TECHNICAL MANUAL

ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

TEST SET, FLIGHT LINE

AN/ALM-154

(NSN 6625-00-134-2975)

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y

NOVEMBER 1978

WARNING
HIGH VOLTAGE

is used within the shelter.

DEATH ON CONTACT

may result if operating personnel fail to observe safety precautions.

EXTREMELY DANGEROUS VOLTAGES
EXIST IN THE AC DISTRIBUTION POWER SYSTEMS

Be careful when working on or near the power connections.

WARNING
VENTILATION IS ESSENTIAL

To prevent asphyxiation, the shelter must be ventilated at all times when occupied.

DON'T TAKE CHANCES!

WARNING

The fumes of TRICHLOROETHANE are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane is nonflammable but heat converts the fumes to a highly toxic phosgene gas the inhalation of which could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves and aprons which the solvent cannot penetrate.

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *25 June 1982*

Organizational, Direct Support and General

Support Maintenance Manual

TEST SET, FLIGHT LINE

AN/ALM-154

(NSN 6625-00-134-2975)

TM 11-6625-2656-24, 9 November 1978, is changed as follows:

1. New or changed material is indicated by a vertical bar in the margin of the page.
2. Added or revised illustrations are indicated by a vertical bar in front of the figure caption. Changed material on illustrations is indicated by screening.
3. Remove and insert pages as indicated below:

Remove	*Insert*
Inside front cover	A through C (Front of Manual)
i and ii	i and ii
1-1	1-1
2-1 through 2-11	2-1 through 2-12
3-1 through 3-7	3-1 through 3-7
7-1	7-1
A-1 and A-2	A-1 through A-3
B-3 and B-4	B-3 and B-4
C-1 and C-2	C-1 and C-2
D-1 through D-5	D-1 through D-6
Index 1 through Index 3	I-1 and I-2
FO 7-1	FO 7-1
None	FO 7-3

4. File this change sheet in front of the publication for reference purposes.

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* U.S. GOVERNMENT PRINTING OFFICE: 1982-505-028/115

TECHNICAL MANUAL
No. 11-6625-2656-24

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC 9 November 1978

ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

TEST SET, FLIGHT LINE AN/ALM-154

(NSN 6625-00-134-2975)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.
In either case, a reply will be furnished direct to you.

LIST OF ILLUSTRATIONS

LIST OF TABLES

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNINGS

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

Be careful when working on the 115 and 230-volt ac line.

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT
Dangerous potentials exist at several points throughout this equipment.
When the equipment is operated with the covers removed, DO NOT touch exposed connections or components. Some transistors have voltages present on their cases. Disconnect power before cleaning the equipment or replacing parts.

DON'T TAKE CHANCES!

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating.

Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

VENTILATION IS ESSENTIAL

To prevent asphyxiation, the van must be ventilated at all times when occupied.

DON'T TAKE CHANCES!

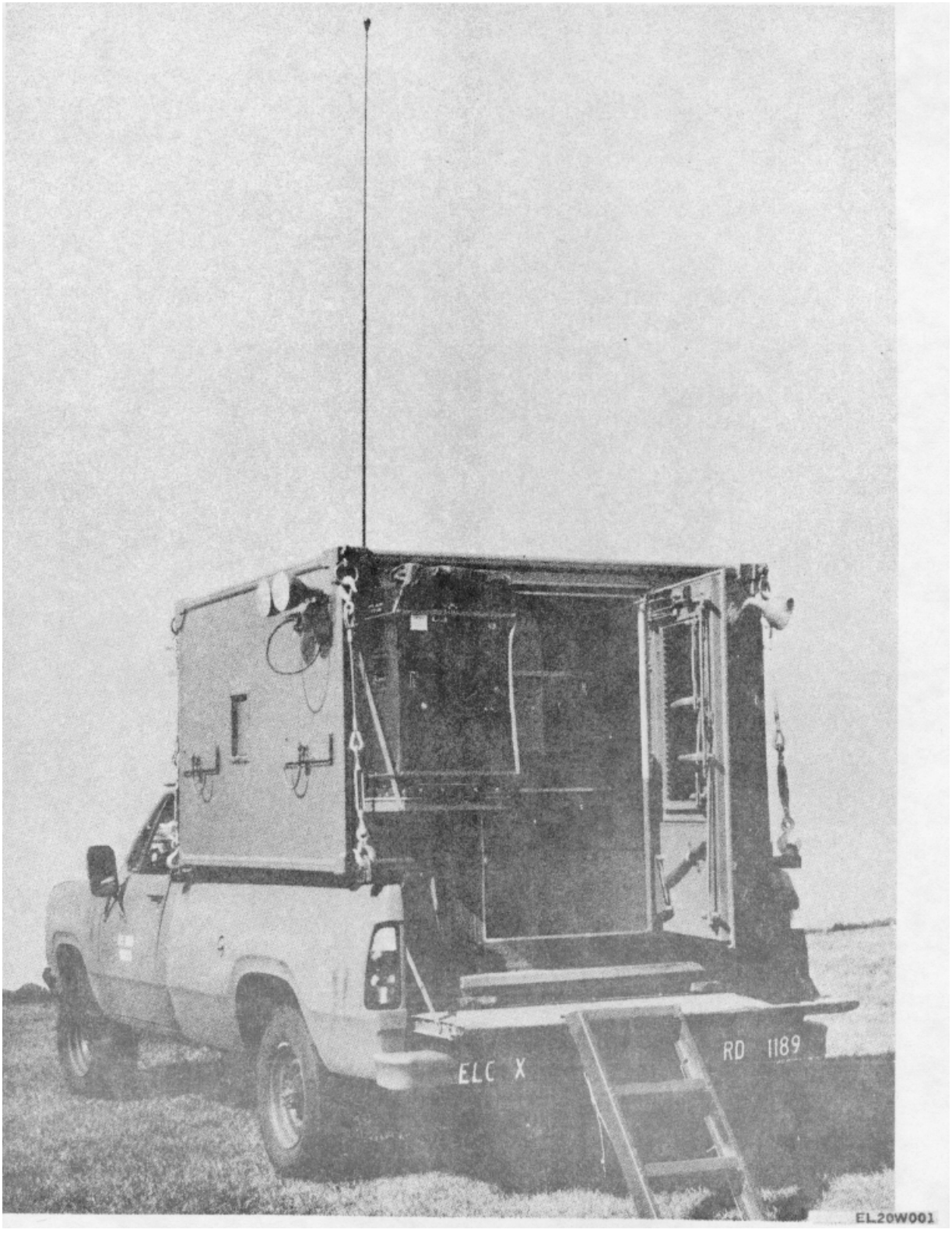

Figure 1-1. Test Set, Flight Line AN/ALM-154.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope
This manual provides a functional description, and organizational, direct support, and general support maintenance instructions for Test Set, Flight Line AN/ALM-154. The manual also includes schematic diagrams, applicable references, and a maintenance allocation chart.

1-2. Maintenance Forms, Records and Reports
a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-181 MCO ,4610.19C/DLAR 4500.15.

1-3. Index of Technical Publications
Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-4. Destruction of Army Electronics Materiel
Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. Administrative Storage
Administrative storage requirements are described in TM 740-90-1.

1-6. Reporting Equipment Improvement Recommendations (EIR)
If your Test Set, Flight Line AN/ALM-154 need improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don' like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

1-7. References
Equipment publications pertinent to the operation (use) of the equipment covered in this manual are listed in Appendix A, References.

Section II. DESCRIPTION AND DATA

1-8. Description
Refer to Chapter 1 of TM 11-5895-955-10-1, Operator's Manual for Receiving Set, Countermeasures AN/ALQ-133, Simulator Set AN/USM-393, and Test Set, Flight Line AN/ALM-154, for purpose and use of the equipment, items comprising an operable equipment, the equipment description, and illustrations of the flight line test set. Refer to TM 11-5895-955-10-2 for classified information related to the flight line test set.

1-9. Tabulated Data
Refer to Chapter 1 of TM 11-5895-955-10-1 for tabulated data for the flight line test set.

1-10. Physical Configuration
The operating equipment of Test Set, Flight Line AN/ALM-154 is mounted in a modified S-250/G shelter which normally mounts in, and is transported by, a 1 /4-ton M-885 Cargo Truck. The S-2501G shelter and the M-885 cargo truck are covered in separate technical publications, TB 750-240 and TM 9-2320-266-12, respectively.

CHAPTER 2
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. INTRODUCTION

2-1. General

This chapter includes a list of tools, test equipment, and materials required for organizational maintenance, supplies repainting and refinishing instructions, provides preventive maintenance checks and services, describes organizational troubleshooting procedures and explains unit removal and replacement procedures.

2-2. Definition of Organizational Maintenance

Organizational maintenance consists of daily and weekly preventive maintenance checks and services, and the isolation and replacement of defective line replaceable units (LRU) in the flight line test set and Receiving Set, Countermeasures AN/ALQ-133, the sets must be checked while connected together in a preflight checkout configuration. The specific manuals explaining these checkout procedures are referenced, as applicable, in this technical manual. Refer to the maintenance allocation chart in Appendix B for specific organizational maintenance responsibilities.

Section II. TOOLS AND TEST EQUIPMENT

2-3. Tools, Test Equipment, and Materials Required

Table 2-1 is a list of tools and test equipment required to perform organizational maintenance.

The listed test equipment and magnetic tape cartridges are required to isolate a trouble in the flight line test set to a defective line replaceable unit (LRU). The tools listed are required to remove and replace defective LRUs. Preventive maintenance requires the cleaning materials, paint, and painting equipment listed in table 2-2.

2-4. Special Test Equipment

Simulator, Intercept Receiver Group SM-701/ ALM-154 is used in conjunction with the flight line test set by organizational maintenance personnel in a line replaceable unit diagnostic (LRUD) test to isolate trouble in Receiving Set, Countermeasures AN/ALQ-133 to a wingmounted Receiver Group, Intercept OR-140/ALQ-133. The LRUD procedure is contained in Chapter 2 of TM 11-5895-831-24-1. Organizational, Direct Support, and General Support Maintenance Manual for Receiving Set, Countermeasures AN/ALQ-133. TM 11-6625-2655-14 is the Operator's Organizational, Direct Support, and General Support Maintenance Manual for Simulator, Intercept Receiver Group SM-701/ALM-154. Refer to this technical manual for equipment details, unit operating procedures, and maintenance instructions.

Section III. REPAINTING AND REFINISHING INSTRUCTIONS

2-5. Maintenance of Exterior Surfaces

All exterior surfaces of the major component units shall be protected in accordance with MIL-F-14072 and MIL-STD-171.

a. Inspection. The exterior finish of the major component units shall be inspected periodically for signs of deterioration or corrosion.

b. Cleaning and Surface Preparation, Refer to TB 43-0118 Field Instructions for Painting and Preserving Electronics Command Equipment.

c. Paint. Zinc chromate metal primer, lusterless olive drab paint, and light gray semigloss enamel listed in SB 11-573, Painting and Preservation Supplies Available for Field Use of Electronics Command Equipment, shall be used.

2-6. Touchup Painting

If the exterior finish of any equipment has been scarred or damaged, touchup painting can prevent corrosion of the surface.

2-7. Cleaning Instructions

a. Remove dust and loose dirt from the exterior surfaces of the equipment with a clean, soft, lint-free cloth.

Table 2-1. Tools, and Test Equipment Required

Item	Use
Tool Kit, Electronic Equipment TK-105/G	Remove and replace major -component units.
Multimeter AN/USM-223A	Troubleshooting
Cartridge, Magnetic Tape T153-2	AN/UYK-23 Computer Diag-nostic Program
Cartridge, Magnetic Tape T153-4	Computer Peripherals Test Program

Table 2-2. Materials Required

Item	Use
Cloth, lint-free	Preventive maintenance
Trichlorotrifluoroethane	Preventive maintenance
Sandpaper No. 000	Surface preparation
Primer, metal, zinc chromate 8010-00-835-2114	Touchup painting
Paint lusterless olive drab No. X-34087	Touchup painting
Enamel, Semigloss, light gray TT-E-529, No. 26250	Touchup painting

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, or hard-to-remove dirt from the exterior surfaces of the equipment with a cloth dampened (not wet) with trichlorotrifluoroe-ethane.

2-8. Surface Preparation

Damaged areas of the exterior finish must be properly prepared for touchup painting.

a. Use No. 000 sandpaper to clean the damaged surface area down to the bare metal. Obtain a bright smooth finish.

b. Sand the edges of the damaged area back to the solid paint, then feather the paint edge that leads to the exposed metal.

c. Wipe the prepared area clean of all sanding residue.

2-9. Touchup Painting Instructions

a. Apply one coat of zinc chromate metal primer to the prepared surface with a small paint brush. Let the primer coat dry thoroughly.

b. Apply two thin coats of lusterless olive drab paint or light gray semigloss enamel, as applicable, over the metal primer. Let the first coat dry thoroughly before applying the second coat.

2-10. Care of Painting Equipment

Refer to TM 43-0139 for instructions on the care of paint brushes and painting equipment.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-11. General

Preventive maintenance is the systematic inspection, care, and servicing of equipment. Scheduled preventive maintenance routines help prevent the occurrence of trouble, reduce out-of-service time, and maintain the required performance level of the equipment.

2-12. Preventive Maintenance Checks and Services

To insure operational readiness, Test Set, Flight Line AN/ALM-154 must be systematically inspected so that result in serious damage or failure. The required preventive maintenance checks and services to be performed are listed in tables 2-3 and 2-4. The step numbers in each table indicate the sequence of minimum inspection requirements. Defects discovered during operation of the equipment shall be noted so that correction can be made as soon as operation has been stopped. If a deficiency is noted during operation that would damage the equipment, STOP OPERATION IMMEDIATELY. Record all deficiencies, with the corrective action taken, on the applicable form prescribed by TM 38-750.

