliary control-indicator indicates 5 kilowatts.</p> <p>(6) Operate the HIGH VOLTAGE switch to RAISE until the POWER OUTPUT meter indicates 10 kilowatts.</p> <p>The HIPAR POWER indicator light on the HIPAR control-indicator illuminates.</p> <p>(7) Operate the HIGH VOLTAGE switch to RAISE to set the HIPAR to the correct operational power output.</p> <p><i>f.</i> On the PPI, set the RANGE switch to 350,000.</p> <p><i>g.</i> On the video and mark mixer, set the MARKS switch to NOR.</p>	<p>Perform the HIPAR system timing checks.</p> <p>Perform the HIPAR system timing checks.</p>
6.	<p>Check the adjustment of the PPI at maximum range.</p> <p>Rotate the range handwheel to obtain an indication of 350,000 on the RANGE dial on the target-designate control-indicator.</p> <p>On the PPI, the sweep disappears 1/4 inch beyond the range circle.</p> <p>The acquisition azimuth line extends to the edge of the PPI.</p>	<p><i>a.</i> Adjust the PWR SENS variable resistor on the alarm control, at the rear of the acquisition control-indicator, fully counterclockwise.</p> <p><i>b.</i> Adjust the PWR SENS variable resistor slowly clockwise until the white HIPAR POWER indicator light illuminates. Continue the adjustment approximately 20 degrees further and lock.</p> <p>Refer to figure 44 in TM 9-1430-254-20/5.</p> <p>Adjust variable resistor R18 on the PPI video amplifier.</p> <p>Refer to figure 33.</p> <p>Adjust the MARK LENGTH HIPAR variable resistor on the precision mark generator.</p> <p>Refer to figure 32.</p>

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Step	Procedure	Corrective action
	Perform the procedures in table 12.	

Table 33 (U). Weekly SIF/IFF Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 13.	

Table 34 (U). Weekly Communication Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 14.	

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Table 37 (U). Monthly Pressurization and Dehumidification Checks—Continued (U)

Step	Procedure	Corrective action
2.	Continued	
	<p>i. Close the valve on the lower portion of the rotary coupler, and open the valve on the waveguide on the upper portion of the rotary coupler.</p> <p>j. Perform the procedures in <i>g</i> above for 10 to 15 minutes.</p>	
3.	Check the operation of the pressurization unit.	
	<p>a. Close the valve on the waveguide on the upper portion of the rotary coupler.</p> <p style="padding-left: 40px;">The compressor stops when the PRESS meter indicates a value within the limits of 13 to 17. Record the indication.</p>	Refer to figure 38.
	<p>b. On the compressor, set the ON—OFF switch to OFF, and set the antenna-disable switch to the acquisition-antenna pedestal to ON. Allow a 3-minute time lapse before proceeding.</p>	
	<p>c. Set the antenna-disable switch to OFF.</p> <p style="padding-left: 40px;">The PRESS meter indication on the compressor has not decreased more than 5 psi from the value recorded in <i>a</i> above.</p>	Refer to figure 38.
	<p>d. On the compressor, set the ON—OFF switch to ON.</p>	
4.	Check the operation of the dehumidifier.	
	<p>a. Observe the HUMIDITY INDICATOR.</p> <p style="padding-left: 40px;">The HUMIDITY INDICATOR is dark blue.</p>	Allow the dehumidifier to operate for two full cycles (6 hours), and recheck that the HUMIDITY INDICATOR is blue. If the procedure is still abnormal, perform the procedures in table 37.
	<p>b. On the acquisition-antenna pedestal, set the antenna-disable switch to ON.</p>	
	<p>c. Set the ANT RPM switch to OFF.</p>	

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Table 38 (U). Monthly Antenna-Voltage, Current, and AFC Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 19, steps 1 through 5.	
2.	<p>AFC modulator balance adjustment.</p> <p>a. At the acquisition receiver-transmitter, gain access to the acquisition AFC. Disconnect the coaxial cable from IF input connector J1.</p> <p>b. Depress and hold MOD BAL switch S1 on the acquisition AFC.</p> <p style="padding-left: 40px;">There is no creep on the micrometer dials.</p> <p>c. Replace the coaxial cable to IF connector J1.</p> <p style="padding-left: 40px;">Micrometer dials settle and remain steady.</p>	<p>Adjust MOD BAL variable resistor R43.</p> <p style="padding-left: 40px;">Refer to figure 29.</p> <p>Repeat 2 above.</p>
3.	<p>Relay amplifier adjustment.</p> <p>a. Depress and hold the AUTO FREQ CONTROL—RELEASE switch.</p> <p style="padding-left: 40px;">The micrometer dials start searching.</p> <p>b. Release the AUTO FREQ CONTROL—RELEASE switch.</p>	<p>Turn RELAY AMP ADJ variable resistor R66 fully clockwise.</p> <p>Depress and hold the AUTO FREQ CONTROL—RELEASE switch and adjust RELAY AMP ADJ variable resistor slowly counterclockwise to 1/8-turn past the point where the micrometer dials start to search.</p> <p style="padding-left: 40px;">Refer to figure 29.</p>
4.	Perform the procedures in table 19, step 6.	

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Table 39 (U). Monthly AFC Discriminator Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 20.	

Table 40 (U). Monthly Transmitter-Frequency and Power-Measurement Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 21.	

*Table 41. (Deleted)**Table 42 (U). Monthly Receiver-Sensitivity Check (U)*

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Prepare for the receiver-sensitivity check at the antenna. a. On the LOPAR control-indicator, rotate the REC GAIN knob clockwise to the first positive stop (not in AGC).	

