Air Transportable Loran C System

(ATLS)

OPERATIONAL FACILITY

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

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CHAPTER 1 - INTRODUCTION

1.1 SCOPE OF MANUAL: This manual contains instructions for installing, energizing, maintaining, disassembling, and storing an Air Transportable Loran-C System (ATLS) Operational Facility (see Figure 1-1). The instructions set forth in this manual are to be used in conjunction with the equipment manuals which are listed in Table 1-1.

1.2 DESIGN CONCEPT: The Air Transportable Loran-C System (ATLS) has been developed in order to provide the Coast Guard with the capability to rapidly get a Loran-C station back into operation after it has been partially or completely destroyed through natural disaster or enemy action. The system also provides the capability of rapidly installing a new single station or a new Loran-C chain. Each station was developed by converting Coast Guard furnished AN/FPN-44 and 46 Loran, communications, power generation, and fuel storage and transfer equipment, and other long-lead-time procurement items to an air-transportable rapid-assembly configuration. This was done primarily by installing the equipment in shelters and utilizing removeable interconnections between the shelters for the electronic, electrical, and mechanical systems.

1.3 DESCRIPTION: Each complete ATLS facility consists of eighteen shelters, two pallets, four generators, and three mobilizers arranged in the following functional groups (See figure 1-1):

1.3.1 Power Group - Consisting of four 250 KW generators, a fuel storage and transfer system, and three shelters and one pallet containing power control and distribution equipment and spare parts.

1.3.2 Timing/Synchronization/Communications Group - Consisting of a communications antenna system, Loran receiving antenna system, and seven shelters, containing the timers, synchronizers, transmitter control unit, communications equipment, office facilities, and spare parts.

1.3.3 Transmitter Group - Consisting of two transmitter water coolers and eight shelters and one pallet containing both transmitters, the antenna couplers, the dummy load, the transmitter monitoring equipment, and the transmitter water distribution and primary heat exchanger equipment. (The Loran-C transmitting antenna is provided separately).

1.3.4 In addition, each facility has the following equipment, common to all groups: Electrical power distribution, lighting, heating/air conditioning, fire protection, and intercom equipment, plus transportation equipment, consisting of three mobilizers to carry the shelters, pallets, and generators.

1.3.5 A more detailed description of the ATLS facility is provided in chapter 2 of this manual.

1.4 CAPABILITIES: Each ATLS facility has the following capabilities:

1.4.1 Capable of being transported to and operated at a remote site anywhere in the world in any normal climate between 75°N and 60°S latitudes.

1.4.2 Capable of being transported from the delivery aircraft to the site and erected with only a standard military towing vehicle required in addition to the ATLS components.

1.4.3 Capable of being erected and placed in an operational condition with a 29 man Coast Guard crew in a period of four weeks after it arrives at a site.

1.4.4 Capable of repeatedly being assembled and disassembled, with minimum refurbishing and parts replacement.

1.4.5 Capable of long term unattended storage in an arid atmosphere.

1.5 FLEXIBILITY: The ATLS has been designed so that any one group and certain specific components may be stored, transported, and operated completely independently of any other components, provided they receive the proper power and electrical inputs when in the operating condition. Examples of this flexibility follow:

1.5.1 Timing room burned out - Deploy two timer shelters.

1.5.2 Fuel system destroyed - Deploy fuel system.

1.5.3 Transmitters and TCG destroyed - Deploy transmitter group and TCG shelter.

1.5.4 Communications fire - Deploy communications shelter.

1.5.5 Multiple generator failure - Deploy one or two generators only.

It should be noted that certain components, such as the power generators, fuel systems, communications gear, transformers, etc., are capable of recouping not only Loran C, but Loran A as well, and any Coast Guard facility which has similar equipment requirements. The power generators are entirely self-contained and are designed to produce 250 KW of 416-480V or 208-240V 3-phase power within 8 hours after their arrival at a site. They can be moved into place from the aircraft using only the ATLS mobilizers.

1.6 TRANSPORTABILITY.

1.6.1 Air. The primary method of transportation is by C-130 or C-141 military aircraft equipped with the 463L Cargo Handling System. By attaching the removable aircraft loading rails to the shelter, pallet, or generator, the base of each shelter, pallet, or generator is configured to match the rollers and the locking mechanisms of the 463L system. The required restraining capability (as specified in the aircraft loading manual) is provided by the

loading rails and the locking mechanism. When installing the loading rails, all bolts should be in place before loading the equipment into the aircraft. The ATLS mobilizers can be used for aircraft loading or unloading of the shelters, pallets, and generators. (Refer to the ATLS mobilizer manuals for detailed instructions).

1.6.2 Road. The ATLS units can be moved over highways by common carrier or by using the ATLS mobilizers. The aircraft loading rails must either be removed from the sides and placed in their stowed positions in order to meet the 8' maximum roadway limitation or special highway permits must be acquired. When the loading rails are stowed, the rail attaching bolts should be replaced in the unit's side plates. All units are designed to be moved over unimproved roads or cross-country to their final site by means of the ATLS mobilizers.

1.6.3 Sea. Only the generators should be transported by sea, due to the susceptibility of the shelter structures and equipment to corrosion.

1.6.4 Rail. Rail transportation is not recommended for ATLS units, due to the large shock loads experienced in coupling railroad cars.

1.7 LOADING AND UNLOADING.

1.7.1 Mobilizers. The mobilizer jacks provided with the Loadcraft mobilizers can be utilized to load the units on the mobilizers or to unload them from the mobilizers. This method does not require any other weight-handling equipment and would be the normal method used at a remote installation site where a crane was not available. (Refer to the Loadcraft mobilizer manual for instructions on the use of the mobilizer jacks.)

1.7.2 Overhead Lift. Where a crane or overhead lift is available, the sling and spreader bar system which is provided as part of the ATLS system can be utilized in loading or unloading the units. The sling system is stored on the Loadcraft mobilizers. If the mover provides his own sling system, it must include at least 9-foot-long spreader bars to prevent crushing of the generator housings and the shelter walls. Lifting locations are stenciled on the unit. (See paragraph 3.9 for additional instructions). Table 1-2 lists the weights of the various ATLS units.

1.8 SUPPORT FACILITIES. For very rapid deployment, housing and messing will be of a field type (tents with C-rations), followed up by skid-mounted collapsible insulated shelters containing berthing, messing, heads, food storage and preparation, and recreation facilities. These shelters will be delivered by ship or other slower and less expensive means of transportation. The housing and messing facilities will not be procured until deployment of the ATLS is ordered. Temporary lodging may not be required if local housing is available near the ATLS site. Support facilities will usually be programmed simultaneously with ATLS deployment, and could consist of the standard structures, water and sewage facilities, landscaping, etc., normally provided in a standard Loran-C station complex. Further discussion of support facility planning and requirements are beyond the scope of this manual.

1.9 LORAN TRANSMITTING ANTENNA. The ATLS transmitters are designed for connection to a standard 625 foot antenna tower or an antenna system of TIP configuration. Sufficient transmission cable is provided in the system to enable placement of the transmitter group up to 500 feet from the transmitting antenna. The procurement, shipment, and erection requirements of the antenna tower will depend upon the site selected and the time requirements for deployment.

1.10 SUPPLEMENTAL EQUIPMENT AND MATERIALS. The equipment and materials listed in Table 1-3 are required for proper installation and/or operation of an ATLS facility; but, due to their design, fragility, combustibility, shelf-life, or other reasons, they are not permanently stowed in the ATLS shelters. These items must be acquired and deployed in advance of or along with the ATLS equipment to ensure availability during the installation phase. The acquisition and shipping modes and procedures used will depend on the time limitations, site location, and other circumstances. Some of these items can be included on the station outfitting list (in the case of a new station) and shipped to arrive when needed.

1.11 PERSONNEL REQUIREMENTS, (to be developed)

TABLE 1-1

ATLS EQUIPMENT MANUALS

Equipment/Model	Manual
Timer/Synchronizer (AN/FPN-46)	CG-273-104 (Operating Manual)
Loran Transmitter Set (AN/FPN-44)	CG-273-103 (Operating Manual)
Frequency Standard (AN/URQ-14)	Hallicrafters Co. Technical Manual (CG-273-101).
Changes to Technical Manual, Timer Synchronizer Set AN/FPN-46	CG-273-104 P1
Changes to Technical Manual, Loran Transmitting Sets AN/FPN-44 and AN/FPN-45	CG-273-103 P1
ATLS Loran Equipment Modifications *	Loran Addendum
Recording Set, Graphic (AN/GSH-18)	Technical Manual
Regulated Power Supply (AN/FPN-44)	Technical Manual
D.C. Power Supply (AN/FPN-44)	Operating Manual
Plastic Schematics (AN/FPN-44)	Operating Manual
Test Data (AN/FPN-44)	Operating Manual
Primary Heat Exchanger (AN/FPN-44)	Technical Manual
Secondary Heat Exchanger (Ellis & Watts LTA-250) *	Ellis & Watts LTA-250
Communications System	RF Communications, Inc. SSB Communications Systems Technical Manual (Appendix I Lists all Publications Necessary for the Operation and Maintenance of the Communications System.)
Intercom System (Executone) *	Executone 100 Series Service Manual

TABLE 1-1

ATLS EQUIPMENT MANUALS (Continued)

Equipment/Model	Manual
Fire Detection System (Pyrotronics, Inc.) *	Pyr-A-larm Maintenance Manual
Air Conditioner, Large (Ellis & Watts MOAC 513) *	Ellis & Watts MOAC 513 Service Manual
Air Conditioner, Small (G.E. AGDCE18DAXG1) *	G.E. RAC Service Manual 30-1700
Water Pump, (Jacuzzi) *	ATLS Manufacturer's Data Book
Water Cooler (Westinghouse) *	ATLS Manufacturer's Data Book
Water Purifier (Ogden) *	ATLS Manufacturer's Data Book
Kitchen Unit; Range, Refrigerator, Sink (Crane) *	ATLS Manufacturer's Data Book
Welding Set (Dayton) *	ATLS Manufacturer's Data Book
Air Compressor (Speedaire) *	ATLS Manufacturer's Data Book
Van Mobilizer (Loadcraft MC-2X)	Loadcraft MC-2X Operation and Maintenance Manual
Van Mobilizer (Gichner VM2003)	Gichner VM2003 Operation and Maintenance Manual
Generator (EMU-28/E)	A.G. Schoonmaker EMU-28/E Operation and Maintenance Manual
Fuel Storage and Transfer System (Uniroyal) *	Uniroyal Fuel Storage and Transfer System Manual
Outfitting, test equipment and spares *	Master Outfitting List (MOL), ERPAL, APL, IPL (2 volumes)

Note:

1. Asterisked manuals are located in shelter 1300. Other manuals are located with the appropriate equipment.

2. Electronic test equipment provided with each ATLS station is listed in Vol. II of the ATLS Master Outfitting List (MOL). Individual test equipment manuals are located with the equipment. The cardex file contains information for locating the test equipment using the item number in the MOL (see Chapter 7 for use of cardex file).

TABLE 1-2. FUNCTIONS AND LOADED WEIGHTS OF SHELTERS, PALLETS, GENERATORS AND MOBILIZERS

SHELTER	FUNCTION	WEIGHT IN LBS.
1100	Power Control and Distribution	16,200
1200	Spare Parts Stowage	12,050
1300	Shop and Spare Parts Stowage	10,200
2100	Timer/Synchronizer	11,000
2200	Timer/Synchronizer Control	9,500
2300	Communications	12,700
2400	Kitchen and Spare Parts Stowage	9,100
2500	Spare Parts Stowage	10,600
2600	Transmitter Control	8,600
2700	Office	7,500
3100	Transmitter Power No. 2	14,850
3200	Transmitter No. 2	13,600
3300	Transmitter Power No. 1	14,800
3400	Transmitter No. 1	13,750
3500	Transmitter Power Distribution	12,850
3600	Antenna Coupler/Dummy Load	9,900
3700	Transmitter Water Distribution	12,200
3800	Transmitter Monitoring	11,600
4100	Pallet Assembly (Power)	17,860
4200	Pallet Assembly (Transmitter)	16,350
Generator	Power Supply (4 per station)	20,500 (uncrated) 21,540 (crated)
Mobilizer	Loadcraft (2 per station for shelters)	3,700 (unloaded)

TABLE 1-2. FUNCTIONS AND LOADED WEIGHTS OF SHELTERS, PALLETS, GENERATORS AND MOBILIZERS (Continued)

SHELTER	FUNCTION	WEIGHT IN LBS.
Mobilizer	Gichner (1 per station for generators)	4,700 (Unloaded)
Lifting Jacks	For raising and lowering shelters, pallets, generators without crane.	200
Lifting Slings	For lifting units with crane	200

TABLE 1-3. SUPPLEMENTAL EQUIPMENT AND MATERIALS

No.	Item/Description	Quantity
1.	Vehicles for towing mobilizers; general logistics and personnel transportation (including spares). (See note 1)	as required
2.	Oscillators, Radio Frequency, 0-1186/URQ-14, (for use with AN/URQ-14 Frequency Standard)	3 each
3.	Type 1086 AN/FPN-44 Transmitter PA tubes (4 per transmitter plus 4 spares)	12 each
4.	Distilled water for transmitter primary cooling system (total system capacity, approx. 60 gallons)	180 gallons
5.	Fresh water for secondary cooling system	See note 2
6.	Generator supplies:	
	a. Fresh soft water for cooling system	See note 3
	b. Anti-freeze for cooling system (See page 122, EMU-28/E Operating Manual)	as required
	c. Lube oil	See note 4
	d. Fuel oil, No. 2 diesel fuel	See note 5
7.	Voice tranceivers, battery powered, hand-held, for initial communications between landing strip and installation site.	as required
8.	Lanterns, portable, battery-powered	as required
9.	First Aid Kit	as required
10.	Cameras and film	as required
11.	Small arms and ammunition	as required
12.	Acetylene, technical, 225 cu. ft. cylinder (see note 6)	2 each
13.	Oxygen, technical, 200 cu. ft. cylinder (see note 6)	2 each
14.	Van Mobilizer Spare Parts (see note 7)	1 set/station
15.	Two Conductor, #2 "USE" power cable for tower lights	see note 7

TABLE 1-3. SUPPLEMENTAL EQUIPMENT AND MATERIALS (Cont'd)

Note 1. Vehicles should be selected to suit the particular terrain, distances, or other factors involved. Towing vehicles should be equipped with a 3" pintle hook and standard fittings for trailer lights. While larger vehicles may be appropriate for over-the-road hauls; smaller, more mobile, and more maneuverable vehicles are preferred for positioning shelters at the installation site.

Note 2. In the event that water is not readily available and must be transported to the installation site, the estimated capacity of the secondary cooling system, including heat exchangers and connecting hoses, is approximately 500 gallons.

Note 3. The combined engine and radiator cooling system capacity is 40 gallons/generator. However, additional water, preferably under pressure, will be required to flush both cooling systems. See page 75 in the EMU-28/E Operating Manual.

Note 4. The lube oil capacity of each generator is 10 gallons, including filters. Refer to page 12, Caterpillar D353 Operating Manual, for correct SAE grade. Reserve lube oil should be provided to suit the particular circumstances.

Note 5. The day tank capacity of each generator is 140 gallons. Sufficient fuel oil must be provided in drums or other containers for generator operation as required until either the transport tanks or bladder storage tanks can be connected and filled to provide a normal fuel supply.

Note 6. Acetylene and oxygen tanks (one each) can be stored in shelter 1300, after the shelter is in place, using the wall brackets provided.

Note 7. Power Cable from Shelter 3500 to the antenna tower lighting controls must be provided separately as GFE or by the tower or site contractor, the length required will depend on the distance from shelter 3500 to the lighting system controls.

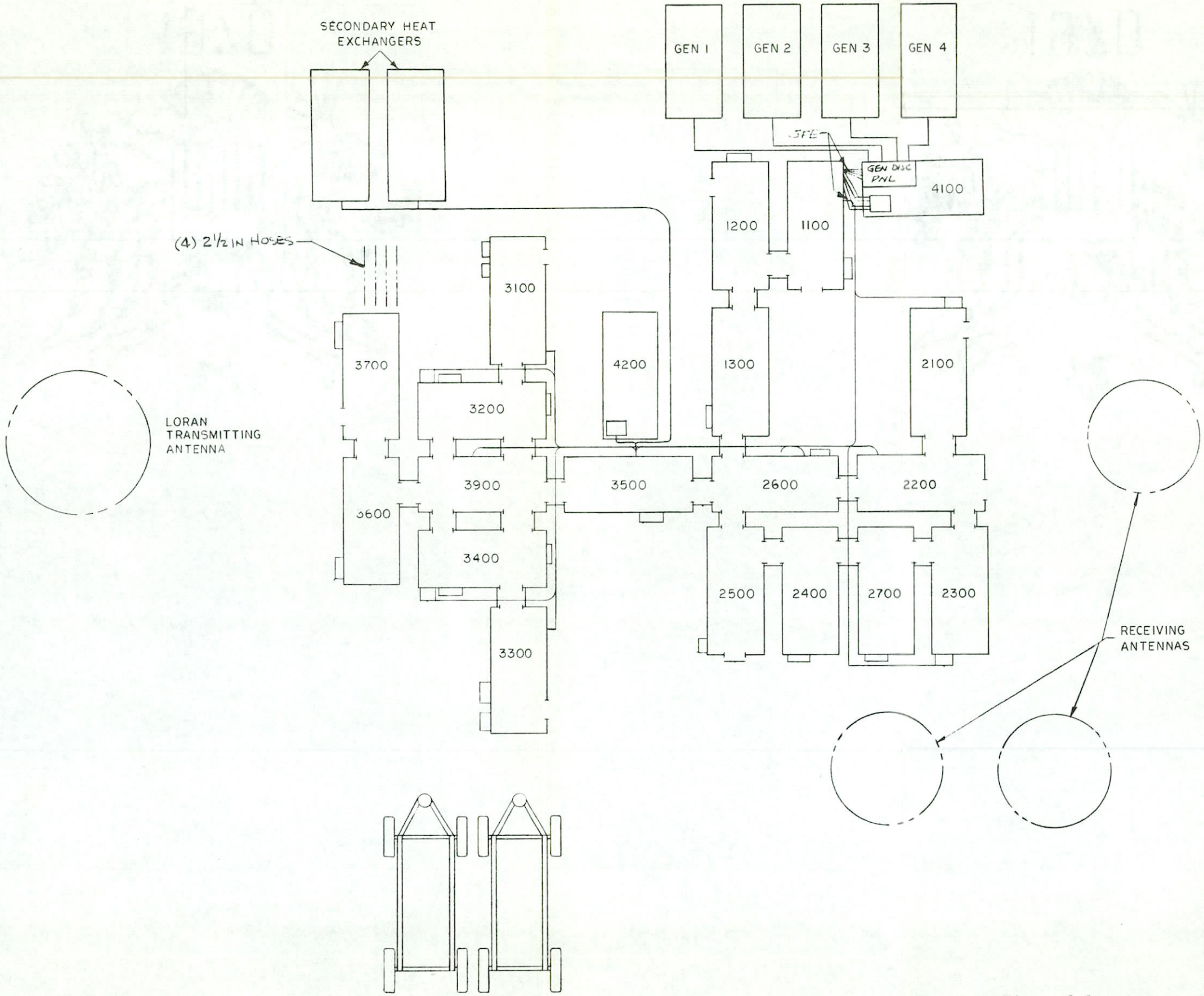


Figure 1-1

ATLS operational facility

CHAPTER 2

COMPONENT AND SYSTEM DESCRIPTION

This chapter contains a description of the various ATLS groups, shelters, components, and systems. Its purpose is to familiarize the reader with the equipment prior to presenting detailed installation instructions.

2.1 POWER GROUP. The power group includes shelters 1100, 1200, and 1300, plus four generators, pallet assembly 4100, and the fuel storage and transfer system. The primary purpose of the power group is to provide and distribute power to the other two shelter groups and to the support facilities. (See figure 2-1).

2.1.1 Shelter 1100 - Power Control and Distribution. Shelter 1100 contains the main power control and distribution panels for the complete ATLS facility. Major equipment includes a power circuit breaker unit and, when desired, the generator control panels (see figure 2-2). A desk and file cabinet are provided for watchstanders.

2.1.2 Shelter 1200 - Spare Parts Stowage. Shelter 1200 contains metal bins for storage of ATLS power group spare parts (See figure 2-3).

2.1.3 Shelter 1300 - Shop and General Spare Parts Stowage. Shelter 1300 functions as a work shop for the ATLS complex, containing two work benches, a mounting for oxygen/acetylene tanks for welding, and an electrically-driven air compressor. Essential hand tools, general spare parts, and housekeeping equipment are stored in this shelter (See figure 2-4).

2.1.4 Pallet Assembly 4100 - General Power Distribution. Pallet 4100 provides a base for the main generator disconnect panel for the 416-480V primary power cables between the generators and shelter 1100. It also holds 225 KVA Power Transformer #1, which is used to provide 120/208V power to the power and timer/synchronizer communications groups. A spare 225 KVA transformer is mounted on pallet 4100 as a replacement for either of the two main ATLS transformers or for providing power to the support facilities, when appropriate (See figure 2-5.)

2.1.5 Power Generators - Four A.G. Schoonmaker Co. (AGSCO) EMU-28/E diesel-generator sets provide electrical power for the ATLS facility (See figure 2-6). Each generator set, rated at 250 KW, is self-contained and is mounted on a skid assembly compatible with the aircraft loading system and the Gichner mobilizers. Full instructions on the installation, operation, and maintenance of these generators are given in the AGSCO EMU-28/E Generator Manual.

2.1.6 Fuel Transfer and Storage System - A complete fuel-oil transfer and storage system, manufactured by Uniroyal, Inc., consisting of five 20,000 gallon storage tanks and two 1,800 gallon transport tanks, plus pumps, hoses, valves and other fuel transfer equipment, is provided in crates stored in shelter 1100. Full instructions on the installation and operation of this system are given in the Uniroyal Fuel Storage and Transfer System Manual.

2.2 TIMER/SYNCHRONIZER/COMMUNICATIONS GROUP. Shelters 2100 through 2700 comprise the Timer/Synchronizer/Communications Group. There are two main functions performed by this group. The first is to generate the triggers, phase code waveforms, and 100 KHz signals necessary to drive the Loran transmitters. The second main function is, in the case of a secondary station, to keep itself in synchronism with, and to monitor and track, the rest of the Loran-C chain. The communications shelter, 2300, provides communications for the station in AM, CW, USB, and LSB modes. In addition, it provides FSK, using teletype equipment. (See figures 2-1 and 2-17).

2.2.1 Shelter 2300 - Communications. The communications equipment in shelter 2300 includes two radio transceivers, two teletypes, a console containing necessary patching networks, and the tone keyers and converters needed to operate the teletypes through the transceivers, plus spare parts storage bins (See figure 2-7). Major equipment includes:

AN/URC-72 Transceivers (2)
Communication Control Console A34B
Dummy load - Byrd Model 8890
Teletype No. 1, CCT-28-ASR/AUX
Teletype No. 2, CCT-28-RSR

2.2.2 Shelter 2100 - Timer/Synchronizer. Shelter 2100's primary purpose is to receive, synchronize with, and record local and remote Loran-C signals as well as to generate accurately timed triggers to drive the transmitter group. In addition, some timer/synchronizer spare parts and test equipment are stored in this shelter. Shelter 2100 is fully screened against RFI (See figure 2-8). Major equipment includes the following:

Strip Chart Recorders, AN/GSH-18 (2)
Remote Control Boxes, RF 307 (2)
Timer-Synchronizer Groups, OA-4484/FPN-46 (2)
Oscilloscope Control, C-4561/FPN-46
Oscilloscope, OS-147/FPN
Receiver Group, OA-4485/FPN-46
Frequency Divider, CV-1488/FPN-46
Envelope Control, C-4559/FPN-46
Phase Control, C-4562/FPN-46
Master Control, C-4560/FPN-46
Power Supply, PP-3660/FPN-46
Phase-Time Comparator, CM-268/FPN-46
Pulse Generator, O-1088/FPN-46
Power Supply, PP-3661/FPN-46
Electrical Equipment Cabinet, CY-3842/FPN-46

2.2.3 Shelter 2200 - Timer/Synchronizer Control. The equipment in shelter 2200 controls the timer synchronizers and strip chart recorders of shelter 2100 and monitors the input voltage and frequency, as well as distributing power to the various units. These functions are accomplished by the Control Indicator Group (CIG). Necessary isolation transformers, line filters, and circuit breakers are also provided. Like shelter 2100, this shelter is fully screened against RFI (See figures 2-9 and 2-10). Major equipment includes:

Control Indicator Group, OA-4486/FPN-46
- Variable Attenuator, CN-917/FPN-46
- Simulator Group, OA-4487/FPN-46
- Variable Attenuator, CN-918/FPN-46
- Control Indicator, C-4563/FPN-46

Teletypewriter, CCT-28ASR/AUX

2.2.4 Shelter 2400 - Spare Parts, Range, Head. Shelter 2400 contains storage bins for spare parts, a small head with lavatory, a water purifier, a 20 gallon water heater, a water cooler, and a combination sink/range/refrigerator unit. A Jacuzzi water pump provides water pressure for shelter 2400 facilities, and required supply and drain piping and fittings are pre-installed. (See figures 2-11, 2-12, and 2-13.)

2.2.5 Shelter 2500 - Spare Parts Storage. The sole purpose of shelter 2500 is spare parts storage, primarily for the timer/synchronizer group. (See figure 2-14).

2.2.6 Shelter 2600 - Transmitter Control. Shelter 2600 contains the Transmitter Control Group equipment, power distribution panels for 120/208V power to the timer/synchronizer/communications group, a workbench, and the fire alarm annunciator panels. (See figure 2-15.) Major equipment consists of the following:

Transmitter Control Group, OA-4481/FPN
- Transmitter Control, C-4556/FPN
- Oscilloscope, OS-147/FPN
- Pulse Generator, O-1086/FPN
- Pulse Generator, O-1087/FPN
- Power Supply, PP-3658/FPN
- Power Supply, PP-3659/FPN
- Electrical Equipment Cabinet, CY-3840/FPN

2.2.7 Shelter 2700 - Office. Two desks, file cabinets, a safe, a medical locker, and a smallarms locker are provided in shelter 2700, along with several storage bins. (See figure 2-16.)

2.3 TRANSMITTER GROUP. The Transmitter Group includes shelters 3100 through 3800 and pallet assembly 4200. The transmitter group basically consists of two separate transmitters, with common shelters for power distribution, transmitter monitoring, antenna coupler/dummy load, and cooling water distribution. Shelters 3100 and 3200 house transmitter No. 2. Shelters 3300 and 3400 house transmitter No. 1. Shelter 3100 is a mirror image of shelter 3300, and shelter 3200 is a mirror image of shelter 3400. (See figure 2-17.)

2.3.1 Shelters 3100 and 3300 - Transmitter Power. The primary purpose of shelters 3100 and 3300 is to generate and supply high voltage to the power amplifier section of the respective transmitters located in shelters 3200 and 3400. The control circuits for the transmitters are also located in shelters 3100 and 3300. Personnel safety is provided in the form of interlocked doors and metal partitions. Major equipment includes:

Rack, Electrical Equipment (Modification of MT-2929/FPN-44)
Power Distribution Switch and Relay Assembly, RE-744/FPN-44
Voltage Divider, CN-942/FPN
Filament Voltage Regulator, CN-941/FPN
Plate Voltage Regulator, CN-940/FPN

2.3.2 Shelters 3200 and 3400. Transmitters. These shelters house the AN-3774/FPN-44 Power Amplifier, the OA-4482/FPN-44 Amplifier-Oscillator Group and associated components required to amplify the Loran signal for transmission. Similar to shelters 3100 and 3300, shelters 3200 and 3400 are fitted with a cage and interlock system.

2.3.3 Shelter 3500. Transmitter Power Distribution. The primary purpose of shelter 3500 is to provide power distribution, via built-in circuit breakers, to both transmitters and to associated units such as the external secondary heat exchangers and the antenna-tower obstruction lights. (See figure 2-18).

2.3.4 Shelter 3600. Antenna Coupler/Dummy Load. Shelter 3600 contains the CU-1106/FPN-44 Antenna Coupler, DA-329/FPN-44 Dummy Load, associated ductwork, an HD-601/FPN liquid cooler, and plumbing connections for transmitter 1 (shelters 3300 and 3400), as well as bin storage for spare parts. (See figure 2-19.)

2.3.5 Shelter 3700. Transmitter Water Distribution. This shelter houses the connections to the secondary heat exchangers for both transmitters, as well as the HD-601/FPN cooler and plumbing connections for transmitter 2 (Shelters 3100 and 3200). Bin storage for spare parts is also provided in shelter 3700. (See figure 2-20.)

2.3.6 Shelter 3800. Transmitter Monitoring and CO_2 Distribution. Shelter 3800 functions as a transmitter monitoring point, in that both transmitters are readily accessible and easily viewed from within this shelter. Additionally, the shelter contains an electronics-bench repair facility, including test equipment and tool storage, as well as the CO_2 control, storage, and distribution system for transmitter fire protection. (See figure 2-21.)

2.3.7 Pallet Assembly 4200. Transmitter Group Power Distribution Pallet 4200 provides a base for 225 KVA power transformer #2, which is used to provide 120/208V power to the Transmitter Group. The transformer secondary is connected directly to the distribution panel in shelter 3500.