Table 2-3. Daily Preventive Maintenance Checks and Services

Step	Item	Procedure	Reference
1	Test Set, Flight Line AN/ALM-154 (complete configuration)	Inspect the entire flight line test set for completeness, general condition, and cleanliness. Clean, if required. Check that all mounting hardware is in place and tight. Tighten, if required. Inspect all cables, connector plugs, and receptacles for cracks, corrosion, and signs of overheating. Check for tightness. Tighten, if required.	Paragraph 2-7.
2	Maintenance-operator control panels magnetic tape recorder-reproducer; display terminal; intercept receiver group simulator.	Check the mechanical operation of each control and switch for free operation and absence of binding. Check each indicator for general condition, cleanliness, and cracked or damaged lens. Clean, if required.	
3	Cable connectors on primary power cable and interconnecting cables to RV-ID aircraft.	Inspect the cable connectors for cleanliness and state of repair. Insure that the connectors will mate properly with associated receptacles and tighten, as required, for good contact.	
4	Test Set, Flight Line AN/ALM-154 power on inspection.	Connect the primary power cable to the external source and apply 115 volts ac to the flight line test set. Set the power aircraft breakers and the POWER ON/OFF switches on the individual units to ON. Check that the applicable power on indicators light.	TM 11-5895-831-24 and TM 11-5895-955-10-1.

Table 2-3. Daily Preventive Maintenance Checks and Services - Continued

Step	Item	Procedure	Reference
5	Test Set, Flight Line AN/ALM-154 preflight procedures.	If an operational mission is scheduled, observe the preflight/postflight checkout procedures. Note any symptoms that could indicate an impending failure and take corrective action as required.	TM 11-5895-955-10-1.
6	Forms and records.	Complete the required forms and records.	TM 38-750.

Table 2-4. Weekly Preventive Maintenance Checks and Services

Step	Item	Procedure	Reference
1	Test Set, Flight Line AN/ALM-154.	Perform the daily preventive maintenance checks and services.	.Table 2-3.
2	Exterior finish.	Touchup paint the exterior finish of any component unit that was noted to be defective in the daily checks and services.	Paragraph 2-6 through 2-10.
3	Preflight checkout.	If no missions have been flown during the week, perform the preflight checkout procedures in the operator manual to ensure operational readiness of the flight line test set.	TM 11-5895-955-10-I.
4	Forms and records..	Complete the required forms and records	TM 38-750.

2-13. Preventive Maintenance Checks and Service Periods

The preventive maintenance checks and services listed in tables 2-3 and 2-4 are to be performed at daily and weekly intervals, respectively. Scheduled preventive maintenance intervals may be adjusted by the maintenance supervisor to compensate for any unusual operating conditions. Equipment maintained in a standby condition requires service before operation, but does not require weekly routines. Records and reports of preventive maintenance checks and services shall be made in accordance with TM 38-750. If a defect is noted during preventive maintenance routines that cannot be remedied by organizational personnel, the defect shall be immediately reported to direct support maintenance personnel.

Section V. TROUBLESHOOTING

2-14. Organizational Troubleshooting

Organizational troubleshooting of the flight line test set is based on trouble indicated during preflight/postflight checkout of Receiving Set, Countermeasures AN/ALQ-133 or daily and weekly preventive maintenance checks and services. Organizational troubleshooting consists of power input checks, interconnecting cable checks, and fault isolation to one of the component units of the flight line test set. Refer to the maintenance allocation chart in Appendix B for specific organizational maintenance responsibilities. Any discovered trouble beyond the scope of organizational maintenance shall be referred immediately to direct support maintenance personnel.

2-15. Preliminary Troubleshooting

Information Organizational troubleshooting requires the use of Test Set, Flight Line AN/ALM-154 connected to the Reconnaissance Aircraft RV-LD countermeasures receiving set in a preflight checkout configuration, and performance of the preflight checkout procedures and line replaceable unit and individual unit diagnostic procedures. Instructions for making the required flight line test set-to-aircraft connections and the preflight checkout operating procedures are contained in TM 11-5895-955-10-1. The flight line test set and the countermeasures receiving set must be connected together for operational tests to confirm equipment serviceability. Operational interaction between the sets makes it difficult to isolate a particular defective major component with a single given set of symptoms. The troubleshooting procedure in paragraph 2-20 provides specific references to the combined organizational troubleshooting procedure for the countermeasures receiving set and the flight line test set, contained in TM 11-5895-831-24-1. This troubleshooting procedure and associated diagnostic tests are quite lengthy; they are not repeated in their entirety in this manual. Diagnostic and test procedures applicable to the maintenance-operator control panel, magnetic tape recorder-reproducer, and display terminal units of the flight line test set are I repeated in this manual for the convenience of organizational maintenance personnel. Portions of the troubleshooting chart that relate to the flight line test set are also repeated.

NOTE

All diagnostic and test programs contained on magnetic tape must be performed with the flight line test set and the countermeasures receiving set connected in a preflight configuration. The unit test for Panel, Maintenance-Operator Control C-9632/ALM-153 can be performed independent of these connections.

2-16. Diagnostic and Test Programs

Several diagnostic and test programs are available to maintenance personnel to assist in testing, troubleshooting

maintenance, and repair of the flight line test set and the countermeasures receiving set. These programs are recorded on magnetic tape cartridges and are used for organizational maintenance. The complete set of tape cartridges and the programs contained on each are listed by identification number and name in Chapter 2 of TM 11-5895-831-24-1. The tape cartridges and programs used to test the operating units of the flight line test set are extracted from that list and presented as follows:

Cartridge Number	*Cartridge Name*
T153-2	AN/UYK-23 Computer Diagnostic Program
T153-4	Computer Peripheral Test Programs RD-392/U or RD-392A/U Magnetic Tape Recorder-Reproducer Test Program Systematics General T-5145 G Display Terminal Test Program

2-17. Standard Operating Procedures

The memory initialization and object program loading procedures are used many times during the loading and execution of operating, test, and diagnostic programs. These procedures should be memorized to facilitate operation of the flight line test set. Test procedures instruct maintenance personnel to perform these procedures without including the procedural steps covered in the following paragraphs.

2-18. Memory Initialization Procedure

This procedure is performed on Panel, Maintenance Operator Control C-9632/ALM-153, to ensure that the memory of Monitor-Controller C-9537/ALQ-133 has been cleared of all possible parity errors each time the monitor-controller is powered up, and always prior to each program loading.

a. Press HALT and RST.

b. Press the REGISTER SELECT A pushbutton.

c. Press the DATA CLEAR pushbutton.

d. Enter/78Ff into the DATA register.

e. Press RW.

f. Press the REGISTER SELECT X pushbutton

g. Press DATA CLEAR, then press RW.

h. Press M.A. CLEAR. All MEMORY ADDRESS indicators turn off.

i. Enter 18201 into the DATA register.

j. Press WI. The MEMORY ADDRESS 15 and REGISTER SELECT M indicators will light.

k. Press DATA CLEAR.

l. Enter /B700 into the DATA register.

m. Press WI.

n. Press RST.

o. Press RUN. Wait approximately two seconds, then press HALT.

p. Press the REGISTER SELECT P pushbutton. The DATA register contains all zeros (no lights on).

NOTE

If incorrect indications are noted in any step, repeat the procedure until correct indications are obtained in all steps.

2-19. Object Program Loading Procedure (Monitor-Controller)

a. Loading Program. This procedure is used to load an object program from a magnetic tape cartridge into the memory of Monitor-Controller C-9537/ALQ-133.

NOTE

Object programs are stacked sequentially on track 1 of the program tapes. If the desired program is not the first program in the sequence, it will be necessary to repeat steps (7) through (12) below of the loading procedure until the desired program has been loaded. For example, if the desired program is fourth in the sequence, repeat steps (7) through (12) below four times.

(1) Be sure all applicable associated equipment is turned on.

(2) Be sure that the write-enable control on the magnetic tape cartridge containing the program to be loaded is set to safe.

(3) Place the magnetic tape cartridge in the tape deck of the magnetic tape recorder-reproducer.

(4) Allow the tape to reach the load point and press the ON LINE pushbutton on the magnetic tape recorder-reproducer. The ON LINE indicator will light.

(5) Press HALT, RST, and the REGISTER SELECT A pushbuttons on the maintenance operator control panel. The HALT and REGISTER SELECT A indicators are on. If any other indicators are on, press RST again.

(6) Perform the memory initialization procedure. See paragraph 2-18.

(7) Press the REGISTER SELECT P pushbutton. The P indicator will light.

(8) Press DATA CLEAR. All DATA indicators turn off.

(9) Enter /2038 into the P register by pressing DATA switches 2, 10, 11, and 12.

(10) Press the RW pushbutton.

(11) Press the REGISTER SELECT A pushbutton. The REGISTER SELECT A indicator will light.

(12) Press RUN. The DATA indicators display

changing states. When the DATA display stabilizes, the RUN and IDLE indicators turn on.

NOTE

If the IDLE indicator does not light, perform step (14) below and repeat the procedure. If the program to be loaded is the first program on the tape cartridge, proceed to step (14) below. Otherwise, carefully observe the requirements of step (13) below.

(7)

(13) Press HALT and RST, then repeat steps

through (12) above the required number of times, as determined by the sequential position of the program on the magnetic tape cartridge, until the desired program on the tape is loaded.

(14) On the magnetic tape recorder-reproducer, press the ON LINE pushbutton, then press the REWIND pushbutton. Wait for the REWIND indicator to turn off.

(15) Press the UNLOAD pushbutton on the magnetic tape recorder-reproducer and wait for the tape cartridge to eject.

(16) Press HALT and RST on the maintenance operator control panel.

(17) Remove the tape cartridge from the tape deck of the magnetic tape recorder-reproducer.

b. Executing Program. After the program has been successfully loaded, press RUN on the maintenance operator control panel to execute the program.

2-20. Organizational Troubleshooting Procedure

NOTE

Refer to TM 11-5895-955-10-1 for preflight configuration connection, power-up, and preflight operating instructions.

a. Confer with operator personnel to obtain the trouble indicated during preflight/postflight checkout of the equipment, or during equipment operation for a mission flight.

b. Obtain the magnetic tape cartridges specified by the operator manual to perform preflight checkout from the magnetic tape storage files in Simulator Set AN/USM-393, and take tape cartridges to the flight line test set.

c. Connect the aircraft, flight line test set, and auxiliary power unit (APU) into the preflight checkout configuration. (If the equipment is already connected, ensure that all cables are properly connected and that all cable connectors are correctly mated and tight.)

d. Start the APU and apply auxiliary power to the aircraft. Apply primary power to the flight line test set. Power-up the aircraft and flight line test set. If an abnormal indication is noted, refer to the troubleshooting chart in table 2-5 and correct the problem before proceeding.

e. Perform the preflight checkout procedures in accordance with the instructions contained in the operator manual.

f. If the operating programs cannot be loaded or a noticeable malfunction occurs in one of the flight line test set units, refer to the troubleshooting chart and correct the problem before continuing.

g. If the programs load and the preflight program executes, run the preflight tests until the program completes or detects an error. Successful completion of the preflight tests without a detected error indicates that the flight line test set and the. countermeasures receiving set are in serviceable condition.

Table 2-5. Organizational Troubleshooting Chart

Item	Trouble symptom	Probable fault	Checks and corrective action
1	No indication of power applied to the flight line test set, except that both of the Panels, Maintenance-Operator Control C-9633/UYK-23 are on.	115-volt ac power is missing or not applied to the units.	Check the control panel breakers for the proper settings. Check the power cable connector at the shelter for proper mating and tightness. Check that the power source is providing 115-volts Sc. Check that the power cable is connected to the power source and that the power source is turned on.
2	Operating programs will not load.	Recorder-Reproducer, Magnetic Tape RD-392/U or RD-392A/U Panel, Maintenance-Operator Control C-9632/ ALM-153 and C-9633/UYK-23.	Attempt to load the tape recorder diagnostic program. if the diagnostic program loads, the operating program tape is bad. If the program does not load, observe the mag-netic tape for movement during the loading procedure. If the tape moves, dean the tape deck head and again attempt to load the program. If the program still does not load, replace the tape recorder and/or interface unit. If the tape does not move, perform the main-tenance-operator control panel tests. If the tests indicate a failure, replace the unit.
3	Test results are not conclusive.	Defective unit in Receiving Set, Counter-measures AN/ALQ-133.	Refer to TM 11-5895-831-24-1 and perform the procedures in table 2-5.
4	Data cannot be entered into the monitor-controller or digital computer sets from the maintenance-operator control panels, tape recorder, or , display terminal	Defective cable in the interconnect cable group.	Power down the equipment and inspect the cable connectors for pushed back pins or signs of a defect. Refer to the wire list and use an ohmmeter to

Table 2-5. Organizational Troubleshooting Chart-Continued

Item	Trouble symptom	Probable fault	Checks and corrective action
			make point-to-point continuity checks on the cable connectors
5	The display terminal does not function properly.	Defective display terminal.	Perform the display terminal diagnostic tests.
6	Radio Set AN/VRC-46 does not function properly.	Defective radio set.	Refer to TM 11-5820-401-12 for organizational troubleshooting procedures.

2-21. Corrective Action

a. Replace a component unit that has been determined to be defective with one of known quality.

Removal and replacement procedures for the component units of the flight line test set are explained in Section V of this chapter.

b. After a unit has been replaced, repeat the preflight checkout procedures to verify that the equipment is serviceable.

c. Transport the defective unit to Electronics Shop, Semi-trailer Mounted AN/ALM-153, notify direct support maintenance personnel of the problem, and complete the required forms and records. If unit replacement did not clear the malfunction, report the problem to direct support maintenance personnel.

2-22. Panel, Maintenance-Operator Control C-9633/UYK-23 Diagnostic Tests

a. A complete set of diagnostic programs for Computer Set, Digital AN/UYK-23 and Panel, Maintenance-Operator Control C-9633/UYK-23 are contained on AN/UYK-23 Computer Diagnostic Programs Magnetic Tape Cartridge T153-2. Instructions and procedures for performing the diagnostic tests are contained in TM 11-7440-269-14-4 and -5. Obtain the diagnostic manuals and Magnetic Tape Cartridge T153-2 from the storage files in Simulator Set AN/USM-393 and take manuals and tape cartridge to the flight line test set.

(1) Place Magnetic Tape Cartridge T153-2 in the tape deck of the magnetic tape recorder-reproducer and place the tape ON LINE.

(2) Refer to the Univac diagnostic manuals for instructions and run the digital computer set and dual processor diagnostics in the parameter and control computer.

(3) Repeat the diagnostic tests for the correlation and location processor.