¹ Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 42 (U). Monthly Receiver-Sensitivity Check—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>b. Operate and hold the DOWN/SCAN—UP switch to obtain a maximum indication on the ANT ELEV dial.</p> <p>c. Set the PROC—IS switch to off (center).</p> <p>d. Set the AJD—OFF switch to OFF.</p> <p>e. Gain access to the control interconnecting group. Disconnect P54 from connector J24.</p> <p>f. At the director station group, disconnect the coaxial connector from connector J21. Connect a short jumper cable between connectors J19 and J21.</p> <p><i>Note.</i> Refer to the manufacturer's instructions for operational procedures for the signal generator. Allow the signal generator to warm up for 30 minutes before performing this check.</p> <p>g. Obtain signal generator TS-403/U or the equivalent. Use coaxial cable CG-92B/U to connect the output of the signal generator to connector J1 on the directional coupler in the acquisition receiver-transmitter.</p> <p>h. Obtain a test oscilloscope, and connect a coaxial cable between the input to the oscilloscope and the VIDEO connector on the acquisition RF power-supply control. On the oscilloscope, set the SYNC SELECTOR switch to EXTERNAL.</p> <p>i. Obtain T-connector UG/274, and connect it to the SYNC connector on the acquisition RF power-supply control.</p> <p>j. Connect a coaxial cable between the T-connector in i above and the SYNC connector on the oscilloscope.</p> <p>k. Connect a coaxial cable between the T-connector in i above and the SYNC connector on the signal generator.</p>	
3.	<p>Check the sensitivity of the main channel.</p> <p>a. On the signal generator, perform the ZERO SET and POWER SET adjustments as outlined in the manufacturer's instructions. Set the SIGNAL FREQUENCY dial to 3300 megacycles, the OUTPUT ATTEN knob to 0 db, and the SYNC SELECTOR switch to POS. Adjust the PULSE WIDTH knob to 1.5 microseconds. Turn the PULSE RATE knob fully clockwise, and adjust the PULSE DELAY knob to approximately 100 microseconds. Set the function switch to INT.</p> <p><i>Note.</i> In b below, insure that the preselector is not tuned to a sideband.</p> <p>b. Manually tune the local oscillator micrometer dial to obtain a pulse of maximum amplitude on the oscilloscope.</p> <p>c. While observing the pulse on the oscilloscope, adjust the OUTPUT ATTEN knob on the signal generator until the pulse amplitude is equal to the amplitude of the noise.</p>	

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Table 42 (U). Monthly Receiver-Sensitivity Check—Continued (U)

Step	Procedure	Corrective action
3.	Continued d. Record the indication on the OUTPUT ATTEN dial. Add this figure to the attenuation value stamped on the directional coupler and the attenuation of the signal-generator-output cable. <i>Note.</i> The attenuation of cable CG-92B/U is a total of 1.25 db. The total attenuation should be greater than 100 db. e. Repeat a through d above with the SIGNAL FREQUENCY dial on the signal generator set to 3100 and 3500 megacycles. Perform the ZERO SET and POWER SET adjustments after each frequency setting.	Perform the procedures in table 61.
4.	Check the sensitivity of the AJD channel. a. On the LOPAR control-indicator, set the AJD—OFF switch to AJD. b. Perform the procedures in step 3 above for the AJD channel.	
5.	Return the LOPAR to normal operation. a. Disconnect all the test cables from the acquisition receiver-transmitter. b. Connect connector P54 to connector J24 in the auxiliary acquisition-control interconnecting group. c. Disconnect the jumper cable connected between connectors J19 and J21 in the director station group, and connect the coaxial connector to J21. d. On the LOPAR control-indicator, set the AJD—OFF switch to OFF.	

Table 43 (U). Monthly Antenna-Coverage Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 2.	

Table 44 (U). Monthly Precision-Indicator Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 24.	

Table 45 (U). Monthly PPI Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 25.	

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Table 46 (U). Monthly B-Scope Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 26.	

Table 47 (U). Monthly Strobe-Channel Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 9.	

Table 48 (U). Monthly MTI Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 28.	
2.	Perform the MTI coverage adjustments. <ol style="list-style-type: none"> On the LOPAR control-indicator, set the ANT RPM switch to 5; rotate the REC GAIN knob fully clockwise against the first positive stop (not in AGC); and rotate the STC knob fully clockwise. Adjust the INTENSITY and GAIN knobs on the PPI for a well defined presentation. Note the position of the BY PASS VID GAIN variable resistor on the fast AGC amplifier. Adjust the BY PASS VID GAIN variable resistor until a high level of noise is observed on the PPI. On the LOPAR control-indicator, set the MTI switch to SECTOR. <p style="text-align: center;">The desired MTI sector is observed on the PPI.</p> Set the MTI switch to 360°. <p style="text-align: center;">The desired 360° MTI range is observed on the PPI.</p> Reset the BY PASS VID GAIN variable resistor to the setting noted in <i>c</i> above. On the LOPAR control-indicator, set the MTI switch to OFF. 	<ol style="list-style-type: none"> Adjust the SECTOR RANGE and SECTOR WIDTH variable resistors on the electronic gate. Perform the procedures in table 64. Refer to figure 30. <p>Adjust the 360° RANGE variable resistor on the electronic gate. Refer to figure 30.</p>
3.	Deenergize the LOPAR transmitter.¹ <p>On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START, and depress the HV SUPPLY — OFF switch.</p>	

¹Omit this step if the checks in the succeeding tables are to be performed.

CONFIDENTIAL*Table 48.1 (U). Monthly Video Level Adjustments (U)*

Step	Procedure	Corrective action
	Perform the procedures in table 28.1.	

Table 49 (U). Monthly Interference-Suppressor and Jam-Strobe-Gain Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 11.	

Table 50 (U). Monthly STC Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 30.	

*Table 51. (Deleted)**Table 52 (C). Monthly Acquisition Range Checks (U)*

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Perform the preliminary checks. <i>Note.</i> This check should be performed after the range-zero check has been completed at the target-tracking radar system. <i>a.</i> Have the target-tracking-radar (TTR) operator energize the target-tracking-radar system through low voltage as prescribed in TM 9-1430-256-12/1. <i>Note.</i> Allow 30 minutes for the target-tracking radar system to warm up. <i>b.</i> On the PPI, set the RANGE switch to 250,000.	