2.4 MOBILIZERS. Special mobilizers are provided for loading ATLS shelters, pallets, and generators on and off aircraft and for transporting these components to a storage or installation site. The mobilizers enable the

equipment to be handled without heavy-duty cranes or similar equipment. Two types of mobilizers are used: A Loadcraft MC-2X Van Mobilizer for loads up to 18,000 lbs. and a Gichner VM-2003 Van Mobilizer for loads up to 21,000 lbs. Special lifting jacks are shipped with the Loadcraft mobilizers for loading or unloading shelters, pallets, and generators from the mobilizers where heavy lifting equipment is not available. Detailed instructions on these mobilizers and lifting jacks are contained in the Loadcraft and Gichner Operation Manuals. Any vehicle having a 3" diameter safety-latched pintle hook can be used to tow either type of mobilizer; however, a truck having air brake capability is required in order to energize the braking system of the Loadcraft mobilizer.

2.5 PHYSICAL CHARACTERISTICS. The following is a brief description of certain basic physical characteristics of the ATLS shelters. More detailed information is given on appropriate ATLS drawings, in related service manuals, and in the installation section of this manual.

2.5.1 Shelter Structure. The shelter body is rectangular in shape, 8 feet wide, 18 feet long and 8½ feet high. Wall, floor, and roof construction consists of a plywood/paper-honeycomb sandwich with a sprayed-on fiberglass coating. Each shelter is structurally independent of the equipment mounted therein. Special framing and bracing is provided for concentrated loads, jacking devices, and tie downs. The interior finish of each shelter is described in Table 2-1. A skid assembly of Corten B steel is lag-screwed to the underside of each shelter body. This assembly, in addition to providing structural support, facilitates mounting the shelter on the mobilizer or mating it to the aircraft's 463L Cargo Handling System. Lifting and towing rings, which are located on each lower corner of every shelter, are used for loading or for tie-down during transit. Special framing and bracing is provided so that a fully loaded shelter can be lifted by the lifting rings.

2.5.2 Shelter System Leveling. Each shelter is equipped with four jack plates which are drilled and tapped to receive the leveling jacks which are stored in each shelter. These leveling jacks, when used in conjunction with the level indicators mounted on two opposite corners of each shelter, facilitate the leveling of all eighteen shelters. The lifting jacks, which are supplied with the Loadcraft mobilizers, also mount on the jack plates. (See figure 2-22.)

2.5.3 Pullman Enclosures and Walkways. Interconnections between the shelters are protected by flexible, nylon-reinforced, polyurethane-foam-insulated, vinyl pullman enclosures. Within the pullmans, rigid steel walkways span the space between adjacent shelters. (See figures 2-23 and 2-24) The interior of the pullman between shelters 2100 and 2200 is draped with a metallic curtain which provides RF interference protection within the frequency band of 90 to 110 KHz. This metallic cloth, which is in the form of a tubular sleeve, is fastened to the inside of the pullman by velcro pads and to the shelters by metal brackets. (See figure 2-25) Additional RFI shielding can be provided (if needed) by installing the copper screening which is supplied with the system, in lieu of the metallic curtain.

2.5.4 Stabilization. To prevent the shelters from overturning in a high wind, a guying system is provided. This system consists of shelter-to-ground

guy wires and shelter-to-shelter adjustable turnbuckles. (See figures 2-26 and 2-27.)

2.5.5 Air Conditioning and Heating Systems.

2.5.5.1 Small Air Conditioners. In the operational mode, there are sixteen 208V AC General Electric model AGDCE18DAXG1 air conditioners in the ATLS System: one each in shelters 1100, 1200, 1300, 2400, 2500, 2600, 2700, 3500, 3600, and 3700, two each in shelters 3100 and 3300, one in the CO_2 area of shelter 3200, and one in the CO_2 area of shelter 3400. (See figure 2-28 and figure 2-3) The air conditioners have pushbutton controls and operate in the following modes: FAN, HI COOL, LO COOL, HI HEAT, LO HEAT. The louvers may be set in either the OPEN or CLOSED position, depending on the operating requirements. An exception to this is in shelters 3100, 3200, 3300, and 3400, where the louvers must be in the CLOSED position at all times to avoid venting CO_2 to the outside in the event of a fire. In these same four shelters, the air conditioners are interlocked with the fire detection system, so that the air conditioner in an affected shelter will shut down in the event of a fire.

2.5.5.2 Large Air Conditioners: In the operational mode, there are seven 480V AC Ellis and Watts model MOAC 513 air conditioners in the ATLS system; two each in shelters 2100, 3200, and 3400, and one in shelter 2300. (See figure 2-29 and figure 2-8). The main power to each large air conditioner is controlled by a 40-amp 3-phase circuit breaker. The breakers for the large air conditioners in shelters 2100 and 2300 are located in shelter 1100, and the breakers for the large air conditioners in shelters 3200 and 3400 are located in shelter 3500. Each of the air conditioners is controlled by a control box mounted on the wall inside the shelter. The control knob on this box has three positions: OFF, VENTILATE, and CONDITIONING. (See figure 2-30). The temperature and humidity sensors and adjustments are located inside the control box. The large air conditioners in the PA tank coil areas in shelters 3200 and 3400 are interlocked with the fire detection system. In the event of fire, the air conditioner in the affected shelter will shut down. Only one of the large air conditioners in shelter 2100 is to be operated at a time, with the other air conditioner available as a standby in the event of failure of the operating unit.

2.5.5.3 Heating. A Seaboard Products Corp. electric heater is mounted in each shelter except shelters 3100, 3200, 3400, 3800, 2100, and 2300. (See figure 2-3). The units have thermostatic switches for temperature control and fans for circulation of the heated air.

2.5.6 Exterior doors. Exterior doors are installed in shelters 1100, 1200, 1300, 2100, 2200, 2300, 2500, 2600, 3100, 3300, 3500, and 3700. Shelter 2200 has two exterior doors; in the storage mode, however, a transit plate covers one of these doors. The plate must be removed to gain access. Access to shelters not having exterior doors also requires removal of a transit plate. Additionally, when various shelter groups are close-coupled (i.e. fastened together by pullman enclosures), certain exterior doors will be removed and the entrances closed in by the pullman enclosures. Each exterior door has the same lock; hence, only one key is required for all shelters. (The exterior

doors in shelters 3100 and 3300 are emergency exits only and cannot be opened from the outside; they are also equipped with electrical safety interlocks.)

2.6 POWER DISTRIBUTION. Electrical power is supplied to the shelter complex and distributed as shown in figure 2-31. Four generators are available to supply 416 to 480V AC power through a generator disconnect panel to the power control and distribution shelter (1100) in the power group (normal operation requires two generators). Shelter 1100 serves as the central power control point and also distributes power to the transmitter group and the timer/synchronizer/communications group as well as within the power group. Circuit breakers in shelter 1100 control the 480V AC power supplied to shelters 2100, 2300, and 3500. Circuit breakers in shelter 1100 also apply 480V AC power to the primary side of transformer T1 and to the fuel transfer pump.

NOTE

Throughout this manual and its associated schematics, drawings, and vendor manuals, reference is made to 480V as the primary or high voltage for the ATLS complex. This value, however, is nominal in that the generators, through adjustment of the voltage regulators, can be set to provide voltage anywhere in the 416V - 480V range. Optimum voltage stability is actually achieved when the voltage regulators are set to 460V. This voltage level enables the generators to absorb substantial load variations and still keep the voltage in the preferred 440V - 480V operating range. It is important, therefore, that technical personnel understand that actual measurements of voltage in the ATLS system will reflect that voltage at which the generators are set, and not necessarily the nominal 480V figure noted in this manual and in other references.

The potential variation in high voltage does not apply to the low voltage values of the 120/208V circuits. Multiple taps are available on the primary side of the appropriate power transformers so that it should always be possible to obtain a low voltage of approximately 120/208V.

Transformer T1 steps down the 480V AC 3-phase power to 208V AC 3-phase power. The 208V AC 3-phase power is then routed back to shelter 1100 and applied to circuit breaker panels which distribute power to the spare parts stowage shelter (1200), the shop and spare parts stowage shelter (1300), and the transmitter control shelter (2600). Shelter 1100 also supplies 120/208V AC power to convenience outlets located in the generator area.

The 120/208V AC power supplied to the transmitter control shelter (2600) is applied to a circuit breaker panel in shelter 2600 and then distributed to the spare parts stowage shelters (2400 and 2500), the office shelter (2700), and the communications shelter (2300), as well as to the equipment and outlets in shelter 2600. Shelter 2600 also supplies voltage to operate a heater in the timer/synchronizer control shelter (2200), and applies 208V AC to isolation transformers T1 and T2 in shelter 2200. The isolation transformers step down the voltage to provide 120V AC to the timer synchronizer shelter (2100). Shelter 2100 also receives 480V AC power from shelter 1100 to operate the large air conditioners.

The transmitter power distribution shelter (3500) distributes power to the shelters in the transmitter group. Shelter 3500 receives 480V AC power from shelter 1100 and supplies 480V AC to operate the large air conditioners in shelters 3200 and 3400 as well as the coolant circulating pumps and fans in the secondary heat exchangers. Shelter 3500 also applies 480V AC to the primary side of transformer T2. Transformer T2 steps down the 480V AC power to 120/208V AC. Shelter 3500 then distributes 120/208V AC power through the transmitter monitoring shelter (3800), to transmitter No. 2 shelters (3100 and 3200), transmitter No. 1 shelters (3300 and 3400), the antenna coupler/dummy load shelter (3600), and the transmitter water distribution shelter (3700).

Figure 8-1 through 8-12 provide more detailed block diagrams of the power distribution system. Detailed schematics are contained in the station drawing package.

2.7 FIRE DETECTION AND PROTECTION SYSTEM. Each of the 18 shelters contains an ionization-type detector, which is sensitive to products of combustion. (See figure 2-30). Shelters 3200 and 3400 contain two of these detectors. In addition, shelters 3100, 3200, 3300, and 3400 each contain a heat detector which is triggered at 136°F. The transmitters are protected by a CO_2 system located in shelter 3800. Other shelters have portable CO_2 extinguishers. The fire detection system for all shelters operates as follows: If a fire starts in one of the shelters, it will be sensed by an ionic detector. The detector will energize an alarm relay and a neon lamp in the base of the detector. The alarm relay in turn will activate a relay in the fire detection box. The contacts of this relay will sound the alarm bell in the shelter, cause a mechanical lever to drop on the alarm annunciator panel in shelter 2600, sound a buzzer and alarm bell in shelter 2600, and sound an alarm bell in shelter 2200. These alarms will continue until the fire is put out, the shelter is cleared of smoke, the momentary reset button on the detector base is pushed in, and the annunciator is reset. The alarm bell in the affected shelter may be shut off earlier by means of the BELL switch on the shelter's fire detection box. The buzzer and bells in shelters 2200 and 2600 may be silenced by twisting the annunciator reset lever counter-clockwise. Transmitter shelters 3100, 3200, 3300, and 3400 have additional circuitry which, in the event of a fire, will shut down the air conditioners and the transmitter and, 30 seconds later, will fire an explosive plug to open a valve at the CO_2 cylinders in shelter 3800 and flood the sealed area of the affected shelters with CO_2. The explosive plug releases either the main or reserve CO_2 tanks, depending on the position of the throw-over switch in shelter 3800. Two of the four CO_2 tanks in shelter 3800 are used for the main supply and the other two are reserve tanks. These tanks are connected by plumbing and valves to transmitter 1, shelters 3300 and 3400, and to transmitter 2, shelters 3100 and 3200. The explosive plugs are not reusable and must be replaced after use. The MONITOR lamps in shelter 2600 indicate the condition of the circuits and the explosive plugs in shelter 3800. The lamps are normally on. An off condition indicates that the CO_2 system cannot be fired electrically; however, the system may still be activated manually, by means of the levers on the zone selector valves and the cylinder heads in shelter 3800. Heat detectors in each of the four transmitter shelters will shut down the transmitter power if the temperature in the shelter goes above 136°F. These heat detectors do not shut down the air conditioners nor release CO_2. The heat detectors are in a normally open condition and are not reusable. They must be replaced after excessive heat has

caused them to close. There are two exterior-door interlock switches in shelters 3100 and 3300, and one exterior-door interlock switch in shelters 3200 and 3400. These interlocks are provided as safety measures to prevent the power from being applied to the transmitter when the external doors or covers are open in any high voltage area of the transmitter shelters. Table 2-2 lists the fire detection relay numbers and the functions of the relays for transmitter 2 (shelters 3100 and 3200). These relay numbers and relay functions are identical to transmitter 1 (shelters 3300 and 3400) and can be used by changing the prefix number 3300 for 3100, and 3400 for 3200. Table 2-3 provides the relay numbers and relay functions for shelter 1100. This table can be used for all other shelters except 3100, 3200, 3300, and 3400. The proper shelter number should be substituted for the prefix 1100.

2.8 INTERCOM SYSTEM. Intercommunication between shelters 1100, 2200, 3100, 3300, and 3800 is provided by the intercom system. The 24V DC power supply for the system is located in shelter 3800, with two series-connected 12-volt wet-cell lead-acid storage batteries for emergency operation during power failure, and a trickle-charger for maintaining the batteries at full charge. In the event of power failure, the switchover of the system to emergency power is automatic. Each intercom has a separate junction box with a master junction box located in shelter 3800. The operation of the intercom system is as follows: Assume a call is made from shelter 1100 to shelter 3800. The caller in shelter 1100 presses the 3800 call button. A chime sounds in the shelter 3800 intercom box and the INCOMING CALL lamp illuminates. No action is required of the called person in shelter 3800 since he is now being monitored by the shelter 1100 intercom caller; however, the caller in shelter 1100 must press the PUSH TO TALK bar in order to talk to the person in shelter 3800. If the person in shelter 3800 wants to avoid the possibility of being monitored by another shelter, he can do so by pulling out the volume control to the PRIVATE position. If an intercom in any shelter is being used, any other shelter attempting to call that shelter will get a BUSY lamp illumination. (For more detailed information, see the Executone manual).

2.9 COMMUNICATION SYSTEM. Each AN/URC-72 radio set in shelter 2300 consists of a model RF-301E transceiver, an AM-3924/URT power amplifier, and a PP-3916/UR power supply. This radio system can be used for transmitting or receiving in USB, LSB, AM, or CW modes (and FSK using the teletype equipment) on any frequency from 2 MHz to 15 MHz, with an RF power output of 1000 watts. The console controls the keying and signal functions for the TTY (teletypewriter) and the patching circuits for patching either of the transceivers to the TTY's. The TTY's in Shelter 2300 and 2200 provide keyboard, page printer, and type operation on two separate loop circuits. These loops may be used independently for FSK transmission and reception. The FSK keyer (for transmission) or converter (for reception) is switched into the TTY loop from the console. Each TTY loop is normalled through a series of jacks on the TTY patch panel. These jacks permit monitoring or substitution of TTY equipment in each loop. Loop 1 is normalled through the patch panel to a model 28 ASR, consisting of keyboard, page printer, typing reperforator, transmitter, and auxiliary typing reperforator (which may be patching out of the circuit if necessary). Loop 2 is normalled through the patch panel to a model 28 KSR, consisting of keyboard and page printer, which is also located in Shelter 2300, and to another model 28 ASR, which is located in Shelter 2200. Provision is made for a TTY land

line and for optional auxiliary TTY equipment in both Shelters 2300 and 2200, by bringing out the patch panel connections for loop 2 to jumpered connections at the console terminal strip. The equipment is designed to operate with the standard URA-38 coupled whip antennas which are provided in the shelter and which can be erected up to 500 feet from shelter 2300.

CHARACTERISTIC EXTERIOR SHELTER DIMENSIONS
HEIGHT 8 FT. 6 IN.
WIDTH 8 FT.
LENGTH 18 FT.

MAXIMUM SHELTER WEIGHT EMPTY EXCEPT FOR INSTALLATION HARDWARE 6,000 LBS

LIMITING WEIGHT IN FULLY LOADED TRANSIT CONDITION 18,000 LBS.

SHELTER NUMBER	SHELTER NOMENCLATURE	FLOOR FINISH	WALL MATERIAL	CEILING MATERIAL
2360 -1100-00	POWER CONTROL & DISTRIBUTION SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	G.P. VINYL SHIELD 3/16" TH. PANELING DARK OAK	ACOUSTIC TILE BOARD WHITE
2360-1200-00	SPARE PARTS SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	ACOUSTIC TILE BOARD WHITE
2360-1300-00	SHOP/SPARE PARTS SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-2100-00	TIMER/SYNC SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS, OVER 1/2" TH. FIRE RETARDANT PLYWOOD, OVER COPPER SCREEN GRAY	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER COPPER SCREEN DARK OAK	ACOUST TILE BOARD, OVER 5/16" TH. FIRE RETARDANT PLYWOOD, OVER COPPER SCREEN WHITE
2360-2200-00	TIMER/SYNC CONTROL SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS, OVER 1/2" TH. FIRE RETARDANT PLYWOOD, OVER COPPER SCREEN GRAY	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER COPPER SCREEN DARK OAK	ACOUST TILE BOARD, OVER 5/16" TH. FIRE RETARDANT PLYWOOD, OVER COPPER SCREEN WHITE
2360-2300-00	COMMUNICATIONS SHELTER	VINYL ASBESTOS TILE 1/8" TH, OVER .025 TH ALUMINUM MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER .025" TH. ALUMINUM DARK OAK	ACOUST TILE BOARD, OVER .025" TH. ALUMINUM WHITE
2360-2400-00	SPARE PARTS & HOUSEHOLD SHELTER	VINYL ASBESTOS TILE 1/8" TH. MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING DARK OAK	ACOUSTIC TILE BOARD WHITE
2360-2500-00	SPARE PARTS SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-2600-00	TRANSMITTER CONTROL SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-2700-00	OFFICE SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	ACOUSTIC TILE BOARD WHITE
2360-3100-00	TRANSMITTER NO. 1 SHELTER	VINYL ASBESTOS TILE 1/8" TH. OVER .025" TH ALUMINUM MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING OVER .025" TH. ALUMINUM DARK OAK	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD, OVER .025 WHITE
2360-3200-00	TRANSMITTER NO. 1 SHELTER	VINYL ASBESTOS TILE 1/8" TH. OVER .025" TH ALUMINUM MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER .025" TH. ALUMINUM DARK OAK	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD, OVER .025 TH. ALUMINUM WHITE
2360-3300-00	TRANSMITTER NO. 2 SHELTER	VINYL ASBESTOS TILE 1/8" TH., OVER .025" TH ALUMINUM MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER .025 TH. ALUMINUM DARK OAK	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD, OVER .025" TH. ALUMINUM WHITE
2360-3400-00	TRANSMITTER NO. 2 SHELTER	VINLY ASBESTOS TILE 1/8" TH., OVER .025" TH ALUMINUM MINT GREEN	G.P. VINYL SHIELD 3/16" TH. PANELING, OVER .025" TH. ALUMINUM DARK OAK	PAINT OVER FIRE RETARDANT 1/4" TH., PLYWOOD OVER .025" TH. ALUMINUM WHITE
2360-3500-00	TRANSMITTER POWER DISTRIBUTION SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-3600-00	ANTENNA COUPLER/DUMMY LOAD SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-3700-00	TRANSMITTER WATER DISTRIBUTION SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE
2360-3800-00	TRANSMITTER MONITORING SHELTER	PAINT OVER FIRE RETARDANT FIBERGLASS GRAY	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD PINE FROST	PAINT OVER FIRE RETARDANT 1/4" TH. PLYWOOD WHITE

TABLE 2-1 SHELTER CHARACTERISTICS

TABLE 2-2. FIRE DETECTION RELAYS AND FUNCTIONS - TRANSMITTER 1 (Shelters 3300 and 3400) AND TRANSMITTER 2 (Shelters 3100 and 3200)

NOTE: Only shelters 3100 and 3200 are indicated; however, there are identical installations in shelters 3300 and 3400, respectively.

3100 F/D K1-	Coil energized by smoke in 3100
-1A and 1B (NO)	Operates alarm annuciator in 2600
-2A and 2B (NO)	Sounds bell in 3200; and in 3100 if 3200 F/D K2 is not energized.
-3A and 3B (NO)	Energizes CO_2 time delay relay (38K1) in 3800
-4A and 4B (NO)	Energizes 3100 F/D K2
-6A and 6B (NC)	Deenergizes transmitter power.
3100 F/D K2-	Coil energized by smoke in 3100, or in 3200 CO_2 area
-1A and 1B (NO)	Deenergizes small air conditioner in 3200 (CO_2 area)
-2A and 2B (NO)	Deenergizes small air conditioner No. 1 in 3100
-3A and 3B (NO)	Deenergizes small air conditioner No. 2 in 3100
-5A and 5B (NC)	Deenergizes large air conditioner No. 2 in 3200 (CO_2 area)
-6A and 6B (NC)	Deenergizes large air conditioner No. 1 in 3200 (Personnel area)
3100 F/D K3-	Coil energized by high temperature in 3100
-6A and 6B (NC)	Deenergizes transmitter power
3200 F/D K1-	Coil energized by smoke in CO_2 area of 3200
-1A and 1B (NO)	Operates alarm annuciator in 2600
-2A and 2B (NO)	Sounds bell in 3200; and in 3100 if 3200 F/D K2 is not energized.

TABLE 2-2. FIRE DETECTION RELAYS AND FUNCTIONS - TRANSMITTER 1 (Cont'd)

-3A and 3B (NO)	Energizes CO_2 time delay relay (38K1) in 3800.
-4A and 4B (NO)	Energizes 3100 F/D K2
-6A and 6B (NC)	Deenergizes transmitter power
3200 F/D K2-	Coil energized by smoke in personnel area of 3200
-3A and 3B (NO)	Operates alarm annuciator in 2600
-4A and 4B (NO)	Sounds bell in 3200
-6A and 6B (NC)	Deenergizes bell in 3100
3200 F/D K3-	Coil energized by high temperature in 3200.
-6A and 6B (NC)	Deenergizes transmitter power

TABLE 2-3. FIRE DETECTION RELAYS AND FUNCTIONS - ALL SHELTERS, Except 3100, 3200, 3300 and 3400,

NOTE: Only shelter 1100 is shown. This is identical to other shelters.

1100 F/D K1-	Coil energized by smoke in 1100
-1A and 1B (NO)	Sounds alarm in 2600 annuciator
-2A and 2B (NO)	Sounds bell in 1100

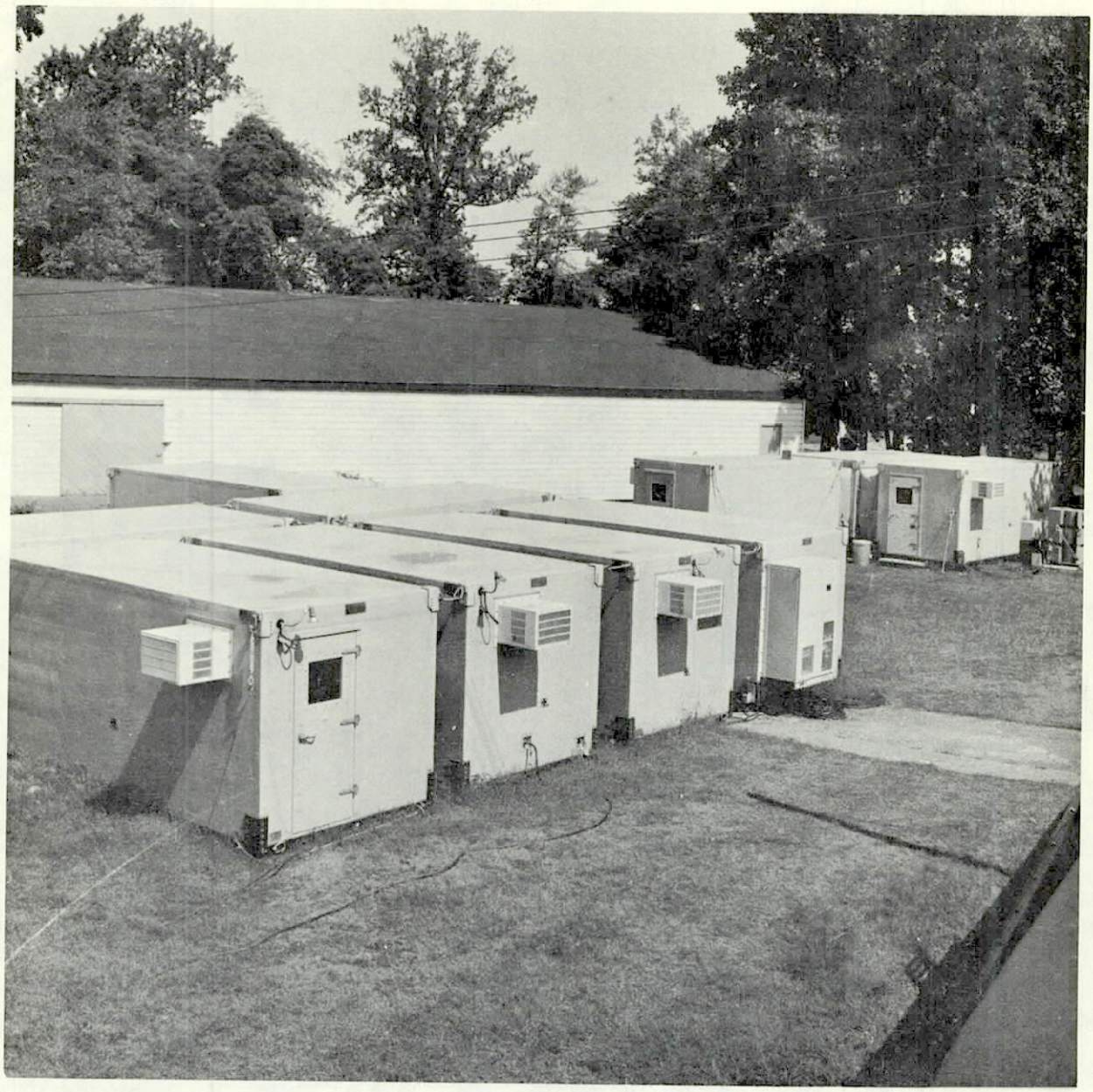


Figure 2-1

ATLS shelters. The timer/synchronizer/communications group is shown in the foreground and the power group in the background.

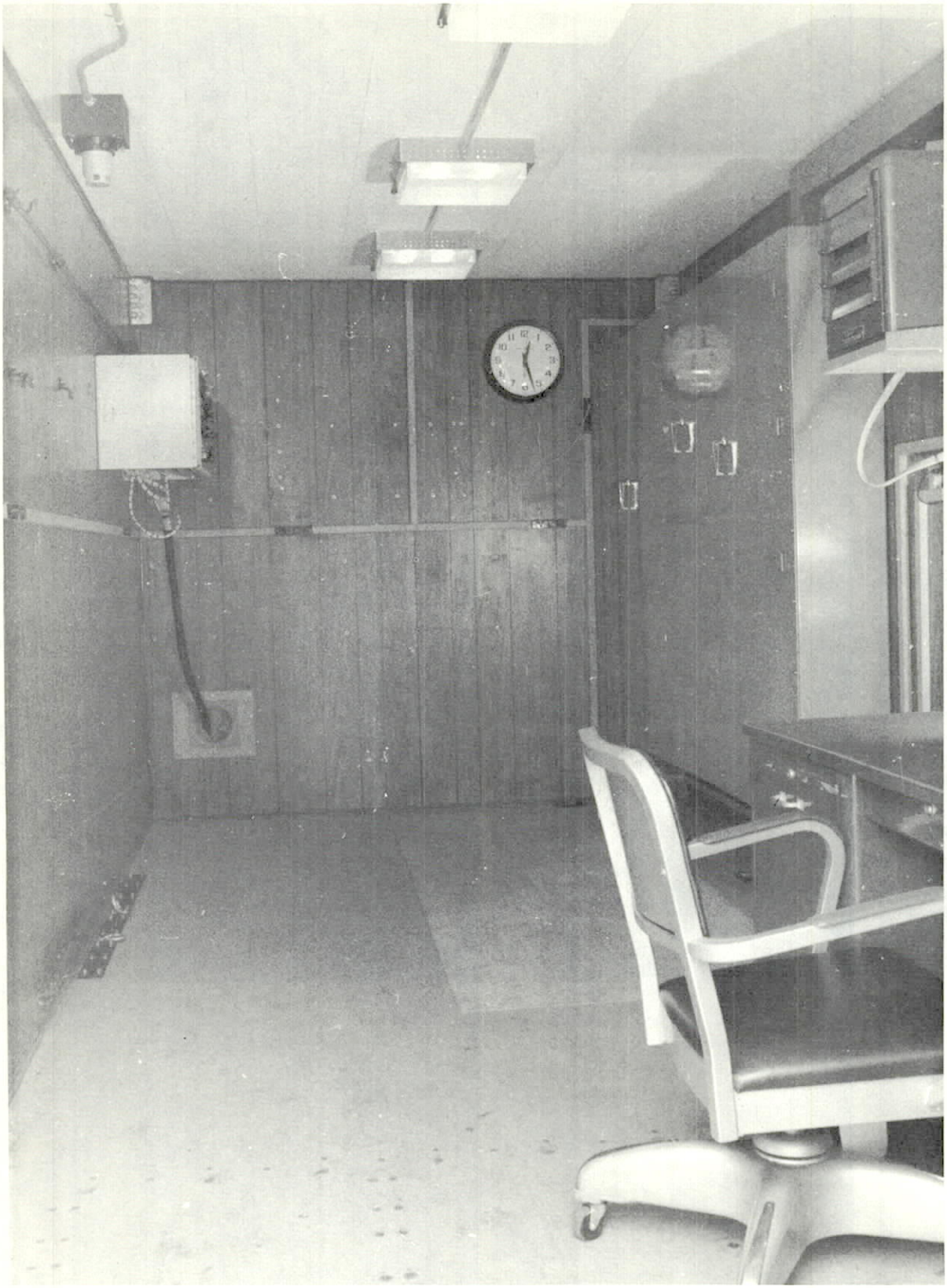


Figure 2-2

Interior of shelter 1100 with one generator control panel installed. Power control panels are in the cabinets on the right.

