TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

DIRECT SUPPORT AND GENERAL SUPPORT

MAINTENANCE MANUAL

DRAGON MAINTENANCE SET

DRAGON WEAPONS SYSTEM

DEPARTMENT OF THE ARMY

APRIL 1981

Technical Manual)
)
9-4935-481-14-3)

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington, D.C., *3 April 1981*

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL DRAGON MAINTENANCE SET

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Continued)

LIST OF TABLES

SAFETY SUMMARY

The following are general safety precautions that personnel must understand and apply during operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS.

Operating personnel must observe safety regulations at all times. Do not replace components or make adjustments inside the equipment with high voltage present. Under certain conditions, dangerous potentials may exist when the power control is in the off position. To avoid injury, remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE.

Under no circumstances should any person reach into the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

CHAPTER 6

INTRODUCTION

6-1. Purpose and Scope

This chapter contains the procedures for testing the Test Set Group, Guided Missile Infrared Tracker OQ-278/TSM-114. It contains the schematics for the cable assemblies, A-16 test adapter, circuit card assemblies and interconnection diagrams for the Tracker Test Set Group (TTSG) OQ-278/TSM-114 and Test Adapter Group OF-77/TSM. It furnishes a maintenance calibration and performance test on the TTSG and procedures for testing the circuit card assemblies of the Night Optical Alignment Fixture (NOAF). This manual is to be used in conjunction with TM 9-4935481-14-1, which contains a complete description of the DMS test unit and accessories, TM 9-4935-481-14-2, which contains the schematic diagrams for the DMS test unit and accessories and TM 9-4935-484-14 which contains the TTSG description and the operational test procedures for Night Vision, Sight, AN/TAS-5.

NOTE

A list of non-standard abbreviations used within this manual is contained in Table 6-1.

6-2. Maintenance Responsibilities

a. Third Echelon, Direct Support (D/S) Maintenance. The D/S maintenance level performs operational checkout of the TTSG and fault isolation to the plug-in unit subassembly or mechanical component level of the TTSG. Plug-in unit replacement, subassembly replacement, and repair of mechanical components not reparable at third echelon will be forwarded to fourth echelon maintenance for repair. Maintenance calibration of the TTSG :s accomplished at. the D/S maintenance level.

b. Fourth Echelon, General Support (G/S) Maintenance. Fault isolation to the component level of plug-in units, subassemblies, and mechanical components and repair of such items forwarded from D/S maintenance will be accomplished at this echelon of maintenance.

6-3. Forms, Records and Reports

All personnel and organizations responsible for operating and/or maintaining this equipment are also responsible for the preparation and disposition of appropriate forms, records, and reports.

6-4. Security Responsibilities

a. The security classification of the DRAGON Weapon System equipment is UNCLASSIFIED. Portions of data relative to the DRAGON system are classified.

b. The importance of security of classified material cannot be over-emphasized. Security is an individual as well as a command responsibility.

c. Safeguarding of classified material will be accomplished in accordance with current directives.

6-5. Reports of Equipment Manual Improvements

Reports of errors, missions, and recommendations for improving this publication by the individual user are encouraged. U. S. Marine Corps reports should be submitted on Form NAVMC 10772 in accordance with MCO 5600.41 . All others should be submitted on DA Form 2028, Recommended Changes to Publications, and forward directly to: Commander, U. S. Army Missile Command, ATTN: DRSMI-NPM, Redstone Arsenal, Alabama 35898.

A space for equipment notes has been provided at the end of each test. The notes consist of equipment and procedure peculiarities not noted specifically within the procedure itself. It is encouraged that any information believed to be helpful be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded directly to: Commander, U.S. Army Missile Command, ATTN: DRSMI-NPM, Redstone Arsenal, Alabama 35898.

Table 6-1. List of Nonstandard Abbreviations

ABBREVIATION	NOMENCALATURE
DMS-D	Dragon Maintenance Set - D/S Maintenance Level
DMM	DIGITAL MULTIMETER
CT	COUNTER-TIMER
PP	POWER Panel
M4CP	MONITOR/CONTROL Panel
CIP	COUNTER INHIBIT(SEC) Panel
ITP	INTERNAL TEST Panel
TP	TRAINER Panel
PPE	PROG PERFORM EVAL Panel
TPS	TRIGGER PULSE SIM Panel
HWS	HORIZ WIRE SIIM Panel
PD	PEAK DETECTOR Panel
RAD	RADIOMETER
DMS-G	Dragon Maintenance Set - G/S Maintenance Level
CC	CIRCUIT CARD/SUBASSEMBLIES Panel
OSC	OSCILLOSCOPE (AN/USM-338)
TTS	TRACKER TEST SET
OAC	OPTICAL ALIGNMENT COLLIMATOR
PS	EXTERNAL POWER SUPPLY
TTSG	TRACKER TEST SET GROUP
TC	THERMAL COLLIIMATOR

Table 6-1. List of Nonstandard Abbreviations - continued

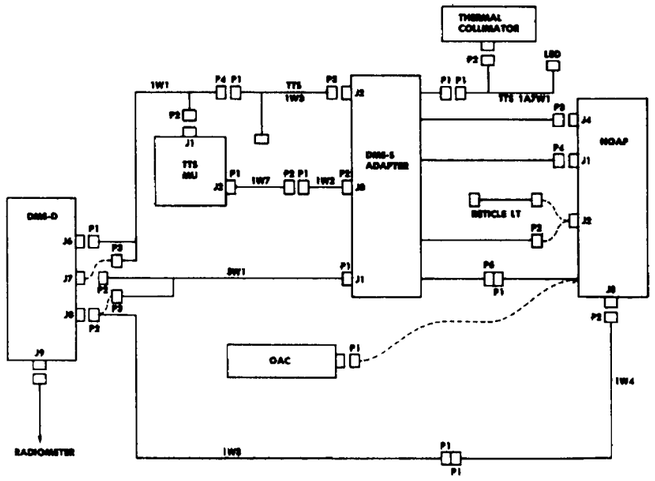
ABBREVIATION	NOMENCALATURE
NOAF	NIGHT OPTICAL ALIGNMENT FIXTURE
NDMM	NIGHT OAF DIGITAL METER
D-S	ADAPTER GROUP TEST
UUT	UNIT UNDER TEST

Table 6-2. TTSG Maintenance Calibration

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **The major units and panels will be identified by the initials as indicated below.**	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	CT	COUNTER TIMER	
	PP	POWER panel	
	MCP	MONITOR/CONTROL panel	
	CIP	COUNTER INHIBIT(SEC) panel	
	PPE	PROG PERFORM EVAL panel	
	TPS	TRIGGER PULSE SIM panel	
	TP	TRAINER PANEL panel	
	HUS	HORIZ WIRE SIM panel	
	RAD	RADIOMETER	
		DMS-S	
	D-S	TEST ADAPTER GROUP	
		UUT	
	TTS	TRACKER TEST SET	
	TTSG	TRACKER TEST SET GROUP	
	OAC	OPTICAL ALIGNFMENT COLLIMATOR	
	TC	THERMAL COLLIMATOR	
	NOAF	NIGHT OPTICAL ALIGNMENT FIXTURE	
	NDMM	NIGHT OAF Dr1	
		SUPPORT	
	OSC	OSCILLOSCOPE (AN/USM-338)	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **No corrective action steps are indicated, because faults will have appeared in the TTSG performance test.**	
1		Perform the TTSG performance test prior to this procedure.	
2		Prepare the DMS-D for testing per paragraph 2-6, TM 9-4935-481-14-1.	
3		Connect the cables as depicted below. Do not mount the OAC and thermal collimator on the NOAF at this time.	



DM8-D, TT8, TTSG CABLE HOOK UP

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
4	TTS	Loosen the 24 captive screws securing the TTS monitoring unit (MU) front panel to the base. Raise the panel and loosen the two screws securing the card box cover and raise it, allowing it to engage in the hook behind the front panel, to support the front panel.	
5	OAC	Loosen one of the bolts securing the cover on the rear of the OAC. Connect the thermistor end of the thermistor cable under the loosen bolt and secure by tightening the bolt as depicted below. 	
6	NO/	Remove the screws securing the bottom cover on the NOAF. Remove the cover.	
		Initial Switch Settings	
7	PPE	FUNCTION TEST switch to 24V REG.	
8	CIP	RUN/HOLD/OFF switch to RUN.	
9	TPS	WIDTH (MS) dial to 5.0.	
10	MCP	SELECTOR A switch to C3.	
11	MCP	SELECTOR B switch to B11.	
12	MCP	DMM LO switch to SEL B.	
13	PP TP	MAIN POWER and DMS switches to ON. Momentarily actuate TEST START switch.	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
14	TTS	MODE switch to BORESIGHT.	
15	TTS	CHARGE switch to ON.	
16	TTS	POWER switch to ON.	
17	TTS	METER SELECT switch to +BATT A.	
18	D-S	CROWBAR TEST SELECT switch to OFF.	
19	D-S	POWER SELECT switch to NORM	
20	D-S	MODE switch to OFF.	
21	D-S	MONITOR SELECT switch to NORM.	
22	NOAF	MODE SELECT switch to NIGHT ADJ.	
23	NOAF	METER SELECT switch to TEST.	
		+5 Vdc Meter Power Supply	
24	NOAF DMM	Adjust 6A4PS1 power supply output potentiometer to +5.100 ± 0.01 Vdc.	
		-8.888 Vdc Reference Test Voltage	
25	MCP	SELECTOR A switch to D9.	
26	MCP	SELECTOR B switch to D23.	
27	NOAF DMM	Adjust 6A2-R39 to -8.888 ± 0.005 Vdc.	
		Thermal Difference Analog Voltage	
		NOTE **The NOAF must be thoroughly stabilized to conduct this calibration. The small bead thermistor mounted in one corner of 6A2 assembly shall not be subjected to any temperature variations such as contact with fingers, test equipment, heat guns, etc., as well as rapid changes in the test area temperatures.**	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
28	NOAF	Connect a short Jumper wire between 6A2-J8 and the NOAF main frame.	
29	MCP	SELECTOR A switch to D4.	
30	MCP	SELECTOR B switch to D3.	
31	D-S DMM	Adjust THERMISTOR SIMULATOR control to +0.5700 ± 0.030 Vdc.	
32	M4CP	SELECTOR A switch to D5.	
33	14CP	SELECTOR B switch to D23.	
34	NOAF DMM	Adjust 6A2-R64 to +1.350 ± 0.005 Vdc.	
35		Repeat steps 29 thru 34 three times for stabilization.	
		Digital Panel Meter Calibration	
		NOTE **This assembly is mounted on the NOAF access cover and the M1 full scale adjusting potentiometer is located below the front of tile digital meter display.**	
36	MCP	SELECTOR A switch to C7.	
37	MCP	SELECTOR B switch to B11.	
38	DMM	Observe and record the Vdc reading.	
39	NOAF NDMM	Adjust M1 full scale adjusting potentiometer to the reading recorded in the previous step ± 0.00 Vdc.	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **The remainder of this calibration can be omitted if the NOAF being used now was used during the TTS maintenance calibration per TM 9-4935-481-14-1.**	
		Trigger Load Network.(2A1).NOAF	
40	PP	DMS switch to OFF.	
41	MCP	Remove 3W1-P2 from J7.	
42	MCP	Connect 1W1-P3 to J7.	
43	MCP	SELECTOR A switch to C9.	
44	MCP	SELECTOR B switch to C10.	
45	PPE	SEQUENCE switch to MNL.	
46	CIP	COUNTER INHIBIT (SEC) dial to 20.96.	
47	PP	DMS switch to ON.	
48	TP	Momentarily actuate TEST START switch.	
49	TTS	Momentarily actuate TEST START/STOP pushbutton (power on).	
50	TTS	Observe TESTING lamp illuminated.	
51	CIP	Wait until ININIHIB lamp illuminates.	
52	DMM	Observe a reading between -0.2230 and -0.2650 Vdc, record for use in step 54.	
53	TTS	Momentarily actuate TEST START/STOP pushbutton (power off).	
54		Multiply the value recorded in step 52 by +0.200, record for use in step 59.	
55		Connect a Jumper between J1 and J2 on the 1W4 cable (16 gauge wire).	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
56	TTS	Momentarily actuate TEST START/STOP pushbutton. (power on)
57	TTS	Observe TESTI1NG lamp illuminated.
58	CIP	Wait until INt4IB lamp illuminates.
59	NOAF	A just 6A3-R6 in the NOAF to the value calculated in step 54 ±15%
60	TTS	Momentarily actuate TEST START/STOP pushbutton. (power off)
61	TTS	POWIER switch to OFF.
62		Disconnect, then reconnect the 1W4-P2 connector connected to the NOAF J3 receptacle.
63	TTS	POWER switch to ON. Repeat step 56 through 61.
64	TTS	Momentarily depress TEST START/STOP pushbutton (power off).
65	NOAF	Retrieve jumper from 6A2-J8 and the frame.
66		Remove jumper from 1W4-J1 and 1W4-J2.
67	PP	DMS switch to OFF.
68	TTS	POWER switch to OFF.
69	NOAF	Reinstall access cover on NOAF.
70	OAC	Install the collimator adapter on the normal mount (rear) of the
	OAC	with the (lower) bearing surface on the right side when viewed from the rear. (Front mount uses day tracker set-up).
71		Install the OAC on the NOAF.
72		Disconnect P5 of DMS-S from NOAF P1,
73		Connect P1 of 1NOAF to J1 of OAC.

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
74	MCP	SELECTOR A switch to F23.
75	MCP	SELECTOR B switch to B3.
76	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.
77	TIS	POWER switch to ON.
78	TTS	Momentarily depress TEST START/STOP pushbutton (power on).
79	CIP	Observe INHIB lamp illuminated.
80	MCP	Disconnect 1W14 from J17.
81	MCP	DMM LO switch to EXT.
82	MCP	Connect OAC thermistor cable to J17.
83	MCP	DMM FUNCTION switch to K OHMS.
84	MCP	DMM INPUT switch to DMM INPUT.
85	DMM	Allow the reading to stabilize approx. 5 min.
86	DMM	Observe and record the resistance reading.
87	MCP	DMM FUNCTION switch to VI.
88	MCP	Dt4M INPUT switch to SEL A.
89	MCP	DMM LO switch to SEL B.
90		Convert the resistance reading taken in step 86 to a temperature value using the chart in figure 6-1.
91		Using the IR source control voltage vs temperature curve, figure 6-2, convert and record the voltage value for the temperature value recorded in step 90 above.
92	TTS DMM TTS	Adjust lA8Al-R8 to the value recorded in Step 91 above ± 0.002 Vac. Momentarily actuate TEST START/STOP switch (power off).

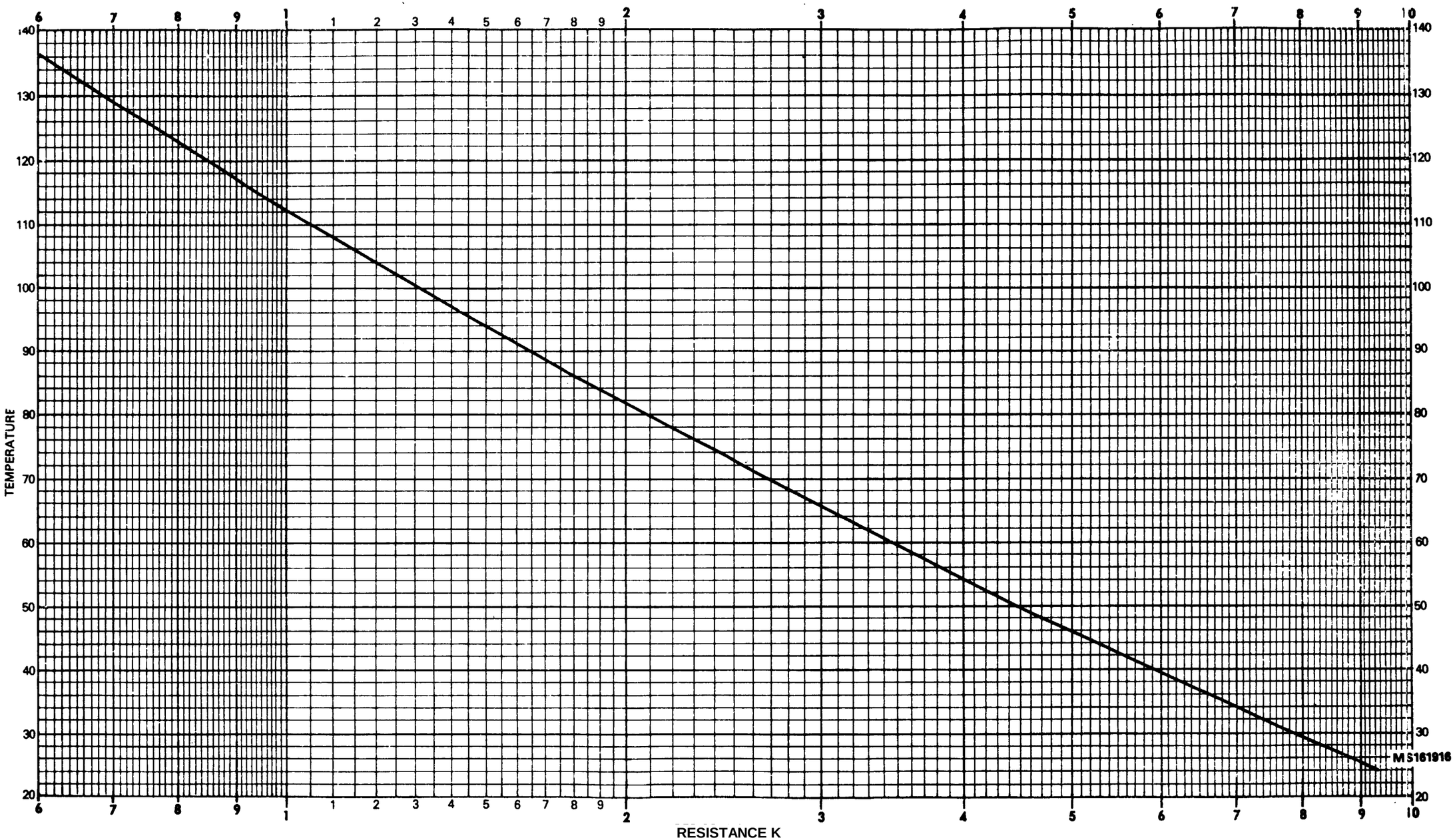
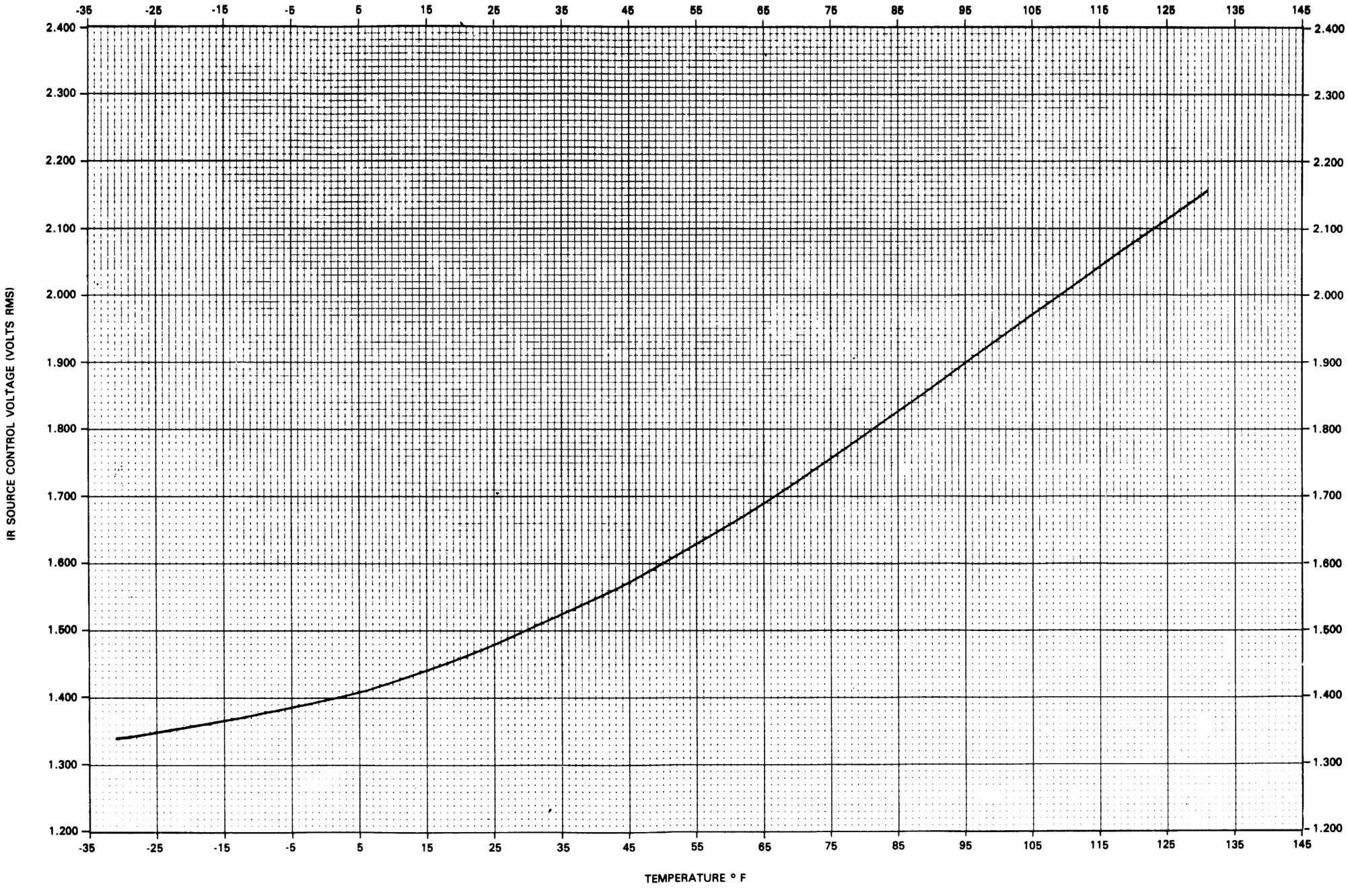


Figure 6-1. Thermistor temperature/resistance curve



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TEMPERATURE °F

Figure 6-2. IR Source control voltage vs. Temperature.

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		IR Source and Detector Normalization (3A1), (1A8) (PART B).	
93	OAC	Remove the rear cover on the OAC to expose the 3A1 card.	
94	NOAF	Position and secure the detector holding fixture on the NOAF.	
95	NOAF	Position and secure the radiometer optics in the detector holding fixture, aligning them in as straight a line as possible.	
96		Install the radiometer detector in the radiometer optics.	
97	RAD	Connect cable 1W6-P2 to the radiometer.	
98	MCP	Connect cable 1W6-P1 to J9.	
99	RAD	Connect coax (special) between RAD and RAD optics.	
100	MCP	DMM LO switch to SYS GND.	
101	MCP	SELECTOR A switch to G21.	
102	CIP	COUNTER INHIBIT(SEC) dial to 06.00.	
103	PPE	SEQUENCE switch to AUTO 2.	
104	TTS	Momentarily actuate TEST START/STOP push button. (power on)	
105	CIP	Observe INHIB lamp illuminated.	
106	RAD	INPUT switch to COLL.	
107	RAD	FULL SCALE switch to 10^{-9}.	
108	NOAF DMM	Adjust the AZIMUTH and ELEVATION knobs to obtain a maximum reading.	
109	DMM	Adjust 3A1-R13 to 0.1840 ± 0.001 Vac.	
110	MCP	SELECTOR A switch to C24.	
111	MCP	DMM LO switch to 2.	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
112		Using the IR monitor voltage calibration vs temperature curve, figure 6-3, and the temperature recorded in step 90 determine and record the value for use in steps 113 and 118 below.	
113	TTS	Adjust 3A1-R8 to the value recorded in step 112 above ± 0.003 Vac.	
114	CIP	RUN/HOLD/OFF switch to HOLD.	
115	CIP	COUNTER INHIBIT(SEC) dial to 18.00.	
		NOTE **Perform step 118 adjustment within 60 seconds of step 117 action. If unable, actuate TTS TEST START/STOP switch (power off), wait 5 minutes then restart test at step 104.**	
116	CIP	RUN/HOLD/OFF switch to RUN.	
117	CIP	Observe INHIB lamp illuminated.	
118	DMM	Adjust 3A1-R17 to the value recorded in Step 112 above ± 0.003 Vac.	
119	TTS	Momentarily actuate TEST START/STOP switch (power off).	
120		Disconnect and stow the radiometer optics and its cabling.	
		IR Source and Detector Normalization (3A1)	
121	OAC	Reinstall sensor end of thermistor cable and cover on rear of OAC. Wait 5 minutes for temperature stabilization.	
122	TTS	MODE switch to MISSILE CMD.	
123	TTS	FREQUENCY dial to 49.	
124	MCP	SELECTOR A switch to F23.	
125	CIP	COUNTER INHIBIT(SEC) dial to 06.00.	

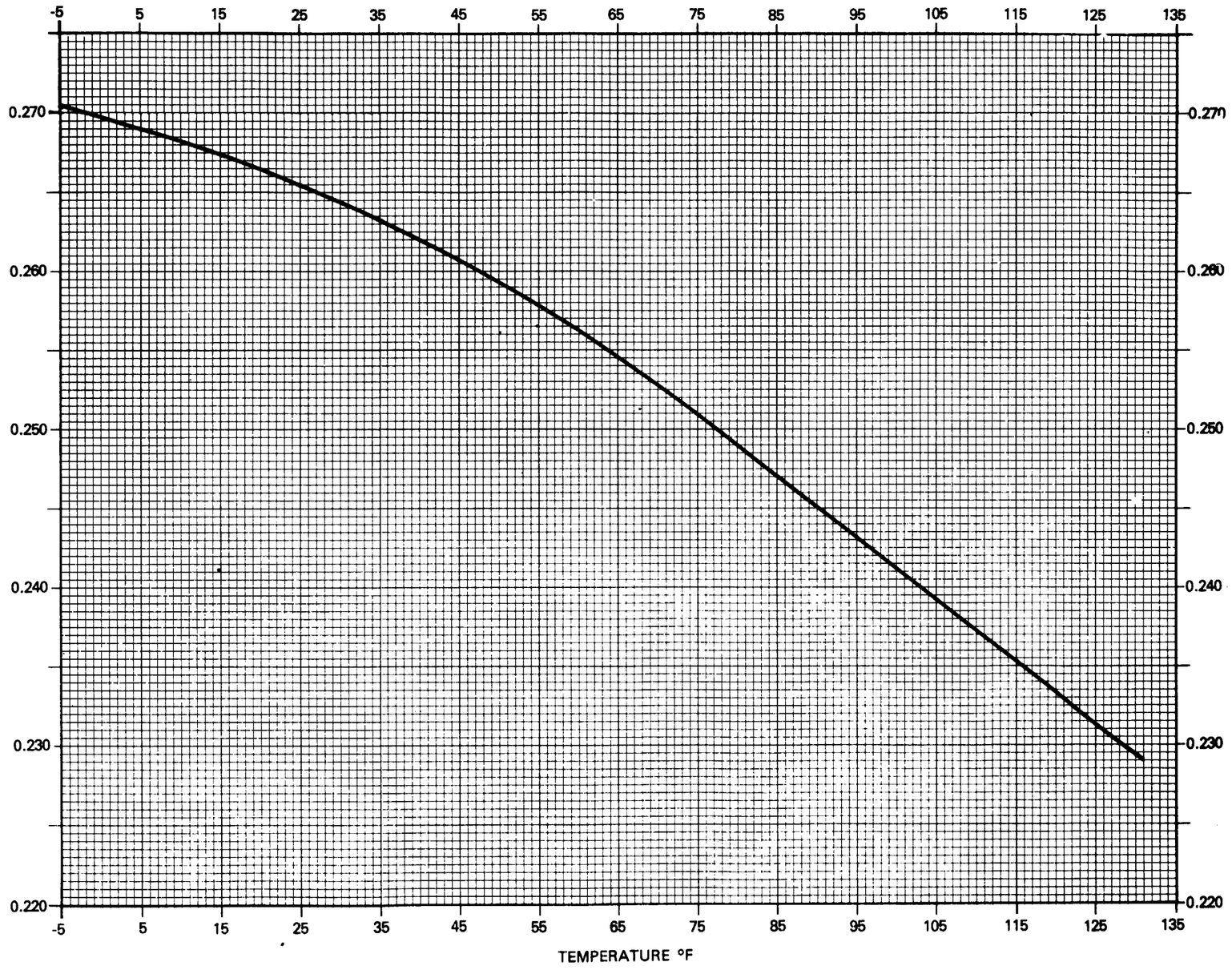

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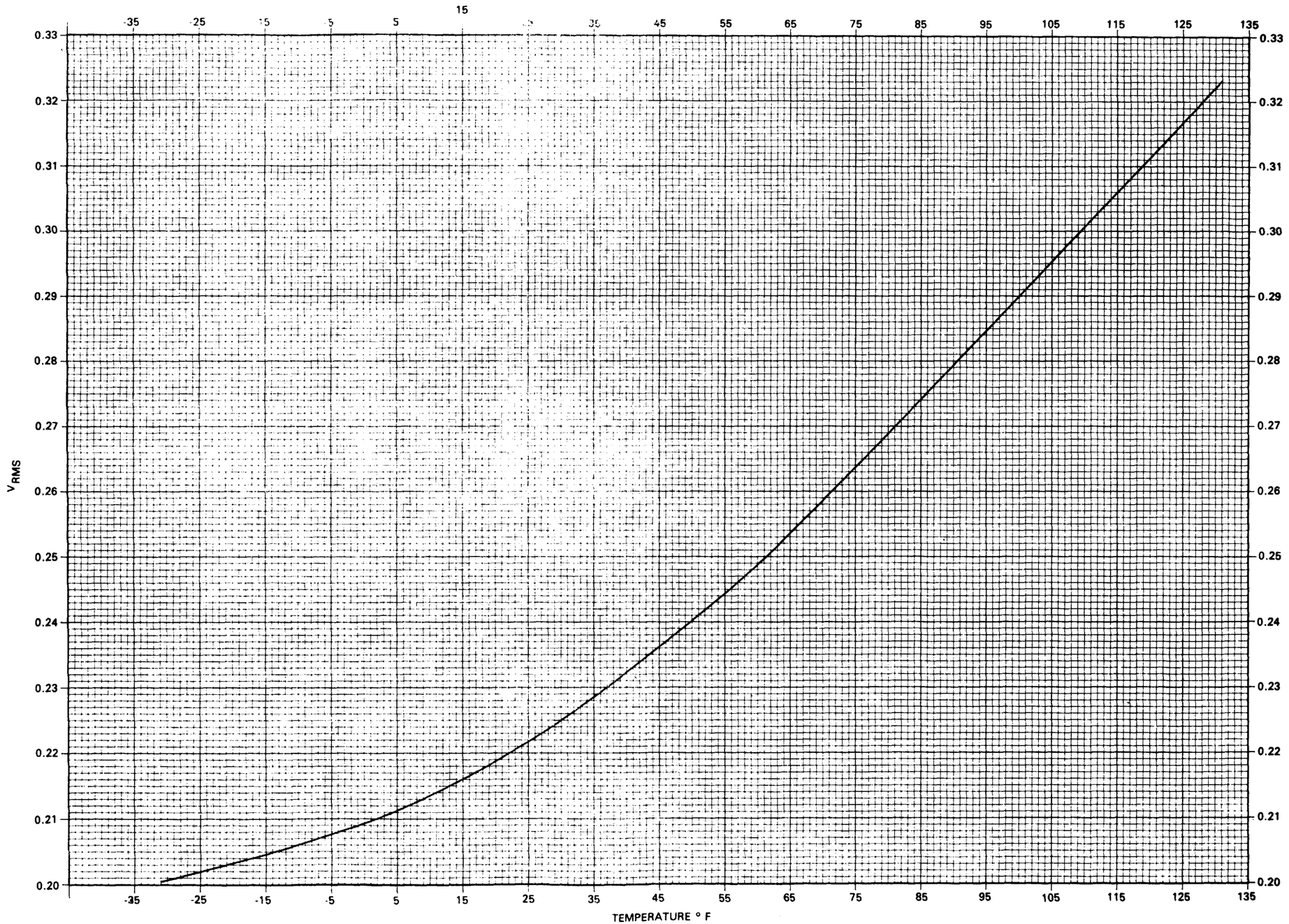
Figure 6-3. IR Monitor voltage calibration vs. temperature curve

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
126	TTS	Momentarily depress TEST START/STOP pushbutton. (power on)	
127	CIP	Observe INHIB lamp illuminated.	
128	MCP	DMM LO switch to EXT.	
129	MCP	DI" FUNCTION switch to K OHMS.	
130	MCP	DMM INPUT switch to DMM INPUT.	
131	DIM	Observe and record the resistance reading.	
132	MCP	DMM INPUT switch to SEL A.	
133	MMP	LO switch to SEL B.	
134	MCP	FUNCTION switch to VAC.	
135		Convert the resistance reading recorded in step 131 to a temperature value using the chart in figure 6-1. Record the temperature value.	
136		Using the IR source control voltage vs temperature curve, figure 6-2 and the temperature recorded in Step 135 above, determine and record the value for use in step 137.	
137	TTS	Adjust 1A8A1-R18 to the value recorded in step 136 above ± 0.002 Vac.	
138	TTS	Momentarily depress TEST START/STOP pushbutton. (power off)	
139	CIP	COUNTER INHIBIT(SEC) dial to 17.01.	
140	TTS	Momentarily depress TEST START/STOP pushbutton. (power on)	
141	CIP	Observe INHIB lamp illuminated.	
142		Using the squelch power level vs temperature chart in figure 6-4 and the temperature recorded in step 135 determine and record the value for use in Step 143 below.	
143	TTS DMM	Adjust 1A8A1-R29 to the value recorded in step 142 above ± 0.02 Vac.	

Table 6-2. TTSG Maintenance Calibration - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
144	TTS	Momentarily depress TEST START/STOP pushbutton.	
145	TTS	FREQUENCY dial to 00.	
146	CIP	COUNTER INHIBIT(SEC) dial to 05.00.	
		<u>Infrared Monitor Voltage(A9)</u>	
147	PPE	SEQUENCE switch to MNL.	
148	TTS	MONITOR SELECT switch to IB OUTPUT.	
149	TTS	Momentarily actuate TEST START/STOP switch. (power on)	
150	CIP	Observe INHIB lamp illuminated.	
151	TTS	Adjust 1A9A2-R23 to 7.5 on the MONITOR meter.	
152	TTS	Momentarily actuate TEST START/STOP switch. (power off)	
153	TTS	CHARGE switch to OFF.	
154	TTS	POWER switch to OFF.	
155	PP	MAIN POWER and DMS switches to OFF.	
156		Disconnect and stow all test cables and accessories.	



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TEMPERATURE °F

Figure 6-4. Squelch power level vs. temperature

Table 6-3, TTSG Performance Test

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **The major units and panels will be identified by the initials as indicated below.**	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	CT	COUNTER TIMER	
	PP	POWER panel	
	MCP	MONITOR/CONTROL panel	
	CIP	COUNTER INHIBIT (SEC) panel	
	PPE	PROG PERFORM EVAL panel	
	TPS	TRIGGER PULSE SIM panel	
	HWS	HORIZ WIRE SIM panel	
	TP	TRAINER panel	
	PD	PEAK DETECTOR panel	
	TKP	TRACKER panel	
	RAD	RADIOMETER	
		DMS-S	
	D-S	ADAPTER GROUP TEST	
		UUT	
	TTS	TRACKER TEST SET	
	TTSG	TRACKER TEST SET GROUP	
	NOAF	NIGHT OPTICAL ALIGNMENT FIXTURE	
	OAC	OPTICAL ALIGNMENT COLLIMATOR	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
	TC	THERMAL COLLIMATOR	
	NDMI	NIGHT OAF DMM	
		SUPPORT	
	OSC	OSCILLOSCOPE (AN/USM-338)	
		NOTE **Refer to fig. 3-36, TM 9-4935-481-14-1 for test point and potentiometer locations. For fault isolation where marked by a △, see pages at the end of the table. Otherwise refer to** **schematic diagram and components located at end of chapter 6.**	
		NOTE **After replacement of cards 6A1, 6A2 or 6A3 the TTSG calibration (table 6-2) must be performed before rerunning this performance test.**	
1		Prepare the DMS-D for testing per paragraph 2-6, TM 9-4935-481-14-1	
2		Prepare the TTS and TTSG for Night Tracker testing per TM 9-4935-484-14, and connect the cables as depicted.	