¹Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

Table 52 (C). Monthly Acquisition Range Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>c. Set the ANT RPM switch on the LOPAR control-indicator to 10, and adjust the INTENSITY and GAIN knobs on the PPI and precision-indicator for a clear presentation.</p> <p>d. On the target-designate control-indicator, set the TRACK CROSS switch to ON and the PI MARKS switch on the video and mark mixer to TEST.</p> <p>e. Adjust the azimuth knob to aline the acquisition azimuth mark with the azimuth line of the electronic cross on the PPI.</p>	
3.	<p>Perform the range-zero checks.</p> <p>a. Have the TTR operator set the target-track-radar range dial to 20,000 yards.</p> <p>b. On the target-designate control-indicator, rotate the range handwheel for a reading of 20,000 yards on the RANGE dial.</p> <p style="padding-left: 40px;">The acquisition-range mark and the tracking-range mark coincide on the precision-indicator.</p> <p>c. Position the target and acquisition range dials to 200,000 yards.</p> <p style="padding-left: 40px;">The acquisition-range mark and the tracking-range mark coincide on the precision-indicator.</p>	<p>Adjust the ZERO variable resistor on the acquisition-range generator.</p> <p>Refer to figure 32.</p>
4.	<p>Perform the manual rate check.</p> <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 5.</p> <p>b. On the target-designate control-indicator, set the MAN—AID switch to MAN.</p> <p>c. Remove the dust cap from the shaft end opposite the driving pinion on motor B4.</p> <p>d. Depress and hold balance switch S7.</p> <p style="padding-left: 40px;">Shaft rotation on motor B4 should be less than one revolution every 45 seconds.</p> <p>e. Release switch S7, and observe the shaft on motor B4.</p> <p style="padding-left: 40px;">Shaft rotation should be less than one revolution every 45 seconds.</p>	<p>Adjust the RATE variable resistor on the acquisition-range generator. Repeat a through c above.</p> <p>Adjust the BAL 1 variable resistor.</p> <p>Refer to figure 32.</p> <p>Adjust the BAL 2 variable resistor</p> <p>Refer to figure 32.</p>

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Table 52 (C). Monthly Acquisition Range Checks—Continued (U)

Step	Procedure	Corrective action
4.	<p>Continued</p> <p><i>f.</i> On the LOPAR control-indicator, set the ANT RPM switch to 10, 15, and back to 5. Observe the shaft on motor B4.</p> <p style="padding-left: 40px;">Shaft rotation should be less than one revolution every 45 seconds.</p> <p><i>g.</i> Rotate the range handwheel 10 turns clockwise, then 10 turns counterclockwise.</p> <p style="padding-left: 40px;">The range-dial indication moves 25,000 to 33,500 yards (increasing in range for clockwise rotation and decreasing for counterclockwise rotation).</p> <p><i>h.</i> Set the ANT RPM switch to 10 and repeat <i>g</i> above.</p> <p style="padding-left: 40px;">The range-dial indication moves 12,500 to 17,000 yards.</p> <p><i>i.</i> Set the ANT RPM switch to 15 and repeat <i>g</i> above.</p> <p style="padding-left: 40px;">The range-dial indication moves 7,500 to 10,500 yards.</p> <p><i>j.</i> If the RANGE RATE variable resistor is adjusted in <i>h</i> and <i>i</i> above, repeat <i>f</i> through <i>i</i> above to eliminate interaction.</p>	<p>Refer to figure 32.</p> <p>Adjust the RANGE RATE variable resistor.</p> <p>Refer to figure 32.</p> <p>Adjust the RANGE RATE variable resistor.</p> <p>Refer to figure 32.</p> <p>Adjust the RANGE RATE variable resistor.</p> <p>Refer to figure 32.</p>
5.	<p>Perform the aided-rate check.</p> <p><i>a.</i> On the target-designate control-indicator, set the MAN—AID switch to AID.</p> <p style="padding-left: 40px;">Shaft rotation should be less than one revolution every 45 seconds.</p> <p><i>b.</i> On the LOPAR control-indicator, set the ANT RPM switch to 5.</p> <p><i>c.</i> Rotate the range handwheel 6 or more turns clockwise, and time for 10 seconds.</p> <p style="padding-left: 40px;">The range changes between 12,500 and 18,500 yards in 10 seconds.</p>	<p>*Loosen the screw on variable resistor R3 and adjust the mechanical adjustment.</p> <p>Refer to figure 32.</p> <p>Refer to figure 32.</p>

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Table 52 (C). Monthly Acquisition Range Checks—Continued (U)

Step	Procedure	Corrective action
5.	Continued <i>d.</i> On the target-designate control-indicator, set the MAN—AID switch to MAN and then to AID. Repeat <i>c</i> above for counterclockwise rotation. <i>e.</i> Set the MAN—AID SWITCH to MAN.	
6.	Perform the slew-rate check. <i>a.</i> On the target-designate control-indicator, operate the SLEW switch to IN. <div style="text-align: center;">The rate of change is between 29,500 and 40,500 yards per second.</div> <i>b.</i> Operate the SLEW switch to OUT. <div style="text-align: center;">The rate of change is the same as <i>a</i> above but the direction is reversed.</div> <i>c.</i> Replace the dust cover on motor B4.	Refer to figure 32.

Table 53 (U). Monthly System-Acquire Checks (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 12.	
2.	Prepare for the aided checks. <i>a.</i> On the target-designate control-indicator, operate the DESIGNATE—ABANDON switch to DESIGNATE. <i>b.</i> Set the MAN—AID switch to MAN. <i>c.</i> Have the target-tracking-radar (TTR) operator set the range MAN—ACQUIRE AID—TRACK AID—AUTO and azimuth MAN—AID—AUTO switches on the target-antenna control group to MAN. <i>d.</i> Operate the ACQUIRE switch. <small><i>Note.</i> The target-track-radar range-balance checks must be performed prior to performing steps 3 and 4 below.</small>	
3.	Perform the aided checks. <i>a.</i> Set the acquisition- and target-tracking-range radars to the same range. <i>b.</i> On the target-designate control-indicator, set the MAN—AID switch to AID. <div style="text-align: center;">The RANGE dial remains stationary.</div>	Perform the procedures in table 52.

CONFIDENTIAL*Table 55 (U). Monthly SIF/IFF Checks (U)*

Step	Procedure	Corrective action
	Perform the procedures in table 13.	

Table 56 (U). Monthly Communication Checks (U)

Step	Procedure	Corrective action
	Perform the procedures in table 14.	

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Section V (U). NONPERIODIC CHECK PROCEDURES*Table 57 (U). Nonperiodic Interlock Checks (U)*

Step	Procedure	Corrective action
1.	Check that all doors, drawers, and panels of the acquisition-radar system are closed properly.	Refer to figure 22.
2.	On the acquisition-power control-panel, set the MAIN POWER, PRESENTATION POWER, and BARBETTE AC POWER switches to ON. The amber INTLK indicator light illuminates.	
3.	Open and close the acquisition-power control-panel and each door of the director station group. The INTLK indicator light extinguishes each time a panel or a door is opened and illuminates when it is closed, or when the INTLK OVERRIDE switch is operated.	Refer to figure 22.
4.	Repeat step 3 above for the battery-control console and the LOPAR antenna-receiver-transmitter group. Note. The INTLK OVERRIDE switch will not override any of the interlocks in the LOPAR antenna-receiver-transmitter group. The doors in the lower-right section of the battery-control console are part of the computer interlock system.	

