TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL,

DIRECT SUPPORT, AND GENERAL SUPPORT

MAINTENANCE MANUAL

FOR

COMMUNICATIONS CENTRAL

AN/TSC-75A

NSN 5895-00-163-9026

This publication is not available through AG Publications Center. Requisition through Commander, US Army Electronics Materiel Readiness Activity, Vint Hill Farms Station, Warrenton, VA 22186.

This manual supersedes TM 32-5895-222-MSP, December 1973

HEADQUARTERS, DEPARTMENT OF THE ARMY

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

FOR

COMMUNICATIONS CENTRAL AN/TSC-75A
NSN 5895404 63-9026

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 Electronics Materiel Readiness Activity, ATTN: SELEM-ME-E, Vint Hill Farms Station, Warrenton, Virginia 22186. A reply will be furnished to you.

This manual supersedes TM 32-5895-222-MSP, December 1973

LIST OF ILLUSTRATIONS

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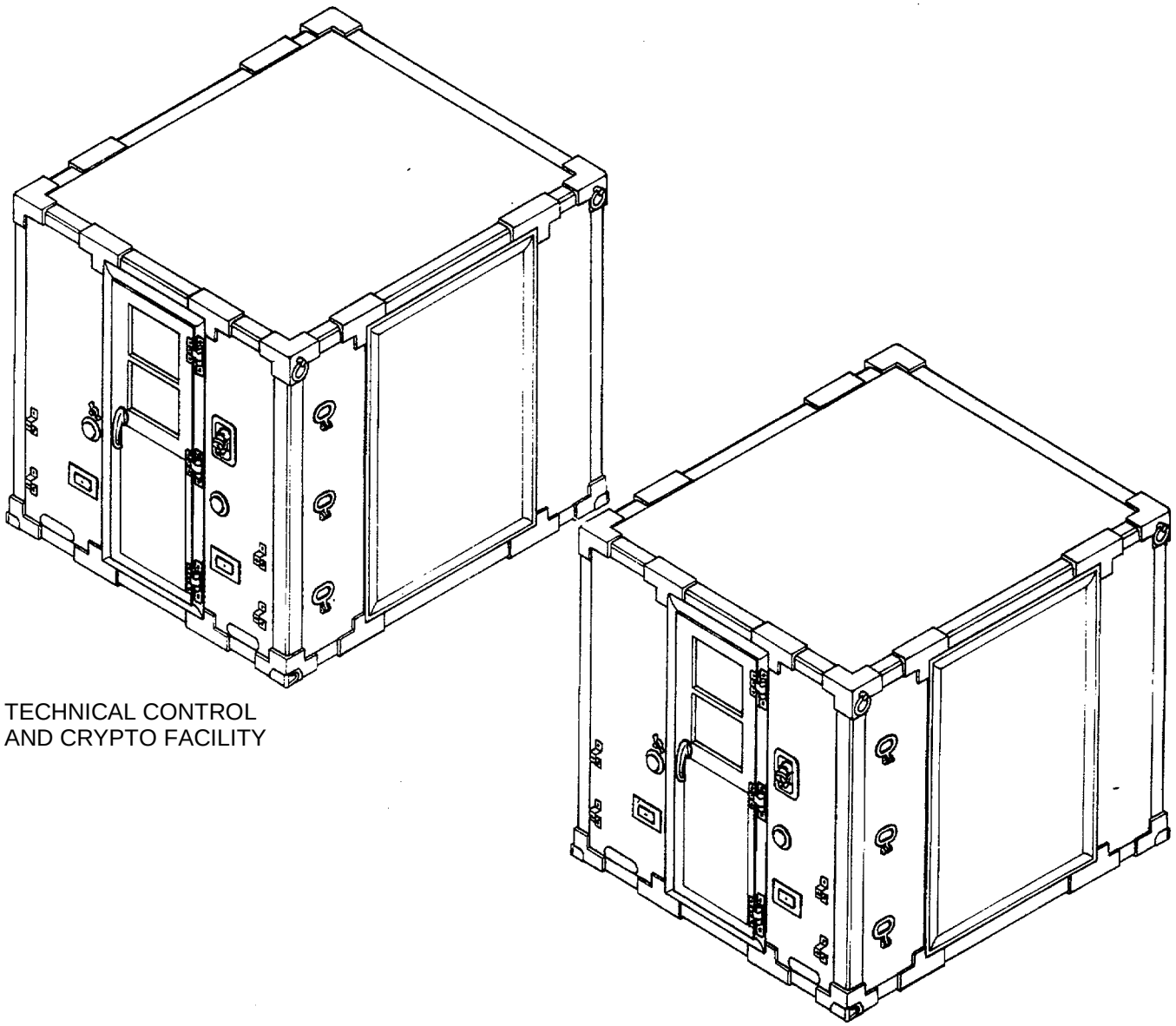


Figure 1-1. Communications Central AN/TSC-75A

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1 SCOPE. This manual provides operator/crew, organizational, direct support, and general support instructions for the installation and maintenance of the Communications Central AN/TSC-75A (figure 1-1).

1-2 MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-3 DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. The AN/TSC-75A shall be destroyed to prevent enemy use in accordance with instructions provided in TM 750-244-2, Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

1-4 ADMINISTRATIVE STORAGE. Administrative storage shall be in accordance with instructions provided in TM 740-90-l, Administrative Storage of Equipment.

1-5 CALIBRATION. No calibration of the equipment in this group is required.

1-6 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S). If your AN/TSC-75A needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't 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 us at US Army Electronics Materiel Readiness Activity, ATTN: SELEM-ME-F, Vint Hill Farms Station, Warrenton, Virginia 22186. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-7 PURPOSE AND USE. The AN/TSC-75A is a transportable communications central designed to send and receive signals over five external four-wire circuit lines individually or simultaneously. The AN/TSC-75A is normally deployed as part of a large communications complex (figure 1-2), however, it is capable of independent usage when supported by additional equipment specified in the technical manual for the basic S-389/MSA-34, Shelter, Electrical Equipment.

1-8 DESCRIPTION.

a. General. The AN/TSC-75A consists of two facilities: the Message Processing Facility and the Technical Control and Crypto Facility. The two facilities, each housed in a shelter, must be interconnected for operation in a multi-shelter installation as shown in figure 1-3. The Message Processing Facility contains five teletypes. The Technical Control Crypto Facility contains the Red patch rack for use in selection of teletype equipment, the Black patch rack for selection of signal processing equipment including analog to digital and digital to analog converters, four racks v containing the communications security equipment for signal encryption, a work bench, and a work table.

b. Major Components. The following paragraphs describe the major items of equipment comprising the AN/TSC-75A.

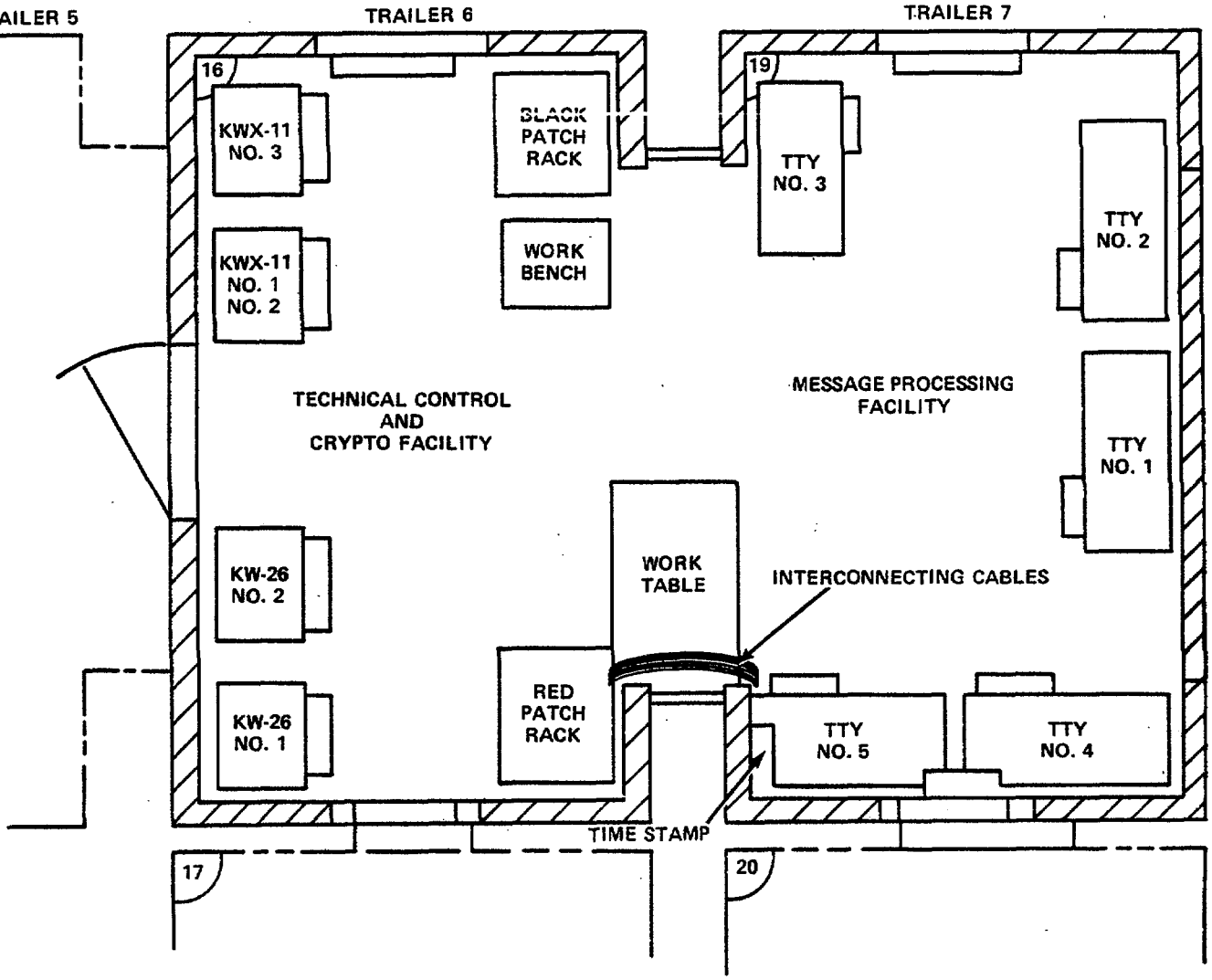
(1) Teletype Equipment. The AN/TSC-75A teletype equipment consists of five Teletype AN/UGC-49 (see figures 1-4 through 1-7). See the Teletype Corporation Manual for additional information.

(*2) Red Patch Rack.* The Red patch rack (see figures 1-7 through 1-9) contains the following equipments.

(*a) DC Power Supply, 6V.* The dc power supply consists of three Lambda Model LM-C-6 power supplies, one for +6V, one for -6V and one for spare to provide +6V and -6V dc through ballast lamps to the crypto equipment.

(*b) Red Patch Panel* The Red patch panel, contains, on the left half of the panel, three jacks in each send and receive signal line to the teletype equipment. The jacks provide the operator with capability to monitor the line or to quickly insert or remove additional or alternate equipment in the line. The jacks on the right half of the panel are not connected.

(*c) Fuse Panel* The fuse panel, contains individual fuses to protect ballast lamps and +6V and -6V circuits from overloads.



NOTE: 16 and 19 indicate shelter units' positions in a 21 shelter configuration.

Figure 1-2. AN/TSC-75A Configuration

(*d) Ballast Lamp Panel.* The ballast lamp panel, contains individual ballast lamps in the +6V and -6V dc circuits to provide constant current over a specified range of variation in applied voltage.

(e) S*afes* Two safes provide protection for classified documents when not in use.

(f) Storage Cabinet and Storage Drawer. The storage cabinet and storage drawer provide a place for keeping manuals, records, and cables when not in use.

(3) *Black Pitch Rack.* The Black patch rack contains the following equipments:

(*a) Isolation Relay Panel.* The isolation relay panel contains an RD-150A amplifier and relay for each send line to amplify and interpret pulses from the teletype and crypto equipment and send corresponding rectangular pulses to the exit line. The panel also contains a relay for each receive line to interpret pulses from the entrance line and send corresponding rectangular pulses to the crypto and teletype equipment.

(*b) DC Power Supply, 120V.* The power supply provides 120V dc to the send line when the corresponding line battery select switch is in the ON position.

(*c) DC Power Supply, 6V.* The dc power supply consists of three supplies. One is for +6V, one is for -6V, and the other is for spare to provide +6V and -6V dc through ballast lamps to the crypto equipment.

(d) Black Patch Panel The Black patch panel on the left half contains three jacks in each send and each

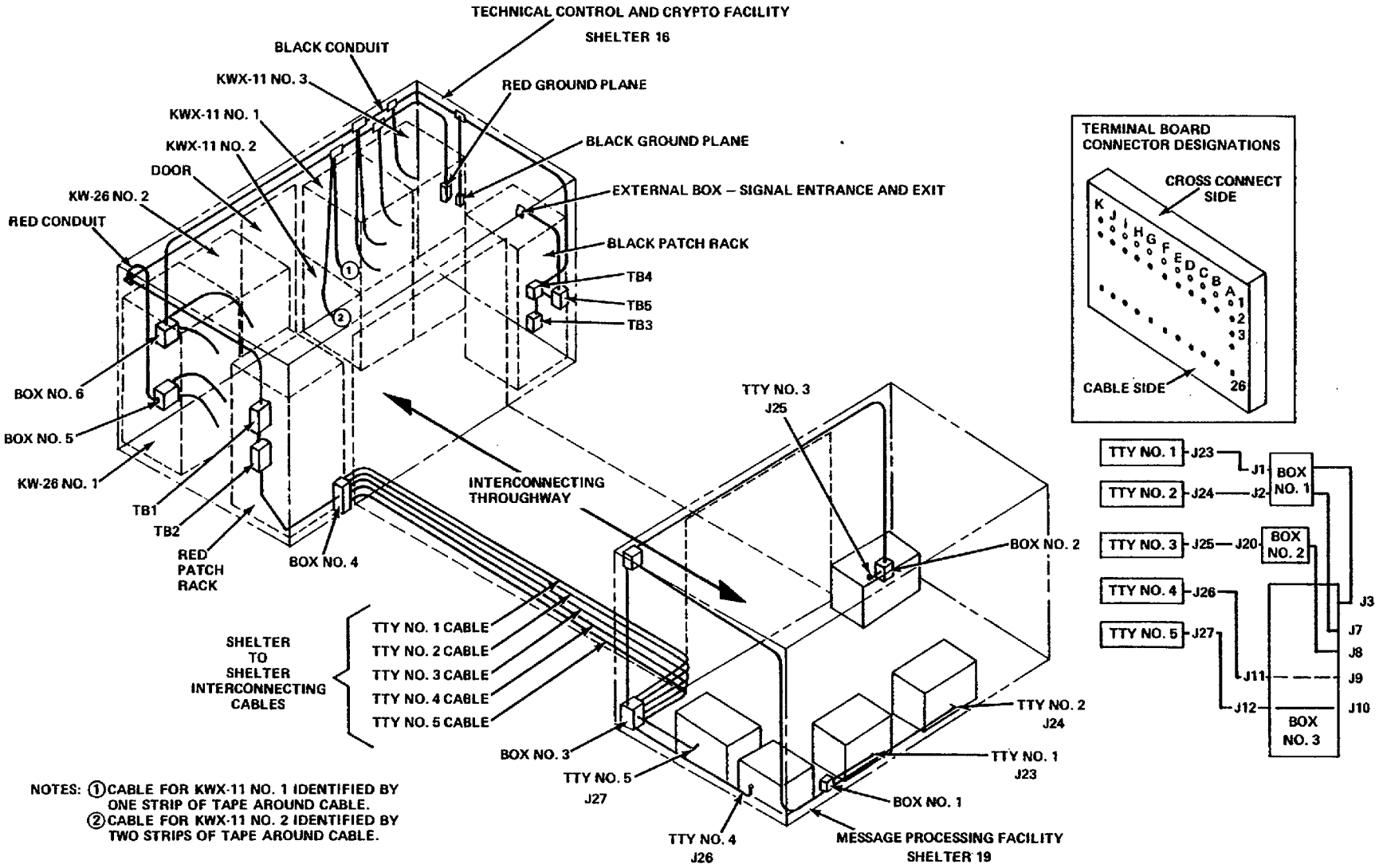
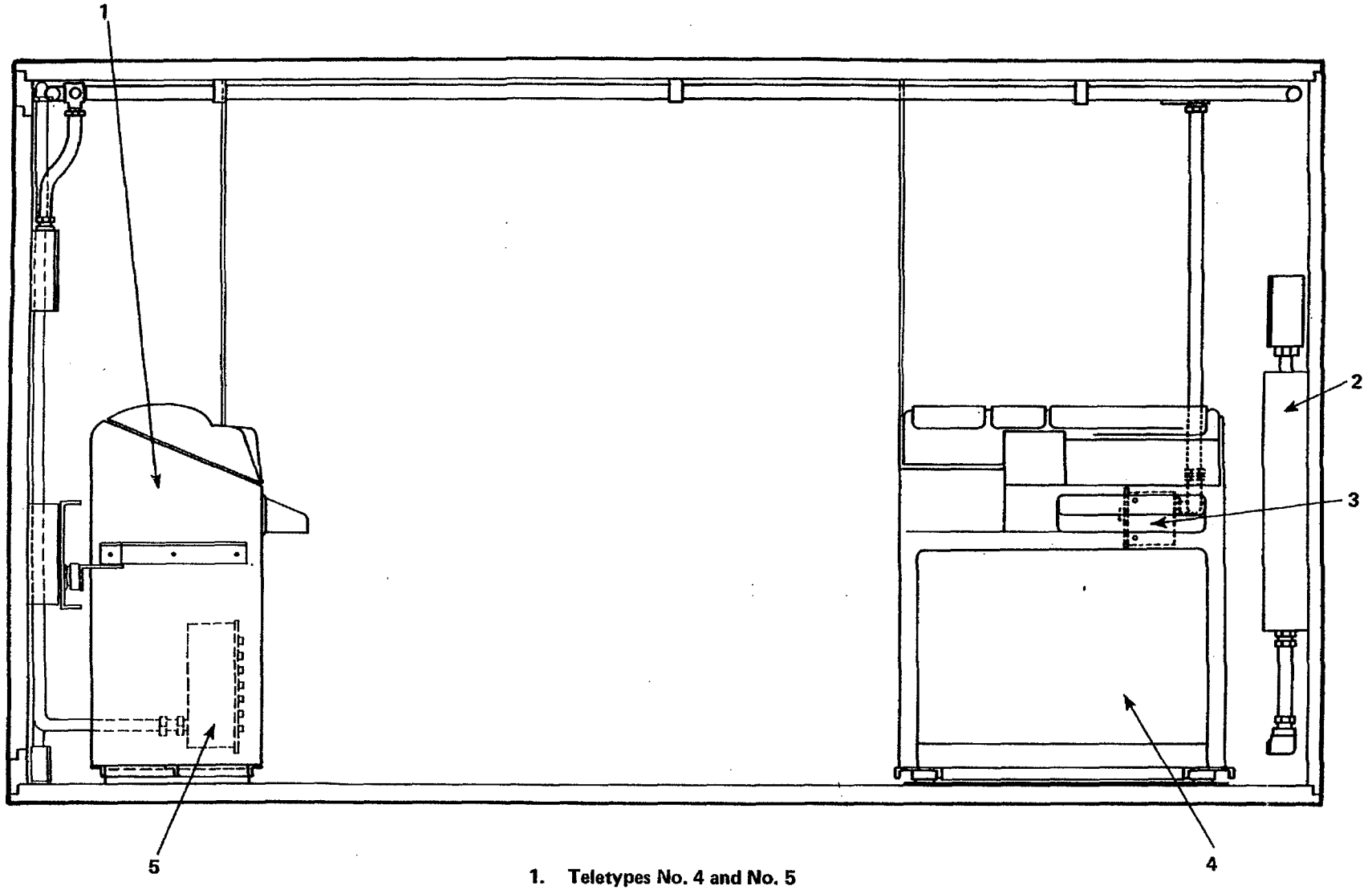
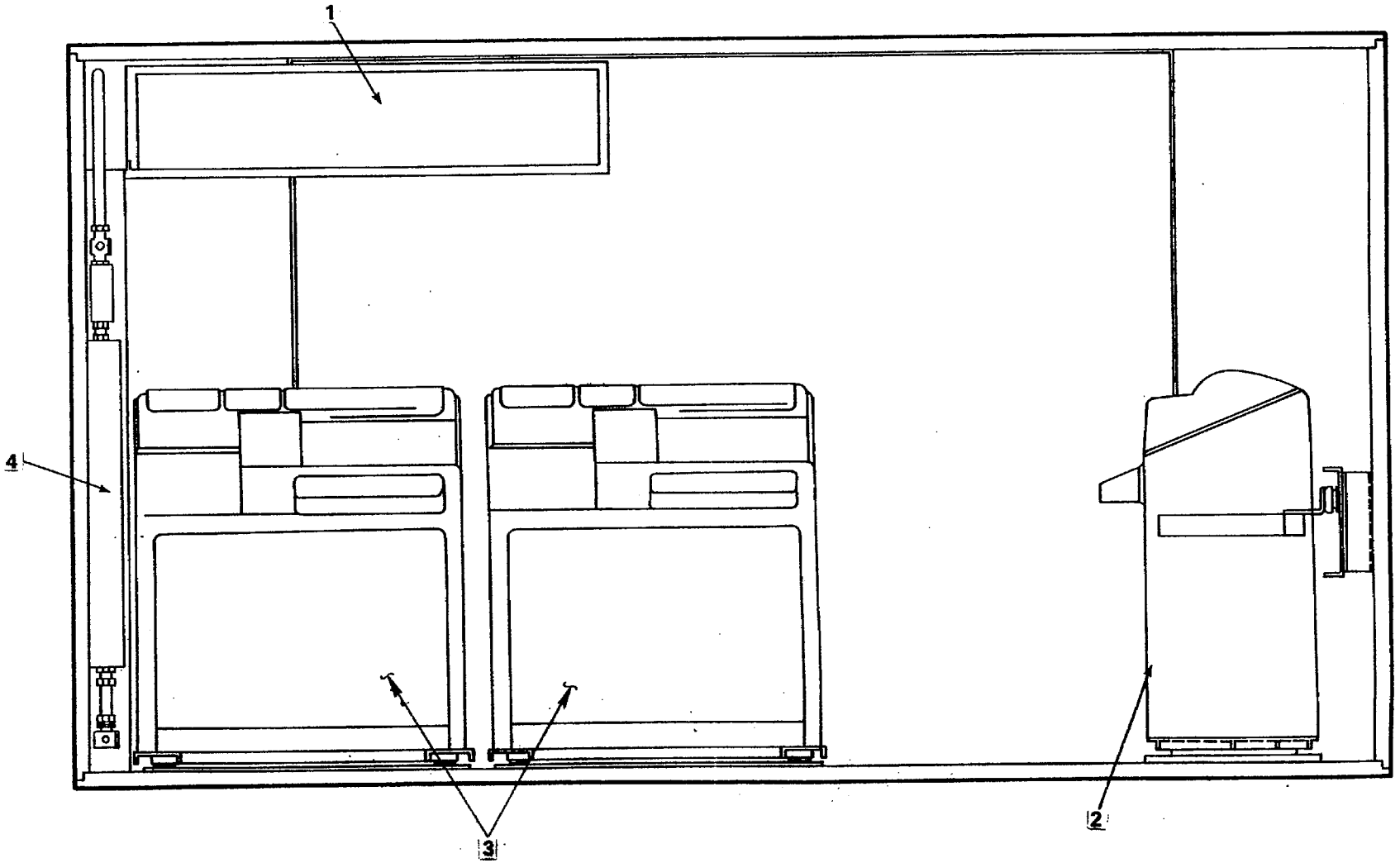