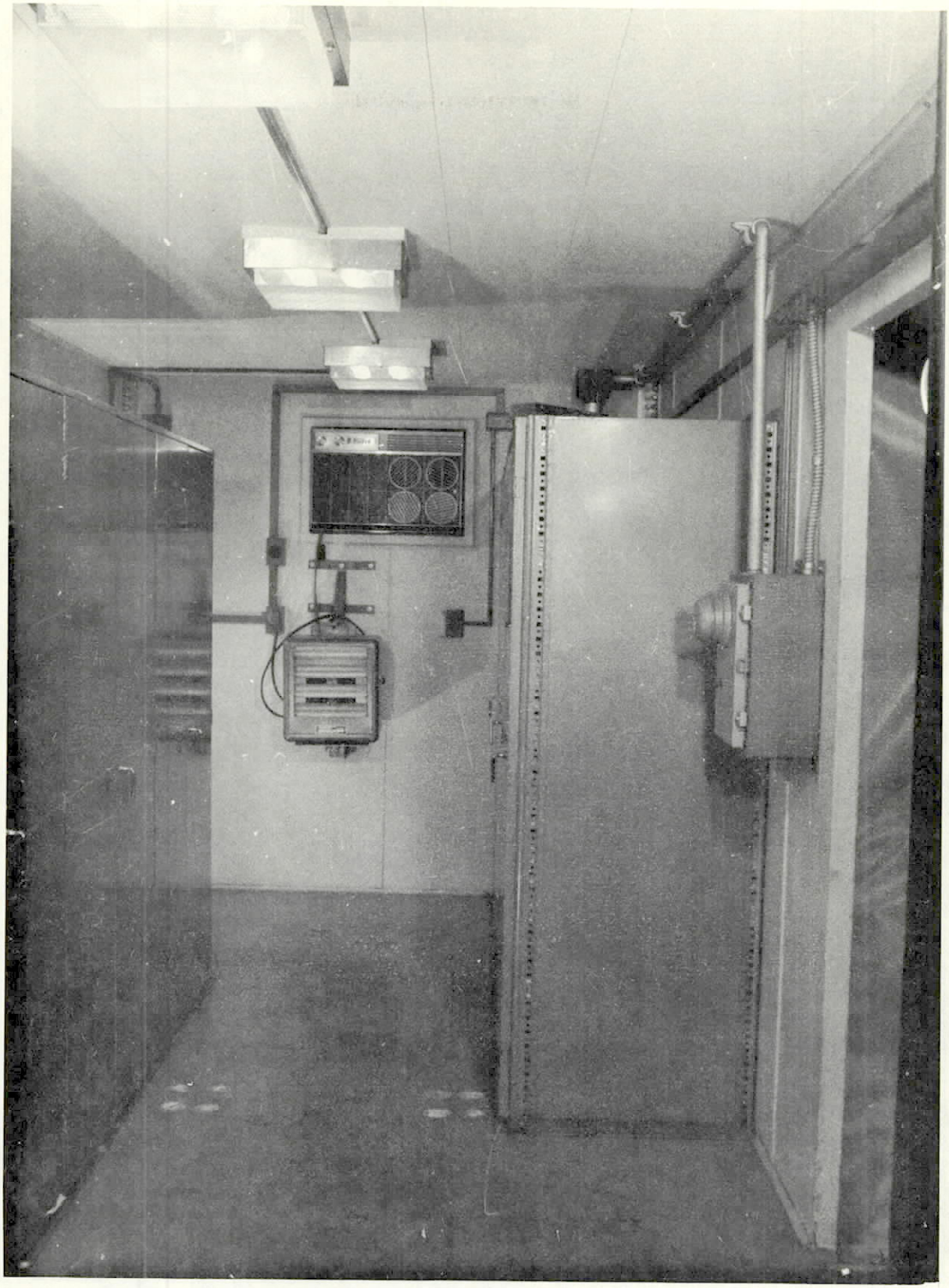


Figure 2-3

Interior of shelter 1200, showing heater, small air conditioner, and spare parts storage cabinets.

Figure 2-4

Interior of shelter 1300, showing the air compressor, small parts storage drawers, and one of the work benches.

Figure 2-5.

Pallet 4100, showing the generator disconnect panel transformer No. 1, and the spare transformer.

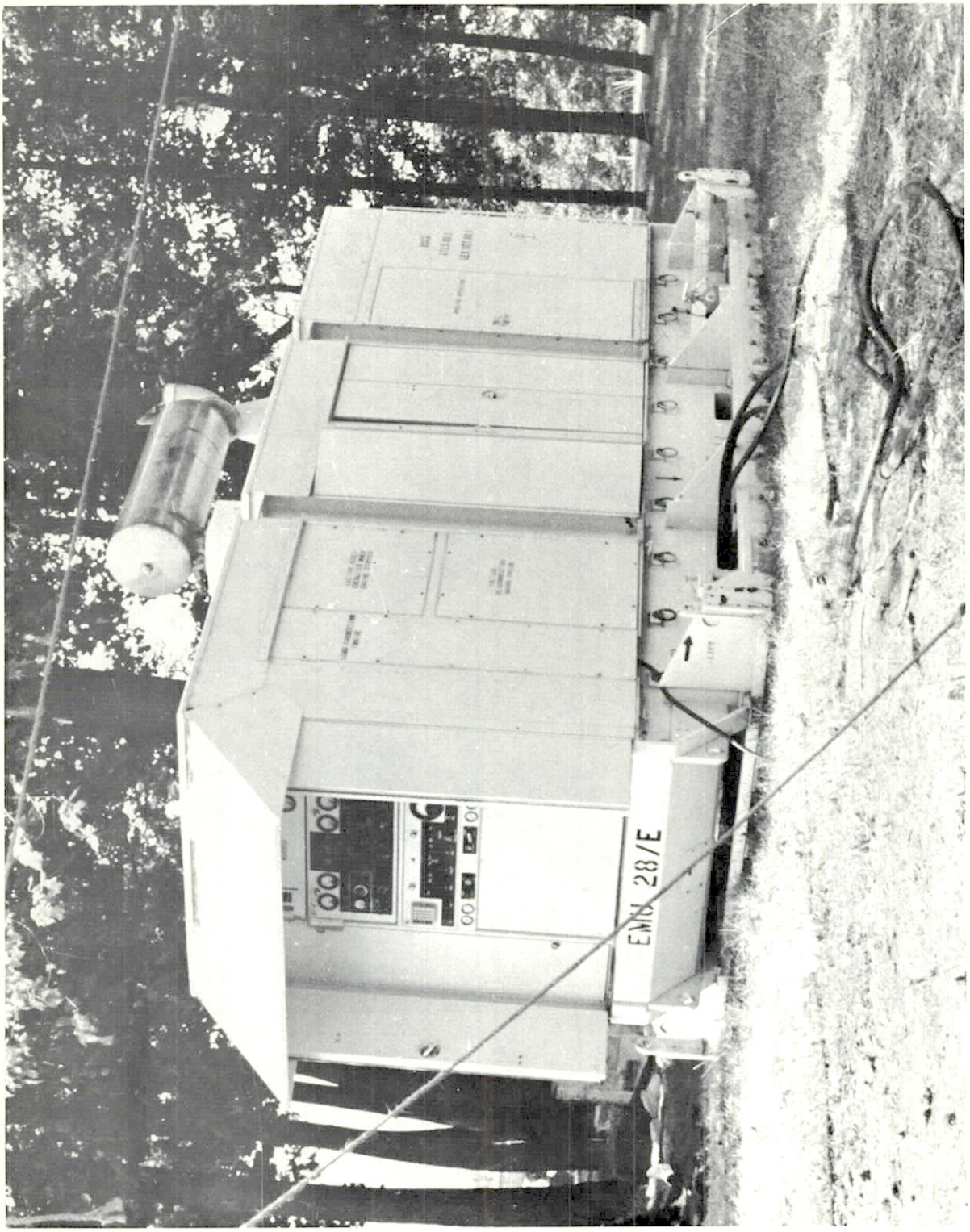


Figure 2-6

EMU-28/E Generator Set.

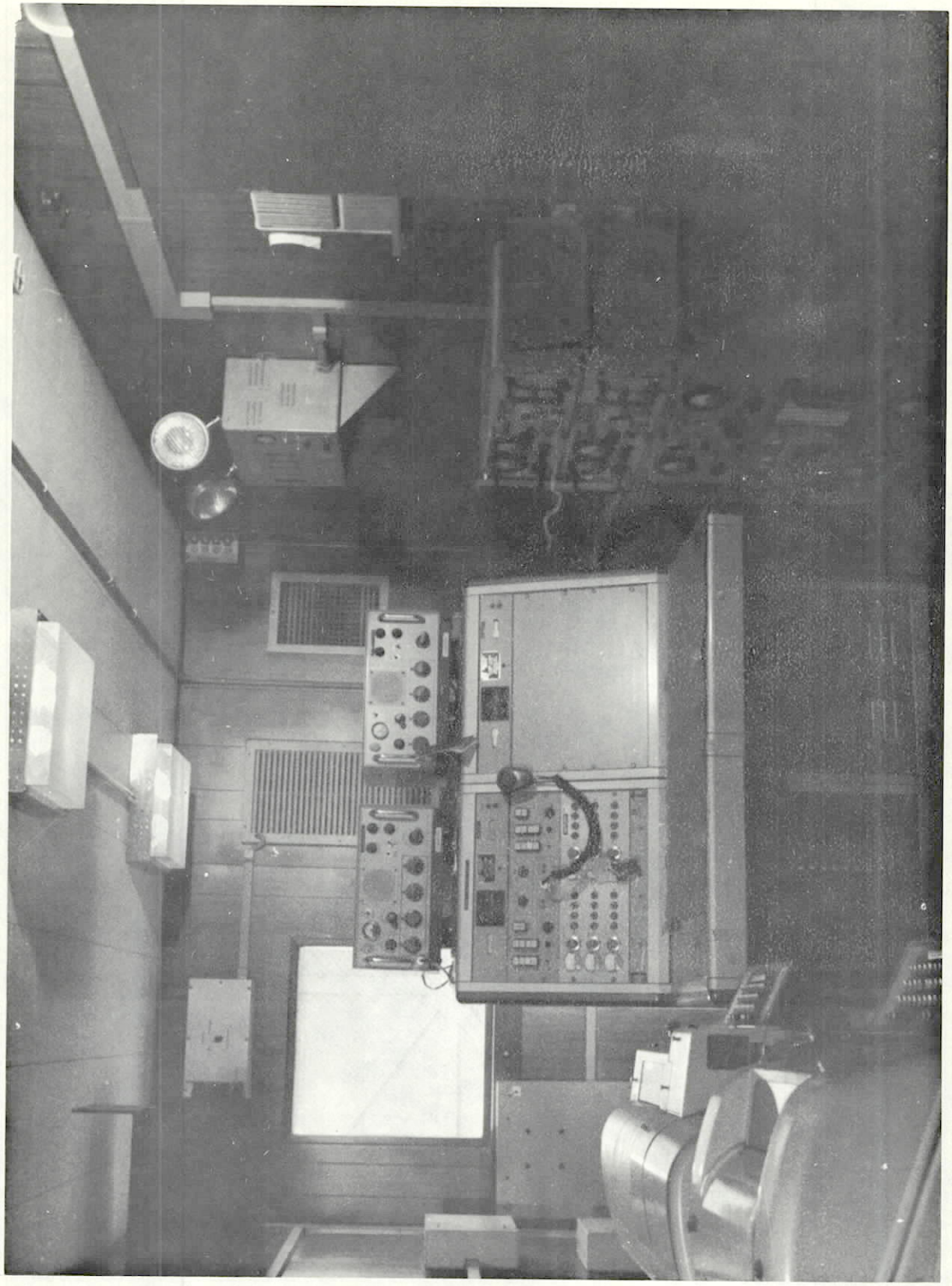


Figure 2-7

Interior of shelter 2300, showing the transceivers, the control console, and the two teletypes.

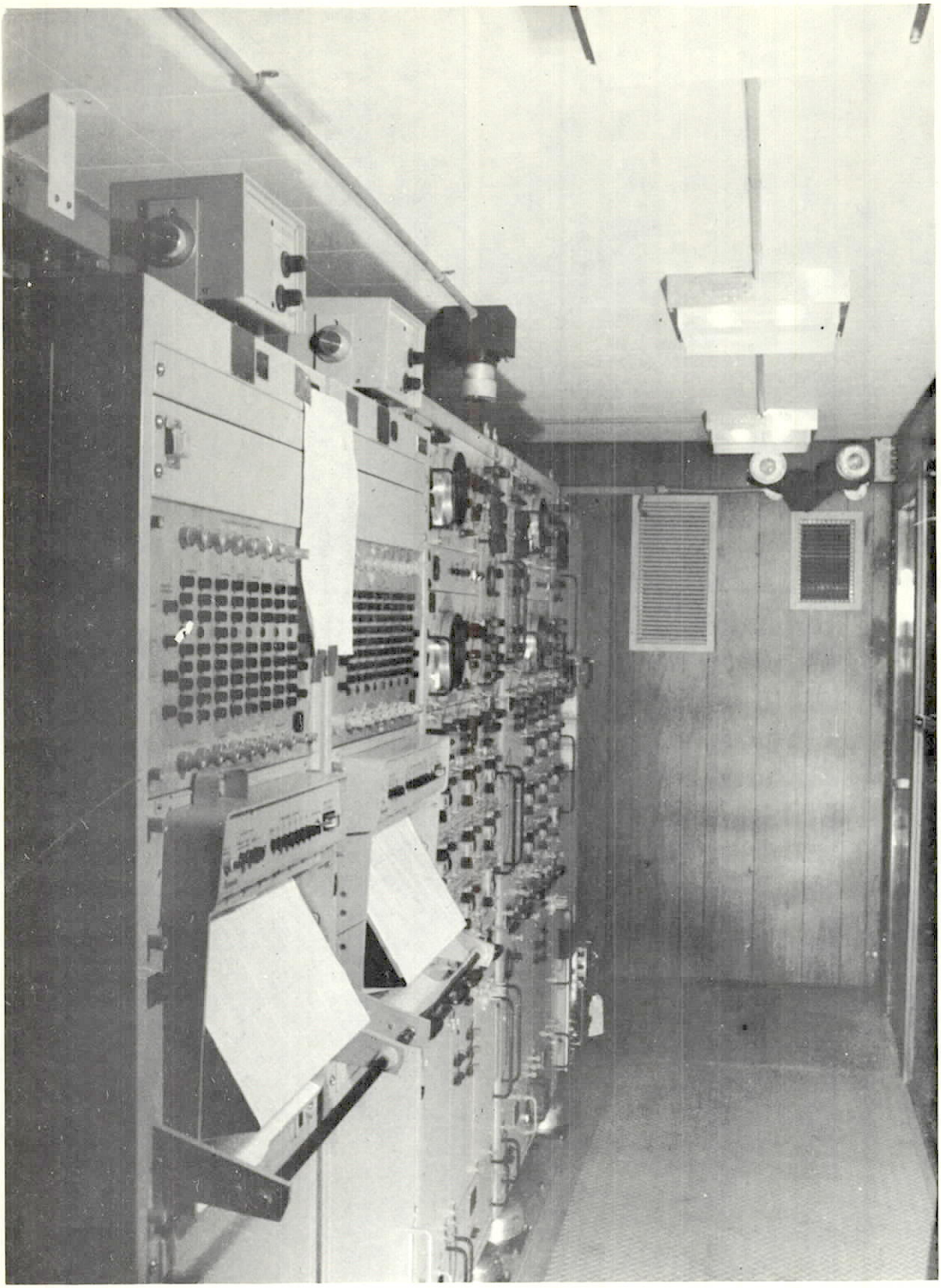


Figure 2-8

Interior of shelter 2100, showing the timer/synchronizers. Note the large air-conditioner intake and outlet vents on the far wall.

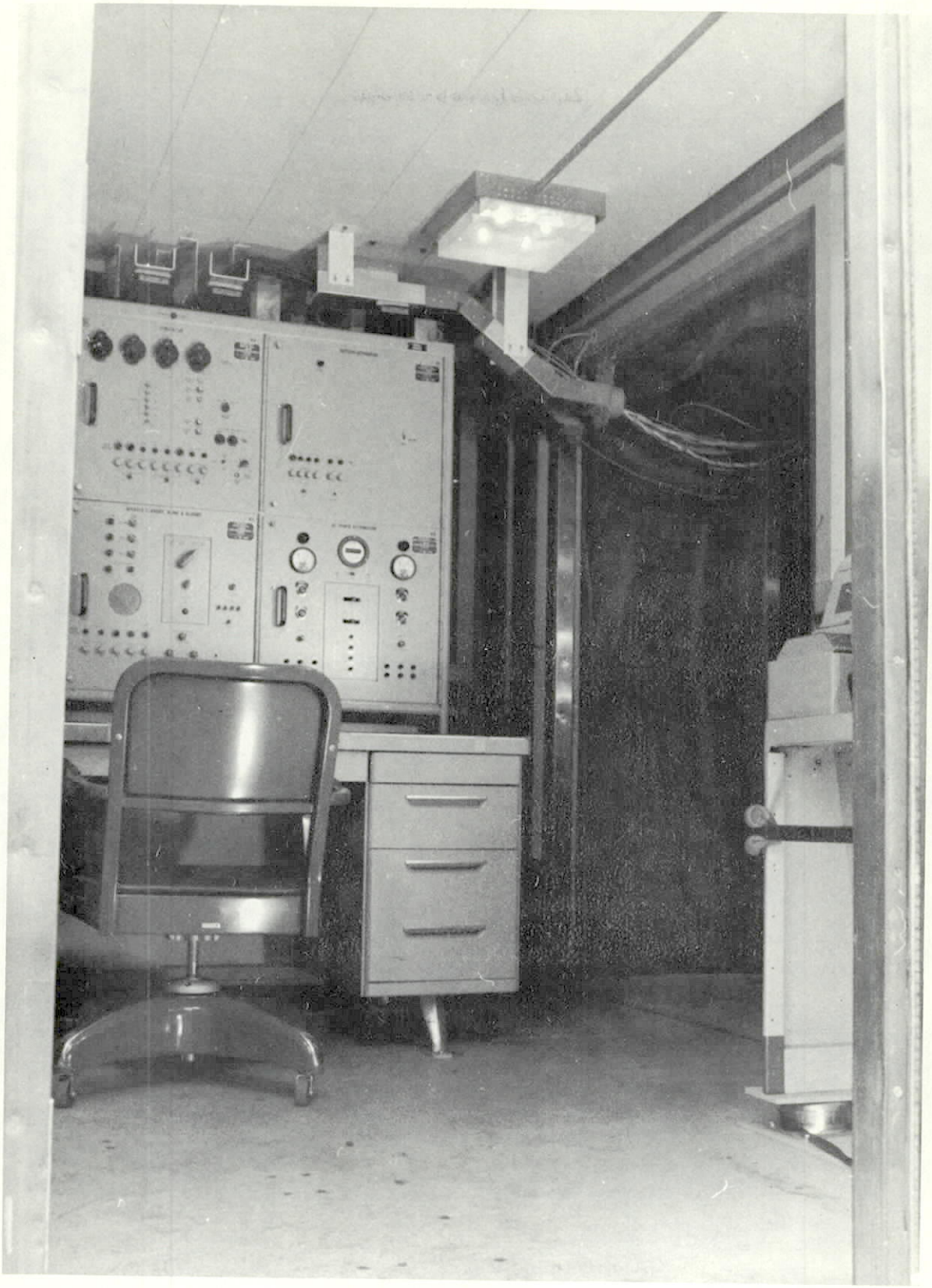


Figure 2-9

Interior of shelter 2200, showing the control indicator group. The isolation transformers are located in a closet behind the control indicator group.

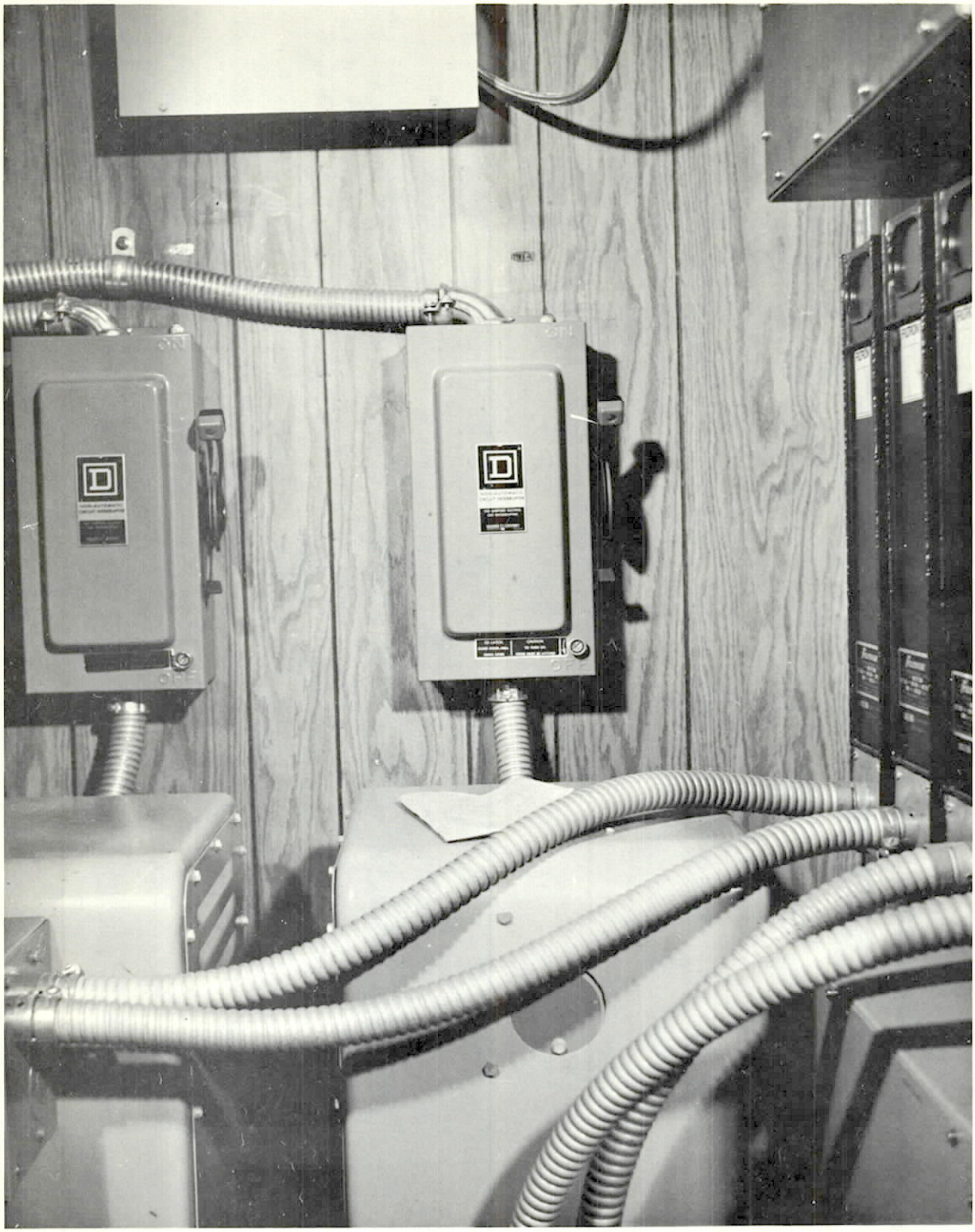


Figure 2-10.

Interior of the closet in shelter 2200, showing the input circuit breakers, the isolation transformers, and the output panels.

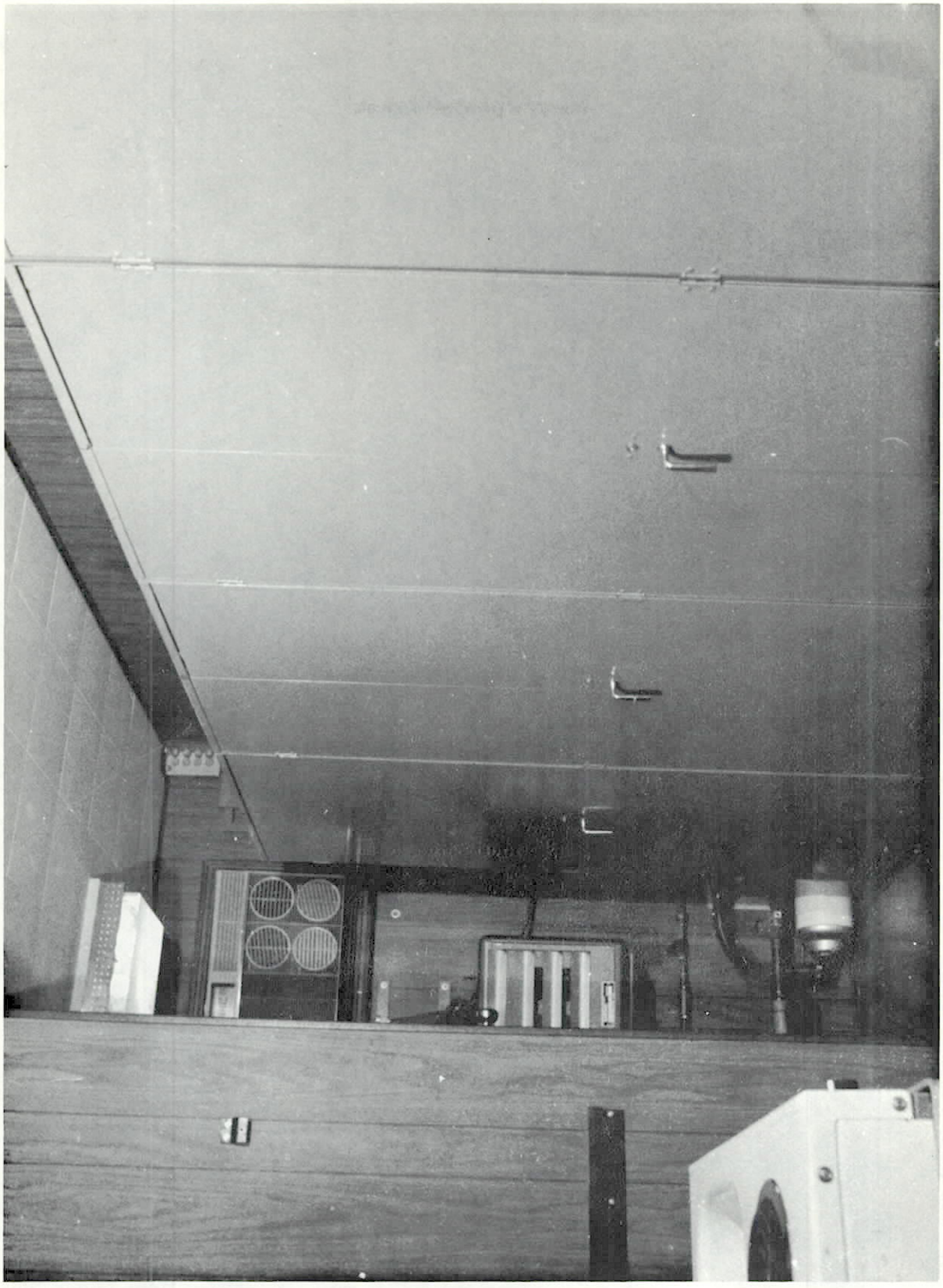


Figure 2-11

Interior of shelter 2400, showing some of the parts storage cabinets. The water pump is located on the floor at the back of the shelter.

Figure 2-12

Interior of shelter 2400, showing the interior of the toilet.