Table 58 (U). Nonperiodic Antenna-Elevation-Scan-Condition Adjustment (U)

Step	Procedure	Corrective action
1.	Prepare for the scan condition check. a. Perform the procedures in table 1. b. On the LOPAR control-indicator, operate the ANT ELEV switch to DOWN/SCAN to obtain a minimum indication on the ANT ELEV indicator.	Loosen the hexagon nuts on the bracket to which switch S2 is mounted. Adjust switch S2 to obtain the proper indication, and tighten the hexagon nuts. Operate the jogging switch on the bottom of the control box to check the operating point of
2.	Perform the check for electromechanical control systems. a. On the acquisition antenna pedestal, set the antenna-disable switch to OFF, and remove the cover from the electromechanical control box. The left pointer indicates 0 degrees on the red scale for all scan conditions.	

*Table 58 (U). Nonperiodic Antenna-Elevation-Scan-Condition Adjustment—
Continued (U)*

Step	Procedure	Corrective action
2.	<p>Continued</p> <p><i>b.</i> Operate the jogging switch on the bottom of the control box to make the antenna scan upward.</p> <p align="center">Switch S1 is activated at: 0 degree for scan condition 1 2 degrees for scan condition 2 4 degrees for scan condition 3 6 degrees for scan condition 4</p> <p align="center">Switch S3 is activated at: 9 degrees for scan condition 1 4.5 degrees for scan condition 2 6.5 degrees for scan condition 3 9 degrees for scan condition 4</p> <p><i>c.</i> Note that the pointer on S3 indicates the upper limit for the scan condition in use.</p> <p align="center">9 degrees for scan condition 1 4.5 degrees for scan condition 2 6.5 degrees for scan condition 3 9 degrees for scan condition 4</p> <p><i>d.</i> Operate the jogging switch until the left pointer indicates exactly 4.5 degrees on the red scale.</p> <p><i>e.</i> Replace the cover on the electromechanical control box.</p> <p><i>f.</i> Set the antenna-disable switch to ON.</p> <p><i>g.</i> Observe the indication on the ANT ELEV indicator on the LOPAR control-indicator.</p> <p align="center">The ANT ELEV indicator indicates on the small mark just below 200 mils (196 mils).</p>	<p>switch S2. Repeat the procedure until the proper indication is obtained.</p> <p align="center">Refer to figure 38.</p> <p>(1) Loosen the hexagon nuts on the bracket to which switch S1 is mounted. Adjust switch S1 in the proper direction, and tighten the hexagon nuts.</p> <p>(2) Repeat <i>b</i> until the proper indication is obtained when the indicator is moving from 0 degree.</p> <p align="center">Refer to figure 38.</p> <p>(1) Loosen the hexagon nuts on the bracket on which switch S3 is mounted. Adjust switch S3 in the proper direction, and tighten the hexagon nuts.</p> <p>(2) Repeat the procedure until the proper indication is obtained when the indicator is moving from 0 degree.</p> <p align="center">Refer to figure 38.</p> <p>Loosen the two setscrews and adjust the pointer.</p> <p>Adjust the ANT ELEV receiver synchro on the rear of the LOPAR control-indicator.</p> <p align="center">Refer to figure 38.</p>

Table 59 (U). Nonperiodic SIF/IFF Energizing Procedure (U)

Step	Procedure	Corrective action
	Caution: Do not use the waveguide from the auxiliary antenna subassembly as a handhold.	
1.	Gain access to the SIF/IFF receiver-transmitter at the LOPAR antenna.	
2.	Perform the procedures in table 1.	
3.	On the LOPAR antenna pedestal, set the antenna disable switch to OFF.	
4.	On coder control unit KY-97B/TPX, set the POWER switch to ON. The coder control POWER indicator light illuminates.	Refer to figure 36.
5.	On the coder control unit, set the LOCAL — REMOTE switch to REMOTE, the MODE SELECTOR switch to 2, the CHOP switch to OFF, and the CHALLENGE switch to OFF.	
6.	On recognition signal simulator SM-140/TPX, set the POWER switch to ON, the B+ — ON-LOCAL-REMOTE switch to REMOTE, and the TRIG IN-PULSE-MODE 2 switch to MODE 2.	
7.	On the recognition signal simulator, rotate the OUTPUT — DELAY knob and the OUTPUT — LEVEL knob fully clockwise.	
8.	On receiver-transmitter RT-211A/TPX, set the POWER switch to ON. The POWER indicator light illuminates.	Refer to figure 36.
9.	On the LOPAR antenna pedestal, set the antenna disable switch to ON.	
10.	On the video decoder located in the equipment cooling cabinet, set the power ON — OFF switch to ON. The power pilot indicator light illuminates.	Refer to figure 36.
11.	Perform the procedures in table 13.	

Table 60 (U). Nonperiodic Magnetron High Voltage Supply Knob Stop Adjustment (U)

Step	Procedure	Corrective action
1.	Gain access to the back of the LOPAR auxiliary control-indicator, and loosen the wingnut on the HV SUPPLY variable transformer.	
2.	Perform the procedures in table 1.	

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Table 60 (U). Nonperiodic Magnetron High Voltage Supply Knob Stop Adjustment—Continued (U)

Step	Procedure	Corrective action
3.	On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob fully counterclockwise to START. Depress the HV SUPPLY — ON switch. Adjust the HV SUPPLY knob for an indication of 30 milliamperes on the MAGNETRON meter.	
4.	On the LOPAR control-indicator, operate the MAG FREQ switch to obtain a minimum indication on the MAGNETRON meter.	
5.	Readjust the HV SUPPLY knob to obtain an indication of 30 milliamperes on the MAGNETRON meter. Warning: Voltages DANGEROUS TO LIFE are present on the rear of the LOPAR auxiliary control-indicator.	
6.	On the rear of the LOPAR auxiliary control-indicator, carefully adjust the metal plate just in front of the wingnut to position the adjustable stop until it touches the variable transformer arm. Tighten the wingnut, being careful not to change the position of the HV SUPPLY knob. Observe that a 30-milliamperere indication is still on the MAGNETRON meter.	
7.	Set the HV SUPPLY knob fully counterclockwise to START, and depress the HV SUPPLY — OFF switch.	