Figure 1-3. AN/TSC-75A Equipment Signal Interconnecting Cables



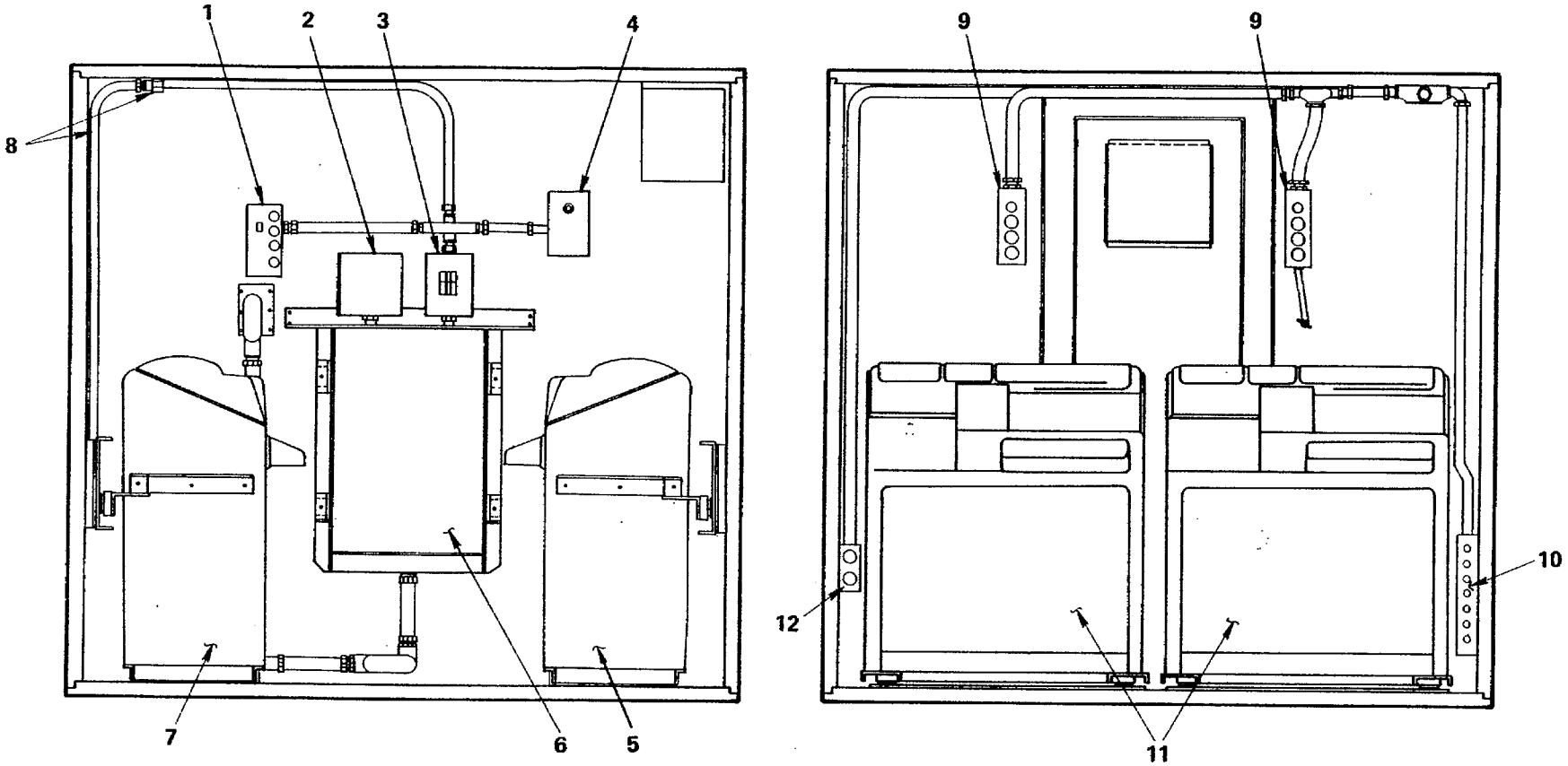
1. Teletypes No. 4 and No. 5
2. RFI Filter
3. Junction Box No. 2
4. Teletype No. 3
5. Junction Box No. 3

Figure 1-4. Message Facility Component Locations - Teletypes No. 3, 4, and 5



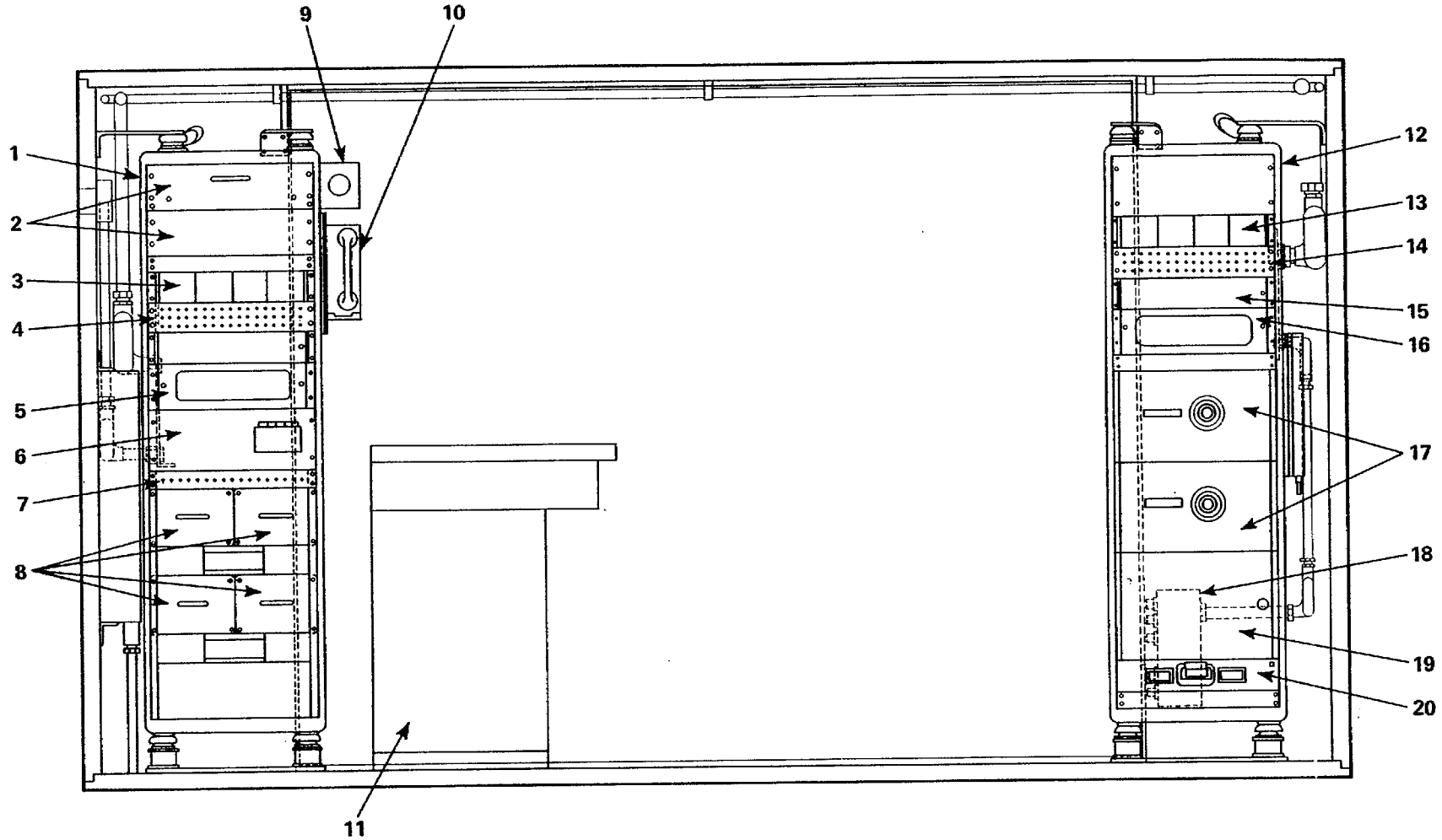
1. Storage cabinet
2. Teletypes No. 4 and No. 5
3. Teletypes No. 1 and No. 2
4. RFI Filter

Figure 1-5. Message Facility Compound Locations



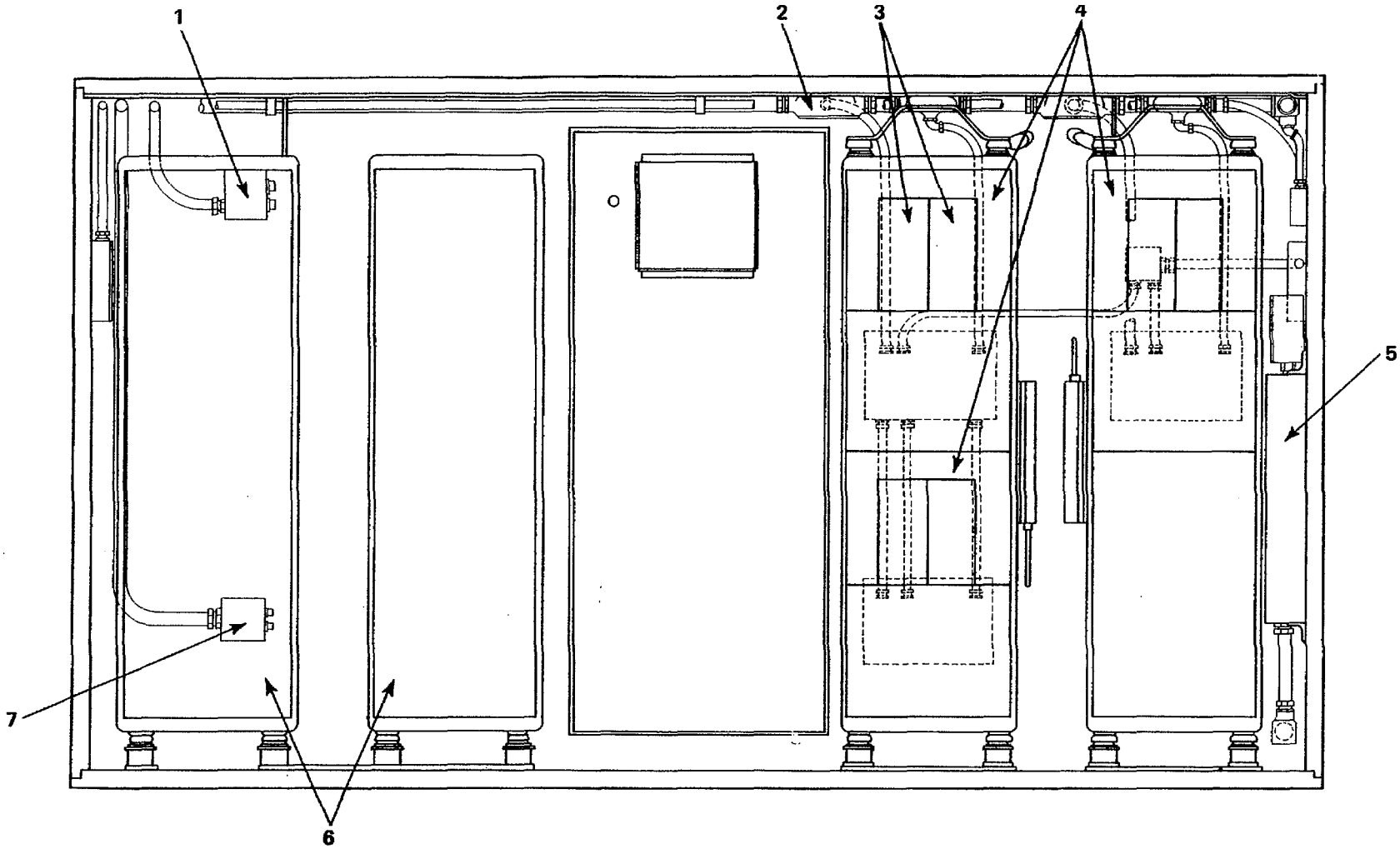
1. 1 10 VAC receptacles, blackout switch, and receptacle
2. Filter discharge unit
3. Lighting and A, B, C phase circuit breakers
4. Blackout receptacle
5. Teletypewriters No. 1 and No. 2
6. RFl filter unit
7. Teletypewriter No. 3
8. Conduit
9. 1 10 VAC receptacles and blackout receptacles
10. Junction box
11. Teletypewriters No. 4 and 5
12. Junction box