Table 6-3. TTSG Performance Test - Continued

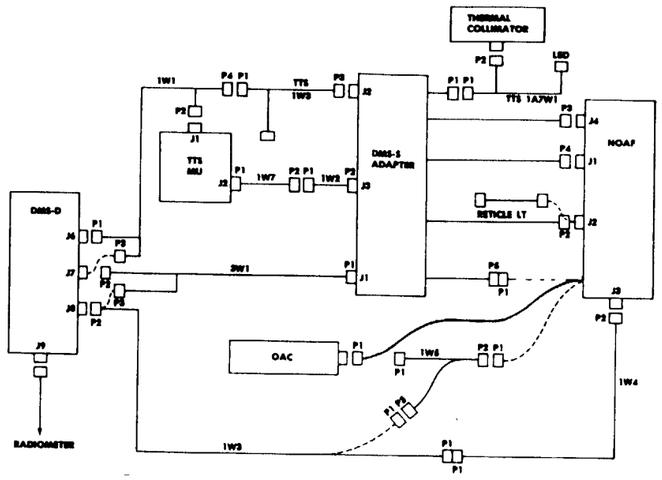
STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
			
		DMS-D, TTS, TTSG CABLE HOOK UP	
3	TTS	POWER switch to OFF.	
4	TTS	MODE switch to SELF TEST.	
5	TTS	CHARGE switch to ON.	
6	NOAF	Adjust all LIGHT controls fully CCW/OFF.	
7	CIP	COUNTER INHIBIT (SEC) dial to 12.50.	
8	CIP	RUN/HOLD/OFF switch to RUN.	
9	PP	MAIN POWER switch to ON.	
10	D-S	MODE switch to OFF.	
11	D-S	CROWBAR TEST SELECT switch to OFF.	
12	D-S	POWER SELECT switch to NORT4.	
		NOAF Continuity Test	
13	D-S	MONITOR SELECT switch to NORM4.	
14	NOAF	METER SELECT switch to OFF.	
15	MCP	DMM INPUT switch to DMM INPUT.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
16	MCP	DMM LO switch to SEL B.	
17	MCP	DMM FUNCTION switch to K OHMS.	
18	MCP	SELECTOR A switch to G23.	
19	MCP	SELECTOR B switch to D23.	
20	MCP	Disconnect 1W1-P1 from J6.	
21	DMM NOAF	Touch DMM pos. probe to the NOAF chassis.	
22	DMM	Observe a reading of ≤ 0.0030 k ohms.	1
23	TTS DMM	Remove the Dftl1 pos. probe from the NOAF chassis and connect it to the TTS monitoring unit (MU) chassis.	
24	DMM	Observe a reading of ≤ 0.0030 k ohms.	Check TTS J1-J.
25	DMM OAC	Remove the DMM pos. probe from the TTS-MU chassis and touch it to the OAC chassis.	
26	DMM	Observe a reading of ≤ 0.0035 k ohms.	2
27	MCP	DMM INPUT switch to SEL A.	
28	DMM	Observe a reading of ≥ 0.5000 k ohms.	Check J1-J, J1-F on TTS-MU, NOAF and OAC.
29	MCP	Reconnect 1W1-Pl to J6.	
30	NOAF	Disconnect NOAF P1 from OAC J1. Connect 14UAF P1 to DMS-S P5.	
31	MCP	DMM LO switch to 5.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
32	MCP	DMM FUNCTION switch to VDC.	
		Power Control Battery	
33	NOAF	NIGHT COLLIMATOR LIGHT control fully cw.	
34	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
35	MCP	SELECTOR A switch to A14.	
36	DMM	Observe a reading of -14.72 to -16.28 Vdc.	Replace card 6A2. Check 6A2 pins 1, 2 and 37.
37	MCP	SELECTOR A switch to D11.	
38	DIM	Observe a reading of +14.72 to +16.28 Vdc.	Replace card 6A2. Check 6A2 pins 1, 2 and 37.
39	D-S	POWER SELECT switch to A.	
40	PPE	SEQUENCE switch to AUTO 2.	
41	PPE	FUNCTION TEST switch to +24V REG.	
42	PPE	Momentarily actuate TEST START switch (power on).	
43	DMM	Observe a reading of +22.80 to +25.20 Vdc.	Replace card 6A2. Check pins 34, 4 and 2.
44	MCP	SELECTOR A switch to A14.	
45	DMM	Observe a reading of -22.80 to -25.20 Vdc.	Replace card 6A2, Check 6A2 pins 1 and 37.
46	PPE	Momentarily actuate TEST START switch (power off).	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
47	PPE	FUNCTION TEST switch to +14V REG.	
48	TTS	POWER switch to ON.	
49	TTS	Momentarily depress TEST START/STOP pushbutton (power on).	
50	DMM	Wait 1 minute, observe a reading of -16.00 to -24.00 Vdc.	Run TTS performance test. Check TTS J2 pins 1 and 2.
51	TTS	Momentarily depress TEST START/STOP pushbutton (power off).	
52	TTS	POWER switch to OFF.	
53	D-S	POWER SELECT switch to B.	
54	PPE	Momentarily actuate TEST START switch (power on).	
55	DMM	Observe a reading of -14.72 to -16.28 Vdc.	Replace card 6A2. Check 6A2 pins 2 and 37.
56	MCP	SELECTOR A switch to C10.	
57	DMM	Observe an open reading (meter drifts).	Replace card 6A2. Check 6A2 pin 1.
58	MCP	SELECTOR A switch to D11.	
59	D44	Observe a reading of +14.72 to +16.28 Vdc.	Replace card 6A20 Check 6A2 pin 35.
60	PPE	Momentarily actuate TEST START switch (power off).	
61	D-S	POWER SELECT switch to A.	
		Power Control Thermal Power	
62	NOAF	MODE SELECT switch to NIGHT A.	
63	MCP	SELECTOR A switch to B17.	

Table 6-3. TTSG Performance lost - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
64	TTS	POWER switch to ON.	
65	TTS	Momentarily depress TEST START/STOP pushbutton (power on).	
66	TTS	Observe TESTING lamp illuminated,	
67	DMM	Observe a reading of -11.70 to -14.30 Vdc.	Replace card 6A2. Check 6A2 pins 3 and 8 for shorts to ground, pin 10.
68	MCP	SELECTOR A switch to B9.	
69	DMM	Observe a reading of +11.70 to +14.30 Vdc.	Replace card 6A2. Check 6A2 pins 45 and 42 for shorts to ground, pin 10.
70	TTS	Momentarily depress TEST START/STOP pushbutton (power off).	
71	TTS	POWER switch to OFF.	
72	NOAF	MODE SELECT switch to OFF.	
73	PP	DMS switch to OFF.	
74		Disconnect 1W3-P1 from 1W4-P1 and NOAF-P1 from DMS-S-PS.	
75		Connect 1W5-P3 to 1W3-P1, 1W5-P2 to NOAF-P1 and 1W5-P1 to the OAC.	
76	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
77	NOAF	Adjust the NIGHT COLLIMATOR LIGHT control fully ccw.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Lamp Control (1A6A1)	
78	NOAF	Adjust COLLIMATOR RETICLE LIGHT control fully cw.	
79	NOAF	Adjust SELF TEST LIGHT control fully cw.	
80	MCP	DMM LO switch to SEL B.	
81	MCP	SELECTOR A switch to E14.	
82	MCP	SELECTOR B switch to E16.	
83	PPE	FUNCTION TEST switch to +24V REG.	
84	PPE	Momentarily actuate TEST START switch (power on).	
85	DMM	Observe a reading of +28.00 to +34.00 Vdc (Allow DMM to stabilize).	
		3	
86	MCP	SELECTOR B switch to E170	
87	DMM	Observe a reading of +28.00 to +34.00 Vdc.	Check NOAF R2 control and wiring P1-T and J1
88	NOAF	Adjust COLLIMATOR RETICLE LIGHT control fully ccw.	
89	NOAF	Adjust SELF TEST LIGHT control to fully ccw.	
90	DMM	Observe a reading of -0.5000 to +0.5000 Vdc (Allow DMM to stabilize).	Check NOAF R2 control, P1-T and J1-K
91	MCP	SELECTOR B switch to E16o	
92	DMM	Observe a reading of -0.5000 to +0.5000 Vdc.	Check NOAF R1 control and wiring P1-S and J1-K.
93	PPE	Momentarily actuate TEST START switch. (power off)	
94	D-S	POWER SELECT switch to NORM.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
95	TTS	Remove the prism from the case cover of the TTS and installation the objective lens of the OAC.	
96	MCP	SELECTOR A switch to A16.	
97	MCP	SELECTOR B switch to D23.	
98	OAC	Observe the COLLIMATOR RETICLE LIGHT and SELF TEST LIGHT are OFF.	Check NOAF R1 and R2 controls. Check P1-S and T.
99	NOAF	Adjust the COLLIMATOR RETICLE LIGHT control fully cw.	
100	OAC	View into the eyepiece and verify the reticle light is illuminated. Adjust eyepiece focus control for a sharp reticle image,. △4	
101	DWM	Observe a reading of -13.50 to -16.50 Vdc.	Replace card 6A1. Check 6A1 pins 2, 4, 5 and 7.
102	NOAF	Adjust SELF TEST LIGHT control fully cw.	
103	OAC	Adjust OAC FOCUS control for a sharp red circular image. The entire dot must fall within the Boresi nt square. △5	
104	NOAF	Adjust COLLIMATOR RETICLE LIGHT control fully ccw.	
105	DMH	Observe a reading of -13.50 to -16.50 Vdc,	Replace card 6A1. Check 6A1 pins 1, 4, 5 and 7.
106	NOAF	Adjust SELF TEST LIGHT control fully ccw.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
107	DMM	Observe a reading ≥ +13.95 Vdc.	Replace card 6A1. Check 6A1 pins 4, 2 and 10
		Lamp Control 1A6A2	
108	NOAF	Adjust NIGHT COLLIMATOR LIGHT control fully cw.	
109	NOAF	Adjust TRACKER RETICLE LIGHT control fully cw.	
110	MCP	SELECTOR A switch to B16.	
111	MCP	SELECTOR B switch to B14.	
112	D-S	POWER SELECT switch to A.	
113	PPE	Momentarily actuate TEST START switch (power on).	
114	TTS	Observe TESTING lamp illuminated.	
115	DMM	Observe a reading of +1.600 to +3.200 Vdc. △6	
116	MCP	SELECTOR A switch to A20.	
117	MCP	SELECTOR B switch to A22.	
118	DMM	Observe a reading of +28.00 to +34.00 Vdc.	Check NOAF R3 control and J2-B and J1-K.
119	PPE	Momentarily actuate TEST START switch (power off).	
120	NOAF	Adjust NIGHT COLLIMATOR LIGHT control fully ccw.	
121	NOAF	Adjust TRACKER RETICLE LIGHT control fully ccw.	
122	PP	DMS switch to OFF.	
123	MCP	Disconnect 3W1-P2 from J7.	
124	MCP	Connect 1W1-P3 to J7.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
125	NOAF	Disconnect D-S P2 from NOAF J2.	
126	NOAF	Connect the tracker reticle light connector to NOAF J2. (Use extension cable)	
127	PP TP	DMS switch to ON. Momentarily actuate TFST STAPT switch.	
128	MCP	DMM LO switch to 5.	
129	MCP	SELECTOR A switch to B8.	
130	D-S	POWER SELECT switch to NORM.	
131	TTS	Observe the tracker reticle light is OFF.	Check NOAF R3.
132	TC	View into the large lens of the thermal collimator, verify no visible light.	Check NOAF R4.
133	NOAF	Observe tracker reticle light assembly face for change in light intensity while rotating TRACKER RETICLE LIGHT control through its range. Leave control filly cw.	Replace bulb in reticle light assy. Check J2 B and C.
134	DMM	Observe a reading of -13.78 to -15.23 Vdc.	Replace card 6A2. Check 6A2 pins 38 and 40.
135	NOAF	Adjust TRACKER P, F7ICLE !IGHI control fully ccw.	
136	TC NOAF	View into the large lens of the thermal coilimator and observe a red ring when the NIGHT COLLIMATOR LIGHT control is adjusted in the cw direction.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
			Replace the LED assy in thermal collimator.
137	DMM	Observe a reading of -13.78 to -15.23 Vdc.	
			Replace card 6A2. Check 6A2 pins 39 and 40.
138	NOAF	Adjust NIGHT COLLIMATOR LIGHT control switch fully ccw.	
139	DMM	Observe a reading of > +1.000 Vdc.	
			Replace card 6A2. Check 6A2 pins 39 and 40.
140	NOAF	Disconnect the reticle light from NOAF-J2.	
141	NOAF	Connect D-S P2 to NOAF-J2.	
142	NOAF	Disconnect 1W5-P2 from NOAF-P1.	
143	NOAF	Connect D-S P5 to NOAF-P1.	
		Charger Control Interlock	
144	NOAF	Adjust SELF TEST LIGHT control fully cw.	
145	DMM	Observe are reading of -13.78 to -15.23 Vdc.	
			Replace card 6A2. Check 6A2 pins 40 and 41.
146	NOAF	Adjust SELF TEST LIGHT control fully ccw.	
147	NOAF	METER SELECT switch to HORIZ.	
148	DMM	Observe a reading -13.78 to -15.23 Vdc.	
			Replace card 6A2. Check 6A2 pins 44, 40 and 37.
149	NOAF	METER SELECT switch to OFF.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
150	NOAF	MODE SELECT switch to NIGHT ADJ.	
151	DMM	Observe a reading of -13.78 to -15.23 Vdc.	
			Replace card 6A2. Check 6A2 pins 36 and 40.
152	PP	DMS switch to OFF.	
153		Disconnect 1W3-P1 from 1W5-P30	
154		Connect 1W3-P1 to 1W4-P1.	
155	MCP	Disconnect 1W1-P3 from J7,	
156	MCP	Connect 3W1-P2 to J7.	
157	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
		Crowbar - Overcurrent	
158	TTS	POWER switch to ON.	
159	MCP	SELECTOR A switch to B9.	
160	D-S	POWER SELECT switch to A.	
161	TFS	Momentarily depress TEST START/STOP pushbutton (power on).	
162	CIP	Wait until INHIB lamp illuminates.	
163	TTS	Observe TESTING lamp illuminated.	
164	D-S	CROWBAR TEST SELECT switch to +13.	
165	TTS	Verify POWER switch has not tripped to OFF.	
			Replace card 6A2, Check 6A2 pins 4, 1 and 2.
166	D-S TTS	Momentarily actuate CROWBAR TEST ACTUATE switch. Observe POWER switch trips to OFF.	
			Replace card 6A2, Check 6A2 pins 8, 3, 1 and 4.

Table 6-30. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
167	TTS	POWER switch to ON.	
168	TTS	Momentarily depress TEST START/STOP pushbutton (power on).	
169	TTS	Observe TESTING lamp illuminated.	
170	CIP	Wait until !NHIB lamp illuminates.	
171	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Replace card 6A2. Check 6A2 pins 3 and 8.
172	D-S	CROWBAR TEST SELECT switch to -13.	
173	MCP	SELECTOR A switch to B17.	
174	D-S TTS	Momentarily actuate CROWBAR TEST ACTUATE switch. Observe POWER switch trips to OFF.	
			Replace card 6A2. Check 6A2 pins 42, 45, 1 and 4.
175	TTS	POWER switch to ON.	
176	TTS	Momentarily depress TEST START/STOP pushbutton (power on).	
177	CIP	Wait until !NHIB lamp illuminates.	
178	TTS	Observe TESTING lamp illuminated.	
179	DMM	Observe a reading o- -11.70 to -14.30 Vdc.	
			Replace card 6A2. Check 6A2 pins 42 and 45.
183	D-S	CROWBAR TEST SELECT switch to +30.	
181	MCP	SELECTOR A switch to A22.	
182	MCP	SELECTOR B switch to A20.	
183	MCP	DMM LO switch to SEL B.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
184	NOAF	TRACKER RETICLE LIGHT control fully cw.	
185	D-S	Momentarily actuate CROWBAR TEST ACTUATE switch. Observe POWER switch trips to OFF.	
			Replace card 6A2. Check 6A2 pins 5, 4 and 1.
186	TTS	POWER switch to ON.	
187	TTS	Momentarily depress TEST START/STOP pushbutton (power on).	
188	CIP	Wait until INHIB lamp illuminates.	
189	TTS	Observe TESTING lamp illuminated.	
190	DMM	Observe a reading of -28.00 to -34.00 Vdc.	
			Replace card 6A2. Check 6A2 pins 5, 4 and 1.
191	D-S	CROWBAR TEST SELECT switch to +31.	
192	MCP	SELECTOR A switch to A21.	
193	MCP	SELECTOR B switch to C1.	
194	NOAF	TRACKER RETICLE LIGHT control fully ccw.	
195	NOAF	SELF TEST LIGHT control fully cw.	
196	D-S TTS	Momentarily actuate CROWBAR TEST ACTUATE switch. Observe POWER switch trips to OFF.	
			Replace card 6A2. Check 6A2 pins 7, 4 and 1.
197	TTS	POWER switch to ON.	
198	TTS	Momentarily depress TEST START/STOP pushbutton (power on)	
199	CIP	Wait until INHIB lamp illuminates.	
200	TTS	Observe TESTING lamp illuminated.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
201	DMM	Observe a reading of +28.00 to +34.00 Vdc.	
			Replace card 6A2. Check 6A2 pins 7, 4 and 1.
		Crowbar-Time Del	
202	MCP	SELECTOR A switch to D8.	
203	MCP	SELECTOR B sw4tch to C19.	
204	MCP	SELECTOR C switch to D8.	
205	CT	A INPUT switch to pos.	
206	CT	B INPUT switch to neg.	
207	CT	FUNCTION switch to TIME A - B.	
208	CT	FREQ/TIME/MULT switch to 103.	
209	CT	Adjust DISPLAY control fully cw to HOLD.	
210	MCP	Disconnect cable from J14 and connect it to J13.	
211	CT	Momentarily depress RESET pushbutton.	
212	D-S	Momentarily actuate CROWBAR TEST ACTUATE switch. Observe POWER switch tips to OFF.	
			Replace card 6A2. Check 6A2 pins 7, 4 and 1.
213	TTS	Observe TESTING light extinguished.	
214	CT	Observe a reading of 15 to 80 msec.	
			Replace card 6A2. Check 6A2 pins 17, 1 and 7.
215	NOAF	SELF TEST LIGHT control fully ccw.	
216	MCP	Disconnect cable from J13 and connect it to J14.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Reference Gert. (-8.880 Vdc)	
217	MCP	SELECTOR A switch to D9.	
218	MCP	SELECTOR B switch to D23.	
219	D-S	CROWBAR TEST SELECT switch to OFF.	
220	D-S	POWER SELECT switch to NORM.	
221	DMM	Observe a reading of -8.790 to -8.970 Vdc.	
			Replace card 6A2. Check 6A2 pin 25. Perform TSG Maintenance Calibration (-8.88V Ref. Gen. section) steps 25 thru 27.
		DMM and DMM PS1	
222	NOAF	METER SELECT switch to TEST.	
223	MCP	SELECTOR A switch to C3.	
224	DMM	Observe a reading of +4.900 to +5.300 Vdc. △7	
225	NOAF DMM	METER SELECT switch to all positions from HORIZ to EXT while observing a reading of +4.900 to +5.300 in all positions.	
			Check NOAF METER SELECT switch, deck's A & B.
226	MCP NOAF	Connect a 10215396 cable to J15 and the white probe to NOAF J5 with black probe to J6.	
227	NOAF	METER SELECT switch to EXT.	
228	MCP	SELECTOR A switch to C7.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
229	MCP	SELECTOR B switch to B11.	
230	MCP	SELECTOR C switch to F11.	
231	MCP DMM	Adjust COMPARATOR THRESHOLD B control to +9.000 ± 0.005 Vdc.	
232	NDMM	Observe a reading of +8.850 to +9.090 Vdc.	
			Perform the digital panel meter calibration per Table 6-2. Replace NDMM.
233	MCP DMM	Adjust COMPARATOR THRESHIOLD B control to -9.000 Vdc.	
234	DMM	Observe a reading of -8.850 to -9.090 Vdc.	
			Perform the digital panel meter calibration per Table 6-2. Replace NDMM.
235	MCP NDMM	Adjust COMPARATOR THRESHOLD B control for +8.888 display on the NDMM.	
236	NDMM	Observe all segments of the NDMM are illuminated.	
			Replace NDMM.
237	MCP DMM	Adjust COMPARATOR THRESHOLD B control for +2.500 + 0.005 Vdc.	
238		Remove cable at J15, NOAF J5 and NOAF J6.	
239	NOAF	METER SELECT switch to TEST.	
240	NDMM	Observe a reading of -8.690 to -9.070 Vdc. △8	
		P.S. Reg. Test (+ 16.0 Vdc)	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
241	MCP	SELECTOR A switch to E14.	
242	MCP	SELECTOR B switch to E16.	
243	PP	DMS switch to OFF.	
244		Disconnect 1W3-P1 from 1W4-P1.	
245		Connect 1W3-P1 to 1W5-P30	
246		Disconnect NOAF-P1 from D-S-P5.	
247		Connect NOAF-P1 to 1W5-P2.	
248	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
249	NOAF	Adjust COLLIMATOR RETICLE LIGHT control fully cw.	
250	NOAF	Adjust TRACKER RETICLE LIGHT control fully cw.	
251	DMM	Observe a reading of > +26.50 Vdc.	
			Replace card 6A1. Check 6A1 pins 7 and 5.
252	MCP	SELECTOR A switch to A20.	
253	MCP	SELECTOR B switch to A22.	
254	DMM	Observe a reading of > +26.50 Vdc.	
			Replace card 6A2. Check 6A2 pins 5 and 1.
255	MCP	SELECTOR A switch to B17.	
256	MCP	DMM LO switch to 5.	
257	DMM	Observe a reading of -1170 to -14.30 Vdc.	
			Replace card 6A2. Check 6A2 pins 3 and 8.
258	MCP	SELECTOR A switch to 89.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
259	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Replace card 6A2. Check 6AZ pins 45 and 42.
260	MCP	SELECTOR A switch to C3.	
261	DMM	Observe a reading of +4.900 to +5.300 Vdc.	
			Replace card 6A2, Check 6A2 lugs 2, 3, 9 and 10.
262	MCP	SELECTOR A switch to D9.	
263	DMM	Observe a reading of -8.790 to -8.970 Vdc.	
			Replace card 6A2, Check 6A2 pin 25. Perform TTSG Maintenance Calibration (-8.88V Ref. Gen. section) steps 25 thru 27.
264	PP	DMS switch to OFF.	
265	MCP	Disconnect 1W3-P2 from J80	
266		Connect 3W1-P3 to DMS-J8.	
267	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
		Horiz/Vert_Filters_DC	
268	PPE	FUNCTION TEST switch to +14V Reg.	
269	PPE	SEQUENCE switch to MNL.	
270	D-S	MODE switch to 1.	
271	MCP	SELECTOR A switch to C4.	
272	MCP	SELECTOR B switch to B1.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
273	MCP	DMM LO switch to SEL B.	
274	PPE	Momentarily actuate TEST START switch (power on).	
275	CIP	Wait until INHIB light illuminates.	
276	TTS	Observe TESTING light illuminated.	
277	HWS DMM	Adjust DC LEVEL control to +7.000 ± 0.01 Vdc.	
278	MCP	SELECTOR A switch to D2.	
279	DMM	Observe a reading of +7.739 to +7.801 Vdc. Record for use in step 285 below.	Replace card 6A2. Check 6A2 pins 21 and 24.
280	MCP	SELECTOR A switch to D1.	
281	DMM	Observe a reading of +7.739 to +7.801 Vdc. Record for use in step 283 below.	Replace card 6A2. Check 6A2 pins 20 and 23.
		Horiz/Vert Filters AC	
282	HWS	Adjust RIPPLE control fully cw.	
283	DMM	Observe the reading recorded in step 281 above ± 0.02 Vdc.	Replace card 6A2. Check 6A2 pins 20 and 23.
284	MCP	SELECTOR A switch to D2.	
285	DMM	Observe the reading recorded in step 279 above ± 0.02 Vdc.	
286	PPE	Momentarily actuate TEST START switch (power off).	

Table 6-3. TTSG Performance Test - Continued

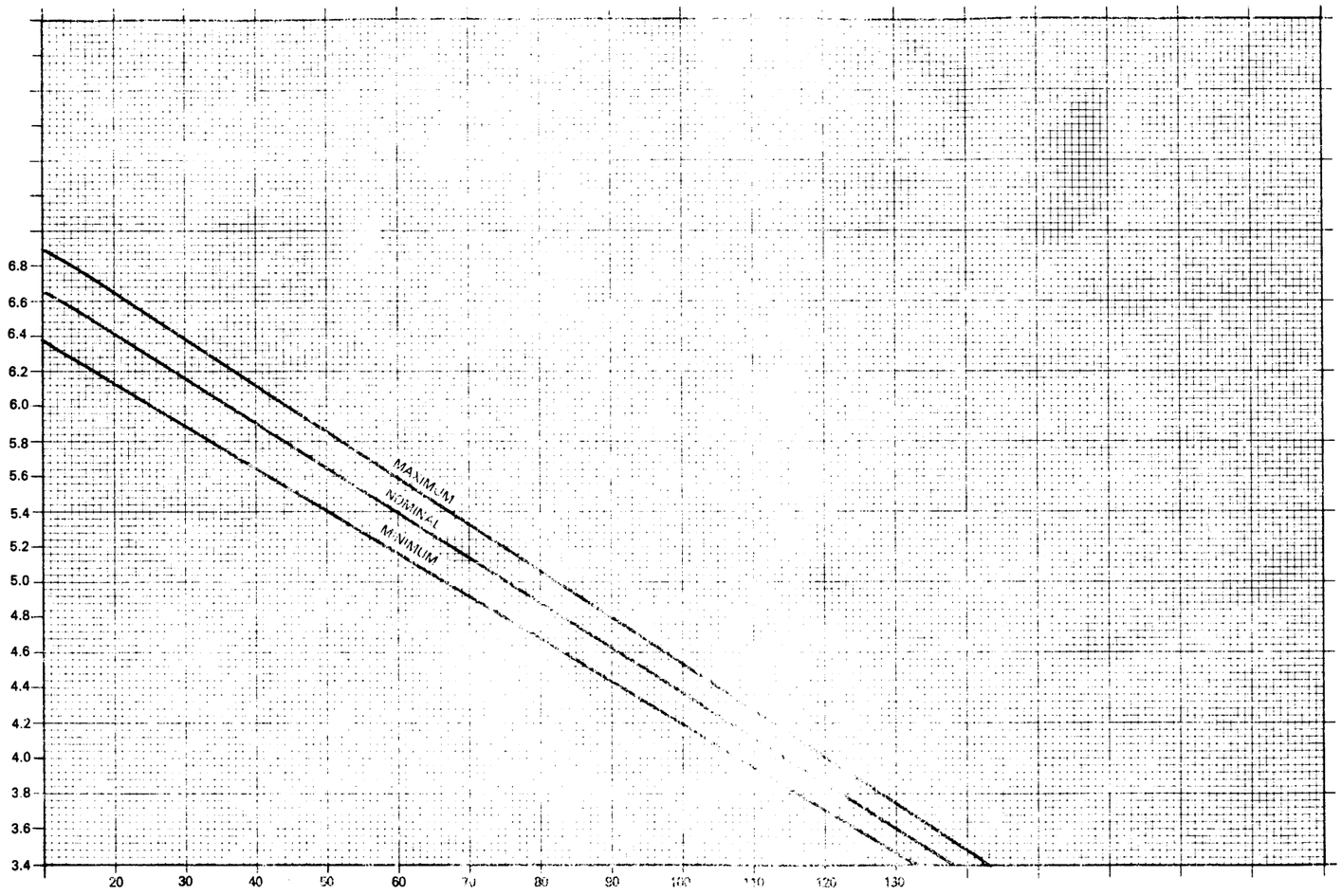
STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
287	HWS	Adjust DC LEVEL control fully ccw.	
288	HWS	Adjust RIPPLE control fully ccw.	
		THERMAL CONTROL CKT.	
289	D-S	MODE switch to 5.	
290	MCP	SELECTOR A switch to B13.	
291	MCP	SELECTOR B switch to B17.	
292	DMM	Observe a reading of +16.67 to +21.09 Vdc.	
		23	
293	MCP	SELECTOR A switch to A20.	
294	MCP	SELECTOR B switch to A15.	
295	DMM	Observe a reading of -0.1000 to +0.1000 Vdc.	Replace card 6A2. Check 6A2 pins 19 and 45.
296	NOAF	Observe the THERMAL SOURCE light is extinguished.	Replace THERMAL SOURCE light. Check lamp assy. for shorts to ground.
297	D-S	MODE switch to 1.	
298	MCP	SELECTOR A switch to D3.	
299	MCP	SELECTOR B switch to B1.	
300	DMM	Observe a reading of +3.840 to +4.840 Vdc.	Replace card 6A2. Check 6A2 pins 32, 31, 33 and 29.
		OAF Temp Sense	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **Allow temperature to stabilize if testing had been interrupted (if power was off).**	
301	MCP	Disconnect 1W14 cable from J17.	
302	MCP	Connect 10277059 thermistor cable to J17.	
303	NOAF	Mount the sensor end of the thermistor cable under cover screw at the NDMM end of NOAF. Assure that the sensor junction is making good mechanical contact.	
304	MCP	DMM INPUT switch to DMM INPUT.	
305	MCP	DMM LO switch to EXT.	
306	MCP	DMM FUNCTION switch to K OHMS.	
307	DM1	Observe and record the resistance reading for use in the next step.	
308		Convert the resistance reading recorded in the previous step to a temperature value using the chart in figure 6-1 (located in table 6-2). Record the °F temperature.	
309	MCP	DMM FUNCTION switch to VDC.	
310	MCP	DMM INPUT switch to SEL A.	
311	MCP	DMM LO switch to SEL B.	
312	MCP	SELECTOR A switch to D4.	
313	DMM	Observe and record the Vdc. reading.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
314	MCP	SELECTOR A switch to A24.	
315	MCP	SELECTOR B switch to A23.	
316	DMM	Observe a reading of +0.7800 to +0.9500 Vdc and record the reading for use in the following step.	
			Replace card 6A2, Check 6A2 pins 32, 31 and 33.
317		Compute the ratio of the step 313 reading divided by the recorded reading in the previous step (316).	
318		Observe that the above ratio is within the limits specified in figure 6-5 for the value of temperature recorded in step 308.	
			Replace card 6A2. Check 6A2 pin 30.
319	MCP	SELECTOR A switch to D4.	
		Temp. Diff . Amp	
320	MCP	SELECTOR B switch to D3.	
321	NOAF	METER SELECT switch to HEATER.	
322	D-S	MODE switch to OFF.	
323	D-S DMM	Adjust THERMISTOR SIMULATOR control to +0.5700 ± 0.003 Vdc.	
324	MCP	SELECTOR A switch to D5.	
325	MCP	SELECTOR B switch to B1.	
326	DMM	Observe a reading of +1.310 to +1.390 Vdc, and record for use in step 327.	
			Replace card 6A2. Check 6A2 pins 28, 29 and 30.



THERMISTOR TEMP. °F

Figure 6-5. J1-N/J4-5 OAF buffer voltage ratio

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
327	NDMM	Observe the reading of step 326 above ± 0.027 Vdc.	
			Check wiring thru the METER SELECT switch deck C5 and D5.
328	MCP	SELECTOR A switch to D4.	
329	MCP	SELECTOR B switch to D3.	
330	D-S DMM	Adjust THERMISTOR SIMULATOR control to 0.0000 ± 0.01 Vdc.	
331	NDMM	Observe a reading of -0.160 to +0.160 Vdc.	
			Replace card 6A2. Check 6A2 pins 28, 29 and 30.
		Comparator Trip Point	
332	MCP	SELECTOR A switch to D5.	
333	MCP	SELECTOR B switch to B1.	
334	D-S DMM	Adjust THERMISTOR SIMULATOR control to +0.9300 ± 0.01 Vdc.	
335	MCP	SELECTOR A switch to B130	
336	MCP	SELECTOR B switch to B17.	
337	DMM	Observe a reading of +16.67 to +21.09 Vdc.	
			Replace card 6A2. Check 6A2 pins 18, 42 and 29.
338	NOAF	Observe THERMAL SOURCE light extinguished.	
			Replace card 6A2. Check 6A2 pins 19 and 45.
339	MCP	SELECTOR A switch to D5.	
340	MCP	SELECTOR B switch to B1.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
341	D-S DMM	Adjust THERMISTOR SIMULATOR control to +1.07 ± 0.01 Vdc.	
342	MCP	SELECTOR A switch to B13.	
343	MCP	SELECTOR B switch to B17.	
344	DMM	Observe a reading of +16.67 to +21.09 Vdc.	
			Replace card 6A2. Check 6A2 pins 18, 42 and 29.
345	NOAF	Observe THERMAL SOURCE light is ON. △9	
346	D-S	Slowly adjust the THERMISTOR SIMULATOR control ccw until the THERMAL SOURCE light goes off.	
			Repeat steps 336 thru 343 slowly. Replace card 6A2. Check 6A2 pins 19 and 45.
347	DMM	Observe a reading of +16.67 to +21.09 Vdc.	
			Replace card 6A2. Check 6A2 pins 18, 42 and 29.
348	MCP	SELECTOR A switch to D5.	
349	MCP	SELECTOR B switch to B1.	
350	DMM	Observe a reading of +0.740 to +0.880 Vdc.	
			Replace card 6A2. Check 6A2 pins 19 and 45.
351	MCP	SELECTOR A switch to B13.	
352	MCP	SELECTOR B switch to B17.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
353	D-S DMM	Slowly adjust the THERMISTOR SIMULATOR control cw until the DMM switches to a lower DC level. Observe a reading of +9.15/ to +11.58 Vdc.	Replace card 6A2. Check 6A2 pins 18, 42 and 29.
354	MCP	SELECTOR A switch to D5.	
355	MCP	SELECTOR B switch to B1.	
356	DMM	Observe a reading of +1.260 to +1.400 Vdc.	Replace card 6A2. Check 6A2 pins 18, 42 and 29.
357	D-S	Adjust THERMISTOR SIMULATOR control 1/2 turn ccw then repeat steps 351 through 356.	
		Thermal Collimator/OAF Interface	
358	PP	DMS switch to OFF.	
359		Remove the thermal collimator from the OAC (Remove mount)	
360		Disconnect and remove the 1W5 cable.	
361		Connect 1W3-P1 to 1W4-PI.	
362		Connect NOAF-P1 to the OAC-J1.	
363		Disconnect the sensor end of the thermistor probe cable from the NOAF.	
364	D-S	MODE switch to 3.	
365	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
366	NOAF	Verify METER SELECT switch to HEATER.	
		NOTE **Allow 3 to 5 minutes for temperature stabilization in next step.**	

Table 6-3. ITSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
367	NDMM	Observe a reading to fluctuate between 1.240 and 1.425 Vdc. The variation between the readings shall be less than 0.035 Vdc. (Readings may drift).	
		10	
		Clock Inhibit	
368	CIP	RUN/HOLD/OFF switch to OFF.	
369	MCP	SELECTOR B switch to E9,	
370	MCP	SELECTOR C switch to C12,	
371	CT	A INPUT switch to neg.	
372	CT	FREQ/TIME/MULT switch to 10^4	
373	CT	Momentarily actuate RESET pushbutton.	
374	PPE	Momentarily actuate TEST START switch (power on).	
375	CT	Observe a reading of 11.88 to 12.12 sec.	Replace card 6A2. Check 6A2 pins 15 and 14, MODE switch deck C lug CC1 and C1.
		MODE Switch Test	
376	CIP	RUN/HOLD/OFF switch to RUN.	
377	PPE	momentarily actuate TEST START switch two times (power off and on).	
378	CIP	Wait until INHIB lamp illuminates.	
379	MCP	DMM LO switch to 5.	
380	MCP NOAF	Set SELECTOR A switch and NOAF HODE switch as indicated and	
	DMM	observe the DMM for each series of switch settings.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE		CORRECTIVE ACTION
		NOAF MODE	SELECTOR A	READING
381		NIGHT-ADJ	B17	-11.70 to -14.30 Vdc.
382		NIGHT-NORM		-11.70 to -14.30 Vdc.
383		OFF		Open (Meter drifts) or < +0.5000 Vdc.
384		DAY-NORM		
385		DAY-ADJ	B17	
386		DAY-ADJ	B9	
387		DAY-NORM		
388		OFF		
389		NIGHT-NORM		+11.70 to +14.30 Vdc.
390		NIGHT-ADJ	B9	+11.70 to +14.30 Vdc.
391		NIGHT-ADJ	A18	-14.72 to -16.28 Vdc.
392		NIGHT-NORM		-14.72 to -16.28 Vdc.
393		OFF		Open (Meter drifts) or < +0.5000 Vdc.
394		DAY-NORM		
395		DAY-ADJ		
396		DAY-ADJ	C12	Open (Meter drifts) or < +0.5000 Vdc.
397		DAY-NORM		≥ +2.500 Vdc.
398		OFF		≥ +2.500 Vdc.
399		NIGHT-NORM		≥ +2.500 Vdc.
400		NIGHT-ADJ		Open (Meter drifts) or < +0.5000 Vdc.
				Corrective action for steps 381 thru 400 is check MODE switch circuitry.
401	PPE	Momentarily actuate TEST START switch (power off).		

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Meter Select Switch Test	
402	PP	DMS switch to OFF.	
403	D-S	MODE switch to 1.	
404	MCP	SELECTOR A switch to C4.	
405	CFP	SELECTOR B switch to B1.	
406	MCP	DMM LO switch to SEL B.	
407	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
408	PPE	Momentarily actuate TEST START switch (power on).	
409	HWS DMM	Adjust DC LEVEL control to +7.000 ± 0.01 Vdc.	
410	NOAF	Set NOAF METER SELECT switch to the positions indicated and observe the NOAF-DMM for each switch setting.	
		NOAF METER SELECT	NOAF DMM READING
411		OFF	No display
412		HORIZ	+7.638 to +7.902
413		VERT	+7.638 to +7.902
414		TEST	-8.690 to -9.070
			Check METER SELECT switch circuitry.
415	PPE	Momentarily actuate TEST START switch (power off).	
416	NOAF	METER SELECT switch to EXT.	
417	MCP	SELECTOR B switch to C7.	

Table 6-3. TSG. Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
418	MCP	DMM INPUT switch to DMM INPUT.	
419	MCP	DMM FUNCTION switch to K OHMS.	
420	MCP	Disconnect the thermistor cable from J17.	
421	MCP	Connect the 1W14 cable to J17.	
422	NOAF	Connect the DMM red probe to NOAF-J5.	
423	DMM	Observe a reading of 2.988 to 3.657 k ohms.	Replace card 6A4.
424	MCP	SELECTOR B switch to B11.	
425	NOAF	Remove the red probe from J5 and connect it to J6.	
426	DMM	Observe a reading of 2.988 to 3.657 k ohms.	Replace card 6A4.
427	PP	DMS switch to OFF.	
428	MCP	Disconnect 3W1-P3 from J8.	
429	MCP	Connect 1W3-P2 to J8.	
430	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
431	NOAF	METER SELECT switch to OFF.	
432		Remove the DMM red probe from NOAF-J6.	
		Thermal Collimator Alignment	
		NOTE	
		Corrective action for this section is to send entire unit to Depot for repair.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
433		Mount the Thermal Collimator on the OAC.	
434	NOAF	Adjust COLLIMATOR RETICLE LIGHT control fully cw.	
435	OAC	View into the eyepiece and adjust the eyepiece for a sharply focused collimator reticle image. Readjust the brightness as desired.	
436	NOAF	Adjust SELF TEST LIGHT control fully cw.	
437	OAC	Adjust the objective focus control as necessary to focus the self test image (red dot) in the center of the OAC reticle for minimum size.	
438	NOAF	Adjust SELF TEST LIGHT control for a comfortable viewing intensity.	
439	NOAF	Adjust COLLIMATOR RETICLE LIGHT control for a comfortable viewing intensity.	
440	OAC	Observe that the outer circumference of the self test image shall not extend beyond the outer edges of the Boresight square. See figure 6-6.	
441	NOAF	Adjust SELF TEST LIGHT control fully ccw.	
442	OAC	Remove the prism from the OAC.	
443	NOAF	Mount the TSG collimator Alignment Prism.	
444		Rotate the TSG Collimator Alignment Prism from the near vertical stowage position to the tilted boresight operational position. Allow the unit to seat in its detent position.	
		NOTE	
		It may be necessary to cover the front end of the OAC to observe a change in light intensity.	