Table 61. (Deleted)

Table 62 (U). Nonperiodic Receiver-Tuner Adjustments (U)

Step	Procedure	Corrective action
1.	Prepare for the receiver-tuner adjustments. a. Perform the procedures in table 19, steps 1 through 6a. b. (Deleted) c. Set the TEST 2 switch to 10. d. Set the AUTO FREQ CONTROL—MOTOR EXC switch to OFF. e. Adjust the LOCAL OSC CONTROLS—SPREAD variable resistors to their midposition. Adjust the LOCAL OSC CONTROLS—LEVEL variable resistors for maximum crystal current indication on the TEST 2 meter. f. Set the AUTO FREQ CONTROL—MOTOR EXC switch to ON, and allow the AFC to lock on.	
2.	Check the AFC current. a. Set the TEST 2 switch to 8.	

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Table 62 (U). Nonperiodic Receiver-Tuner Adjustments—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>The TEST 2 meter indicates between 3 and 6 microamperes.</p> <p>b. Set the TEST 2 switch to 9.</p> <p>The TEST 2 meter indicates 1 milliampere.</p> <p>c. (Deleted)</p> <p>d. Set the RCVR TEST switch to MAIN and the TEST 2 switch to 10.</p> <p>The TEST 2 meter indicates 1 milliampere.</p> <p>e. Set the RCVR TEST switch to AUX.</p> <p>The TEST 2 meter indicates 1 milliampere.</p> <p>f. Repeat d and e above to eliminate interaction.</p>	<p>Adjust the AFC pickup probe on the directional coupler.</p> <p>Refer to figure 29.</p> <p>Using both hands, one on either side of the local oscillator cavity, loosen the large knurled nut, and adjust the slide bar to obtain the proper indication. Tighten the large knurled nut.</p> <p>Refer to figure 28.</p> <p>Adjust the main signal crystal pickup probe on the right side of the local oscillator cavity.</p> <p>Refer to figure 28.</p> <p>Adjust the auxiliary signal crystal pickup probe on the left side of the local oscillator cavity.</p> <p>Refer to figure 28.</p>
3.	<p>Adjust the local oscillator current.</p> <p>a. Operate the MAG FREQ switch to RAISE until the magnetron reaches the upper frequency limit.</p> <p>b. Adjust the LOCAL OSC CONTROLS—SPREAD variable resistors for a maximum indication on the TEST 2 meter. Mark the position of the resistor control shaft.</p> <p>c. Operate the MAG FREQ switch to LOWER until the magnetron reaches the lower frequency limit.</p> <p>d. Adjust the LOCAL OSC CONTROLS—SPREAD variable resistors for a maximum indication on the TEST 2 meter. Mark the position of the resistor control shaft.</p> <p>e. Set the LOCAL OSC CONTROLS—SPREAD variable resistor control shaft midway between the two marks in b and d above.</p>	
4.	(Deleted)	

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Table 62 (U). Nonperiodic Receiver-Tuner Adjustments—Continued (U)

Step	Procedure	Corrective action
	<p>Note. Step 5 below should be performed when a local oscillator tube is replaced or when the receiver sensitivity check falls out of tolerance.</p>	
5.	<p>Check the main preselector.</p>	
	<p>a. Operate the MAG FREQ switch to obtain an indication of 8 on the magnetron tuning drive indicator dial.</p>	
	<p>b. On the acquisition RF power supply control, set the MOTOR EXC switch to OFF.</p>	
	<p>b.1. On the LOPAR auxiliary control-indicator, set the HV SUPPLY knob to START, and depress the HV SUPPLY—OFF switch.</p>	
	<p>c. Set the RCVR TEST switch to MAIN and the TEST 2 switch to 11. Set the IF GAIN switch to LOC.</p>	
	<p>d. Depress the NOISE GEN—EXC switch, and adjust the IF GAIN knob for a midscale indication on the TEST 2 meter. Release the NOISE GEN—EXC switch.</p>	
	<p>e. Remove the main (right) IF preamplifier from the receiver-tuner. Do not disconnect any cables.</p>	
	<p>f. Remove the cover from the receiver-tuner gear box. Using a 3/4-inch, open-end wrench, loosen the locknut on the preselector shaft until the mechanical clutch disengages the preselector tuner gear but not enough to disengage the spur gear.</p>	
	<p>g. Depress the spring-loaded attenuator plunger on the main signal frequency converter (right), and hold the plunger depressed with a rubber band.</p>	
	<p>h. Depress and hold the NOISE GEN—EXC switch. Hold the micrometer dial, and adjust the preselector gear to the higher of the two maximum indications on the TEST 2 meter. Record the reading on the micrometer dial. Maintain the TEST 2 meter indication just below full scale by adjusting the IF GAIN knob.</p>	
	<p>i. Release the NOISE GEN—EXC switch.</p>	
	<p>The micrometer dial indication is approximately the same as noted in <i>h</i> above.</p>	
	<p>j. Tighten the locknut on the preselector shaft lightly, being careful not to change the adjustment. Replace the gear box cover, and release the spring-loaded attenuator plunger. Replace the IF preamplifier.</p>	
	<p>Refer to figure 28.</p>	
6.	<p>Check the auxiliary preselector.</p>	
	<p>a. Set the RCVR TEST switch to AUX.</p>	
	<p>b. Remove the auxiliary IF preamplifier (left) from the receiver-tuner. Do not disconnect any cables.</p>	
	<p>c. Repeat step 5 <i>e</i> through <i>j</i> above, and use the spring-loaded attenuator plunger on the auxiliary signal frequency converter (left).</p>	
	<p>d. Set the IF GAIN switch to NOR, the TEST 2 switch to OFF, and the MOTOR EXC switch to ON.</p>	

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Table 63 (U). Nonperiodic 4-kc Oscillator Adjustments (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1.	
2.	Connect the VTVM between the CARRIER test point on the 4-kc oscillator and ground. The voltmeter indicates 70 volts ac.	Adjust the ACQ ADJ variable resistor on the 4-kc oscillator. Refer to figure 37.
3.	Connect the VTVM between the ACQ test point and chassis ground. The voltmeter indicates within the limits of 22 and 28 volts.	Refer to figure 37.
4.	Disconnect and remove the VTVM.	