Figure 1-6. Message Facility Component Locations



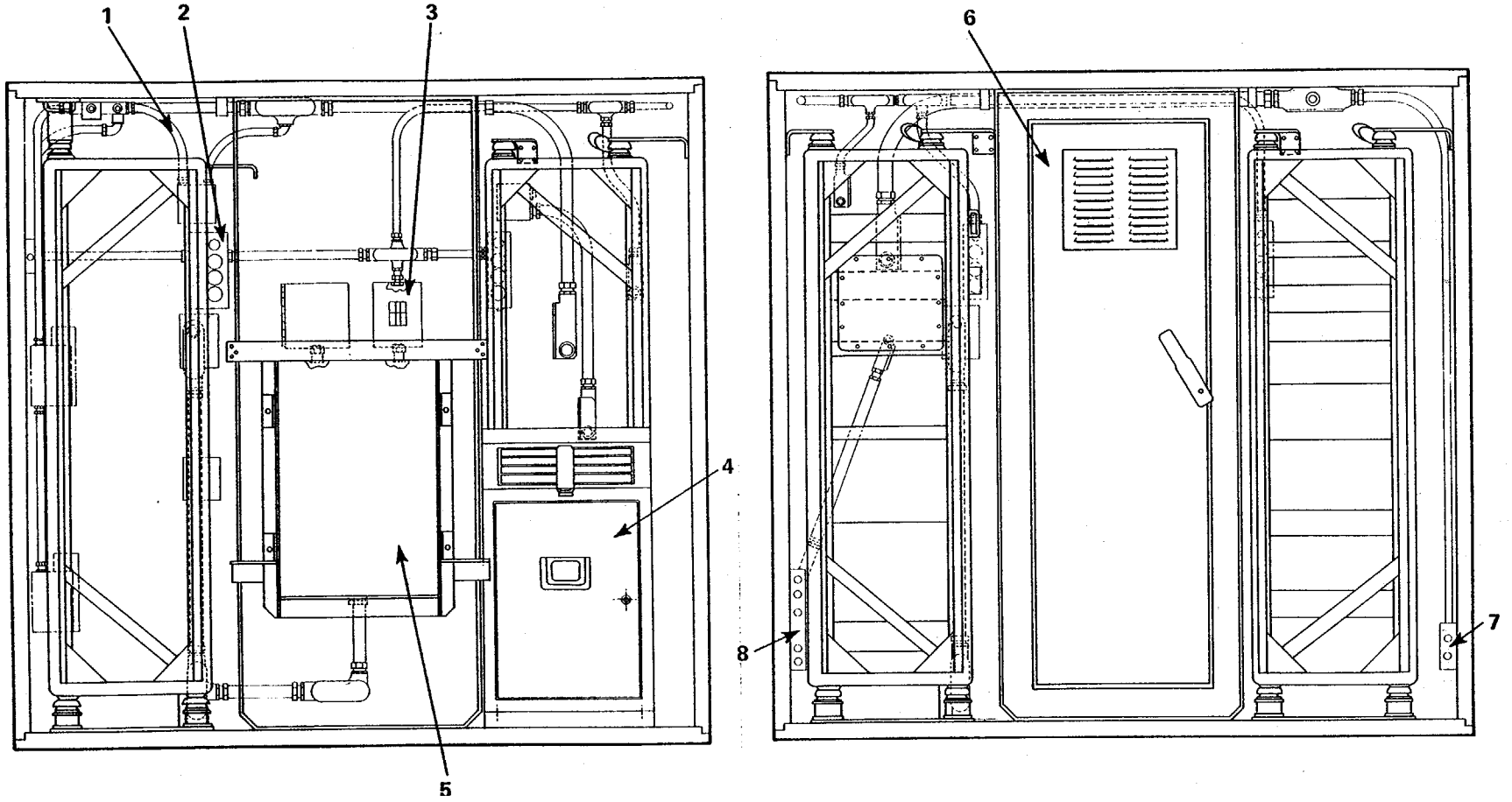
1. Equipment rack No. 1
2. Relay panel
3. Power supply
4. Black patch panel
5. Ballast panel
6. Switch panel
7. TH-22 patch panel
8. Telegraph converter TH-22
9. Voice security light
10. Telephone
11. Workbench
12. Equipment rack No. 2
13. Power supply
14. Red patch panel
15. Fuse panel
16. Ballast lamp panel
17. Safe
18. Junction box No. 4
19. Storage cabinet
20. Drawer

Figure 1-7. Crypto Facility Component Locations - Equipment Racks No. 1 and 2



1. Junction box No. 6
2. Conduit
3. KW-7(2)
4. KWX-11(3)
5. RFI filter
6. KW-26 No. 1 and No. 2
7. Junction box No. 5

Figure 1-8. Crypto Facility Component Locations



1. Conduit
2. 1 10 Vac receptacle
3. AO, BO, CO, B.O. Circuit Br.
4. Work bench
5. RFI Filter
6. Rear shelter door
7. Junction box 5
8. Junction box 4

Figure 1-9. Crypto Facility Locations - Electrical Ducts and Filter Unit

receive signal line between the crypto equipment and isolation relays to provide the operator with capability to monitor the line or quickly insert or remove additional or alternate equipment in the line. The right half of the panel contains three jacks in each send and each receive signal line between the isolation relays and the exit/entrance box. They provide the operator with capability to monitor the line or quickly insert or remove a terminal telegraph converter TH-22/TG, to convert analog (tone) signals to digital (pulse) signals or digital signals to analog signals as required.

(*e) Fuse Panel.* The fuse panel contains individual fuses to protect ballast lamps and +6V and -6V dc circuits from overloads.

(f) Ballast Lamp Panel. The ballast lamp panel contains individual ballast lamps in the +6V and -6V dc circuits. These provide constant current over a specified range of variations in applied voltage.

(g) Line Loop Battery Select Panel. The line battery select panel contains a power switch in each of the five send lines. Each switch in the OFF position permits power to be supplied by the corresponding external line. The operator can, when power is not being supplied by the external line, apply 120V dc by placing the switch in the ON position.

(*h) TH-22 Patch Panel.* The TH-22 patch panel contains four input and output jacks connected to each of the four Terminal Telegraph Converters TH-22/TG, to provide quick insertion or removal from the lines as required. The operator can connect these jacks to the jacks on the right half of the Black patch panel by the telephone plug-equipped patch cords.

(*i) Terminal Telegraph Converters.* Each of the four Terminal Telegraph Converters TH-22/TG will convert analog (tone) signals to digital (pulse) signals or digital signals to analog signals when patched in to a line through the TH-22 patch panel and the Black patch panel, right half.

(j) Voice Security Light The voice security light signals the operator by flashing when activated by an incoming telephone call.

(*k) Telephone.* The TA-312/PT telephone set which must be plugged into the voice security light is used by the operator to take incoming calls.

(4) Communications Security Equipment. The communications security equipment consists of three KWX-11 signal processors. Each KWX-1 1 includes two KW-7 signal processors for processing signals on lines No. 1, No. 2, and No. 3. Two KW-26 signal processors are used for processing signals on lines No. 4 and No. S when patch cords are not in use.

c. Interconnection of Major Equipment. (See figure 1-3). The two shelters will normally be transported on separate vehicles with all internal interconnecting cables installed. The external shelter-to-shelter interconnecting cables are normally stored in the cabinet in the Red patch rack when not in use.

d. Signal Wiring. The central's signal wiring uses connectors on the equipment ends of the cable runs. The wiring terminates into soldered pair connections at the rear of the two patch panels.

e. Lighting Systems. (See figure 1-10). Fluorescent light units recessed into the ceiling provide interior lighting for both shelters. The lights can be controlled from both ends of the shelters. A blackout lighting system is controlled by door-mounted switches which turn on low-power incandescent lights and turn off the main lights as long as a door remains open. Blackout circuit switches, mounted next to the filter unit in both facilities (figures 1-6 and 1-10) are used to turn the circuit off when desired.

f. Electrical Ducting and Conduit Systems The conduit system in both facilities replaces the ducting of the basic S-389 shelter to better service the teletype and crypto units. The wall-mounted receptacle boxes provide three 110 Vac receptacles and a blackout receptacle. The wiring is routed through the conduit to the circuit breaker box mounted above the filter unit, through the filter and floor ducts, and on to the external power connectors at each end of the shelter. The electrical schematic (FO-1) applies to both shelters.

g. Climate Control. Climate control is provided by air conditioners mounted at the head of the AN/MSA-34 semi-trailers a the OUTS configuration and mounted in the shelter front doorways when deployed independently. Both shelters are provided with inlet and return air ducts located on either side of the shelter at floor level.

h. Additional Equipment Required. Equipment required for operation but not supplied with the central is listed in table 1-1.

1-9 TABULATED DATA. Tabulated data for communications equipment housed in the central are provided in the technical manuals covering the specific components. Overall physical characteristics and power requirements for the

Electrical Equipment Shelter S-389/MSA-34 are as follows:

Weight (approx.)	5,166 lb
Exterior dimensions:	
Length	148 in
Width	92 in
Height	88 in
Cube	693 ft^3
Interior dimensions:	
Length	140 in
Width	82 in
Height	72 in
Cube	518 ft^3
Floor space	80 ft^2
Power requirements	208 Vac, 5060 Hz, 100 A

1-10 ITEMS COMPRISING AN OPERABLE AN/TSC-75A. Components comprising an operable AN/TSC-75A are listed in table 1-2 and in Appendix B of this manual.

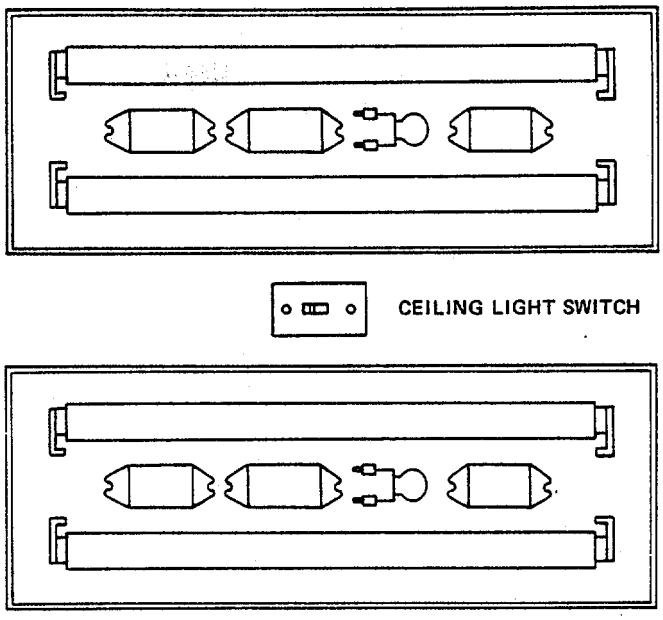


Figure 1-10. Ceiling Lights

Table 1-1. Additional Equipment Required

Quantity	Equipment	Function
2	Generator Set	Used as standby power source if commercial power fails or as primary power source when commercial power is not available
2	Air Conditioner	Used to heat and cool shelters
2	Air Conditioner Mounting Kit	Used to mount air conditioner
2	Power Cable Kit	Used to connect generator to shelter and air conditioner
2	Grounding Kit	Used to ground shelters

Table 1-2. Items Comprising an Operable AN/TSC-75A

NSN	Item	Quantity	Height (in.)	Depth (in.)	Width (in.)	Weight (lb)
	Electrical Shelter Equipment S-389/MSA-34	2				
581540-8796529	Teletypewriter AN/UGC-49	5	38.75	23.75	36	

Table 1-2. Items Comprising an Operable AN/TSC-75A

NSN	Item	Quantity	Height (in.)	Depth (in.)	Width (in.)	Weight (lb)
5830-00-327-5066	Electrical Equipment Rack MT-1579/G (Modified)	6	68	23	20.5	85
	Electronic Teletypewriter Security Equipment KW-7	6			19	
	Electronic Teletypewriter Security Equipment KWX-11	3			19	
	Electronic Teletypewriter Security Equipment KW-26	2			19	
	Power Supply LM-C-V	3			—	
5805-00-340-3559	Power Supply Assembly PP-1 209	2			19	
	Patch Panel, Bendix 4028351-0501	2			19	
	Altered Fuse Panel, Bendix 2003972	2			19	
	Ballast Lamp Panel, Bendix 2002772-0501	2			19	
7110-00-999-0628	Safe PSI-16-2	2			19	
7125-00-990-9948	Storage Cabinet CY-6154	1	12	12	19	
	Storage Drawer	1			19	
	Relay Panel Assembly	1			19	
	Relay Chassis	1			19	
	Panel Switch Assembly	1				19
6645-00-842-2458	Telegraph Converter Terminal TH-22	4				
5805-00-543-0012	Telephone Set TA-312/PT	1	7.75	5	15	9.75
	Work Table	1				
	Rotary Chair	4				

CHAPTER 2

SERVICE UPON RECEIPT AND INSTALLATION

Section I. SYSTEM PLANNING

2-1 GENERAL. Upon receipt, the specific application for which the central will be used should be thoroughly reviewed. When used in an OUTS configuration, the two shelters will be mounted on separate semitrailers within the system. When independently deployed, the two shelters may be transported to the selected site either separately or together. Each shelter requires a 2-1/2 ton or larger truck for movement.

Section II. SITE AND SHELTER REQUIREMENTS

2-2 SITING. Site selection is determined by application. When used in an OUTS configuration, the site must accommodate the multiple semitrailers of the system. When used independently, the site must accommodate the two shelters installed side-by-side. In either case, select a level site with natural drainage. Swampy or spongy ground surrounded by high areas should be avoided. Take advantage of natural conditions in the area. For example, select a site protected by a grove of trees, if possible. Unhindered vehicular access to the site must be provided so that the central can be easily serviced when necessary.

2-3 SHELTER REQUIREMENTS. The two shelters require a minimum 16- by 12- foot site. In an OUTS configuration, power for the central is provided by the complex as it is assembled. When deployed independently, each shelter requires a generator capable of a minimum 10 kW output. If portable generators are not used, the site must have access to commercial power.

Section III. SERVICE UPON RECEIPT OF MATERIEL

2-4 UNPACKING. Remove the waterproof tape surrounding all doors and panels. Open all doors to air out the shelters.

25 CHECKING UNPACKED EQUIPMENT

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF Form 364 Report of Discrepancy (ROD),

b. Check the equipment against the component listing in the operator's manuals and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with paragraph 1-2. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. (Equipment which has been modified will have the MWO number on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWO's have been applied. (Current MWO's applicable to the equipment are listed in DA PAM 310-7.)

Section IV. INSTALLATION INSTRUCTIONS

2-6 TOOLS REQUIRED FOR INSTALLATION . No special tools are required or authorized.

2-7 INSTALLATION INSTRUCTIONS . When the central is deployed as part of an OUTS complex, instructions required for positioning shelters and for connecting power cables are provided in TM 32-5811-021-14. When deployed independently, instructions for installing portable air conditioners and portable power generators with associated power cable kits are provided in TM 32-5410-217-14&P.

a. Shelter Positioning. Position the shelters adjacent to each other. In ground-mounted deployment, level the site or the shelters with blocking.

b. Side Panel Removal. Remove adjacent side panels from both shelters as follows:

(1) Station one person inside the crypto facility and one on the roof above panel.

(2) Loosen tiedown slings (when required).

(3) From inside the shelter, loosen clamps around edge of panel by loosening jam nut on each clamp (figure 2-1).

(4) Rotate all panel clamps 90 degrees to release panel from shelter; retighten screw at each clamp to hold clamps in released position. Have person on roof hold panel in position.

(5) From inside the shelter, push panel outward allowing person on roof to grasp panel. Use standoffs on panel as handholds to lower panel to ground.

(6) Repeat steps (1) through (5) above to remove side panel on message facility.

(7) Store the removed panels off the ground in a protected area, using any dunnage that is available to reduce deterioration by the elements.

c. Walkway Installation. Install side walkway cover as follows:

(1) Remove walkway cover package from storage in shelter and separate into top, bottom, and two side sections (figure 2-2).

(2) Rotate screw jacks on all sections to reduce width so gap is cleared between shelters.

(3) Position bottom section in place, with lip pieces along bottom nesting around edge of panel opening extrusion. Rotate screw jacks to spread bottom section between shelters.

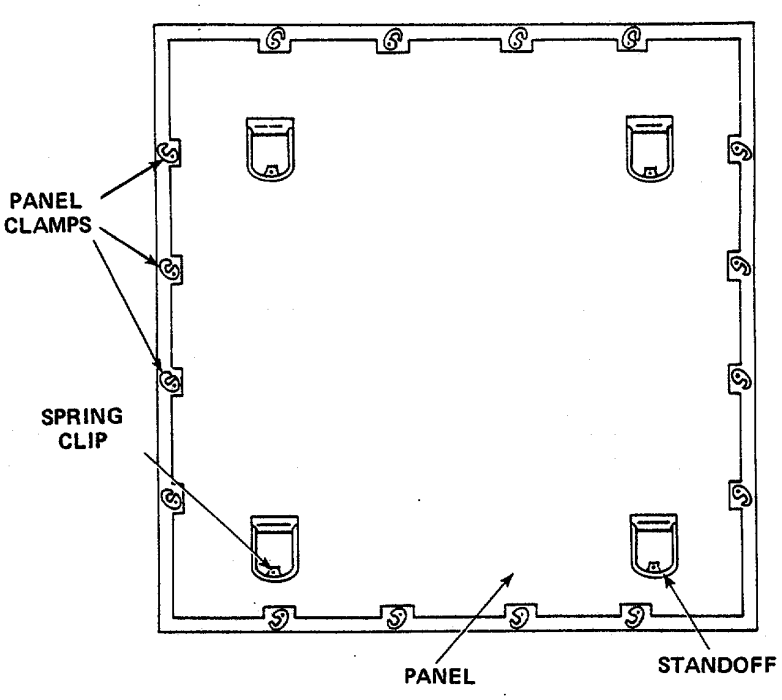


Figure 2-1. Side Panel and Clamps

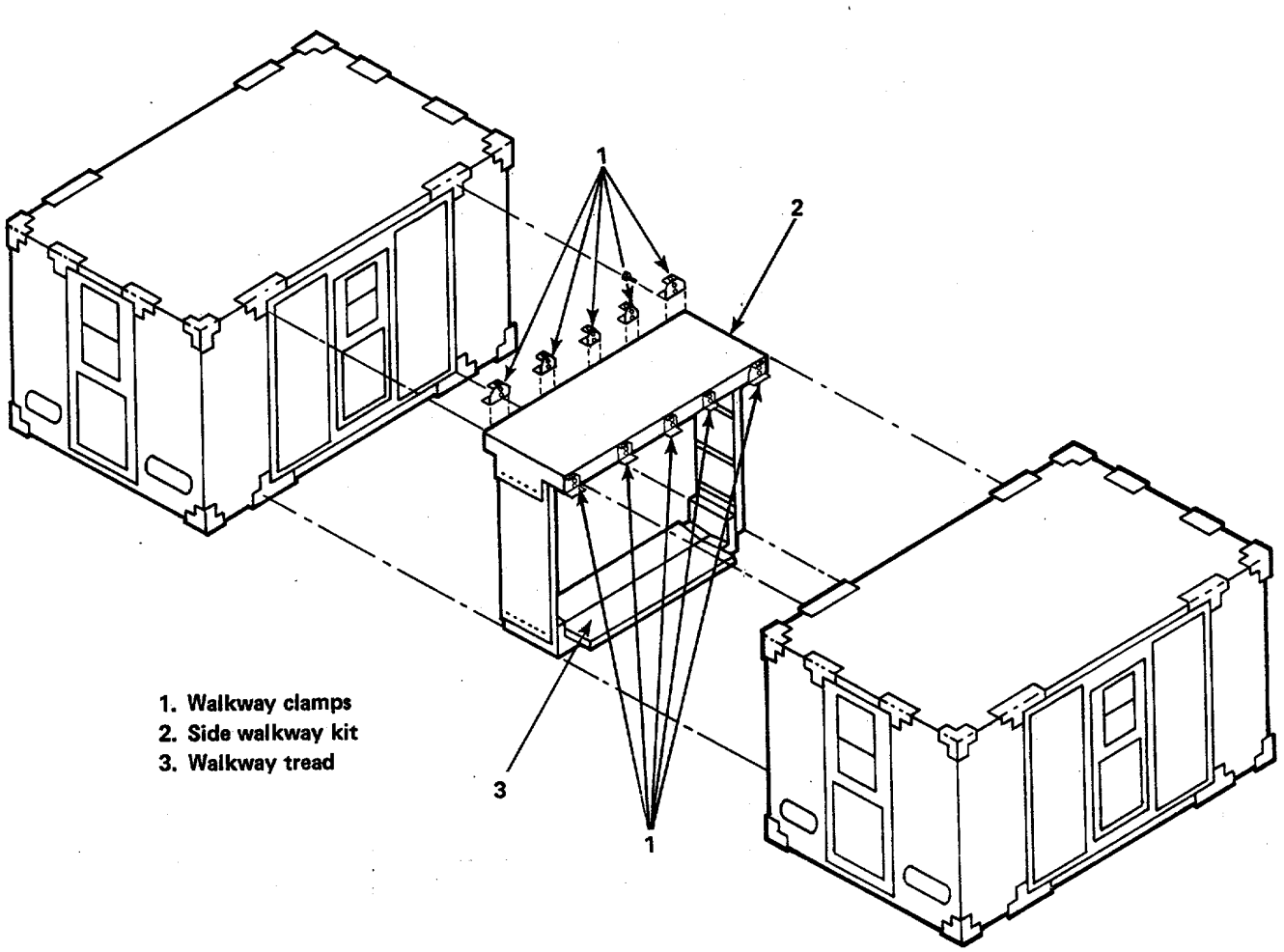


Figure 2-2. Walkway Kit

(4) Lift top section to roof at position to be connected.