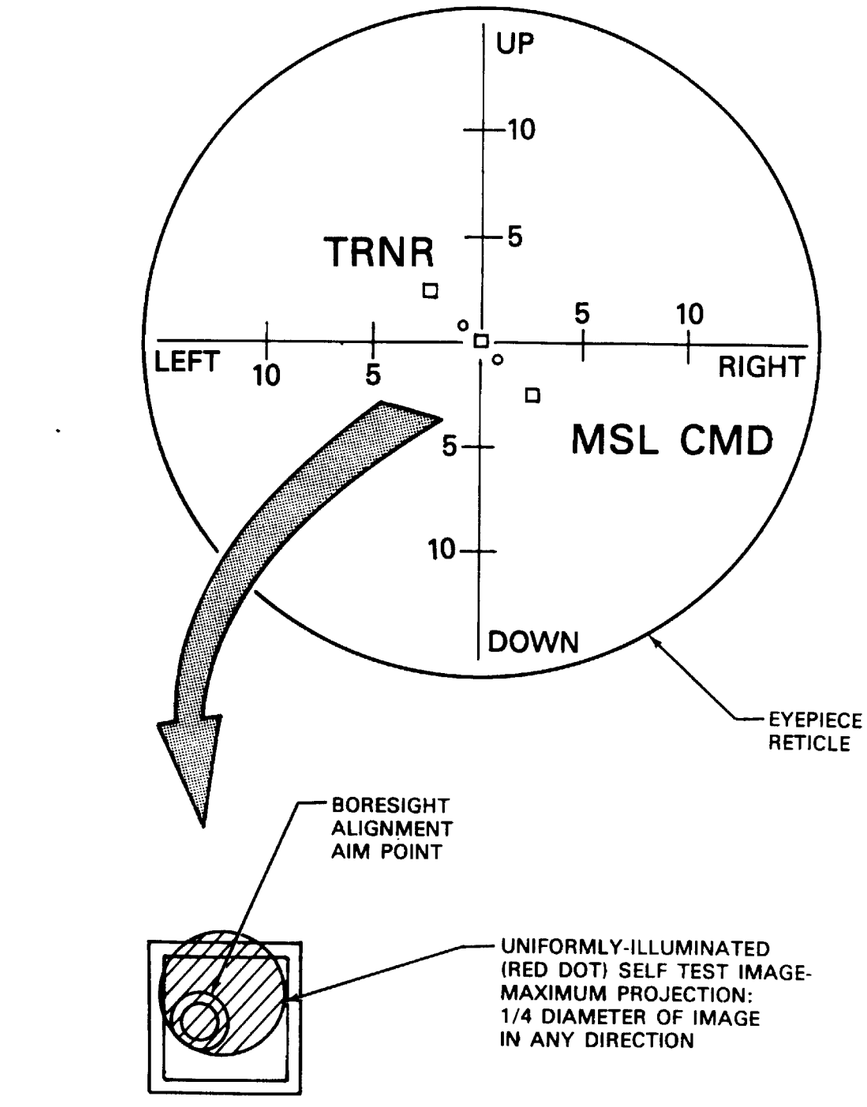


FIGURE 6-6 Collimator self test display

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
445	NOAF	Adjust NIGHT COLLIMATOR LIGHT control fully cw.	
446	OAC NOAF	View into the OAC eyepiece, observe the Collimator Reticle Light remains illuminated while rotating the COLLIMATOR RETICLE LIGHT control ccw to the minimum light intensity position.	
447	NOAF OAC	Adjust the Thermal Collimator Azimuth and Elevation Controls until the projected pair of illuminated red circles appears near the center of the OAC reticle.	
448	NOAF OAC	Adjust the NIGHT COLLIMATOR LIGHT control for a comfortable viewing level. Readjust the COLLIMATOR RETICLE LIGHT control for the desired-background light level. Both the target images projected by the Thermal Collimator shall be uniformly illuminated, well defined circular, red spots. See figure 6-7.	
449	TC OAC	Adjust the Thermal Collimator Azimuth and Elevation Boresighting Controls until the upper left image is centered over the OAC reticle Boresight Alignment Box at the center of the OAC reticle. See figure 6-7.	
450	TC OAC	Observe the Thermal Collimator Missile Command Target shall be nearly coincident with the OAC reticle MSL CMD Aim Point located in the lower right quadrant of the reticle. See figure 6-7. The small circular Missile Command Aim Point must be located totally within the projected image. See figure 6-7. Misalignment may be in either axis as long as the Missile Command Aim Point falls within the envelope of the TTSG image.	
		Collimator Interface Focus Travel	

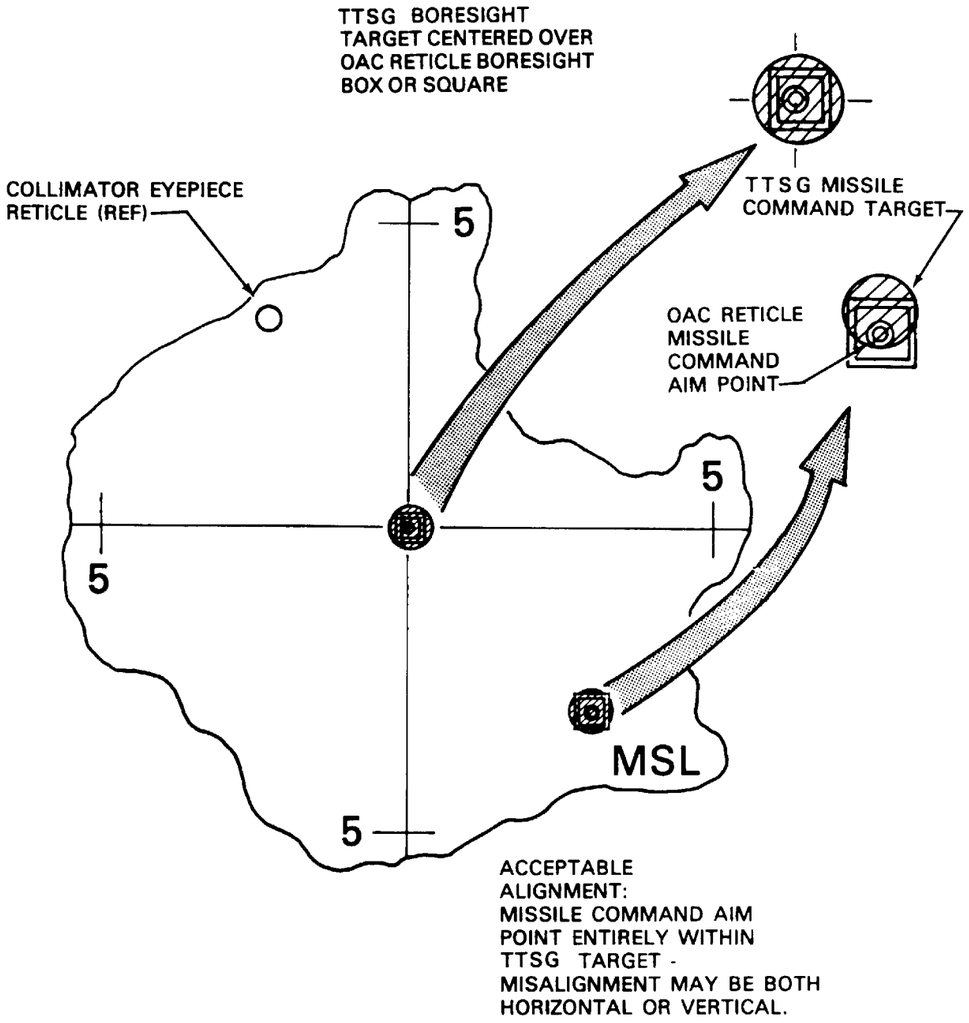


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Figure 6-7. TTSSU target size and alignment

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
451	NOAF OAC	Adjust the Thermal Collimator Horizontal control only, until the TTSG projected Boresight image is positioned entirely past the OAC reticle 10MR mark on the left side of center or is at max. adjustment. The vertical travel of the image above or below the horizontal OAC reticle line shall be less than the radius of the image. See figure 6-8.
452	NOAF OAC	Adjust the Thermal Collimator Horizontal control only until the image is positioned entirely past the OAC reticle 10MR mark on the right or is at max. adjustment. Again the vertical travel of the image above or below the horizontal OAC reticle line shall be less than the radius of the image. See figure 6-8.
453	NOAF OAC	Readjust the TTSG Boresight image to the OAC reticle center or Boresight aim point.
454	NOAF OAC	Adjust the Thermal Collimator Vertical control only until the image is positioned past the OAC reticle 10MR mark above the center or is at max. adjustment. The horizontal travel of the image left or right of the vertical OAC reticle line shall be less than the radius of the image. See figure 6-8.
455	NOAF OAC	Adjust the Thermal Collimator Vertical control only until the image is positioned entirely past the lower 10MR mark or is at max. adjustment. The horizontal travel left or right of the vertical OAC reticle line shall be less than the radius of the image. See figure 6-8.
456	NOAF	Adjust the four light controls fully ccw.

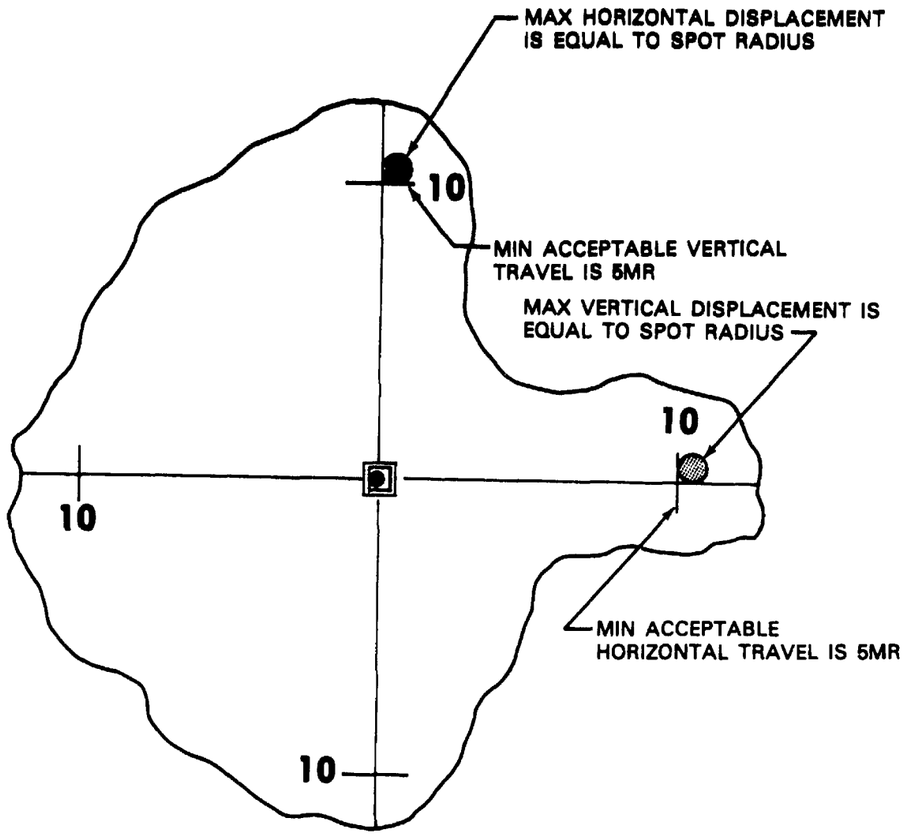

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Figure 6-8 TTSSU target prosition and travel requirements

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOAF AZ/EL MECH.	
		NOTE	
		Corrective action for this section is return the unit to Depot for repair.	
		CAUTION	
		Do not Jam the NOAF AZIMUTH or ELEVATION Controls into their end stops.	
457	NOAF	Adjust the AZIMUTH control knob at the DAC end of the NOAF (direct drive). Check for both left and right OAC travel.	
458	NOAF	Adjust the ELEVATION control knob at the OAC end of the NOAF (direct drive). Check for both up and down OAC travel.	
459	NOAF	Adjust the AZIMUTH control knob at the meter end of the NOAF. Check both left and right OAC travel.	
460	NOAF	Adjust the ELEVATION control near the meter end of the NOAF. Check for both up and down OAC travel.	
461	NOAF	Adjust the AZIMUTH and ELEVATION controls to their approx. center of travel.	
		NOTE	
		The remainder of this test can be deleted if superseded by the performance of the TTS Performance Test, Table 3-14 of TM 9-4935-481-14-1 using the NOAF.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
462	TTS	Loosen the 24 captive screws securing the front panel to the base. raise the front panel and loosen the two screws securing tile circuit card box cover. Raise the cover allowing it to engage in the hook behind the front panel to support the front panel.	
163	MCP	DTIM INPUT switch to SEL A.	
164	MCP	DMM LO switch to 5.	
165	MCP	DMM FUNCTION switch to VDC.	
166	D-S	POWER SELECT switch to A.	
167	D-S	MODE switch to OFF.	
		J3 Umbilical Readout Test (Boresight)	
168	TTS	MODE switch to BORESIGHT.	
169	MCP	SELECTOR A switch to D22.	
470	CIP	COUNTER INHIBIT (SEC) dial to 00.24.	
471	PPE	FUNCTION TEST switch to +24V REG.	
472	PPE	Momentarily actuate TEST START switch (power on).	
473	TTS	Observe TESTING lamp illuminated.	
474	CIP	Observe INHIB lamp illuminated.	
475	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check NOAF wiring J1-L and J3-2.
476	MCP	SELECTOR A switch to D21.	
477	DMM	Observe a reading of -11.70 to -14.30 Vdc.	
			Check NOAF wiring J1-M and J3-3.
478	MCP	SELECTOR A switch to D19.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
479	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check NOAF wiring J1-P and J3-5.
480	MCP	SELECTOR A switch to D20.	
481	DMM	Observe a reading of -11.70 to -14.30 Vdc.	
			Check NOAF wiring J1-U and J3-9.
482	MCP	SELECTOR A switch to D19.	
483	CIP	RUN/HOLD/OFF switch to HOLD.	
434	CIP	COUNTER INHIBIT (SEC) dial to 00.26.	
485	CIP	RUN/HOLD/OFF switch to RUN.	
486	CIP	3bserve INHIB lamp illuminated.	
487	DMM	Observe a reading of $\leq$ +0.5000 Vdc.	
			Check NOAF wiring J1-P and J3-5.
488	MCP	SELECTOR A switch to D20.	
489	DMM	Observe a reading of -11.70 to -14.30 Vdc.	
			Check NOAF wiring J1-U and J3-9.
490	CIP	RUN4/HOLD/OFF switch to HOLD.	
491	CIP	ZOUNTER INHIB (SEC) dial to 18.20.	
492	CIP	RUN/HOLD/OFF switch to RUN.	
493	CIP	Observe INHIB lamp illuminated.	
494	MCP	SELECTOR A switch to D18.	
495	DMM	Observe an open reading (meter drifts).	
			Perform TTS Performance Test.
496	CIP	RUN/HOLD/OFF switch to HOLD.	
497	CIP	COUNTER INHIBIT (SEC) dial to 18.60.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
498	CIP	RUN/HOLD/OFF switch to RUN.	
499	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Perform TTS Performance Test.
500	PPE	Momentarily actuate TEST START switch (power off).	
501	TTS	Observe TESTING lamp extinguished.	
502	PPE	SEQUENCE switch to AUTO 2.	
503	CIP	COUNTER INHIBIT(SEC) dial to 28.00.	
504	PPE	Momentarily actuate TEST START switch (power on).	
505	TTS	Observe a complete test cycle for approx. 21 sec. (completed when TESTING lamp extinguishes and GO or NO-GO lamp illuminates).	
506	TTS	Set MODE switch to the positions indicated and observe appropriate lamp illuminated.	
		DG AGC FIL IR WC RIP HE VP VE TS SQ	
		G G G G G G G G G G G	
		11	
507	PPE	Momentarily actuate TEST START switch (power off).	
508	TTS	RODE switch to BORESIGHT.	
		Trigger (Trig. Safe & Trig Output)	
509	PP	DMS switch to OFF.	
510	MCP	Disconnect 3W1-P2 from J7.	
511	MCP	Connect 1W1-P3 to J7.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
512	PP TP	DMM switch to ON. Momentarily actuate TEST START switch.	
513	MCP	DMM LO switch to SEL B.	
514	MCP	SELECTOR A switch to C9.	
515	MCP	SELECTOR B switch to C10.	
516	PPE	SEQUENCE switch to MNL.	
517	CIP	COUNTER INHIBIT dial to 20.96.	
518	TTS	POWER switch to ON.	
519	TTS	Momentarily actuate TEST START/STOP pushbutton (power on).	
520	TTS	Observe TESTING lamp illuminated.	
521	CIP	Wait until INHIB lamp illuminated.	
522	DMM	Observe a reading between -0.2230 and -0.2650 Vdc, record for use in step 524.	
			Perform TTS Performance Test.
523	TTS	Momentarily actuate TEST START/STOP pushbutton (TESTING light goes off).	
524		Multiply value recorded in step 522 by 0.200 and record for use in step 529.	
		NOTE **Circuit is very sensitive, jumper with a short piece of 16 ga. wire and fasten securely.**	
525		Connect a (16 gauge wire) jumper between J1 and J2 on the 1W4 cable.	
526	TTS	Momentarily actuate TEST START/STOP pushbutton (power on).	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
527	TTS	Observe TESTING lamp illuminated.
528	CIP	Wait until INHIB lamp illuminates.
529	DMM	Observe a reading of the voltage calculated in step 524 ± 15%.
		12
532	TTS	Momentarily actuate TEST START/STOP pushbutton (TESTING light goes off).
531	TTS	POWER switch to OFF.
532	PP	DF1S switch to OFF.
533	MCP	Disconnect 1W1-P3 from J7.
534	MCP	Connect 3W1-P2 to J7.
535		Remove jumper between J1 and J2 on 1W4 cable.
536	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.
		Trigger Output Logic Test
537	CIP	RUN/HOLD/OFF switch to OFF.
538	PPE	SEQUENCE switch to OFF.
539	PPE	FUNCTION TEST switch to +14V REG.
540	TPS	TRIG OUTPUT switch to GO TEST.
541	TTS	MODE switch to TRIG OUTPUT.
542	PPE	Momentarily actuate TEST START switch (power on).
543	TTS	observe TESTING lamp illuminated. Wait 5 seconds before continuing. (Do not wait more than 15 sec.)
544	TPS	Momentarily actuate TRIGGER switch.
545	TTS	Observe GO lamp illuminated and TESTING lamp extinguished. Check NOAF wiring around J3-14 and 15.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
546	TPS	TRIG OUTPUT switch to OFF.
547	PPE	Momentarily actuate TEST START switch (power off).
		IR Source I Test - IR Pulse I Test
		NOTE **Verify all NOAF pots are fully ccw for the following steps.**
548	TTS	MODE switch to BORESIGHT.
549	MCP	SELECTOR A switch to F1.
550	MCP	DMM LO switch to SYS GND.
551	MCP DMM	Adjust COMPARATOR THRESHOLD B control to +0.3000 + 0.01 Vdc.
552	MCP	SELECTOR A switch to F2.
553	MCP DMM	Adjust COMPARATOR THRESHOLD C control to +0.3000 + 0.01 Vdc.
554	HCP	DMM FUNCTION switch to VAC.
555	PP	DMS switch to OFF.
556	NOAF	Remove the OAC from the NOAF.
557	NOAF	Remove and stow the TTSG Collimator Alignment prism.
558	NOAF	Remove the offset collimator mount and install the normal (for day tracker) collimator mount.
559	NOAF	Reinstall the OAC on the NOAF.
560		Secure the radiometer optics holding fixture to the 1W4 cable.
561		Position the 41AR radiometer optics in the holding fixture.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
562	RAD	Remove the cap on the detector cylinder.
563	RAD	Screw the detector cylinder into the optics.
564	RAD	Connect 1W6-P2 to the control box.
565	RAD	Connect 1W6-P1 to J9.
566	RAD	Connect the radiometer coax between the control box and the optics.
567	NOAF	Position the AZIMUTH and ELEVATION knobs so the OAC is approximately parallel with the NOAF and in line with the saddle.
568	RAD	INPUT switch to COLL.
569	RAD	FULL SCALE switch to 10^{-9}
570	MCP	SELECTOR A switch to G21.
571		Disconnect 1W3 from 1W4.
572		Disconnect NOAF-P1 from OAC-J1.
573		Connect 1W5-P3 to 1W3-P1.
574		Connect 1W5-P2 to NOAF-P1.
575		Connect 1W5-P1 to OAC-J1.
576	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.
577	TTS	Verify OAC eyepiece cover is on the eyepiece.
		IR Irradiance Test (Near-Ctr-Diode) Boresignt Mode
578	CIP	COUNTER INHIBIT(SEC) dial to 06.00
579	CIP	RUN/HOLD/OFF switch to RUN.
580	MCP	Connect a 1W20 cable from J12 to the oscilloscope A input.

Table 6-3. TTSG Performance Test - Continued

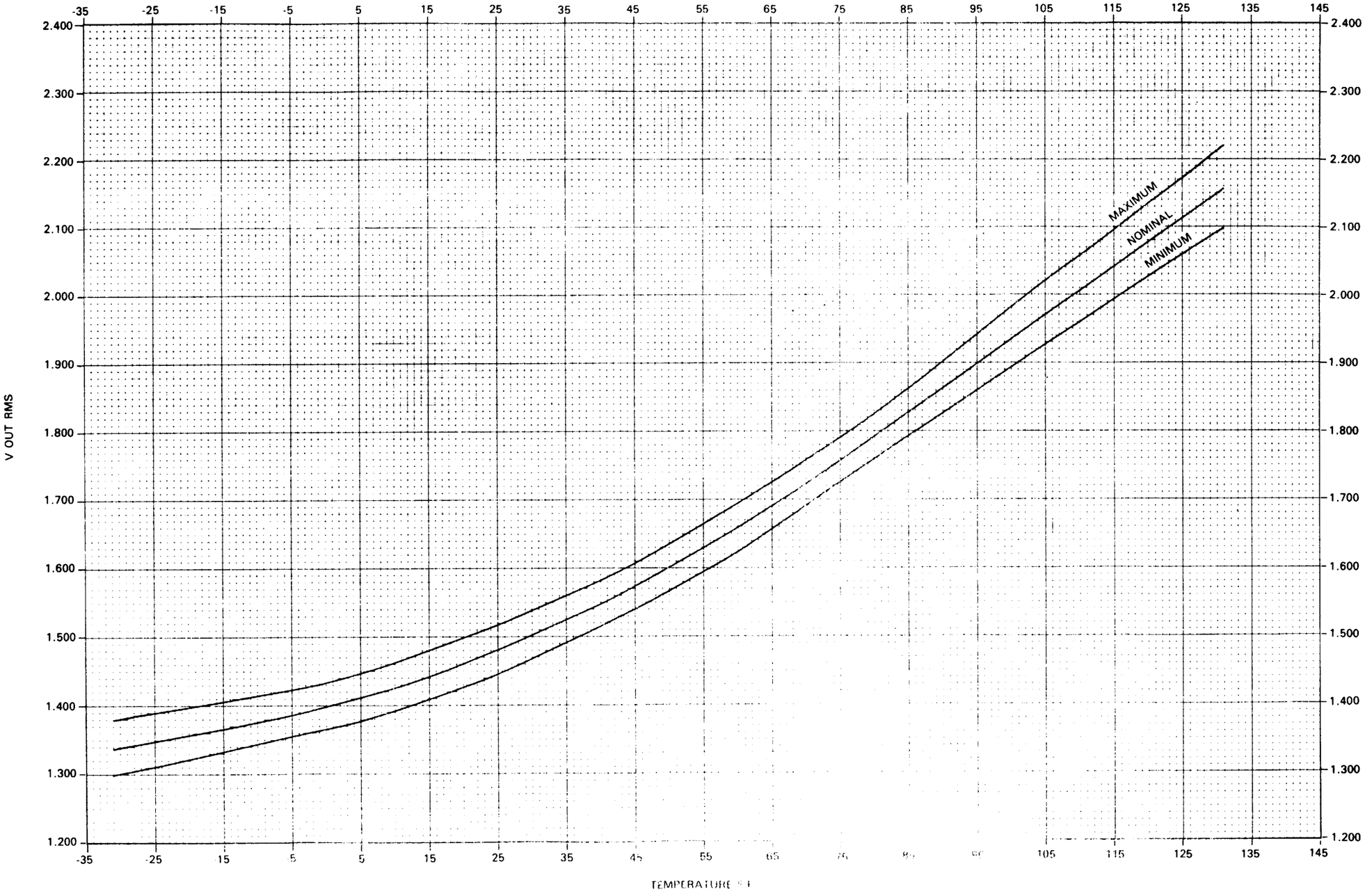
STEP	UNIT	PROCEDURE CORRECTIVE ACTION
		NOTE **An oscilloscope is connected to the radiometer output test points to aid the operator in detecting the OAC output signal during this alignment. Use the DMM for final amplitude peaking. After completing the final amplitude peaking do not disturb the mechanical interface between the OAC and the radiometer.**
581	PPE	Momentarily actuate TEST START switch (power on).
582	CIP	Observe INHIB lamp illuminated,
583	MCP	DMM INPUT switch to DMM INPUT.
584	MCP	DMM LO to EXT.
585	MCP	Disconnect the DIM cable 1W14 from J17.
586	MCP	Connect the BNC end of the Thermistor cable to J17.
587		Remove the thermistor end of the thermistor cable from the Thermal Collimator and connect it under one of the OAC rear cover mounting bolts.
588	MCP	DMM FUNCTION switch to K OHMS.
589	DMM	Observe and record the resistance reading.
590	MCP	DMM FUNCTION switch to VAC-
591	MCP	Disconnect the Thermistor cable from J17.
592	MCP	Connect DMM cable 1W14 to J17.
593	TTS	Connect DMM pos probe to 1A8A1-J5 and neg probe to 1A8A2-J1.
594	DMM	Observe and record the Vac reading.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
595		Convert the resistance reading recorded in 594 above to a temperature value using the chart in figure 6-1. Record the converted temperature value.
596		Using the IR SOURCE control voltage generator, output limits vs temperature curve figure 6-9 determine and record the maximum nominal and minimum values of the output for temperature recorded in step 595.
597		Observe that the Vac value recorded in step 594 is between or equal to the maximum or minimum values recorded in step 596. △13
598	MCP	DMM INPUT switch to SEL A.
599	MCP	DMM LO to SYS GND.
600	TTS	Remove DMM probes from 1A8.
601	NOAF	Adjust the NOAF AZIMUTH and ELEVATION controls to obtain the highest Vac reading, as displayed on the DMM.
602	DMM	Observe a reading of 0.1380 to 0.2300 Vac. △14
603	TTS	MONITOR SELECT switch to IR OUTPUT.
604	TTS	Observe TTS MONITOR meter for a reading within the IR OUTPUT green band (5.5 to 9.5 volts). △15
605	CIP	RUN/HOLD/OFF switch to HOLD.
606	CIP	COUNTER INHIBIT(SEC) dial to 17.50.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE CORRECTIVE ACTION
607	RAD	FULL SCALE switch to 10^{-7}.
608	CIP	RUN/HOLD/OFF switch to RUN.
609	CIP	Wait until INHIB lamp illuminates.
610	DMM	Observe a reading of 0.0920 to 0.7600 Vac. △16
611	TTS	Observe MONITOR meter for a reading within the IR OUTPUT green band (5.5 to 9.5 volts). △17
612	MCP	SELECTOR A switch to C24.
613	MCP	DMM LO switch to 2.
614	DMM	Observe a reading of 0.1880 to 0.3120 Vac. △17
615	PPE	Momentarily actuate TEST START switch (power off).
616	CIP	COUNTER INHIBIT(SEC) dial to 06.00
617	RAD	FULL SCALE switch to 10^{-9}
618	TTS	MODE switch to MISSILE CMO.
619	TTS	FREQUENCY dial switch to 44.
		IR Irradiance Test (Near-Ctr-Diode) Missile Cmd Mode
620	CT	FREQ/TIME/MULT switch to 10^{0}
621	CT	A INPUT switch to pos.
622	CT	B INPUT switch to neg.



MS161924

TEMPERATURE °F

Figure 6-9. IR source, control voltage generator output limits vs. Temperature

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
623	OSC	VOLTS/DIV to .2.	
624	OSC	TIME/DIV to 10 µsec.	
625	OSC	Sweep MODE switch to AUTO.	
626	OSC	INT/EXT switch to INT.	
627	OSC	-/+ switch to +.	
628	OSC	Position scope trace on bottom line.	
629	MCP	SELECTOR B switch to H22.	
630	PP	DMS switch to OFF.	
631	MCP	Disconnect 3W1 from J7.	
632	MCP	Connect 1W1-P3 to J7.	
633	PP TP	DMS switch to ON, Momentarily actuate TEST START switch.	
634	CT	Using a coax tee, connect A and B INPUT's to J16.	
635	MCP OSC	Remove the 1W20 cable on scope CHANNL A INPUT and connect a cable from scope CHANNEL INPUT to J14.	
636	OSC	Adjust TRIGGER LEVEL to display a positive pulse (may be necessary to increase scope intensity).	
637	MCP	Remove the cable at J14 and connect it to J15.	
638	MCP	SELECTOR A switch to F23.	
639	MCP	SELECTOR B switch to B3.	
640	MCP	SELECTOR C switch to B5.	
641	TTS	POWER switch to ON.	
642	TTS	Momentarily depress TEST STATION/STOP pushbutton (power on).	
643	TTS	Observe TESTING lamp illuminated.	
644	CIP	Observe INHIB lamp illuminated.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
645	MCP	Disconnect 1W14 cable from J17.	
646	MCP	Connect the BNC end of the Thermistor cable to J17.	
647	MCP	DMM LO switch to EXT.	
648	MCP	DMM INPUT switch to DMM INPUT.	
649	MCP	DMM FUNCTION switch to K OHMS.	
650	DMM	Observe and record the resistance reading.	
651	MCP	DHM FUNCTION switch to VAC.	
652	MCP	DMM INPUT switch to SEL A.	
653	MCP	DMM LO switch to SEL B.	
654	DMM	Observe and record the Vac reading.	
655		Convert the resistance reading recorded in step 650 above to a temperature value using the chart in figure 6-1. Record the converted temperature reading.	
656		Using the IR Source, control voltage generator output limits vs temperature curve, figure 6-9, determine and record the maximum nominal and minimum values of the output level for the temperature recorded in step 655 above.	
657		Observe the value recorded in step 654 is between or equal to the maximum or minimum values recorded in step 656.	Adjust 1A8A1-R18 to nominal value recorded in step 656.
658	HCP	Disconnect the Thermistor cable from J17.	
659	CT	Momentarily depress RESET pushbutton.	
660	CIP	RUN/HOLD/OFF switch to HOLD.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
661	CIP	COUNTER INHIBIT dial to 12.00.	
662	OSC	TIME/DIV switch to 50 µsec.	
663	CIP OSC	RUN/HOLD/OFF switch to RUN. Observe, in approximately 7 sec., a pulse train > 0.6 V peak.	Replace card 6A1. Check 6A1 pins 21 and J1-F.
664	CT	Observe a reading of 17 to 23 µsec.	Replace card 6A1. Check 6A1 pins 21 and J1-T.
665	CT	FREQ/TIME/MULT switch to 10^1.	
666	CT	B INPUT switch to pos.	
667	TTS	Momentarily depress TEST START/STOP pushbutton twice (power off then on).	
668	CT	Momentarily depress RESET pushbutton.	
669	CIP	Wait until INHIB lamp illuminates.	
670	CT	Observe a reading of 9.00 to 11.00 msec.	Replace card 6A1. Check 6A1 pins 21 and J1-F.
671	CIP	RUN/HOLD/OFF switch to HOLD.	
672	CIP	COUNTER INHIBIT(SEC) dial 17.01.	
673	CIP	RUN/HOLD/OFF switch to RUN.	
674	CIP	Wait until INHIB lamp illuminates.	
675	DMM	Observe a reading of ≤ 0.3320 Vac.	
676	TTS	Momentarily depress TEST START/STOP pushbutton (power OFF).	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
677	TTS	POWER switch to OFF.	
678	PP	DMS switch to OFF.	
679	MCP	Remove 1WI-P3 from J7 and connect 3W1-P2 to J7.	
680	PP TP	DMS switch to ON. Momentarily actuate TEST START switch.	
681	MCP	SELECTOR A switch to G21.	
682	MCP	DMM LO switch to SYS GND.	
683	CIP	COUNTER INHIBIT(SEC) dial to 06.00	
684	PPE	Momentarily actuate TEST START switch (power on).	
685	CIP	Wait until INHIB lamp illuminates.	
686	DMM TTS	Repeak the DMM Vac reading by adjusting the OAF AZIMUTH and ELEVATION controls for a maximum reading.	
687	DMM	Observe a reading of 0.1380 to 0.2300 Vac. and record for use in step 709.	Perform TTSG Maintenance Calibration per Table 6-2. Perform the IR section.
688	MCP	SELECTOR A switch to F17.	
689	MCP	SELECTOR B switch to D19.	
690	MCP	SELECTOR C switch to C24.	
691	MCP	Connect a 1W20 cable between J12 and J13.	
692	CIP	RUN/HOLD/OFF switch to HOLD.	
693	CIP	COUNTER INHIBIT(SEC) dial to 13.00.	
694	OSC	CHANNEL A VOLTS/DIV switch to 1.	
695	OSC	-/+ pushbutton to -.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
696	TKP	TRACKER PWR switch to ON. **NOTE** **The following three steps are a timed run. Read before proceeding.**	
697	CIP	RUN/HOLD/OFF switch to RUN.	
698	OSC	Position trace to top line.	
699	OSC	In approximately 4.0 sec. observe the amplitude of the negative pulses from the center of the main trace to the peak negative excursion and record for use in step 710. Do not consider minor narrow excursions or overshoots. △18	
700	TKP	TRACKER POWER switch to OFF.	
701	MCP	Remove the 1W20 cable between J12 and J13.	
702	MCP	SELECTOR A switch to G21.	
703	TTS	Connect a jumper between 1A8A1-J4 and 1A8A2-J1 (BLK).	
704	RAD	FULL SCALE switch to 10^{-7}.	
705	DMM	Observe a reading of 0.0920 to 0.7600 Vac. and record for use in step 709.	Check continuity of jumper between 1A8A1-J4 and 1A8A2-J1 (BLK).
706	OSC	Observe the peak-to-peak amplitude of the sine wave to be between 0.494 and 0.821 VP-P. Make suitable CRT INTENSITY, FOCUS, AND ASTIGMATISM adjustments and then take reading from center-to-	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		center of the trace excursions. Ignore narrow excursions, overshoots and transients. Record for use in step 710. △19	
707	TTS	Remove the jumper between 1A8A1-J4 and 1A8A2-J1 (BLK).	
708	RAD	FULL SCALE switch to 109.	
709		Multiply the reading in step 705 by 100 and then divide this value by the reading in step 687. Verify the ratio to be between 68 and 84. △19	
710		Verify the ratio of the IR PULSE amp. to the low level IR peak to peak amp. to be between 200 and 300 using the following equation: $\text{RATIO} = \frac{\text{step 699 x step 709}}{\text{step 706}}$	Replace card 6A1. Check 6A1 pins 20 and 21.
711	CIP	RUN/HOLD/OFF switch to HOLD.	
712	CIP	COUNTER INHIBIT (SEC) dial to 14.51.	
713	CIP	RUN/HOLD/OFF switch to RUN.	
714	CIP	Wait until INHIB lamp illuminates.	
715	DMM	Observe a reading of 091380 to 0.2300 Vac.	Replace card 1A8. Check 1A8 pins 13, 22 and 25.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
716	TTS	Observe MONITOR meter for a reading within the IR OUTPUT green band (5.5 to 9.5 Volts). △20	
717	CIP	RUN/HOLD/OFF switch to HOLD.	
718	CIP	COUNTER INHIBIT(SEC) dial to 17.01,	
719	CIP	RUN/HOLD/OFF switch to RUN.	
720	CIP	Wait until INHIB lamp illuminates.	
721	DMM	Observe a reading of ≤ 0.1380 Vac. △21	
722	CIP	RUN/HOLD/OFF switch to HOLD.	
723	CIP	COUNTER INHIBIT(SEC) dial to 18.41.	
724	CIP	RUN/HOLD/OFF switch to RUN.	
725	CIP	Observe INHIBIT lamp illuminated.	
726	DMM	Observe a reading of 0.1380 to 0.2300 Vac.	Replace card 1A8. Check 1A8 pins 13, 26, 27 and 31.
727	PPE	Momentarily actuate TEST START switch (power off).	
728	TTS	MODE switch to TRAINER.	
729	RAD	FULL SCALE switch to 10^{-7}.	
730	PPE	Momentarily actuate TEST START switch (power on).	
731	DMM	Observe a reading of > 0.0920 Vac.	Replace card 1A8. Check 1A8 pins 22 and 34. Perform TTS Performance Test.

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
732	PPE	Momentarily actuate TEST START switch (power off).	
		IR Irradiance Test (Off-Ctr-Diode)	
		Boresight Mode	
733	TTS	MODE switch to BORESIGHT	
734	CIP	COUNTER INHIBIT(SEC) dig to 00.50.	
735	PPE	Momentarily actuate TEST START switch (power on).	
736	CIP	Observe INHIB lamp illuminated.	
737	RAD	FULL SCALE switch to 10^{-6}.	
738	NOAF	Adjust the NOAF AZIMUTH and ELEVATION controls to obtain the highest Vac reading, as displayed on the DMM.	
739	DMM	Observe a reading of 0.0131 to 0.1640 Vac. △22	
740	CIP	RUN/HOLD/OFF switch to HOLD.	
741	CIP	COUNTER INHIBIT(SEC) dial to 19,01.	
742	CIP	RUN/HOLD/OFF switch to RUN.	
743	CIP	Wait until INHIB lamp illuminates,	
744	DEE	Observe a reading of 0.0131 to 0.1640 Vac.	Replace card 1A8. Check 1A8 pins 25 and 24. Perform TTS Performance Test.
745	CIP	RUN/HOLD/OFF switch to OFF (wait 5 seconds).	
746	PPE	Momentarily actuate TEST START switch (power off).	
747	RAD	Remove and stow the radiometer and associated cables and accessories.	