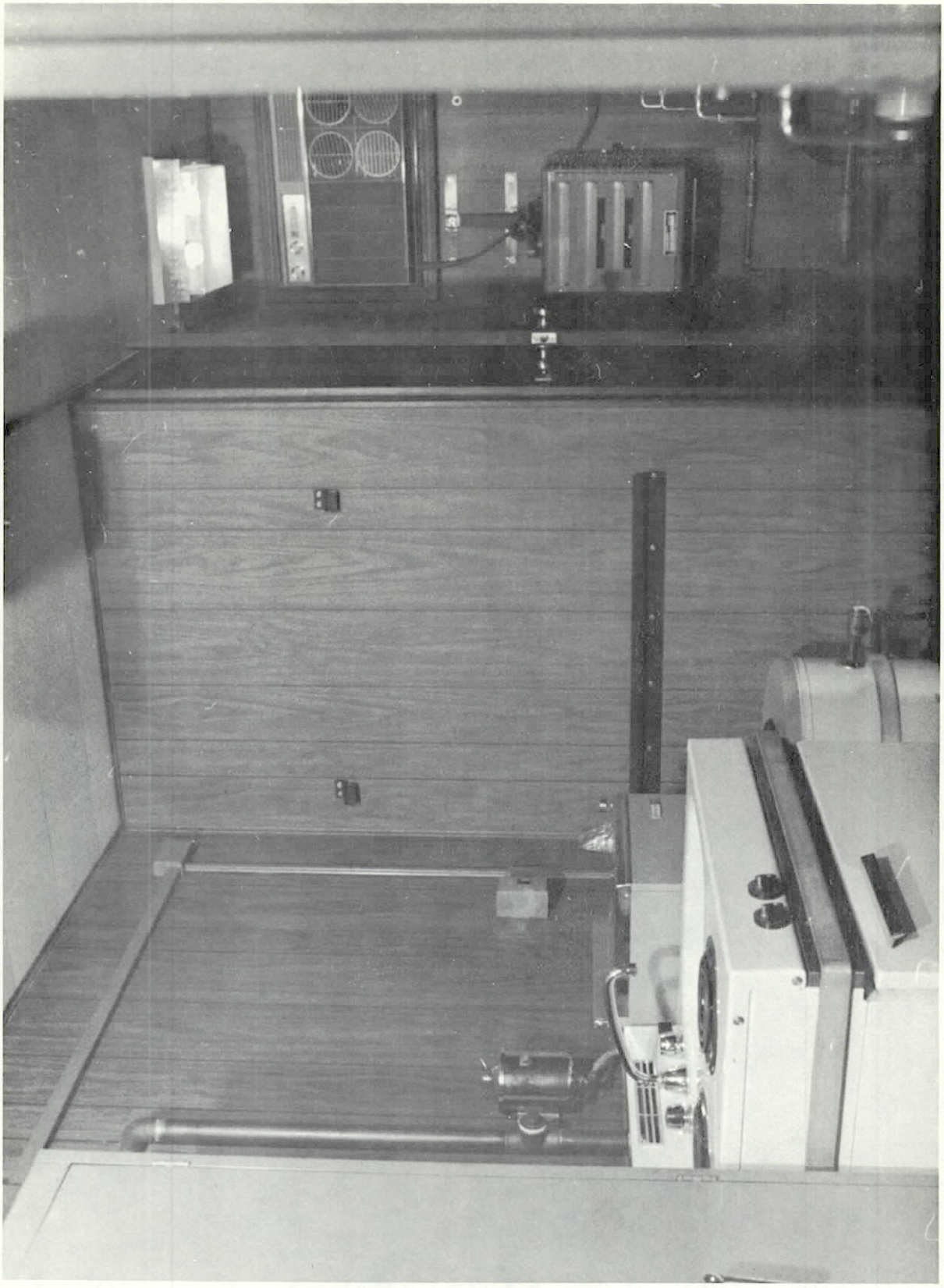


Figure 2-13

Interior of shelter 2400, showing the combination sink/range/refrigerator, the water purifier, the water cooler, and the water heater.

Figure 2-14

Interior of shelter 2500, showing the parts storage cabinets.

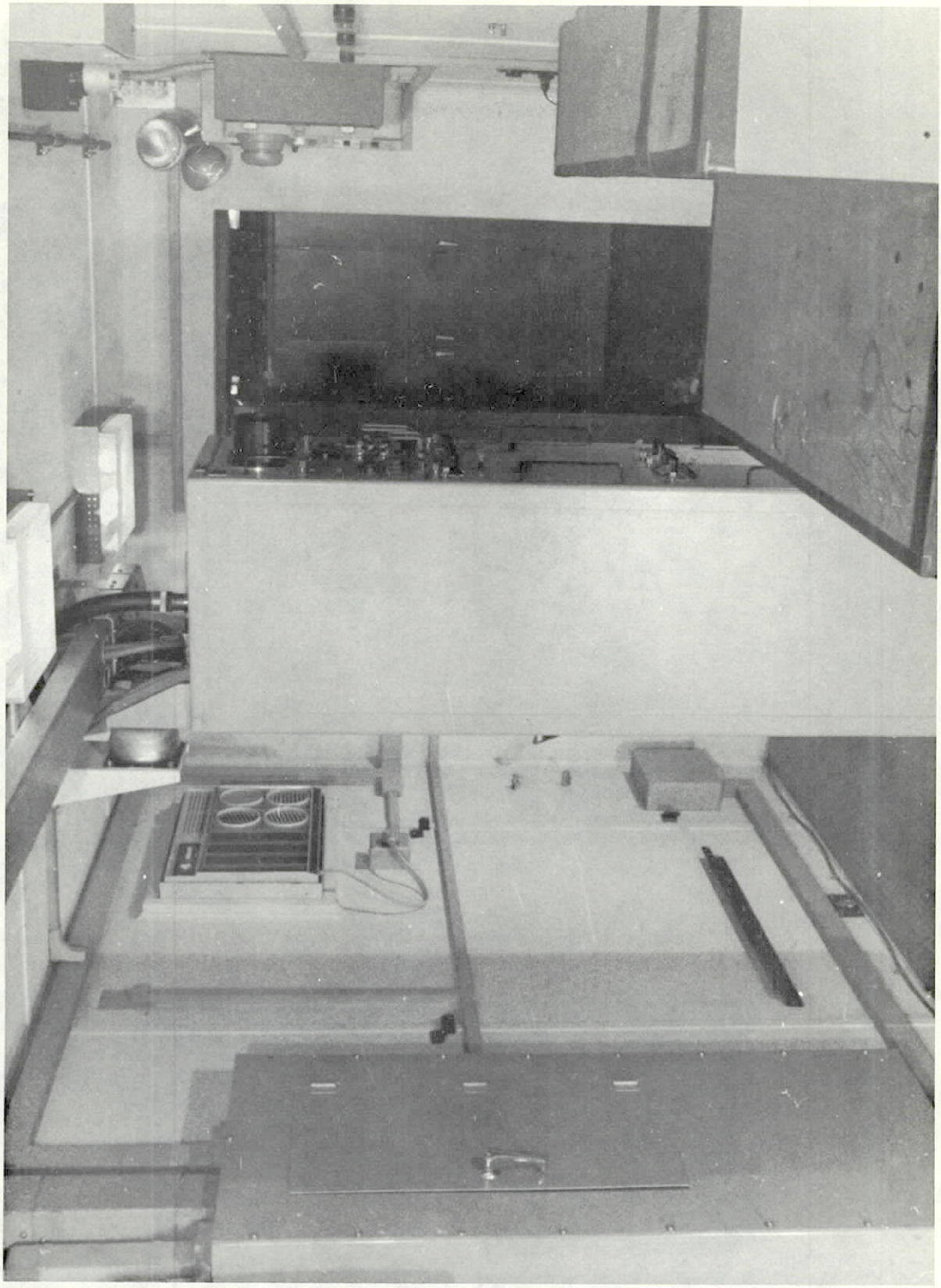


Figure 2-15

Interior of shelter 2600, showing the power distribution panel for the timer/synchronizer/communications group (in the left of the picture), the transmitter control group (center), and the work bench (foreground).

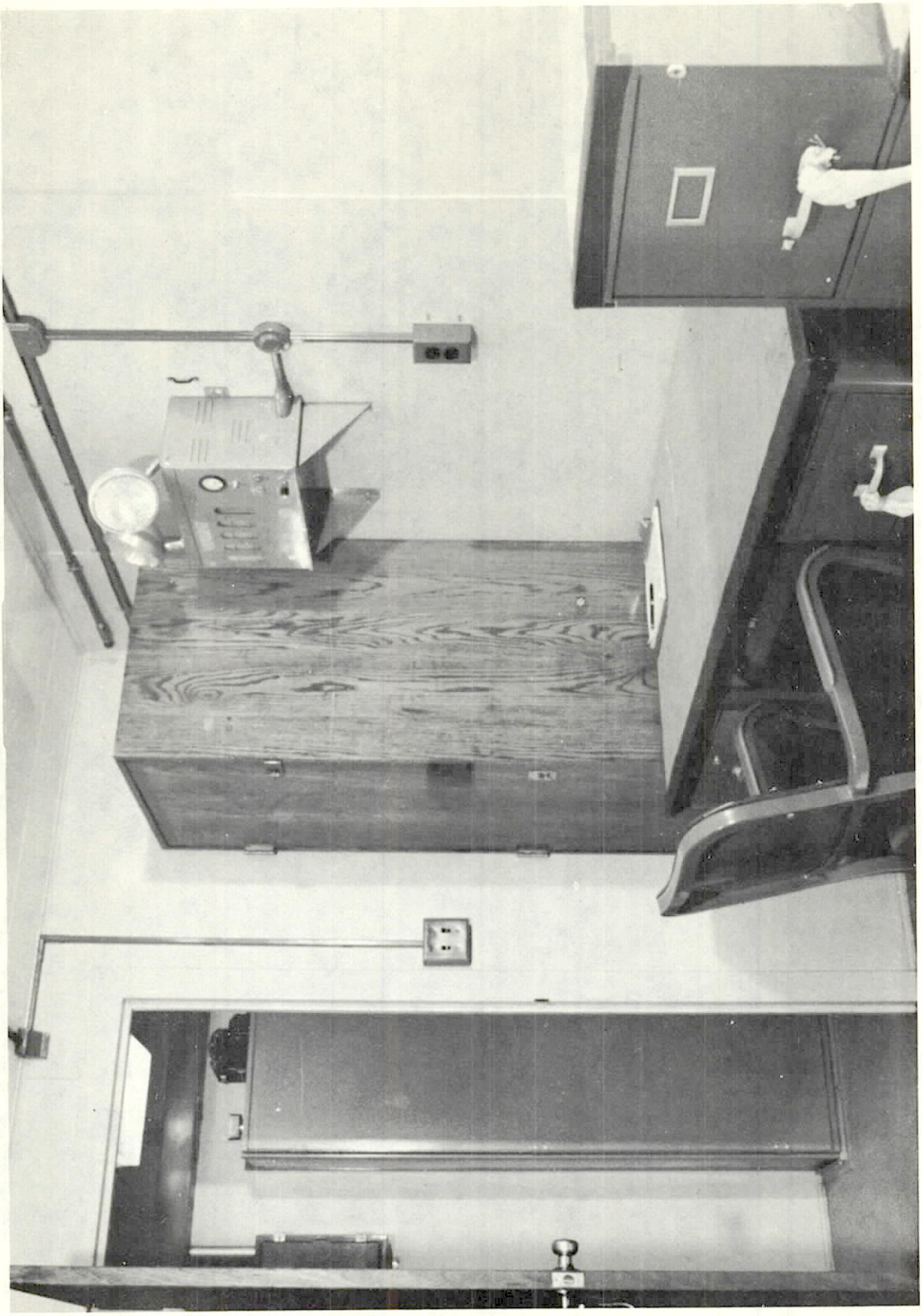


Figure 2-16

Interior of shelter 2700, showing one of the desks, a filing cabinet, and the small arms locker.

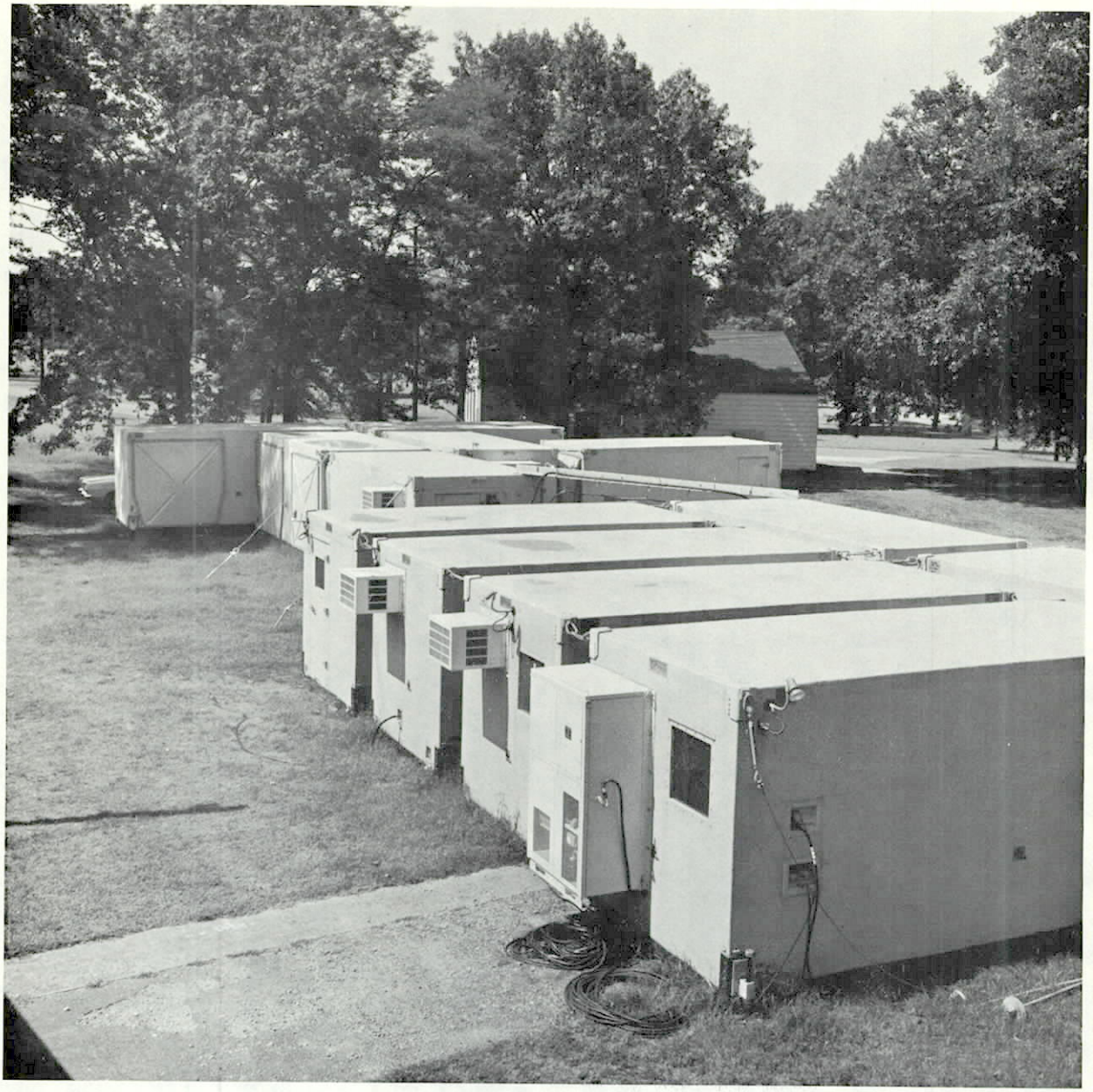


Figure 2-17

ATLS shelters. The timer/synchronizer/communications group is shown in the foreground and the transmitter group in the background. Shelters 3300 and 3400 (transmitter #1) were not installed when this picture was taken.

Figure 2-18

Interior of shelter 3500, showing the power distribution panels.

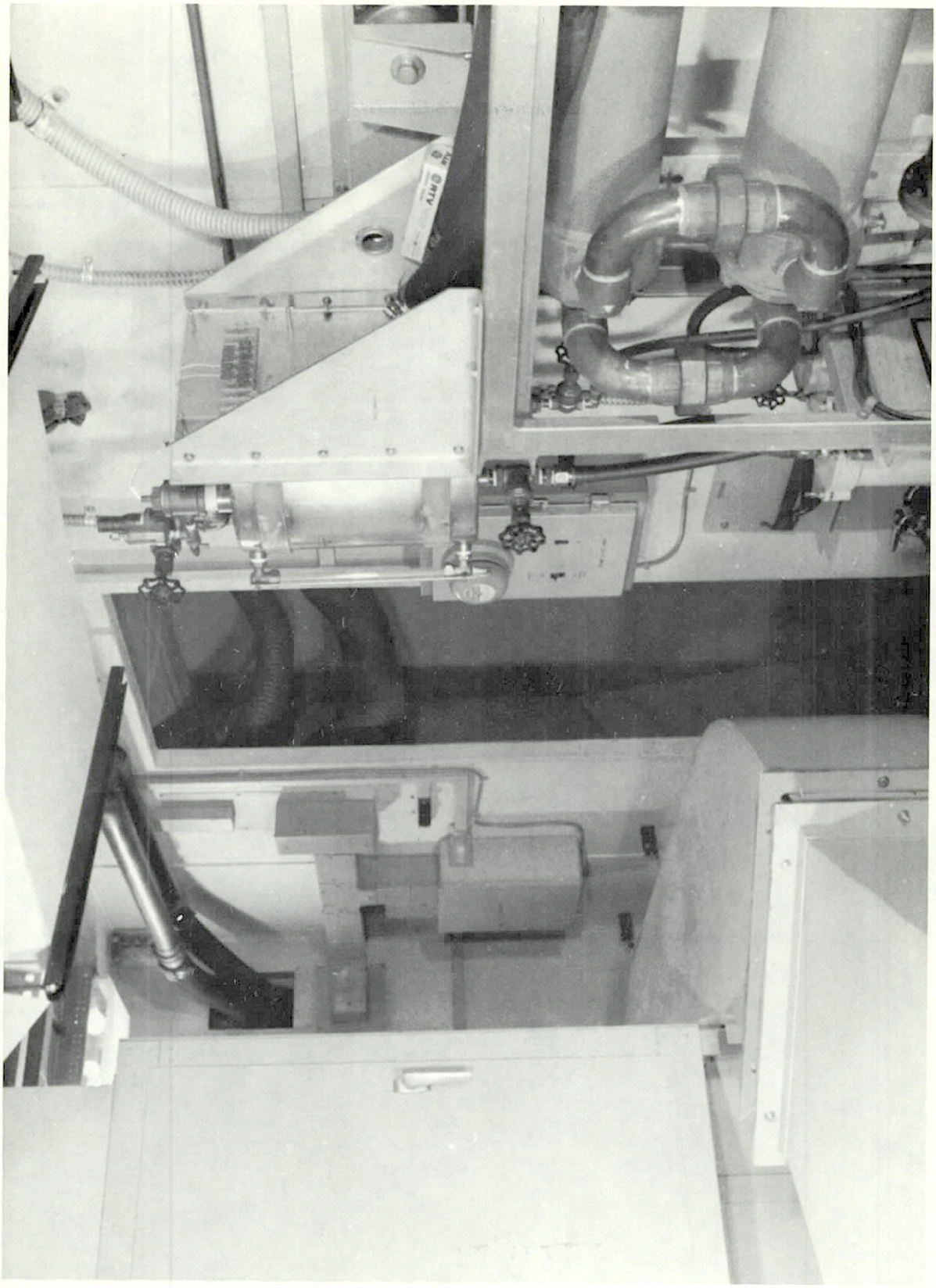


Figure 2-19

Interior of shelter 3600, showing the antenna coupler and dummy load on the left and the primary heat exchanger on the right.

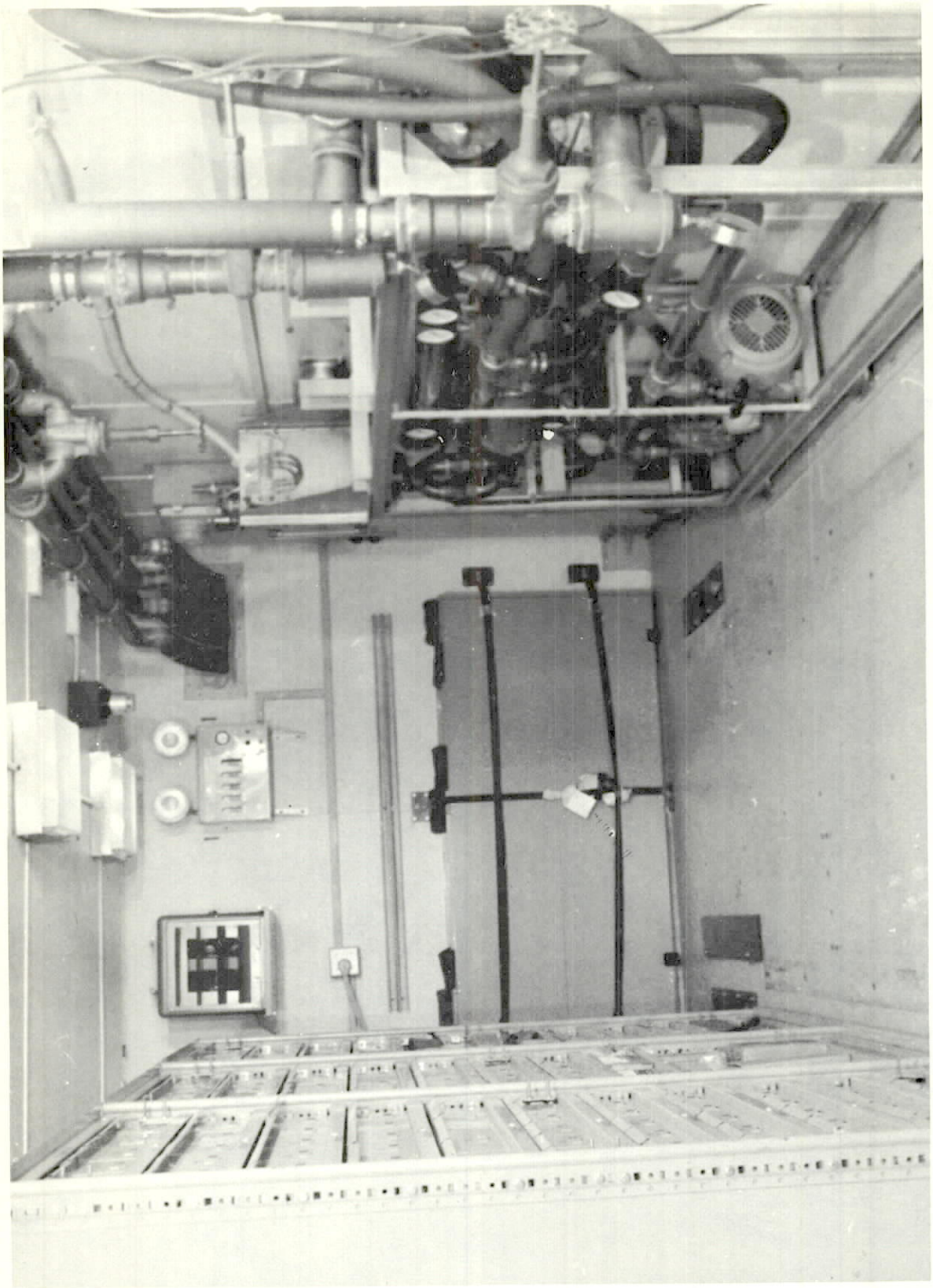


Figure 2-20

ıterior of shelter 3700, showing the parts storage cabinets on the left and he primary heat exchanger on the right. The water distribution piping and valves can be seen above the heat exchangers.

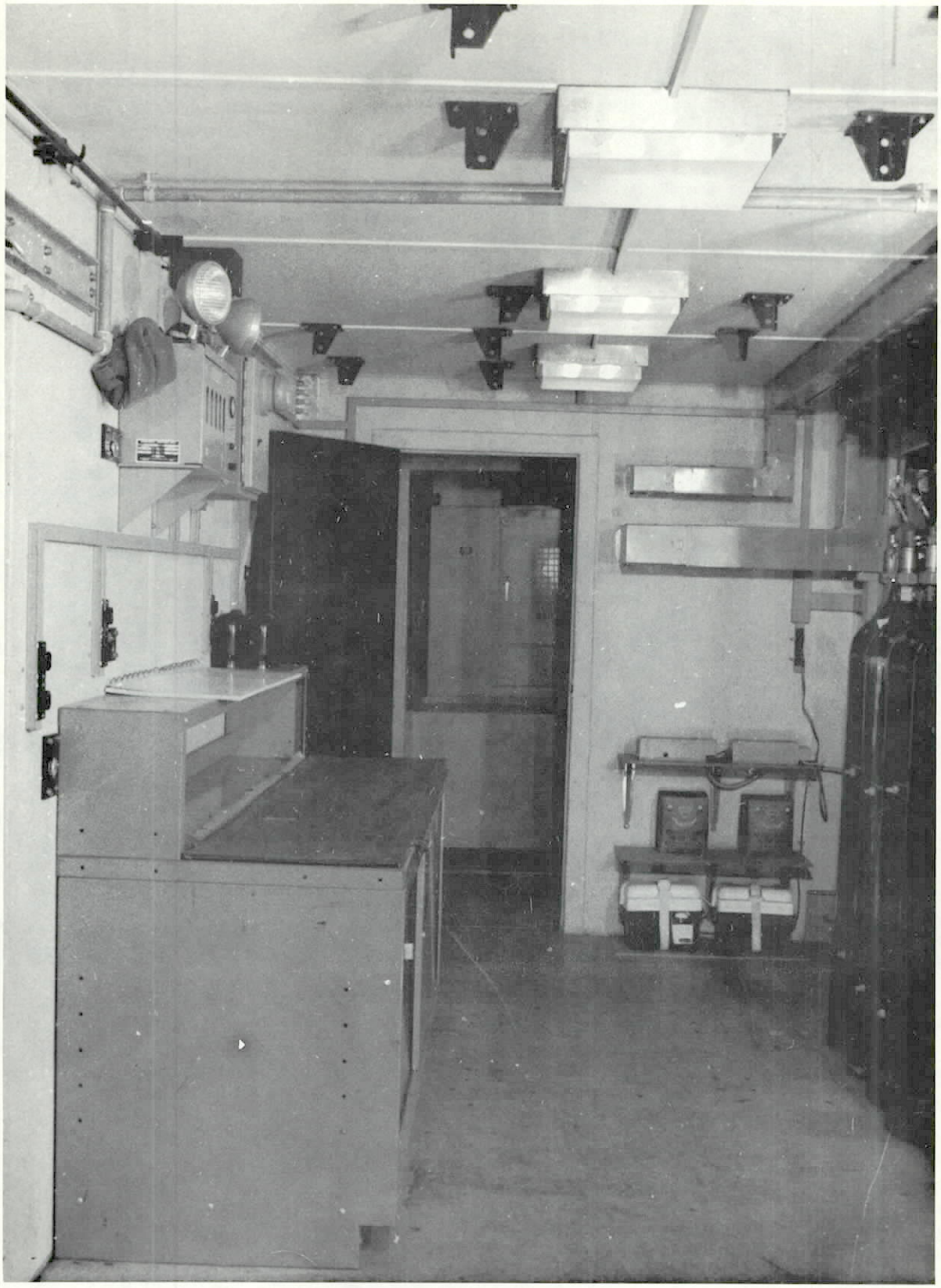


Figure 2-21

Interior of shelter 3800, showing the workbench on the left and the CO_2 storage bottles on the right. The power supply for the intercom system is on the far wall.

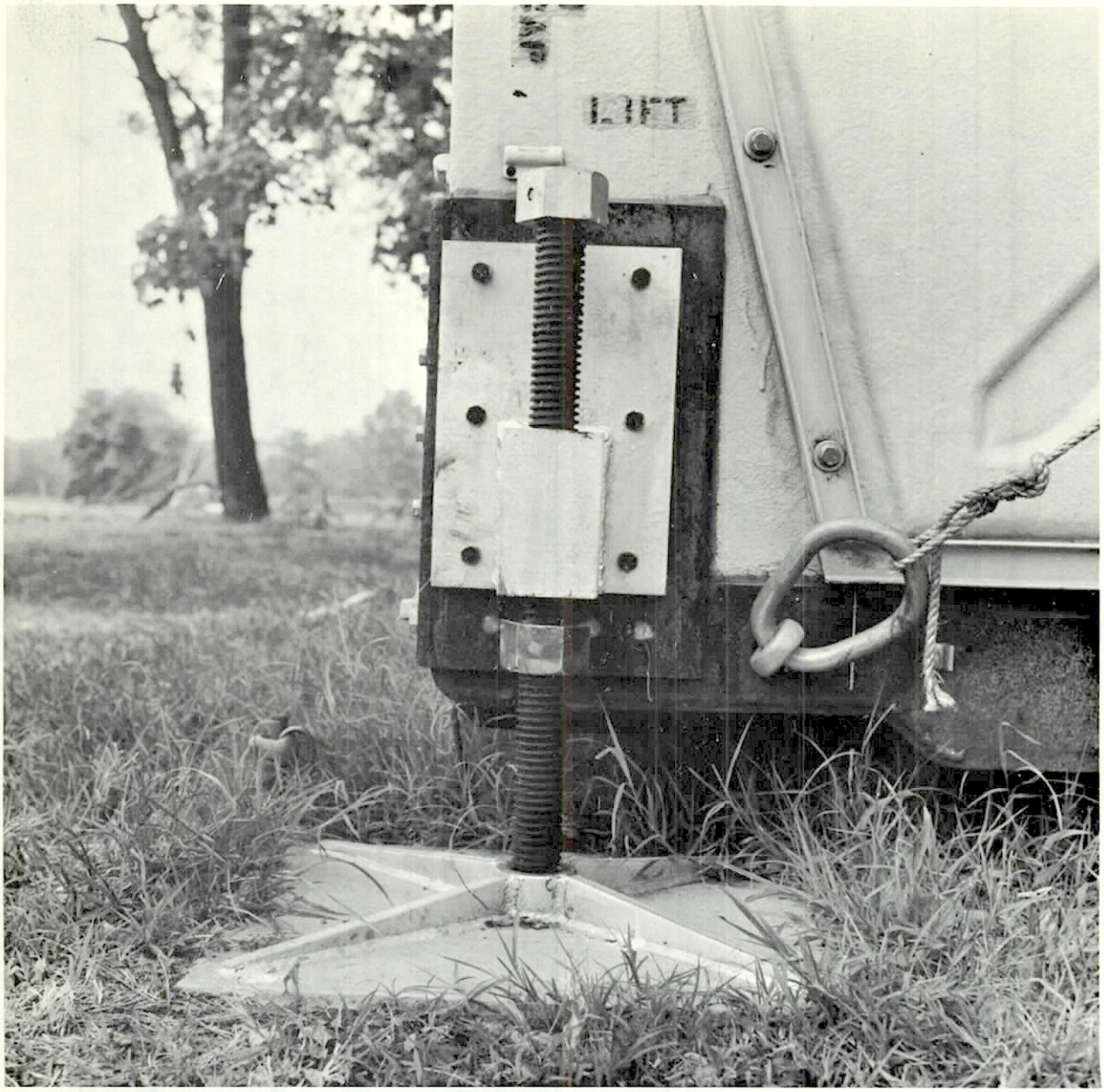


Figure 2-22

Leveling jack attached to shelter. Note the small levels above the jack mounting plate.