(5) Install three center-type top clamps, one right-end top clamp, and one left-end top clamp on each shelter. To install clamps, position over shouldered pins in shelter roof and push clamps to engage pins in key slots. End top clamps will straddle castings in shelter roof.

(6) Position top section in place and rotate screw jacks to spread section against shelter. Rotate top clamps down to compress top section to shelter.

(7) Install side sections from inside shelter, inserting pins on the sections into holes in the side of the shelters. The side sections are installed inside the side flaps of the top section and outside the upright legs on the bottom section. Rotate screw jacks to spread side sections between shelters.

(8) From outside of cover assembly, snap the "lift the dot" type fasteners, top and bottom, to completely close the assembly.

(9) Ensure that gasketing on the cover contacts the shelter and that lip pieces at bottom of cover contact panel opening extrusion. Adjust screw jacks and clamps, as required, for weatherproof seal.

d. Walkway Tread. Install walkway treads as follows:

NOTE

Walkway treads are supplied with two interchangeable bolt-on angles. The long-leg angle is used if both panels are removed; the short-leg angle is used if a door-type panel is left in position. Select and bolt on the long-leg angle prior to proceeding with installation.

(1) Remove walkway tread from storage position.
(2) Lay walkway tread in place across bottom of cover and adjust width to suit span between cover framing.
(3) Fasten tread to cover framing with quarter-tum screw devices provided.

2-8 INTERCONNECTING COMMUNICATIONS EQUIPMENT. Normally, the two shelter units will be transported by separate vehicles with all interconnecting cables installed except for those from shelter to shelter (figures 1-2 and 1-3). After installing shelters on site, remove teletype interconnect cables from stored position in Red patch rack cabinet and connect Box No. 4 (shelter 16) to Box No. 3 (shelter 19) as shown in figure 1-3.

2-9 DOCUMENT SAFE.

a. General. Two document safes are provided with the AN/TSC-75A. Both are located in the Red patch rack. Each safe is provided with a manipulation-proof combination lock. The lock combination is preset at the factory and must be changed prior to use. Refer to local directives to determine the authority for changing and recording combinations.

b. Safe Combination Changes. Each safe lock is preset at the factory with combinations set to 50-25-500 for initial opening. Instructions for changing combinations are contained inside each safe. To initially open a safe, proceed as follows:

(1) Turn dial on combination lock counterclockwise through at least four complete revolutions. On the last revolution, stop at 50. i
(2) Turn dial clockwise past 25 two complete revolutions, and stop at 25 on the third revolution.
(3) Turn dial counterclockwide past 50. Stop at 50 on the second revolution.
(4) While holding dial stationary at 50, turn small knob in center of dial approximately 90 degrees clockwise.
(5) Turn dial clockwise to 0.
(6) Tum door handle to safe downward and open safe door.
(7) Remove instruction sheet from safe and set new combination in accordance with manufacturer's instructions. Replace instruction sheet in safe.

NOTE

Try new combination several times before closing and locking safe door.

(8) Record new combination in accordance with local security policy.

2-10 ROTARY CHAIR. Release chair by pushing tiedown assembly into floor socket to release. Adjust height with seat adjusting screw (figure 2-3).

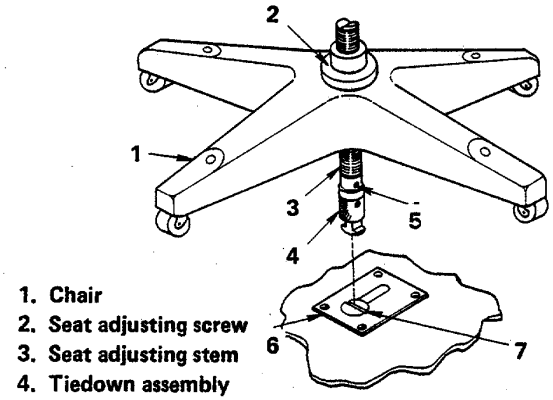


Figure 2-3. Rotary Chair

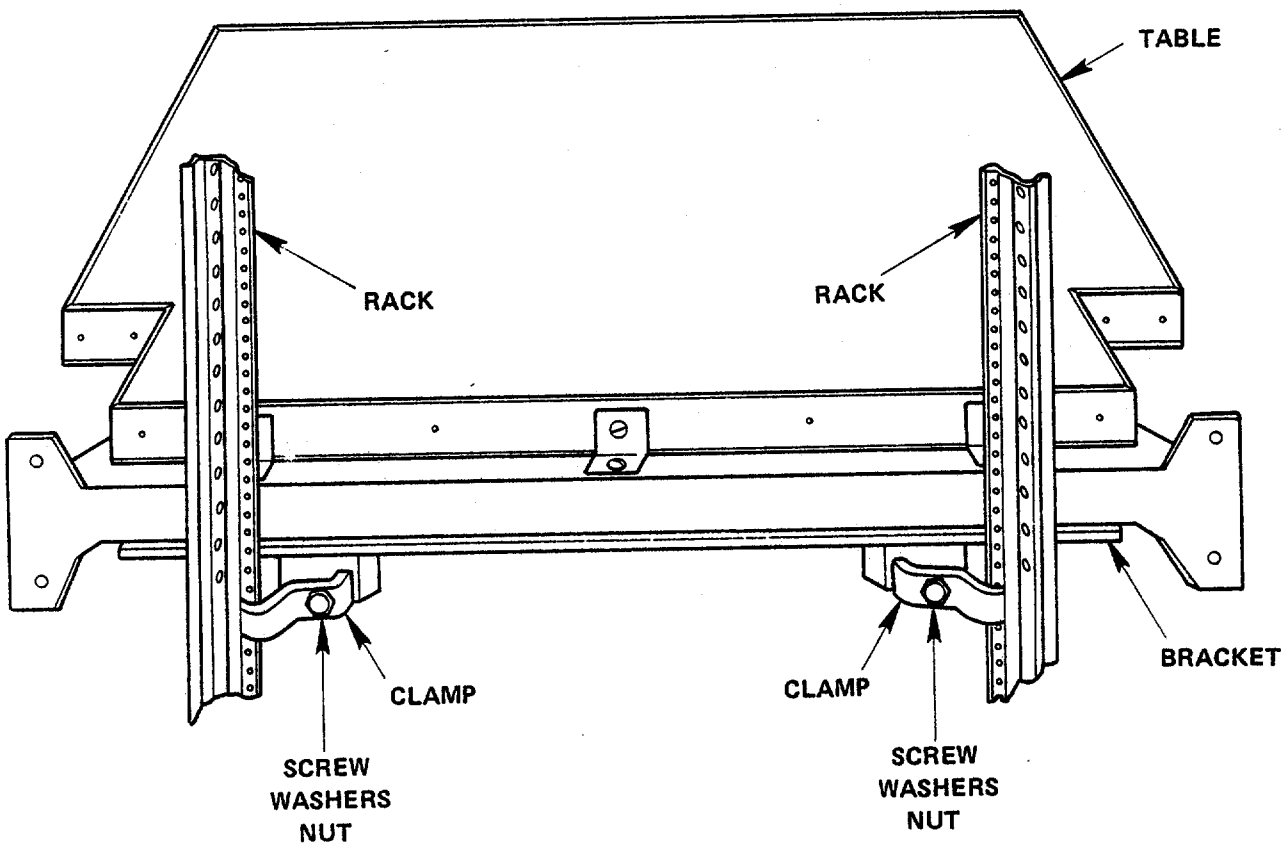


Figure 2-4. Table Installed in Walkway

Section V. PRELIMINARY ADJUSTMENT OF EQUIPMENT

2-11 PRELIMINARY CHECKS AND ADJUSTMENTS. Ensure that the circuit breakers in both shelters are in the OFF position before connecting external power. Preliminary checks for components within the central are provided in the individual technical manuals.

2-12 SYSTEM LINEUP. No lineup procedure is required for the central other than selecting the required patches with the Red and Black patch panels as required.

Section VI. INSTALLATION AND CIRCUIT LINEUP

2-13 EXTERNAL CONNECTIONS. Instructions for connecting external power cables are provided in TM 32-5410-217-14&P.

2-14 SWITCH SETTINGS AND PATCH PANEL CONNECTIONS .

a. Switch settings required for components within the central are provided in the individual technical manuals.

b. The Red and Black patch panels provide system flexibility when mission requires special patching arrangements. A simplified overall block diagram of the system is provided in figure 6-1.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. CONTROLS AND ADJUSTMENTS

3-1 DAMAGE FROM IMPROPER SETTINGS. For safe and efficient operation of the central, read the operating instructions in the equipment technical manuals. Make note of all WARNINGS and CAUTIONS which could result in injury to personnel or damage to equipment.

3-2 OPERATOR/CREW CONTROLS. The system controls for both shelters are listed in table 3-1.

Table 3-1. Operator's Controls

Control, indicator, or connector	Function
Red patch panel	Connects teletypes to crypto equipment.
Black patch panel, left half	Connects crypto equipment to line relays.
Black patch panel, right half	Connects line relays to external line or telegraph tone converter.
Battery select switch	Applies 120 Vdc to relay output.
Lighting Circuit Breakers	Provides overload protection for shelter lighting circuit.
AO Circuit Breakers	Provides overload protection for A-phase power circuit.
Bo Circuit Breakers	Provides overload protection for B-phase power circuit.
CO Circuit Breakers	Provides overload protection for C-phase power circuit.
Ceiling Light Switches	Three-way light switches providing control of ceiling lights from either light unit.
Blackout Circuit Switches	When on, permits automatic operation of blackout light feature when any entrance to the central is opened. When off, switch overrides automatic blackout lighting feature.
Blackout Receptacles	Connection point in blackout circuit for door actuated switches.
Air Conditioner Selector	Controls heating or cooling and ventilation.
Air Conditioner Thermostat	Controls temperature.

Section II. OPERATION UNDER USUAL CONDITIONS

3-3 GENERAL. This section provides instructions for operation of components of the central not covered in other technical manuals.

3-4 PRELIMINARY STARTING PROCEDURES AND INITIAL ADJUSTMENTS. Prior to placing the central into operation, perform the following procedures:

a. Turn circuit breakers and power controls on all equipment to OFF.
b. Ensure shelter is grounded.
c. Check all power and signal interfaces. Ensure all connectors are properly installed and secured.

3-5 OPERATING PROCEDURES. The following subparagraphs provide instructions for placing the shelter in operation, stopping for standby, and stopping for shutdown.

a. Starting Procedures.
(1) Turn light circuit breakers in both shelters to ON.
(2) Turn ceiling lights in both shelters to ON.
(3) Turn A, B, and C phase circuit breakers in both shelters to ON.
(4) Turn equipment to .ON.

b. Patch Panel Operation. See figure 3-1.

(1) Assume that it is necessary for TTY No. 1 to send to KWX-1 1 No. 2 and to receive from KWX-1 1 No. 3. Assume further that only No. 1 external signal line is avail- able for use. The patching procedure for this configuration would be as follows:

(a) Remove a patch cord from storage position on the Red patch rack and plug one end into No. 1 send LOOP jack on the Red patch panel. This disconnects KWX-1 1 No. 1 from the TTY No. 1 send LINE and connects the patch cord to TTY No. 1 send. Plug the other end of the patch cord into No. 2 send LINE jack of the Red patch panel. This disconnects TTY No. 2 send from the line to KWX-1 1 No. 2 and connects TTY No. 1 send to the line to KWX- I No. 2 send.

(b) Remove a second patch cord from the storage position on Red patch rack and plug one end into No. 1 receive LOOP on the Red patch panel. This disconnects KWX-11 No. 1 from the TTY No. 1 receive LINE and connects the patch cord to TTY No. 1 receive. Plug the other end of the patch cord into No. 3 receive LINE jack of the Red patch panel. This disconnects TTY No. 3 from receive line to KWX-11 No. 3 and connects TTY No. 1 receive to the line to KWX-1 1 No. 3.

(c) Remove a patch cord from storage position on the Black patch rack and plug one end into No. 1 send LINE jack on the left half of the Black patch panel. This disconnects KWX- 1 No. 1 from the relay No. 1 send line and connects the patch cord to relay No. 1 send. Plug the other end of the patch cord into No. 2 send LOOP jack on the left half of the Black patch panel. This disconnects relay No. 2 send from the line to KWX-11 No. 2 and connects relay No. 1 send to the line to KWX- 1 No. 2.

(d) Remove a second patch cord from storage position on the Black patch rack and plug one end into No. 1 receive LOOP jack on the left half of the Black patch panel. This disconnects KWX-11 No. 1 from the relay No. I receive line and connects the patch cord to relay No. 1 receive. Plug the other end of the patch cord into No. 3 receive LOOP jack on the left half of Black patch panel. This disconnects relay No. 3 receive from the line to KWX-11 No. 3 and connects relay No. 1 receive to the line to KWX-l1 No. 3 receive.

(2) For another example of patch procedure, assume that the receive signal is monitored and analog (tone) signals are heard. When tone signals are to be processed by the AN/TSC-75A, the signal conversions from tones to pulses and pulses to tones must be made by patching, on the right half of the Black patch panel, the TH-22 converter into the circuit between the relays and the line. The patching procedure for inserting the converter would be as follows:

(a) Remove a patch cord from storage on the Black patch rack and plug one end into the send IN jack on TH-22/TG Patch Panel for the desired channel. Plug the other end of the patch cord into the No. 1 send LOOP jack on the right half of the Black patch panel.

(b) Remove another patch cord from storage on the Black patch rack and plug one end into the send OUT jack on the TH-22/TG patch panel for the channel selected. Plug the other end of the patch cord into the No. 1 send LINE jack on the right half of the Black patch panel.

(c) Remove another patch cord from storage on the Black patch rack and plug one end into the receive IN jack on the TH-22/TG patch panel for the channel selected. Plug the other end of the patch cord into the No. 1 receive LINE jack on the right half of the Black patch panel.

(d) Remove another patch cord from storage on the Black patch rack and plug one end into the receive OUT jack in the TH-22/TG patch panel for the channel selected. Plug the other end of the patch cord into the No. 1 receive LOOP jack on the right half of the Black patch panel.

c. AN/UGC49 Operation. See Teletype Corporation Bulletin 270B for operating instructions.
d. AN/KW-7 Operation. See TM 11-5810-221-15/1 for operating instructions.
e. Power Supply PP-1209. See TM 11-5805-239-12 for operating instructions.
f. Power Supply (Lwnbda LM). See TM 11-6130-359-143 for operating instructions.