Table 6-3. TTSG Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
748	CT	Reconnect the 2 input cables to J14 and J16.	
749	PP	MAIN POWER and DMS switches to OFF.	
750		Disconnect and stow all cables and accessories.	

Table 6-3. TTSG Performance Test - Continued

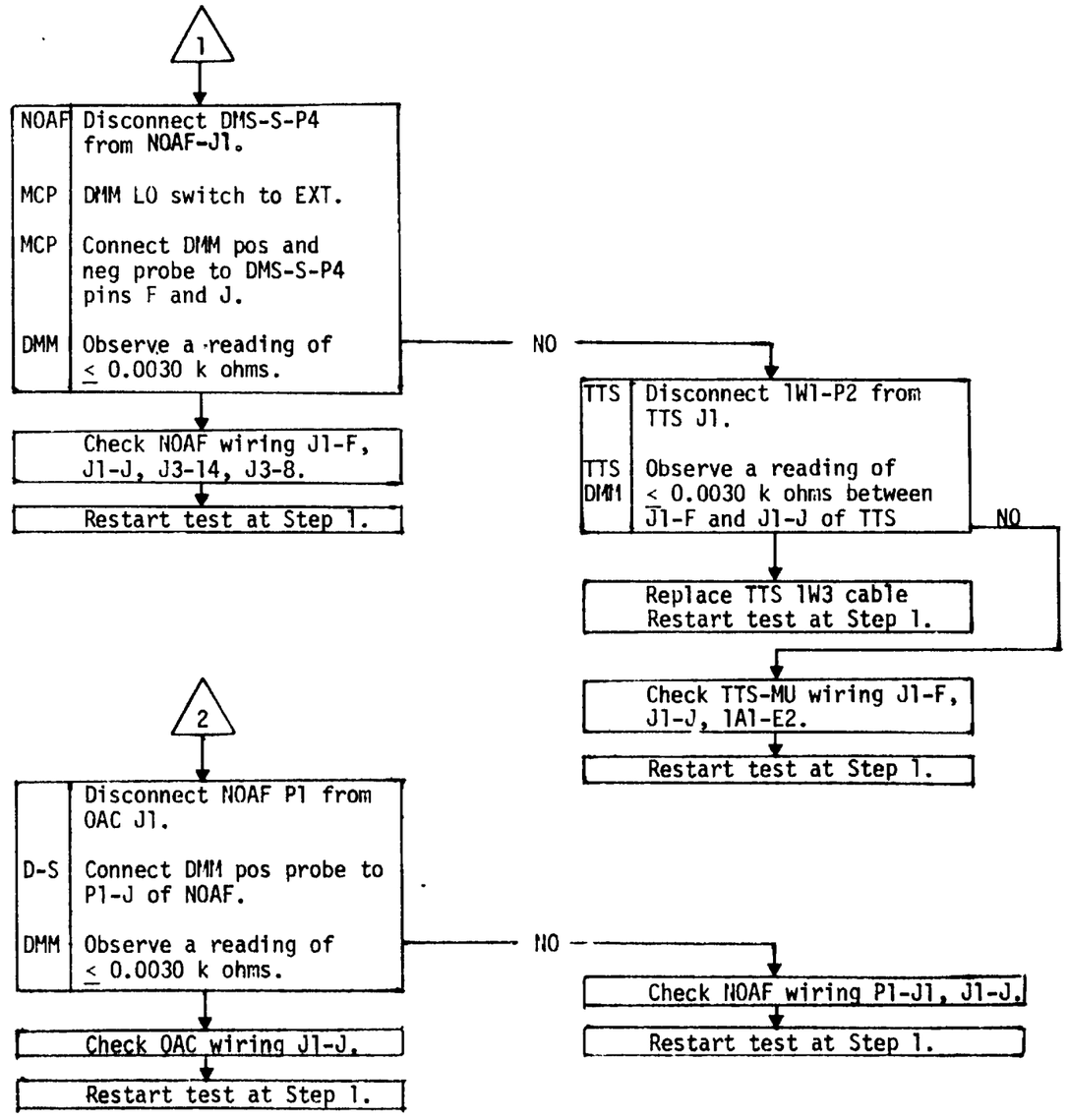


Table 6-3. TTSG Performance Test - Continued

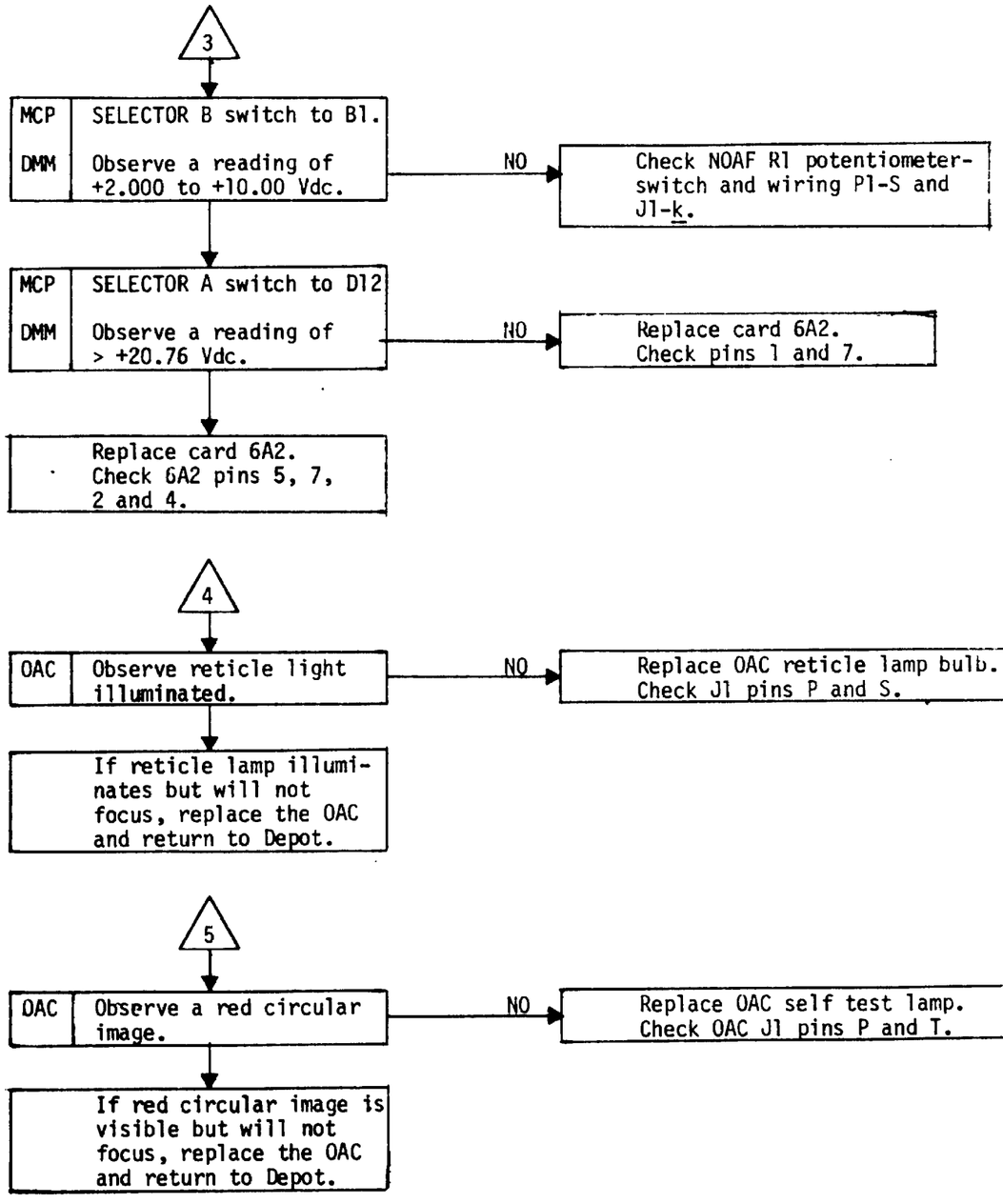
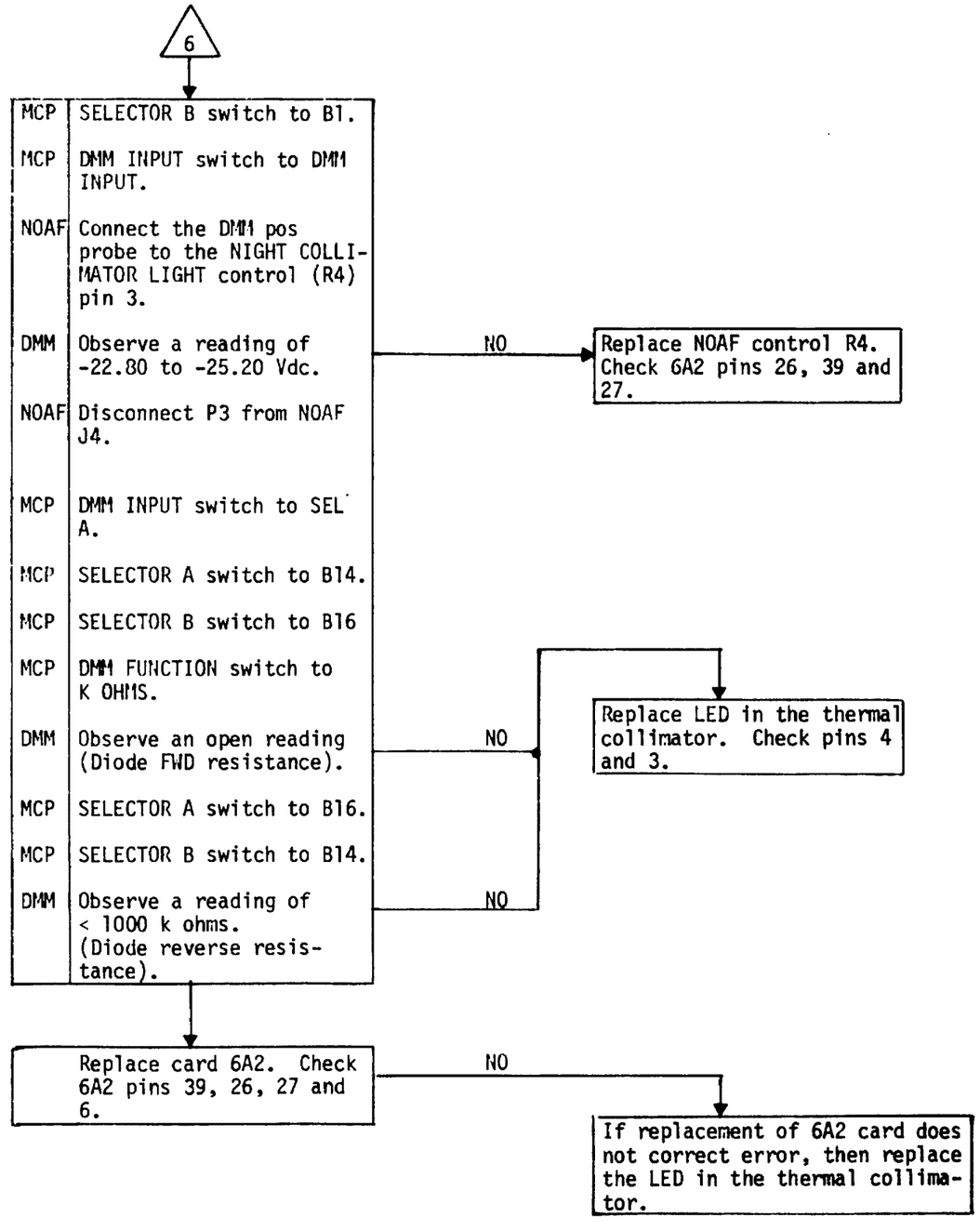


Table 6-3. TTSG Performance Test - Continued



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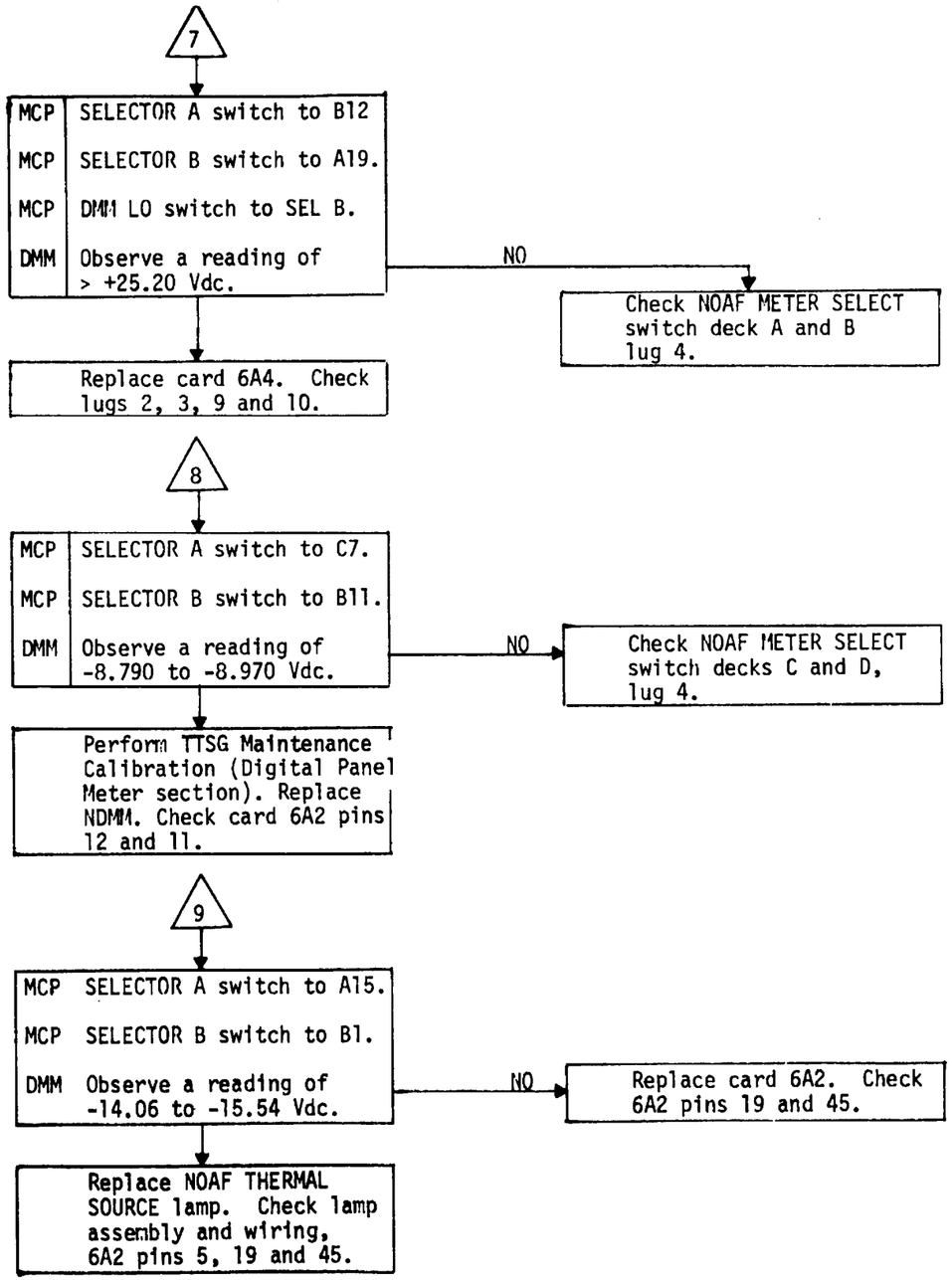

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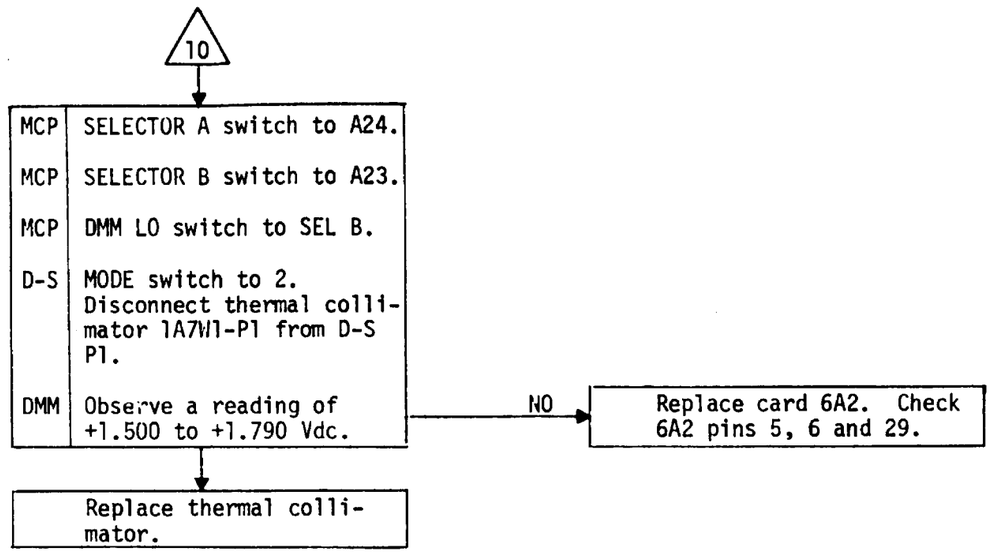

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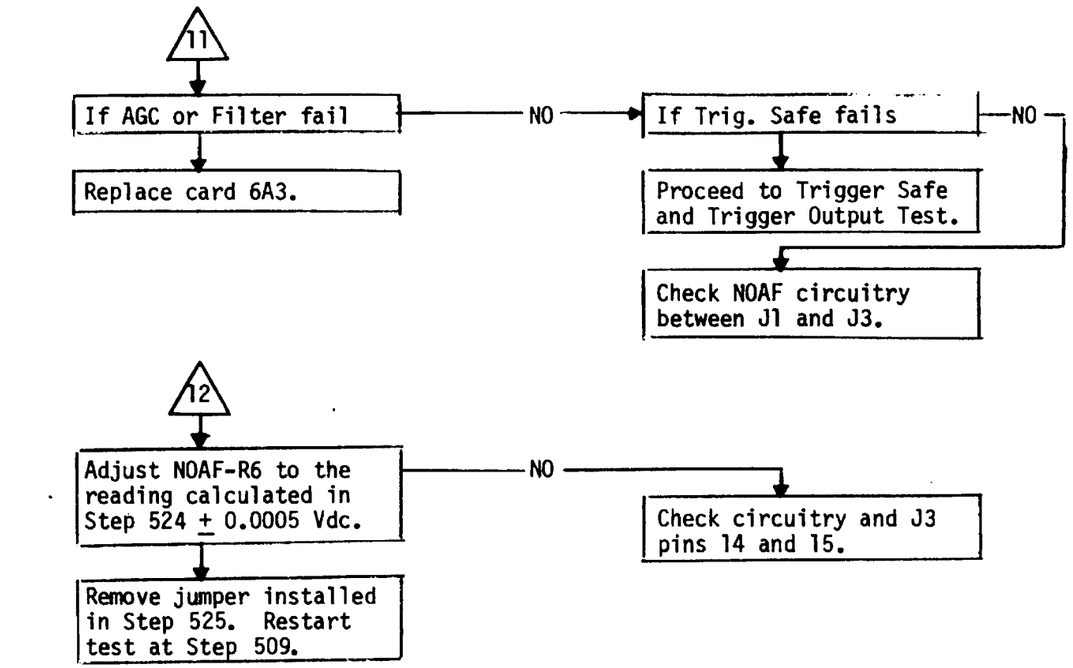

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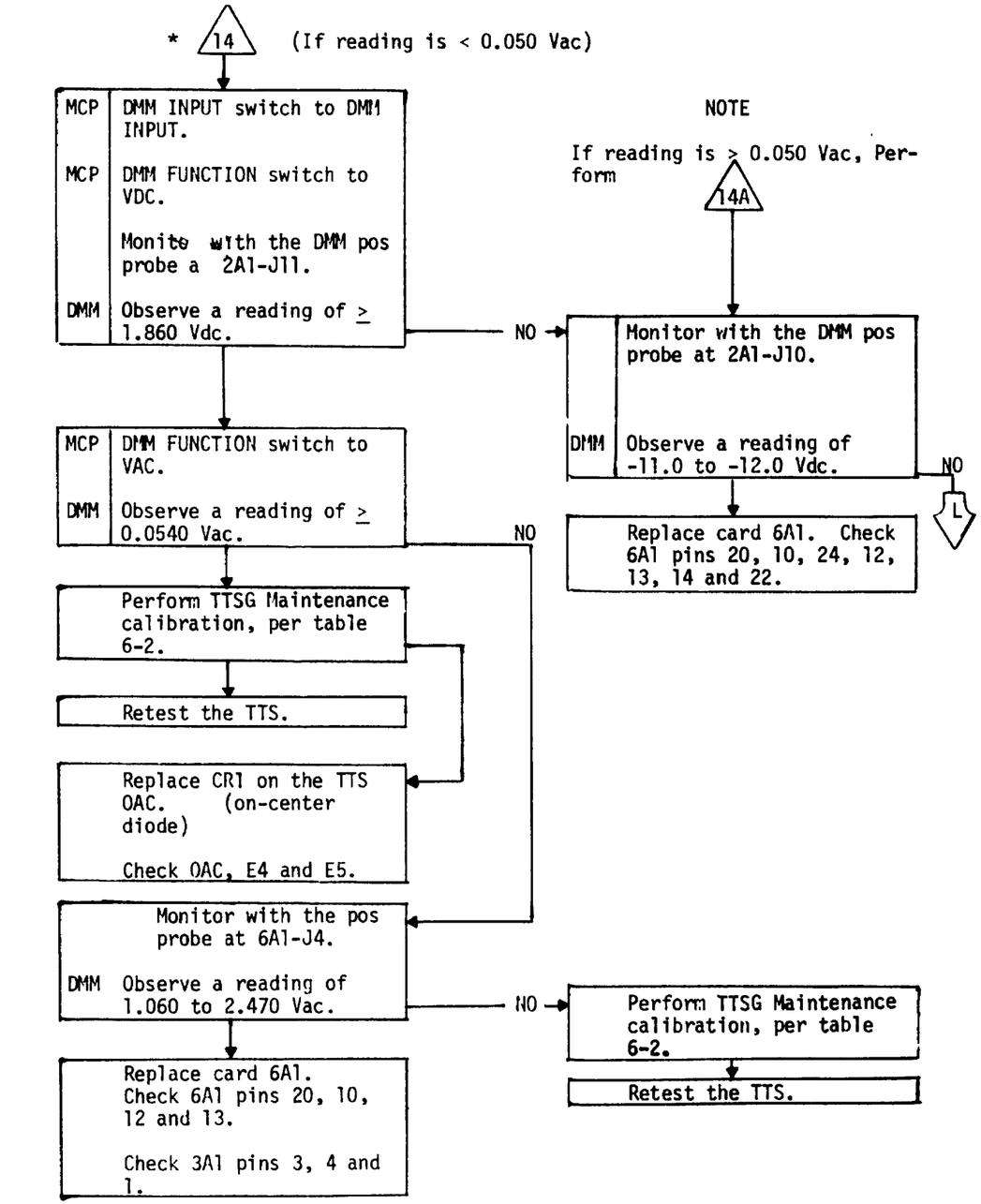


Table 6-3. TTSG Performance Test - Continued

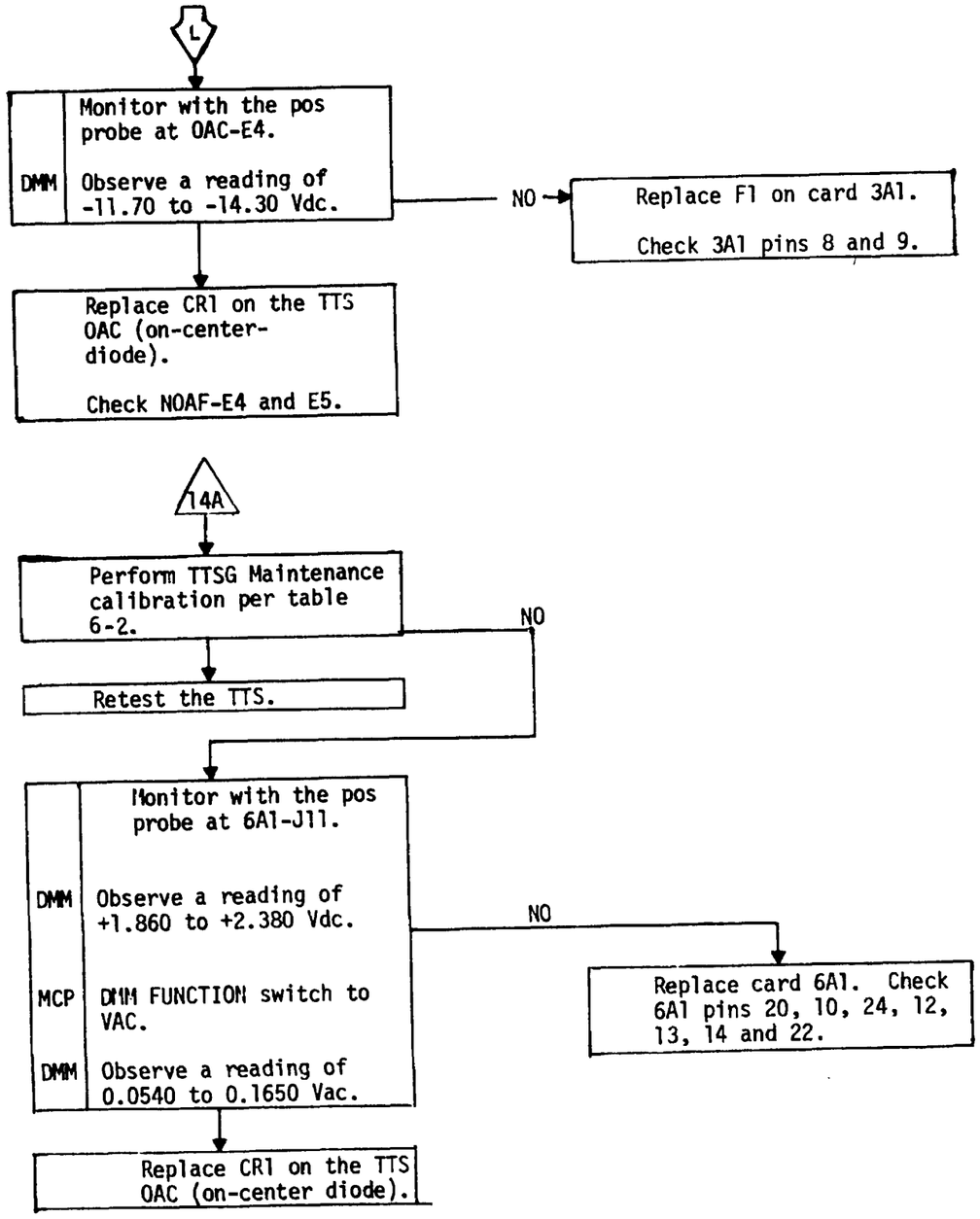
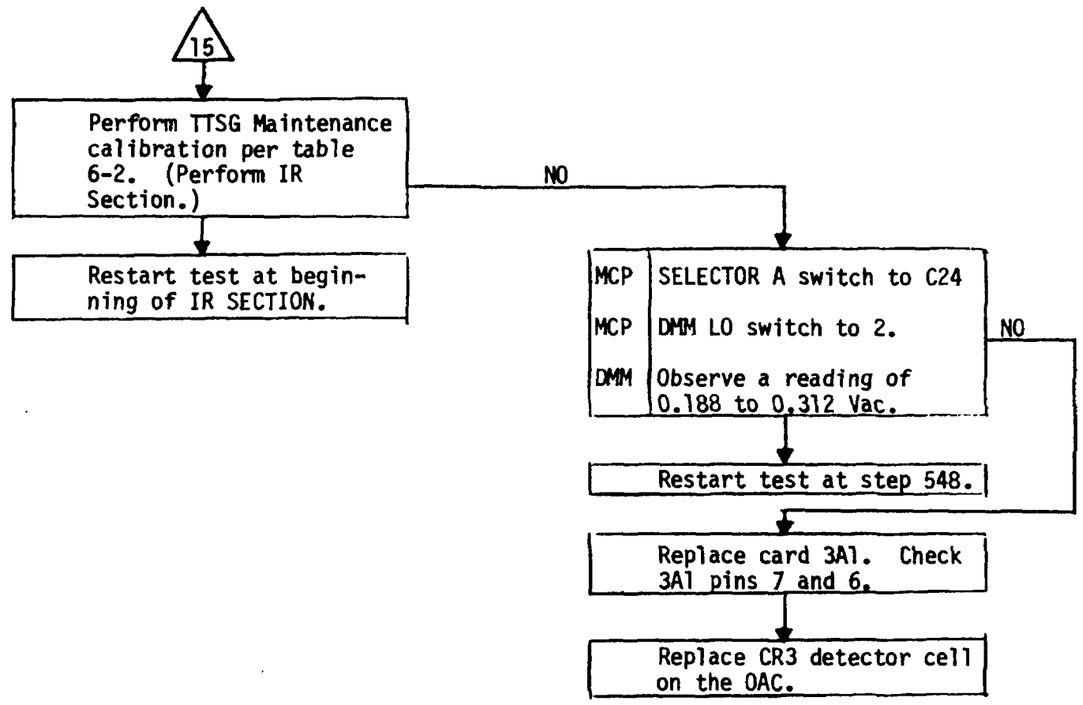


Table 6-3. TTSG Performance Test - Continued



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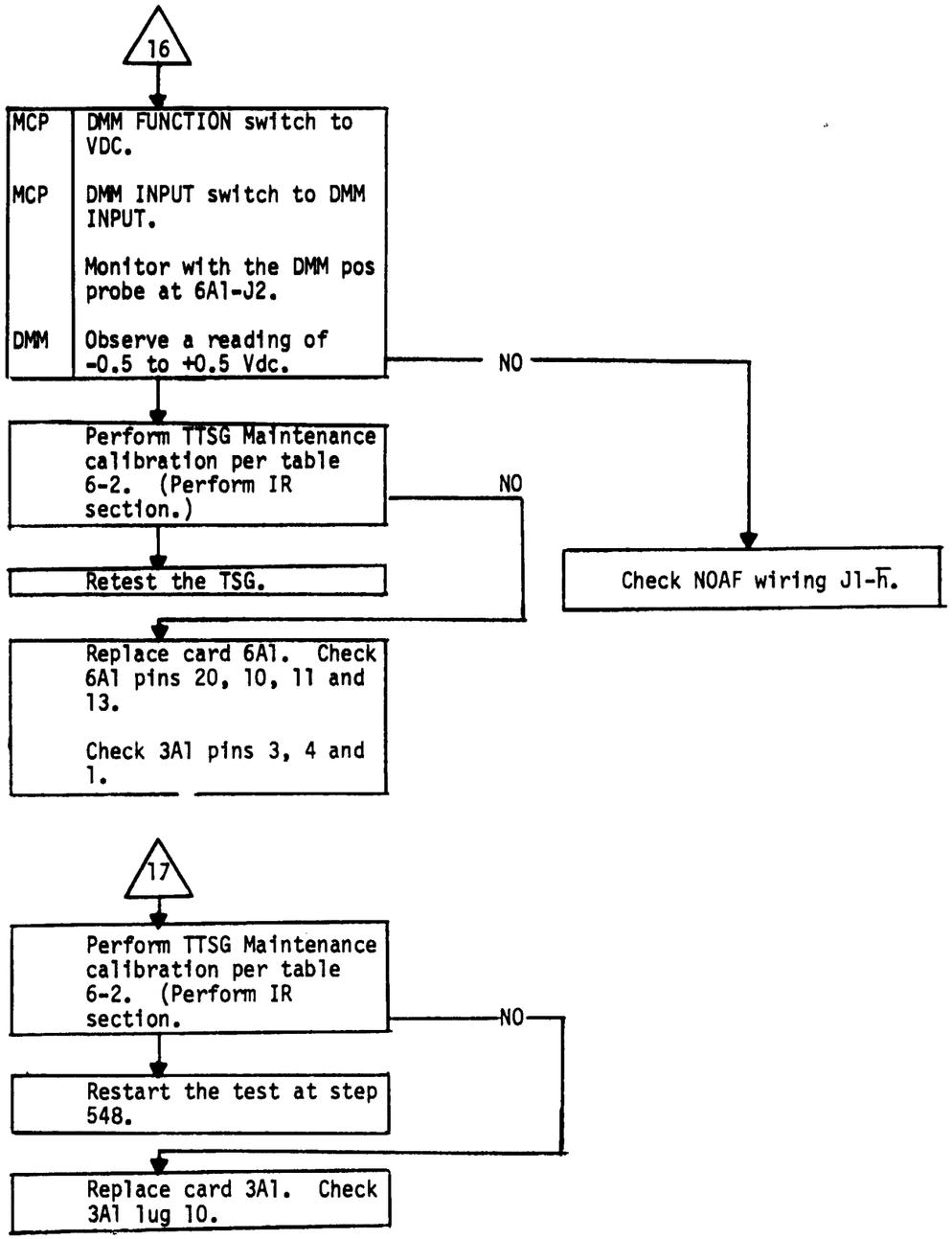

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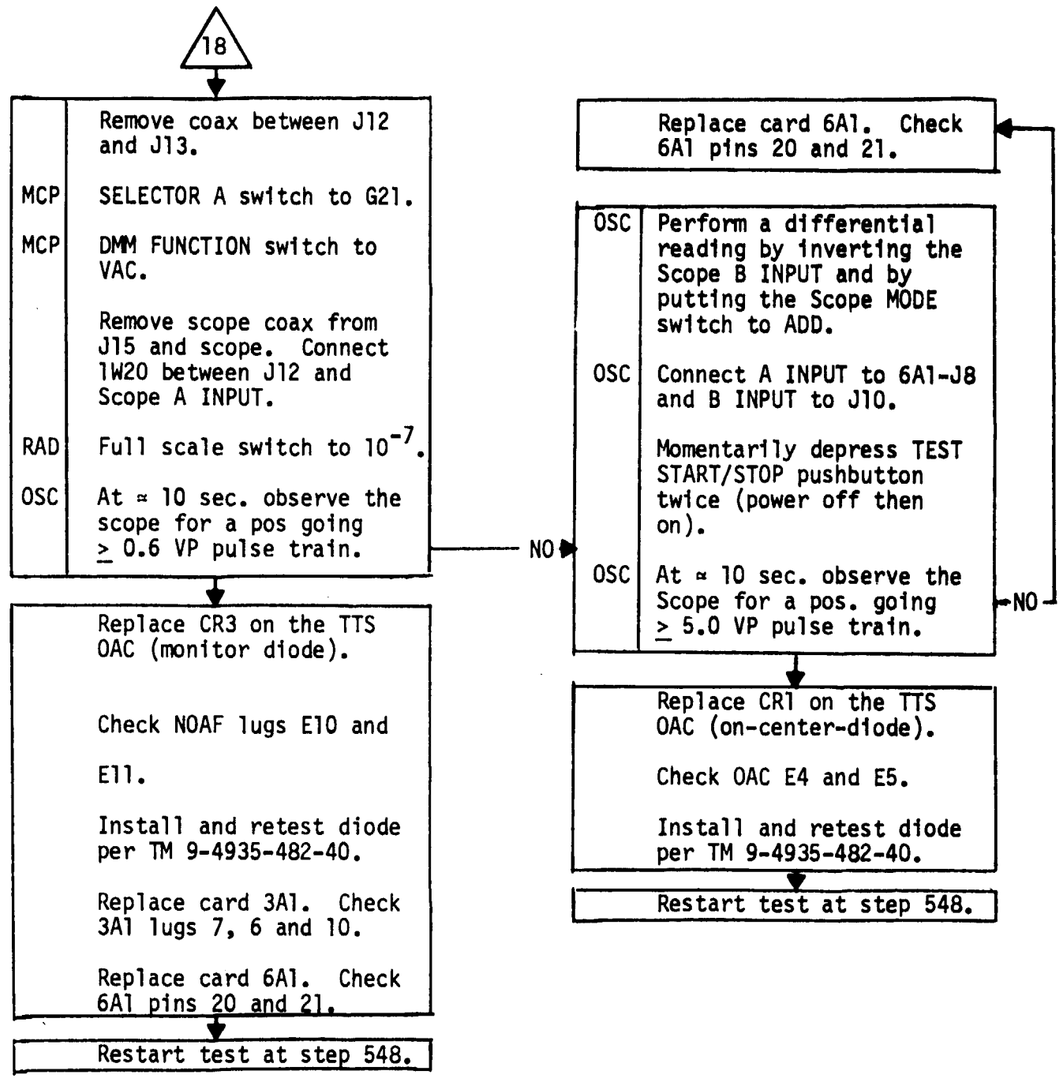

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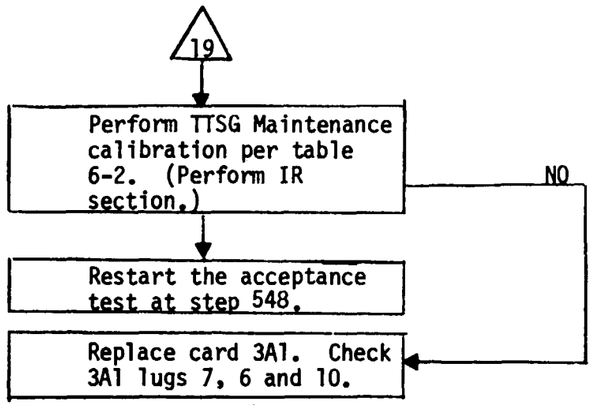