Table 64 (U). Nonperiodic 4-kc Oscillator Input Adjustment (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1.	
2.	On the LOPAR control-indicator, set the ANT RPM switch to 5 and the MTI switch to SECTOR.	
3.	Rotate the REC GAIN knob clockwise to the first positive stop (not in AGC).	

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Table 64 (U). Nonperiodic 4-KC-Oscillator-Input Adjustment—Continued (U)

Step	Procedure	Corrective action
4.	On the electronic gate in the director station group, note the position of the SECTOR WIDTH variable resistor. Adjust the SECTOR WIDTH variable resistor fully clockwise.	
5.	On the PPI, adjust the GAIN and INTENSITY knobs to obtain a well defined presentation.	
6.	Note the position of the IF GAIN ADJ variable resistor on the fast AGC amplifier. Adjust the IF GAIN ADJ variable resistor to obtain a high level of noise on the PPI.	Refer to figure 28.
7.	Turn the 4KC ADJ variable resistor on the electronic gate fully clockwise. Adjust the 4KC ADJ variable resistor slowly counterclockwise until 360-degree coverage is obtained on the PPI.	Refer to figure 30.
8.	Reset the SECTOR WIDTH variable resistor to the position noted in step 4 above.	
9.	Reset the IF GAIN ADJ variable resistor on the fast AGC amplifier to the position noted in step 6 above.	Refer to figure 28.
10.	On the LOPAR control-indicator, set the MTI switch to OFF.	

Table 65 (U). Nonperiodic Mark Generator Adjustments (U)

Step	Procedure	Corrective action
1.	Perform the procedures in table 1. ¹	
2.	Perform the 4-kc adjustments. <p>a. On the LOPAR control-indicator, set the ANT RPM switch to 10.</p> <p>a.1. Using a test oscilloscope, obtain a presentation of several cycles of the 4-kc signal at test point TP1 on the precision mark generator in the battery-control console.</p> <p style="padding-left: 40px;">The signal rises smoothly to a maximum amplitude and drops smoothly to a minimum amplitude with each revolution of the acquisition antenna.</p> <p>b. (Deleted)</p>	Adjust the 4KC ADJ variable resistor on the precision mark generator to obtain the lowest null without overmodulation. Refer to figure 32.

¹Omit this step if the checks in the preceding tables have been performed in sequence.

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Table 65 (U). Nonperiodic Mark Generator Adjustments—Continued (U)

Step	Procedure	Corrective action
	c. (Deleted)	

Table 66 (U). Nonperiodic Mechanical Adjustment of the PPI Cathode-Ray Tube in the Battery-Control Console (U)

Step	Procedure	Corrective action
	<p>Warning: Use extreme care when handling the PPI cathode-ray tube. If the tube is broken, flying fragments of glass may cause serious injury. Protective face shield and gloves must be used while handling the tube.</p> <ol style="list-style-type: none"> 1. Perform the procedures in table 25; then deenergize the acquisition-radar system. 2. Remove the PPI from its normal position, and place it on the shelf of the battery-control console. 3. Remove the top and left-side protective shields from the PPI. Swing open the PPI marker generator. 4. Loosen the socket-head screw on the top, forward part of the PPI. Move the two securing control-handles on the forward part of the PPI clockwise to free the tube. 5. Grasp the tube-socket housing, and carefully rotate the housing in the opposite direction from which the flashing spot on the PPI is displaced. 6. Move the two securing control-handles for the PPI tube counterclockwise to secure the tube. Tighten the socket-head screw. 7. Perform the procedures in table 1. Set the TEST switch on the PPI test panel to +X AXIS. Adjust the INTENSITY knob on the PPI until a proper presentation is observed. 	

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Table 66 (U). Nonperiodic Mechanical Adjustment of the PPI Cathode-Ray Tube in the Battery-Control Console—Continued (U)

Step	Procedure	Corrective action
8.	Depress and hold the azimuth switch on the target-designate control-indicator, and adjust the GAIN knob on the PPI until the steerable azimuth line is clearly visible. Position the steerable azimuth line over the flashing spot, and check that the azimuth is 1600 mils. If the indication is abnormal, deenergize the acquisition-radar system, and repeat steps 5 through 8 until the flashing spot appears at 1600 mils. If the indication is normal, replace the PPI marker generator and protective shields, and replace the PPI in its normal position.	

Table 67 (U). Nonperiodic Mechanical Adjustment of the B-Scope-Indicator Cathode-Ray Tube (U)

Step	Procedure	Corrective action
	<p>Warning: Use extreme care when handling the B-scope cathode-ray tube. If the tube is broken, flying fragments of glass may cause serious injury. Protective face shield and gloves must be used while handling the tube.</p>	
1.	Energize the target-tracking radar system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.	
2.	Set the IND HV switch on the target-track-control power supply to on (up).	
3.	Set the POS — ZERO and SWP — ZERO switches on the B-scope modulation-eliminator to ZERO.	
4.	Adjust the INTENSITY and GAIN knobs on the B-scope indicator to obtain a vertical line in the center of the B-scope.	
	<p>The vertical line is parallel to the center vertical graticule on the B-scope.</p>	Perform the procedures in steps 6 through 13 below.
5.	If the indication is normal, perform step 14 below.	
6.	Deenergize the target-tracking radar system.	
7.	Remove the B-scope indicator from its normal position, and place it in a suitable work area.	
8.	Remove the top and left protective shields from the B-scope, and swing open the B-scope marker generator.	
9.	Loosen the socket-head screws on the top-forward part of the B-scope, and move the two securing control-handles clockwise to free the tube.	

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Table 67 (U). Nonperiodic Mechanical Adjustment of the B-Scope-Indicator Cathode-Ray Tube—Continued (U)

Step	Procedure	Corrective action
10.	Grasp the tube-socket housing and carefully rotate the housing in the opposite direction from which the vertical line on the B-scope was displaced.	
11.	Move the two securing handles counterclockwise to secure the tube.	
12.	Perform the procedures in steps 1 through 5 above. If the vertical line is still displaced, repeat steps 6 through 13 until the desired results are obtained.	
13.	Tighten the socket-head screws, and replace the B-scope marker generator and protective shields.	
14.	Set the SWP—ZERO and POS—ZERO switches to NORMAL.	