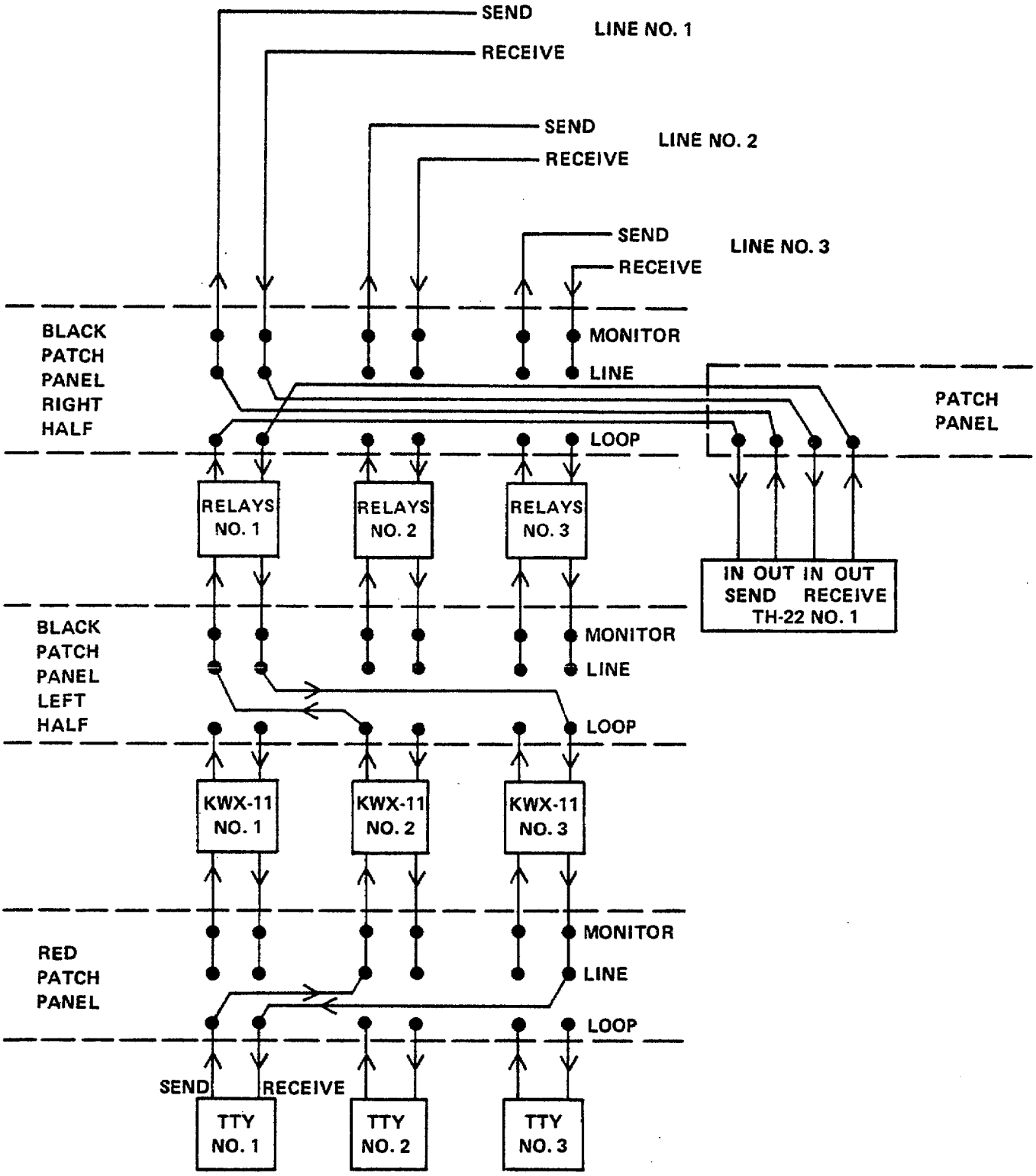


Figure 3-1. Patch Panel Procedure (Example)

g Document Safe. Consult local security for obtaining new safe combination and instructions for opening.

h. Telephone Operation, Incoming Calls. A TA-312/PT telephone set .s provided with the AN/TSC-75A. Incoming calls activate the flasher assembly mounted above the telephone. The operator must connect the telephone to the flasher assembly by inserting the red plug from the telephone into the jack provided on the front of the flasher assembly. This plug must remain in the jack for the duration of the call. Upon completion of the call, return handset to telephone cradle and remove red plug from jack in front of flasher assembly.

i. Telephone Operation, Outgoing Calls. To place an outgoing telephone call from the AN/TSC-75A, connect the red plug from the telephone to the flasher assembly mounted above the telephone. Upon completion of the call, remove the red plug from jack in front of flasher assembly.

j. Air Conditioning. Air conditioning controls mounted, on the ceiling of the shelters will control all three shelters on the AN/MSA-34 semitrailer when the central is deployed as part of an OUTS complex (figure 3-2). Select desired air conditioning.

3-6 STOPPING PROCEDURES FOR STANDBY. Standby modes for equipment are provided in the individual technical manuals.

3-7 STOPPING PROCEDURE FOR SHUTDOWN.

a. Turn all equipment to OFF.
b. Tum A, B, and C phase circuit breakers to OFF.
c. Turn shelter lights to OFF.
d. Turn light circuit breakers to OFF.

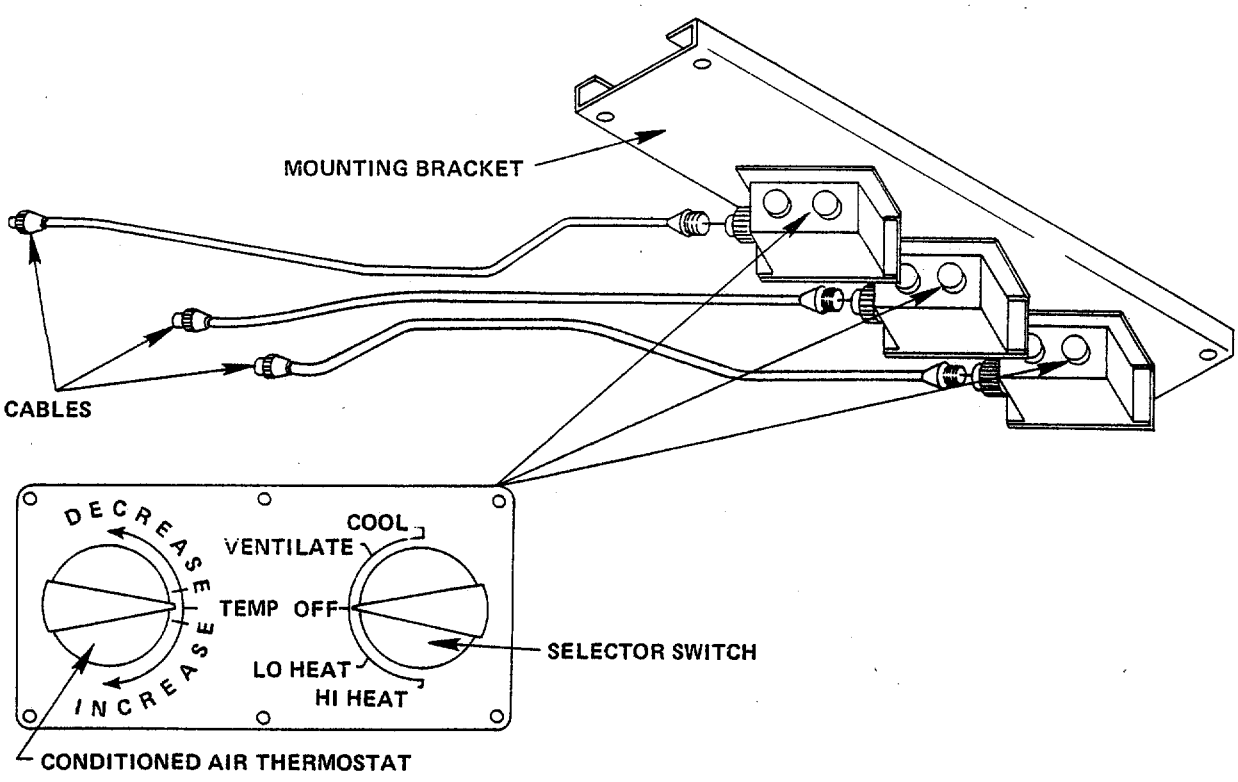


Figure 3-2. Air Conditioner Control Unit

Section III. OPERATION UNDER UNUSUAL CONDITION

3-8 GENERAL. It may be necessary to operate the central under abdominal conditions where extreme heat, cold, humidity, moisture, or sand conditions prevail. When equipped with external air conditioning, the shelter will protect personnel and equipment at temperatures ranging from minus 30° to plus 120°F. Methods of minimizing the effects of these unusual operating conditions are described below.

a. Operation in Arctic Climates. Subzero temperatures and climatic conditions associated with subzero weather affect efficient operation of equipment. Handle equipment carefully. Parts, especially plastics and wire insulation, become brittle at these temperatures. Keep equipment operating so it remains warm. Place a barrier, such as a curtain, between the equipment and the shelter entrance. This reduces heat loss and the danger of a cold draft striking heated elements in the equipment. When equipment is exposed to cold air, moisture will condense on it. Dry the equipment thoroughly.

b. Operation in Tropical Climates. When equipment is operated in warm, damp climates, moisture conditions are acute. Poor ventilation and high relative humidity may cause condensation on equipment. Dry equipment thoroughly at the first signs of moisture.

c. Operation in Desert Climates. Large amounts of sand, dust, and dirt will enter components. The best precaution is to make the shelter as dustproof as possible with available materials. Hang wet sacking over doors to cut down on sand entering when the doors are used. Do not remove panel and chassis assemblies unless absolutely necessary. Clean assemblies thoroughly before replacing them. Keep equipment as free from dust as possible. Make frequent preventive maintenance checks. Excessive amounts of dust, sand, or dirt that comes in contact with oil and grease will damage moving parts.

3-9 OPERATION UNDER EMERGENCY CONDITIONS .

The central is designed to operate during periods of partial equipment failure. The patch panels in the crypto facility provide the capability for using the teletypes on any signal line when one or more teletypes or crypto units are in repair.

Section IV. PREPARATION FOR MOVEMENT

3-10 GENERAL. To prepare the central for movement, proceed as follows:

a. Secure all loose equipment and clean off workbench.
b. Tum all equipment to OFF.
c. Tum A, B, and C phase circuit breakers to OFF.
d. Disconnect central interconnecting cables and store in drawers beneath workbench.
e. Remove walkway tread by removing quarter-turn screws fastening it to walkway frame. Store in either shelter as required.
f. Remove side walkway.
(1) Release the "lift the dot" fasteners on the outside top and bottom of walkway cover.
(2) Release the rotating screw jacks holding side panels in place.
(3) Remove side sections from inside walkway.
(4) Release rotating top clamps holding top section in place.
(5) Release rotating screw jacks holding section against shelters.
(6) Remove center-type top clamps, right-end top clamp, and left-end top clamp.
(7) Remove top section.
(8) Release rotating screw jacks holding bottom section between shelters.
(9) Remove bottom section.
(10) Fold sections together and secure in either shelter as required.
g. Replace side panels on both shelters. Station a person on the roof.
(1) Lift panel into position.
(2) Rotate all panel clamps 90 degrees and tighten lock screws.
(3) Tighten tiedown slings.
h. Tum all lights to OFF.
i. Turn lighting circuit breakers to OFF.
j. Remove auxiliary generators, power cables, air conditioners, and grounding kits (when required). See TM 32-5410-217-14&P.
k. Stow hand tools and secure all cabinets and drawers.
l. Seal all doors and panels with waterproof tape (when required).

CHAPTER 4

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

4-1 GENERAL. Repair parts, tools, test equipment, and accessories issued or authorized for use by the operator are provided in appendix D. No special tools are issued or required.

Section II. LUBRICATION INSTRUCTIONS

4-2 OPERATING EQUIPMENT. For detailed lubricating instructions on components within the central, refer to the component technical manuals. For detailed lubrication instructions on shelter components, refer to TM 32-5410-217-14&P. Apply a light film of lubricating oil to the chair seat adjusting screws and in chair tiedown pin sliding collars when required. Lubricate drafting chair tiedown pin sliding collar when required.

Section III. PREVENTIVE MAINTENANE CHECKS AND SERVICE(PMCS)

4-3 GENERAL.

a. This section provides the operator's periodic maintenance checks and services procedures that are necessary to ensure that the equipment will perform its designated function until the next scheduled service.

b. To ensure that the central is always ready for operation, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services are listed and described in table 4-1. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit will be noted for future correction to be made as soon as operation of the unit has ceased. Record all deficiencies together with the corrective action taken. General instructions for PMCS are as follows:

(1*) Before You Operate.* Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

(2) *While You Operate.* Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

(3) *After You Operate.* Be sure to perform your after (A) PMCS.

(4) *If Your Equipment Fails to Operate*. Troubleshoot with proper equipment. Report any deficiencies using the proper forms (see TM 38-750).

Section IV. TROUBLESHOOTING

4-4 GENERAL. This section provides instructions that will enable the operator/crew to isolate sources of certain malfunctions. When a malfunction is noted in the equipment, look for the malfunction in the troubleshooting chart (table 4-2). Check each of the probable causes listed to determine the actual cause and perform the appropriate corrective action. Any trouble that is beyond the scope of operator/crew shall be referred to organizational maintenance. Troubleshooting procedures for components contained within the central are provided in the technical manuals covering each component.

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

Within designated interval, these checks are to be performed in the order listed. If the equipment must be kept in continuous operation, check and service only those items that are the responsibility of OPERATOR/CREW maintenance which can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down. The "Item Number" column shall be used as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

B - Before
D - During
A—After
W - Weekly
M—Monthly
C—Combat Operability Check

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
1	•					•	MWO's	Determine if all pertinent URGENT MWO's have been applied.	One or more URGENT MWO's have not been applied.
2				•		•	EQUIPMENT COMPLETENESS	Check all equipment against COEIL and BIIL.	Any component necessary to perform mission is missing.
3				•		•	ALL EQUIPMENT COVERED BY SEPARATE MANUALS	Refer to manuals and perform operator/crew PMCS as listed.	One or more items of equipment is reported Red.
4	•			•			RACKS AND RACK-MOUNTED EQUIPMENT	Check for secure attachment of shelves, cabinets, and components.	
5	•			•		•	KNOBS AND CONTROLS	Check for presence and tightness of all knobs and controls.	Controls will not operate equipment.

Table 4-1. Operator /Crew Preventive Maintenance Checks and Services - Continued

6	•			•		•	INTERCONNECTING CABLES	Check for connection; check cables for cuts, kinks, and worn insulation.	Damaged cables prevent performance of mission.
7	•			•		•	LIGHTS	Check for function of all fluorescent lights. Replace as needed.	
8	•			•			BLACKOUT LIGHTS	Check that blackout lights come on and normal lights go out when door is opened.	
9				•		•	FILTER DISCHARGE UNIT	Turn all equipment to OFF. Turn all circuit breakers to OFF. Pilot light on unit goes out within one minute.	Discharge unit requires maintenance.
10				•			RUNNING SPARES	Check all spare parts (bulbs, lamps, starters); reorder as needed.	
11	•			•		•	AIR CONDITIONERS	Check for proper operation. Check controls.	Air conditioner inoperative.
12					•	•	CONDUIT ASSEMBLY	Inspect for missing cover plates, hardware, or loose clamps.	Conduit damaged.
13				•			FIRE EXTINGUISHER	Check state-of-charge gauge and the mounting bracket.	
14	•				•		ROTARY CHAIRS AND DRAFTING CHAIR	Check rotary chairs for firm seat and back attachment and for casters on all four legs. Check tiedown pins on all chairs.	
15				•			SHELTER EXTERIOR	Check for corrosion, damaged skin, bent panels.	
16	•			•		•	EXTERIOR CABLING	Check power, ground, and signal cables for tight connections, kinks, bends, or breaks. Water area around ground rod if dry.	Cabling is damaged.
17	•	•				•	GENERATOR	Check for proper operation.	Generator inoperative.

Table 4-2. Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. NO SIGNAL ON INDIVIDUAL SEND OR RECEIVE LINE.

Step 1. Isolate malfunction to one component; to line relays and amplifier, crypto equipment, tone converter, or teletype. Check signals at Monitor jacks on patch panels (figure 3-1).

NOTE
Tum battery select switch to OFF when patching into Black patch panel right half.
Patch into LINE or LOOP jacks after connecting other end of patch cord.

Check component power switches, controls, power cord, receptacle, and circuit breaker. Request organizational maintenance as required.

2. NO POWER TO CENTRAL.

Step 1. Trace power cable from the central to the power source.

Reconnect cable.

Step 2. Check circuit breakers.

Turn breakers to ON.

Step 3. Check output at power source.

If output is incorrect, switch to auxiliary generator. Request organizational maintenance as required.

3. PARTIAL LOSS OF POWER.

Step 1. Check individual circuit breakers in both shelters.

Reset tripped circuit breakers.

Step 2. Check for loose or damaged incoming power cable.

Tighten all connections. Request organizational maintenance as required.

4. ALL SHELTER LIGHTS INOPERATIVE.

Step 1. Check light circuit breakers.

Table 4-2. Troubleshooting-Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
Reset light circuit breakers. Request organizational maintenance as required.
5. ONE SHELTER LIGHT UNIT INOPERATIVE.
Step 1. Check for defective lamp.
Replace lamp.
Step 2. Check for defective starter.
Replace starter.
Step 3. Check for defective ballast or filter unit.
Request organizational maintenance as required.

Section V. MAINTENANCE OF THE CENTRAL

4-6 OPERATOR MAINTENANCE. Operator maintenance is limited to inspection procedures specified in the equipment manuals and to the inspections specified in table 4-2.

4-7 GENERAL SHELTER CLEANING.

Use a dry, clean, lint-free cloth or brush to remove dust and dirt. If necessary, moisten the cloth or brush with a cleaning compound to remove grease, oil, dirt, and dust. After cleaning, wipe dry with a lint-free, dry cloth.

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT USE NEAR AN OPEN FLAME. Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

5-1 GENERAL. Tools and test ,equipment required for maintenance of the central are listed in Appendix D. There is no Repair Parts and Special Tools List included in this publication.

Section II. REPAINTING AND REFINISHING

5-2 TOUCHUP PAINTING. General touchup painting will be performed in accordance with TB 43-0118, Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters. See TM 43-0139, Painting Instructions for Field Use, for instructions on the care of painting equipment.

5-3 CONDUIT IDENTIFICATION BANDS. All conduit runs are painted with identification bands at all interfaces at intervals of 3 feet. Identification bands are either red or black, depending on the conduit run. Each band is a 2-inch-wide strip which completely encircles the conduit. These bands should be touched up as required and repainted whenever conduit installation is required.

5-4 EQUIPMENT RACKS. Equipment racks will be repainted or touched up as required. See TB 43-0118 for procedures. The equipment racks are provided with identification stripes across the top. The identification stripe will be 1 inch high by 19 inches wide. Rack No. 6 will have a black identification stripe; rack No. 5 will have a red identification stripe.

Section III. LUBRICATION INSTRUCTIONS

5-5 S-389 SHELTER. Lubrication instructions for the shelter are provided in TM 32-5410-217-14&P.

5-6 OPERATING EQUIPMENT. Lubrication instructions for operating equipment housed in the central are provided in the individual technical manuals covering each component.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

5-7 GENERAL. Organizational maintenance consists of preventive maintenance and replacement of authorized repair parts.

a. The PMCS provided in table 5-1 outlines inspections to be made at the indicated intervals. Inspections are designed to help maintain equipment in combat serviceable condition and to indicate what items are to be checked and how they should be checked.

b. Defects that cannot be corrected will be reported to higher category maintenance personnel. Records and reports of repair and preventive maintenance will be made in accordance with procedures given in TM 38-750.

Table 5-1. Organizational Preventive Maintenance Checks and Services

NOTE

Within designated interval, these checks are to be performed in the order listed.

If the equipment must be kept in continuous operation, check and service only those items that are the responsibility of OPERATOR/CREW maintenance which can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

The "Item Number" column shall be used as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

B - Before
D - During
A—After
W - Weekly
M—Monthly
C—Combat Operability Check

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
1	•					•	MWO's	Determine if all pertinent URGENT MWO's have been applied.	One or more URGENT MWO's have not been applied.
2				•		•	EQUIPMENT COMPLETENESS	Check all equipment against COEIL and BIIL.	Any component necessary to perform mission is missing.
3				•		•	ALL EQUIPMENT COVERED BY SEPARATE MANUALS	Refer to manuals and perform operator/crew PMCS as listed.	One or more items of equipment is reported Red.
4	•			•			RACKS AND RACK-MOUNTED EQUIPMENT	Check for secure attachment of shelves, cabinets, and components.	
5	•			•		•	KNOBS AND CONTROLS	Check for presence and tightness of all knobs and controls.	Controls will not operate equipment.