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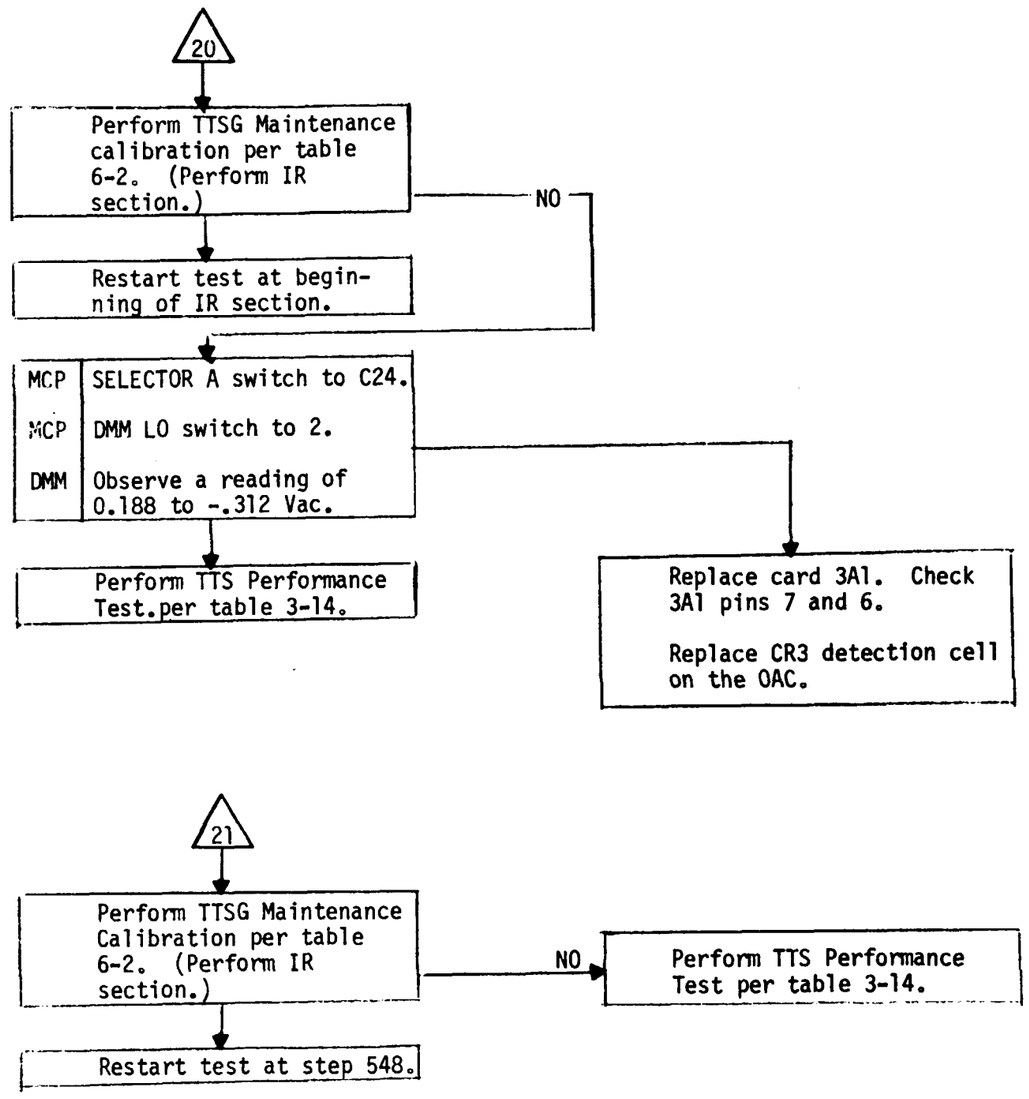

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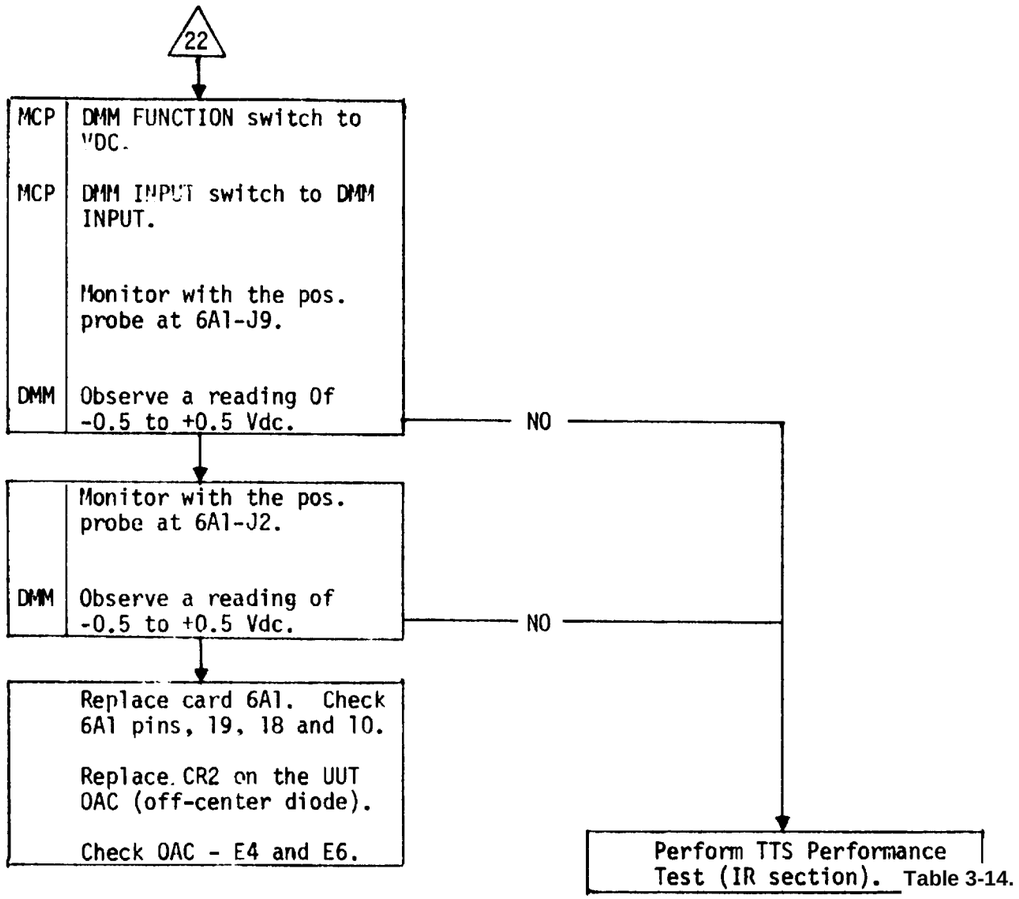

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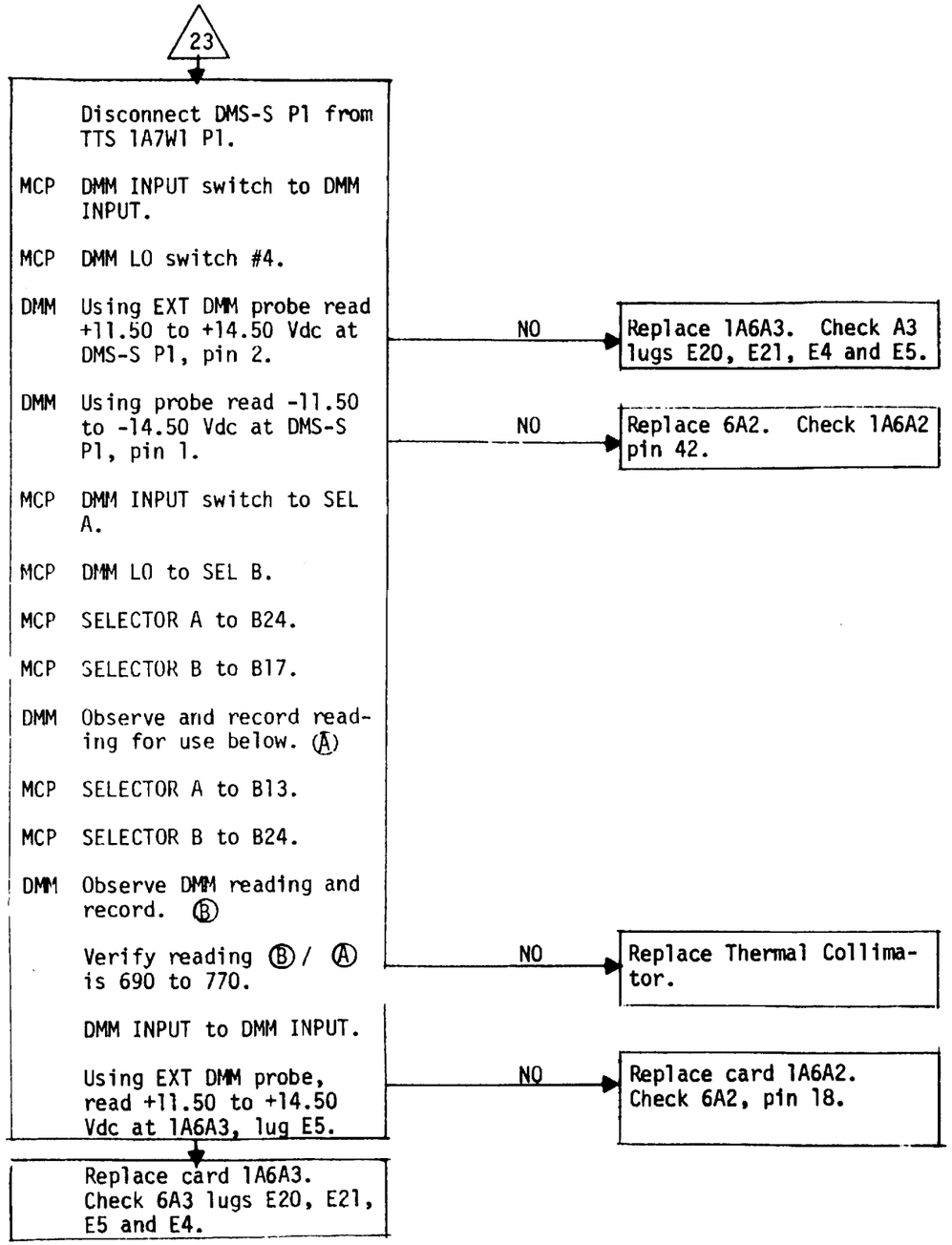

EQUIPMENT NOTES

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE	
		The major units and panels will be Identified by the initials as indicated below.	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	PP	POWER Panel	
	MCP	MONITOR/CONTROL Panel	
	PPE	PROG PERFORM EVAL Panel	
	TP	TRAINER Panel	
		DMS-G	
	CC	CIRCUIT CARD/SUBASSEMBLIES Panel	
	OSC	OSCILLOSCOPE (AN/USM-338)	
		NOTE	
		The TEST CONTROL switches on the DMS-G will be abbreviated by the initials TC.	
		Prepare the DMS-D and DMS-G for testing per paragraph 2-6 and 2-7 in TM 9-4935-481-14-1.	
		NOTE	
		For fault isolation where marked by a △, see pages at the end of this table. Otherwise refer to schematic diagram located at end of Chapter 6, See functional interface diagram and components location following this test.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
2	CC	Position and secure adapter A14 to the UUT INTERFACE J1 connector. Adapter must be fastened securely or failure indications can result.	
3	CC	TEST MODE switch to TRACKER TEST SET.	
4	CC	-13V switch to -13V.	
5	CC	+13V switch to +13V.	
6	CC	TC-12 switch to ON.	
7	CC	DMS-G POWER switch to ON.	
8	PP TP	MAIN POWER and DMS switches to ON, momentarily actuate the TEST START switch.	
9	CC	13 VOLTS DC ADJ/FIXED switch to ADJ.	
10	MCP	SELECTOR A switch to B20.	
11	CC DMM	Adjust the +13V potentiometer for +13.00 ± 1.0 Vdc.	
12	MCP	SELECTOR A switch to B210	
13	CC DMM	Adjust the -13V potentiometer for -13.00 ± 1.0 Vdc.	
14	CC	DMS-G POWER switch to OFF.	
15	CC	Plug the 2A1 card into P2 of adapter A14.	
16	CC	DMS-G POWER switch to ON.	
17	CC DMM	Adjust the -13V potentiometer for -13.00 ± 0.01 Vdc.	
18	MCP	SELECTOR A switch to B20.	
19	CC DMM	Adjust the +13V potentiometer for +13.00 ± 0.01 Vdc.	
20	MCP	DMM FUNCTION switch to VAC.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
21	MCP	DMM LO switch to 4.	
22	MCP	SELECTOR A switch to B6.	
23	MCP	SELECTOR B switch to A12.	
24	PPE	SEQUENCE switch to MNL.	
25	OSC	Install isolation plug on scope.	
		NOTE **Verify scope isolation by verifying no continuity between DMS ground and scope chassis. For the remainder of the procedure do not connect grounds between the scope and DMS-D or DMS-G except when called for.**	
26	CC DMM	Adjust POTENTIOMETERS 1 control for 1.770 ± 0.001 Vac.	Check AR1 circuit for loading of the input signal.
27	CC	TC-19 switch to ON.	
28	MCP	DMM INPUT switch to DMM INPUT.	
29	DMM	Connect the external DMM positive probe to 2A1-J5.	
30	MCP	DMM FUNCTION switch to VDC.	
31	DMM	Observe a reading of -1.420 to -1.650 Vdc.	Check AR1, AR2 and AR3 circuits.
32	MCP	DMM FUNCTION switch to VAC.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
33	DMM	Observe a reading of 0.9700 to 1.010 Vac.	Check AR1 and AR2.
34	MCP	DMM LO switch to SEL B.	
35	MCP	DMM INPUT switch to SEL A.	
36	MCP	SELECTOR A switch to A10.	
37	DMM	Observe a reading of 0.9700 to 1.020 Vac.	Check AR3, Q1, Q2 and Q4.
38	MCP	SELECTOR A switch to A15.	
39	MCP	SELECTOR B switch to B9.	
40	DMM	Observe a reading of 0.0054 to 0.0062 VAC.	Check Q1, Q2, Q4 and P1-20.
41	MCP	DMM FUNCTION switch to VDC.	
42	DMM	Observe a reading of +0.1900 to +0.2400 Vdc.	Check P1-20.
43	MCP	SELECTOR A switch to A22.	
44	MCP	DMM LO switch to 4.	
45	DMM	Observe a reading of +1.770 to +2.250 Vdc.	Check AR4.
46	MCP	DMM FUNCTION switch to VAC.	
47	DMM	Observe a reading of 0.0525 to 0.0605 Vac.	Check Q4, AR4 and P1-20.
48	MCP	DMM LO switch to SEL B.	
49	MCP	D1MM FUNCTION switch to VDC.	
50	MCP	SELECTOR A switch to A14.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
51	MCP	SELECTOR B switch to A3.	
52	DMM	Observe a reading of ≤ +0.0050 Vdc.	Check U1C, U3 and Q3. (Q3 should not be conducting at this time.)
53	MCP	DMM FUNCTION switch to VAC.	
54	DMM	Observe a reading of ≤ 0.0020 Vac.	Check U1C, U3 and Q3. (Q3 should not be conducting at this time.)
55	MCP	DMM INPUT switch to DMM INPUT.	
56	MCP OSC	Connect a 1W20 cable from J12 to the oscilloscope "A" input. **NOTE** **Ensure AC isolation plug is on OSC pwr input.**	
57	MCP	SELECTOR A switch to B6.	
58	MCP	DMM LO switch to 4.	
59	MCP	DMM FUNCTION switch to VDC.	
60	CC DMM	Adjust POTENTIOMETER 1 control between 3.4 and 7.1 VP-P on the oscilloscope while verifying the DMM remains at a negative value.	Check AR1 and AR2.
61	MCP	DMM INPUT switch to SEL A.	
62		Remove test probe from 2A1-J5.	
63	CC	TC-12 switch to OFF.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
64	MCP	DMM FUNCTION switch to VAC.	
65	CC DMM	Adjust POTENTIOMETER 1 control for 2.500 ± 0.005 Vac.	Check the AR1 circuit for loading of input signal.
66	CC	TC-16 switch to ON.	
67	MCP	DMM LO switch to SEL B.	
68	MCP	SELECTOR A switch to A15.	
69	MCP	SELECTOR B switch to B7.	
70	MCP	Disconnect the cable at J12.	
71	DMM	Observe a reading of 0.1060 to 0.1220 Vac.	Check U1D, U4, K1, P1-20 and P1-13.
72	MCP	DMM FUNCTION switch to VDC.	
73	DMM	Observe a reading of +0.1700 to +0.2050 Vdc.	Check U1D, U4, K1, P1-20 and P1-13.
74	MCP	DMM LO switch to 4.	
75	MCP	SELECTOR A switch to A22.	
76	DMM	Observe a reading of +1.700 to +2.100 Vdc.	Check AR4.
77	MCP	DMM FUNCTION switch to VAC.	
78	DMM	Observe a reading of 1.060 to 1.220 Vac.	Check AR1 and AR2.
79	MCP	DMM LO switch to SEL B.	
80	MCP	SELECTOR A switch to A140	
81	MCP	SELECTOR B switch to B8.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
82	MCP	FUNCTION switch to VDC.	
83	DM1	Observe a reading of ≤ +0.0050 Vdc.	Check Q3.
84	MCP	DMM FUNCTION switch to VAC.	
85	DMM	Observe a reading of ≤ 0.0030 Vac.	Check Q3.
86	CC	TC-15 switch to ON.	
87	MCP	DMM LO switch to SYS GND.	
88	MCP	SELECTOR A switch to A22.	
89	DMM	Observe a reading of ≤ 0.0300 Vac.	Check U2 and Q4.
90	MCP	DMM LO switch to SEL B.	
91	MCP	SELECTOR A switch to A14.	
92	DMM	Observe a reading of 0.1060 to 0.1200 Vac.	Check U1C, U3, Q3, Q4 and P1-19.
93	MCP	DMM FUNCTION switch to VDC.	
94	DMM	Observe a reading of +0.1700 to +0.2050 Vdc.	Check Q3 and U3.
95	MCP	SELECTOR A switch to A15.	
96	MCP	SELECTOR B switch to B7.	
97	DMM	Observe a reading of ≤ 0.002 Vdc.	Check U1C, U2, U3, Q3 and Q4.
98	MCP	DMM FUNCTION switch to VAC.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
99	DMM	Observe a reading of ≤ 0.003 Vac.	Check U1C, U2, U3, Q3 and Q4.
100	MCP	SELECTOR A switch to B6.	
101	CC DMM	Adjust POTENTIOMETERS 1 control for 1.770 ± 0.001 Vac.	
102	MCP	DMM LO switch to 4.	
103	MCP	SELECTOR A switch to A22.	
104	CC	TC-15 switch to OFF.	
105	CC	TC-16 switch to OFF.	
106	CC	TC-19 switch to OFF.	
107	DMM	Observe a reading of 0.1100 to 0.1270 Vac.	Check AR5, Q5, and Q6.
108	CC DMM	Adjust POTENTIOMETER 1 control for 0.0850 ± 0.0010 Vac.	
109	MCP	DMM INPUT switch to DMM INPUT.	
110		Connect the DMM POS probe to 2A1-J7.	
111	MCP	DMM FUNCTION switch to VDC.	
112	DMM	Observe a reading of +4.708 to +5.152 Vdc and record for use in step 115.	Check AR5 and Q1.
113	CC	TC-1 switch to ON.	
114	CC	TC-20 switch to ON.	
115	DMM	Wait for DMM to stabilize then observe a reading within ± 0.1000 Vdc of voltage recorded in step 112.	Check AR4, AR5, Q5, Q6 and Q7.

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
116		Connect a 10215396 cable to the oscilloscope A INPUT and the white probe at 2A1-J8, black probe to 2A1-J10.	
117	OSC	Observe a 5.20 to 7.00 VP-P ≅ 20 µsec pos. pulses. (disregard overshoot)	Check Q6 and Q7.
118	MCP	DMM LO switch to SEL B.	
119	MCP	SELECTOR A switch to A15.	
120	OSC	Remove the 10215396 cable between the A INPUT and 2A1-J8 and 2A1-J10.	
121	MCP	Connect a 1W20 cable from J12 to the oscilloscope A INPUT.	
122	OSC	Connect a COAX from J13 to oscilloscope B INPUT.	
123	OSC	Mode switch to A.	
124	OSC	Channel A coupling to AC.	
125	OSC	Channel B coupling to AC.	
126	OSC	Channel A VOLTS/DIV switch to .2.	
127	OSC	Channel B VOLTS/DIV switch to .1.	
128	OSC	TIME/DIV switch to 2.0 µsec.	
129	OSC	Observe and record VP-P of the positive pulses, ignore overshoot, noise or ringing, for use in step 132. Verify pulsewidth is 14 to 26 µsec. at the 30% amplitude point.	Check AR5, Q5, Q6 and Q7.
130	OSC	MODE switch to B.	
131	OSC	Observe and record VP-P of the positive pulses for use in step 132. Ignore overshoot, noise or ringing.	Check AR5, Q5, Q6 and Q7.

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
132		Subtract step 131 reading from step 129 reading. Verify difference is 0.520 to 0.700 Vdc.	Check AR5, Q5, Q6 and Q7.
133	MCP	Disconnect the cables from J12 and J13.	
134	CC	DMS-G POWER switch to OFF.	
135	CC	TC-1 switch to GND.	
136	MCP	DMM INPUT switch to SEL A.	
137	MCP	D1M FUNCTION switch to K OHMS.	
138	MCP	SELECTOR A switch to A8.	
139	MCP	SELECTOR B switch to A19.	
140	DMM	Observe an open reading (≥ 400 k ohms).	Check CR5.
141	MCP	SELECTOR A switch to A17.	
142	DMM	Observe an open reading (≥ 400 k ohms).	Check CR6.
143	MCP	SELECTOR A switch to A18.	
144	DMM	Observe an open reading (≥ 400 k ohms).	Check CR7.
145	MCP	SELECTOR A switch to A19.	
146	MCP	SELECTOR e switch to A8.	
147	DMM	Observe a reading of ≤ 400 k ohms. Wait for capacitor to charge.	Check CR5.
148	MCP	SELECTOR B switch to A17.	

Table 6-4. NOAF Circuit Card 1A6A1 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
149	DMM	Observe a reading of ≤ 400 k ohms.	
			Check CR6.
150	MCP	SELECTOR B switch to A18.	
151	DMM	Observe a reading of ≤ 400 k ohms.	
			Check CR7.
152	MCP	DMM FUNCTION switch to VDC.	
153	MCP	SELECTOR A switch to A8.	
154	MCP	SELECTOR B switch to A16.	
155	CC	DMS-G POWER switch to ON.	
156	CC	24V switch to 24V.	
157	CC	-14/24V switch to -14/24V.	
158	CC	+14/24V switch to +14/24V.	
159	DMM	Observe a reading of -27.90 to -34.10 Vdc.	
			Check VR5, VR2, VR3 and Q8.
160	MCP	SELECTOR A switch to A19.	
161	MCP	SELECTOR B switch to A80	
162	DMM	Observe a reading of +0.6000 to +0.8000 Vdc.	
			Check VR5, VR2, VR3 and Q8.
163	CC	DMS-G POWER switch to OFF.	
164	CC	ALL TC switches to OFF or GND.	
165	PP	MAIN POWER AND DMS switches to OFF.	
166	UUT	Disconnect all test leads.	
167	CC	Remove the 1A6A1 Card from adapter A14.	
168	CC	Remove and stow adapter A14.	

EQUIPMENT NOTES

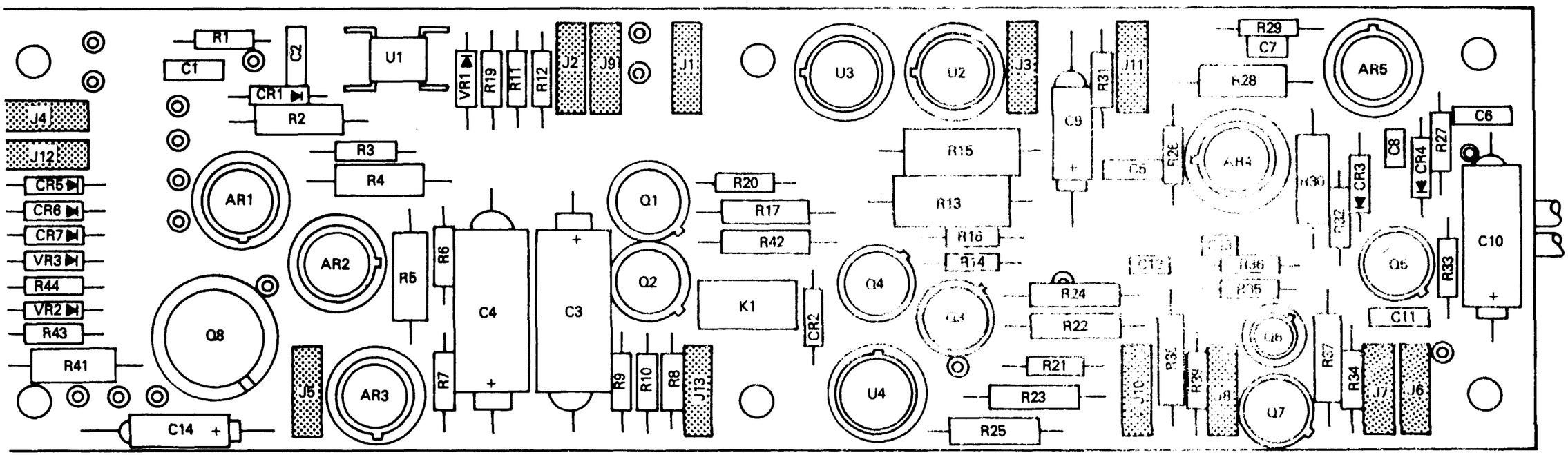

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Figure 6-10. Night Optical Alignment Fixture Circuit card 1A6A1 test points, adjustments, and parts location.

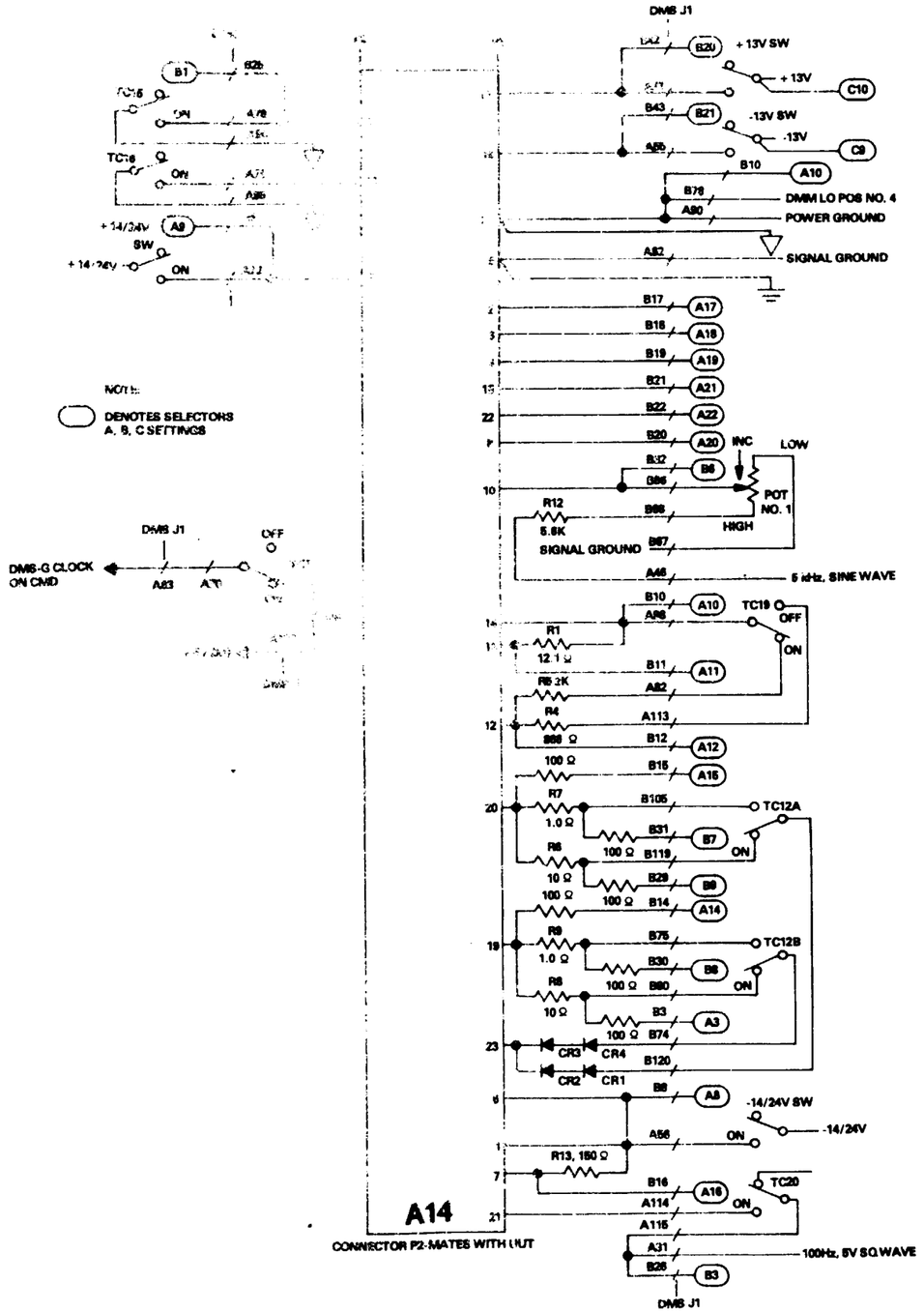

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Figure 6-11. NOAF card 1A6A1 - interface diagram.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **The major units and panels will be identified as indicated below.**	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	PP	POWER panel	
	TP	TRAINER panel	
	MCP	MONITOR/CONTROL panel	
	PPE	PROG PERFORM EVAL panel	
	HWS	HORIZ WIRE SIM panel	
	CT	COUNTER TIMER	
	IT	INTERNAL TEST	
		DMS-G	
	CC	CIRCUIT CARD/SUBASSEMBLIES panel	
	OSC	OSCILLOSCOPE (AN/USM-338)	
	PS	EXTERNAL power supply	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
1		Prepare the DMS-D and DMS-G for operation per paragraph 2-6 and 2-7 in TM 9-4935-481-14-1.	
		NOTE **For fault isolation refer to schematic diagrams and components located at end of chapter 6. See functional interface diagram following this test.**	
2	CC	Position and secure adapter A16 to the UUT INTERFACE J1 connector. Adapter must be fastened securely or failure indications can result.	
3	CC	TEST MODE switch to TRACKER TEST SET.	
4	CC	Connect P1 of adapter to card 1A6A2.	
5	CC	Connect the E9 clip lead of adapter to 1A6A2 card lug E5.	
6	CC	TC- 24V switch to 14V.	
7	CC	TC-3 switch to ON.	
8	CC	TC +14/24V switch to +14/24V.	
9	CC	TC -14/24V switch to -14/24V.	
10	CC	TC-1 switch to ON.	
11	CC	TC-5 switch to ON.	
12	CC	TC-8 switch to ON.	
13	CC	TC-16 switch to ON.	
14	CC	DMS-G POWER switch to ON.	
15	PP TP	MAIN POWER and DMS switches to ON. Momentarily actuate TEST START switch.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Power Control	
16	MCP	SELECTOR A switch to A3.	
17	MCP	DMM LO switch to 4.	
18	GMM	Observe a reading of +15.68 to +17.33 Vdc.	
			Check K1.
19	MCP	SELECTOR A switch to A4.	
20	DMM	Observe a reading of -15.68 to -17.33 Vdc.	
			Check K1.
21	MCP	SELECTOR A switch to D11.	
22	DMM	Observe a reading of -0.5000 to +0.5000 Vdc.	
			Check K1.
23	MCP	SELECTOR A switch to D12.	
24	DMM	Observe an open reading (meter drifts).	
			Check K1.
25	CC	TC-13 switch to ON.	
26	DMM	Observe a reading of -15.68 to -17.33 Vdc.	
			Check K1.
27	MCP	SELECTOR A switch to A3.	
28	DMM	Observe a reading of +15.68 to +17.33 Vdc.	
			Check K1.
29	CC	TC-13 switch to OFF.	
		Thermal Power	
30	MCP	SELECTOR A switch to D2.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
31	CC	TC-14 switch to ON.	
32	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check Q8, Q9, Q10, VR6 and VR7.
33	MCP	SELECTOR A switch to D3.	
34	CC	TC-18 switch to ON.	
35	DMM	Observe a reading of -11,70 to -14.30 Vdc.	
			Check Q11, Q12, VR8 and VR9.
36	CC	TC-14 switch to OFF.	
37	CC	TC-1 switch to GND.	
38	DM	Observe a reading of -11.70 to -14.30 Vdc.	
			Check Q11, Q12, VR8 and VR9.
39	MCP	SELECTOR A switch to D2.	
40	CC	TC-18 switch to OFF.	
41	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check Q8, Q9, Q10, VR6 and VR7.
42	CC	TC-1 switch to ON.	
43	CC	TC-14 switch to ON.	
		CAUTION	
		When the 24V switch is in the 24V position this is an over voltage condition. Perform the test as rapid as possible to prevent component overheating.	
44	CC	TC- 24V switch to 24V.	
45	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check Q8, Q9, Q10, VR6 and VR7.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
46	CC	TC-18 switch to ON.	
47	MCP	SELECTOR A switch to D3.	
48	DMM	Observe a reading of -11.70 to -14.30 Vdc.	
			Check Q11, Q12, VR8 and VR9.
		Lamp Control	
49	CC	TC-22 switch to 1.	
50	CC	TC-17 switch to ON.	
51	CC	POTENTIOMETERS 1 control fully ccw.	
52	MCP	SELECTOR A switch to A11.	
53	MCP	SELECTOR B switch to A10.	
54	MCP	DMM LO switch to SEL B.	
55	DMM	Observe a reading of +0.3200 to +0.4000 VDC.	
			Check Q6, Q7 and Q5.
56	CC	Adjust POTENTIOMETERS 1 control fully cw.	
57	CC	Observe a reading of +0.0700 to +0.1270 Vdc.	
			Check R20.
58	CC	DMS-G POWER switch to OFF, wait until transistors on card cool.	
59	CC	TC-14. switch to OFF.	
60	CC	TC-16 switch to OFF.	
61	CC	TC-17 switch to OFF.	
62	MCP	SELECTOR A switch to A8.	
63	MCP	SELECTOR B switch to A9.	
64	MCP	DMS-G POWER switch to ON.	
65	DMM	Observe a reading of +28.50 to +32.00 Vdc. (Do not wait.)	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		(Reading may change as temperature changes.)	
			Check Q6, Q7 and Q5.
66	CC	TC- 24V switch to 14V.	
67	DMM	Observe a reading of ≥ +26.50 Vdc,	
			Check Q6, Q7 and Q5,
		Charger Control Interlock	
68	MCP	SELECTOR A switch to D1.	
69	MCP	SELECTOR B switch to A4.	
70	CC	TC-17 switch to ON.	
71	CC	TC-22 switch to 2.	
72	DMM	Observe a reading of ≥ +30.00 VDC.	Check CR3, CR7, CR6, CR10, CR12 and CR9.
73	CC	TC-22 switch to 1.	
74	DMM	Observe a reading of +0.800 to +2.000 Vdc.	
			Check CR10 and CR3.
75	CC	TC-17 switch to OFF.	
76	DMM	Observe a reading of +0.8000 to +2.000 Vdc.	
			Check CR9 and CR3.
77	CC	TC-22 switch to 2.	
78	DMM	Observe a reading of +0.8000 to +2.000 Vdc.	
			Check CR12 and CR3.
79	CC	TC-22 switch to 3.	
80	DMM	Observe a reading of +0.4000 to +1.000 Vdc.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
			Check CR7.
81	CC	TC-22 switch to 4.	
82	DMM	Observe a reading of +0.4000 to +1.000 Vdc.	
			Check CR6.
		Crowbar Test	
83	CC	TC-22 switch to 1.	
84	CC	TC-15 switch to ON.	
85	CC	TC-4 switch to ON.	
86	MCP	SELECTOR A switch to F1.	
87	MCP	SELECTOR B switch to C13.	
88	MCP	SELECTOR C switch to A18.	
89	MCP	DMM LO switch to SYS GND.	
90	DMM	Adjust COMPARATOR THRESHOLD B to +4.200 + .005 Vdc.	
91	MCP	SELEC.OR A switch to A18.	
92	MCP	DTM LO switch to 4.	
93	CT	FUNCTION switch to TIME A + B.	
94	CT	FREQ/TIME/MULT switch to 10^2.	
95	CT	A INPUT switch to pos.	
96	CT	3 INPUT switch to neg.	
97	CT	Adjust DISPLAY control fully cw to HOLD.	
98	DMM	Observe a reading of +14.85 to +18015 Vdc.	
			Check Q2 and Q3.
99	CC	TC-2 switch to ON.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
100	CC	TC-14 switch to ON.	
101	CT	Momentarily depress RESET pushbutton.	
		NOTE **Perform the next 5 Steps as rapidly as possible.**	
102	CC	TC-12 switch to ON.	
103	CT	Observe a reading of 15 to 80 msec.	
			Check Q2 and Q3.
104	DMM	Observe a reading of < +1.000 Vdc.	
			Check Q2.
105	CC	TC-12 switch to OFF.	
106	CC	DMS-G POWER switch to OFF, wait 2 minutes then turn it back to ON.	
107	CC	TC-15 switch to OFF.	
		NOTE **Perform the next 6 Steps as rapid as possible.**	
108	CC	TC- 24V switch to 24V.	
109	DMM	Observe a reading of +22o80V to +25.20 Vdc.	
			Check setup. Repeat last 2 steps.
11.0	CC	TC-5 switch to GND.	
111	DMM	Observe a reading of < +1.000 Vdc.	
			Check Q1.
112	CC	TC-24V switch to 14V.	
113	CC	DMS-G POWER switch to OFF.	
		+ 13V Heater	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
114	CC	TC-1 switch to GND.	
115	CC	TC-2 switch to OFF.	
116	CC	TC-14 switch to OFF.	
117	CC	TC-17 switch to ON.	
118	CC	TC-18 switch to OFF.	
119	CC	TC-19 switch to ON.	
120	CC	TC-22 switch to 2.	
121	CC	DMS-G POWER switch to ON.	
122	DMM	Observe a reading of +14.85 to +18.15 Vdc.	Check Q10, Q9, Q2 and Q3.
123	CC	TC-1 switch to ON.	
124	CC	TC-14 switch to ON.	
125	DMM	Observe a reading of < +1.000 Vdc.	Check Q10, Q9, Q2 and Q3.
12.6	CC	TC-4 switch to GND.	
127	CC	TC-14 switch to OFF.	
128	CC	TC-18 switch to ON.	
129	CC	TC-1 switch to GND.	
130	CC	TC-4 switch to ON.	
131	DMM	Observe a reading of +14.85 to +18.15 Vdc.	Check setup, Repeat last 4 steps.
132	CC	TC-1 switch to ON.	
133	CC	TC-14 switch to ON.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
134	DMM	Observe a reading of < +1.000 Vdc.	Check Q11, Q12, Q8, Q3 and Q2.
135	CC	DMS-G POWER switch to OFF.	
136	CC	TC-2 switch to ON.	
137	CC	TC-14 switch to OFF.	
138	CC	TC-19 switch to OFF.	
		CROWBAR - OVERVOLT	
139	MCP	SELECTOR A switch to B4.	
140	MCP	SELECTOR B switch to A4.	
141	MCP	DMM LO switch to SEL B.	
142	MCP	DMM FUNCTION switch to K OHMS.	
143	DMM	Observe a reading of 0.9872 to 1.013 K Ohms.	Check R8.
144	MCP	DMM FUNCTION switch to VDC.	
143	CC	13 Volts DC ADJ/FIXED switch to ADJ.	
146	OSC	Connect a coax between J15 and OSC A INPUT.	
147	MCP	DMM LO switch to 4.	
148	CC	TC -14/24V switch to OFF.	
149	CC	TC-3 switch to GND.	
150	CC	DMS-G POWER switch to ON.	
151	CC	TC +13V switch to ON.	
152	DMM	Observe a reading more negative than -20.00 Vdc.	Check for short at P-2-46.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		CAUTION **The CW adjustment of the following +13 POT should not exceed past the switching point by more than 1/4 turn, to protect from overheating the 1A6A2 Card over-volt diodes.**	
153	CC	Adjust the 13 Volt DC +13 V control slowly cw until the scope display switches from the ≅ 16.5 Vdc level to < 1.0 Vdc. (Adjustment is not necessary if reading is initially < 1.0 Vdc.)	Check Q4, VR1 and VR2.
154	MCP	DMM LO switch to SEL B.	
155	MCP	SELECTOR A switch to A3.	
156	MCP	SELECTOR B switch to B4.	
157	DMM	Observe a reading of ≤ 60.00 Vdc.	Check Q4, VR1 and VR2.
158	CC	TC+13V switch to OFF.	
159	CC	1C-4 switch to GND.	
160	CC	TC -14/24V switch to -14/24V.	
161		TC-3 switch to ON.	
		REFERENCE GENERATOR	
162	MCP	SELECTOR A switch to A16.	
163	MCP	DMM LO switch to 4.	
164	DMM	Adjust 1A6A2-R39 to -8.880 ± .005 Vdc.	Check AR2B.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
165	CC	TC-24V switch to 24V.	
166	DMM	Observe a reading of -8.790 to -8.970 Vdc.	Check AR2B.
167	CC	TC-24V switch to 14V.	
168	CC	TC-14 switch to ON.	
		HORIZ/VERT FILTERS	
169	PPE	SEQUENCE switch to MNL.	
168	PPE	Momentarily actuate TEST START switch.	
		HORIZ - DC	
171	MCP	SELECTOR A switch to A15.	
172	HWS DMM	Adjust the DC LEVEL potentiometer to +7.000 ± .01 Vdc.	
173	MCP	SELECTOR A switch to A24.	
174	DMM	Observe a reading of +7.739 to +7.801 Vdc and record for use in Step 180.	Check AR3.
		VERT - DC	
175	MCP	SELECTOR A switch to B1.	
176	DMM	Observe a reading of +7.739 to +7.801 Vdc and record for use in Step 178.	Check AR4.
		VERT - AC LEVEL	
177	HWS	Adjust the RIPPLE potentiometer fully cw.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
178	DMM	Observe the reading recorded in step 176 ± .02 Vdc.	
			Check AR4.
		HORIZ - AC LEVEL	
179	MCP	SELECTOR A switch to A24.	
180	DMM	Observe the reading recorded in step 174 ± .02 Vdc.	
			Check AR3.
181	PPE	SEQUENCE switch to OFF.	
		THERMAL CONTROL CIRCUIT	
182	CC	TC-8 switch to GND.	
183	CC	TC-14 switch to OFF.	
184	CC	TC-16 switch to ON.	
185	CC	TC-17 switch to OFF.	
186	CC	TC-22 switch to 1.	
187	MCP	SELECTOR A switch to A23.	
188	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check AR1-A, AR2-A, AR1-B, U3 and U4.
189	MCP	SELECTOR A switch to A14.	
190	DMM	Observe a reading of +8.387 to +14.95 Vdc.	
			Check AR1-A, AR2-A, AR1-B, U1 and U2.
191	CC	TC-6 switch to ON.	
192	CC	TC-20 switch to ON.	
193	MCP	SELECTOR A switch to A20.	
194	DMM	Observe a reading of +3.840 to +4.840 Vdc.	
			Check AR1-A.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		OAF TEMP SENSE	
		NOTE	
		Allow temperature to stabilize if testing had been interrupted.	
195	MCP	Disconnect cable 1W14 from J17.	
196	MCP	Connect the 10277059 thermistor probe to DMS-D J17.	
		CAUTION	
		Tabs of the probe may interfere with the thermistor mounted on 1A6A2 card causing damage, use care when mounting sensor.	
197		Place the sensor end of the 10277059 thermistor probe on the card thermistor mounting pad, holding it in place using a bolt and nut. Assure that the sensor junction is making good mechanical contact.	
198	MCP	DMM INPUT switch to DMM INPUT.	
199	MCP	DMM LO switch to EXT.	
200	MCP	DMM FUNCTION switch to K OHMS.	
201	DMM	Observe and record the DMM reading.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
202		Convert the resistance reading recorded in step 201 above, to a temperature reading using the chart in figure 6-1. Record the temperature °F.	
203	MCP	DMM FUNCTION switch to VDC.	
204	MCP	DMM INPUT switch to SEL A.	
205	MCP	DMM LO switch to 4.	
206	MCP	SELECTOR A switch to A21.	
207	DMM	Observe and record the DMM reading.	
208		Verify that the recorded voltage in step 207 shall be between the limits defined in figure 6-12 as a function of the temperature measured in step 202 above.	Check AR1-B.
		THERM DIFF AMP	
209		SELECTOR A to A12.	
210		SELECTOR B to D4.	
211		DMM LO switch to SEL B.	
212		Observe a reading of .7800 to .9500 Vdc and record the DMM reading for use in step 213.	
213		Compute the ratio of step 208 reading divided by the step 212 reading.	
214		Verify the ratio is within the limits specified in figure 6-13 for the value of temperature recorded in step 202.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		THERM DIFF AMP	
215	MCP	SELECTOR A switch to A21.	
216	MCP	SELECTOR B switch to A20.	
		NOTE **For the following tests, cover the boards with cloth or paper to minimize air circuit.**	
217	CC	TC-20 switch to OFF.	
218	CC	Adjust POTENTIOMETERS 2 control to +0.5700 ± 0.003 Vdc.	
219	MCP	SELECTOR A switch to A19.	
220	MCP	DMM LO switch to 4.	
221	DMM	Adjust 1A6A2-k64 to +1.350 ± 0.004 Vdc.	Check AR2-A.
222	MCP	DMM LO switch to SEL B.	
223	MCP	SELECTOR A switch to A21.	
224	CC DMM	Adjust POTENTIOMETERS 2 control to 0.0000 ± 0.01 Vdc.	
225	MCP	SELECTOR A switch to A19.	
226	MCP	DHM LO switch to 4.	
227	DMM	Observe a reading of -0.1500 to +0.1500 Vdc.	Check AR2-A.