(4) If the test results indicate a failure in either Panel, Maintenance-Operator Control C-9633/UYK-23, repeat the tests to verify the failure. (Digital computer set failures are covered in TM 11-5895-831-24.) If a failure is still indicated, replace the failed unit with one of known quality and repeat the tests to verify proper operation of the exchanged unit. Refer to Section V of this chapter for removal and replacement procedures.

b. Rewind and remove the diagnostic tape cartridge from the tape deck of the magnetic tape recorder-reproducer. Return the tape cartridge and the diagnostic manuals to the storage files in Simulator Set AN/USM-393.

2-23. Panel, Maintenance-Operator Control C-96321ALM-153 Diagnostic Tests

a. The following steps of procedure are performed on Panel, Maintenance-Operator Control C-9632/ALM-153 to test the unit for proper operation. This test can be performed without the flight line test set connected in the preflight configuration, with power applied to the unit and the PWR ON/OFF switch set is ON.

(1) Press RST, DATA CLEAR, M.A. CLEAR and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators will light.

(2) Press DATA pushbutton 15. The indicator will light.

(3) Press RW and REGISTER SELECT E. The REGISTER SELECT E indicator turns on and the REGISTER SELECT A indicator turns off.

(4) Press DATA CLEAR. All DATA indicators turn off.

(5) Press DATA pushbutton 14. The indicator will light.

(6) Press RW and REGISTER SELECT B. The REGISTER SELECT E indicator turns off and the REGISTER SELECT B indicator turns on.

(7) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(8) Press DATA pushbutton 13. The indicator will light.

(9) Press RW and REGISTER SELECT X. The REGISTER SELECT B indicator turns off and the REGISTER SELECT X indicator turns on.

(10) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(11) Press DATA pushbutton 12. The indicator will light.

(12) Press RW and REGISTER SELECT L. The REGISTER SELECT X indicator turns off and the REGISTER SELECT L indicator turns on.

(13) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(14) Press DATA pushbutton 11. The indicator will light.

(15) Press RW and REGISTER SELECTS. The REGISTER SELECT L indicator turns off and the REGISTER SELECT S indicator turns on.

(16) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(17) Press DATA pushbutton 0. The indicator will light.

(18) Press RW and REGISTER SELECT BP. The REGISTER SELECT S indicator turns off and the REGISTER SELECT BP indicator turns on.

(19) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(20) Press DATA pushbutton 10. The indicator will light.

(21) Press RW and REGISTER SELECT P. The REGISTER SELECT BP indicator turns off and the REGISTER SELECT P indicator turns on.

(22) Press DATA CLEAR. The lighted indicators in the DATA register turn off.

(23) Press DATA pushbutton 9. The indicator will light.

(24) Press RW and REGISTER SELECT A. The REGISTER SELECT P indicator turns off and the REGISTER SELECT A and bit 15 DATA register indicators turn on.

(25) Press the following pushbutton switch/indicators and verify the on/off status of the associated indicators listed.

REGISTER SELECT pushbuttons	*REGISTER SELECT and DATA indicators (ON)*	*REGISTER SELECT Indicators (OFF)*
E	E and DATA 14	A
B	B and DATA 13	E
X	X and DATA 12	B
L	L and DATA 11	X
S	S and DATA O	L
BP	BP and DATA 10	S
P	P and DATA 9	BP

(26) Press SENSE SWITCH pushbuttons 1, 2, 3, and 4. Al four SENSE SWITCH indicators turn on.

(27) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators light and stay on. No other indicators turn on.

(28) Press MEMORY ADDRESS pushbuttons 0 through 15. All MEMORY ADDRESS indicators light.

(29) Press M.A. CLEAR. ALL MEMORY ADDRESS indicators turn off.

(30) Press RI. The PAR, REGISTER SELECT M, and MEMORY ADDRESS 15 indicators will light.

(31) Press RST and REGISTER SELECT A. The PAR indicator turns off. The REGISTER SELECT A and HALT indicators only are lit.

(32) Press the following pushbutton switch/indicators, and verify the on/off status of the associated indicators listed, then press WI.

NOTE

Pushbutton WI must be pressed after each listed switch/indicator is pressed and the indicator status is verified.

DATA register pushbuttons	*MEMORY ADDRESS indicators (ON)*	*MEMORY ADDRESS Indicators (OFF)*
15	15, AND REGISTER SELECT M	
14	14	15
13	14, 15	
12	13	14, 15
11	13, 15	
10	13, 14	15
9	13, 14, 15	
8	12	13, 14, 15
7	12, 15	
6	12, 14	15
5	12, 14, 15	
4	12, 13	14, 15
3	12, 13, 15	
2	12, 13, 14	15
1	12, 13, 14, 15	
0	11	All others

NOTE

All DATA register indicators are on.

(33) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(34) Press the RI pushbutton 16 times as indicated and verify the on/off status of the associated indicators listed after each operation of the RI switch/indicator.

pushbuttons switch indicator	*MEMORY ADDRESS (MA) or DATA register indicators (ON)*	*MEMORY ADDRESS (MA) or REGISTER SELECT Indicators (OFF)*
RI	M REGISTER	A
SELECT, DATA 15		
RI	MA 14; DATA 14,15	MA 15
RI	MA 13, 15	
DATA 13, 14, 15		
RI	MA 13;	MA 14, 15
DATA 12, 13, 14, 15		
RI	MA 13, 15;	
DATA 11-15		

NOTE

The MEMORY ADDRESS register increments each time the RI pushbutton is pressed.

RI	DATA 10 through 15
RI	DATA 9 through 15
RI	DATA 8 through 15
RI	DATA 7 through 15
RI	DATA 6 through 15S
RI	DATA 5 through 15
RI	DATA 4 through 15
RI	DATA 3 through 15S
RI	DATA 2 through 15
RI	DATA I through 15
RI	DATA 0 through 1S

(35) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only turn on.

(36) Press DATA pushbuttons 0, 2, 4, 6, 8, 10, 12, and 14.

(37) Press MW. The REGISTER SELECT M indicator will light.

(38) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(39) Press MR. DATA indicators 0, 2, 4, 6, 8, 10,

12, and 14 light.

(40) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(41) Press DATA pushbuttons 1, 3, 5, 13, 14, and 15.

(42) Press WI. The MEMORY ADDRESS register increments.

(43) Press DATA CLEAR. All DATA register indicators turn off.

(44) Press DATA pushbuttons 1 through 7.

(45) Press WI. The MEMORY ADDRESS register increments.

(46) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(47) Press RUN. The RUN and IDLE indicators light.

(48) Press HALT. The HALT indicator will light and the RUN and IDLE indicators turn off.

(49) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(50) Press DATA pushbuttons 0, 6, and 15, then press WI. The MEMORY ADDRESS register increments.

(51) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(52) Press BP. The indicator will light. Press DATA CLEAR. ALL DATA indicators turn off.

(53) Press RW, then press BPI. The BPI and HALT indicators turn on.

(54) Press HALT. The BPI indicator turns off.

(55) Press BPR. The BPR and HALT indicators turn on.

(56) Press HALT. The HALT indicator stays on and the BPR indicator turns off.

(57) Press the REGISTER SELECT X pushbutton; the indicator will light. Press DATA CLEAR, then press RW.

(58) Press BP, DATA pushbutton 14, and RW.

(59) Press BPW. The HALT indicator stays on and the BPW indicator will light.

(60) Press HALT. The HALT indicator stays on and the BPW indicator turns off.

(61) Press RST and REGISTER SELECT A. The REGISTER SELECT A and HALT indicators only are lit.

(62) Press IR. The indicator will light.

(63) Press INST. DATA indicators 0, 6, and 15 light.

(64) Press INST again. DATA indicators 1 through 7 will light.

(65) Press HALT and RST (end of test).

b. If an error is detected during the performance of a, above, repeat the entire procedure to verify the failure.

2-24. Magnetic Tape Recorder-Reproducer Diagnostic Tests

a. The following procedure provides instructions for use of Magnetic Tape Recorder-Reproducer Test Program to test Recorder-Reproducer, Magnetic Tape RD-392/U (single tape transport) and RD-392A/U (two tape transports). This program is provided on Computer Peripheral Test Programs Magnetic Tape Cartridge T153-4. Obtain Magnetic Tape Cartridge T153-4 from the magnetic tape storage files in Simulator Set AN/USM-393 and take cartridge to the flight line test set.

NOTE

The operator functions in this test are performed on Panel, Maintenance Operator Control C-9632/ALM-153 and the keyboard of the Systematics General T-5145G (HP2648A) Display Terminal.

(1) Press HALT and RST on the maintenance operator control panel.

(2) Set the controls on the display terminal as follows :

Control	*Setting*
PARITY	NONE
BLOCK MODE	DOWN
DUPLEX	FULL
BAUD RATE	9600
REMOTE	DOWN
CAP LOCK	DOWN
AUTO LF	DOWN
ON/OFF (on back)	ON

(3) Perform a memory initialization procedure on the maintenance-operator control panel.

(4) Place Magnetic Tape Cartridge T153-4 in the tape deck of the tape recorder, and place the tape ON LINE.

(5) Load and execute the Magnetic Tape Recorder-Reproducer Test Program using the object program loading procedure. This program is the first program on tape cartridge T153-4.

(6) Press HALT and RST.

(7) Rewind and remove the tape cartridge from the tape deck of the magnetic tape recorder-reproducer.

(8) Place a new or recently degaussed write-enabled magnetic tape cartridge in the tape deck of the magnetic tape recorder-reproducer and place the tape ON LINE.

(9) Press RUN. The Display Terminal displays: U440-2 CARTRIDGE TAPE RECORDER TEST ENTER COMMAND (PC FOR COMMAND DESCRIPTIONS).

*

NOTE

Step 10 is not mandatory for test performance.

(10) Enter the command PC, then press ENTER on the keyboard of the display terminal. The display terminal displays a list of the program commands and a definition of each.

(11) Enter the command DG, then press ENTER on the keyboard. The following messages are displayed on the display terminal during test execution. This requires approximately two minutes.

```
DG
EACH DRIVE WILL BE TESTED IF LOADED
        WITH TAPE
A BINARY COUNT WILL BE WRITTEN TO
        DECK 01 TRACK 01
A BINARY COUNT WILL BE WRITTEN TO
        DECK 01 TRACK 02
A BINARY COUNT WILL BE WRITTEN TO
        DECK 01 TRACK 03
A BINARY COUNT WILL BE WRITTEN TO
        DECK 01 TRACK 04
A BINARY COUNT WILL BE READ FROM
        DECK 01 TRACK 01
A BINARY COUNT WILL BE READ FROM
        DECK 01 TRACK 02
A BINARY COUNT WILL BE READ FROM
        DECK 01 TRACK 03
A BINARY COUNT WILL BE READ FROM
        DECK 01 TRACK 04
TURN OFF WRITE ENABLE PLUG ON DECK
        NO 01
PRESS ENTER WHEN READY
```

(12) Do not turn off the write enable control.

(13) On completion of the test, press ENTER on the keyboard. The display terminal displays:

```
STATUS =3C22, CARTRIDGE NOT SAFE
DONE
*
```

NOTE

If a failure is detected during test execution, the program displays an error message on the display terminal. If the IDLE indicator lights after an error message is displayed, press RUN to continue. If a data error occurs, up to 256 error messages can be displayed.

b. If error messages are displayed on the display terminal, repeat the entire procedure in a, above to verify the failure. If a failure is still indicated, press HALT and RST, rewind and remove the tape cartridge, and replace the magnetic tape recorder-reproducer with one of known quality. Then repeat the test to verify proper operation of the exchanged unit. Refer to paragraphs 2-27 through 2-31 for the unit removal and replacement procedures.

c. If the test in a, above completes successfully, press HALT and RST. Rewind and remove the scratch tape cartridge from the tape deck of the magnetic tape recorder-reproducer. Return the tape cartridges to the magnetic tape storage files in Simulator Set AN/USM-393.

2-25. Display Terminal Diagnostic Tests

a. The following procedure provides instructions for use of the Systematics General T-5145G display terminal test program to test the Systematics General T-5145G display terminal. This program is contained on computer peripheral test programs magnetic tape cartridge T153-4. Obtain magnetic tape cartridge T153-4 from the magnetic tape storage files in Simulator Set AN/USM-393 and take cartridge to the flight line test set.

NOTE

The operator functions in this test are performed on Panel, Maintenance Operator Control C-9632/ALM-153 and the keyboard of the Systematics General T-5145G (HP2648A) display terminal.

(1) Press HALT and RST on the maintenance operator control panel.

(2) Set the controls on the display terminal as follows:

Control	*Setting*
PARITY	NONE
BLOCK MODE	DOWN
DUPLEX	FULL
REMOTE	DOWN
BAUD RATE	9600
CAP LOCK	DOWN
AUTO LF	DOWN
ON/OFF	ON

(on back)

(3) Perform a memory initialization procedure on the maintenance-operator control panel.

(4) Place computer peripheral test programs magnetic tape cartridge T153-4 in the tape deck of the magnetic tape recorder-reproducer and place the tape ON LINE .

(5) Press RST on the maintenance-operator control

panel and press ENTER on the keyboard of the display terminal.

(6) Load Systematics General T-5145G display terminal test program. This is the second program on magnetic tape cartridge T153-4. Then press HALT.

(7) Press RST, then RUN on the maintenance operator control panel.

(8) Observe the display terminal screen. The screen is filled with alphanumeric characters. Check that the numeric sequence (0-9) and the alphabetical sequence (A-Z) are correct. Also check that all alphanumeric characters and symbols are aligned vertically in each column (A over A, B over B, etc.).

(9) Press BREAK on the keyboard when ready to continue. The display terminal displays: KEYBOARD CHECK-TYPE ALL CHARACTERS FOLLOWED BY ENTER Type all lower and upper case alphabetical and numeric characters and symbols, but not controls, on the keyboard followed by ENTER. The display terminal displays each character as typed and repeats all characters after ENTER is pressed. Verify that all characters typed are repeated. (This step does not verify that all characters have been input.)

(10) Deleted.

(11) Deleted.

(12) Press ENTER on the keyboard. The display terminal displays END OF DISPLAY TERMINAL TEST in the center of the screen and the word STOP flashes.