Table 5-1. Organizational Preventive Maintenance Checks and Services - Continued

Item No.	Interval					C	Item to be inspected	Procedures	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M				
6	•			•		•	INTERCONNECTING CABLES	Check for connection; check cables for cuts, kinks, and worn insulation.	Damaged cables prevent performance of mission.
7	•			•		•	LIGHTS	Check for function of all fluorescent lights. Replace as needed.	
8	•			•			BLACKOUT LIGHTS	Check that blackout lights come on and normal lights go out when door is opened.	
9				•		•	FILTER DISCHARGE UNIT	Turn all equipment to OFF. Turn all circuit breakers to OFF. Pilot light on unit goes out within one minute.	Discharge unit requires maintenance.
10				•			RUNNING SPARES	Check all spare parts (bulbs, lamps, starters); reorder as needed.	
11	•			•		•	AIR CONDITIONERS	Check for proper operation. Check controls.	Air conditioner inoperative.
12					•	•	CONDUIT ASSEMBLY	Inspect for missing cover plates, hardware, or loose clamps.	Conduit damaged.
13				•			FIRE EXTINGUISHER	Check state-of-charge gauge and the mounting bracket.	
14	•				•		ROTARY CHAIRS AND DRAFTING CHAIR	Check rotary chairs for firm seat and back attachment and for casters on all four legs. Check tiedown pins on all chairs.	
15				•			SHELTER EXTERIOR	Check for corrosion, damaged skin, bent panels.	
16	•			•		•	EXTERIOR CABLING	Check power, ground, and signal cables for tight connections, kinks, bends, or breaks. Water area around ground rod if dry.	Cabling is damaged.
17	•	•				•	GENERATOR	Check for proper operation.	Generator inoperative.

Section V. TROUBLESHOOTING

5-8 TROUBLESHOOTING PROCEDURE.

WARNING

Be CAREFUL when performing the troubleshooting procedures; dangerous voltage is present in the equipment. When an abnormal symptom has been observed, look for a description of this symptom in the troubleshooting chart (table 5-2) and perform the corrective actions described. Any trouble beyond the scope of organizational maintenance shall be referred to direct support maintenance.

Table 5-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. SIGNAL LOSS THROUGH BLACK PATCH PANEL RIGHT HALF.
Step 1. Check for continuity between loop, line, and monitor jacks for either send or receive line as required. **WARNING** 120 volts exists on send line wiring with battery select switch ON. Turn battery select switch OFF and tum 120 Vdc supply OFF if possible. **Repair or replace as required. Request direct support maintenance as required.**
2. SIGNAL LOSS THROUGH BATTERY SELECT SWITCH.
Step 1. Cycle switch OFF and ON. **Replace as required. Request direct support as required.**
Step 2. Check 120 Vdc power supply controls, power cord, circuit breaker. **Readjust or repair as required. Request direct support as required.**
Step 3. Check send relay operation and relay coil supply voltage. **Refer to next step.**
3. SIGNAL LOSS THROUGH SEND RELAY.
Step 1. Check 120 Vdc supply at relay output.

Table 5-2. Troubleshooting Chart - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Service or repair 120 Vdc supply as required. Request direct support as required.

Step 2. Check 6 Vdc power supplies to send relay coil. Check ballast lamps in +6V and -6V lines. Lights will be ON in operating circuit. Check fuses in line at fuse panel.

Service power supply and replace line fuses as required.

Step 3. Check send relay amplifier with signal at input. (Black patch left hand send line jack.)

Replace or repair as required. Request direct support as required.

4. SIGNAL LOSS THROUGH BLACK PATCH PANEL LEFT HAND.

Step 1. Check continuity between Line, Loop, and Monitor jacks with line crypto equipment OFF.

Repair or replace as required. Request direct support as required.

5. SIGNAL LOSS THROUGH CRYPTO EQUIPMENT.

Step 1. Apply signal at Red patch panel Line jack and check at Black patch left hand Monitor jack. Check equipment operation as described in technical manual.

Request direct support as required.

6. SIGNAL LOSS THROUGH RED PATCH PANEL LEFT HAND.

Step 1. Check continuity between Line, Loop, and Monitor jacks.

Repair or replace as required. Request direct support as required.

7. SIGNAL LOSS THROUGH TH-22 TELEGRAPH CONVERTER.

Step 1. Check operating controls, power cord, fuses, circuit breaker.

Request direct support as required.

8. SIGNAL LOSS TO OR FROM TELETYPE.

Step 1. Check teletype controls, power line, circuit breakers.

Service as required.

Table 5-2. Troubleshooting Chart - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check for signals at Red patch Monitor jacks.

Request direct support as required.

9. NO POWER TO CENTRAL.

Step 1. Check output at power source.

Switch to auxiliary power as required.

Step 2. Check for defective external power cables.

Repair or replace as required.

Step 3. Check for defective wiring between external power connectors and circuit breakers.

Repair or replace as required. Request direct support as required.

Step 4. Check for defective circuit breakers.

Replace as required.

10. SINGLE RECEPTACLE INOPERATIVE.

Step 1. Check for defective circuit breaker.

Replace as required.

Step 2. Check wiring from circuit breaker to receptacle.

Repair or replace as required. Request direct support as required.

Step 3. Check for defective receptacle.

Replace as required.

11. NO SHELTER LIGHTS.

Step 1. Check lighting circuit breakers.

Reset or replace as required.

Table 5-2. Troubleshooting Chart - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check external power cable.

Repair or replace as required.

Step 3. Check wiring from external connector to circuit breakers.

Repair or replace as required. Request direct support as required.

12. SINGLE LIGHT INOPERATIVE.

Step 1. Check lamp.

Replace as required.

Step 2. Check for defective starter and ballast.

Repair or replace as required.

Step 3. Check for defective switch.

Replace as required.

Step 4. Check for defective wiring between switch and circuit breaker.

Repair or replace as required. Request direct support as required.

13. BLACKOUT LIGHTS FAIL TO OPERATE WHEN DOOR IS OPENED.

Step 1. Check blackout light circuit breaker.

Reset breaker to ON.

Step 2. Check microswitch on door.

If switch is defective, replace.

Step 3. Inspect wiring from rnicroswitch to circuit breaker.

Repair or replace defective wiring. Request direct support as required.

Table 5-2. Troubleshooting Chart - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
14. CHAIR TIEDOWN INOPERATIVE.
Step 1. Check floor tiedown socket for dirt. **Depress socket cover, lock open, and clean out dirt with pick or wire.**
Step 2. Inspect tiedown pin on chair. **If pin is bent or broken, remove and replace pin.**

Section VI. MAINTENANCE OF THE CENTRAL

5-9 REMOVAL OF TELETYPES. To remove the teletype units from the central, proceed as follows:

a. Turn power switch on teletype unit to be removed to OFF.
b. Disconnect line cord plug from receptacle.
c. Disconnect signal line cable from connector on rear panel.
d. Remove mounting hardware (figure 5-1).

5-10 TELETYPE DISASSEMBLY, REPAIR, AND REASSEMBLY. Instructions for disassembly, repair and reassembly of the teletype units are provided in Teletype Corp. Bulletin 270B and 312B.

5-11 INSTALLATION OF TELETYPES. To install the teletype unit in position in the central, proceed as follows:

a. Place teletype into position.
b. Install mounting hardware (figure 5-1).
c. Ensure ground strap is properly installed across shock mount.
d. Connect signal line cable to connector on rear panel of teletype unit.
e. Connect line cord plug to AC receptacle.

5-12 REMOVAL AND INSTALLATION OF RACK-MOUNTED EQUIPMENT.

NOTE

Turn power to OFF and disconnect power cable plugs before removing equipment.

a. Remove equipment form the rack as follows:
(1) Disconnect power cable plug from rack receptacle.
(2) Remove mounting hardware from front panel.
(3) Carefully slide equipment forward to reach cable connectors.
(4) Disconnect cables.
(5) Carefully slide equipment forward and out of rack.

b. Install equipment in the rack as follows:
(1) Carefully slide equipment halfway into rack.
(2) Connect cables.
(3) Carefully slide equipment all the way into rack.
(4) Secure equipment in rack with front panel mounting hardware.
(5) Connect power cable to rack receptacle.

5-13 REMOVAL AND INSTALLATION OF INTERCONNECTING CABLES.

WARNING

Turn power to OFF on equipment and disconnect power cable plugs before disconnecting interconnecting cables. Dangerous voltages are present in the equipment.

a. Refer to figure 1-3 for identification of interconnecting cable assemblies

b. Remove cable assemblies as follows:
(1) Disconnect power to equipment.
(2) Disconnect connector at each end of cable assembly; remove or pull forward any equipment that interferes.
(3) Remove cable assembly; remove any tape, lacing cord, or cable ties that interfere.

c. Install cable assemblies as follows:
(1) Insert cable assembly and the connector at each end.
(2) Secure and support cable with cable ties, lacing cord, or tape.
(3) Install equipment that interfered with cable removal and replacement.

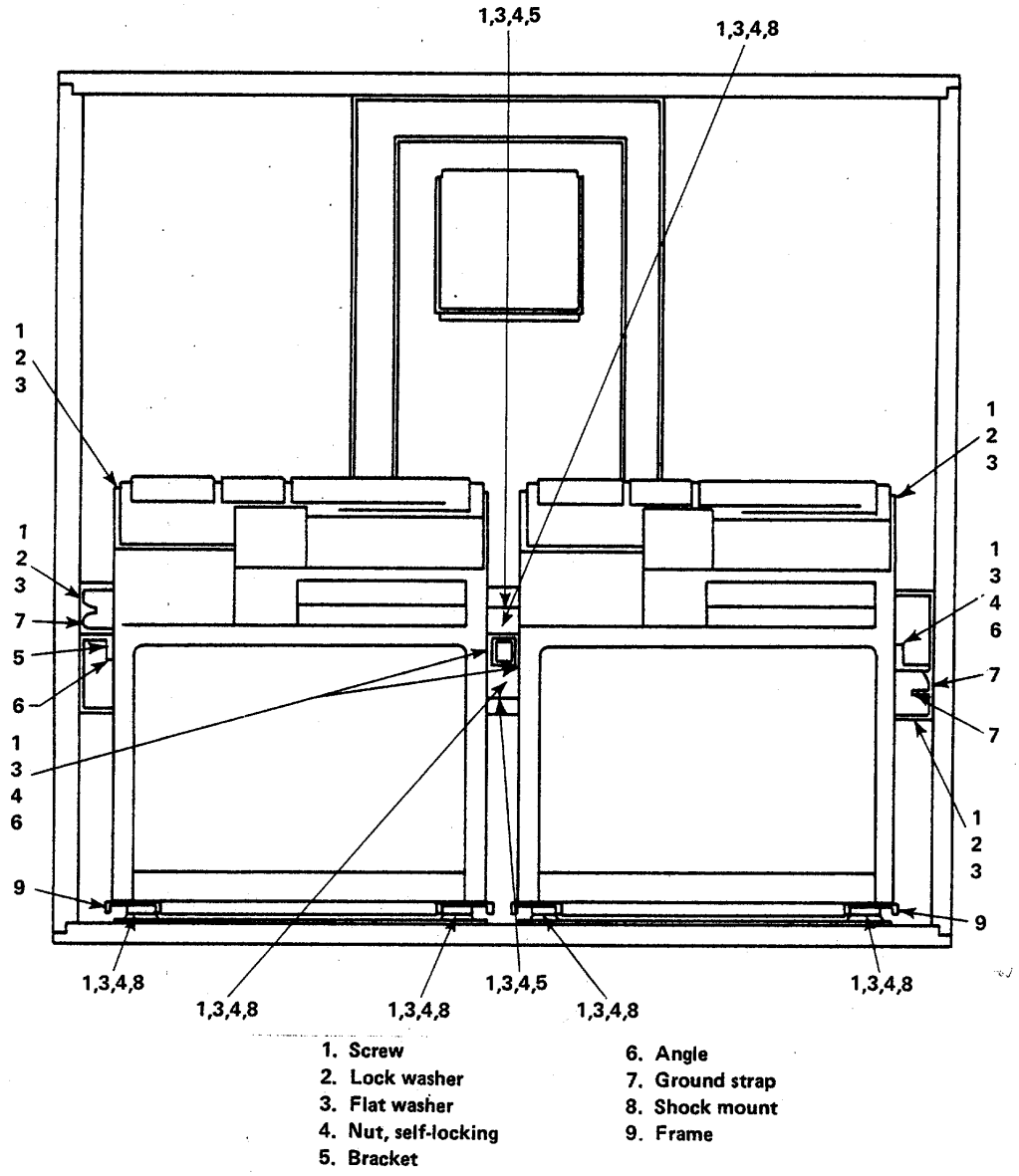


Figure 5-1. AN/UGC-49 Teletypewriter

(4) Connect power to the equipment.

5-14 RECEPTACLE MAINTENANCE.

a. Receptacle Removal.

(1) Turn circuit breaker controlling receptacle to OFF.
(2) Remove screws securing defective convenience receptacle to electrical duct or receptacle box.
(3) Pull receptacle out far enough to gain access to connections.
(4) Loosen terminal screws on back of new receptacle.
(5) Loosen terminal screws on old receptacle.
(6) Remove wires and connect to corresponding terminals on new receptacle.
(7) Tighten terminal screws on new receptacle.

b. Receptacle Installation.

(1) Position receptacle, ensuring wires are dressed neatly and insulation is not cut.
(2) Install screws removed in step a(2) above.
(3) Reset circuit breaker to ON.

5-15 BLACKOUT RECEPTACLE REMOVAL AND INSTALLATION.

a. *Receptacle Removal.*

(1) Turn light circuit breaker and blackout circuit switches to OFF.
(2) Remove assembly hardware sets securing blackout receptacle to top of electrical duct or to receptacle box.
(3) Pull receptacle out far enough to gain access to wires on back of receptacle.
(4) Unsolder wires from back of blackout receptacle.
(5) Solder to corresponding terminals on new receptacle.

b. Receptacle Installation.

(1) Position receptacle, ensuring wires are dressed neatly and insulation is not cut.
(2) Install hardware sets.
(3) Reset circuit breaker to ON.

5-16 BLACKOUT CIRCUIT SWITCH REMOVAL AND INSTALLATION.

a. Switch Removal.

(1) Turn light circuit breaker, blackout circuit switch, and the A and B phase circuit breakers to OFF.

(2) Remove assembly hardware sets securing upper cover plate to electrical duct or receptacle box. Pull cover plate far enough away to gain access to blackout circuit switch.

(3) Remove assembly hardware sets securing blackout switch to electrical duct or receptacle box.
(4) Loosen terminal screws on new switch.

(5) Remove wires from old switch and connect to corresponding terminals on new switch. Tighten terminal screws.

b. Switch Installation.

(1) Install switch in electrical duct or in receptacle box.
(2) Replace mounting hardware.

5-17 FLUORESCENT LAMP LENS REMOVAL AND INSTALLATION.

a. *Lens Removal.* See figure 5-2.

(1) Remove cover locking screws and allow cover to swing down slowly.
(2) Remove lens contacts by removing the assembly hardware sets securing each contact to cover.
(3) While holding lens in cover frame, remove remaining assembly hardware sets around frame.
(4) Remove lens.

b. Lens Installation

(1) Position new lens in cover frame.
(2) Install lens retainers and secure with hardware removed in step a(3), above.
(3) Install lens contacts using assembly hardware set for each.
(4) Swing light cover up and install two cover locking screws.

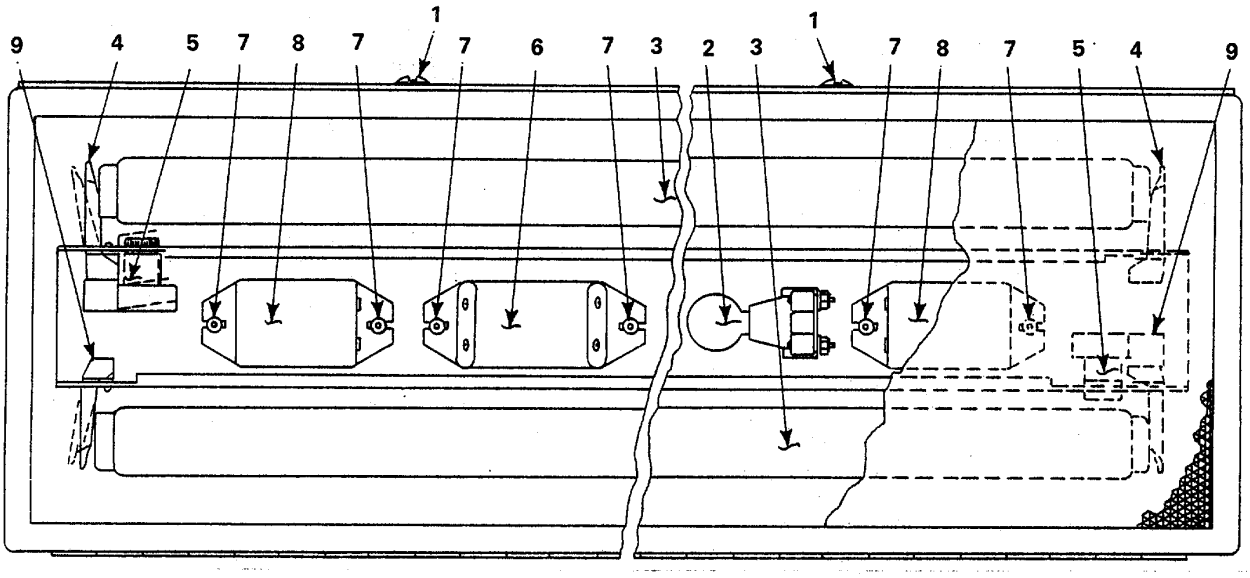
5-18 FLUORESCENT/INCANDESCENT LAMP REMOVAL AND INSTALLATION.

a. Lamp Removal. See figure 5-2.

(1) Turn ceiling lights to OFF. Turn light circuit breaker to OFF.
(2) Remove screws holding cover closed. Allow cover to swing down slowly.

(3) Grasp defective fluorescent lamp gently with one hand while pressing firnly against spring pressure of lockholder.

(4) Pull lamp down from unit.