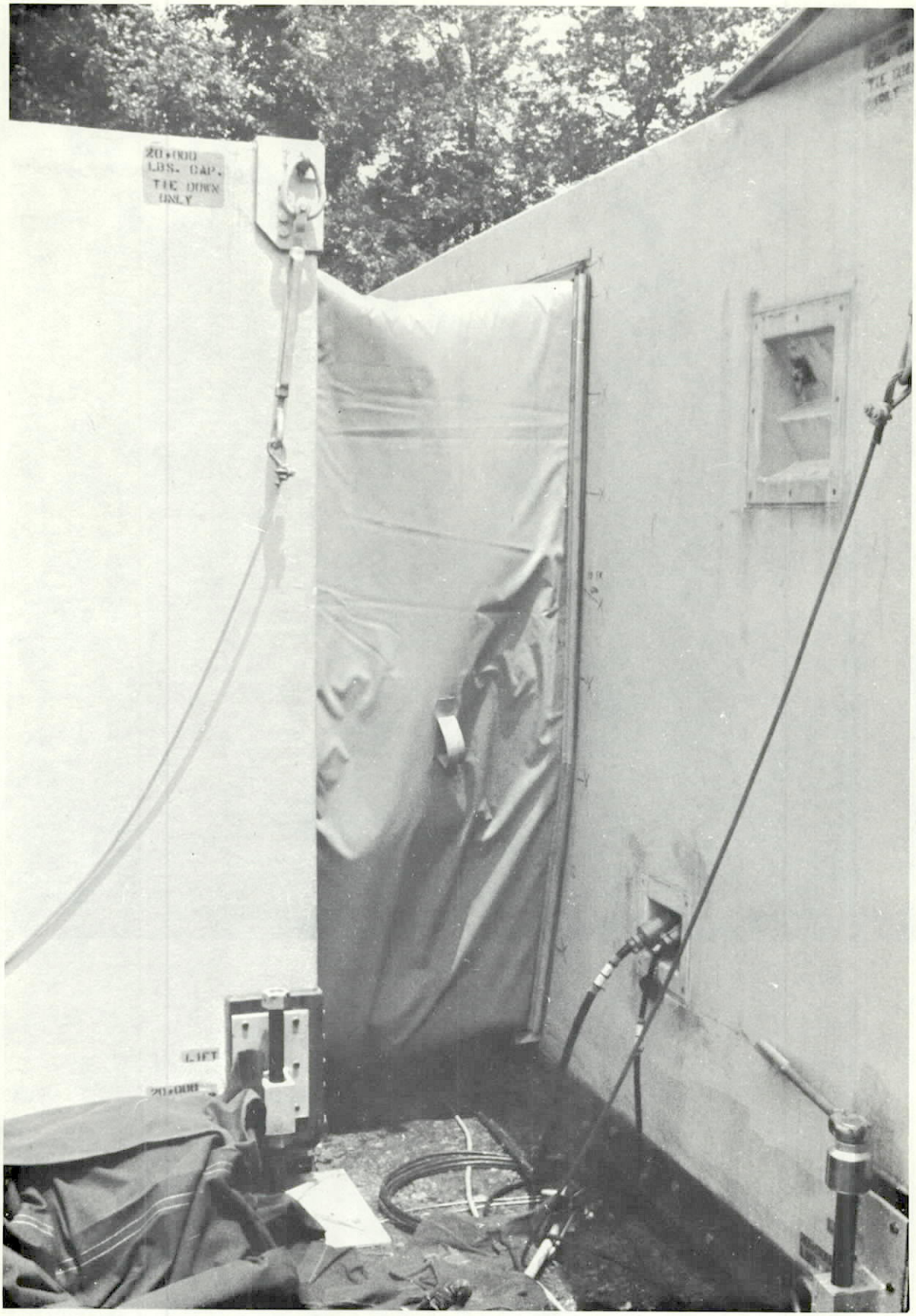


Figure 2-23

Intershelter pullman enclosure (exterior view).

Figure 2-24.

Intershelter pullman enclosure and walkway (interior view).

Figure 2-25

RFI curtain installed inside the pullman enclosure between shelters 2100 and 2200.

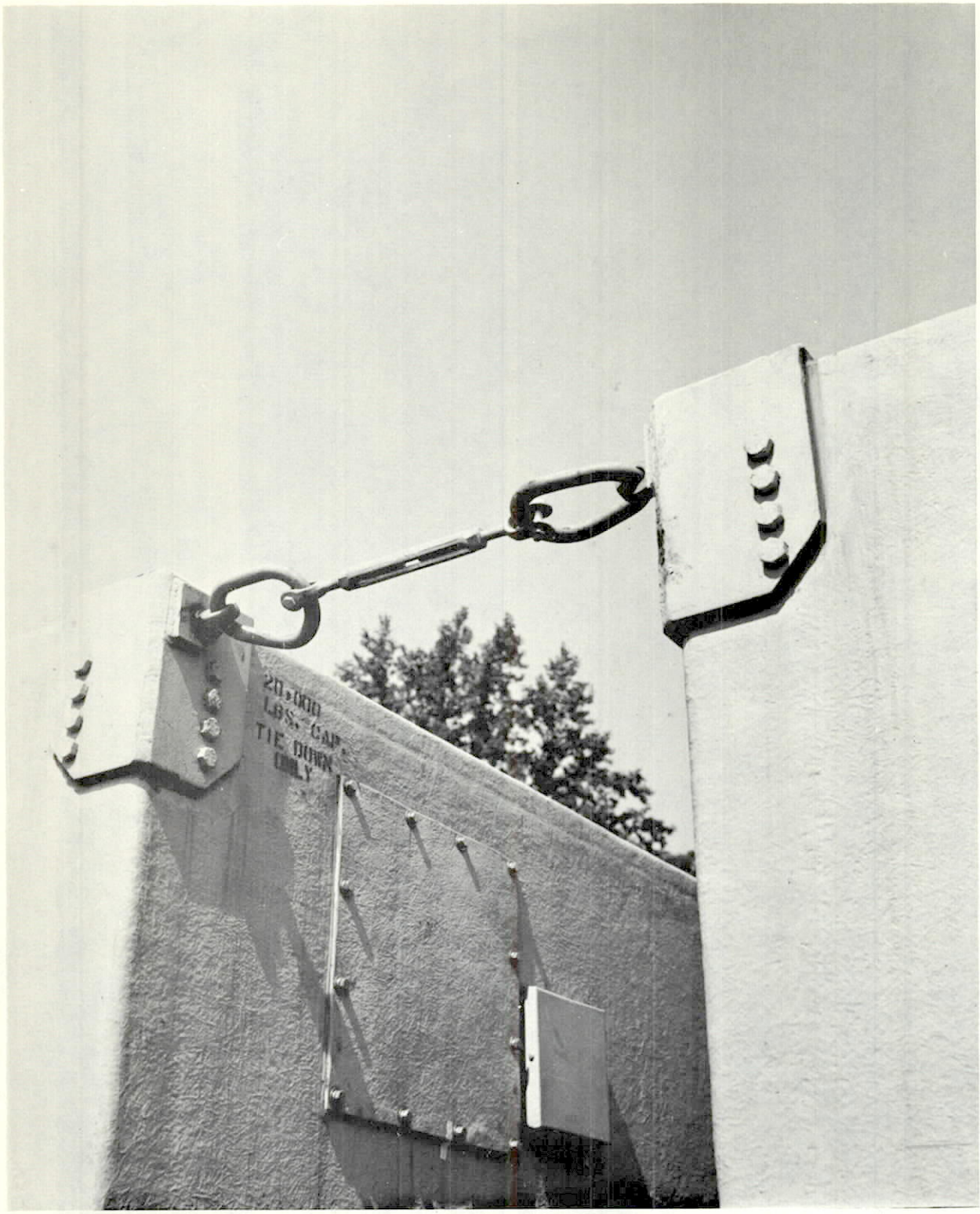


Figure 2-26.

Shelter-to-Shelter guy.

Figure 2-27

Shelter-to-Ground guy.

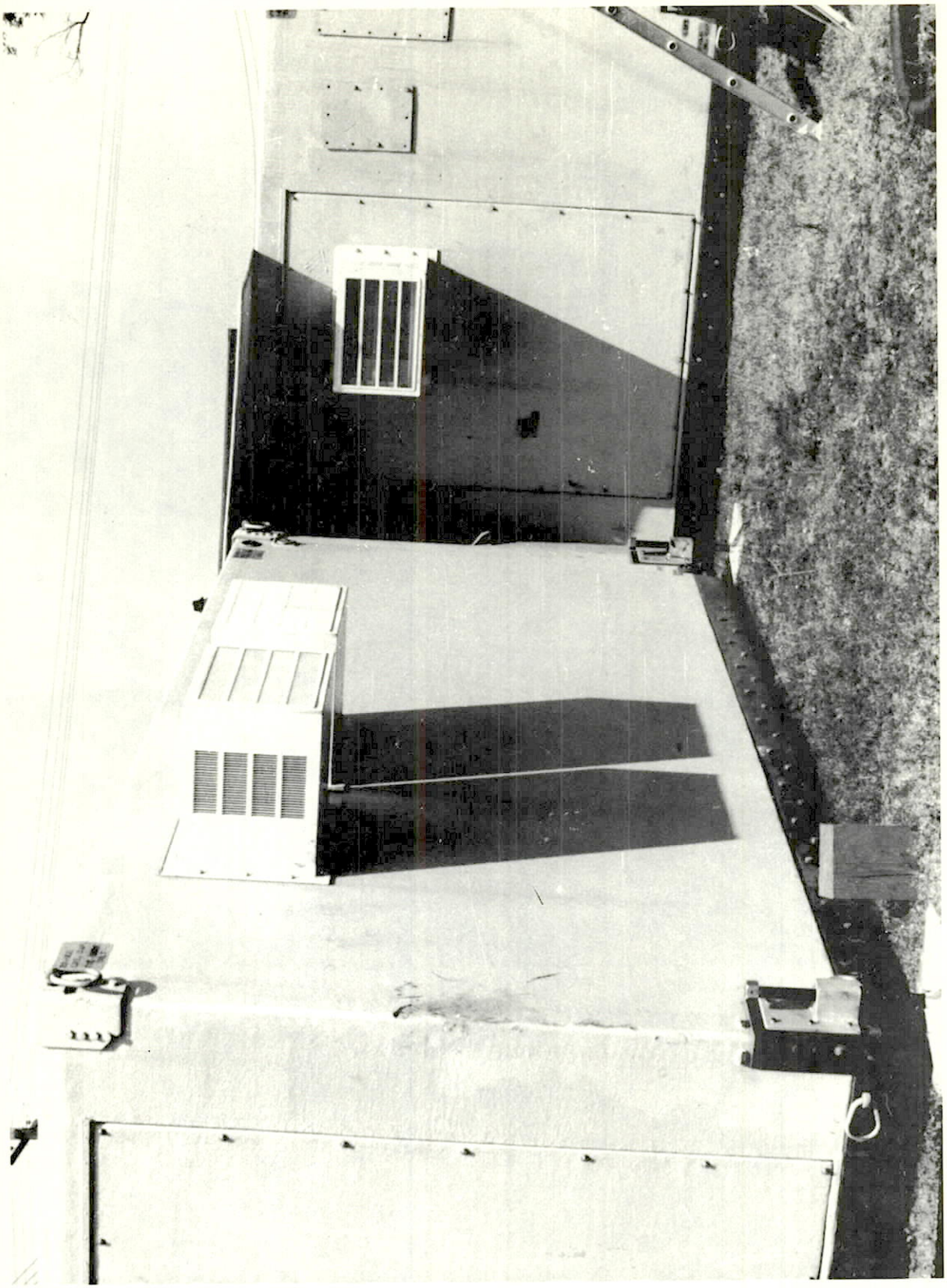


Figure 2-28

Small air conditioners installed on shelters.

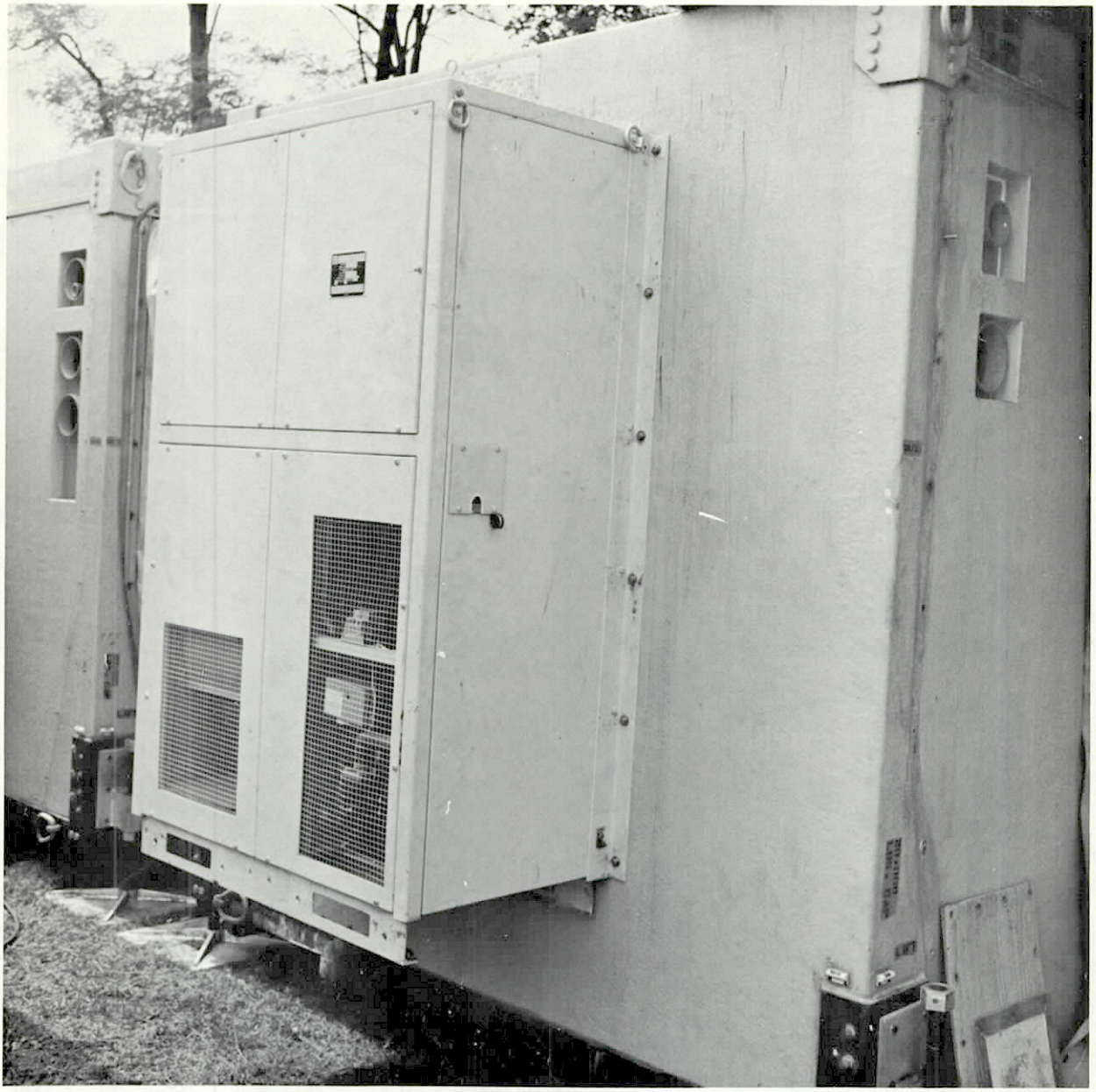


Figure 2-29

Large air conditioner installed on shelter.

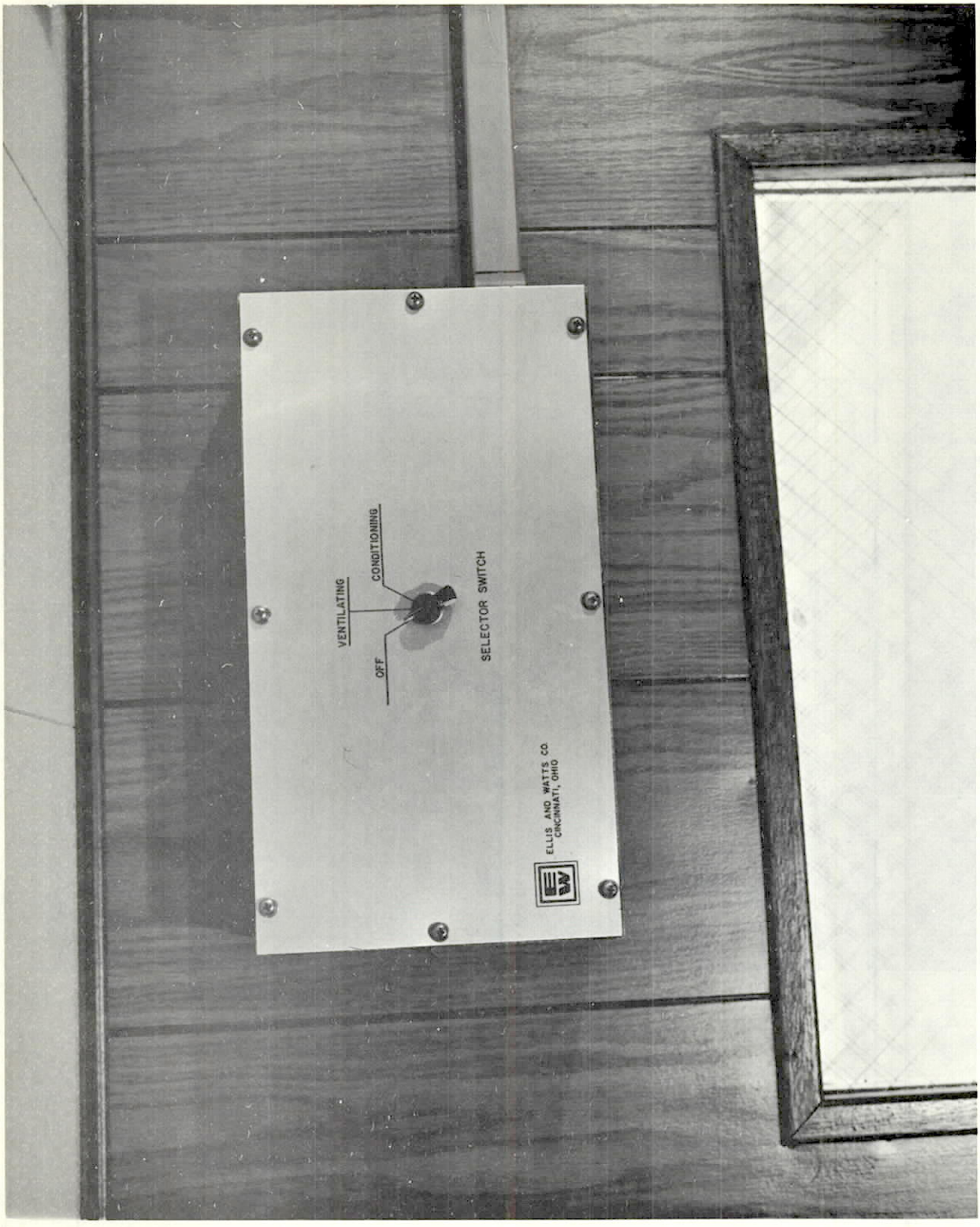


Figure 2-30

Control box for large air conditioner.

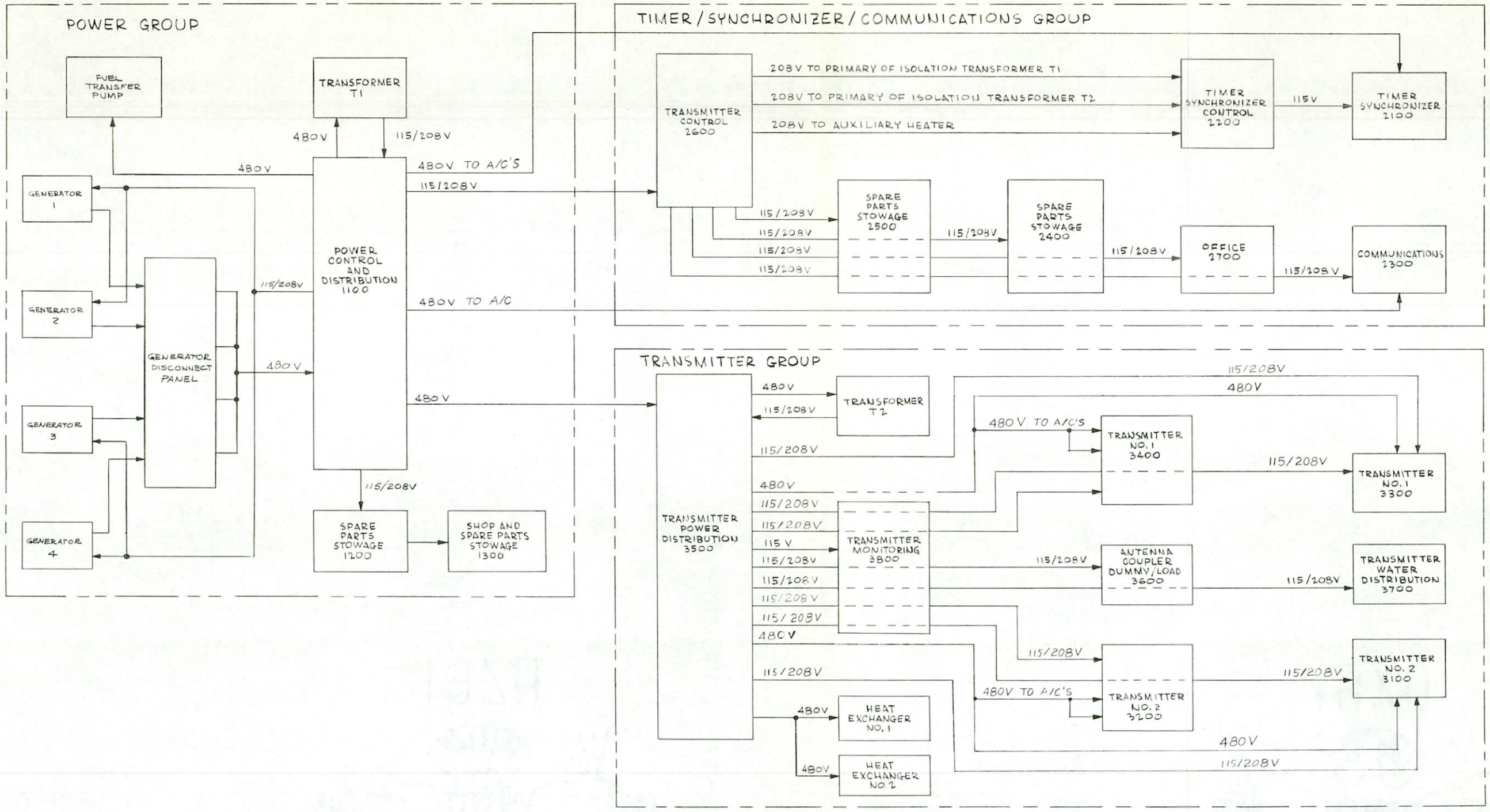


Figure 2-31

Block diagram of facility power distribution.

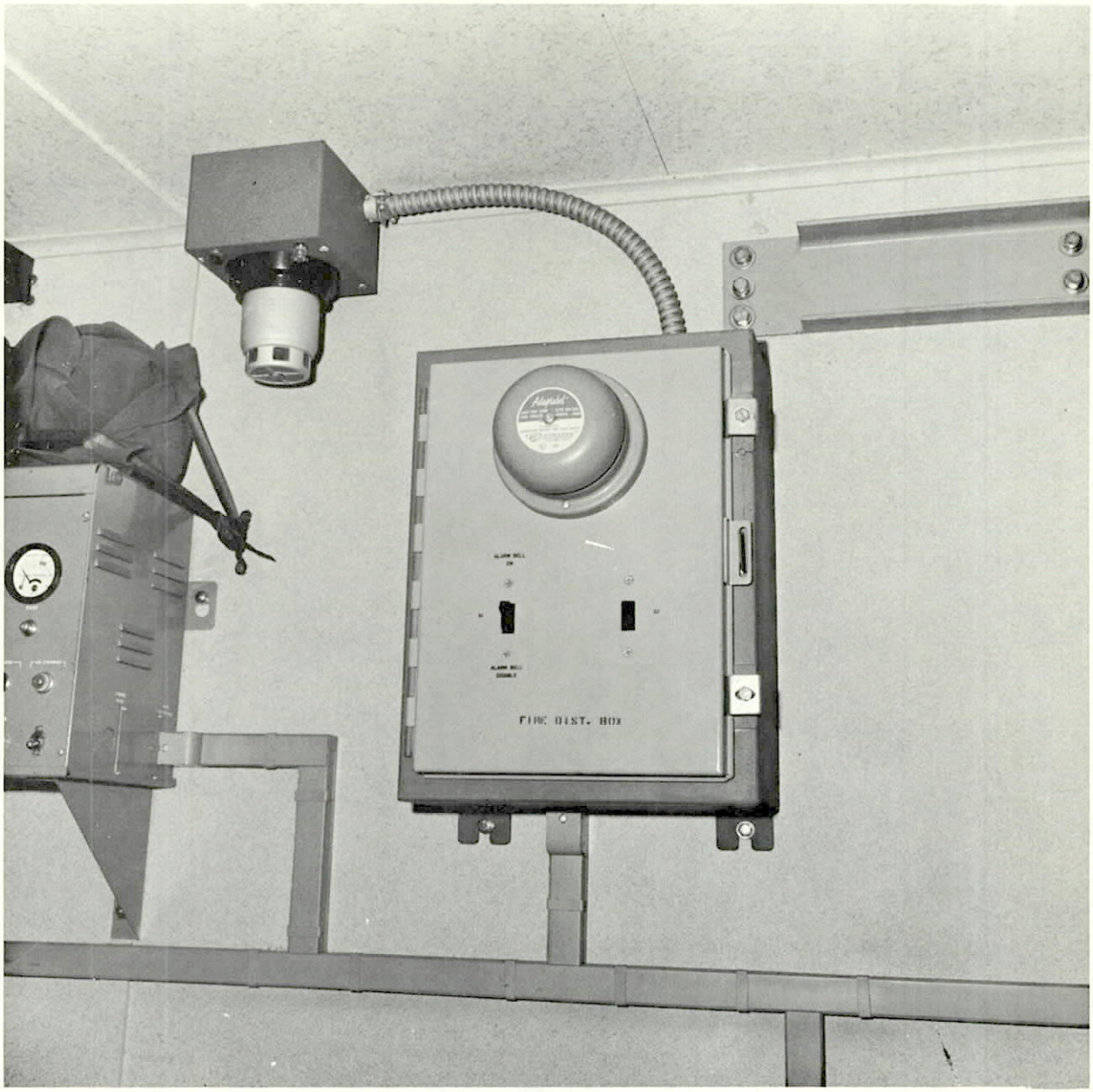


Figure 2-32

This figure shows a typical installation of the emergency lighting system and of the fire detection and alarm system. The large box to the left is the emergency lighting system. The object attached to the box in top center is the ionization-type fire detector. The large box to the right contains the terminal boards for the fire detection system wiring, as well as housing the necessary relays and the on-off and local alarm silence switchs.

CHAPTER 3

SITING AND PLACEMENT

Chapter 3 contains information and instructions for proper site selection, delivery sequence, movement, handling, and positioning of ATLS shelters, generators, and pallet assemblies. It also contains recommended procedures for a "semi-permanent" installation of an ATLS facility.

3.1 SITE SELECTION. An installation site must be selected to accommodate either an entire ATLS station or a partial station. The site must be reasonably level, free from obstructions, and suitable for leveling the shelters by means of leveling jacks adjustable from 0 to approximately 11 inches. Table 3-1 lists the dimensional requirements for the site. See figure 3-1 for precise location of the major equipment. It is advisable to stake out or mark the site and shelter locations, as noted in figure 3-1, prior to positioning the ATLS shelters.

3.2 SITING SEQUENCE. The recommended temporary and permanent sequence for siting the various ATLS shelters and components is shown in Table 3-2. Proper sequencing is important to ensure that the correct parts, equipment, and materials are available in the appropriate order, to facilitate placement of each shelter, and to make efficient use of time and personnel. The siting sequence, of course, must be varied if only a few shelters are deployed for recoupment purposes; the sequence depending on the particular circumstances involved.