(13) Observe the PARITY indicator on the keyboard. The indicator turns off.

(14) Press HALT and RST on the maintenance operator control panel.

b. If an error condition is indicated, repeat the entire procedure to verify the failure. If a failure is still indicated, replace the display terminal with one oft known quality and repeat the test to verify proper operation of the exchanged unit. Refer to paragraphs 2-27 through 2-31 for the unit removal and replacement procedures.

c. Rewind and remove the tape cartridge from the tape deck of the magnetic tape recorder-reproducer. Return the tape cartridge to the magnetic tape storage files in Simulator Set AN/USM-393.

Section VI. UNIT REMOVAL AND REPLACEMENT PROGRAM

2-26. General

This section explains removal and replacement procedures for the major units of Test Set, Flight line AN/ALM-154, except for Radio Set AN/VRC-46 and components of modified Shelter S-250. Removal and replacement procedures for these units are contained in separate technical manuals. Refer to Appendix A, References.

NOTE

When a unit is removed, always check the cables for fraying and the cable connectors for bent or pushed-back pins. Some of the units in the flight line test set equipment rack are mounted on slides. A portion of each slide assembly is secured to the sides of the mounted unit. If the replacement unit is not equipped with these parts, the parts must be removed from a defective unit and secured to the replacement unit before the unit can be installed in the rack.

2-27. Panel, Maintenance-Operator Control C-9633/UYK-23

WARNING

115 Vac present when power is applied to this assembly. Death or personal injury may result if operating personnel fail to observe safety precautions.

a. Removal Procedure.

(1) Remove and retain the Phillips-head screws that secure the panel to the equipment rack.

(2) Support the unit and pull unit forward.

(3) Mark and carefully disconnect all electrical connectors from the control panel.

(4) Remove the control panel from the equipment rack.

b. Replacement Procedure.

(1) Support the replacement unit, observe the markings, and carefully connect the electrical connectors to the proper receptacles on the control panel. Be sure all connectors are firmly tightened.

(2) Position the unit in place in the equipment rack and align the holes for the mounting screws. Be sure the cables are not crimped or binding.

(3) Secure the control panel to the rack with the screws previously removed.

2-28. Panel, Maintenance-Operator Control C-9632/ALM-153

WARNING

115 Vac present when power is applied to this assembly. Death or personal injury may result if operating personnel fail to observe safety precautions.

a. Removal Procedure.

(1) Remove and retain the Phillips-head screws that secure the front panel of the unit to the equipment rack.

(2) Pull the unit forward until the slides are fully extended.

(3) Mark and carefully disconnect all electrical connectors from the unit.

(4) Release the slide locks, and remove the unit from the slide assembly and the rack.

b. Replacement Procedure.

(1) Be sure the replacement unit is equipped with slide assembly components.

(2) Extend the rack-mounted portion of the slide assembly, release the slide locks, and install the replacement unit on the slides.

(3) Observe the markings and carefully connect the electrical connectors to the proper receptacles on the unit. Be sure all connectors are firmly tightened.

(4) Slide the unit into the rack, and secure the front panel to the rack with the screws previously removed.

2-29. Interface Unit J-3238/ALM-153

Use the procedure in paragraph 2-28 to remove and replace the interface unit.

2-30. Recorder-Reproducer, Magnetic Tape RD-392/U or RD-392A/U

Use the procedure in paragraph 2-28 to remove and replace the magnetic tape recorder-reproducer.

2-31. Display Terminal, Systematics General T-5145G (HP2648A)

a. Removal Procedure.

NOTE The display terminal is attached with isolators to a mounting tray

(1) Unplug power cable.

(2) Disconnect cable assembly W97.

(3) Release the draw latches from the mounting rails.

(4) Lift the terminal and mounting tray out of the rack.

NOTE If the display terminal is to be shipped out of the unit for repairs, perform (5) through (12) below to detach the mounting tray. Work space should be at least twice as large as the base of the display terminal.

(5) Place the display terminal on a large flat work surface.

(6) Release the cabinet latches on each side of the display terminal.

(7) Raise the lid.

(8) Release the lid retainer lever by pressing the retaining lever toward the inside of the cabinet while continuing to raise the lid.

(9) Gently lay the lid back onto the flat work surface.

(10) Refer to TM 11-7440-306-34 and remove the display terminal power supply.

(11) Use a 9/16-inch socket wrench and remove the MS35308-305 cap screws from the mainframe shell and studs in the shock mounts.

(12) Lift the display terminal from the mounting tray.

b. Replacement Procedure.

NOTE

If the display terminal is replacement unit, the mounting tray will not be attached. Perform (1) through (12) below to attach the mounting tray to the display terminal. If the display terminal is a previously installed unit with the mounting tray attached, proceed to (13) below.

Work space should be at least twice as large as the base of the display terminal.

(1) Place the display terminal on a large flat work surface.

(2) Release the cabinet latches on each side of the display terminal.

(3) Raise the lid.

(4) Release the lid retainer lever by pressing the retaining lever toward the inside of the cabinet while continuing to raise the lid.

(5) Gently lay the lid back onto the flat work surface.

(6) Refer to TM 11-7440-306-34 and remove the display terminal power supply.

(7) Position the display terminal on the mounting tray.

(8) Align the holes in the mainframe shell over the studs in the shock mounts.

(9) Insert the MS35308-305 cap screws through the holes in the mainframe shell into the studs in the shock mounts and tighten with a 9/16-inch socket wrench.

(10) Refer to TM 11-7440-306-34 and reinstall the power supply.

(11) Replace the lid on top of the mainframe cabinet. Push the lid retainer lever toward the inside of the cabinet in order to fit the retaining lever into the slot in the lid.

(12) Secure the cabinet latches on each side of the display terminal.

NOTE The following steps describe the installation of the display terminal with the mounting tray attached.

(13) Locate the position where the unit is to be mounted.

(14) Place the display terminal with the mounting tray attached onto the mounting rails.

(15) Secure the draw latches to the mounting rails.

(16) Carefully route cable assembly W97 through the rack structure to the J-3238 interface unit and connect the cable to jack J6.

NOTE

The display terminal can be operated from either 115 or 230 V, 60 hertz line voltage. An optional feature is 230 V, 50 hertz.

(17) Refer to TM 11-7440-306-34 and ensure that the display terminal is properly adjusted for available power.

(18) Plug power cable into a grounded power receptacle.

b. Replacement Procedure.

(1) To replace the keyboard, place keyboard in position on the table and align the mounting screw holes. Secure the keyboard in place with the four Phillips-head screws previously removed from the underside of the table.

(2) Set the main chassis of the replacement unit in place on the table and align the four mounting bolt holes.

(3) Secure the main chassis to the table with a mounting bolt in each corner of the chassis.

(4) Carefully route the cable through the rack structure to the interface unit. Connect the cable connector to the proper receptacle on the rear of the interface unit. Be sure that the connector is firmly tightened. Tighten the two screws that secure the cable connector to the interface unit chassis.

(5) Push the interface unit into position in the rack, and secure the front panel in place with the screws previously removed.

(6) Connect the keyboard cable connector to the proper receptacle on the main chassis. Be sure the connector is firmly tightened.

(7) Position the cover in place on the main chassis. Align the screw holes and secure the cover in place with the eight screws removed previously.

CHAPTER 3

FUNCTIONING OF THE EQUIPMENT

Section I. INTRODUCTION

3-1. General

This chapter includes the following: Section II, System Operation, describes the general functional operation of Test Set, Flight Line AN/ALM-154 as used to provide flight line services for Receiving Set, Countermeasures ANIALQ-133 in the Quick Look II System configuration. Section III, Functional Operation, explains the operation of the flight line test set units at the major unit block diagram level. References to other technical manuals are furnished that present operating instructions for the flight line test set and descriptions, data, and maintenance instructions for the individual units that comprise the flight line test set.

Section II. SYSTEM OPERATION

3-2. System Configuration

a. The Quick Look II Noncommunications Emitter Identification-Location System consists of the equipment subsystems (sets and shop) listed below. Refer to figure 3-1 for a system configuration block diagram.

(1) Receiving Set, Countermeasures AN/ ALQ-133.

(2) Simulator Set AN/USM-393.

(3) Digital Data Set AN/USQ-61A.

(4) Test Set, Flight Line AN/ALM-154.

(5) Electronics Shop, Semi-trailer Mounted AN/ALM-153.

b. Receiving Set, Countermeasures AN/ ALQ-133 and Simulator Set AN/USM-393 form a tactical emitter location system. Digital Data Set AN/USQ-61A provides secure two-way data communications between the airborne countermeasures receiving set and the groundbase simulator set. Test Set, Flight Line AN/ALM-154 provides preflight and postflight services (operating and mission program loading, preflight checkout, postflight checkout, and postflight data dump) for the countermeasures receiving set at the aircraft on the flight line. Electronics Shop, Semi-trailer Mounted AN/ALM-153 is the maintenance facility for the operating sets that form the system.

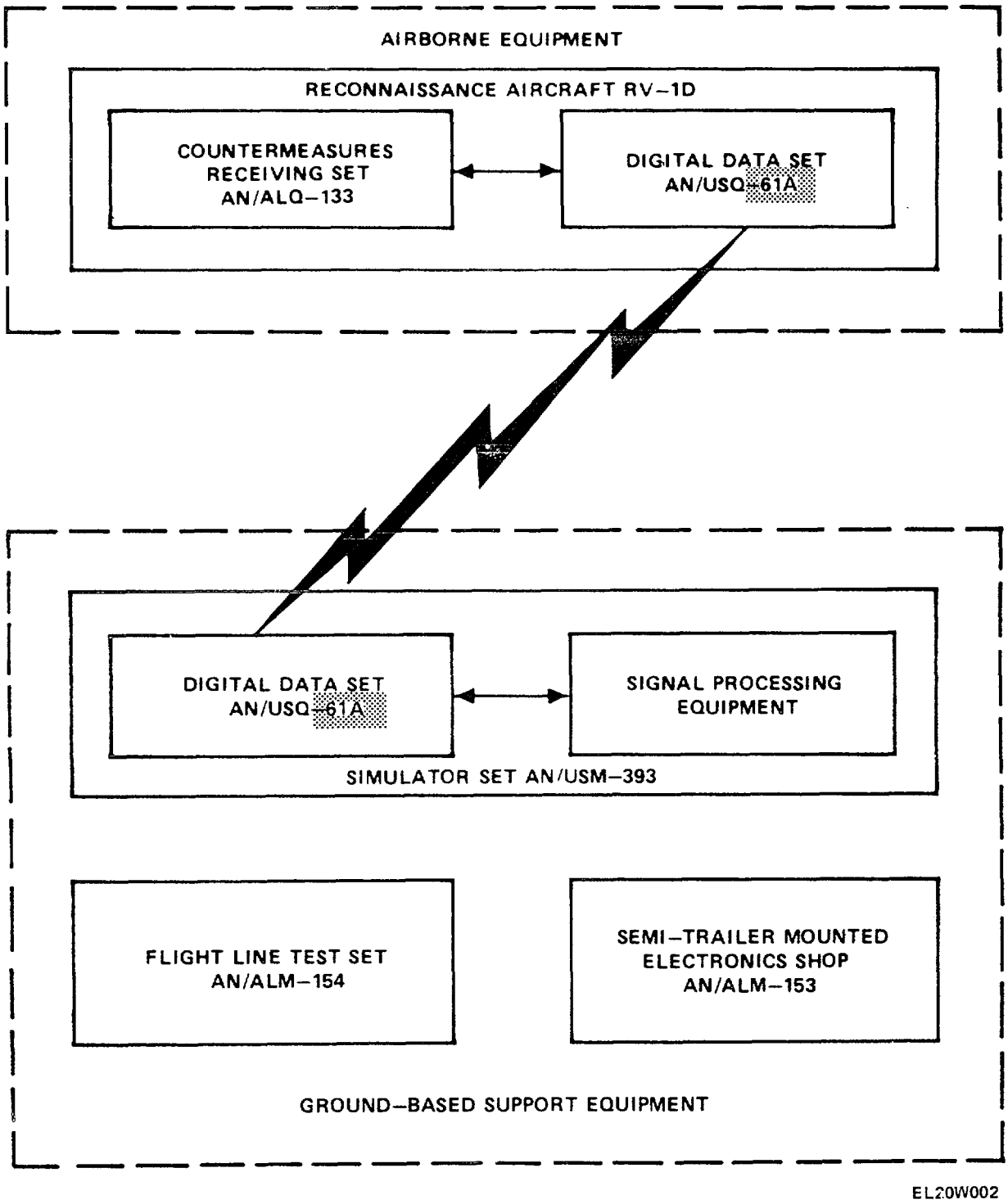

Figure 3-1. Quick Look II System Configuration.

3-3. Applicable Operator and Maintenance Manuals
Refer to Appendix A, References, for a list of technical manuals applicable to the flight line test set. The following listed technical manuals are the primary documents that describe the equipment sets and electronics shop comprising the Quick Look II System.

a. TM 11-5895-955-10-1, and 2; Operator's Manual for Receiving Set, Countermeasures AN/ALQ-133, Simulator Set AN/USM-393, and Test Set, Flight Line AN/ALM-154. (Operational interfaces between the sets dictate that operating instructions and procedures be combined in one manual.)

b. TM 11-5895-831-24-1 and -2; Organizational, Direct Support, and General Support Maintenance Manual for Receiving Set, Countermeasures ANIALQ-133.

c. TM 11-6625-2845-24; Organizational, Direct Support, and General Support Maintenance Manual for Simulator Set AN/USM-393.

d. TM 11-7035-200-14; Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Digital Data Set AN/ USQ-61A.

e. TM 11-4940-476-14; Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Electronics Shop, Semi-trailer Mounted AN/ALM-153.

f. TM 11-7440-306-34: Direct Support and General Support Maintenance Manual for Display Terminal, Systematics General T-5145G (HP2648A).