Table 68 (U). Nonperiodic FUIF Internal Loop Check (U)

Step	Procedure	Corrective action
	<p><i>Note.</i> Perform the weekly FUIF range calibrate checks and the target acquire checks before proceeding with this check. This procedure is to be performed only when the daily check of the FUIF range calibration (FUIF back-to-back loop check) has failed. Drift is indicated by the check of the FUIF range calibration being out of tolerance at 0, 1600, 3200, and 4800 mils, and should be alleviated by performing the FUIF range calibrate checks as quickly as possible. If drift is still excessive, the PPI sweep generator should be replaced.</p>	
1.	Check that the FUIF power and the computer PLATE VOLTS switch are off.	
2.	Disconnect the white-brown-blue wire from terminal 69 (X _s —FUIF X analog) in the FUIF interconnecting box. Using a jumper lead, connect this wire to terminal 61 (X _i).	
3.	Disconnect the white-red-blue wire from terminal 70 (Y _s —FUIF Y analog). Using a jumper lead, connect this wire to terminal 62 (Y _i).	
4.	On the PPI test panel, set the TEST switch to FOE.	
5.	Perform the procedures in table 1.	
6.	Have the target-tracking-radar operator energize the target-tracking radar system through low voltage as prescribed in the power checks in TM 9-1430-256-12/1.	
7.	Energize the computer as prescribed in the power checks in TM 9-1430-251-12/1.	
8.	Set the COMPUTER CONDITION switch on the computer-control panel to ACTION.	
9.	On the target-designate control-indicator, set the TRACK CROSS switch to ON.	
10.	Have the target-tracking-radar operator perform the procedures in a through c below.	
	<p>a. Rotate the range and azimuth handwheels to obtain indications of 100,000 yards in range and 1600 mils in azimuth.</p>	

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Table 68 (U). Nonperiodic FUIF Internal Loop Check—Continued (U)

Step	Procedure	Corrective action
10.	Continued b. Slowly rotate the elevation handwheel toward 1276 mils until the circle symbol encircles the electronic cross. Do not move the azimuth handwheel to aid centering. c. Set in a slow aided rate in azimuth.	
11.	Observe the PPI presentation. The intersection of the electronic cross remains within the circle symbol throughout 6400 mils of antenna rotation.	Refer to figures 32 and 33; figure 27, TM 9-1430-255-20; and figure 52, TM 9-1430-256-20/3. If the electronic cross intersection remains within the circle symbol, the errors observed during the daily check of the FUIF range calibration (FUIF back-to-back loop check) are external to the Improved NIKE—HERCULES system. Contact the appropriate support unit.
12.	Have the target-tracking-radar operator set the azimuth MAN-AID-AUTO switch to MAN.	
13.	On the target-designate control-indicator, set the TRACK CROSS switch to OFF.	
14.	Set the computer PLATE VOLTS switch on the computer-control panel to the off (down) position.	
15.	On the PPI test panel, set the TEST switch to NORMAL.	
16.	Remove the jumped leads connected to the wires in steps 2 and 3 above, and connect the wires to their original terminals.	

CONFIDENTIAL**Section VI (U). SPECIAL CHECK PROCEDURES***Table 69 (U). Special ± 250 -Volt-Regulator Balance Adjustment (U)*

Step	Procedure	Corrective action
	<p><i>Note.</i> There are eleven +250 or +150 volt regulators, each of which must be adjusted after system emplacement or whenever one of them is replaced. Two regulators are located in the director station group; seven are located in the radar power supply group; and two are located in the target-ranging-radar control.</p>	
1.	Substitute the regulator requiring adjustment for the left +250 or +150 volt regulator in the upper section of the director station group.	
2.	Perform the procedures in table 1. Do not proceed with this adjustment until the plate voltage has been applied for 15 minutes.	
3.	Set the NOR — BAL switch in the director station group to NOR.	Refer to figure 19.
4.	Set the VOLTS switch on the null-voltage test set to OFF.	
5.	Connect the null-voltage test-set power cable to connector J55.	
6.	Connect a test cable between the TEST — 1 terminal on the null-voltage test set and GRD connector J56.	
7.	Release the clamp on the null-voltage test-set meter and zero the meter.	
8.	Set the TEST TERM switch on the null-voltage test set to 1.	
9.	Set the dials on the null-voltage test set to 50,000.	
10.	Set the NOR — BAL switch to BAL.	
11.	Set the VOLTS switch on the null-voltage test set to +250.	
12.	Adjust the BALANCE variable resistor on the left +250 or +150 volt regulator to obtain a null indication on the null-voltage test-set meter. The final adjustment is made with the SENSITIVITY 3 switch on the null-voltage test set depressed.	Refer to figure 19.
13.	Set the VOLTS switch to OFF and the NOR — BAL switch in the director station group to NOR. Remove the test cable from GRD connector J56 and the null-voltage test-set power cable from connector J55.	

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Table 70 (U). Special Track-Standby-Filament Check (U)

Step	Procedure	Corrective action
1.	On the acquisition-power-control panel, set the PRESENTATION POWER and MAIN POWER switches to ON.	
2.	On the radar-power control-indicator in the tracking station group, set the MAIN POWER switch to off (down).	
3.	On the acquisition-power-control panel, set the TRACK TRANSMITTER FILAMENTS switch to on (up). The TRACK TRANSMITTER FILAMENTS indicator light on the acquisition-power-control panel and the MISSILE — PREHEAT and HOT and the TARGET — PREHEAT and HOT indicator lights on the radar-power control-indicator illuminate. On the range-radar control-indicator, the TRR PREHEAT and HOT indicator lights illuminate.	Refer to figure 19.
4.	Set the TRACK TRANSMITTER FILAMENTS switch to off (down). The TRACK TRANSMITTER FILAMENTS indicator light extinguishes. The MISSILE — PREHEAT and HOT and the TARGET — PREHEAT and HOT indicator lights on the radar power control-indicator extinguish. On the range-radar control-indicator, the TRR PREHEAT and HOT indicator lights extinguish.	Refer to figure 19.

Table 71 (U). Special Auxiliary Antenna Subassembly Leveling and Orientation Checks (U)

Step	Procedure	Corrective action
	<i>Note.</i> This procedure is to be performed only upon initial emplacement of the acquisition antenna-receiver-transmitter group or when the acquisition antenna is removed for maintenance.	
1.	Perform the level and orientation checks prescribed in table 17. <i>Caution:</i> Exercise care to prevent damage to the acquisition antenna.	
2.	On the acquisition-antenna pedestal, set the antenna-disable switch to OFF.	
3.	Install the antirotational lock to hold the acquisition antenna in position while adjustments are being made on the auxiliary antenna subassembly.	