3.3 LOADING AND DELIVERY. Unless sufficient time and storage area is available to stage ATLS components at or near the installation site, it is important that shelters, generators, and pallets be loaded and delivered to the selected site in proper sequence. Failure to do this will result in needless delays when trying to place equipment in correct order (i.e., a shelter delivered out-of-sequence must be temporarily off-loaded to enable use of a mobilizer for moving another shelter which must be positioned first). Table 3-3 contains a recommended aircraft loading sequence when delivery is to be made by air to an airstrip near the installation site. It is also important that the shelter be properly oriented in the aircraft so that they may be placed on the mobilizer in the correct position. If the shelter is reversed on the mobilizer, an incorrect shelter-to-shelter placement will result when shelters must be backed into position at the installation site. Shelters whose loading position is critical are marked at one end with a blue dot. If these shelters are placed in the aircraft with the blue dot facing forward (toward the cockpit), the shelters will be correctly positioned on the mobilizer when off-loaded. The same sequence and orientation should be maintained when moving ATLS equipment by other means, the number of ATLS components moved at one time being a function of the carrying capacity of the transportation mode.

NOTE

The requirements of AFM 71-4, "Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft" should be understood and met when deploying ATLS by C-130 or C-141. Primary compliance involves the attachment of DD Form 1387-2, "Special Handling Data/Certification" to each shelter containing hazardous materials listed in AFM 71-4. Figure 3-2 depicts this form. DD 1387-2's have been filled out (except for TCN data) and placed on appropriate ATLS shelters for initial movement, and should be renewed prior to re-deployment. TCN data should be entered on the forms when known.

3.4 AIRCRAFT UNLOADING. Following the instructions set forth in the Loadcraft and Gichner mobilizer manuals, unload, assemble, and prepare the mobilizers for use and off-load the ATLS equipment. Be sure to use only the Gichner mobilizer to off-load and transport the generators, since the generator weight exceeds the load capacity of the Loadcraft mobilizers. The Gichner mobilizers may be used to transport any of the station generators, shelters, or pallets. (NOTE: The crates must be removed before towing the generators, even on the Gichner mobilizers). Special brackets have been developed to improve the lateral alignment of the shelters and pallets as they are loaded onto the mobilizers. Each bracket has a removable pin and is easily fastened to the mobilizer skid channel. There are sixteen bracket locations per mobilizer, four for each corner skid channel. The brackets should be installed before loading, removed upon unloading, and transferred to the next mobilizer to be loaded. Thirty-two brackets are provided per station. The brackets should not be used when loading the EMU-28/E generators. The brackets are stowed on the Gichner mobilizers, but are for use on both the Gichner and Loadcraft mobilizers.

3.5 TOWING SHELTERS TO SITE. Prior to actual towing, a careful check should be made to ensure that all brake and light connections are attached. It is important that the speed limitations and towing instructions set forth in the mobilizer manuals be carefully observed.

3.6 USE OF LIFTING JACKS. The primary method of loading and unloading the mobilizers at a remote site where no heavy lifting equipment is available is by using the lifting jacks. In this operation, a shelter, pallet, or generator is lifted off the ground high enough to allow the mobilizer to be removed from or installed beneath the unit. The load is then lowered onto the mobilizer and bolted in place or lowered to the ground. During the lifting operation, proper safety precautions for lifting heavy equipment should be observed. In addition to the obvious precautions of not allowing personnel to be under the load or between the load and a wall of another shelter while it is supported by the jacks, the following specific precautions should be observed.

3.6.1 The lifting jack adaptor plate must be bolted securely to and be flush with the shelter jack plate. Be sure to use large flat washers on the adaptor plate bolts to prevent the bolt heads from pulling thru the holes under the side loading which may occur during wind gusts or uneven load conditions. Make certain that the lip of the adapter plate fits under the shelter jack plate so that the load weight is supported by the lip and not by the adaptor plate bolts. In addition, make certain that the quick-release retainer pin is installed when the jack is installed on the adaptor plate. If a jack becomes unloaded during the lifting or lowering operation, this retainer pin will keep the jack from falling off the adaptor plate.

3.6.2 Two jack handles have been provided; a short handle for use when the load is near the ground and a longer handle for use when the load is high enough for the handle to clear the ground. No other handles or wrenches should be used. (See figures 3-3e and 3-3f.)

3.6.3 During the lowering operation, it is necessary to manually pull out the ratchet pin to allow the handle to be turned in the opposite direction. During this time, there is no holding device or brake action to keep the load from lowering by gravity. If the handle were released while the ratchet pin was pulled out, the handle would spin around at a high rate of speed and the load would fall. Accordingly, during the lowering operation, an additional man should be stationed at each jack to operate the ratchet pin. If the jack operator should lose his grip on the handle, the ratchet operator can immediately release the ratchet pin and stop the load from falling.

3.6.4 The load must be kept as level as possible at all times. To insure this, in addition to one man for each jack, a fifth man must be supplied to act as supervisor and safety observor. The supervisor must see that all jackmen operate their jacks at the same rate. By observing the level-bubbles on opposite corners of the shelters, or by using a beam level for the other loads, he can instruct individual jack operators to slow down or speed up to keep the load level.

3.6.5 A load must be kept on all four jacks at all times. It may be noted during the operation that one or two jacks have no load. This indicates that the other jacks are supporting more than their share of the load. For example, the load may be balancing on two diagonal jacks while the jacks on the other two corners are not loaded. In this case the load may remain level, but the load capacity of the jacks which are bearing the load may be approached. If a jack becomes unloaded, the lifting operation should be stopped and the individual operator whose jack has no load should raise his jack until it is supporting a reasonable load. The operation may then be resumed.

3.6.6 If the soil is soft and there is danger of the jack base settling, the supplementary ground plates must be used to distribute the load over a larger area of soil to prevent settling.

3.6.7 Moderate wind gusts should ordinarily pose no problem or danger to the lifting operation. However, if extreme wind gusts prevail and swaying is evident, it may be prudent to rig temporary guys to prevent swaying or overturning or, preferably, to postpone lifting operations until the wind subsides.

3.7 LOADING SHELTERS FROM GROUND POSITION. To raise a shelter, pallet, or generator and place it on a mobilizer, proceed as follows:

a. Remove the lifting jacks, ground plates, and long handles from the Loadcraft mobilizer. Associated tools, attaching bolts, and the short jack handles are located in a tool box on the mobilizer. (See figure 3-3a).

b. Mount a jack adaptor plate on each corner of the shelter, using six 9/16" bolts and large flat washers. (See figure 3-3b).

c. Install the jack on the adaptor plate. Be sure not to use undue force. The jack, when properly aligned with the adaptor plate, can be hung on the three studs in the adaptor plate and then lifted until the top surface of the jack load plate enters the slot in the top of the adaptor plate. (See figure 3-3c).

d. Install the self-locking retaining pin which secures the jack to the plate. (See figure 3-3d).

e. Install the jack handle on the jack. Control the lifting rate by having each man make no more than four (4) complete turns on the jack. When each man has completed his turns, commence another set of turns.

f. When the shelter is lifted sufficiently, move the mobilizer under the shelter. Be cautious when rolling the mobilizer under the lifted shelter and avoid striking the jacks.

g. Align the mobilizer under the shelter. Be sure that the rails of the shelter align with the channels on the mobilizer and that the hold-down nuts on the base align with the bolt holes in the skids.

h. After the mobilizer is aligned, lower the shelter to a height of approximately 1" above the channels on the mobilizer. Install the eight captive hold-down bolts, located on the mobilizer, which hold the shelter to the mobilizer. (See figure 3-3a).

i. Lower the shelter on to the mobilizer and tighten the eight hold-down bolts. Remove the jacks, leaving the jack adapter plates on the shelters. (This will expedite the removal and lowering of the shelter). For short distances, and when the jacks are not required elsewhere, the jacks may be raised and left attached to the shelter to further expedite removal of the shelter from the mobilizer.

NOTE

For short distances at slow (walking) speed, which are typical when the shelters are being placed at the site, the hold-down bolts need not be installed. For highway or rough road use, however, they must be installed.

3.8 UNLOADING MOBILIZERS AND LOWERING SHELTERS. The following procedure should be used to off-load shelters, generators, and pallets from the mobilizers.

a. Before removing a shelter from a mobilizer, be sure that the shelter is properly positioned relative to adjacent shelters and that the shelter is reasonably level. Adjusting the shelter to level after the load has been transferred to the jacks may result in a shift in spacing between shelters by the time the shelter is lowered to the ground.

b. Unless the lifting jacks have been left in position on the shelter, remount the lifting plates and jacks as specified in paragraph 3.7 above.

c. Remove the eight hold-down bolts from the shelter and raise the shelter evenly on all four jacks until the shelter is clear of the mobilizer.

d. Carefully pull the mobilizer from under the shelter, adjusting the shelter height as may be necessary to clear the mobilizer skid channels.

e. Carefully lower the shelter to the ground, ensuring that the shelter stays level and that the jacks are evenly loaded. Additional instructions for lowering the jacks are contained in the Loadcraft mobilizer manual.

NOTE

If the leveling jacks are to be mounted on the shelters, time can be saved by lowering the shelter onto wood blocks placed at each corner in lieu of lowering the shelter all the way to the ground. The blocks will enable easier removal of the mobilizer jacks and mounting of the leveling jacks and may reduce the amount of leveling adjustment required to level the shelter in its final position.

NOTE

Whenever shelters, generators or pallets are to be stored or used in a corrosive environment or placed on bare ground, the mobilizer hold-down nuts on the shelter, generator, and pallet skids should be plugged to protect the nut threads. An alternative is to chase the threads prior to mobilizer loading to ensure ease of fastening to the mobilizers.

3.9 USE OF LIFTING SLINGS. Each shelter and pallet is equipped with four lifting rings on the skid assembly sides to facilitate lifting the units with a crane or other heavy lifting equipment. Generators have a built-in lifting eye welded to the jack plates at each corner. Two sets of lifting slings and spreader bars are provided with each ATLS station and are secured to the Loadcraft mobilizers when in storage. Use of the lifting slings is relatively simple (see figure 3-4); however, a few important safety precautions must be followed:

3.9.1 The slings are fitted with removable socket pins and cotter pins at the attaching end. After connecting the slings to the shelters, the cotter pins should be spread to prevent accidental loss of the socket pin during hoisting operations.

3.9.2 Care should be taken by means of steadying lines or similar methods to prevent the sling from swinging freely when unattached to prevent damage to the shelter or injury to personnel. Similar precautions obviously should be taken while the shelter is being moved.

3.9.3 Mobilizers can be loaded and unloaded by using a crane to lift the shelters, pallets, or generators. Extreme care must be taken to properly align the shelter skids with the mobilizer dollies and bolt holes and to prevent damage to the mobilizer. Use of steadying lines and coordination between the crane operator and loading supervisor are essential.

3.10 SHELTER-TO-SHELTER SPACING AND ALIGNMENT. With reference to figure 3-1, the pullman enclosures and walkways have been designed to permit a range in shelter spacing between adjacent shelters of 27 inches to 30 inches. It is recommended, however, that shelter spacing be kept as close to 28½ inches as possible to simplify pullman and walkway installation. Exceptions to this rule are as follows:

3.10.1 The spacing between shelters 2200 and 2600 must not exceed 29 inches because of the relatively short electrical cables which run between

these shelters. At the same time, the spacing should not be less than 28 inches in order to avoid a too small spacing between the shelters discussed in paragraph 3.10.2 below.

3.10.2 If the spacing specified in paragraph 3.10.1 above is maintained, the spacing between shelters 2300 and 2700, 2700 and 2400, and 2400 and 2500 can be equalized at 25½ inches, and proper alignment of shelters 2300 and 2500 with shelters 2200 and 2600, respectively, can be maintained.

Of equal importance to proper shelter spacing is the alignment of adjacent shelters. In most cases, adequate alignment of the pullman enclosure connection points is easily obtained by carefully orienting adjacent shelters so that the sides normal to the opposing surfaces lie in the same plane, as indicated in figure 3-1. At this time, adjacent openings will directly face each other. Maximum lateral misalignment tolerance is ± 1½" and maximum vertical misalignment tolerance is ± ½" for properly mating pullman and walkway connections.

3.10.3 The position of each shelter, in relation to the position of adjacent shelters, is very important. Because of the similarity of shelters (especially when transit plates are in place) it is easy to incorrectly position a shelter. To facilitate proper placement, the exterior walls of the shelters are stenciled with a numerical code which indicates the shelter position. As an example, the wall of shelter 2600 which must be adjacent to shelter 2200 is stenciled 26/22. The mating wall of shelter 2200 is stenciled 22/26. In all cases, the first number is the shelter number and the second number is the shelter which must be adjacent to that wall. (See figure 3-5).

3.11 INSPECTION OF SHELTERS FOR TRANSIT DAMAGE. As soon as possible after placing the shelters in position at the site, a visual inspection of each shelter's exterior and interior should be made for damage incurred during transit. If breaks are found in the exterior surface of a shelter they should be repaired immediately, using materials provided in the fiberglass repair kit. Major damage should be protected from further exposure and inspected to determine the corrective action to be taken. The interior of the shelters should be inspected for equipment damage incurred during transit. The spare parts list in this manual gives those parts which are available for field installation. Further damage should be reviewed to determine the maintenance action that should be taken. See Chapter 7 for details on ATLS maintenance and refurbishing.

3.12 SEMI-PERMANENT INSTALLATION. There may be situations where an ATLS facility will be installed on a semi-permanent basis and where sufficient time is available prior to installation to enable a certain degree of departure from various ATLS design concepts for the sake of improved appearance, freedom of movement and access, reduced maintenance, or similar reasons. It may be desirable, for example, to place the generators indoors, to install the shelters and generators on a concrete slab, to install certain exposed cables in trenches, to bury fuel and water piping, or to change the length of pre-cut cables. Accordingly, this section provides recommendations for "permanentizing" an ATLS facility or for modifying a station during installation, if time and conditions permit.

3.12.1 Foundation.

3.12.1.1 Whenever possible, ATLS shelters and generators should be mounted on a concrete slab, properly sloped for drainage. The slab should be designed to facilitate vehicle access for installation and future servicing (ramped or grade level). An asphalt, soil cement, or stabilized soil apron can provide a hard surface for circumferential access while reducing site preparation costs.

3.12.1.2 The foundation should contain necessary "built-ins" for grounding, cable and pipe trenching, and anchorages. The power transformers and the disconnect panel should be removed from the pallets and placed directly on slabs. The weight of the transformers and the disconnect panel should preclude the need for studs, but if anchorage to the slab is required, anchor bolts can be utilized. This possibility, however, should be taken into account during slab design. Should shelter-to-ground guying be required, tie-down rings should be cast in place in the slab, but in a location where they do not interfere with shelter placement.

3.12.2 Shelters.

3.12.2.1 The shelters should be placed directly onto the concrete slab and leveling jacks should be used only where necessary and/or to provide access to the underside of the pullmans for installation purposes (in which case the shelters should be lowered to slab level and the jacks removed after the pullmans are secured). Removal of the jacks wherever possible will minimize maintenance.

3.12.2.2 The aircraft loading rails should be removed before placing the shelters on the slab. The rails may be stored on pallet 4200.

3.12.3 Cabling.

3.12.3.1 For non-temporary installations, external cables between the shelters, the transformers, and the disconnect panel should be cut to suit the actual length required to avoid unsightly and cumbersome coils of cable adjacent to the shelters. A record should be kept of all cut cables to facilitate reordering and replacement, if necessary.

3.12.3.2 External cable runs and antenna cable should be buried or placed in covered trenches for appearance and access purposes. When shelter groups are close-coupled, the following cable runs should be buried:

From	To	For
*Generators	Disconnect panel	Power Cables
*Generators	1100	Remote control panel cables
3600	Loran transmitting antenna	Transmission cable
2300	Communications antennas	Antenna cables

From	To	For
2200	Loran Receiving Antenna	Antenna cable
1100	Fuel transfer pump	Pump power cable

* See paragraph 3.12.5 below.

3.12.3.3 In the close-coupled mode, trenches between basic groups or between shelters are not considered practical, due to the short runs involved and the added expense of providing built-in trenches. Exposed cables can be cut to proper length, run under or between shelters, or bundled next to shelter skids. When ATLS groups are separated, it may be desirable, depending on the distance involved, to have cable trenches for or to bury the following runs:

a. 480V power from shelter 1100 to the large air-conditioners in shelters 2100 and 2300.

b. 480V power from Shelter 1100 to Shelter 3500.

c. 208/120V power from Shelter 1100 to Shelter 2600.

d. Cabling between Shelter 2600 and Shelter 3500.

3.12.4 Grounding. (To be developed).

3.12.5 Generators.

3.12.5.1 If the generators are to be left exposed and there is no practical reason why they should be separated from shelter 1100 and the disconnect panel by more than six feet, the power cabling provided with the generators may be used and the remote control panel cabling provided with the generators will be long enough to permit mounting the generator control panels in shelter 1100.

3.12.5.2 If the generators are to be housed in a closed building or if the spacing between the generators and shelter 1100 is to exceed six feet, the control panels cannot be mounted in shelter 1100 and must remain on the generators. Additionally, new power cable must be provided and cut to fit the actual distance involved. During installation, however, if power is required before new cables can be installed, one or more generators can be temporarily located close enough to the disconnect panel to enable use of the precut power cables provided with the generators. Once the remaining generators are permanently located and connected, the temporarily located generators can be taken off the line and shifted to their permanent position, with only a brief loss of station power.

3.12.6 Piping.

3.12.6.1 Permanent buried fuel piping should be installed between the fuel tanks and the generators, and slab foundations designed accordingly.

3.12.6.2 Similarly, the water supply piping between shelter 2400 and the water source and the drain line between the shelter and the septic tank or station drainage system should be buried.

3.12.6.3 All permanent piping must be separately provided as GFE or by the site contractor.

TABLE 3-1. ATLS SITE DIMENSIONS

EQUIPMENT	SITE DIMENSIONS IN FEET	MAXIMUM GRADE IN INCHES	
		LONG DIMENSION	SHORT DIMENSION
Loran Transmitting Antenna	1700 x 1700	N/A	N/A
Full ATLS Facility (close-coupled)	93 x 83	23	22
Power Group (Shelters 1100-1300)	45 x 22	19	18
Timer/Synchronizer Group (Shelters 2100-2700)	55 x 45	20	20
Transmitter Group (Shelters 3100-3800)	75 x 52	22	20
Loran Receiving Antenna	100 x 100	N/A	N/A
Communications Antennas (2)	100 x 100 (each)	N/A	N/A
Generators (4)	47 x 25	See EMU-28/E Operation Manual	
Fuel Storage System	115 x 90	See Uniroyal fuel System Manual	

TABLE 3-2. ATLS STATION SITING SEQUENCE

SEQUENCE	UNIT	NOTES
1.	Gen. 3	Final position. The location of this unit is used as the datum point for siting all other units.
2.	13	Place temporarily alongside Gen 3, on the side opposite the site for Gen 2.
3.	Gen. 2	Final position in reference to Gen 3.
4.	23	Place temporarily alongside Unit 13.
5.	35	Place temporarily (for unloading) in reference to Gen 3.
6.	Pallet 41	Final position in reference to Gen 3.
7.	38	Final position in reference to Gen 3.
8.	* 11	Final position in reference to Gen 3.
9.	32	Final position in reference to 38.
10.	Pallet 42	Final position in reference to 38.
11.	* 35	Final position in reference to 38.
12.	* 31	Final position in reference to 32.
13.	37	Place temporarily (for unloading) in reference to Gen 3.
14.	34	Final position in reference to 38.
15.	* 33	Final position in reference to 34.
16.	37	Final position in reference to 38.
17.	Heat Exch. #1	Final position in reference to 37.
18.	Heat Exch. #2	Final position in reference to 37.
19.	* 36	Final position in reference to 37.
20.	Gen. 1	Final position in reference to Gen 2.

TABLE 3-2. ATLS STATION SITING SEQUENCE (Cont'd)

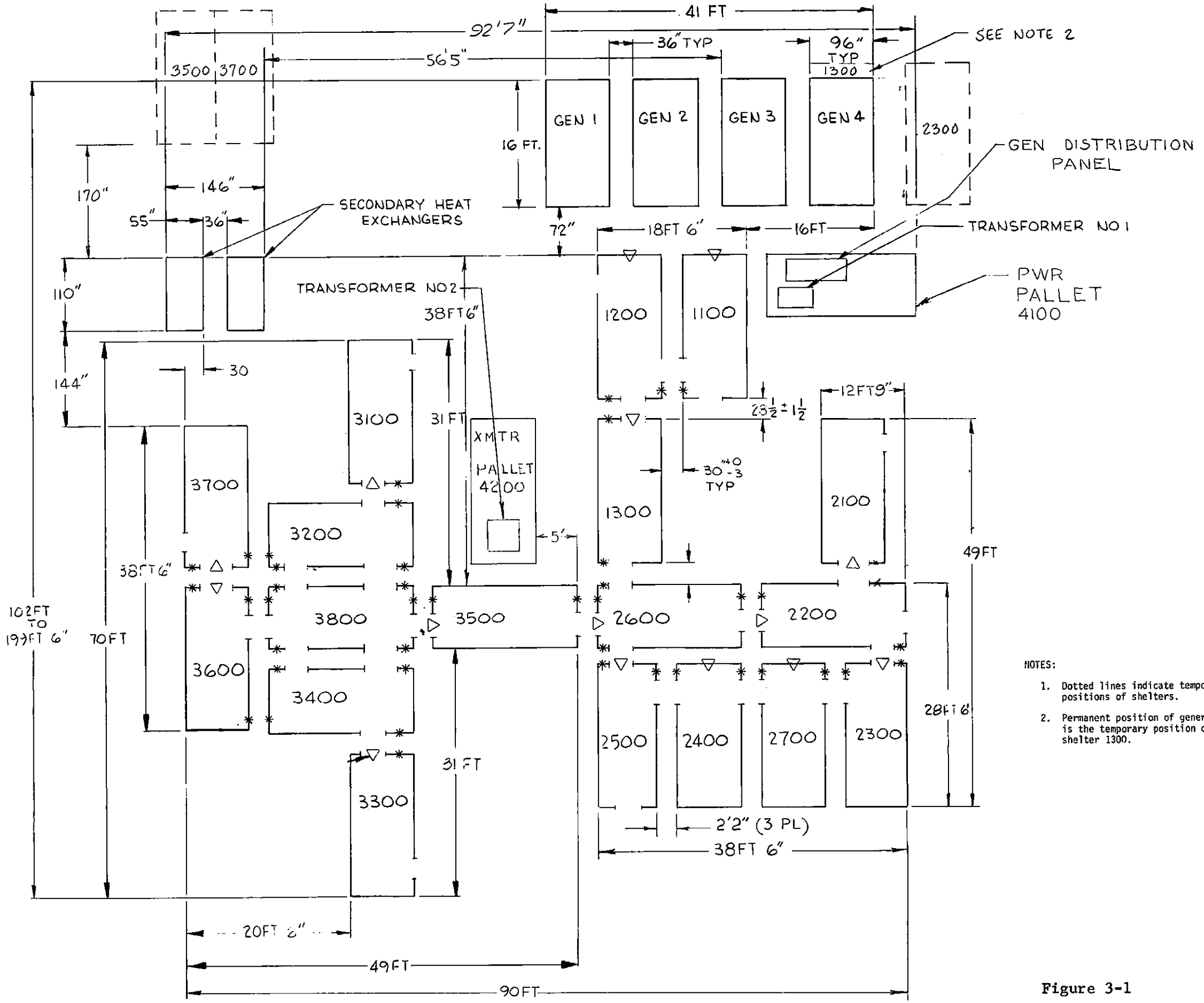
SEQUENCE	UNIT	NOTES
21.	* 12	Final position in reference to 11.
22.	Gen. 4	Final position in reference to Gen. 3
23.	* 13	Final position in reference to 12.
24.	* 26	Final position in reference to 35.
25.	* 22	Final position in reference to 26.
26.	* 21	Final position in reference to 22.
27.	* 25	Final position in reference to 26.
28.	* 24	Final position in reference to 26.
29.	* 27	Final position in reference to 22.
30.	* 23	Final position in reference to 22.

* Denotes Shelters to be Backed Into Place.

TABLE 3-3. ATLS AIRCRAFT LOADING SEQUENCE

C-130 Flight #	C-130 Flt. Wt.	Cargo	Unit Wt.	C-141 Flt. Wt.	C-141 Flight #
1.	30,700	Generator #3 Shelter 13	20,500 10,200	51,200	1
2.	33,200	Generator #2 Shelter 23	20,500 12,700	43,410	2
3.	30,710	Pallet 41 Shelter 35	17,860 12,850		
4.	27,800	Shelter 38 Shelter 11	11,600 16,200	44,150	3
5.	29,950	Pallet 42 Shelter 32	16,350 13,600	40,650	4
6.	29,050	Shelter 31 Shelter 37	14,850 12,200		
7.	28,550	Shelter 33 Shelter 34	14,800 13,750	49,050	5
8.	30,400	Generator #1 Shelter 36	20,500 9,900	42,450	6
9.	32,550	Generator #4 Shelter 12	20,500 12,050		
10.	18,100	Shelter 26 Shelter 22	8,600 9,500	29,100	7
11.	21,600	Shelter 21 Shelter 25	11,000 10,600	27,200	8
12.	16,600	Shelter 24 Shelter 27	9,100 7,500		

NOTE:
1. Personnel, mobilizers, trucks, and support facilities will precede the above on separate flights or other means of transport.
2. Oscillators, 1086 tubes, transmitter distilled water, etc., can go on tailgates of C-130 Flights 9 through 12.
3. Be sure that aircraft loading rails stored on Pallet 4200 are available and are mounted on each shelter and pallet prior to movement. Generator loading rails are stored on each generator.



NOTES:

1. Dotted lines indicate temporary positions of shelters.
2. Permanent position of generator 4 is the temporary position of shelter 1300.

Figure 3-1

ATLS site dimensions.

SPECIAL HANDLING DATA/CERTIFICATION

TRANSPORTATION CONTROL NUMBER	NOMENCLATURE OF ITEM	NET EXPLOSIVE WEIGHT	GROSS WEIGHT
DESTINATION			

HANDLING INSTRUCTIONS

SHIPPER CERTIFICATION: This is to CERTIFY that the contents of the packages in this shipment are properly described by name and are packed, marked, and in proper condition for transportation in accordance with:

- ☐ SUBPARAGRAPH_____, AFM 71-4, TM 38-250, NAVWEPS 15-03-500 AND MC O P4030.19
- ☐ OFFICIAL AIR TRANSPORT RESTRICTED ARTICLES TARIFF 6, CAB NO. 82
- ☐ OTHER *(Specify)*
- ☐ SHIPMENT WITHIN PASSENGER/CARGO AIRCRAFT LIMITATIONS

SIGNATURE	DATE

D D FORM 1387-2 (5 PT) 1 APR 66 — REPLACES EDITION OF 1 APR 63, WHICH MAY BE USED.

S/N 0101-806-6721

Figure 3-2

Form DD 1387.2, Hazardous Materials Certificate

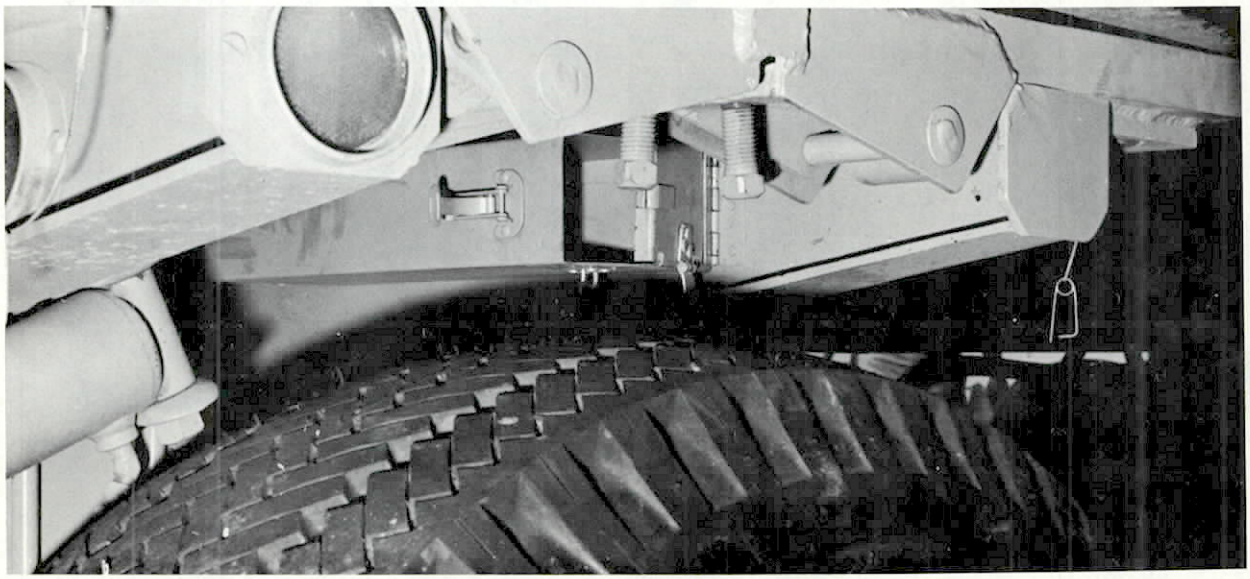


Figure 3-3a

Loadcraft mobilizer tool box.