3-4. Equipment Description
The flight line test set consists of three maintenance-operator control panels, an interface unit, a magnetic tape recorder-reproducer, a display terminal, and a transceiver mounted in modified Transportable Shelter S-250. The shelter mounts in, and is transported by, a 11/4-ton Cargo Truck M-885. Refer to the operator's manual, TM 11-5895-955-10-1, for additional details, tabulated data, and a list of items that comprise the operable equipment. Figure 3-2 illustrates the equipment configuration within the transportable shelter. The maintenance-operator control panels, magnetic tape recorder-reproducer, and interface unit mount in a 19-inch equipment rack. The display terminal is table mounted on rails and the transceiver is shelf mounted. A self-contained intercept receiver group simulator test instrument is normally stored on a shelf in the shelter, when not in use. A cable set is provided that interconnects the flight line test set units with the countermeasures receiving set in the aircraft. The flight line test set requires 115-volt ac power from an external source, which is applied through a power cable to the shelter circuit breaker panel.

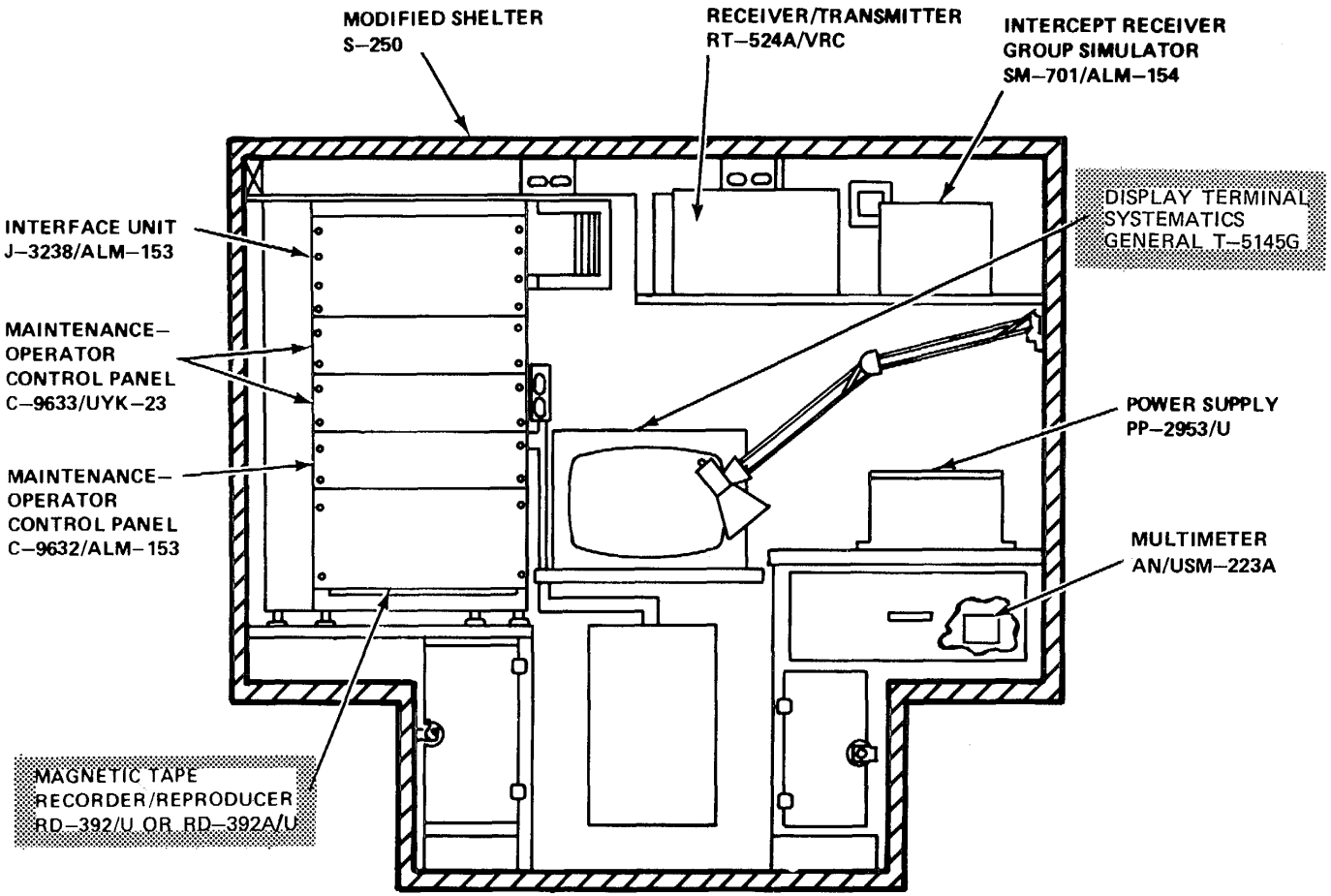

Figure 3-2. Flight Line Test Set Equipment Location In Modified Shelter.

to verify serviceability. Up-link and down-link operation of Digital Data Set AN/USQ-61A is also checked by the preflight test program. The airborne operating programs are then loaded, and the computers are initialized with data generated in Simulator Set AN/USM-393 for the specific airborne mission.

b. Postflight Operations. During postflight operations, a flight line editor program is loaded and executed, that records on magnetic tape cartridges data collected and retained in airborne computer memory during a mission flight. The program then verifies the recorded data. On completion of the program (data dump), operator personnel forward the magnetic tape cartridges to Simulator Set AN/USM-393 for data reduction and processing into a human-readable output format.

c. Diagnostic and Test Programs. The flight line test set is also used to load and execute a number of diagnostic and test programs. If a malfunction occurs in the countermeasures receiving set, a line replaceable unit diagnostic (LRUD) program can be used to isolate the trouble to a line replaceable unit. Diagnostic programs for individual units can also be loaded and executed. Chapter 2 of TM 11-5895-831-24-1 contains a complete list of the diagnostic and test programs that can be used.

Section III. FUNCTIONAL OPERATION

3-6. Functional Description

The flight line test set contains the peripheral devices that are used by operator and maintenance personnel to access and control the monitor-controller and digital computers in the countermeasures receiving set. To perform these functions, the flight line test set must be positioned on the left side of the aircraft forward of the wing and cabled to the aircraft. The peripheral devices in the flight line test set are connected by the cables, through a junction panel on the aircraft, to the associated units in the countermeasures receiving set. Figure FO 7-1 is a cabling diagram that shows internal cabling and the cables used to connect the flight line test set to the aircraft and countermeasures receiving set. See figure 3-3 for a functional block diagram of the peripheral devices discussed in the following paragraphs.

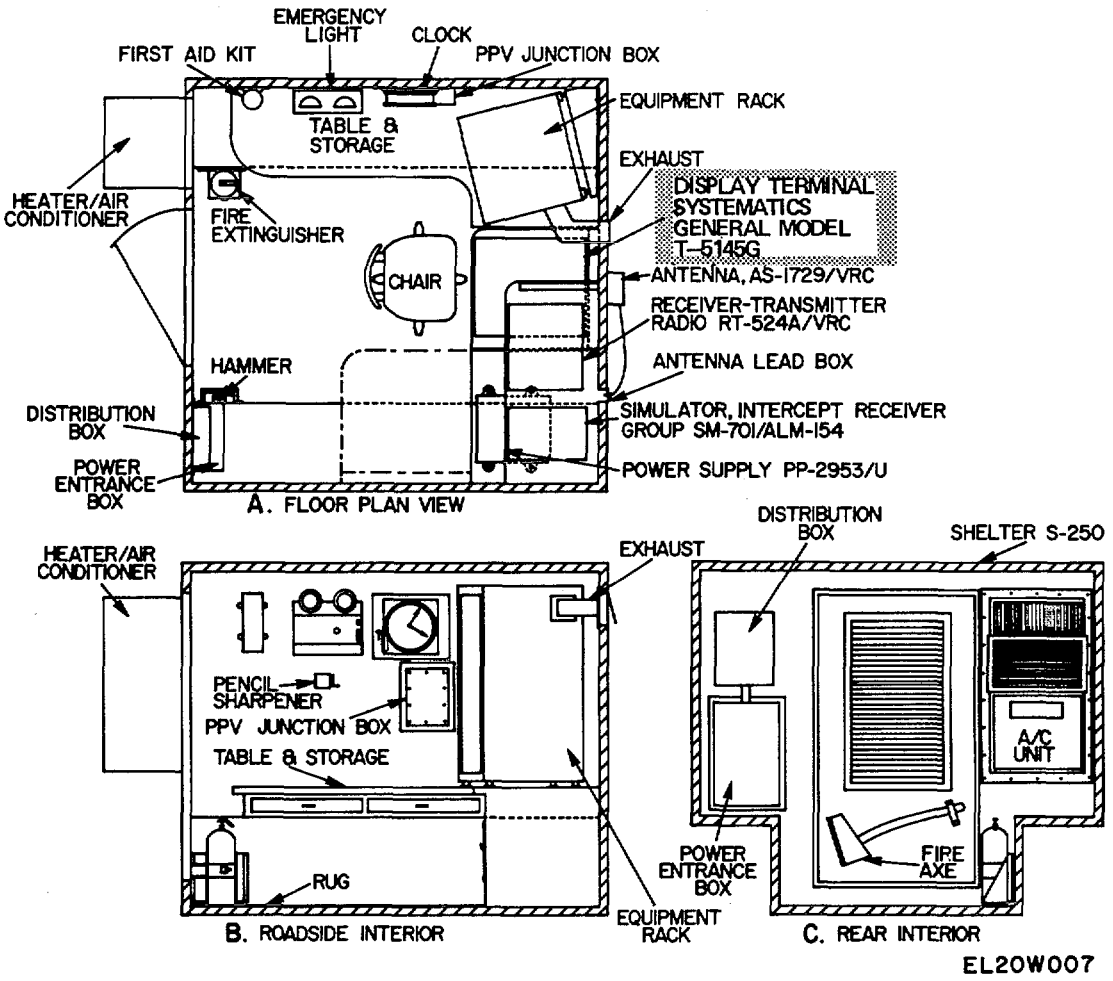

Figure 3-3. Functional Block Diagram.

NOTE

Separate individual technical manuals exist for each of the units that form the flight line test set. These manuals are referenced in following applicable paragraphs, and listed in Appendix A, References.

3-7. Panel, Maintenance-Operator Control C-9633/UYK-23

The flight line test set contains two maintenance operator control panels of this type. Each maintenance-operator control panel is used to access and control Computer Set, Digital AN/UYK-23 (parameter and control computer, and correlation and location processor) in the countermeasures receiving set. Each unit provides the necessary control functions to load or read the memory or hardware registers of the associated digital computer, a means for starting and stopping instruction execution, and single instruction and breakpoint modes for program debugging. Visual indicators provide simultaneous readout of both selected data and memory addresses. Refer to TM 11-7440-269-14-1 through -5 for additional details, tabulated data and maintenance instructions for the two maintenance-operator control panels.

3-8. Panel, Maintenance-Operator Control C-96321ALM-153

This maintenance-operator control panel is used to access and control Monitor-Controller C-9537/ALQ-133 in the countermeasures receiving set. The unit provides the necessary control functions to load or read the memory or hardware registers of the associated monitor-controller, a means for starting and stopping instruction execution, and single instruction and breakpoint modes for program debugging. Visual indicators provide simultaneous readout of both selected data and memory addresses. The maintenance-operator control panel interfaces the monitor-controller through three bi-directional, serial data paths. Two paths carry selected data and memory addresses and the third path carries control information. Refer to TM 11-6625-2649-14.

3-9. Interface Unit J-32381ALM-153

The interface unit provides an asynchronous data interface between Monitor-Controller C-9537/ ALQ-133 in the countermeasures receiving set and the Systematics General T-5145G (HP2648A) display terminal, by use of an RS-232 interface module. The unit accepts parallel from a read/write direct (RWD) bus, and serializes, formats, and transmits the information to the video display terminal. The reverse of this operation is performed when data is sent from the display terminal to the monitor-controller. Baud rate, parity type, and the number of stop bits are under program control. Refer to TM 11-5895-829-14.

3-10. Display Terminal, Systematics General T-5145G (HP2648A)

The display terminal is a peripheral device used to display program outputs and to enter data and commands, in response to program requests received from Monitor-Controller C-9537/ALQ-133 in the countermeasures receiving set. Refer to TM 11-5895-965-14-1 and -2.

3-11. Recorder-Reproducer, Magnetic Tape RD-3921U or RD-392A/U

This peripheral device is a digital magnetic tape recorder and formatter that is used to load programs and files from magnetic tape cartridges into the monitor-controller and the digital computers in the countermeasures receiving set, and to record postflight memory data dumps. Refer to TM 11-5835-242-14.

3-12. Radio Set AN/VRC-46

The radio receiver/transmitter is used by operator and maintenance personnel for voice communications between the flight line test set and Simulator Set AN/USM-393. Refer to TM 11-5820-401-12.

3-13. Simulator, Intercept Receiver Group SM-701/ALM-154

This special support equipment unit is used by organizational maintenance personnel to simulate a Receiver Group, Intercept OR-140/ALQ-133, when performing the extended line replaceable unit diagnostic (ELRUD) tests in the flight line test set. Refer to TM 11-6625-2655-14.

3-14. Modified S-250/G

Shelter Refer to appendix D for details and instructions pertaining to the modified transportable shelter.

3-15. Shelter Power Distribution

(Fig FO 7-3)

Single-phase, 115-volt ac, 60-Hz power from an external power source is applied through a power cable to the shelter, then through a power entrance box and distribution circuit breakers to the shelter lights, convenience outlets, electric heater, and air conditioner.

CHAPTER 4
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

4-1. Definition

Direct support maintenance for Test Set, Flight Line AN/ALM-154 consists of the functions indicated by the MAINTENANCE CATEGORY F column in the maintenance allocation chart in Appendix B. Direct support maintenance is generally the inspection, testing, and replacement of circuit cards in defective line replaceable units that have been replaced by organizational maintenance personnel and transported to Electronics Shop, Semi-trailer Mounted AN/ALM-153 for repair. Specific direct support maintenance responsibilities for each major component unit and component subassemblies shall be as shown for each entry in the maintenance allocation chart.

4-2. Direct Support Maintenance Instructions

Direct support maintenance instructions for the component units of the flight line test set are furnished in the individual technical manuals for those units. Refer to the applicable technical manual referenced in the maintenance allocation chart for each unit, and follow the instructions presented therein to perform the maintenance functions that are the responsibility of direct support maintenance personnel.