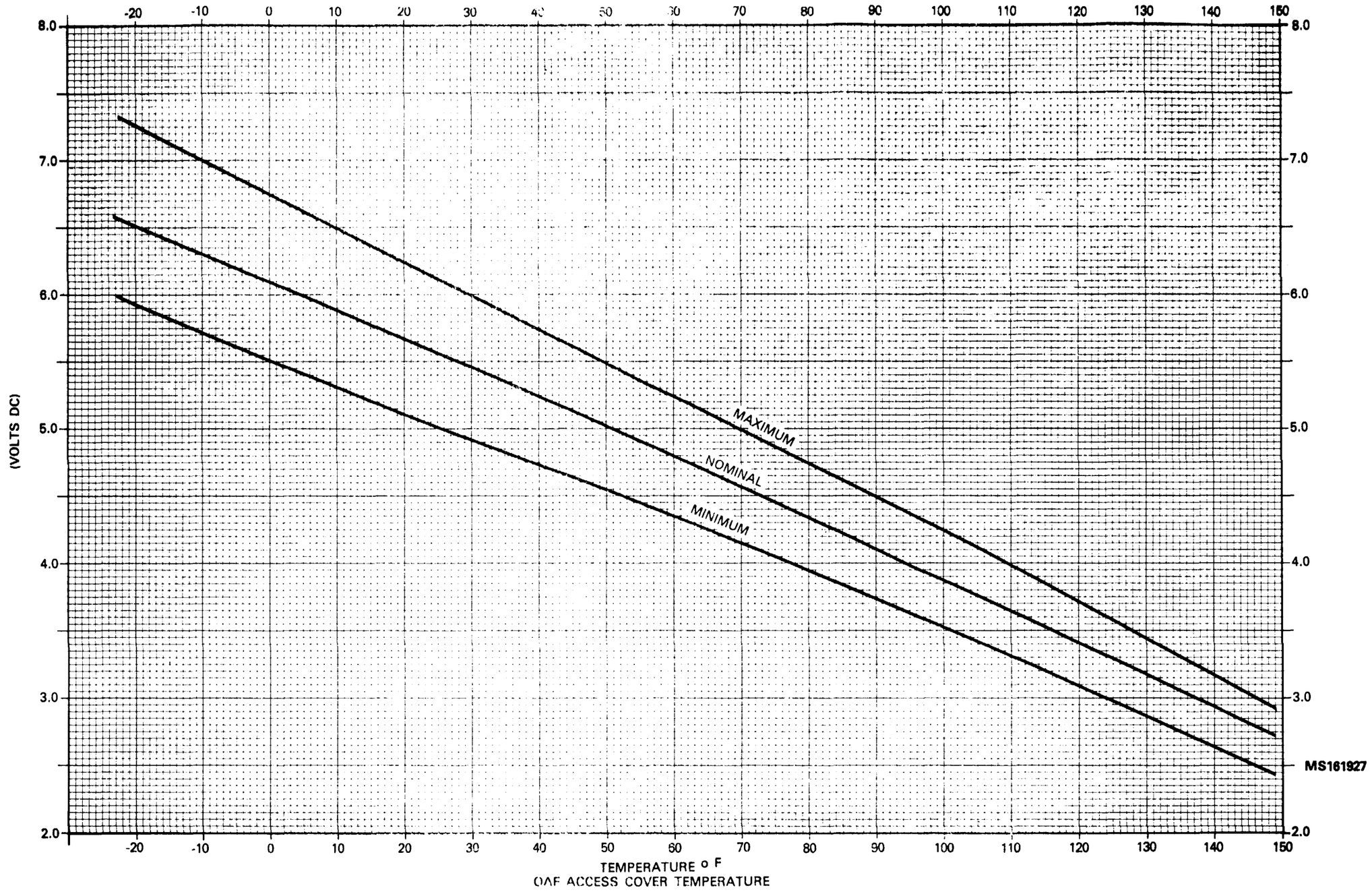

Figure 6-12. OAF thermistor/temperature correlation.

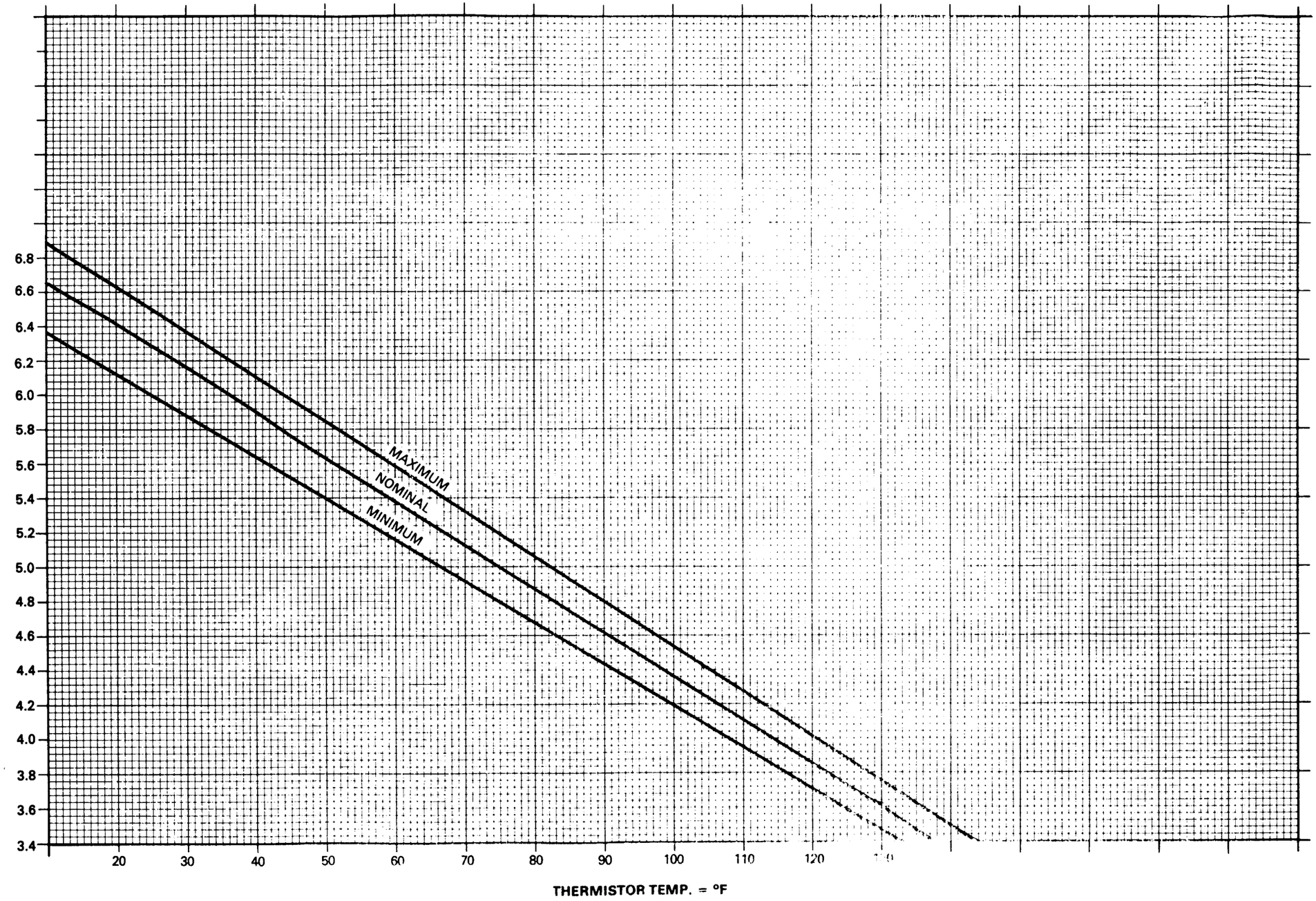

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Figure 6-13. P1-30/P10 OAF buffer voltage ratio.

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		COMPARATOR TRIP POINT	
		NOTE	
		When adjusting POTENTIOMETERS 2 in the following	
		step, do not adjust above 0.9400 (Comparator will trip).	
228	CC DMM	Adjust POTENTIOMETERS 2 control to 40.9300 ± 0.01 Vdc.	
229	MCP	SELECTOR A switch to A23.	
230	DMM	Observe a reading of +11.70 to +14.30 Vdc.	Check B3 and U4.
231	MCP	SELECTOR A switch to A 14.	
232	DMM	Observe a reading of +8.387 to +14.95 Vdc.	If reading is negative restart test at step 223. Check U1 and U2.
233	MCP	SELECTOR A switch to A19.	
234	CC DMM	Adjust POTENTIOMETERS 2 control to +1.070 ± 001 Vdc.	
235	MCP	SELECTOR A switch to A23.	
236	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
237	MCP	SELECTOR A switch to A14.	
238	DMM	Observe a reading of -15.20 to -16.80 Vdc.	Check U1 and U2.
239	MCP	SELECTOR A switch to A19.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
240	CC DMM	Adjust POTENTIOMETERS 2 control to +0.8800 ± 0.01 Vdc.	
241	MCP	SELECTOR A switch to A23.	
242	DMM	Observe a reading of +11.70 to +14.30 VDC.	Check U3.
243	MCP	SELECTOR A switch to A14.	
244	DMM	Observe a reading of -15.20 to -16.80 Vdc.	Check U1.
245	HCP	SELECTOR A switch to A19.	
246	CC MM	Adjust POTENTIOMETERS 2 control to +1.260 ± 0.01 Vdc.	
247	MCP	SELECTOR A switch to A23.	
248	DMM	Observe a reading of +11.70 to +14.30 Vdc.	Check U3.
249	MCP	SELECTOR A switch to A19.	
250	CC DMM	Adjust POTENTIOMETERS 2 control to +1.400 ± 0.01 Vdc.	
251	MCP	SELECTOR A switch to A23.	
252	DMM	Observe a reading of -0.1000 to +0.1000 Vdc.	
		POWER DOWN OF EXCESSIVE CIRCUITS	
253	CC	TC-5 switch to ON.	
		TC-6 switch to GND.	
		TC-8 switch to ON.	
		TC-17 switch to ON.	
		TC-16 switch to OFF.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		TC-22 switch to 2.	
		13 Volts DC ADJ/FIXED switch to FIXED	
		CLOCK INHIBIT CONTROL	
254	CC	TC-7 switch to ON.	
255	MCP	SELECTOR A switch to B3.	
256	DMM	Observe a reading of < +1.000 Vdc.	
			Check Q13.
257	CC	TC-7 switch to GND.	
258	DMM	Observe a reading of +11.70 to +14.30 Vdc.	
			Check Q13.
		THERMAL - INPUT RESISTANCE	
259	CC	TC +!4/24V switch to OFF.	
260	CC	TC -14/24V switch to OFF.	
261	CC	TEST START switch to START.	
262	CC	TC-11 switch to ON.	
263	CC	12 Volts DC +13V control fully ccw.	
264	CC	13 Volts DC ADJ/FIXED switch to ADJ.	
265	MCP	SELECTOR A switch to C6.	
266	MCP	SELECTOR B switch to C11.	
267	MCP	SELECTOR C witch to A12.	
268	MCP	DMM LO switch to SEL B.	
269	CC	TC +13V switch to ON.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
270	CC DMM	Adjust the 13 Volts DC +13V control to 18.08 Vdc 0.01 Vdc.	
			Check set up.
271	MCP	DMM input to EXT.	
272	MCP	DMM LO switch to EXT.	
273	MCI	Disconnect thermistor cable from J17.	
274	MCP	Connect 1W14 cable to J17.	
275	DMM	Using EXT DMM probe, measure 18.04 to 18.12 Vdc between J15 (pos. probe) and J12-Female (neg. probe).	
			Check R65 and R66.
		GROUND STRAP	
276	MCP	DMM INPUT switch to SEL A.	
277	MCP	DMM FUNCTION switch to K OHMS.	
278	MCP	DMM LO switch to SEL B.	
279	MCP	SELECTOR A switch to C12.	
280	MCP	SELECTOR B switch to B18.	
281	MCP	Observe a continuity reading of < 0.0020 K ohm.	
			Check E5.
282	CC	DMS-G POWER to OFF.	
283	CC	All TC switches to OFF or GND.	
284	MCP	MAIN POWER and DMS switches to OFF.	
285		Disconnect all test leads.	
286	MCP	Remove card 1A6A2 from adapter A16.	

Table 6-5. NOAF Circuit Card 1A6A2 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
287	MCP	DMM INPUT switch to DMM INPUT.	
288	MCP	DMM LO switch to EXT.	
289		Using EXT DMM probes read < 0.0020 k ohms between P1-8 and P1-47.	
290		Remove and stow adapter A16.	

EQUIPMENT NOTES

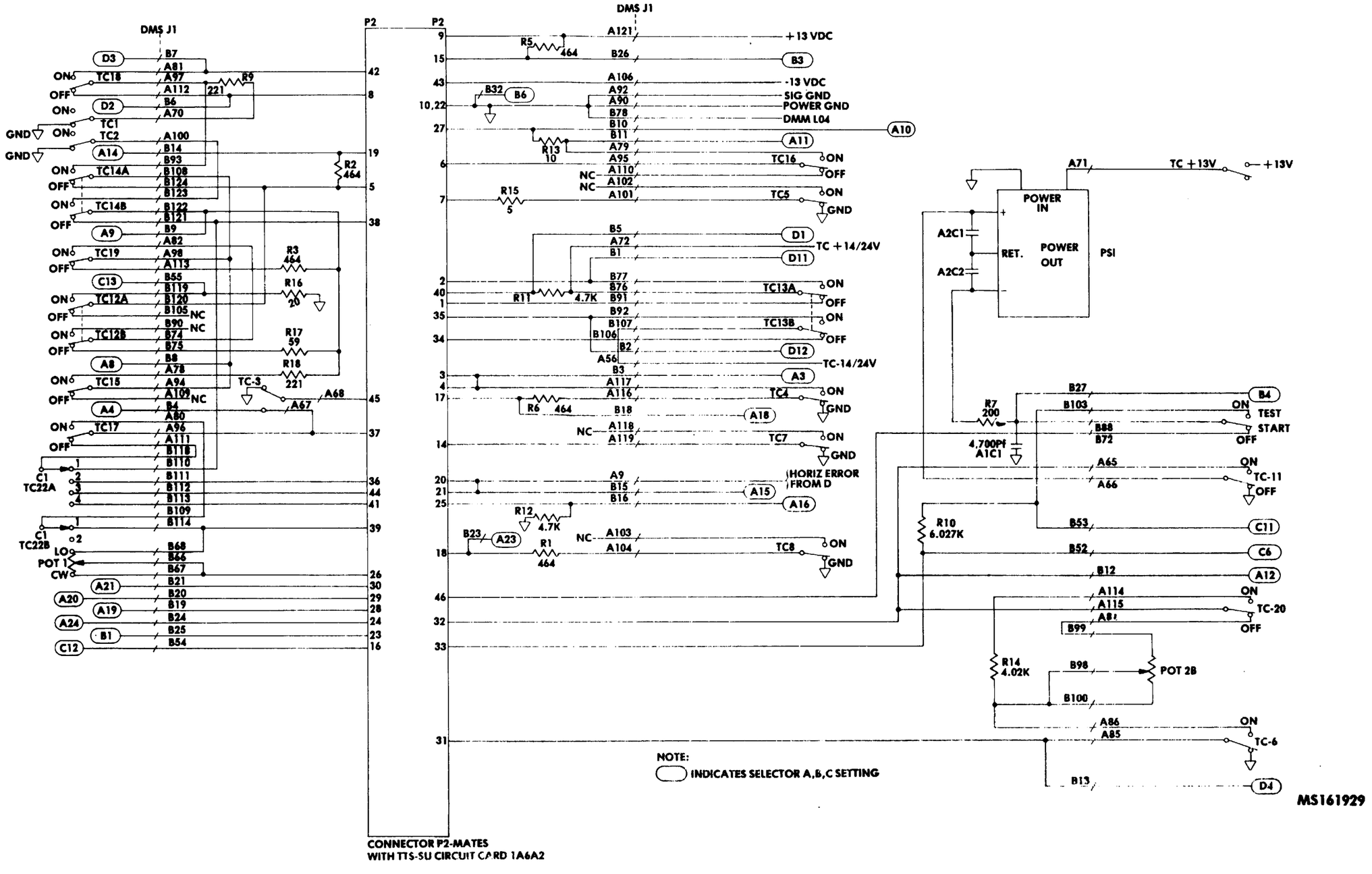

Figure 6-14. TTSG 1A6A2 Interface diagram.

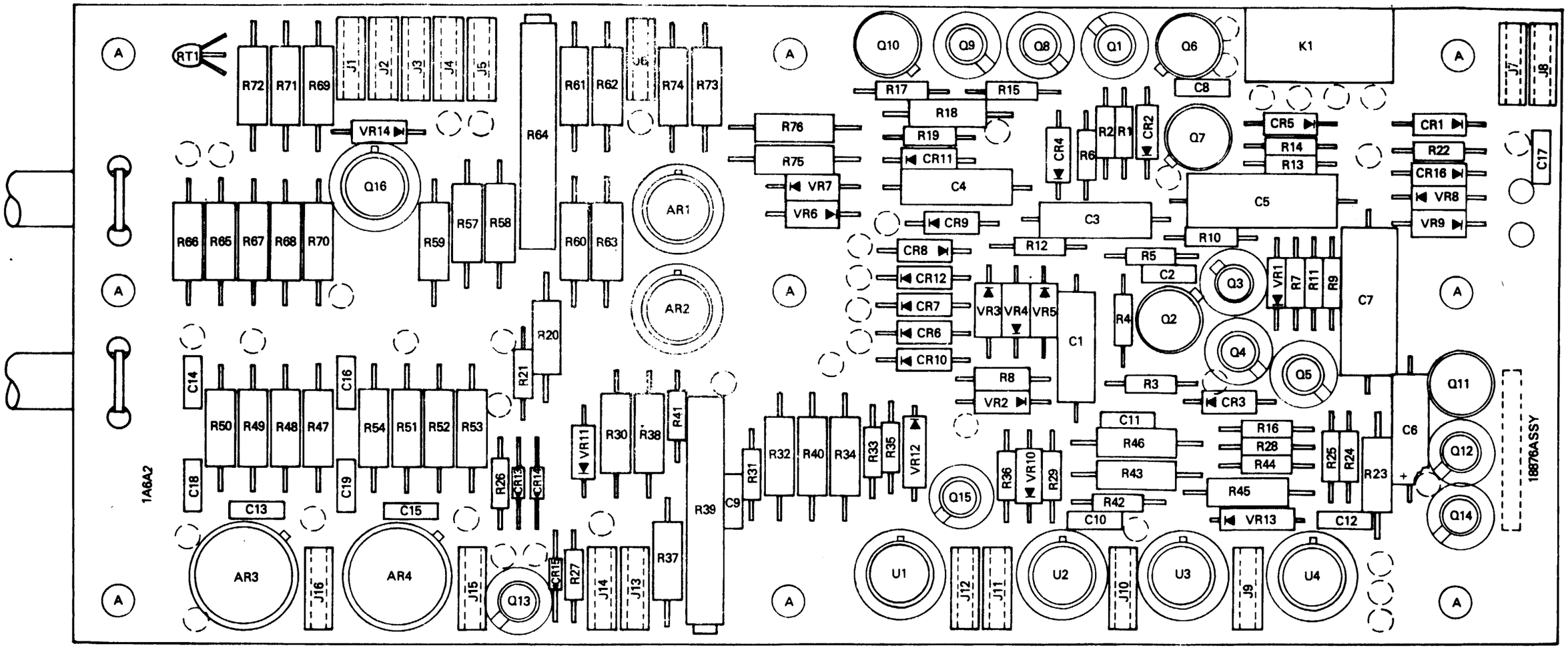

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Figure 6-15. NOAF circuit card 1A6A2 test points, adjustments and parts location.

Table 6-6. NOAF Circuit Card 1A6A3 Performance Test

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **The major units and panels will be ident ified as indicated below.**	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	PP	POWER panel	
	TP	TRAINER panel	
	MCP	MONITOR/CONTROL panel	
	PPE	PROG PERFORM EVAL panel	
	HWS	HORIZ WIRE SIM panel	
		DMS-G	
	CC	CIRCUIT CARD/SUBASSEMBLIES panel	
		NOTE **The TEST CONTROL switches on the DMS-G will be abbreviated by the initials TC.**	
1		Prepare the DMS-D and DMS-G for operation per paragraphs 2-6 and 2-7 in TM 9-4935-481-14-1.	

Table 6-6. NOAF Circuit Card 1A6A3 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE **For Fault isolation refer to schematic diagram and components located at end of chapter 6. See functional interface diagram following this test.**	
2	CC	Position and secure adapter A16 to the UUT INTERFACE J1 connector. Adapter must be fastened securely or failure indications can result.	
3	CC	TEST MODE switch to TRACKER TEST SET.	
4		Connect the test leads from adapter A16 to card 1A6A3 per the marking on the test leads.	
5		Adjust 1A6A3-R6 fully cw.	
6	CC	DMS-G POWER switch to ON.	
7	PP TP	MAIN POWER and DMS switches to ON. Momentarily actuate TEST START switch.	
8	MCP	SELECTOR A switch to B11.	
9	MCP	SELECTOR B switch to B12.	
10	MCP	DMM LO switch to SEL B.	
11	MCP	DI4M FUNCTION switch to K OHMS.	
12	DMM	Observe a open reading.	Check K1 and R1.
13	CC	TC-9 switch to ON.	
14	CC	TC-10 switch to ON.	
15	CC	TC -13V switch to -13V.	

Table 6-6. NOAF Circuit Card 1A6A3 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
16	DMM	Observe a reading of 0.0308 to 0.0320 k ohms.	
			Check K1 and R1.
17	CC	TC -13V switch to OFF.	
18	CC	Adjust 13 Volts DC +13V control fully ccw.	
19	CC	13 Volts DC ADJ/FIXED switch to ADJ.	
20	MCP	DHM FUNCTION switch to VDC.	
21	MCP	SELECTOR A switch to B9.	
22	MCP	SELECTOR B switch to B8.	
23	CC	TC +13V switch to +13V.	
24	DMM	Wait until DMM stabilizes.	
25	CC	Adjust 13 Volts DC +13V control to +1.000 ± 0.001 Vdc. Record exact reading for use in Step 28 below.	
26	MCP	SELECTOR A switch to B7.	
27	MCP	SELECTOR B switch to B6.	
28	DMM	Observe the reading recorded in Step 25 above ± 0.015 Vdc.	
			Check R6, R9 and R4.
9	MCP	SELECTOR A switch to C15.	
30	MCP	SELECTOR B switch to B7.	
31	DMM	Observe a reading of > 0.0840 Vdc.	
			Check R6 and R9.
32	DMM	Adjust 1A6A3-R6 ccw for a minimum DMM reading.	
33	MCP	SELECTOR A switch to B9.	
34	MCP	SELECTOR B switch to B8.	
35	CC DMM	Adjust 13 Volts DC +13V control to +1.000 ± 0.001 Vdc.	

Table 6-6. NOAF Circuit Card 1A6A3 Performance Test - Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
36	MCP	SELECTOR A switch to C15.	
37	MCP	SELECTOR B switch to B7.	
38	DMM	Observe a reading of < +0.0840 Vdc.	
			Check R6 and R9.
39	CC	TC +13V switch to OFF.	
40	CC	TC -13V switch to -13V.	
41	CC	TC-9 switch to OFF.	
42	MCP	SELECTOR A switch to B14.	
43	MCP	SELECTOR B switch to B13.	
44	CC DMM	Adjust 13 Volts DC -13V control to +6.800 Vdc.	
45	MCP	SELECTOR A switch to B16.	
46	MCP	SELECTOR B switch to B17.	
47	DMM	Observe a reading of +3.315 to +3.326 VDC.	
			Check R14.
48	CC	TC-9 switch to ON.	
49	CC	TC-10 switch to OFF.	
50	MCP	SELECTOR A switch to B14.	
51	MCP	SELECTOR B switch to B13.	
52	CC DMM	Adjust 13 Volts DC -13V control to +4.760 ± 0.001 VDC.	
53	MCP	SELECTOR A switch to B15.	
54	MCP	SELECTOR B switch to B17.	
55	DMM	Observe a reading of 7.688 to 7.712 Vdc.	
56	CC	TC -13V switch to OFF.	
			Check R1

Table 6-6. NOAF Circuit Card 1A6A3 Performance Test - Continued

STEP	UNIT	PROCEDURE		CORRECTIVE ACTION
57	MCP	DMM INPUT switch to DMM INPUT.		
58	MCP	DMM LO switch to EXT.		
59	MCP	DMM FUNCTION switch to K OHMS.		
60	DMM	Touch the DMM pos and neg probe together. Record the resistance reading for use in Steps 62 thru 70 below.		
61		Using the DMM pos and neg probes measure the resistance between the following points minus the reading recorded in Step 60 above.		
		FROM	TO	READING
62	DMM	E6	E22	0.0900 to 0.1100 k ohms.
63	DMM	E7	E23	0.0900 to 0.1100 k ohms.
64	DMM	E8	E24	0.0900 to 0.1100 k ohms.
65	DMM	E9	E25	0.0900 to 0.1100 k ohms.
66	DMM	E10	E26	0.0900 to 0.1100 k ohms.
67	DMM	E11	E27	0.0900 to 0.1100 k ohms.
68	DMM	E12	E28	0.0900 to 0.1100 k ohms.
69	DMM	E13	E29	0.0900 to 0.1100 k ohms.
70	DMM	E14	E30	0.0900 to 0.1100 k ohms.
71	CC	DMS-G POWER switch to OFF.		
72	CC	All TC switches to OFF or GND.		
73	PP	MAIN POWER and DMS switches to OFF.		
74		Disconnect all test leads.		
75	CC	Remove card 1A6A3 from adapter A16.		
76	CC	Remove and stow adapter A16.		

EQUIPMENT NOTES

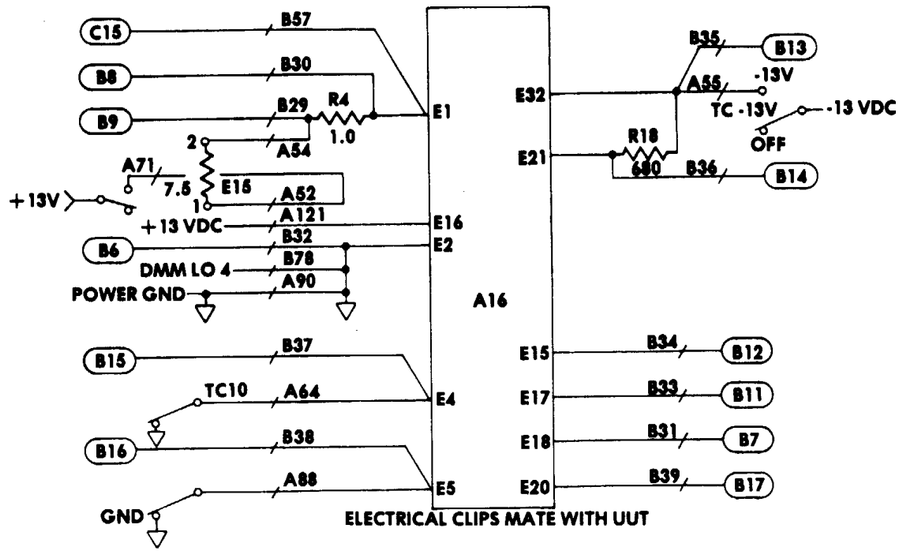

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Figure 6-16. TTSG card 1A6A3 - Interface diagram.

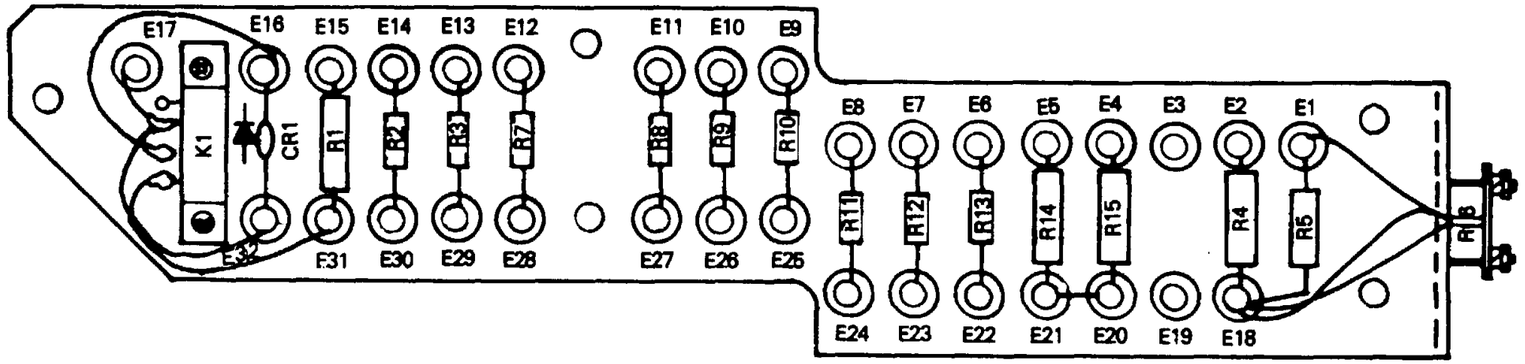

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Figure 6-17 Electronic component assy - 1A6A3 parts location

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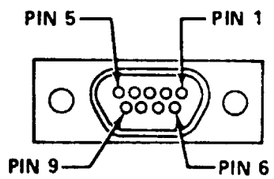
Table 6-7. Night Tracker Performance Test

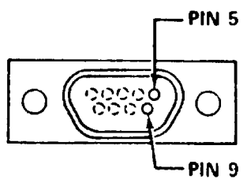
STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		NOTE The major units and panels will be identified by the initials as indicated below.	
		DMS-D	
	DMM	DIGITAL MULTIMETER	
	PP	POWER panel	
	MCP	MONITOR/CONTROL panel	
	CSCB	CONTROL SIGNAL COMPARATOR BOARD on tracker	
	TTSG	TRACKER TEST SET GROUP	
		NOTE This procedure is keyed to be run at D/S or G/S level. If being performed at D/S level, follow the instructions where [D] is indicated. If at G/S level, where [G] is indicated.	
1	TTSG	Perform the tracker operational evaluation as per TM 9-4935-484-14. If the TRIG OUTPUT check fails, proceed to step 39 in this procedure. If any of the BORESIGHT or MISSILE CMD checks fail, continue with step 2. If NIGHT DISPLAY check fails, forward tracker to G/S.	
2		Remove the bottom cover plate from the tracker.	
3		Replace the CSCB as per instructions contained in TM 9-1425-484-24, however - do not perform recoating procedure at this time.	

Table 6-7. Night Tracker Performance Test - Continued

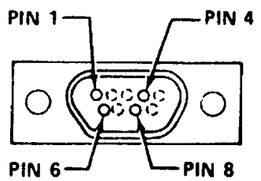
STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
4		Rerun the tracker on the TTSG. If good, recoat the cable assembly cases as per TM 9-1430-483-34 and replace the bottom cover plate on the tracker. If the tracker still fails any of the BORESIGHT or MISSILE CMD checks, continue with step 5.	
5		Disconnect Nutator Plug W1P1 (10276510) and Firing Mechanism Plug W2P1 (10276486) from 3A2A21-J1 and J2. Disconnect Detector Plug W1P1 (10276488) from 3A2A20-J1.	
6		Prepare the DMS-D for testing per paragraph 2-6.	
7	PP	MAIN POWER switch to ON.	
8	MCP	DMM INPUT switch to DMM INPUT.	
9	MCP	DMM FUNCTION switch to K OHMS.	
10	MCP	DMM LO switch to EXT.	
11		Utilizing the following diagram, perform the resistance checks on the cables connected to the tracker by probing with the Dash pos and neg probes as indicated. If any reading is out of tolerance, proceed to step 34.	