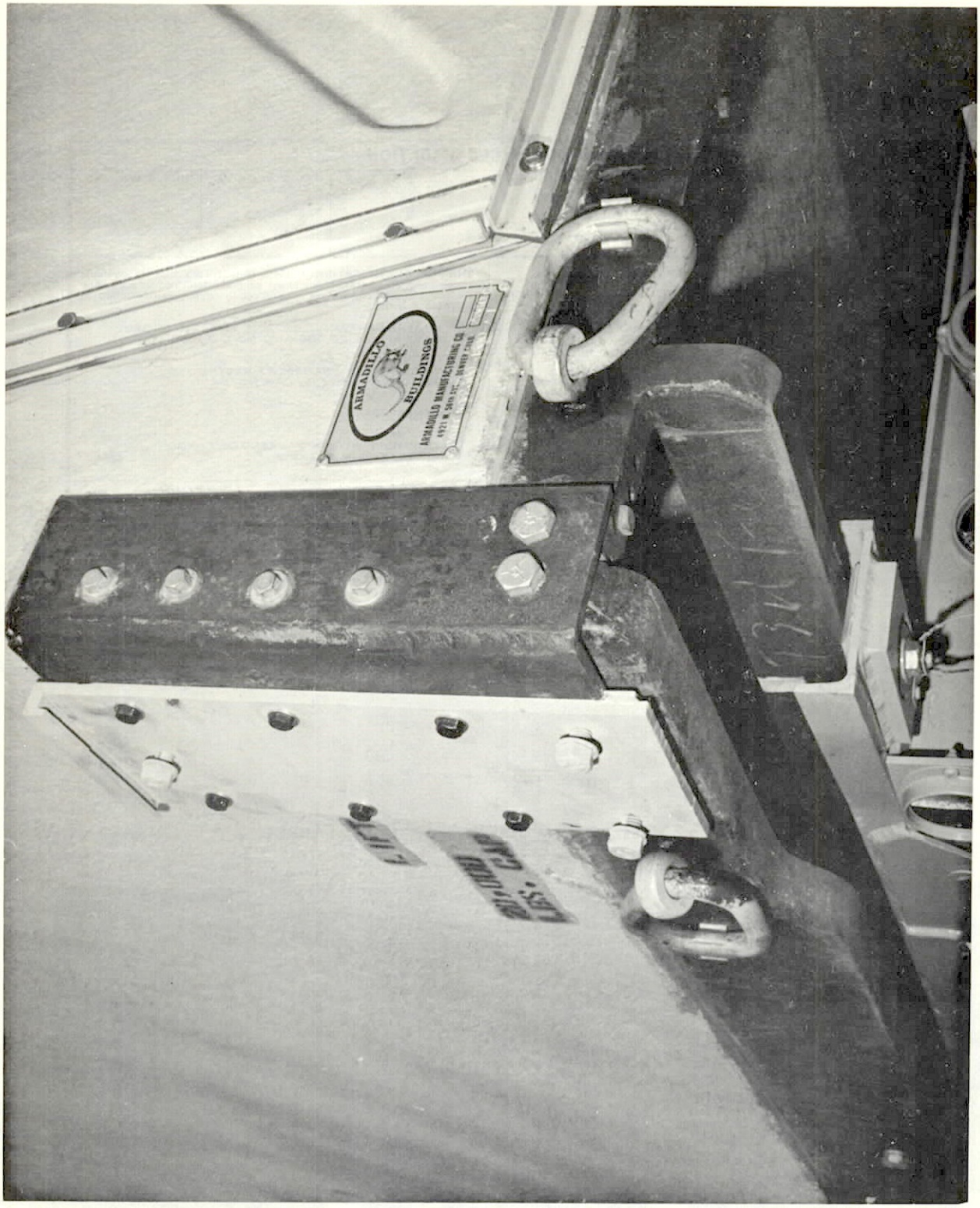


Figure 3-3b

Jack adaptor plate mounted on shelter.

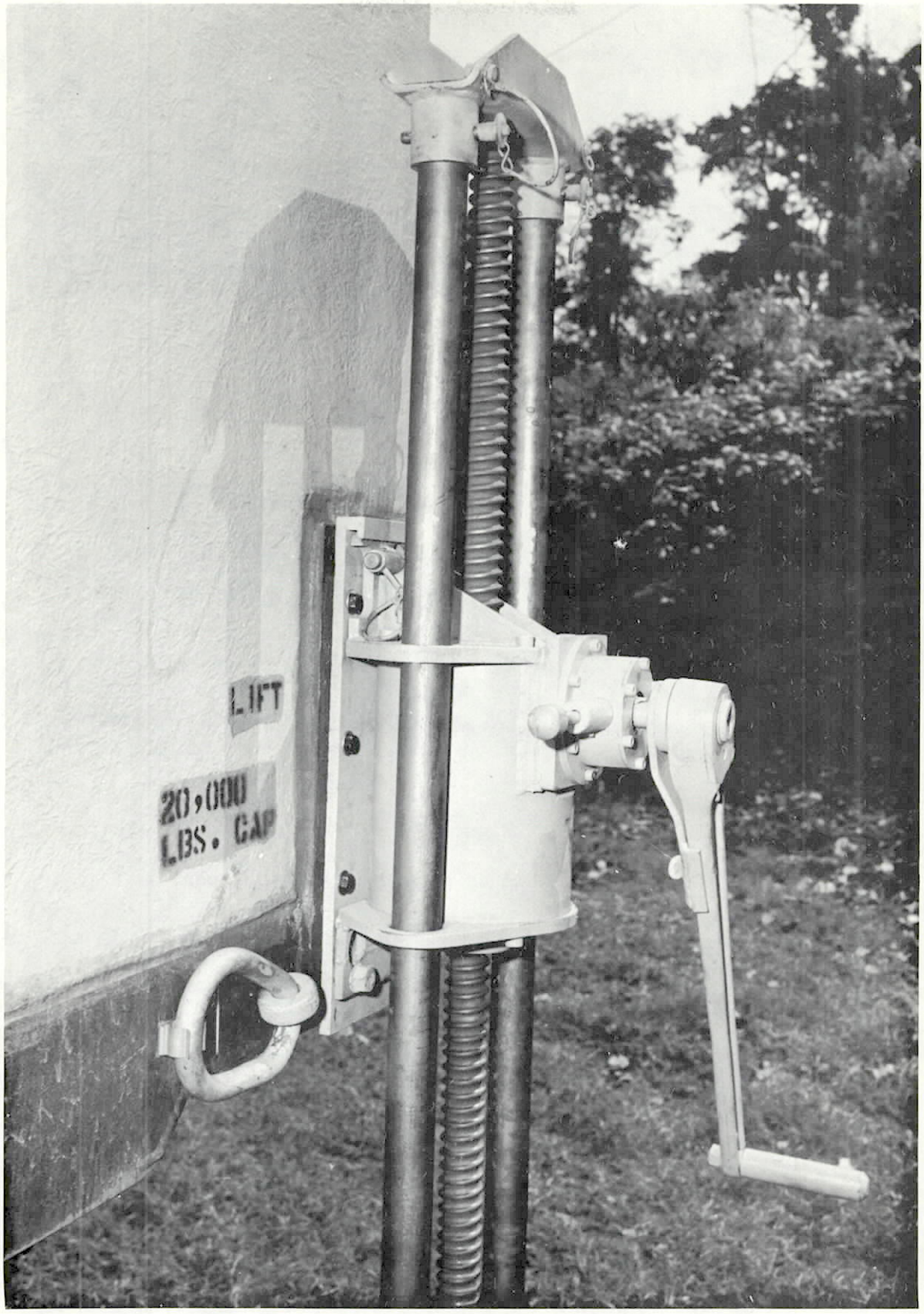


Figure 3-3c

Lifting jack installed on jack adaptor plate

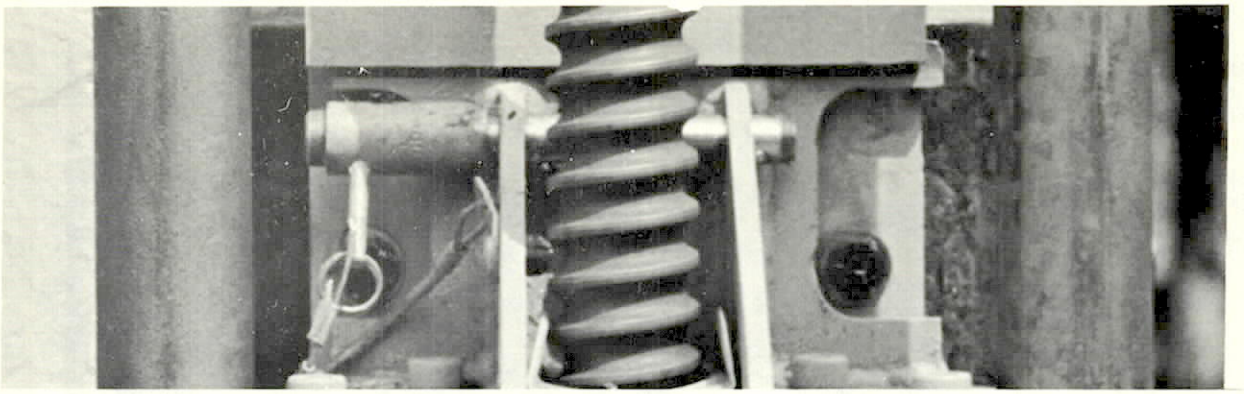


Figure 3-3d

Jack retaining pin.

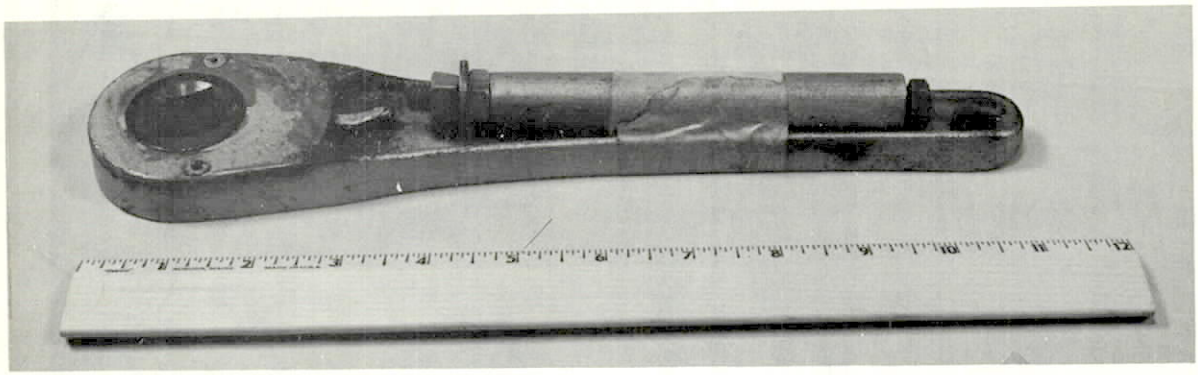


Figure 3-3e

Short jack handle as stowed in the tool box.

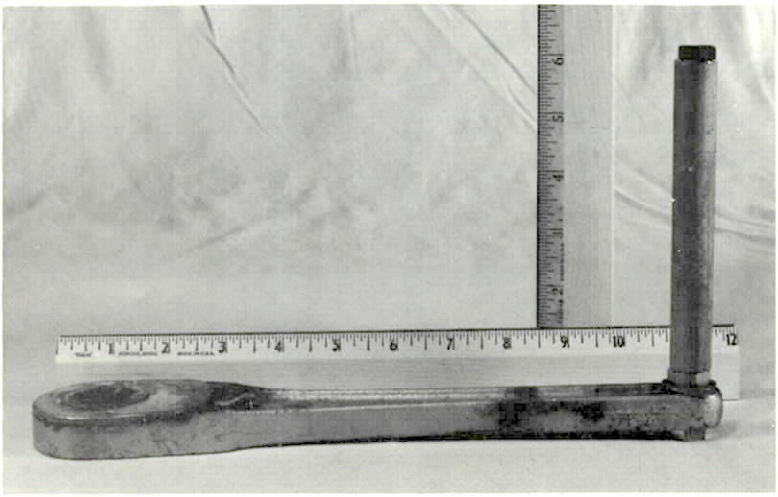


Figure 3-3f

Short jack handle assembled for use

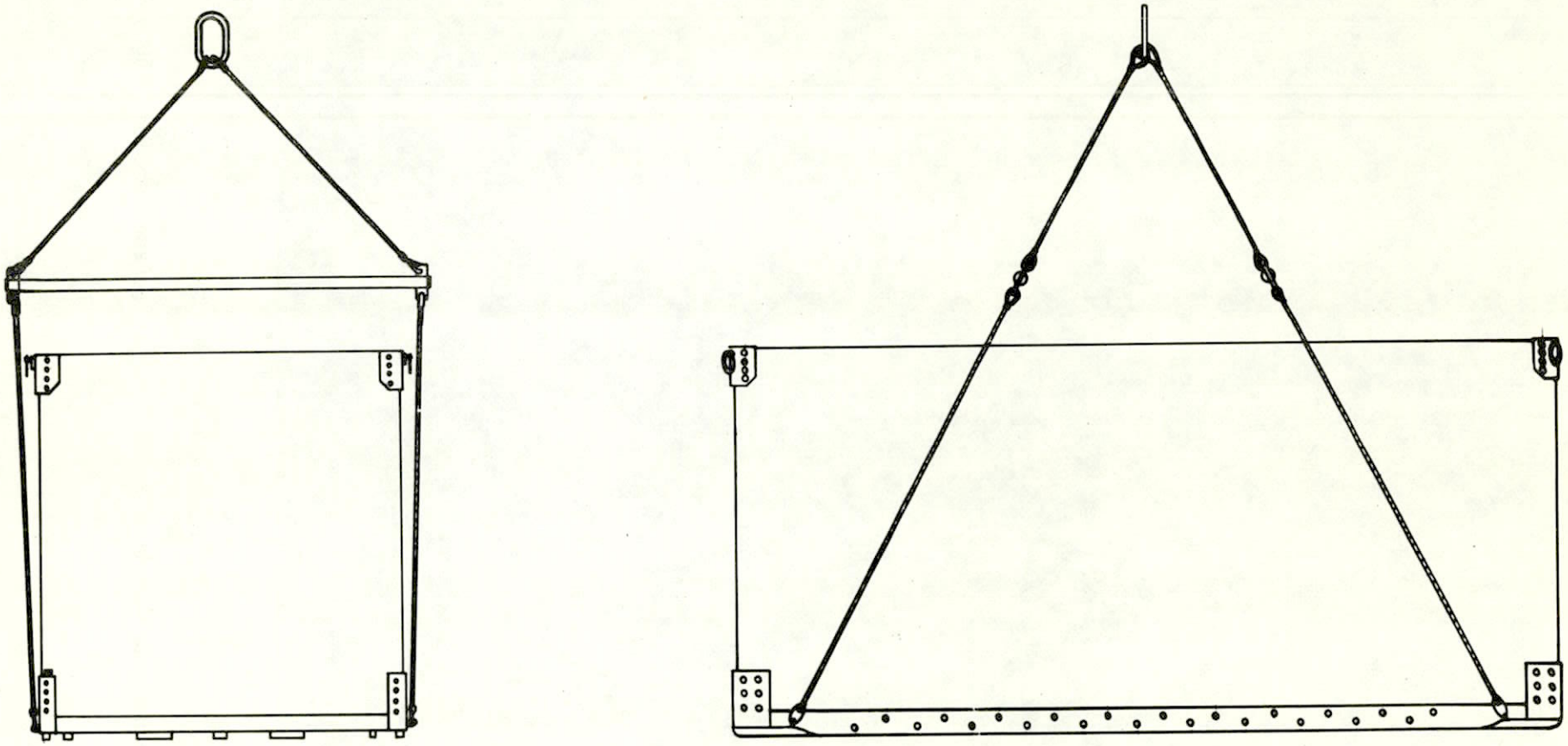


Figure 3-4

Use of lifting slings.

Figure 3-5

Shelter placement code (shelter 2200, this side faces shelter 2600).

CHAPTER 4

INSTALLATION

This chapter contains instructions for converting an ATLS facility from the stowage condition to a condition ready for operation. The heart of this chapter is the Installation Sequential Chart which is located in the back of this manual. (Pages C-1 through C-20). This chart indicates the suggested sequence of installation and references the specific procedure for accomplishing each task. The tasks to be performed are listed vertically and the sequence of each task is indicated horizontally. Complete each vertical column before attempting to start a new column. Failure to follow this sequence may result in a loss of time, by making necessary repetition of a previous step. Note that, throughout the chart, reference is made to the installation checkout procedures in chapter 5.

WARNING: If the installation checkout procedure is accomplished incrementally, extreme caution must be used, since power will be applied while men are handling cables and power panels. A safer but more time consuming procedure is to wait and perform all the power checkout procedures after all cabling has been accomplished.

The instructions given in the Sequential Chart are based on the assumption that Shelter 1300 will be temporarily positioned near the generators or near the shore tie and used as an office and shop during the installation of the facility. The chart is also based on the assumption that shelter 2300 will be temporarily positioned near shelter 1300 and used for communications during the installation of the facility. If these temporary facilities are not needed, the instructions which relate to them may be ignored. If they are needed, it will be necessary to arrange a temporary power feed to both shelters. The necessary materials are stored in shelter 1300, and detailed instructions for properly connecting the temporary feed are given in paragraph 4.5.

4.1 SPECIAL TOOLS. Tools are supplied with each ATLS Operational Facility for use during installation. The tools, listed in Table 4-1, are stored in the front workbench in shelter 1300.

4.1A SPECIAL INSTRUCTIONS FOR INITIAL INSTALLATION. Subsequent to delivery of the ATLS shelters from the manufacturer, several revisions were incorporated in various equipment and additional and/or replacement parts ordered for use in the ATLS System. In view of the difficulty in unstowing the shelters to properly place these additional items, temporary storage has been provided within the shelters and on the pallets to facilitate deployment. The temporary storage locations are not shown on the ATLS drawings, since the items will be stowed, after initial installation, in their appropriate cabinets in accordance with the Master Outfitting List. This section, therefore, lists and explains parts which are in temporary stowage locations as well as those revisions which should be made the first time each ATLS facility is installed.

4.1A.1 Secondary Heat Exchanger Staggered Start Kit. The secondary heat exchanger starting system must be modified by installing a special staggered starting kit which enables separate starting of the main fans and motors to reduce line loading. Full instructions and drawings for installation are in the Ellis and Watts Operating Manual for the heat exchangers. The kit is stowed in shelter 1300.

4.1A.2 Shelter 3800 portable fire extinguishers. Two portable 15 lb CO_2 fire extinguishers are stowed in shelter 2100 behind the timers and should be installed in shelter 3800. Instructions for installation, consisting of fastening a bracket to the wall and floor, are in the stowage carton.

4.1A.3 Generator Spare Control Modules. Each ATLS station is equipped with spare EMU-28/E generator control modules located in bulk stowage. Those modules which have metallic nameplates fastened to the side of the module's aluminum housing should be modified by removing the metal nameplate and transferring the nameplate information to the housing using indelible ink or other means of permanent, but nonconductive, marking.

4.1A.4 Repair Kits, Tools, and Spare Parts. Several repair kits, for repair of fiberglass, nutserts, pullmans and gaskets, extra tools and additional or replacement spare parts are stowed in special crates or boxes in shelters 1300 and 2200 and on both pallets. A complete packing list is fastened to each box indicating the items contained therein. The replacement parts are already listed in the cardex files and should be stored in accordance with these files. Those items which are not specifically listed in the cardex files, such as the repair kits and additional tools and parts, should be stowed wherever suitable cabinet space is available and a card established in the cardex file showing its permanent location. The master outfitting list has been amended to include these additional items, but specific storage locations must be established as stated above.

4.1A.5 Shelter and Pallet Weights. Temporary weight tags have been placed on certain shelters and pallets to reflect the additional weight of the temporarily stowed items. After initial installation and permanent stowage of these parts, the temporary weight tags should be removed.

4.2 INVENTORY AND SPARE PARTS LISTS. Tables 4-2 through 4-21 contain lists of equipment which is stowed in each shelter and pallet. These tables, and the drawings which accompany them, are used to unstow the shelters. Stowed material is listed in the order in which it must be removed. The hardware which must be removed when unstowing each major item is indented under the major item. (See paragraph 4.6 for detailed instructions.) Index numbers 1 through 29 indicate major items, while numbers above 29 indicate securing hardware. The entry in the OPENING column indicates the opening through which the stowed item should be removed. In the stowed condition, the transmitter system has shorting wires across the terminals of all large condensers, a safety pin in the filament regulator, and wooden pegs in the flow valves of the AN/FPN 44. These items must be removed before operating the system.

Complete ATLS outfitting lists and ERPAL, APL, and IPL information on spare parts and supplementary Coast Guard furnished items are provided under

separate cover. A cardex file, divided into sections according to system categories, is provided in the shelters to facilitate location of these outfitting items and of spare parts and tools within the shelter complex.

4.3 PREPARATION FOR REMOVING STOWED EQUIPMENT. To begin unstowage and installation of the ATLS system, first obtain the key to open shelter 1300. Remove some of the items secured by the cargo net in order to gain access to the workbench drawers. Retain the screwdriver and pliers which will be used to remove the nuts and bolts securing the workbench drawers. Remove the key from the bag which is tied to the work bench. This key opens the sliding doors of the work bench.

4.4 CONTROL OF UNSTOWED EQUIPMENT. It is important that the temporary location of unstowed equipment be noted and controlled, so that later, when a piece of equipment must be installed in its operating location, it can be readily found. In most cases, the equipment stowed within a shelter will be used in that shelter. Therefore, unless otherwise specified, place this equipment near the final location, within or outside the shelter in which it was stowed, or, as in the case of small air conditioners, install the equipment immediately upon removal from storage. Bulk stowage should be removed to covered storage, or placed on the ground near the shelter and covered with a tarpaulin. Fiberglass patch kits are provided to repair any damage suffered by the shelters in transit. One kit is stowed in each of the following shelters: 1300, 2200, 2300, 3200, 3400.

4.5 INSTRUCTIONS FOR TEMPORARY POWER CONNECTIONS TO SHELTER 1300 AND 2300. (See figure 4-1). It may be desirable to have electrical power to shelters 1300 and 2300 in advance of permanent wiring in order to have a shop/office area available and to initiate early communications with other commands for emergency, operational, or administrative purposes. The temporary power kit in shelter 1300 provides a means for quickly connecting the first generator to these shelters.

The temporary power kit contains the following equipment:

1	Square D	QO403F/S 60 amp MLO, 3ϕ, 4 Wire Load Center
1	Square D	QO120 20 A, 1 Pole Breaker
1	Square D	QO240 40 A, 2 Pole Breaker
1	Square D	FAE 34050 RO 50A, 240V Ckt bkr in 3R Enclosure
1	Square D	100SN Solid neutral kit
5	Appleton	#CG-100125 Cable connectors
5	Appleton	#HUB125 Hub connectors
2	Thomas & Betts	#31003 lugs for #10 wire
2	¼ -20 x 3/4" bolts w/nuts & lockwashers	
10'	#10 Stranded wire green insulation	
20'	#12 black solid	
20'	#12 white solid	
10'	#8 black solid or stranded	
10'	#8 red solid or stranded	
200'	Type SO cable approx. 1.08" OD with 3 #6 stranded and 1 #8 stranded rubber insulated, neoprene jacketed, round conductor or 4 #6 conductors, (Portable cable or Trailer power cable)	

To install the temporary power connections, perform the following steps:

a. Cut off about 15 feet of 4 conductor 6 AWG cable (enough to reach from the power source to a spot where you can conveniently install the 50 amp breaker and its enclosure).

b. Mount the 50 amp breaker in its enclosure.

c. Install 2 hubs on the output end and 1 hub on the input end of the enclosure.

d. Install the solid neutral kit.

e. Connect the 15' cable to the circuit breaker, routing it through a cable connector, (connect the white conductor to the neutral and connect the other three conductors to the breaker input terminals).

f. Cut the remaining 4-conductor cable in appropriate lengths to reach shelters 1300 and 2300.

g. Connect the 4-conductor cables to the output side of the circuit breaker, routing them through cable connectors.

h. Connect a ground lug to the circuit breaker enclosure and ground the enclosure to a ground rod, using 10 AWG green wire.

i. Assemble the load center, installing one of the hubs and cable connectors on the top and one on the bottom.

j. Route the cable which is to carry power to shelter 1300 through one of the connectors on the load center. Connect the white wire to the neutral buss; connect the blue wire to the 20 amp breaker; and connect the red and black wires to the 40 amp breaker.

k. Take the load center into shelter 1300 and connect a length of 12 AWG white wire from terminal 6 in the power distribution box (13TB1) to the neutral bar of the load center.

l. Connect a 12 AWG white jumper between terminal 6 and terminal 10 on 13TB1.

m. Connect a length of 12 AWG black wire from the 20 amp breaker to terminal 5 on 13TB1.

n. Connect a black jumper between terminal 5 and terminal 9 on 13TB1.

o. Connect 10 AWG red and black wires between the 40 amp breaker and terminals 1 and 2 on 13TB1.

p. Ground the load center enclosure and the power distribution box to a ground rod, using 10 AWG green wire.

q. Connect the cable which is to carry power to shelter 2300 to the input panel on the side of shelter 2300. (Connect the white conductor to the neutral lug and the remaining three conductors to the phase lugs.) Ground the ground lug.

r. Connect the 4-conductor 6 AWG cable from the 50 AMP enclosed breaker to a 208V 3-cycle power source. If the Schoonmaker generator is to be used as the power source, see the Schoonmaker manual for instructions on how to connect the cable. Also see the Schoonmaker manual for instructions on how to change the generator over to 120/208 volt operation.

WARNING: The generators are usually shipped set for 240/416 volt operation.

DANGER: The cable between the generator buss and the 50 AMP enclosed breaker should be kept as short and as well protected as possible. The 6 AWG cable is rated for only 55 amps, but the generator is capable of a 400 amp output.

4.6 REMOVING STOWED EQUIPMENT. Most of the shelters contain equipment which must be unstowed prior to installation. This section contains illustrations showing the location of this stowed equipment, (Figures 4-2 through 4-21) plus tables which indicate the order and route of removal (Tables 4-2 through 4-21). In addition, the lists indicate the part numbers of the red tiedown hardware that must be removed. The deck hardware should be removed as soon as practical to facilitate unstowage and to reduce the tripping hazard. Wall hardware should not be removed unless it presents a snagging hazard or interferes with the installation of equipment. The part numbers will be useful when the hardware must be replaced. It is also suggested that each tie-down component be marked with the shelter number to further identify the part. When this hardware is removed, insert plastic plugs of the correct size (stowed in shelter 1300) into the screw holes. Store the hardware in each leveling jack box, on a per shelter basis, for future use in restowing the system. Bolts and nuts and washers should be placed in small fabric bags and labelled or else tied to the hardware which they attach. Do not step on bags and other soft containers in which items are stowed. Do not remove hardware unless necessary for unstowage or for removal of equipment.

4.6.1 Disassembly of Air Conditioner Stowage Racks. Shelters 2600 and 3800 contain floor-to-ceiling racks which are used to stow the small air conditioners. After the air conditioners are removed, the racks must be removed from the shelters. The following procedure will permit removal of these racks with a minimum amount of disassembly. To remove the air conditioner stowage racks, see figure 4-2a and proceed as follows:

a. Remove eight double clamps from vertical channels. (Figure 4-22b)

b. Remove air conditioner.

c. On each of the four shelves, remove the four bolts with spring-loaded nuts which secure the shelves to the vertical channels. (Figure 4-22c)

d. Remove the shelves. Do not remove the angle brackets from the vertical channels.

e. Remove the four bolts which secure each post base to the floor. (Figure 4-22d)

f. Remove the four bolts which secure each vertical channel to the post bases on the ceiling. Do not remove post bases from ceiling. (Figure 4-22e)

g. Remove the four vertical channels and attached angle brackets from the shelter.

h. Fasten the eight double clamps and hardware to the vertical channels.

i. Stow all the removed parts and hardware as they will not be used again until the station is restowed. Mark the shelter number and vertical channel position (relative to the shelter) on all rack components.

4.6.2 Disassembly of Test Equipment Stowage Rack. Shelter 3800 also contains, in addition to the air conditioner stowage racks, a floor-to-ceiling rack which is used to stow test equipment. (See figure 4-23) The procedure for removing the rack is the same as for the small air conditioner stowage racks. (See paragraph 4.6.1). The procedure for removing the test equipment differs, however, as some of the equipment is shock-mounted.

4.6.3 Removal of Loading Rails. It is sometimes convenient to leave the loading rails installed on the shelters. However, the width of the shelters, with the rails installed, is greater than eight feet. Therefore, if local ordinances do not allow the towing of a trailer which exceeds eight feet in width, remove the loading rails before towing the shelters to the site. In the operational mode, the rails may remain attached except where steps are to be installed or where they present a tripping or obstruction hazard.