1. Cover locking screw
2. Incandescent lamp (blackout light)
3. Fluorescent lamp
4. Lock holder with starter receptacle
5. Starter
6. RFI filter
7. Self-locking hex nut
8. Ballast
9. Lock holder without starter receptacle

Figure 5-2. Shelter Light Components

b. Lamp Installation.

(1) Insert one end of new lamp in either lock holder. Press firmly against spring pressure of engaged lockholder.

(2) Raise lamp to align pins with lockholder. Release lockholder over pins.

(3) Swing light cover up and install screws.

(4) Reset light circuit breakers to ON.

5-19 FLUORESCENT STARTER REMOVAL AND INSTALLATION.

a. Starter Removal. See figure 5-2.

(1) Remove lamp cover and fluorescent lamp (paragraphs 5-17 and 5-18) on same side of unit as defective starter.

(2) Rotate defective starter approximately 1/4 turn counter-clockwise until it is disengaged from holder.

(3) Remove starter.

b. Starter Installation.

(1) Insert new starter into holder. Press in firmly on starter and rotate it approximately 1/4 turn until it clicks into position.

(2) Install lamp and close cover of unit (paragraph 5-18).

5-20 RFI FILTER REMOVAL AND INSTALLATION.

a. Filter Removal. See figure 5-2.

(1) Turn light circuit switch to OFF.

(2) Remove two cover locking screws and allow cover to swing down slowly.

(3) Cut each wire entering filter as close as possible to filter unit.

(4) Using a thin screwdriver and an 11/32-inch wrench, remove self-locking hex nut and flat washer securing filter to the light unit.

(5) Loosen remaining hex nut a few turns and remove filter.

b. Filter Installation.

(1) Using a small piece of sandpaper, remove paint around screw slots on new filter unit.

(2) Slide one end of filter under washer and locknut.

(3) Wrap ground wire around screw shaft under flat washer. Tighten hex nut.

(4) Install flat washer and hex nut removed in step a(4), above.
(5) Cut ail four wires on new filter approxirnately five inches in length.
(6) Strip 3/8-inch of insulation from each wire.
(7) Connect wire from filter side opposite incandescent lamp to wire connecting both bailasts using a crimp-type, solderless butt connector.
(8) Connect wire from side opposite incandescent lamp to previously clipped wire at end of light unit using a crimp-type, solderless butt connector.
(9) Connect wire from side closest to incandescent lamp to wire running to two flex lock holders not having starters. Use a crimp-type solderless butt connector.
(10) Connect wire from side opposite incandescent lamp to wire running to shell side of incandescent lamp fixture. Use a crirnp-type solderless butt connector.
(11) Apply electrical tape around all solderless connectors. Dress all wiring into channel of unit.
(12) Swing light cover up and install two locking screws.
(13) Reset light circuit breakers to ON.

5-21 BALLAST REMOVAL AND INSTALLATION.

a. Ballast Removal. See figure 5-2.
(1) Turn light circuit switch to OFF.
(2) Remove two cover locking screws and allow cover to swing down slowly.
(3) Cut both ballast wires as close as possible to ballast unit.
(4) Using a thin screwdriver and an 11/32-inch wrench, remove one self-locking hex nut and flat washer used to secure ballast in light unit.
(5) Loosen hex nut on opposite end of ballast a few turns. Remove ballast.

b. Ballast Installation.
(1) Slide one end of replacement ballast under washer and locknut.
(2) Install flat washer and hex nut removed in step a(4), above.
(3) Cut wires on new ballast to approximately 5 inches. Strip 3/8 inch of insulation from each wire.
(4) Connect each wire from new ballast to wire in channel cut from old bassast. Use solderless butt connectors.
(5) Swing light cover up and install two cover locking screws.
(6) Reset light circuit breaker to ON.

5-22 LIGHT SWITCH REMOVAL AND INSTALLATION.

a. Light Switch Removal.
(1) Turn light circuit breaker to OFF.
(2) Remove assembly hardware sets securing mounting plate of defective switch to ceiling.
(3) Pull plate and switch down from ceiling far enough to gain access to connections on back of switch.
(4) Remove assembly hardware sets securing light switch to mounting plate.

b. *Light Switch Installation.*
(1) Loosen terminal screws on new switch.
(2) Remove wires from old switch and connect to corresponding terminals on new switch. Tighten terminal screws.
(3) Install mounting plate on switch using the hardware sets removed in step a(4), above.
(4) Press mounting plate into position, ensuring wires are dressed neatly behind plate.
(5) Install assembly hardware sets removed in step a(2), above.
(6) Reset light circuit breaker.

CHAPTER 6

FUNCTIONING OF EQUIPMENT

Section I. INTRODUCTION

6-1 GENERAL. The Communications Central, AN/TSC-75A, is a self-contained, transportable communications facility, housing several types of communications equipment in two shelters. Functional descriptions of the equipment housed within the AN/TSC-75A are provided in the technical manuals covering the individual equipment.

6-2 FUNCTIONING OF ANITSC-75A. The AN/TSC-75A is capable of functioning as an independent unit when provided with the necessary auxiliary equipment, listed and described in TM 32-5410-217-14. In normal operation, the AN/TSC-75A is deployed as part of Mobile Operations and Electrical Facility AN/MSA-34, which provides central facilities for air conditioning, heating, and electrical power.

a. *Operation.* Five sets of equipment send and receive signals on five lines as shown in figure 6-1. The equipment also enables the operators, by means of patch panels, to select alternative equipment when desired or required.

b. *Patch Panel Operation.* Two patch panels enable any of the five teletype units to operate with any of the three KWX-1 1 units and KW-26 units in any combination. The two patch panels also enable the three KWX-1 1 and two KW-26 units to operate in any combination on the five signal lines. Figure 6-1 illustrates the various patching capabilities of the AN/TSC-75. When no patching is performed, the following configuration of the AN/TSC-75 exists:

(1) TTY No. 1 unit operates with No. 1 KWX-11, and No. I KWX-11 operates on external signal line No. 1.
(2) TTY No. 2 unit operates with No. 2 KWX-11, and No. 2 KWX-11 operates on external signal line No. 2.
(3) TTY No. 3 unit operates with No. 3 KWX-11, and No. 3 KWX-11 operates on external signal line No. 3.
(4) TTY No. 4 unit operates with No. 4 KW-26, and No. I KW-26 operates on external signal line No. 4.
(5) TTY No. 5 unit operates with No. 5 KW-26, and No. 2 KW-26 operates on external signal line No. 5.

c. *Signal Flo*w. The transmitted teletype signal is produced at TB1 and applied through the Red patch panel left half to the crypto equipment. The encrypted data signal is applied to the Black patch panel left half and the send relay amplifier. The amplifier drives the relay with +6 Vdc and -6Vdc signals from the 6 volt power supplies through a fuse and ballast lamp. The send relay applies a 120-volt encrypted data signal to the line in the Mark position from the 120 Vdc power supply through the battery select switch. The encrypted signal is presented to the external connector box. The received signal enters at the external connector box and is applied through the Black patch panel right half to the receive relay. The encrypted data signal operates the relay to produce a +6 Vdc signal during the Mark condition and a -6 Vdc signal during the space. The data signal is applied through the Black patch left hand to the crypto equipment. The unencrypted data signal is applied through the Red patch to TC3 of the teletype (figure 6-1 and FO-2).

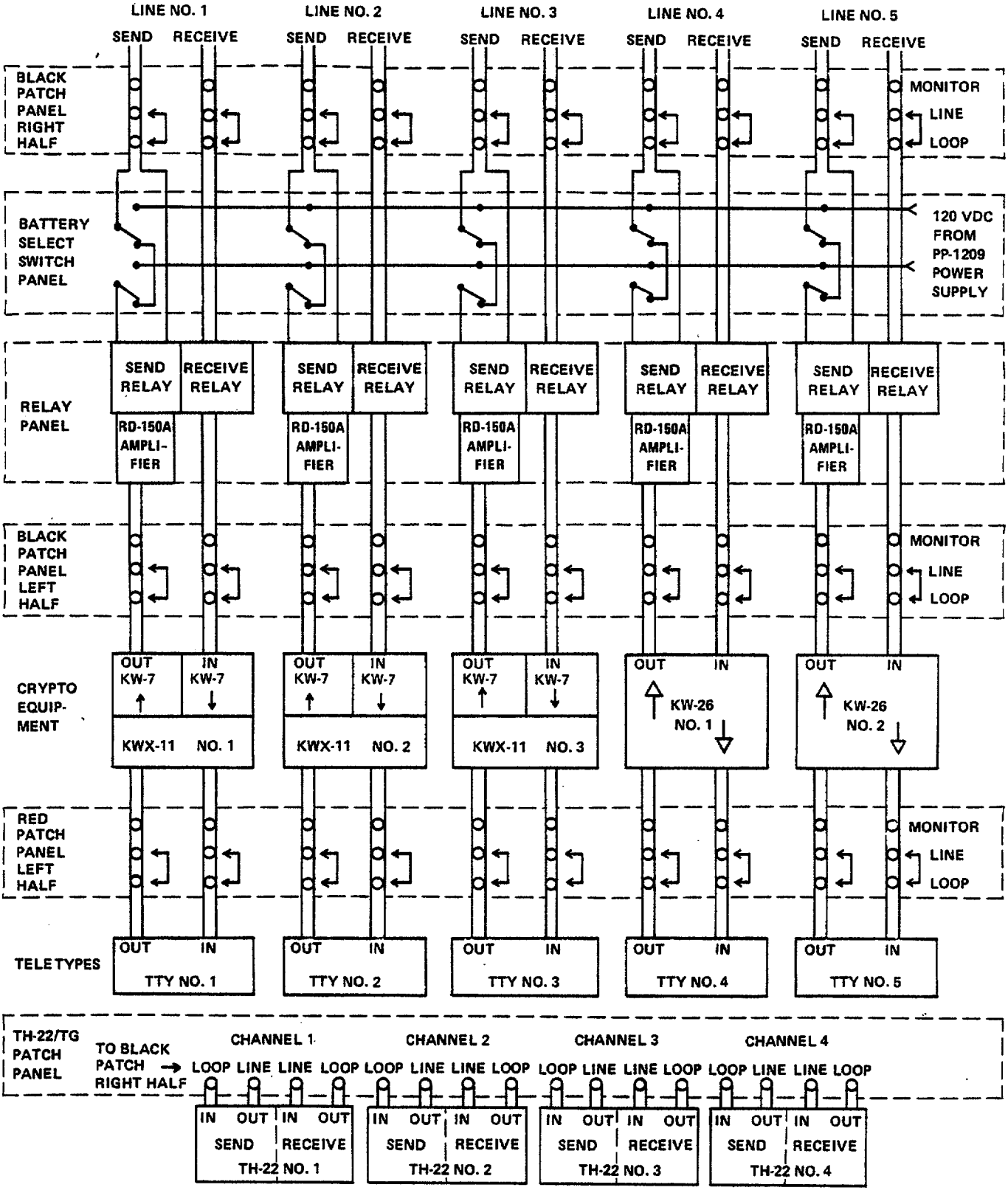


Figure 6-1. AN/TSC-75A Block Diagram

CHAPTER 7

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

7-1 SCOPE. This section provides direct support and general support maintenance instructions for the central. Direct and general support maintenance will primarily consist of repairs to components, bench tests as specified in individual technical manuals, and repairs to the system beyond the operator/organizational level.

7-2 VOLTAGE AND RESISTANCE MEASUREMENTS.
See table 7-1. Perform the necessary voltage checks. Perform these system level checks line by line as required. Access to the five terminal boards TB1 through TBS will require sliding some of the equipment halfway out of the rack. TB1 and TB2 are behind the Red patch rack, and TB3 through TB5 are behind the Black patch rack (figure 1-3).

Table 7-1. Key System Voltage and Waveforms

Component	Voltages	Test Point	Input waveform	Output waveform
1. Black patch, right half	120 Vdc	Monitor jack	encrypted data	encrypted data
2. Telegraph tone converter		Black patch right half monitor jack	encrypted data	tone modulated encrypted data
3. Battery select switch	120 Vdc	Switch, TBS		
4. Send relay input	6 Vdc	TPE		
5. Send relay output	120 Vdc	TP7, TP6	encrypted data	
6. Send relay amplifier		TPL, TB6	encrypted data	
7. Receive relay input	120 Vdc	TP1	encrypted data	
8. Receive relay output	6 Vdc "Mark"	TP7	encrypted data	
9. Black patch, left half		Monitor jack		
10. Crypto equipment			TTY data	encrypted data
11. Red patch, left half		Monitor jack	TTY data	
12. Teletype			TTY data	TTY data

7-3 WAVEFORMS. See table 7-1 for listing of typical system waveforms. See individual technical manuals for component waveforrns during bench tests.

7-4 CONTINUITY TESTS. Perform continuity tests to the system as required. See FO-2 and FO-3.

7-5 BENCH TESTS. Perform bench tests as required once faults have been isolated and verified to a single component. Refer to individual technical manuals for bench test procedures of specific components.

Section II. TOOLS AND EQUIPMENT

7-6 TOOLS AND EQUIPMENT. .No special tools or equipment are authorized or required for maintenance of the AN/TSC-75A. See the individual technical manuals for special tools or equipment required for specific items of equipment comprising the AN/TSC-75A.

7-7 MAINTENANCE REPAIR PARTS. See the individual technical manuals for maintenance repair parts required for specific items of equipment comprising the AN/TSC-75A.

Section III. TROUBLESHOOTING

7-8 GENERAL. This section provides troubleshooting procedures to be used for isolating the source malfunctions which rnay occur in equipment and interconnecting cables housed within the two shelters. Refer to appropriate technical manuals for troubles related to the basic shelter and/or operating equipment. (Appendix A.)

7.9 TROUBLESHOOTING PROCEDURES. Trouble-shooting procedures for the AN/TSC-75A are provided in table 7-2.

7-10 DIAGRAMS. See FO-1, FO-2, and FO-3 as required.

Table 7-2. Direct and General Support Troubleshooting Chart

Item no	Malfunction	Probable Cause	Corrective action
1	Signal loss through Black patch panel right hand	a. No 120 Vdc send relay supply voltage	a. Check voltage and waveform at Monitor jack. Repair battery select switch, power supply as required.
		b. Open wiring in panel	b. Check continuity between Line, Loop, and Monitor jacks with battery select switch OFF and 120 Vdc supply OFF if possible.
2	Signal loss through TH-22 telegraph con-verter terminal		a. Perform bench tests as required.
3	Signal loss through battery select switch	a. No 120 Vdc supply	a. Check voltage at power supply output. Service as required.
4	Signal loss through send relay	a. No 120 Vdc supply at output	a. Check voltage at 120 Vdc power supply output. Service as required.

Table 7-2. Direct and General Support Troubleshooting Chart - Continued

Item No	Malfunction	Probable Cause	Corrective action
		b. No 6 Vdc supply at input	b. Check voltage at 6 Vdc power supplies. Service as required.
		c. Relay needs replacement	c. Replace as required.
5	Signal loss through send relay amplifier		a. Perform bench tests as required.
6	Signal loss through receive relay	a. No 6 Vdc supply to output	a. Check for +6V at TP6 in Mark condition and 6V during space. Service or repair supplies as required.
		b. Relay needs replacement	b. Replace as required.
7	Signal loss through Black patch left half	a. Open wiring in panel	a. Check continuity between Line, Loop, and Monitor jacks. Repair as required.
8	Signal loss through crypto equipment		a. Perform bench tests as required.
9	Signal loss through Red patch, left half	a. Open wiring in panel	a. Check continuity between Line, Loop, and Monitor jacks. Repair as required.
10	No output or printout at teletypes		a. Perform maintenance as required.

Section IV. MAINTENANCE OF AN/TSC-75A

7-11 COMPONENT REPAIRS. Perform repairs to communications components when required as specified in the individual technical manuals.

7-12 SHELTER REPAIRS. Perform repairs to the shelter when required as specified in TM 32-5410-217-14&

Section V. DIRECT SUPPORT AND GENERAL SUPPORT TESTING PROCEDURES

7-13 TESTS AND PROCEDURES. Procedures required for testing completed component repairs are provided in paragraph 3-5. Procedures required for testing components will be provided in individual maintenance manuals.

7-14 PERFORMANCE STANDARDS. Performance standards required to determine the condition of repaired equipment will be found in individual technical manuals.

CHAPTER 8

MATERIEL USED IN CONJUNCTION WITH MAJOR ITEM

8-1 GENERAL. Functional descriptions and procedures for installing, interconnecting, and operating the auxiliary generators required for independent deployment are provided in TM 5-6115-365-15. Procedures for auxiliary air conditioners and mounting kits are provided in TM 54120-222-14 and TM 4 32-5410-217-14&P.

APPENDIX A

REFERENCES

Reference	Title
TM 54120-222-14	Operator's, Organizational, Direct Support and General Support Manual: Air Conditioner, Self Contained CE 20 VAL 6
TM 11 5115-365-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Generator Set PU-332A/G
TM1 11-5810-214-12&P	Operator's and Organizational Maintenance Manual: (Including Repair Parts and Special Tools Ust) TSEC/KW26
TM 11-5810-221-15	Operator's and Organizational, Direct Support, General Support and Depot Maintenance Manual: TSEC/KW7
TM 11-130-359-14	Operator's and Organizational, Direct Support and General Support Maintenance Manual: Power Supply, LM-C-6
TM 32-5410-217-14&P	Organizational, Direct Support and General Support Maintenance Manual: (Including Repair Parts and Special Tools List) Shelter, Electrical Equipment S-389/MSA-34
TM 32-5811021-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Operational Unit, Transportable Systern (OUTS)
TM 32-5895-242-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Communication Central AN/TGC-35A
TM 38-750	The ARMY Maintenance Management System (TAMMS)
TM 43-0139	Painting Instructions for Field Use
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)
Bulletin 270B (Teletype Corp.)	Operation and Maintenance Instructions for Teletype AN/UGC49
SB 70841/42	Federal Supply Code for Manufacturers; United States and Canada. Name to Code and Code to Name (GSA-FSS H4-1(H4-2)
SF-368	Quality Deficiency Report
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters

Reference	Title
DA PAM 310-7	Military Publications: US Army Equipment Index of Modification Work Orders
DA Form 2028	Recommended Changes to Publications and Blank Forms
DD Form 6	Report of Packaging and Handling Deficiencies

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1 SCOPE. This appendix lists integral components of and Basic Issue Items (BII) for Communications Central AN/TSC-75A to help you inventory items required for safe and efficient operation.