W1P1 (10276510)



W2P1 (10276486)



W1P1 (10276488)

Table 6-7. Night Tracker Performance Test-Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Detector Plug Resistance Checks (W1P1)	
		Monitor with DM: pos probe / neg probe / Reading	
12		Pin 4 / Pin 8 / > 200 k ohms	
13		Pin 8 / Pin 4 / < 500 ohms*	
14		Pin 8 / Pin 1 / < 500 ohms*	
15		Pin 1 / Pin 8 / > 200 k ohms	
16		Pin 6 / Cable case / < 0.0015 k ohms	
17		Pin 6 / Pin 4 / E0000	
18		Pin 6 / Pin 8 / E0000	
19		Pin 6 / Pin 1 / E0000	
		* Use multimeter Simpson 260 or equivalent for this reading.	
		Nutator Plug (W1P1) Firing Mechanism Plug (W2P1) Resistance Checks	
		Monitor with DMM: pos probe / neg probe / Reading	
20		Pin 1 (W1P1) / Pin 6 (W1P1) / ≅ 1.200 k ohms	
21		Pin 1 (W1P1) / Pin 3 (W1P1) / ≅ 0.620 k ohms	
22		Pin 1 (W1P1) / Pin 8 (W1P1) / E0000	
23		Pin 1 (W1P1) / Pin 4 (W1P1) / E0000	
24		Pin 1 (W1PI) / Pin 9 (W2P1) / E0000	
25		Pin 1 (W1PI) / Pin 5 (W2P1) / E0000	
26		Pin 6 (W1PI) / Pin 3 (W1P1) / ≅ 0.620 k ohms	
27		Pin 2 (W1PI) / Pin 7 (W1P1) / ≅ 0.190 k ohms	

Table 6-7. Night Tracker Performance Test-Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
		Monitor with DMM: pos probe / neg probe / Reading	
28		Pin 2 (W1P1) / Pin 3 (J1P1) / ≅ 0.170 k ohms	
29		Pin 7 (W1P1) / Pin 3 (W1P1) / ≅ 0.360 k ohms	
30		Pin 8 (W1P1) / Pin 9 (W1P1) / ≅ 0.100 k ohms	
31		Pin 4 (W1P1) / Pin 9 (W1P1) / E0000	
32		Pin 9 (W1P1) / Pin 4 (W1P1) / Increases steadily to ≅ 755 k ohms	
33		Pin 9 (W1P1) / Pin 9 (W2P1) / E000	
34		If any of the above readings are out of tolerance, troubleshoot the two wiring harnesses and repair as necessary,	
35		If the above readings are not out of tolerance:	D Forward tracker to G/S. G Troubleshoot and replace the nutator or tracker housing as necessary.
36		Rerun the tracker on the TTSG .	
37	G	Perform the purging procedure if required.	
38	PP	MAIN POWER switch to OFF.	
		TRIG OUTPUT Failure Test	
		NOTE To be performed only if the tracker failed the TTSG TRIG OUTPUT test.	

Table 6-7. Night Tracker Performance Test-Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
39		Remove the firing mechanism from the tracker as per instructions contained in TM-9-1425-484-24.	
40		Solder the leads of a new firing mechanism to the tracker filter and rerun the TRIG OUTPUT test on the TTSG. Proceed with step 42.	
41		Install the new firing mechanism as per TM 9-1425-484-24 , and rerun the tracker on the TTSG.	
42		Unsolder the firing mechanism leads from the tracker filter.	
43		Prepare the DMS-D for testing per paragraph 2-6.	
44	MCP	DMM INPUT switch to DMM INPUT.	
45	MCP	DMM LO switch to EXT,	
46	MCP	DMM FUNCTION switch to K OHMS,	
47	PP	MAIN POWER switch to ON.	
48		Perform resistance measurements as necessary utilizing the DMM probes and the tracker schematic diagram located in TM 9-1430-483-34 to isolate the malfunction to a short or an open in the trigger high or low side. Unsolder wires as necessary to isolate circuitry. Replace the CSCB as a final check. NOTE The maximum resistance for either line from the exposed filter side through to the CSC board connector should be ≤ 0.010 k ohms. The minimum resistance from; the exposed filter lead to the exposed ground lug beside it should be ≥ 9.000 k ohms,	

Table 6-7. Night Tracker Performance Test-Continued

STEP	UNIT	PROCEDURE	CORRECTIVE ACTION
49			Replace or repair the faulty component.
50			Install the firing mechanism.
5!			Rerun the tracker on the TTSG.
52	PP	MAIN POWER switch to OFF.	

EQUIPMENT NOTES

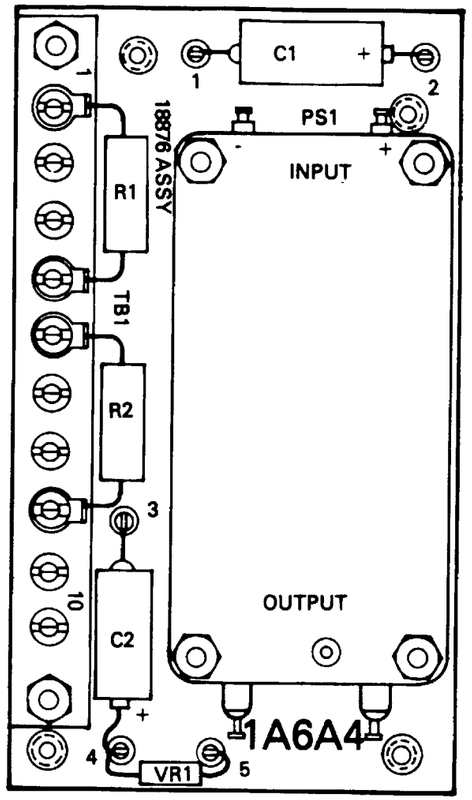


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Figure 6-18 Electronic component assy - 1A6A4 parts location

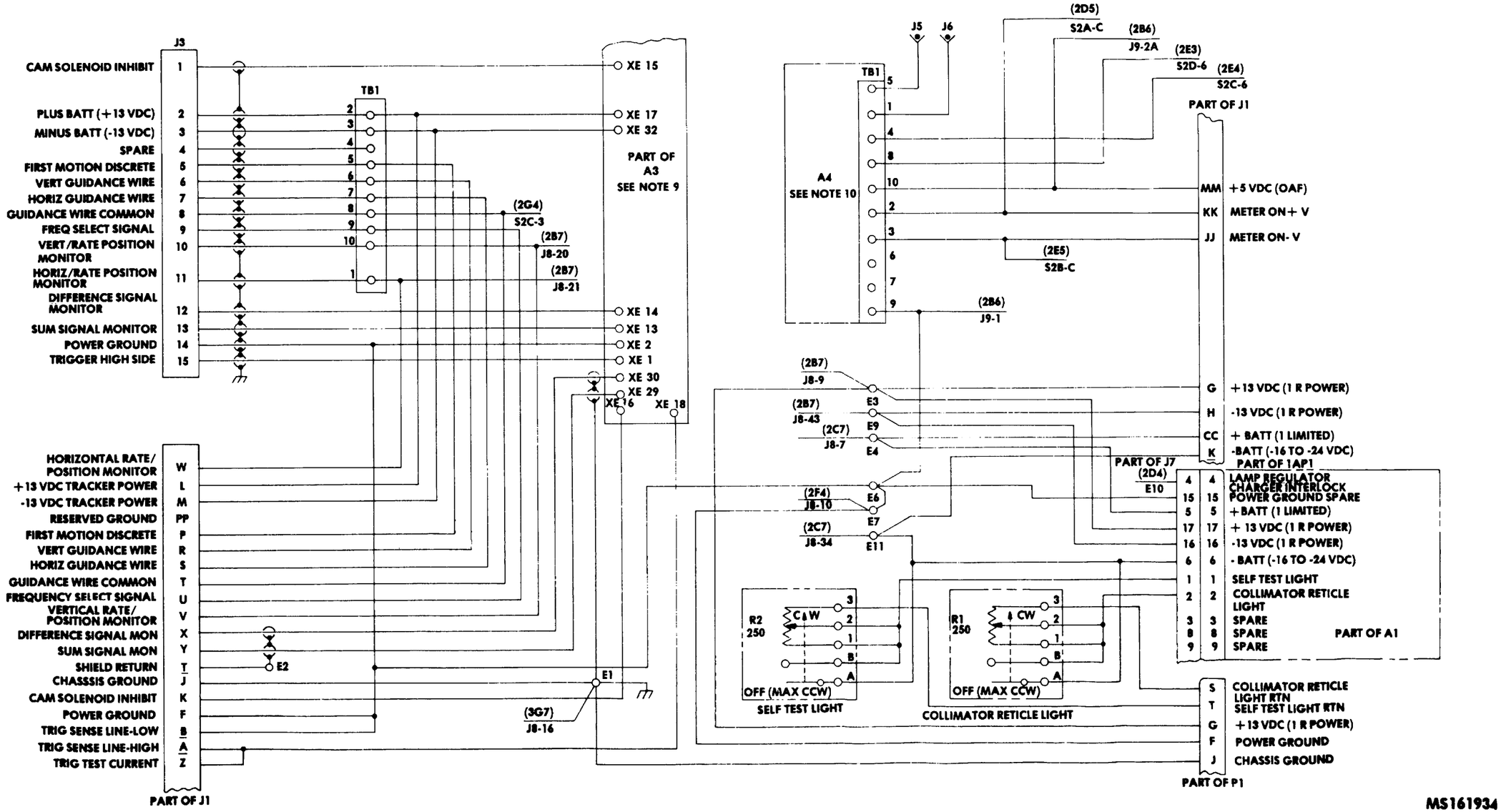


Figure 6-19 Night optical alignment fixture schematic diagram (sheet 1 of 3)

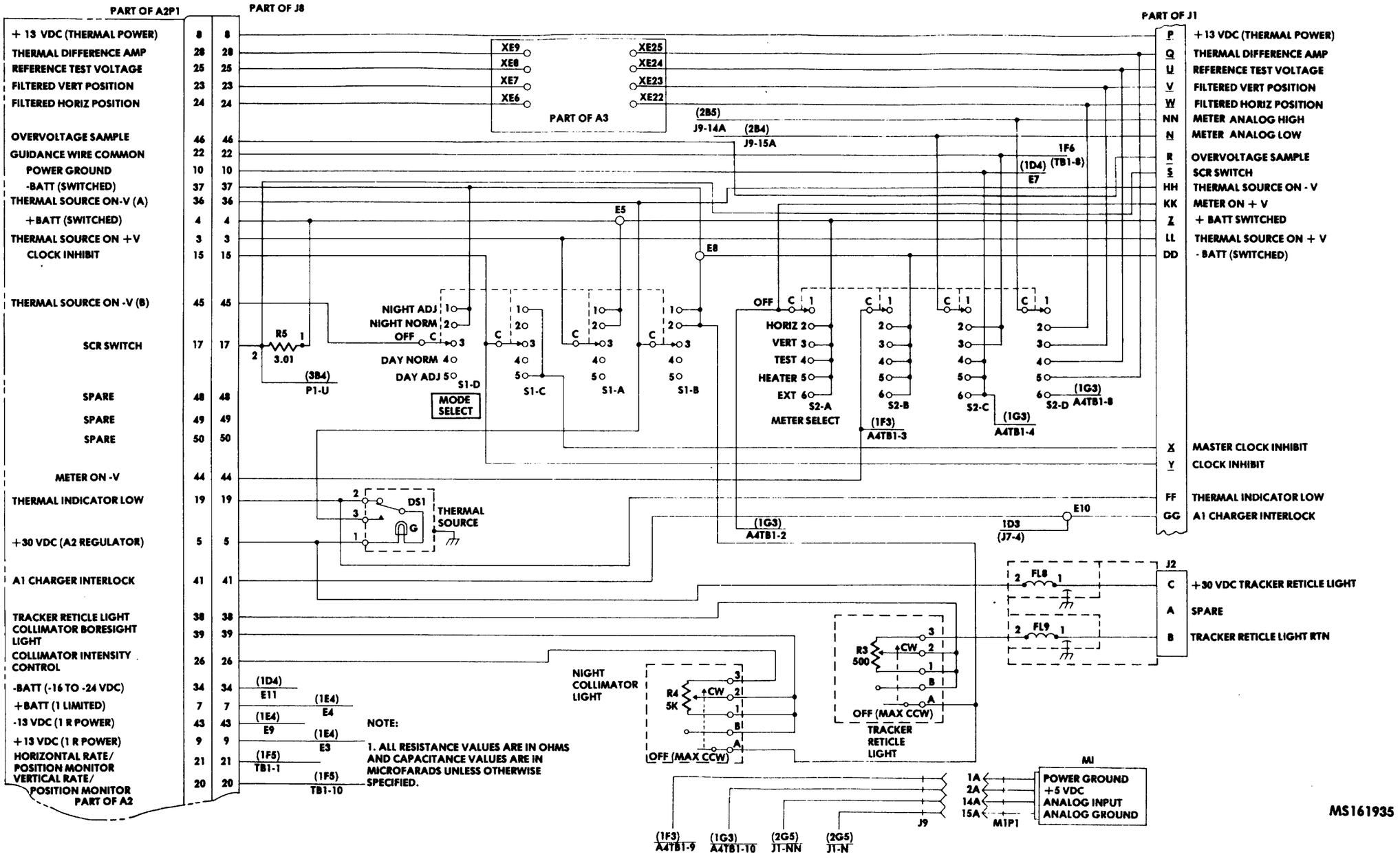


Figure 6-19 Night optical alignment fixture schematic diagram (sheet 2 of 3)

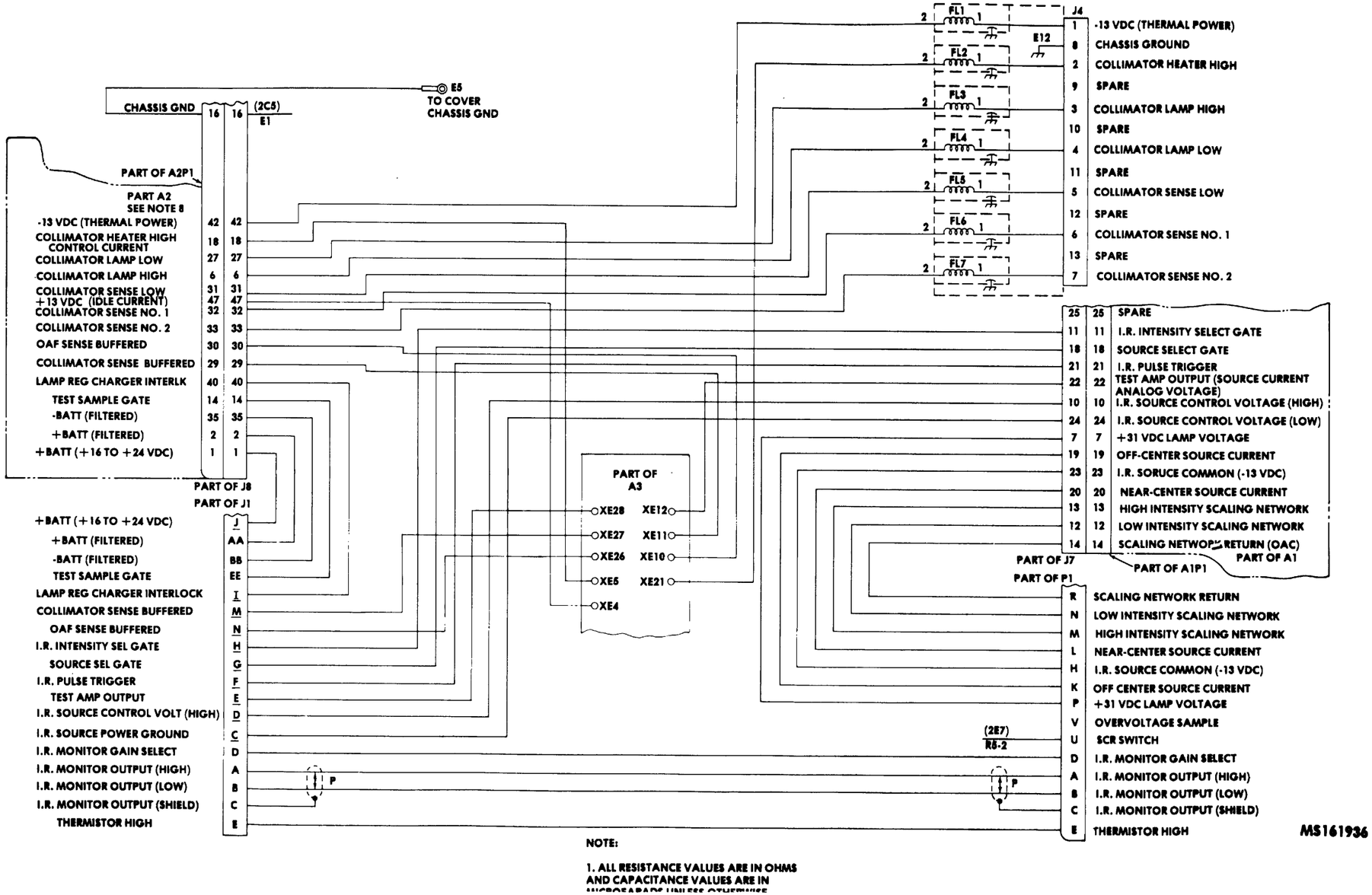
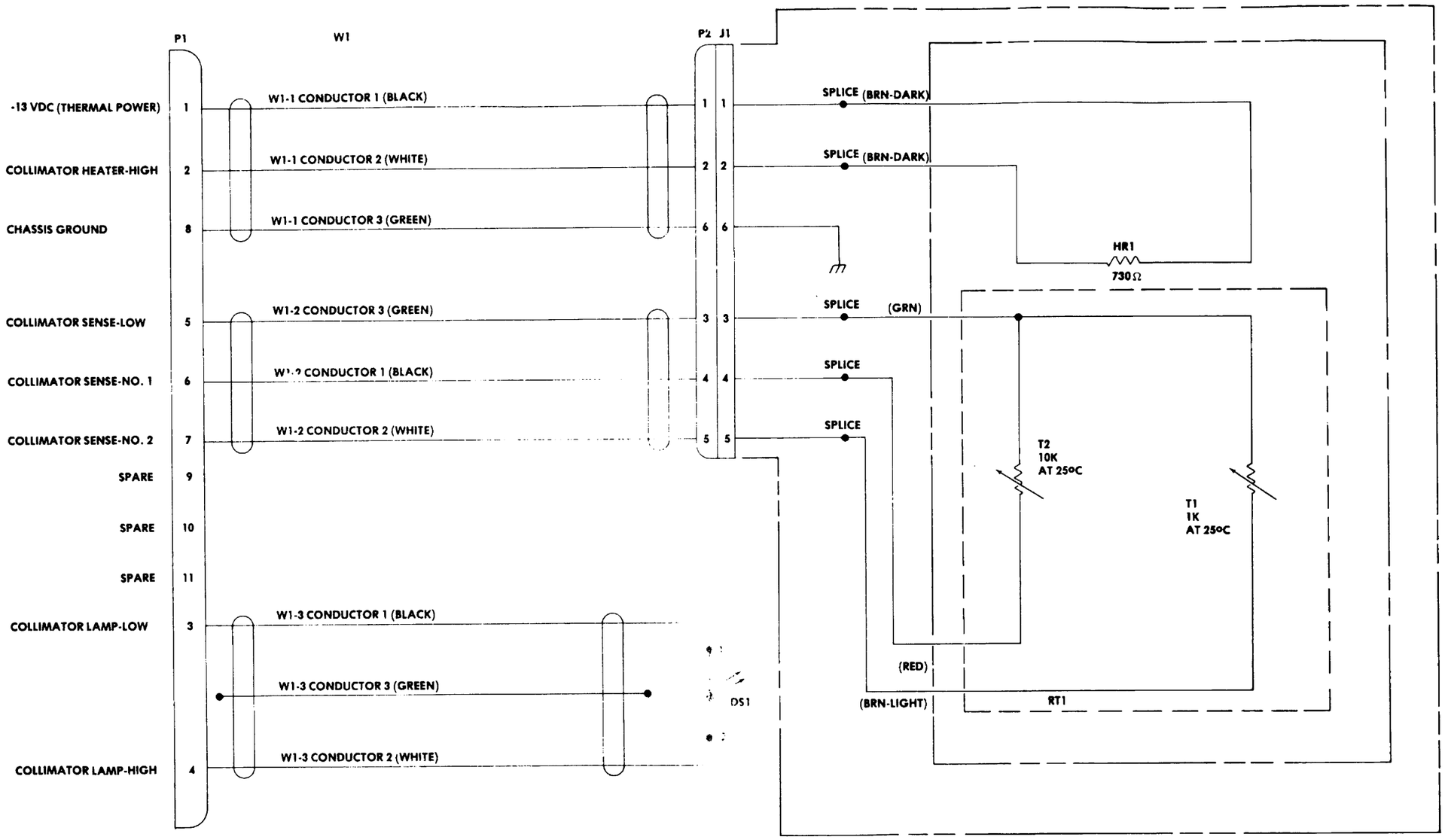


Figure 6-19 Night optical alignment fixture schematic diagram (sheet 3 of 3)



MS161937

Figure 6-20 Thermal collimator schematic diagram

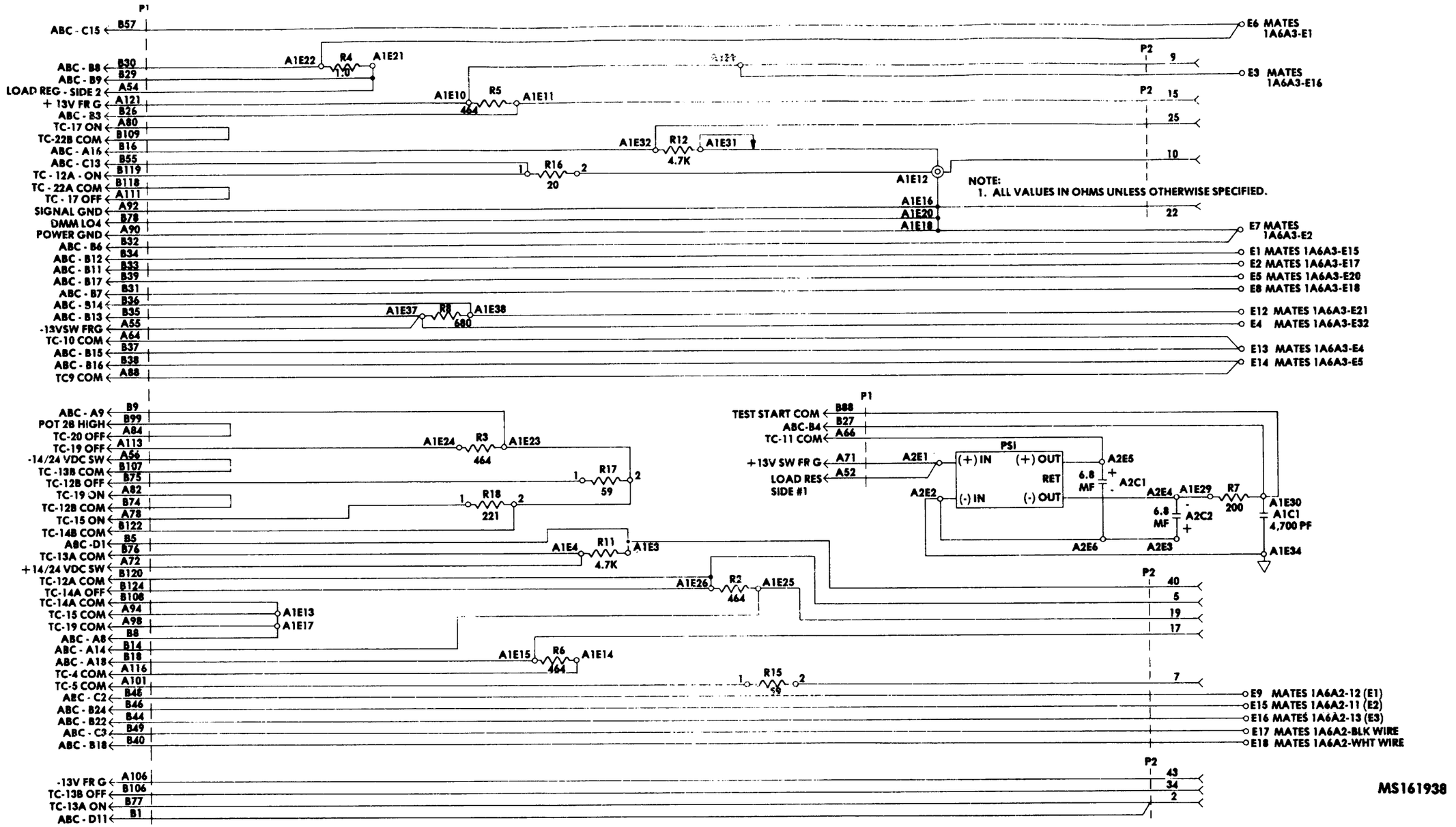
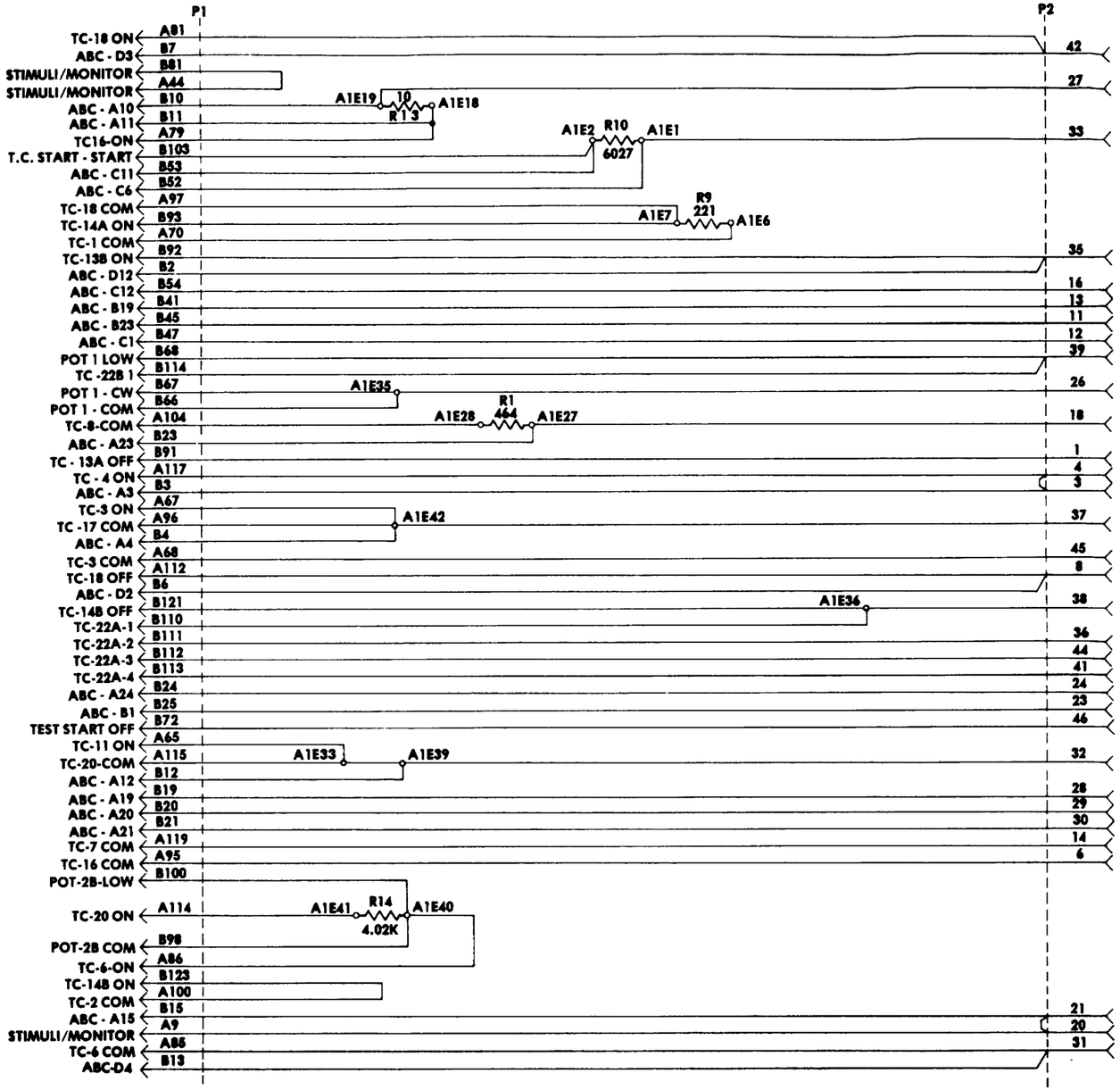


Figure 6-21 A-16 adapter schematic diagram (sheet 1 of 2)

6-97/6-98 (blank)



MS161939

Figure 6-21 A-16 adapter schematic diagram (sheet 2 of 2)

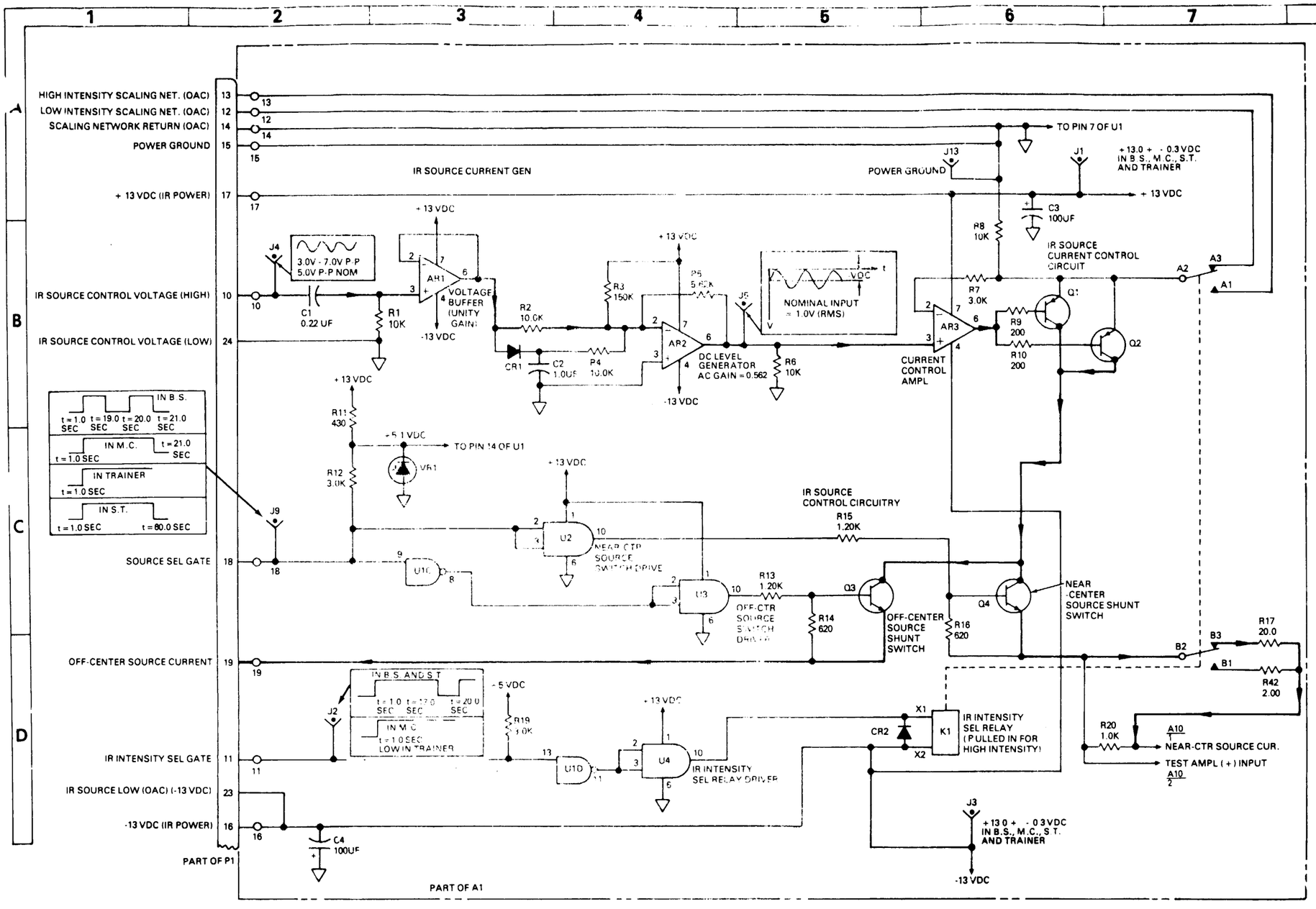


Figure 6-22 Schematic Diagram 1A6A1 Sheet 1 of 2

6-101/6-102 (blank)

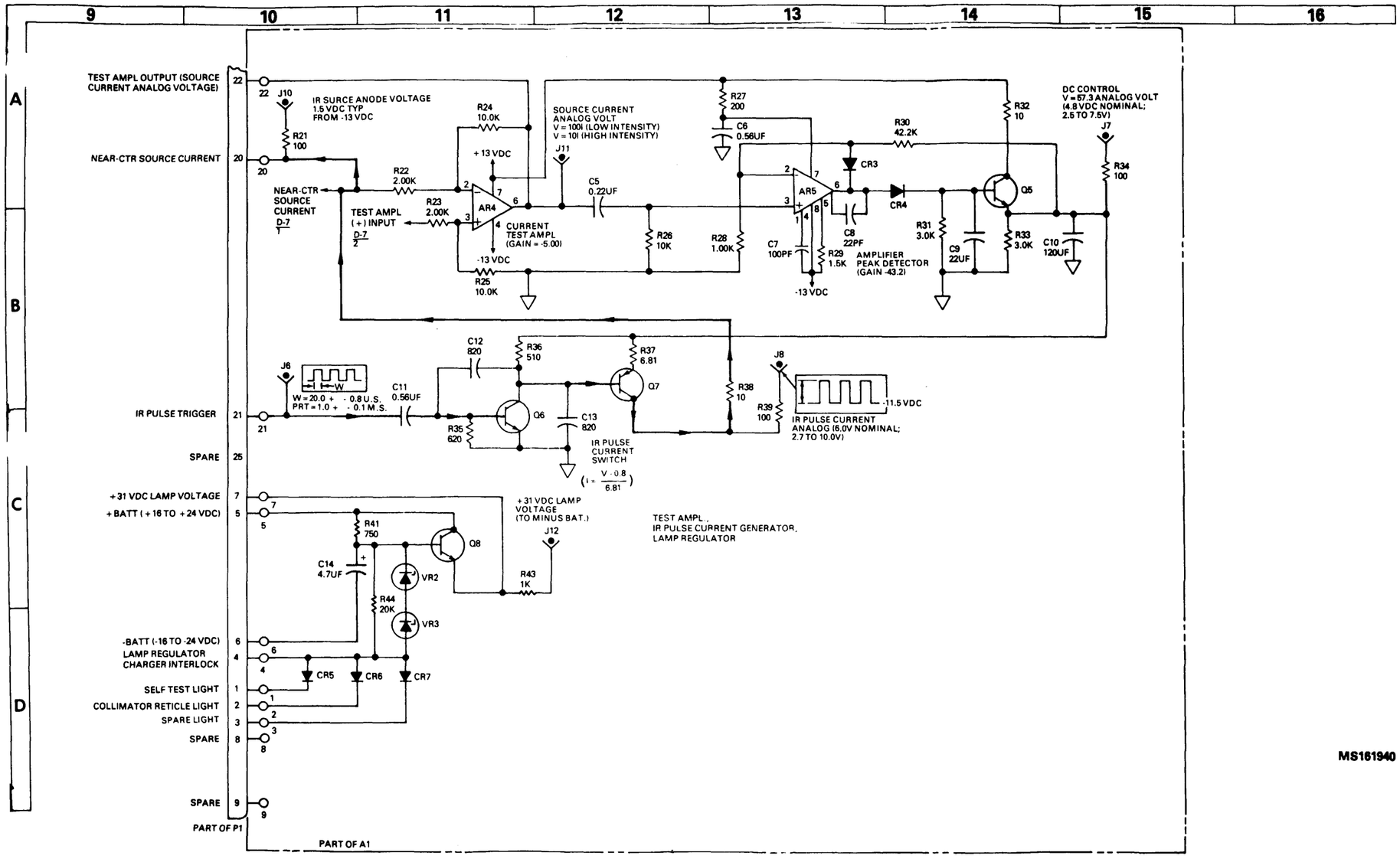


Figure 6-22 Schematic Diagram 1A6A1 Sheet 2 of 2

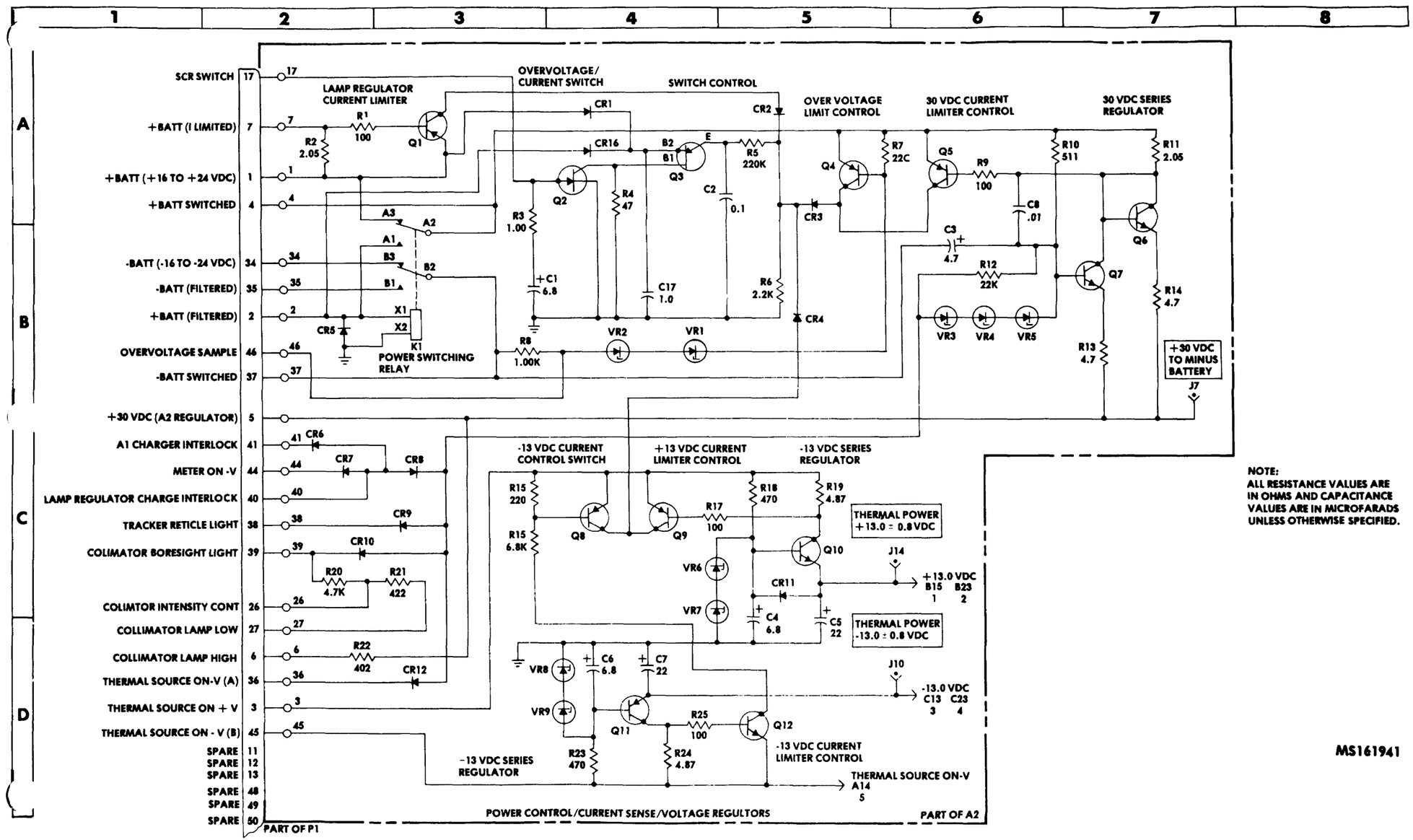


Figure 6-23 1A6A2 Circuit card schematic diagram (sheet 1 of 3)