CHAPTER 5
GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

5-1. General

There are no general support maintenance responsibilities or requirements assigned in the maintenance allocation chart for the flight line test set. Refer to MAINTENANCE CATEGORY column H in the maintenance allocation chart furnished in Appendix B.

5-2. General Support Maintenance Instructions

Maintenance requirements beyond the scope of direct support maintenance shall be referred to depot maintenance as indicated by MAINTENANCE CATEGORY column D in the maintenance allocation chart.

CHAPTER 6
WIRE LISTS

6-1. General

The wire lists for the units of the Test Set, Fight Line AN/ALM-154 are contained in the separate technical manuals for those units. See Appendix A, References, for a listing of the manuals. The cables shown in figure FO 7-1 are wired pin-to-pin between the connectors and, therefore, require no wire lists.

CHAPTER 7
DIAGRAMS

7-1. General

The schematic diagrams for Flight Line Test Set AN/ALM-154 (fig. FO 7-1, FO 7-2 and FO 7-3) which are foldout illustrations located at the back of the manual.

APPENDIX A

REFERENCES

DA Pam 310-4	Index of Technical Publications.
SB 11-573	Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
SC 5180-91-CL-R07	Tool Kit, Electronic Equipment TK-105/G, (NSN 5180-00-610-8177).
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TB 43-0124	Maintenance and Repair Procedure for Shelters, Electrical Equipment S-141/G and S-141B/G (NSN 5410-00-752-9698), S-144/G, S-144A/G, S-144B/G, S-144C/G and S-144D/G (NSN 5410-00-542-25-32), S-250/G (NSN 5410-00-999-4935), S-250/G (shielded), (NSN 5410-00-489-6076), S-280/G (NSN 5410-00-999-5269), S-280A/G (5410-00-999-6022), S-280B/G (5410-00-117-2868), S-280B/G (5410-00-117-2868, S-280B/G (shielded), (5410-00-001-4093), S-280C/G and S-318/G (5410-00-763-2339) and S-318A/G (5410-00-116-7086) TM 9-2320-266-10 Operator's Manual: Truck, Cargo: 11/4-Ton, 4X4, M880 (NSN 2320-00-579-8942), M881 (NSN 2320-00-579-8943), M882 (NSN 2320-00-579-8957), M883 (NSN 2320-00-579-8959), M884 (NSN 2320-00-579-8985), M885 (NSN 2320-00-579-8989); 1¼/4-Ton, 4X2, M890 (NSN 2320-00-579-8991), M891 (NSN 2320-00-579-9046), M892 (NSN 2320-00-579-9052); Truck Ambulance: 11/4-Ton, 4X4, M886 (NSN 2310-00-579-9078); 1¼/4-Ton, 4X2, M893 (NSN 2310-00-579-5679), and Truck, Telephone Maintenance: ¼/4-Ton, 4X4, M888 (2350-01-044-0333).
TM 11-4940-476-14	Operator's Organizational, Direct Support and General Support Maintenance Manual: Electronic Shop, Semi-Trailer Mounted AN/ALM-153 (NSN 4940-01-018-2505).
TM 11-5805-201-12	Operator and Organizational Maintenance Manual: Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-201-35	Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5820-401-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): Radio Sets AN/VRC-12 (NSN 5820-00-223-7412), AN/VRC-43 (NSN 5820-00-223-7415), AN/VRC-44 (NSN 5820-00-223-7417), AN/VRC-45 (NSN 5820-00-223-7418), AN/VRC-46 (NSN 5820-00-223-7433), AN/VRC-47 (NSN 5820-00-223-7434), AN/VRC-48 (NSN 5820-00-223-7435), AN/VRC-49 (NSN 5820-00-223-7437), AN/VRC-54 (NSN 5820-00-223-7567), AN/VRC-55 (NSN 5820-00-402-2265); Mounting Kit MT-1029/VRC (NSN 5820-00-893-1323) and MT-1898/VRC (NSN 5820-00-893-1324); Antenna Kit AT-912/VRC (NSN 5820-00-897-6357), Control, Frequency Selector C-2742/VRC (NSN 5820-00-892-3343) and Control, Radio Set, C-2299/VRC (NSN 5820-00-892-3340).
TM 11-5835-242-14	Operator's Organizational, Direct Support and General Support Maintenance Manual for Recorder/Reproducer Magnetic Tape, RD-392/U (NSN 5865-01-031-4052) and RD-392A/U (NSN 7050-01-035-1345).

TM 11-5895-829-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Interface Unit J-3238/ALM-153 (NSN 5865-01-024-0390).
TM 11-5895-831-24-1 and -2	Organizational, Direct Support and General Support Maintenance Manuals, Receiving Set, Countermeasures AN/ALQ-133 (NSN 5865-00-134-2601).
TM 11-5895-955-10-1	Operator's Manual: Receiving Set, Counter-measures AN/ALQ-133 (NSN 5865-00-134-2601); Simulator Set AN/USM-393 (NSN 6625-00-134-2976) and Test Set, Flight Line AN/ALM-154 (NSN 6625-00-134-2975).
(C) TM 11-5895-955-10-2	Operator's Manual: Receiving Set, Counter-measures AN/ALQ-133 (NSN 5865-00-134-2601); Simulator Set AN/USM-393 (NSN 6625-00-134-2976) and Test Set, Flight Line AN/ALM-154 (NSN 6625-00-134-2975).
TM 11-6130-233-12	Operator's and Organizational Maintenance Manual: Power Supplies PP-2953/U, PP-2953AA/U, PP-2953B/U and PP-2953C/U (NSN 6130-00-985-7899).
TM 11-6130-233-35	Direct Support, General Support and Depot Maintenance Manual: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U and PP-2953C/U (NSN 6130-00-985-7855).
TM 11-6625-654-14	Operator's, Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools List) for Multimeter AN/USM-223 (NSN 6625-00-999-7465).
TM 11-6625-2649-14	Operator's Organizational, Direct Support and General Support Maintenance Manual: Panel, Maintenance-Operator Control C-9632/ALM-153 (NSN 5865-01-024-0387).
TM 11-6625-2655-14	Operator's Organizational, Direct Support and General Support Maintenance Manual: Simulator, Intercept Receiver Group SM-701/ALM-154 (NSN 6625-01-024-0395).
TM 11-6625-2845-24	Organizational, Direct Support and General Support Maintenance Manual for Simulator Set AN/USM-393 (NSN 6625-00-134-2976).
TM 11-7035-200-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Data Set, Digital AN/USQ-61 (NSN 7035-00-134-2602).
TM 11-7440-269-14-1 thru 5	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Digital Computer Set AN/UYK-23 (NSN 7035-01-041-3437).
*TM 11-7440-306-12-1	Operator's and Organizational Maintenance Manual: CRT Terminal Systematics General Model T-5145G (Hewlett-Packard Graphics Terminal 2648A) (To be published).
*TM 11-7440-306-12-2	Operator's and Organizational Maintenance Manual: CRT Terminal Systematics General Model T-5145G (Hewlett-Packard Graphics Terminal 2648A) (Quick Reference Guide.).
*TM 11-7440-306-12-3	Operator's and Organizational Maintenance Manual: CRT Terminal Systematics General Model T-5145G (Hewlett-Packard Graphics Terminal 2648A) (User's Manual).
*TM 11-7440-306-12-4	Operator's and Organizational Maintenance Manual: CRT Terminal Systematics General Model T-5145G (Hewlett-Packard Graphics Terminal 2648A) (Reference Manual).
TM 11-7440-306-24P	Organizational, Direct Support and General Support, Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): CRT Terminal Systematics General Model T-5145G (Hewlett-Packard Graphics Terminal HP2648A) (To be published).

* See footnote at end of appendix

*TM 11-7440-306-34	Direct Support and General Support Maintenance Manual: Model HP2648A Graphics Terminal (Display Terminal, Systematics General T-5145G) (Composite Service Manual).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 43-0139	Painting Instructions for Field Use.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

***Requests for this manual must be sent to Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-PEW, Ft. Monmouth, NJ 07703.**

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations for AN/ALM-154. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f: Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services Inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of taskhours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew

0 -- Organizational
F - Direct Support
H - General Support
D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. Tool and Test Equipment Requirements (Sec III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5. Remarks (Sec IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is B-3.)

SECTION II. MAINTENANCE ALLOCATION CHART
FOR TM 11-6625-266-24
TEST SET, FLIGHT LINE AN/ALM-154

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
00	TEST SET, FLIGHT LINE AN/ALM-154	INSPECT		0.3				1, 2, 3, 4	
		TEST		0.5				1	
		REPAIR		2,..0					
01	PANEL, MAINTENANCE-OPERATOR CONTROL C-9633/UYK-23, UNIT 1 (REFER TO TM 11-7440-269-14-1 THRU -14-5 AND -24P)								
02	DISPLAY TERMINAL, SYSTEMATICS GENERAL T-5145G, UNIT 2 REFER TO (HP2648A) TM 11-7440-306-12-1,-2, -3 -4 and -24P, -34)								
03	RECORDER/REPRODUCER, MAGNETIC TAPE RD-392/U OR RD-392A/U UNIT 3 (REFER TO TM 11-5835-242-14 AND -24P)								
04	INTERFACE UNIT J-3238/ALM-153, UNIT 4 (REFER TO TM 11-5895-829-14 AND -24P)								
05	SIMULATOR INTERCEPT RECEIVER GROUP, SM-71/ALM-154 UNIT 5 (REFER TO TM 11-6625-2655-14 AND -24P/								
06	PANEL, MAINTENANCE-OPERATOR CONTROL C-9632/ALM-153, UNIT 6 (REFER TO TM 11-6625-2649-14 AND -24P)								
07	INTERCONNECT CABLE GROUP, UNIT 7	INSPECT		2.0					
		TEST		4.0				1, 2, 3, 4	
		REPAIR			5.0			1, 2	
		REPLACE			0.5				
08	SHELTER S-250 (MODIFIED), UNIT 8 (REFER TO TB 750-240 AND TM 11-5410-214-15P)								
09	TEST SET, MULTIMETER, AN/USM-223A, UNIT 9 (REFER TO TM 11-6625-654-14)								
10	POWER SUPPLY PP-2953/U (REFER TO TM 11-6130-233-12 AND -35)								
11	HANDSET H-250/U	INSPECT			0.2			1	
		TEST			0.1				
		REPLACE			0.1			1,2	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TEST SET, FLIGHT LINE AN/ALM-154

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O, F, H,	TOOL KIT, ELECTRONIC EQUIPMENT TK-105G	5180-00-610-8177	
2	0. F, H,	MULTIMETER A/USM-223A	6625-00-999-7465	
3	0, F, H, D	MAGNETIC TAPE CARTRIDGE		
4	0, F, H, D	MAGNETIC TAPE CARTRIDGE T153-4		
5	0, F, H, D	ELECTRONIC SHOP, SEMI-TRAILER MOUNTED AN/ALM-153	4940-014-0B-2505	

APPENDIX C
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists expendable supplies and materials you will need to operate and maintain the AN/ALM-154. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

C-2. Explanation of Columns

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").

b. Column 2 Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
0 -- Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column 3 --National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4-Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5 Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

(Next printed page is C-2.)

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NUMBER AND CAGE	(5) UNIT OF MEAS
1			CLOTH LINT FREE	EA
2		685-00-105-3084	TRICHLOTRIFLUOROETHANE	PT
3			SANDPAPER NO. 000	AR
4		8010-00-835-2114	PRIMER, METAL ZINC CHROMATE	AR
5			PAINT, LUSTERLESS, OLIVE DRAB NO. X-34087	AR
6			ENAMEL, SEMIGLOSS, LIGHT GRAY TT-E-529, NO. 26250	AR

APPENDIX D
MODIFIED SHELTER, ELECTRICAL EQUIPMENT S-250/G

D-1. General

This appendix describes the modifications made to the S-250/G shelter to provide a transportable facility for Test Set, Flight Line AN/ALM-154. Refer to Appendix A for a listing of manuals that cover the basic shelter and components thereof.

D-2. Purpose and Use

The modified S-250/G shelter provides a transportable facility for flight line maintenance of QUICK LOOK II Emitter Identification-Location System.

D-3. Technical Characteristics

a. Power Requirements

Type..... Five wire, three phase, 50 amperes on each phase
Frequency..... 60 Hertz
Voltage ..... 120/208 vac

b. Shelter Dimensions

Length ..... 147 inches
Width ..... 87 inches
Height..... 83 inches
Weight (approximate) ..... 1300 pounds

c. Outlets

Convenience 7
Convenience (External)..... 3
Fan 1
Heater 2

d. Floodlights (External). 2

e. Emergency Lighting

(Battery) 1

f. Circuit Breakers

60 Amperes..... 1 (3 Ganged)
20 Amperes..... 6
15 Amperes..... 1

g. Air Conditioner ..... 300 Watts

D-4. Items Comprising an Operable Equipment

Quantity	Item	Illustration
	Test Set, Flight Line AN/ALM-154 Consisting of:	
2	Panel, Maintenance-Operator C-9633/UKY-23 (Unit 1, Unit 3)	Fig. 3-2
1	Display Terminal, Systematics General T-5145 (HP2648A) (Unit 2)	Fig. 3-2; F, D-1 General T-5145 (HP2648A) (Unit 2)
1	Recorder-Reproducer, Magnetic Tape RD-392/U or RD-392A/U (Unit 4)	Fig. 3-2
1	Interface Unit J-3238/ALM-153 (Unit 5)	Fig. 3-2
1	Simulator, Intercept Receiver Group SM-701/ALM-154 (Unit 6)	Fig. 3-2; A, D-1
1	Panel Maintenance-Operator Control C-9632/ALM-153 (Unit 7)	Fig. 3-2
1	Modified Shelter S-250 (Unit 8)	Fig. 3-2, D-1
1	Interconnect Cable Group	
1	Multimeter Test Set AN/USM-223A	Fig. 3-2
1	Power Supply PP-2953/U	Fig. 3-2; F, D-1
1	Microphone-Headset, Model H-157/A1C	
1	Power Entrance Box	C, Fig. D-1
1	Distribution Box	C, Fig. D-1
1	Receiver-Transmitter, Radio RT-524A/VRC	Fig. 3-2; A, D-1
1	Antenna AS-1729C/VRC	F, Fig. D-1
1	Heater/Air Conditioner	B, Fig. D-1
1	Electric Heater, Singer	F, Fig. D-1
]	Microphone, Dynamic M-80/U	
1	Telephone Set TA-312/Pt	
2	Floodlight Adapter Kit Assembly	E, Fig. D-1
1	Chair, Typist	A, Fig. D-1
1	Hammer, Sledge, 8 lbs.	E, Fig. D-1
1	Fire Axe	C, Fig. D-1
1	First Aid Kit	A, Fig. D-1

Quantity	Item	Illustration
1	Pencil Sharpener	B, Fig. D-1
1	Emergency Light, Exide Miniguard 214C	A, Fig. D-1
1	Clock, 24 Hour, Chelsea	A, Fig. D-1
1	Fire Extinguisher	A, Fig. D-1
1	Sling Kit	
1	Dust Pan	
1	Brush, Hand	
1	Ground Rod w/strap	
1	Box, Tape (Lab made)	
4	Reel, Cable (Lab made)	
1	Ladder, Boarding MX-3543/G	
1	Shelter Tie-down Assembly	
1	Rack 4-foot	
	Lighting Fixtures, Benches	
2	Padlocks, Keyed	
2	Padlocks, Keyless	
5	Security Lock Combination	
2	Ash Trays	
1	Coat Hook	
2	Creeper	
4 (approx.)	Lamps, Fluorescent	

D-5. Description

a. Exterior.