B-2 GENERAL This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of End Item. These items, when assembled, comprise the central and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items (BII). These are the minimum essential items required to place the central in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the central during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3 EXPLANATION OF COLUMNS.

a. illustration This column is divided as follows:

(*1) Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(*2) Item Number.* The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. Not applicable.

g. Quantity Required (Qty Req'd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (a) FIG NO	(1) ILLUSTRATION (b) ITEM NO	(2) NATIONAL STOCK NUMBER	(3) PART NUMBER	(4) DESCRIPTION (FSCM)	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD	(8) QUANTITY RCVD	(8) QUANTITY DATE	(8) QUANTITY DATE	(8) QUANTITY DATE
1-1		5410-00-988-0302		SHELTER, ELECTRICAL EQUIP-MENT S-389/MSA-34 (MODIFIED)			1				
1-4		5815-00-879-6529	ANUGC54 FSCM 80058	TELETYPEWRITER AN/UGC49			3				
1-5		5815-00-108-5517	ANUGC54 FSCM 80058	TELETYPEWRITERAN/UGC-54			2				
1-7		5830-00-327-5066	MT1577G	RACK, ELECTRICAL EQUIPMENT MT-1577/G FSCM 80058			6				
1-8				ELECTRONIC TELETYPEWRITER SECURITY EQUIPMENT KW-7			6				
1-8				ELECTRONIC TELETYPEWRITER SECURITY EQUIPMENT KWX-1 1			4				
1-8		5810-00-960-2171		ELECTRONIC TELETYPEWRITER SECURITY EQUIPMENT KW-26			2				
1-7		5805-00-340-3559	PP1209FG	ASSEMBLY, POWER SUPPLY PP-1209F/G FSCM 80063			2				
1-7			4028316-0501	PANEL, PATCH			2				
1-7			0012-1-1207-1	PANEL, ALTERED FUSE			2				
1-7			2003773-0501	PANEL, BALLAST LAMP			2				
1-7		7110-00-999-0628		SAFE PSIM-12			2				
1-5		7125-00-990-9948	CY6154G	CABINET, STORAGE CY-6154/G FSCM 80058			1				
				DRAWER, STORAGE			1				
1-7				PANEL, RELAY, ASSEMBLY			2				
				CHASSIS,ALTERED RELAY			1				
				PANEL, SWITCH ASSEMBLY			1				
1-7		6695-00-842-2458	TH22	TERMINAL, TELEGRAPH CONVERTER TH-22 FSCM 99251			4				
1-7		5805-00-543-0012	TA312PT	TELEPHONE SET TA-312/PT FSCM 81349			1				

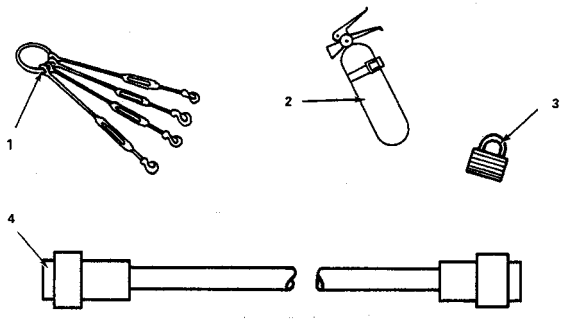


Figure B-1. Basic Issue Items

Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) PART NUMBER	(4) DESCRIPTION	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a) FIG NO	(b) ITEM NO							RCVD	DATE	DATE	DATE
B-1	1		0283-2-2000-1	SLING ASSEMBLY 0283-2-2000 (15942)			2				
B-1	2	4210-00-555-8837	MIL-B-52031	EXTINGUISHER, FIRE W/BRACKET MIL-B-5203 1 (99539)			2				
B1	3		0283-2-2234-1	PADLOCK AND CHAN ASSEMBLY, MODIFIED 0283-2-22341			4				
B-1	4		0283-1-2226-1	CABLE ASSEMBLY			2				

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1 SCOPE. This appendix lists additional items authorized for the support of the Communications Central AN/TSC-75A.

C-2 GENERAL. This lists identifies items that do not have to accompany the central and that do not have to be turned in with it. These items are all authorized by CTA, MTOE, JTA.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION Part Number & FSCM	Usable on Code	(3) U/M	(4) QTY AUTH
4120-00-973-4589		AIR CONDITIONER, 208 V, 3-PHASE, 50/60 Hz, CE 20 VAL 6	EA	2
		- OR -		
4120-00-168-1781		AIR CONDITIONER, 208 V, 3-PHASE, 50/60 Hz, CH 620-2		
4130-00-973-4589		ELECTRIC GENERATOR, P4-332A/G 10 kW, 208 V, 3-PHASE, 60 Hz	EA	2
	0216-1-1100 (15942)	KIT, AIR CONDITIONER MOUNTING MK-OOI-1/U	EA	2
	0283-1-4600-1 (15942)	KIT, WALKWAY, SIDE	EA	1
		KIT, GROUND ROD, COMPRISED OF:		
	0283-1-2221-2 (15942)	CABLE, GROUND	EA	2
5975-86-3912	9592 (90190)	CLAMP, GROUND ROD	EA	2
5975-00-549-0011	9438 (90190)	ROD, GROUND	EA	2

APPENDIX D

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

D-1 GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The irnplementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the tools and test equipment required for a particular function as referenced from Section II.

d Section IV contains supplemental instructions or explanatory notes for a particular maintenance function as referenced from section II.

D-2 MAINTENANCE FUNCTIONS.

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

e. Replace. The act of substituting a serviceable like type part, subassembly, or module for an unserviceable counterpart.

f Repair. The application of maintenance services or other maintenance actions 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.

g. Overhaul That maintenance effort (services actions) necessary to restore an item to a completely serviceable/ operational condition as prescribed by maintenance standards; i.e., Depot Maintenance Work Requirement 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.

h. 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.

D-3 EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column i 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 names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, *Maintenance Function.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para. D-2.)

d. Column 4, Maintenance Level Column 4 specifies, by the listing of a "work time" 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 the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of man-hours specified by the "work time" 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 MAC. The symbol designations for the various maintenance levels are as follows:

C ..... Operator or crew
O..... Organizational maintenance

F ..... Direct support maintenance
H..... General support maintenance
D..... Depot maintenance

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

f Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetical order, which shall be keyed to the remarks contained in Section IV.

D-4 EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS SECTION III.

a. Column 1, Reference Code. The tool and TMDE reference code correlates with a code used in the MAC, Section II, column 5.

b. Column 2, Maintenance level The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National/NATO Stock Number. The National Stock Number (NSN) of the tool or TMDE.

e. Column 5, Tool Part Number. The manufacturer's part number.

D-5 EXPLANATION OF COLUMNS IN REMARKS SECTION IV.

a. Reference Code. The code recorded in Section II, column 6.

b. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIP	(6) REMARKS
00	COMMUNICATIONS CENTRAL AN/TSC-75A	Inspect	.5	.5					
		Service	1.0	1.0					
		Install		1.0					
		Repair	.5	1.0	5.0				
		Overhaul				80			
		Rebuild				120			
01	SHELTER GROUP								
0101	SHELTER S-389/MSA-34	Inspect	.2						
		Service		1.0					
		Instail		1.0					
		Replace		1.0					
		Repair		8.0					
		Rebuild				40			
0102	ELECTRICAL SYSTEM	Inspect		.2					
		Test		.2					
		Service	1.0						
		Replace			3.0				
		Repair		3.0	3.0				
0103	LIGHTING	Inspect	.1						
		Test	.1						
		Service		.5					
		Replace		.5					
		Repair		2.5					

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIP	(6) REMARKS
0104	CONDUIT	Inspect		.2					
		Service		1.0					
		Repair	4.0						
02	EQUIPMENT GROUP								
0201	TELETYPE AN/UGC49	Inspect	.l	B					
		Test	.1						
		Service		.1					
		Replace		1.0				2	
		Repair			2.0				
0202	ELECTRONIC TELETYPE-WRITER SECURITY EQUIPMENT KW-7, KWX-1 1, KW-26	Inspect	.2						
		Test	2						
		Service							
		Replace	1.0						
		Repair	2.0						
0203	PATCH PANEL	Inspect	2						
		Test		.3					
		Service		,3					
		Replace	1.0						
0204	TELEGRAPH CONVERTER TERMINAL TH-22	Inspect							
		Test	.2						
		Service							
		Replace	.2						
		Repair	*1.5*						
0205	POWER SUPPLY PP-1209/FG	Inspect	.1						
		Test							
		Replace	.4						
		Repair	2.0						
0206	FUSE PANEL								
0207	SWITCH PANEL	Inspect	.1						
		Test							
		Replace	2						
		Repair	*.5*						
0208	RELAY PANEL	Inspect							
		Test							
		Replace	.2						
		Repair	*.5*						
0209	BALLAST PANEL	Inspect	.1						
		Test	, I						
		Replace		.2					
		Repair							
0210	TELEPHONE TA-3 12/PT	Inspect	1						
		Test			*.5*				
		Replace	.1						
		Repair		.1	.5				

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIP	(6) REMARKS
			C	O	F	H	D		
0211	ELECTRICAL EQUIP-MENT RACK MT-1579/G	Inspect Service	.1 .1						
0212	SIGNAL CABLE	Inspect Test Service Replace	.2 .2 .1 .3						

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference code	(2) Maintenance level	(3) Nomenclature	(4) National/NATO stock number	(5) Tool number
1	0	MULTIMETER TS-352B/4	6625-00-553-0142	TS-352B/4
2	0	TOOL KIT, TELETYPEWRITER TE-50B		TE-SOB

Section IV. REMARKS

Reference code	Remarks
A	REFER TO TM 32-5410-217-14&P FOR MAINTENANCE INSTRUCTIONS.
B	REFER TO TELETYPE BULLETINS 270B AND 312B, VOLS. 1 THROUGH 5, FOR MAINTENANCE INSTRUCTIONS.
C	REFER TO TM 11-5810-214-12&P (KW-26) FOR MAINTENANCE INSTRUCTIONS.

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1 SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the Communications Central AN/TSC-75A. These items are authorized to you by CTA 50-970,. Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

E-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. E").

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

C ..... OperatorlCrew

c. Column 3, National Stock Number (NSN). This is the NSN 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 U/M differs from the unit of issue, requisition the lowest unit that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

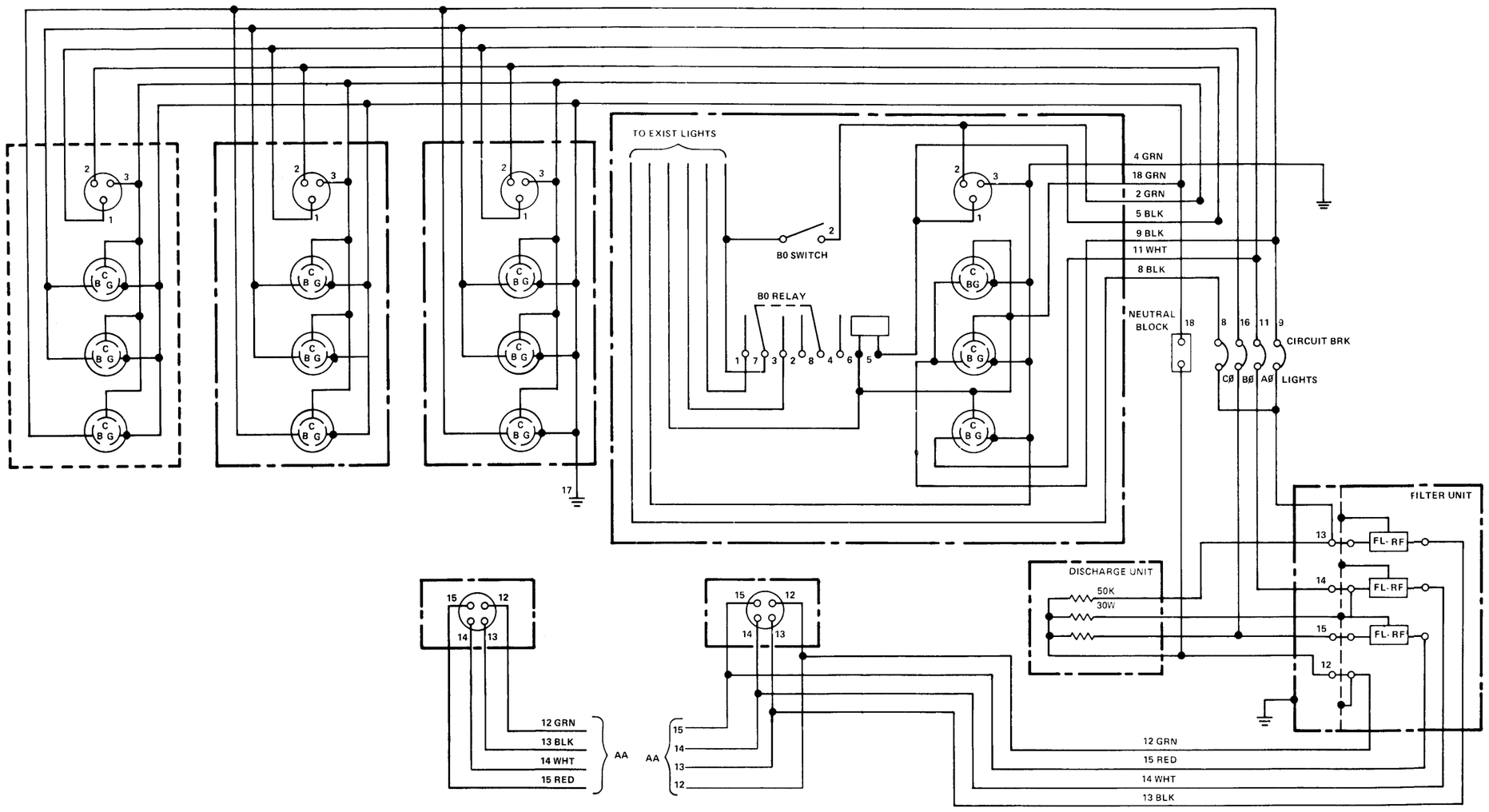
(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	7930-00-395-9542	CLEANING COMPOUND, TRICHLOROETHANE	OZ
2	C	9150-00-231-6640	OIL, GENERAL PURPOSE	EA

By Order of the Secretary of the Army:

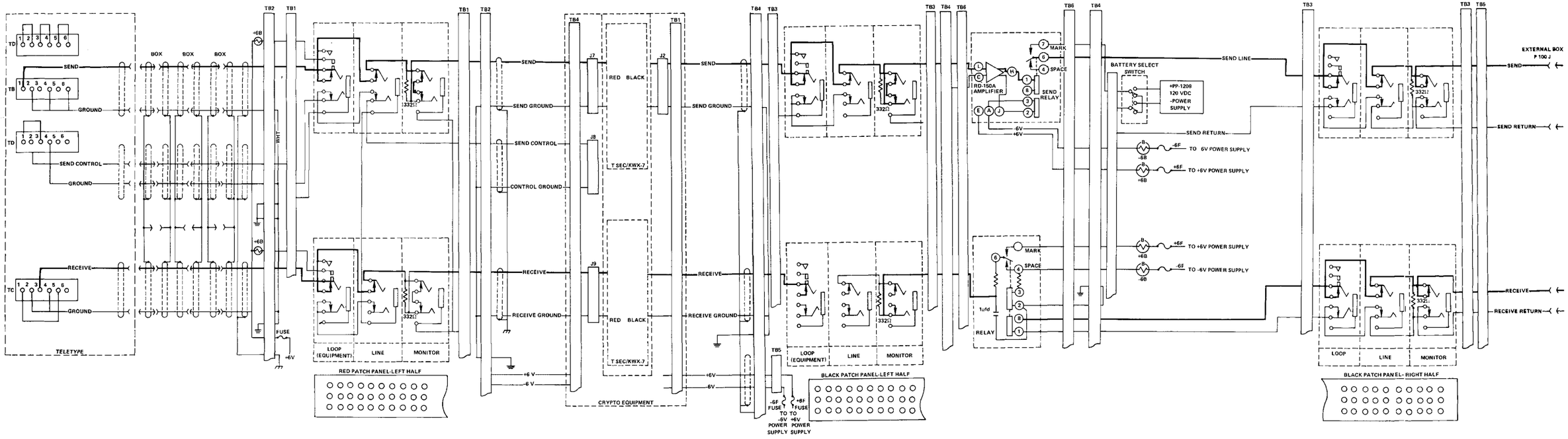
E. C. MEYER
General, United States Army
Chief of Staff

Official:

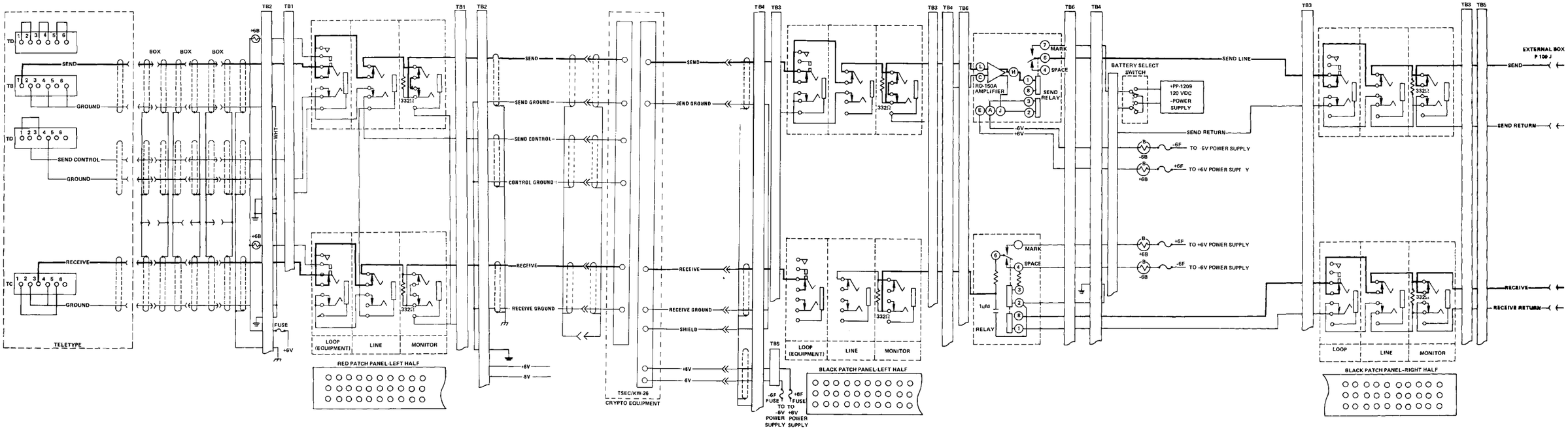
J. C. PENNINGTON
Major General, United States Army
The Adjutant General



FO-1. Electrical System Schematic



FO-2. Schematic, Signal lines 1 through 3



FO-3. Schematic, Signal lines 4 and 5

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