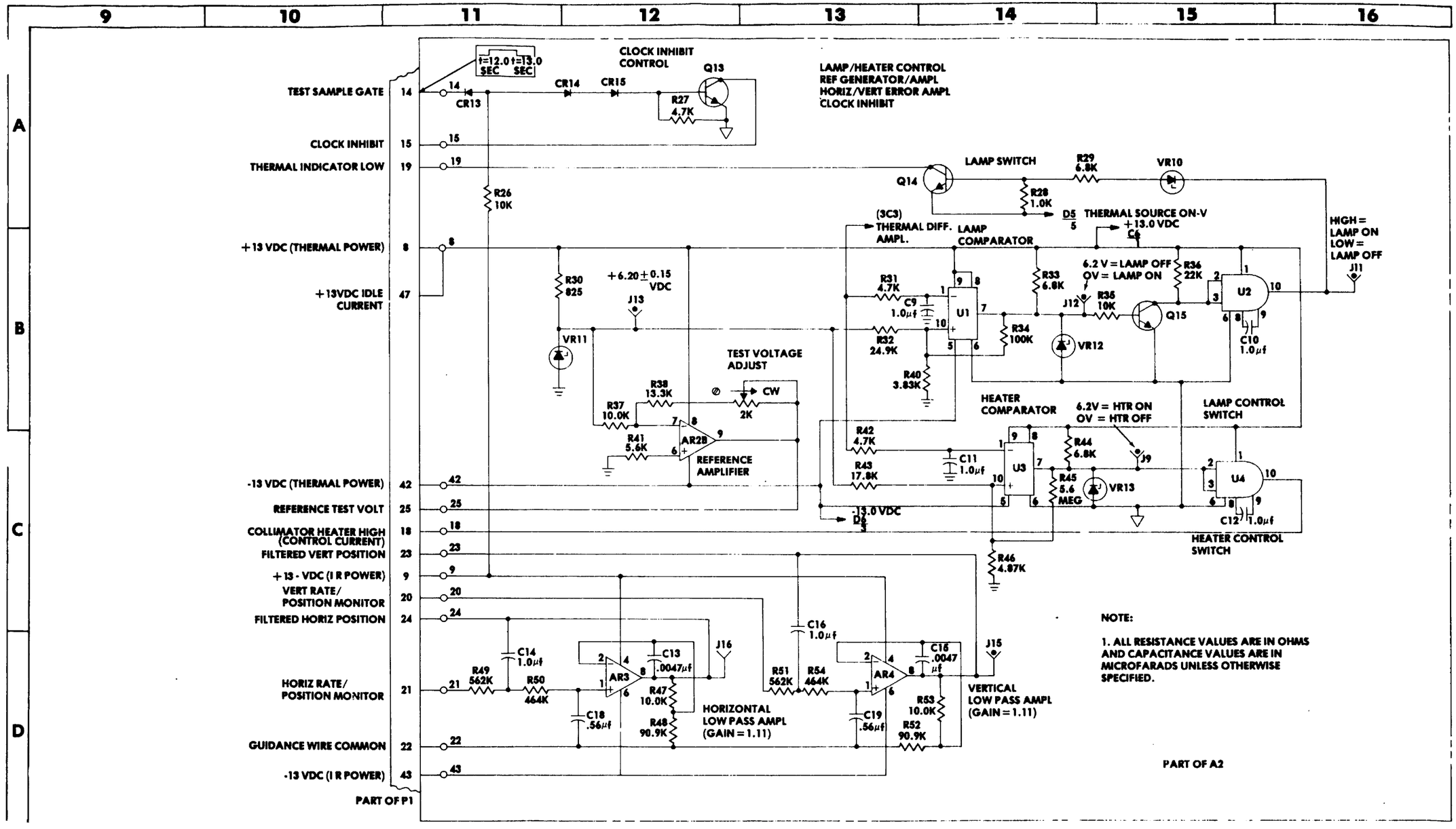


Figure 6-23 1A6A2 Circuit Card Schematic diagram (sheet 2 of 3).

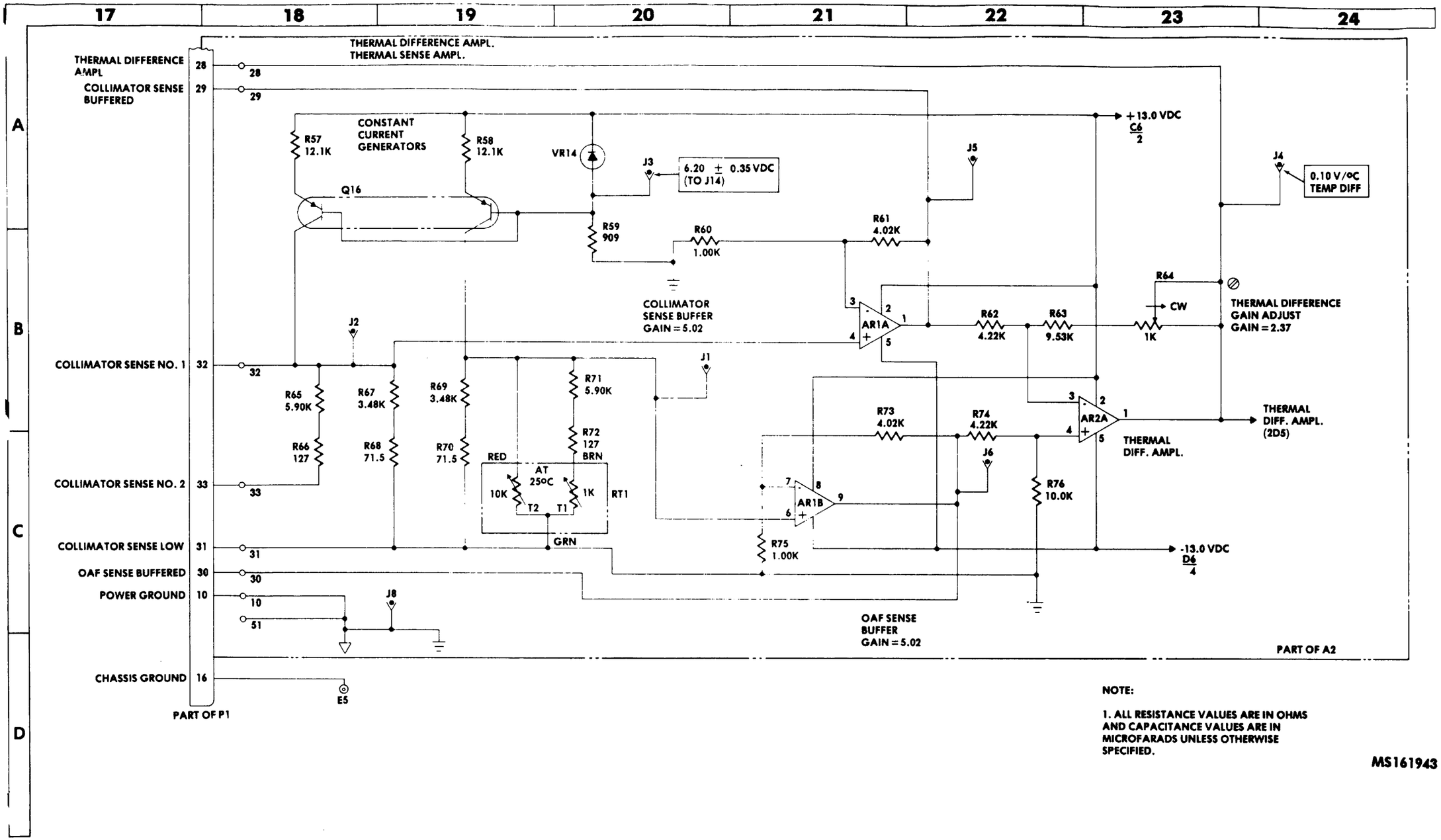
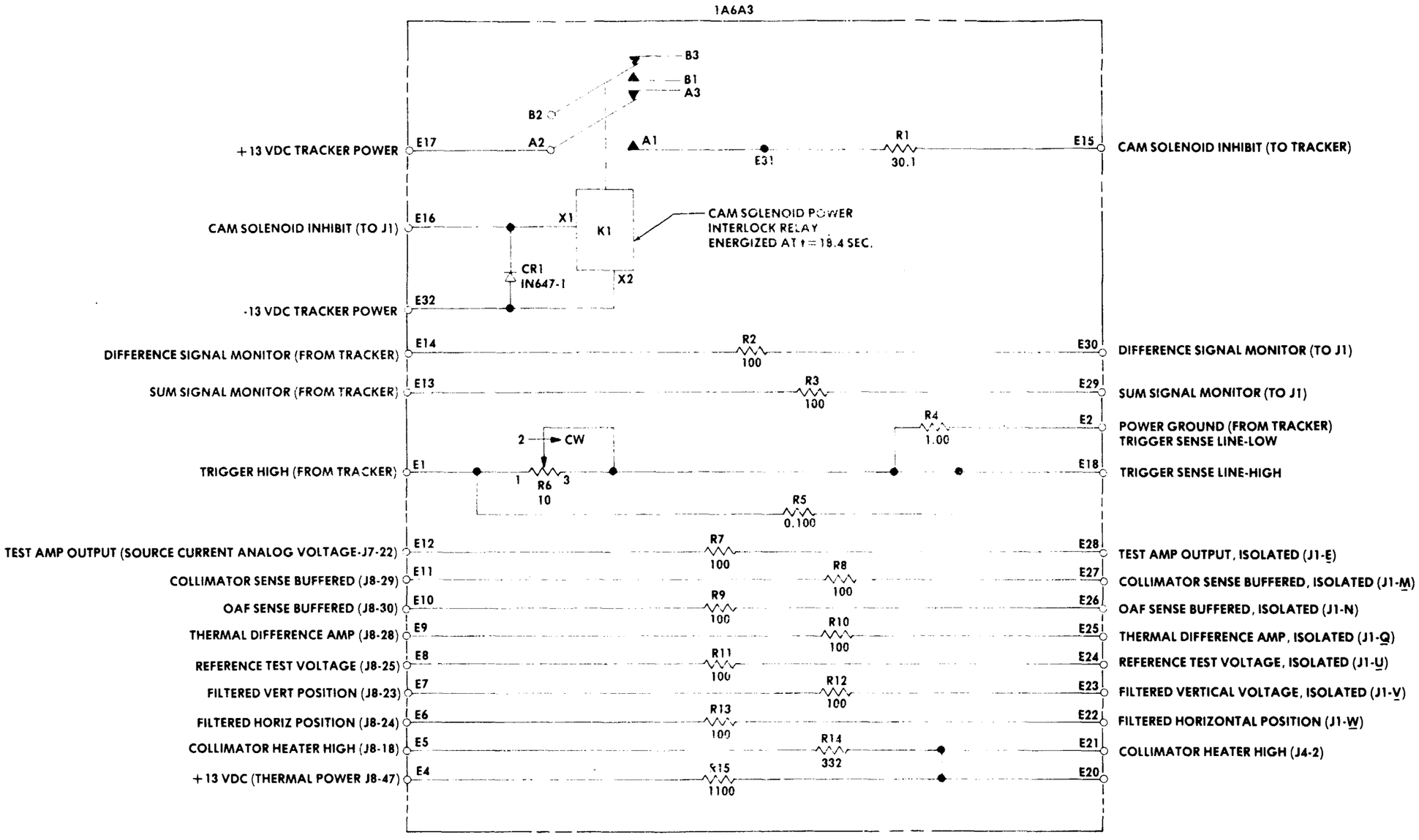


Figure 6-23 1A6A2 Circuit card schematic diagram (sheet 3 of 3).

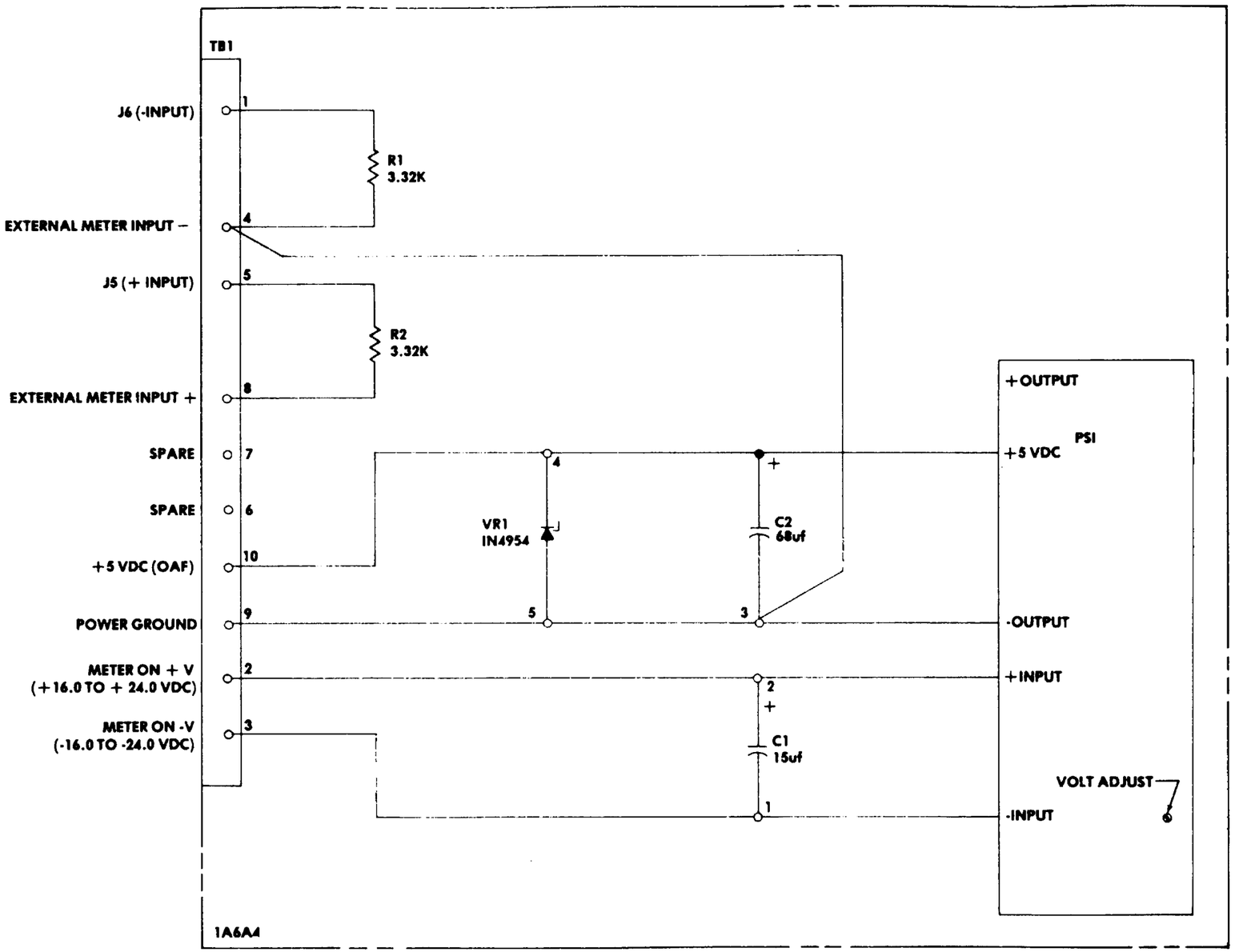


NOTE:

1. ALL RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

MS161944

Figure 6-24 1A6A3 Schematic.



MS161945

NOTE:

1. ALL RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

Figure 6-25 1A6A4 Circuit card schematic diagram.

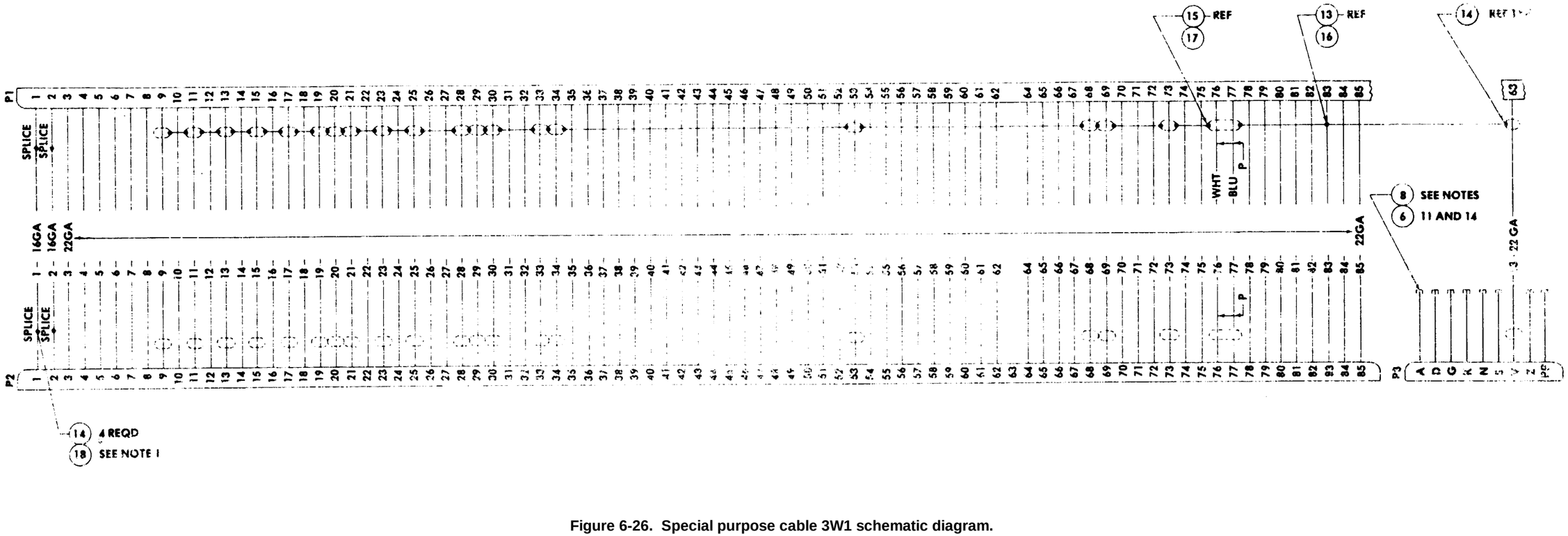


Figure 6-26. Special purpose cable 3W1 schematic diagram.

6-115/6-116 (blank)

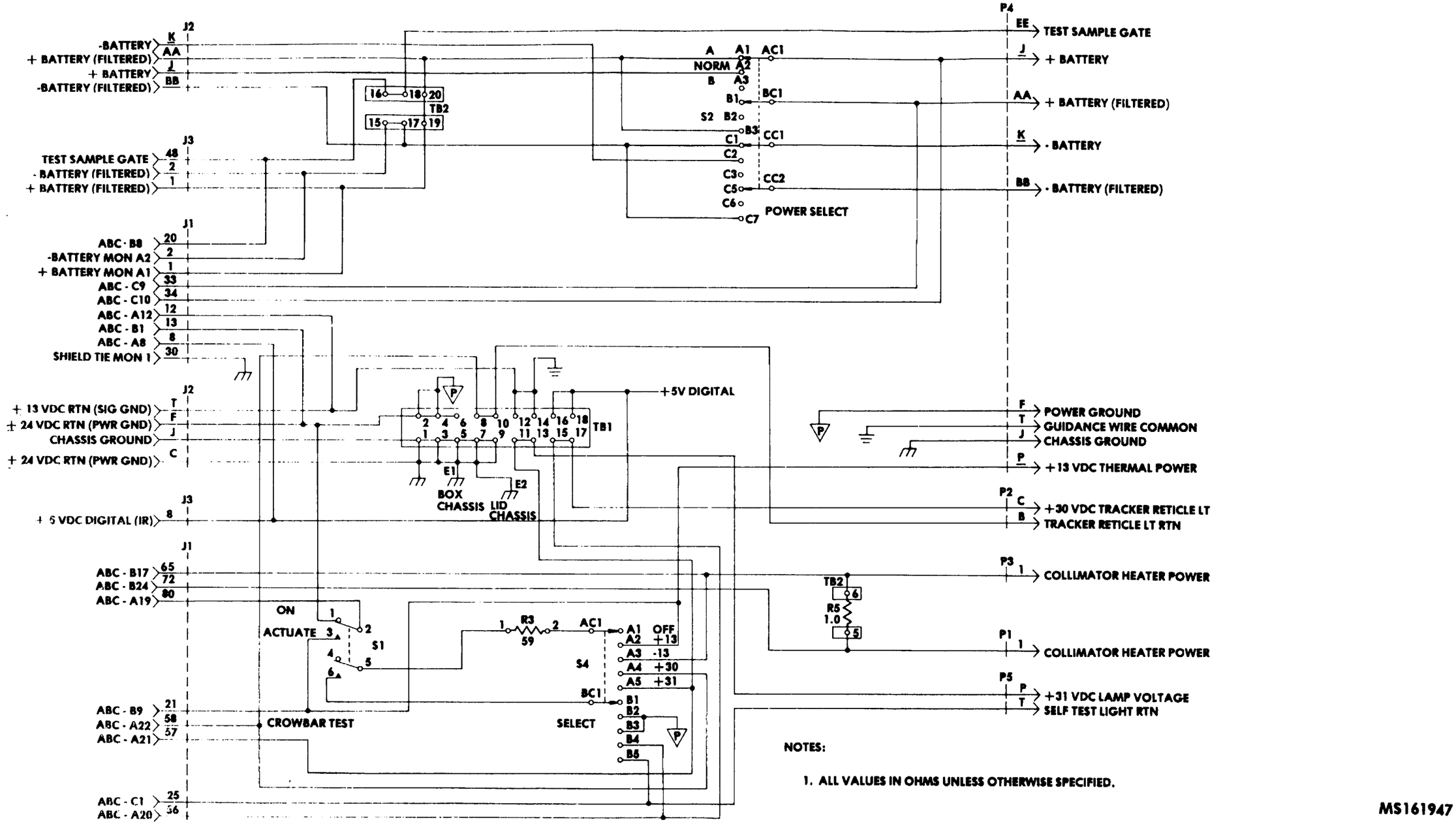


Figure 6-27. Test adapter schematic diagram (sheet 1 of 5).

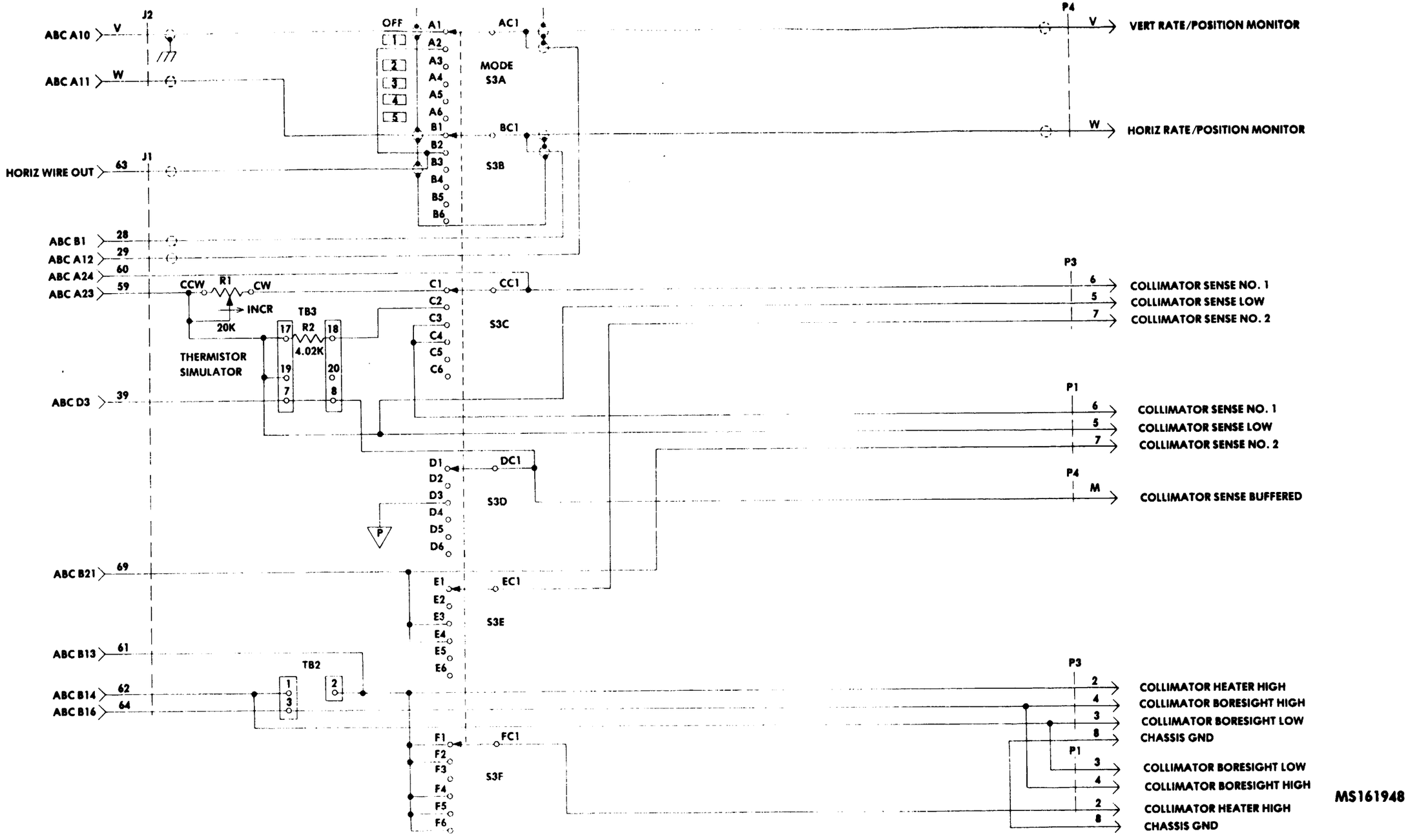


Figure 6-27. Test Adapter schematic diagram (sheet 2 of 5).

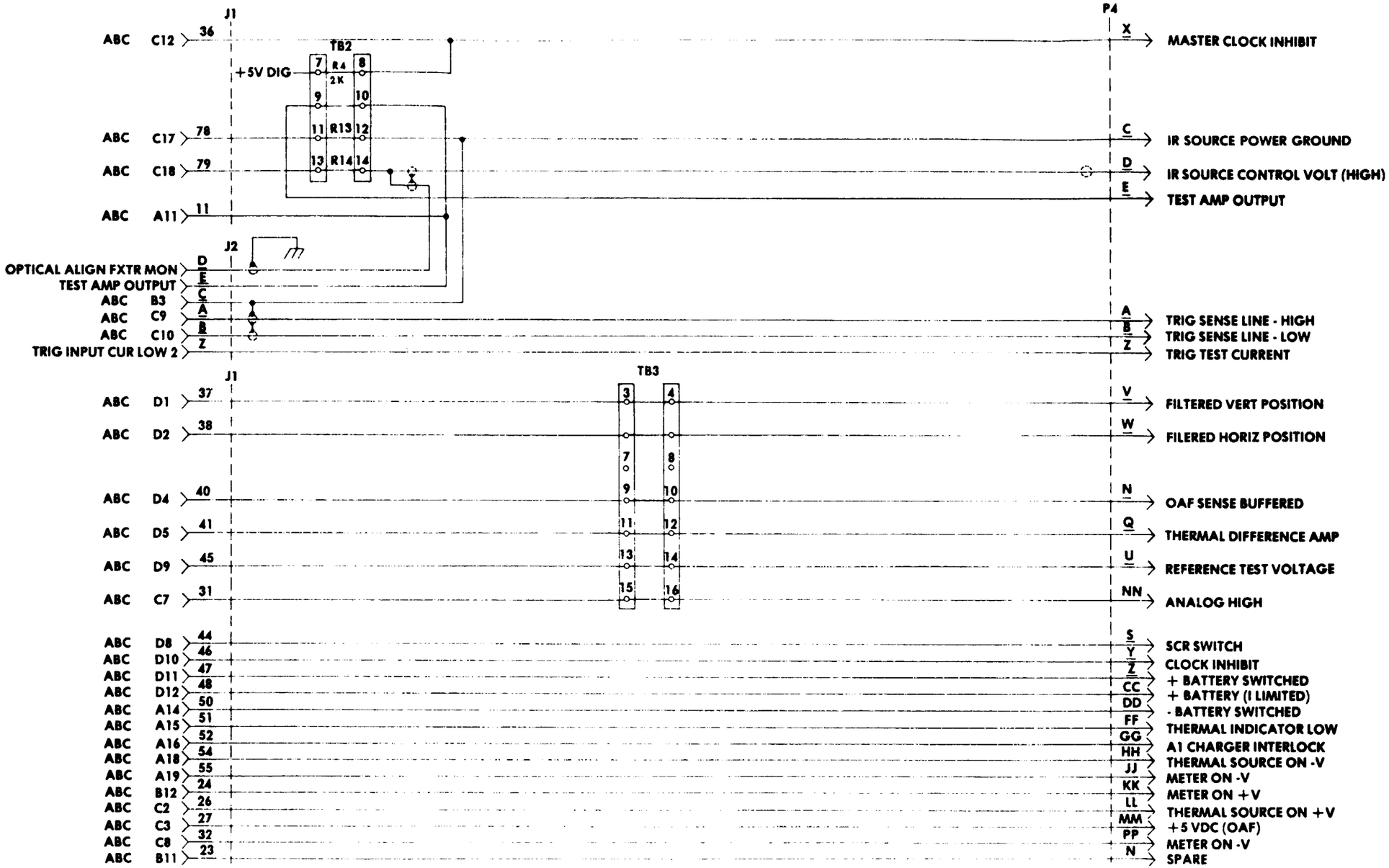
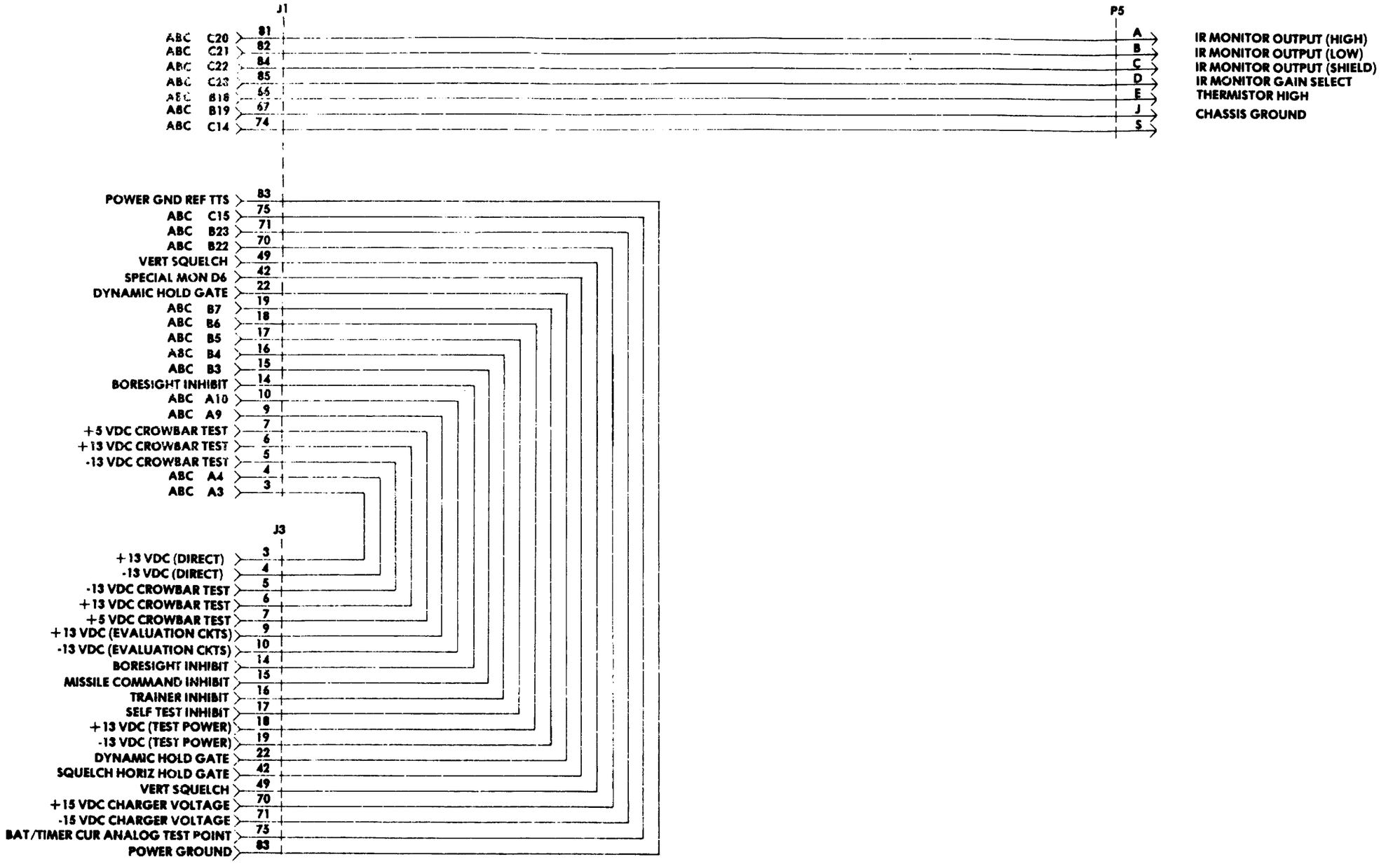


Figure 6-27. Test adapter schematic diagram (sheet 3 of 5).



MS161950

Figure 6-27. Test adapter schematic diagram (sheet 4 of 5).

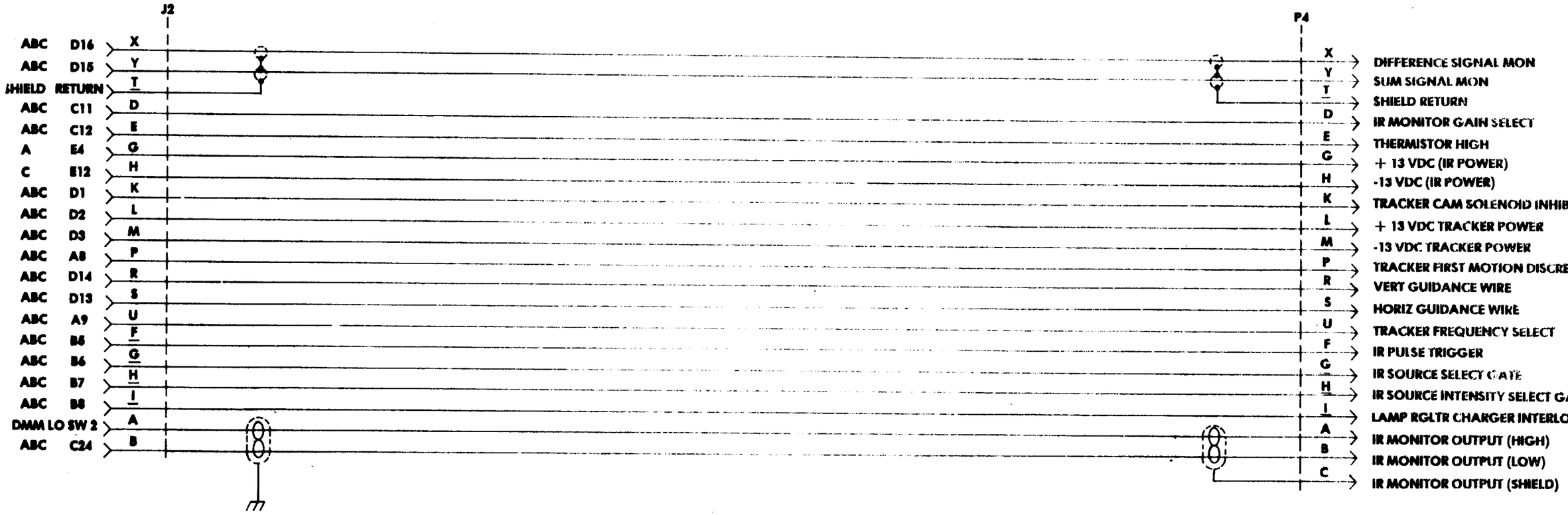


Figure 6-27. Test adapter schematic diagram (sheet 5 of 5).

6-125/6-126 (blank)

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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