(1) *Front*. Matching Unit-Base, Antenna MX-6707/VRC for Radio Receiver AN/VRC-46 and an air screen filter are located on the exterior front panel.

(2) *Roadside*. Two hinged cable adapter assemblies are mounted on the roadside panel. Retaining clips are located below the interface connector panel for securing the power and communication cables. A cover plate assembly is located on the roadside wall for interfacing of cable assemblies with Interface Unit J-3238/ALM-153. An adapter mount assembly for spotlight support is attached to the upper wall.

(3) *Rear*. An air conditioner is mounted on the left panel adjacent to the rear door. A light panel adapter mount assembly plate is located on the upper right wall. The power entrance panel is located to the right of the rear door, and consists of a covered duplex convenience outlet, ground lug connector, and a 120/208 V 60 Hz power cable connector.

(4) *Curbside*. Two hinged cable adapter hook assemblies are mounted on the curbside panel. A light adapter mount assembly plate for installing the spotlight is attached to the curbside panel with a 60 Hz external covered convenience outlet.

b. Interior. Two sets of fluorescent 20-watt lamps with starters are mounted on the ceiling.

(1) *Front* (F, fig. D-1). Two rack mounted assemblies run the length of the shelter. A fire extinguisher is attached to the floor on the lower wall.

(2) *Curbside* (E, fig. D-1). One formica 2 x 2 desk shelf is bolted and hinged to the curbside wall. Mounted on the underside of the shelf is a removable light adapter assembly and adapter plate. Two sets of 60 Hz single phase outlets are located on the power duct along the top of the curbside panel (fig. D-2). A sledge hammer is stored and mounted to the rear of the curbside wall. A wooden storage drawer is located below the desk shelf.

(3) *Roadside (*B, fig. D-1). A first aid kit, 24 hour mechanical clock, and an emergency lighting unit are mounted on the roadside wall. A removable cable assembly adapter panel is located in the middle of the roadside panel. A bench extends 6 feet from the front wall, under the bench are two wooden storage drawers and a storage cabinet. The upper wall has a power duct with a 20 ampere circuit for the air conditioner (fig. D-2). Two sets of 60 Hz single phase outlets are located on the top of the roadside panel.

(4) *Rear* (C, fig. D-1). A door is located in the center with a removable screened ventilation panel.

A fire axe is mounted and stored on the lower door. A circuit breaker box with a 60 amp fuse and 9 individual circuit breakers are mounted on the left side. The air conditioner with controls for heat or air conditioning is mounted on the right side. A power duct containing duplex outlets, off-on light switches with black-out control switches are located on the top of the rear panel (fig. D-2).

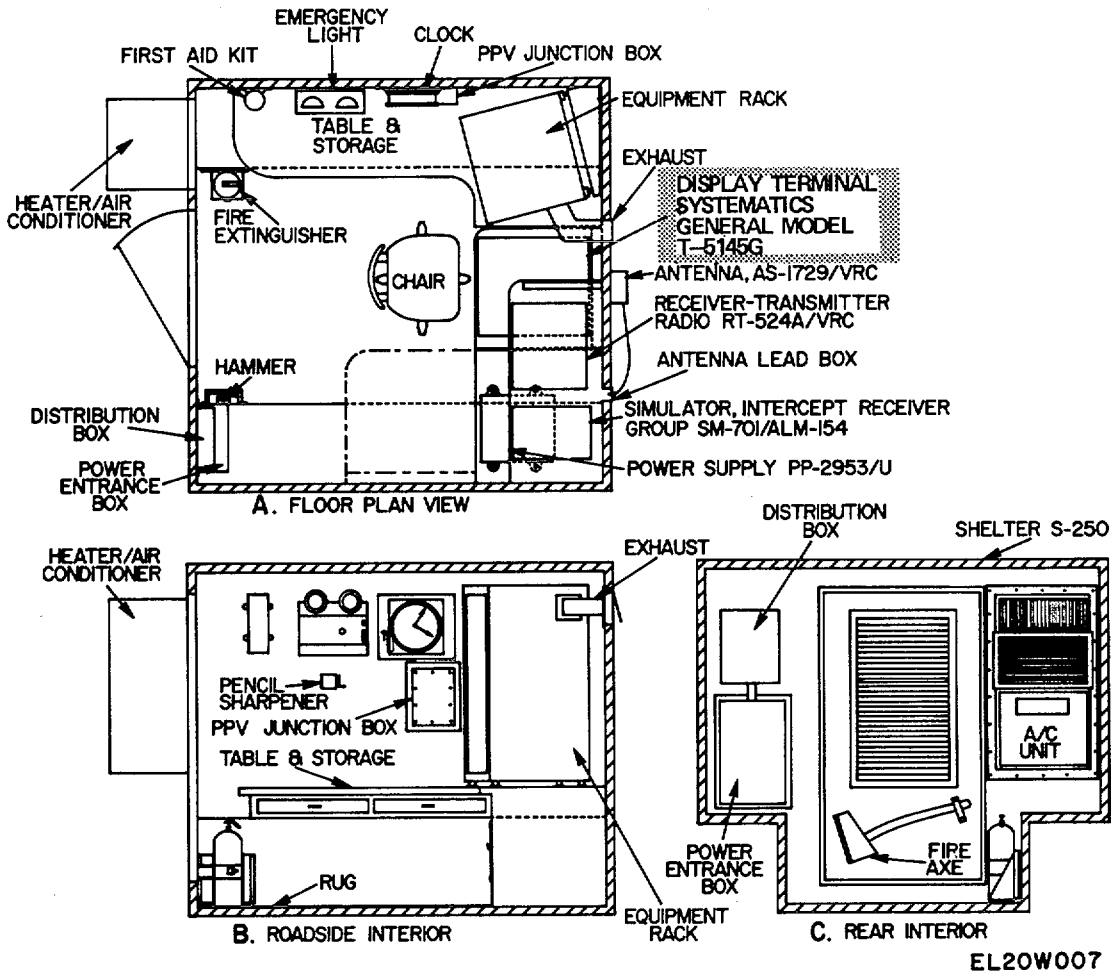

Figure D-1. (1) Modified Shelter, Internal Views (Sheet 1 of 2).

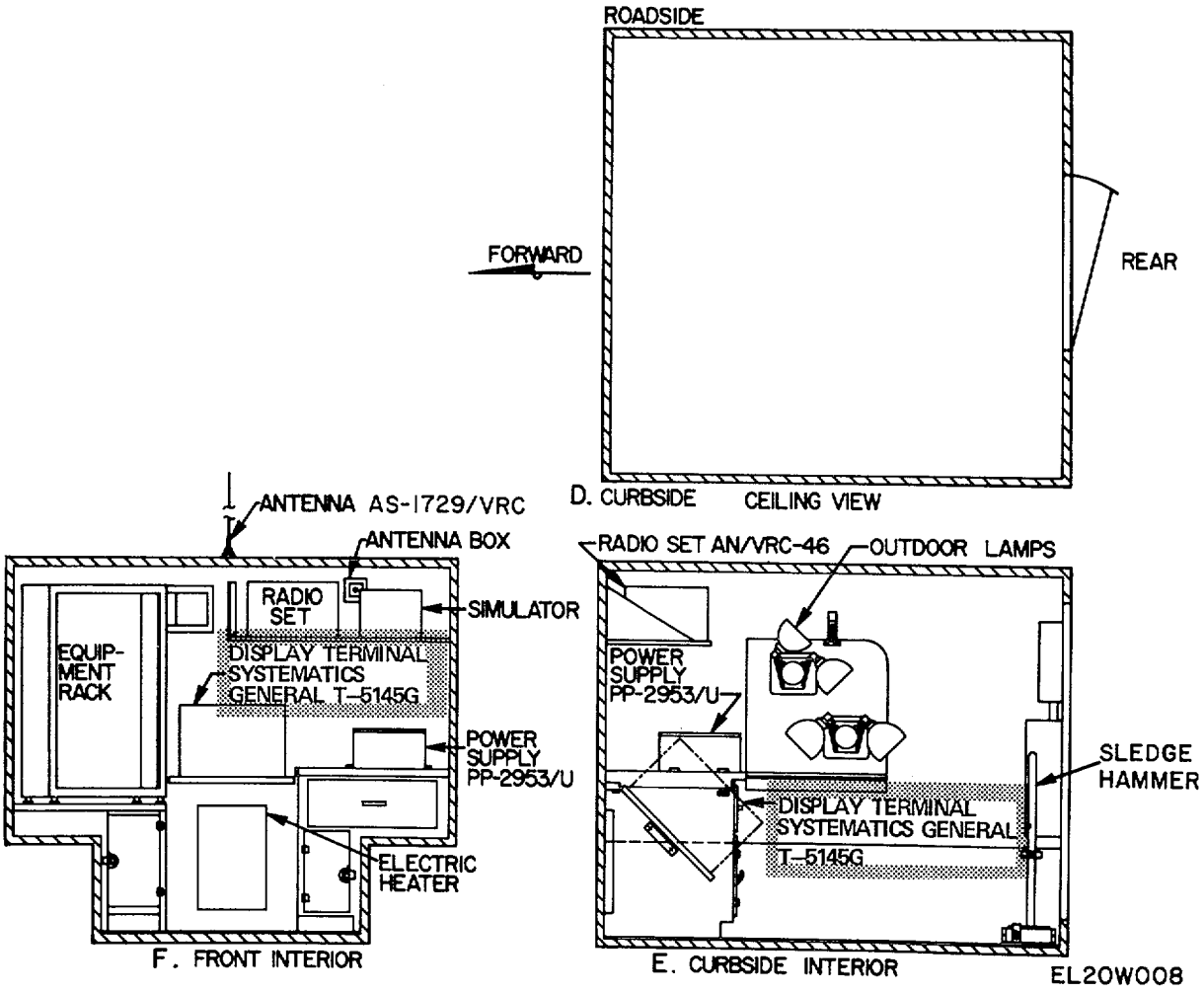

Figure D-1. (2) Modified Shelter, Internal Views (Sheet 2 of 2).

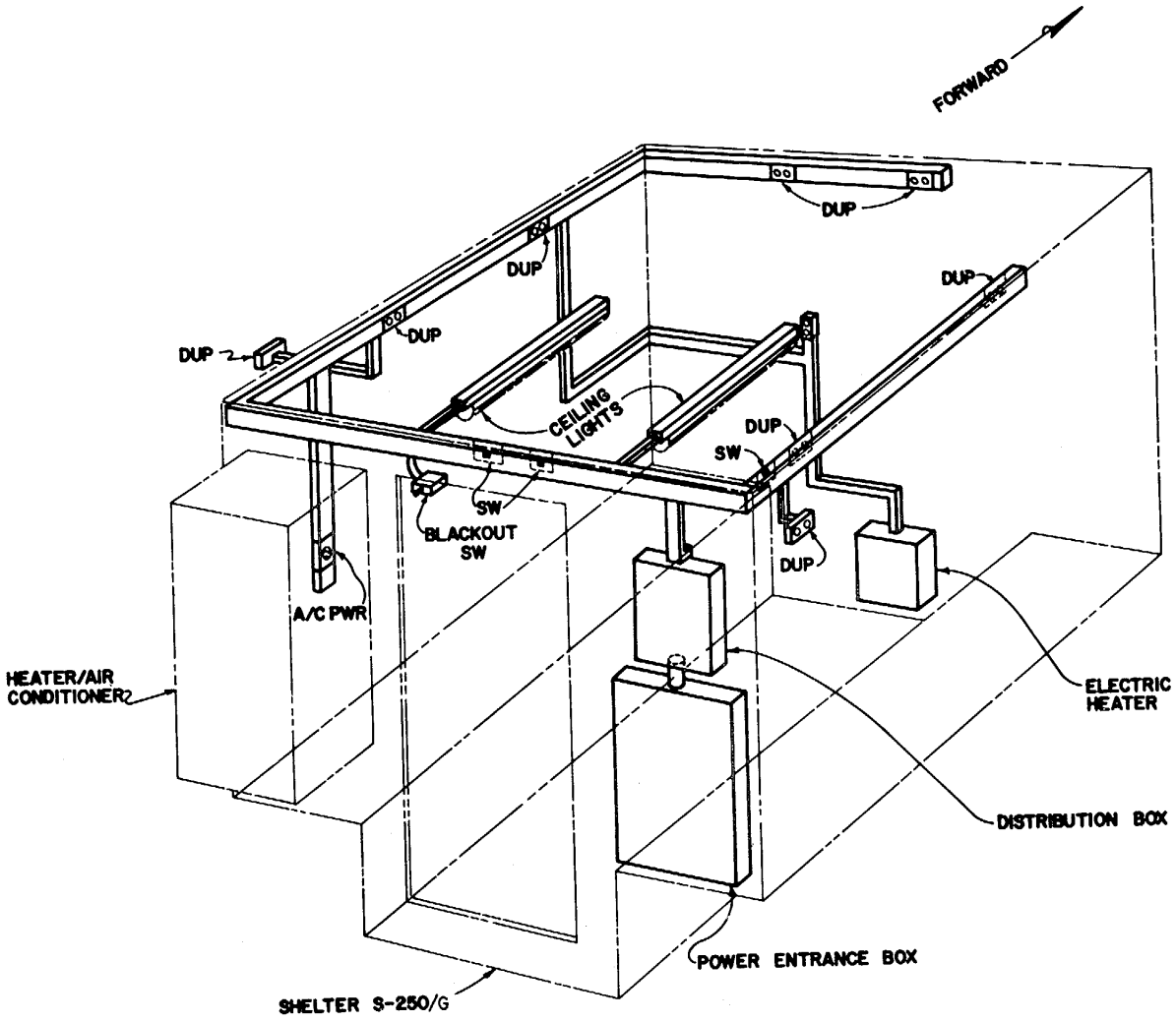

Figure D-2. Modified Shelter, Power Receptacles and Duct Locations.