CONFIDENTIALTable 71 (U). *Special Auxiliary Antenna Subassembly Leveling and Orientation Checks—Continued (U)*

Step	Procedure	Corrective action
4.	Obtain a ladder and place it against the acquisition antenna in order to gain access to the auxiliary antenna subassembly. <i>Warning:</i> Secure the ladder in place to prevent injury to personnel.	
5.	Install the level assembly on the auxiliary antenna subassembly.	
6.	Adjust the four leveling screws, using the large socket-head-screw wrench on the level assembly until the auxiliary antenna subassembly is level, as indicated by the level vials.	
7.	Manually rotate the acquisition antenna, and perform steps 4 and 6 above at 90-degree intervals of rotation.	
8.	Manually rotate the acquisition antenna until the hairline on the hairline bracket, as observed through the peepsight on the acquisition-antenna pedestal, is centered on a well defined datum point. Note the indication on the azimuth dial.	
9.	Rotate the acquisition antenna through 3200 mils of rotation as indicated on the azimuth dial.	
10.	Install the antirotational lock to hold the acquisition antenna in the position set in step 9 above.	
11.	Turn the auxiliary antenna subassembly until the datum point observed in step 8 above is visible through the azimuth-orientation sights.	On the auxiliary antenna subassembly, loosen the azimuth locking screws, using the small socket - head - screw wrench located on the level assembly.
12.	Tighten the azimuth locking screws, being careful not to disturb the setting of the auxiliary antenna subassembly.	
13.	Remove the ladder and the antirotational lock.	
14.	On the acquisition-antenna pedestal, set the antenna-disable switch to ON.	

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Table 72 (U). Special Magnetron Tuning-Drive-Coupling Checks (U)

Step	Procedure	Corrective action
	<p><i>Note.</i> This procedure is to be performed only when the magnetron tuning drive is repaired or replaced.</p>	
1.	<p>Check the tuning drive torque.</p> <ol style="list-style-type: none"> Perform the procedures in table 1. Gain access to the magnetron and the magnetron tuning drive in the acquisition receiver-transmitter. Remove the flexible cable from the magnetron. Place torque-wrench adapter 7603269 over the loose end of the flexible cable from the magnetron tuning drive, and tighten the setscrews. Attach torque wrench 7602850 to the adapter. Hold the flexible cable in one hand and the torque wrench in the other. Have an assistant operate the MAG FREQ switch to RAISE, then to LOWER. <p style="text-align: center;">The torque-wrench scale indicates between 1-1/2 and 3 inch-pounds.</p> <ol style="list-style-type: none"> Connect the flexible cable from the magnetron tuning drive to the magnetron. Remove the magnetron anode blower connection. 	<p>Remove the flexible cable from the magnetron tuning drive motor. Remove the three screws, the tuning-drive cover, and the tuning-drive motor. Use two 1/2-inch, open-end wrenches, and loosen the top jam nut to increase the torque. Loosen the bottom jam nut, and tighten the top jam nut to decrease the torque. Install the tuning-drive motor and the flexible cable and repeat the procedure in step 4 above until the torque is within limits. Remove the flexible cable from the tuning-drive motor; install the tuning-drive cover; and secure with the three screws. Replace the flexible cable on the tuning drive.</p>
2.	<p>Calibrate the MAG FREQ meter.</p> <ol style="list-style-type: none"> On the acquisition RF power supply-control, operate and hold the MAG FREQ switch to DEC until the magnetron tuning drive stops. Disconnect the flexible cable from the magnetron tuning drive to the magnetron. On the acquisition control indicator, operate the MAG FREQ switch until the MAG FREQ meter indicates 0. 	

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Table 72 (U). Special Magnetron Tuning-Drive-Coupling Checks—Continued (U)

Step	Procedure	Corrective action
2.	<p>Continued</p> <p>d. Connect the flexible cable to the magnetron.</p> <p>e. On the acquisition RF power supply-control, operate and hold the MAG FREQ switch to INCR until the magnetron tuning drive stops.</p> <p>f. If the MAG FREQ meter does not indicate 100, note and record the indication.</p> <p>g. Disconnect the flexible cable from the magnetron.</p> <p>h. On the acquisition control indicator, operate the MAG FREQ switch until the MAG FREQ meter indicates halfway between the indication recorded in <i>f</i> above and 100.</p> <p>i. Connect the flexible cable to the magnetron.</p> <p>j. Operate the MAG FREQ switch to DEC until the magnetron tuning drive stops.</p> <p style="text-align: center;">The MAG FREQ meter indicates the same number of divisions away from 0 as that set from 100 in step <i>h</i> above.</p> <p>k. Replace the magnetron anode blower connection.</p>	<p>Repeat the procedures in <i>a</i> through <i>j</i> to minimize the difference.</p>

Table 73 (U). Special Magnetron Aging Procedure (U)

Step	Procedure	Corrective action
	<p><i>Note.</i> This procedure is to be performed whenever the magnetron in the LOPAR is replaced.</p> <p>Caution: The following procedure must be performed before placing the system in normal operation.</p> <ol style="list-style-type: none"> Perform the procedures in table 1. On the LOPAR auxiliary control-indicator, set the ANT RPM switch to 10. Set the HV SUPPLY knob to START, and depress the HV SUPPLY—ON switch. <p><i>Note.</i> If a normal operating current of 30 milliamperes can be obtained in step 4 below without producing an erratic meter indication, the magnetron does not require aging, and the system may be placed in normal operation.</p> <ol style="list-style-type: none"> Observe the MAGNETRON meter and slowly adjust the HV SUPPLY knob clockwise until the meter indication becomes erratic. Adjust the HV SUPPLY knob counterclockwise until the MAGNETRON meter indication is only slightly erratic. Allow the magnetron to age at this setting for 10 to 15 minutes. 	

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CONFIDENTIAL*Table 73 (U). Special Magnetron Aging Procedure—Continued (U)*

Step	Procedure	Corrective action
6.	Continue to repeat steps 4 and 5 above until the magnetron has been aged and there is no erratic indication on the MAGNETRON meter at 30 milliamperes.	
7.	Set the HV SUPPLY knob to the START position, and depress the HV SUPPLY—OFF switch.	

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Chief of Staff.

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