D-6. Power Connection

Refer to the Premission (Preflight) Operation of Test Set, Flight Line AN/ALM-154 instructions in TM 11-5895-955-10-1 which includes instructions for connecting the shelter to the power unit.

D-7. Power Cables

The shelter is equipped with a 50-foot power cable and a 10-foot pit tail extension cable for interconnection with Generator Set, Gasoline Engine, Trailer Mounted PU-620/M. The pig tail leads are connected to the generator as follows:

Color	Connection
White	Neutral
Black	Phase 1
Red	Phase 2
Green	Phase 3

D-8. Loading and Unloading the Shelter

Refer to TB 750-240 for detailed loading, securing and unloading procedures.

D-9. Removal and Replacement of Fluorescent Light Fixtures

WARNING

115 Vac present when power is applied to this assembly. Death of personal injury may result if operating personnel fail to observe safety precautions.

NOTE

The fluorescent light fixtures are fabricated as part of the power duct. The radio frequency filters are sealed units; they are not repairable and are replaced as a complete unit.

a. Place the switch in the OFF position; remove the light shield and fluorescent lamp.

b. Carefully pry off the associated power duct cover.

c. Tag and assemble wires from the defective component and remove the defective component.

d. Replace the defective component in the power duct and reconnect wires.

e. Replace the duct cover, fluorescent lamp and light shield.

D-10. Replacement of Fuse Links

WARNING

115 Vac present when power is applied to this assembly. Death or personal injury may result if operating personnel fail to observe safety precautions.

a. Open the switch by pulling the handle out.

b. Open the panel door and remove the fuse cartridge from its socket.

c. Check fuse for continuity. If fuse is open perform d through g below. If fuse has continuity replace its socket and check remaining fuses.

d. Unscrew the ring of the fuse cartridge and remove ring and lock assembly.

e. Remove fuse link from the assembly and install new link with a screwdriver.

f. Replace the fuse link assembly in the cartridge and screw ring on the cartridge.

g. Replace the fuse in its socket and close panel door.

D-11. Removal and Replacement of Air Conditioner Filter

When an air conditioner filter must be replaced or removed for cleaning perform the following:

a. Removal.

(1) 'Loosen the wingnuts holding the filter box in place and remove the cover.

(2) Loosen the wingnuts holding the bracket and remove the bracket.

(3) Slide the filter out of the filter box.

b. Replacement.

(1) Place the filter on the rear bracket.

(2) Place the front brackets under the filter and secure the bracket with the wingnuts.

(3) Place the filter box cover in position over the box opening and secure the cover with the wingnuts removed.

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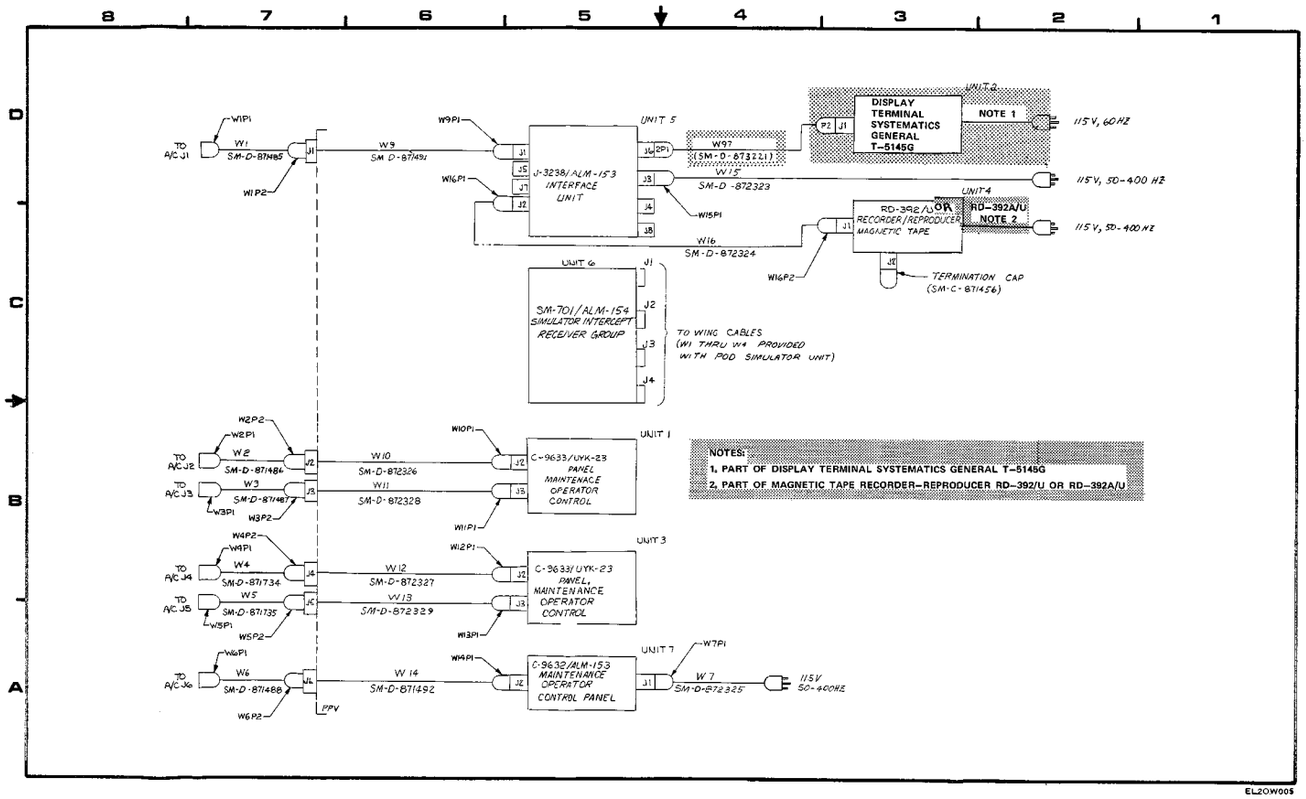

Figure FO-7-1. Test Flight Line Cable Diagram.

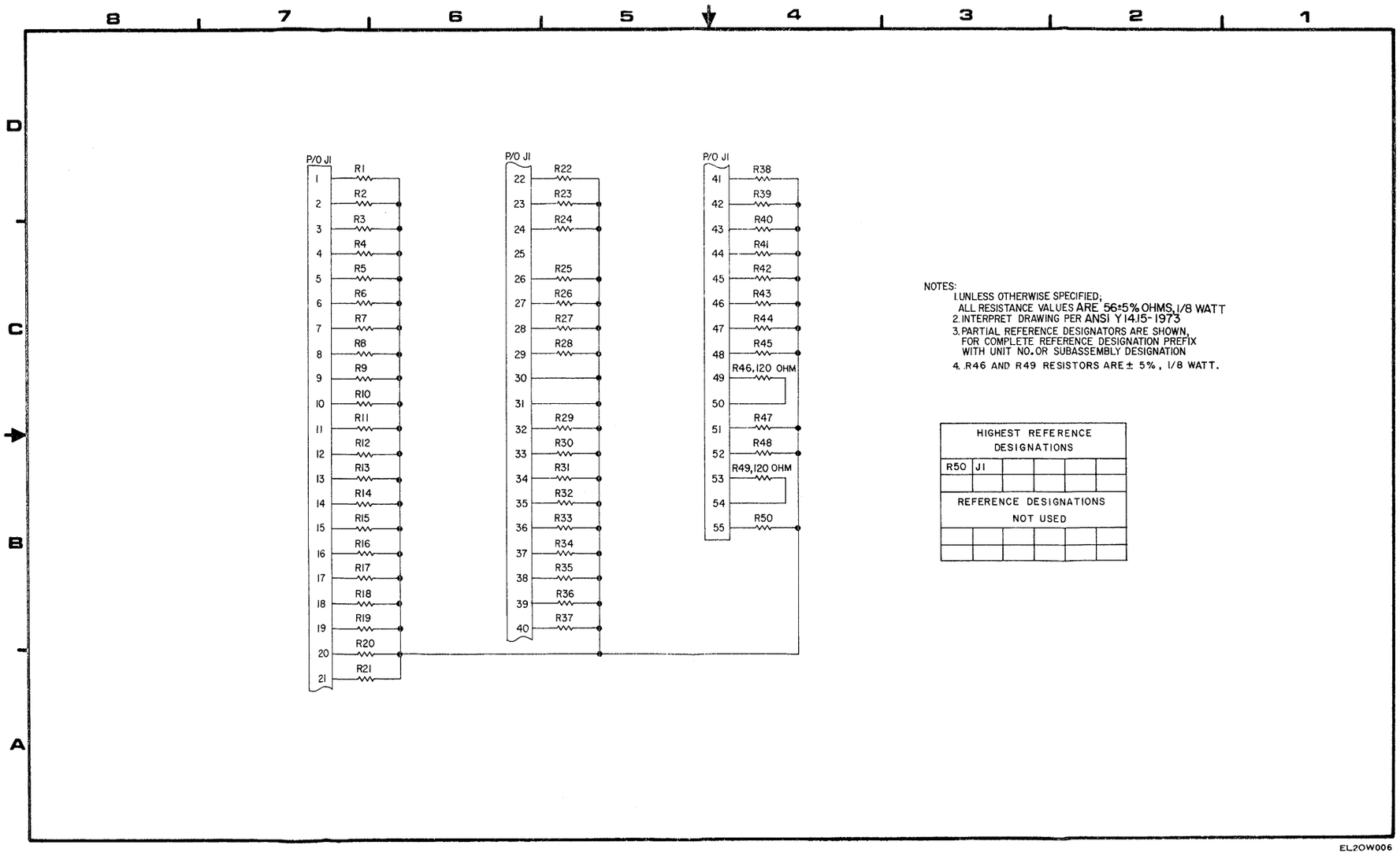

Figure FO-7-2. Resistor Termination Assembly SM-C-871456 Schematic Diagram.

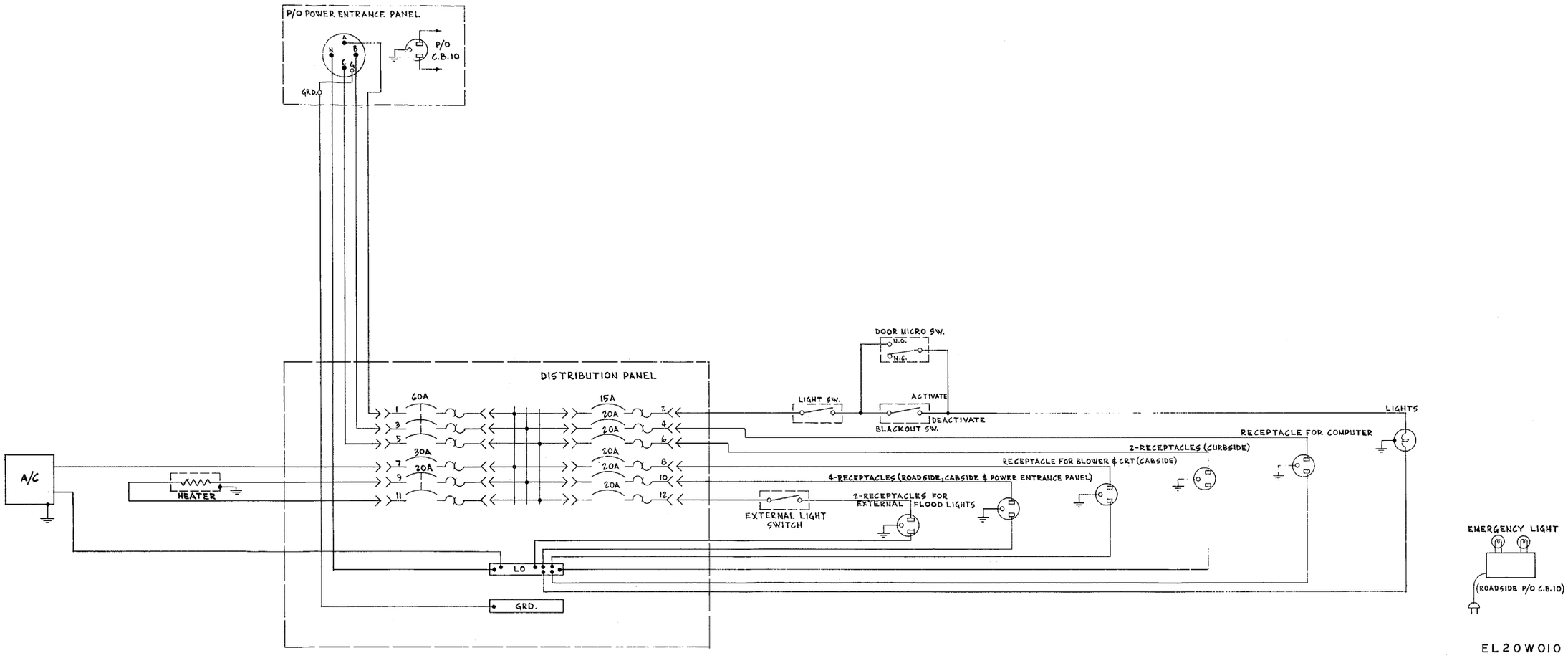

Figure FO-7-3. AC Distribution.

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