4.6.4 Unloading of Secondary Heat Exchanger from Shelters 3500 and 3700. The following procedure describes the removal of the secondary heat exchanger from its stowed position and its placement in a permanent position.

a. In shelter 3500, the wire spool assembly must be removed first (see figures 4-24a and 4-24b). This assembly can be pulled to the end of the shelter by a vehicle, then tipped on its side and rolled out of the way.

b. Obtain one support bracket (50019-3500B2) and four loading rails (50019-1143D1) from pallet assembly 4200. (See items 3 and 5, figure 4-21)

c. Obtain five bolts (3/8-16 x 3/4 long) and five flat washers (3/8 inch) from the workbench drawer in shelter 3800.

d. Attach the support bracket to the shelter (3500 or 3700) with one bolt and washer on each end. Using a 9/16 inch wrench, make the bolts snug but do not fully tighten.

e. Set a pair of loading rails (50019-1143D1) on the support bracket (See figure 4-24c) and adjust the support bracket until the rails are lined up with the floor of the shelter. The rails unit also line up with the channels on the floor of the shelter (See figure 4-24c). Tighten the two bolts securely.

f. Place a second pair of rails (50019-1143D1) in line with the first pair and adjust the spacing between the rails to accommodate the wheels of the heat exchanger.

NOTE

If a concrete slab or similar hard surface is provided for the a/TLS system, the second pair of rails may not be required.

g. Insert the remaining three bolts with washers into the support bracket holes and tighten them securely, using a 9/16 inch wrench.

h. Be sure the casters are trailing when off-loading the heat exchanger. Use the combination lever dolly, in shelter 1300, and the"Z'' bracket, item 35 in shelter 3500, to raise the heat exchanger if it is necessary to rotate the casters.

i. Remove the heat exchanger from the shelter and slowly guide it down the rails, bringing it to rest on the second pair of rails (which is its permanent position).

j. Remove the rails resting on the support bracket and remove the five bolts holding the support bracket.

k. Stow the set of rails and the support bracket on pallet assembly 4200 and stow the five bolts and washers in the workbench drawer of shelter 3800.

4.7 TEMPORARY LIGHTING. Temporary lighting early in the installation cycle may be provided by any of the following methods:

4.7.1. Use of large dry-cell powered flashlights (See Cardex file for storage location).

4.7.2. Use of the portable generator located in shelter 2300 and the portable lights provided with the system, located in shelters 1100, 2200, 2300, 3200, and 3400. Extension cords are provided in shelters 1300, 2200, 2300, and 3800.

4.7.3. Use of 250KW generator. As soon as one of the generators is operating, power will be available and temporary connections can be made to the interior lighting circuits in the shelters. The Schematic Diagram and the Power Distribution Checkout Procedures, paragraph 5.1 may be used to ensure that only the lighting circuits and convenience outlet circuits in the shelters are connected. Portable lights can then be plugged into the convenience outlets of the completed shelters to provide lights for adjacent incomplete shelters.

4.8. DETAILED INSTALLATION. The following paragraphs provide detailed installation instructions for preparing the ATLS Operational Facility for use. These instructions support the installation sequencing chart.

4.8.1 Pullman Transit Plate Removal. To remove a pullman transit plate see figure 4-25a and proceed as follows:

NOTE

All transit plates on the 18-foot side of the shelters have 2 x 4 wooden stiffeners on the inside which must be removed before the transit plates can be removed. Store the stiffeners with the transit plates.

a. Using a 9/16 inch nut driver, provided in the tool kit, remove the upper corner bolts securing the pullman transit plate and the pullman brackets to the shelter and install 3" studs in place of the 2 removed bolts (see figure 4-25b). The studs are stowed in shelter 1300.

b. Remove the remaining bolts and pull off the transit plate.

c. Store the pullman transit plate and the mounting hardware for future use during restowage. Place the bolts and nuts in fabric bags to avoid loss so that they can be reused during restowage.

d. Retain the pullman brackets for use in installation of the pullman enclosure.

e. Be sure to replace the pullman brackets on or near the shelter from which they were removed to facilitate pullman installation later. The pullman brackets are stamped to show their shelter location and the shelter which they face. (see figure 4-25c).

NOTE

When reinstalling a transit plate, make sure a 0-150 in.-lb. torque wrench is used to torque bolts to a maximum of 36 in.-lb. (3 ft.-lb).

4.8.2. Leveling Jack Installation and Use. A leveling jack must be installed on each corner of the shelter to level the shelter. Four leveling jack assemblies, ready for installation, are stored in a box in each shelter. To install the leveling jacks, see figure 4-26 and proceed as follows:

a. Obtain the leveling jack assemblies from the red box in the shelter and ensure that each assembly is equipped with six 3/8-inch 24 UNF-1" bolts and six lockwashers.

b. Locate the jack mounting plates on each end of the long sides of each shelter. Note that the mounting plate attaches by means of the same six tapped holes which are used for attaching the lifting jacks.

c. Prior to installing a leveling jack assembly on a shelter, thread the lock nut on the screw to within one inch of the ball on the lower end of the screw.

d. Turn the screw so the threaded bracket is just flush against the lock nut.

e. Lightly lubricate the exposed screw threads using the DAG dispersion No. 243 grease supplied with the tool kit.

f. Place six bolts with lock washers through the leveling jack assembly and thread them into the jack plate.

g. Using a 9/16 inch wrench, tighten the bolts.

CAUTION: Do not employ excessive torque on the mounting bolts.

h. Place the leveling jack assembly ground plate on the ground and turn the threaded screw down to engage the ball in the ground plate socket.

i. Place the 2-3/8 inch socket and rachet wrench, provided in the tool kit, on top of the jack screw.

WARNING: Ensure that no one places any portion of his body or any equipment under a shelter during any part of the raising or lowering operation.

j. To raise the shelter, rotate the socket wrench clockwise on each jack.

k. To lower the shelter, rotate the socket wrench counterclockwise on each jack.

WARNING: Ensure that the corner jacks are not bumped during raising of the shelter.

l. If the shelter is the first one in the complex or group to be raised, it should be raised to approximately half the length of travel of the corner screws.

m. Level the shelter, using the corner level bubbles.

NOTE

Two pairs of level bubble indicators are located on opposite corners of each shelter, just above the jack plate. (See figure 4-27).

n. If the shelter is being raised to level it with another shelter in the complex, it should be raised until the floor at the pullman opening is level with the floor of the adjoining shelter (within 1/2 inch).

NOTE

A four-foot hand level is provided in the tool kit to aid in aligning the adjoining shelters.

o. After level condition has been attained, raise the lock nut on each jack assembly until it is seated firmly against the bottom of the threaded screw bracket, using the 2-3/8 inch open end wrench provided in the tool kit. This will prevent accidental lowering of a shelter during use.

4.8.3. Removal of Exterior Opening Doors Within Pullmans. Prior to installing a pullman and walkway between two adjacent shelters, the exterior opening doors between the shelters must be removed. To remove an exterior door, proceed as follows:

a. Place the door in a closed position.

b. On the inside of the shelter, remove the three acorn nuts from the bolts which attach each door hinge to the wall and carefully tap the bolts flush to the wall surface.

c. Pull the bolts out of the hinges and remove the door.

d. Replace the bolts and nuts into the shelter wall and hand tighten.

4.8.4. Standard Pullman Enclosure Installation. The standard pullman enclosures are used to connect one shelter to another to provide an enclosed passageway between shelters. See figure 4-27 to determine which shelters require a pullman installation. Before installing the enclosures, the pullman transit plates must be removed. To install the pullman enclosure, see figures 2-22 and 4-28 and proceed as follows:

a. Obtain 3/8 inch diameter, 3 inch long, continuously threaded studs from shelter 1300 and a 9/16-inch nut driver from the tool kit.

b. Screw 10 threaded studs into pullman mounting holes, (one in each top corner and 4 in each of the remaining sides) to provide temporary support and alignment for the pullman enclosure.

c. Remove the pullman enclosure from the shelter. Obtain the four mounting brackets which were removed with the transit plate.

d. Open the pullman and position it between the shelters which are to be connected.

e. Position the pullman on one shelter (figure 4-28) by raising it and placing it on the studs which were previously screwed into the shelter. Inserting a board, pole, or mounting bracket through the loop strap on the top of the pullman and across the tops of the shelters will help hold the pullman while positioning the bolts.

f. Align all mounting brackets on studs and insert 1" long mounting

bolts with lock & flat washers, but do not tighten. (The bolts and washers are in a mailing bag attached to the pullman.)

NOTE

Be sure that only the 1" long bolts are used in installing the pullmans, not the 1 1/4" bolts which were used to hold the transit plates.

g. Remove the threaded studs and replace them with bolts and washers. (Do not use the bolts removed from the transit plate, as they are longer than those in the mailing bag.)

h. When all four brackets are in place, hand tighten the mounting bolts, using the 9/16 inch nut driver provided. Use the 0-150 inch-pound torque wrench provided to tighten the mounting bolts to a maximum of 36 inch-pounds.

CAUTION: Do not employ excessive torque on the pullman bolts, the transit plates, or the air conditioner mounting bolts. The maximum recommended torque is 36 inch-pounds. Use the 150 in-lb. torque wrench. (The 80 ft-lb torque wrench is not accurate at the lower end of the scale and must not be used on these mounting bolts.)

i. Be sure the pullman is pulled up flush and tight on the top corners to prevent water leakage.

j. Obtain the correct mounting brackets and connect the other end of the pullman to the adjoining shelter.

WARNING: Do not walk on the pullman. It is not designed to support a man's weight. Walkway plates are provided.

k. Any leaks noted after pullman installation which cannot be remedied by fitting the pullman flush to the shelter surfaces at the specified bolt tightness may be stopped by sealing with the RTV which is provided.

4.8.5. RFI Pullman and Curtain Installation. Shelters 2100 and 2200 are interconnected by the RFI (Radio Frequency Interference) pullman as shown in figure 4-27. Before installing the RFI pullman, the pullman transit plates must be removed. The RFI pullman is distinguished by the velcro pads on the interior. (See figure 4-29). To install the RFI pullman, see figure 4-30 and proceed as follows:

a. Obtain two 3/8 inch diameter, 3 inch long, continuously threaded studs and a 9/16 inch nut driver from the tool kit.

b. Screw two threaded studs into the top row of the pullman mounting holes, preferably the second hole in from each end, to provide temporary support and alignment for the pullman. Use a board or pole through the top strap to provide additional support.

c. Remove the RFI pullman from the shelter. Remove the RFI curtain from the pullman. Obtain the four mounting brackets which were removed with the transit plate.

CAUTION: Great care should be taken to prevent the RFI curtain from being torn.

d. Open the pullman and position it between the shelters to be connected.

e. Position the RFI pullman on one shelter (figure 4-30) by raising it and placing it on the two studs which were previously screwed in.

f. Align the longest of the straight mounting brackets on the studs and insert the six mounting bolts with washers, but do not tighten.

g. Remove the two threaded studs and replace them with the mounting bolts and washers.

h. Screw the two threaded studs into the bottom row of pullman mounting holes, second in from each end.

i. Repeat steps f and g for the bottom row of mounting holes, using the short straight bracket.

j. Install the two bent side brackets by placing one threaded stud on the side where the bend occurs, slipping the bracket over it and inserting the mounting bolts and washers.

k. Remove the stud and replace it with a mounting bolt and washer.

CAUTION: Do not employ excessive torque on the mounting bolts.

l. When all four brackets are in place, tighten the mounting bolts using a 9/16-inch nut driver, do not overtighten.

m. Repeat step b and steps e through l to connect the other end of the RFI pullman to the adjoining shelter.

WARNING: Do not walk on the pullman. It is not designed to support a man's weight. A walkway is provided.

n. Open the RFI curtain and arrange the inside of the pullman so that the self-sticking velcro pads on the pullman and curtain align. Press the pads together to engage and support the curtain during installation.

o. Install the RFI curtain retaining brackets. These brackets are stowed on the wall of shelter 2200. The brackets are installed by aligning their captive screws with the holes in the RFI curtain and with the holes in the frame around the pullman opening. Screw the panel screws in hand tight, to clamp the curtain to the frame. There are a total of 8 brackets, 4 on each side of the RFI pullman. (See figures 4-30 and 4-31).

NOTE

Access to the upper brackets can be facilitated by installing the metal walkway between shelters 2100 and 2200.

NOTE

A piece of 36 inch wide copper screening is provided in shelter 2100 to replace the RFI pullman should it not provide adequate protection. If replacement is required, remove the RFI pullman and fit the copper screening in its place, using the above instructions.

4.8.6 Pullman Walkway Installation. The walkways are used to provide a walking path between adjacent shelters. The walkways come in two sizes and are installed within all but two pullmans as shown in figure 4-27. The walkways are stored inside the shelters with the pullmans. To install a walkway see figure 4-28 and proceed as follows:

CAUTION: Do not allow the walkway to drop onto the pullman enclosure.

a. Anchor one end of walkway to a shelter using a 3/8-inch diameter bolt, with flat washer and lockwasher. Insert the bolt through the oblong slot in the walkway.

b. Use a 9/16-inch nut driver to tighten the bolt.

CAUTION: Do not anchor both ends of the walkway. Be sure the anchoring bolt on the one end is kept tight. Do not exceed 36 in-lbs. torque on the bolt.

4.8.7 Step Assembly Installation. The step assemblies are installed on the shelters as indicated in figure 4-27. Each step assembly is stored inside the respective shelter and is equipped with four 3/8 x 1 inch 16 UNC bolts, flat washers, lock washers, and nuts. To install the step assemblies, see figure 4-32 and proceed as follows:

a. Position the step assembly against the shelter skid and align the mounting holes in the skid with the holes in the step.

b. Insert bolts with flat washers through the step and through the shelter skid holes.

c. On the inside of the skid, place lockwashers and nuts on the bolt and tighten them with a 9/16 inch wrench.

CAUTION: Do not apply excessive torque to mounting bolts.

4.8.8 Ground Rod Installation. Each shelter has a 3/4-inch diameter, 6-foot long, copper ground rod, with driving and attaching hardware. The ground

rods are stored in the shelters. To install the ground rods, see figures 4-27 and 4-33 and proceed as follows:

a. Locate the ground wire attaching device on the shelter by referring to figure 4-28.

b. Connect a six-foot long piece of No. 2 copper wire to the attaching device, using the allen wrench which is furnished in the tool kit.

c. Clamp the device for attaching the wire to the ground rod, approximately 6 inches from the threaded end of rod, using the allen wrench. (see figure 4-33a)

d. Screw the coupling onto the threaded rod for half the length of the coupling and then screw the driving nut into the coupling as far as possible. (See figure 4-33b)

e. Using the sledge hammer provided in the tool kit, drive the ground rod into the soil until approximately 8 inches of rod remain above the ground. Each ground should be located in the general area indicated in figure 4-27 and should be within reach of the wire, which was attached to the skid in step 2.

f. Raise the wire clamp to a point near the coupling and clamp the wire to the ground rod.

NOTE

Any excess wire should not be cut off but should be coiled and placed beneath the shelter.

g. In addition to grounding each shelter, connect a ground wire between the ground lug on each large air conditioner, each heat exchanger, each transformer and the antenna insulator assembly (shelter 3600) and the nearest ground rod.

h. Recheck the connections for tightness.

4.8.9 Removal of Transit Plates Over Windows and Air Conditioner Mounting Ports. Transit plates are installed over the glass in the exterior doors and over the two windows in the timer/sync/comms complex and over the air conditioner mounting parts. To remove the transit plates, see figure 4-34 and proceed as follows:

NOTE

The air conditioner transit plates should be removed just prior to installing the air conditioner.

a. Using a 9/16-inch wrench, remove the mounting bolts, which secure the transit plates to shelter.

b. Stow the transit plates for future use,

c. Stow the bolts in a bag.

4.8.10 Door Grounding Strap. Shelters 2300, 3100, 3200, 3300, and 3400 each are equipped with .025 inch thick aluminum shielding throughout the interior of the shelters. Shelters 2300, 3100, and 3300 have shielded doors and shelters 3100, 3200, 3300 and 3400 have a removable wall panel with aluminum shielding. To provide electrical continuity between these doors and the adjacent wall panels, a flexible nylon-sleeved wire is attached between them and the wall panel, using a lug and screw, as shown in figure 4-35. Check to see that all the grounding straps are in place.

4.8.11 Installation of Small Air Conditioner. To install the small air conditioners, see figure 4-36 and proceed as follows:

a. Remove the front panel and air filter from the air conditioner and put them aside.

b. Remove the two securing screws and nuts from each side at the top of the air conditioner (see G.E. manual).

c. Remove the two screws which secure the main chassis to the air conditioner sleeve (see G.E. manual).

d. Remove the main chassis from the metal sleeve.

e. Lift the sleeve assembly and insert it into the opening in the shelter wall (see figure 4-37).

f. Secure the air conditioner sleeve to the external wall of the shelter, using fourteen 3/8-16 x 1 1/8" bolts. Tighten the bolts using the 9/16 inch nut driver, or torque them to 36 inch-pounds, using the 150-inch-pound torque wrench.

g. Install the air conditioner chassis, from inside the shelter, into the metal sleeve.

h. Insert and tighten the bolts which secure the chassis to the sleeve.

i. Remove the compressor hold-down bolt through the underside of the outside sleeve. This bolt secures the compressor during transit.

NOTE

In shelters 3100 and 3300 (because of the lack of space inside the shelter) the entire air conditioner must be installed as a unit from outside

the shelter. This method can be used for all other shelters as well, if desired, for it eliminates the need to dismantle the air conditioner.

4.8.12 Installation of Large Air Conditioner. To install the large air conditioner, proceed as follows:

a. Remove the red cable stowage boxes and associated hardware from pallets 4100 and 4200.

b. Remove the straps and mounting hardware that secure the large air conditioners to the deck of each pallet. (Figure 4-38 and 4-39)

c. Using the johnson bars provided in shelter 1300, walk each air conditioner to an open area of the pallet and lay the air conditioner on its back.

d. Assemble the air conditioner carrying frame, using the following items (see figure 4-40a and 4-40b).

(1) Three wood beams, 2" x 4" x 64" from the shelter transit plates.

(2) Two 4" x 4" x 10' support assemblies, P/N 50019-1300B2, stowed in shelter 1300.

e. Secure the air conditioner carrying frame to the air conditioner, using the 3/8 - 24 x 6" bolts and associated nuts which are attached to the 4" x 4" x 10' support assemblies. Be sure to properly orient the frame, as shown in figure 4-38, so that the lifting points will be commensurate with the C.G. of the air conditioner (i.e. most of the weight of the air conditioner is at the lower or bottom end.)

f. Each of the men secures a firm hold on a section of each beam that protudes beyond the air conditioner (see figure 4-40c). Carry the air conditioner on the carrying frame to the opening provided for it in the side of the shelter.

WARNING: AIR CONDITIONER WEIGHT IS 850 LBS.

g. Lower the air conditioner close to the shelter wall (figure 4-40d) and remove the carrying frame. Replace the nuts and bolts on the support assemblies.

h. With three or more men, raise the air conditioner upright against the shelter wall (see figure 4-40e). In the event that the immediate area is muddy or not level, place a piece of scrap lumber or crating under the air conditioner.

i. Uncoil the air conditioner control cable from inside the shelter wall and run it through the hole in the air intake grill to the outside of the shelter (see figure 4-40f).

j. Open the air conditioner front panel and pull the control cable from the shelter through the opening in the air conditioner screen. Be sure that the cable is fed completely through to prevent pinching of the cable between the shelter and the air conditioner (see figure 4-40g).

k. Attach each of the two angle supports, P/N 50019-3833D9, to each of two lifting jacks P/N 50088XM using the hardware provided on the jacks. (figure 4-40h).

l. Position the jacks under the air conditioner and as close as possible to the shelter (as shown in figure 4-40i). Be sure to leave clearance between the back of the jack plates and the air conditioner so that the air conditioner can be "walked" into alignment with the mounting holes on the shelter.

m. Proceed carefully to raise air conditioner by turning the jack handles counterclockwise (figure 4-40j) until the holes in the air conditioner mounting flange line up with the corresponding holes in the shelter wall. Some should be assigned to provide lateral support to the air conditioner during this operation and to keep the control cable from kinking. The air conditioner may have to be manually shifted or "walked" on the jacking brackets to get it flush with the shelter wall and properly aligned, a process which can be done safely if proper caution is used to support the jacks when moving the air conditioner.

n. Secure the air conditioner to the shelter using twelve 3/8-16 x 1 inch bolts, flat washers, and lockwashers. Tighten the bolts using the 150 in-lb. torque wrench, to 36 in-lbs of torque. Start the securing operation with the upper holes first. Do not tighten all the bolts until the air conditioner is properly seated against the shelter and all the bolts have been started.

4.8.13 Installation of Exterior Light. To install the exterior light, proceed as follows:

a. Remove the exterior light, which is mounted on the wall inside the shelter, by removing the two screws from the holding brackets. Replace the screws in the holding brackets.

b. Screw the nipple on the light into the threaded hole in the cover of the round box on shelter (figure 4-41).

c. Insert the plug on the light into the electrical outlet on the shelter and twist to lock.

4.8.14. Filling batteries with electrolyte.

a. Emergency light (Ni-Cd) batteries. Mix the electrolyte by adding the entire contents of one 5 lb. package of KOH powder (packed in metal cans) to 6-1/2 quarts of distilled or de-ionized water and stir until completely dissolved. Obtain the water from the primary heat exchanger supply. (Use caution and provide proper ventilation as the solution is caustic.) Remove the battery filler hole vent caps. Remove the plastic film covering the filler holes and discard. Fill each cell to the full mark with the prepared electrolyte.

Replace the vent caps and install the battery in the emergency light unit. Additional operating and precautionary instructions are packed with the powder and the batteries.

b. Intercom (lead-acid) batteries. Remove the filler hole vent caps from the battery. Fill each cell to the full mark with electrolyte as it comes from the container. (Use caution as the solution is caustic.) Replace the vent caps and install the battery in the intercom unit. The electrolyte is stored in shelter 3800 near the batteries.

c. Generator (lead-acid) batteries. Follow instruction contained in paragraphs 3.7.a, 3.7.b, and 3.7.c of the generator instruction manual.

4.8.15. Installation of Generator Control Panels. Install the generator control panels in shelter 1100 as follows:

a. Remove the 8 bolts for each panel from the shelter walls (use a 9/16-inch wrench).

b. Mount the generator control panel brackets to the wall. (Figure 4-42a). The brackets are stowed in the generator start-up kit crates (see Table 1-3, AGSCO manual).

c. Install the two horizontal bars containing the control panel shock mounts (see paragraph 3.5.4.a in the AGSCO manual), by fastening them to the brackets with 2 bolts at each end of each bar.

d. Position the control panel by inserting the 4 studs of the shock mounts into the 4 holes in the panel back. Fasten the panel, using the 4 nuts which were removed when the panel was taken out of the generator. (see Figure 4-42b.)

e. Run each remote control cable from its generator (see paragraph 3.5.4.b in the AGSCO manual) through the booted opening at the rear of shelter 1100 and connect it to its respective remote control panel.

f. Pull the draw strings on the boot over cable opening tight to exclude water. If the opening cannot be made watertight, seal it with RTV.

4.8.16. Installation of Output Insulator Assembly. For installing the output insulator assembly on the outside wall of shelter 3600, two men will be required. Refer to Figure 4-43a and proceed as follows:

a. Locate the area on the outside wall of shelter 3600 where the insulator assembly is to be mounted.

b. Position the insulator assembly on the wall. (Orient as shown in figure 4-43b)

c. Attach the insulator assembly to the wall using 12 3/8-16 x 1 bolts with lockwashers and flat washers. Tighten the bolts, using a 150 in-lb. torque wrench, to 36 in-lb.

4.8.17. Inter-Shelter Ducting. Three types of ducting are used to contain the inter-shelter cables; they include wiremold ducting, RFI flexible shielding conduit, and fiberglass ducting. Wiremold ducts are used to protect all electrical cables including the RFI flexible shielding conduit. Fiberglass ducting is only used for the transmitter-to-dummy load installation.

4.8.17.1. Wiremold Ducting. To install the wiremold ducting, see figure 4-44 and proceed as follows:

a. Position one end of the ducting over the collar on the outside wall of the shelter.

b. Compress the ducting and slip the other end over the collar on the adjacent shelter.

c. Release the ducting. The expanded ducting will remain in place.

d. Repeat steps a, b, and c for all wiremold ducts.

e. On shelter 2200, a special cover must be installed (see figure 4-45) prior to installing the wiremold ducting.

NOTE

Wiremold ducting must be installed prior to connecting cables between shelters, but after the pullman enclosures are in place.

4.8.17.2. RFI Flexible Shielding Conduit. The four RFI flexible shielding conduits (see figure 4-46) must be connected through the wiremold ducts between the following shelters:

FROM SHELTER	TO SHELTER
2600	3500
3500	3800
3800	3200
3800	3400

In shelter 2200, reinstall the copper tubing to the top of the CIG (Refer to Drawing 2200A1.) Use drawing 2200A2 for stowed configuration.

4.7.17.3. Fiberglass Ducting. To connect the fiberglass ducting between shelters 3200 and 3600, and between 3400 and 3600 via 3700, see figure 4-47 and proceed as follows:

CAUTION: To avoid damage to the equipment, at least two men should be used to install the fiberglass ducting.

a. In shelter 3600, lift the A side of the external fiberglass duct and position it over the antenna coupler shield. (See figure 4-48a) Ensure that the other end of the duct is positioned through the pullman entrance and into shelter 3700.

b. In shelter 3600, line up the external copper tubing with the antenna coupler tubing and insert both copper tubes into the two antenna coupler tubes.

c. Secure the fiberglass duct to the antenna coupler by inserting and securing the four 1/4-20 x 3/4" nylon fillister-head screws and associated hex nuts.

d. Connect and secure the B side of the internal fiberglass duct to the antenna coupler in the same manner that the external fiberglass duct was connected.

e. Line up the copper tubing at the shelter end of the internal fiberglass duct with the tubing mounted on the insulated mounting plate and insert.

f. Tighten the set screws and clamps at the neck of the shelter tubing, as required.

g. Secure the shelter end of the internal fiberglass duct to the insulated mounting plate by inserting six 1/4-20 x 3/4" pan head screws and associated hex nuts and tightening as required.

h. In shelter 3700, line up the copper tubing at the shelter end of the external fiberglass duct with the tubing mounted on the insulated mounting plate and insert.

i. Tighten the set screws and clamps at the neck of the tubing as required.

j. In shelter 3700, connect the external fiberglass ducting as shown in figure 4-48b. External connections from shelter 3700 to shelter 3200 and from shelter 3600 to shelter 3400 should be accomplished as shown in illustration.

4.8.18. Installation of Communications Antenna. Instructions for installing the ATLS communications whip antennas are contained in the RF Communications, Inc. Installation and Operation manual for the shelter 2300 communications system. The following additional information is intended to supplement those instructions.

a. Lay out the ground system depicted in Appendix V of the RF Communications Manual using basic trigonometric principles.

b. Mark the center point of the ground plane with a ground rod and use the rod to temporarily secure ground radials prior to forming the base plate perimeter ground wire shown in detail A, drawing SK-194, in Appendix V of the RF Communication manual and in figure 4-49a of this manual. After the perimeter ground wire is brazed to the radials and corner ground rods, cut the ground wires from the inner part of the perimeter ground wire and remove the centered ground rod.

c. Assemble and erect the antenna and base, as shown in the RF Communications Manual and figures 4-49b, 4-49c, and 4-49d.

d. Secure the antenna base plate to earth using the 16 inch stakes provided in shelter 2300 (see stowage drawings for location of stakes).

4.9. TRANSMITTER PREPARATION

4.9.1. Flow Meter Dowel Pins. Remove hex cap nuts on top of each water flow meter and remove wooden dowel pin from tube (see figure 4-50.) Replace the hex cap nuts. Some stations do not have the wooden dowels installed; check them carefully for broken meters.

4.9.2. Install PA Water Jacket Stand-off Insulators. Each of the four PA tubes sits in a water jacket which keeps the tube cool during operation. Each water jacket is at plate potential during operation and is isolated from ground by horizontal and vertical ceramic insulators. These ceramic insulators are replaced by metal facsimilies to prevent damage during transit and the ceramic insulators must be installed prior to run up. The following steps will assist in the installation of the ceramic insulators.

a. The ceramic insulators are stowed in the bulk storage, behind the PA rack in shelters 3200 and 3400.

b. Two 9/16" wrenches (open, box, or socket) and a large slot screwdriver are required. Save all hardware in all steps.

c. Loosen the retaining band (part of the horizontal insulator) from the top of the water jacket. Swing aside.

d. Remove the two cap nuts holding the water jacket to the vertical insulator.

e. Lift the water jacket and gently rest it on the frame near the vertical insulator. (See figure 4-51a).

f. Remove both metal insulators. The vertical insulator nuts are welded to underside of frame; the horizontal insulator nuts are on the reverse side of the frame.

g. Reassemble the horizontal insulator with the retaining band. The rubber washer fits between the insulator and the band assembly. (See figure 4-51b)

h. Mount the vertical and horizontal insulators using the previous hardware.

i. Gently place the water jacket on the vertical insulator. The rubber washer goes between the water jacket and the insulator. Secure the jacket with the two capped bolts. Do not tighten.

j. Place the retaining band around water jacket and secure. Do not tighten. The water jacket should be positioned so that the bolt on the rim, near the top, faces to the rear of the PA tube rack.

k. Shift the water jacket around for optimum position (vertical and minimum strain on any one insulator).

l. Tighten the retaining band.

m. Tighten the vertical insulator.

n. Repeat all steps c through m for each PA tube.

4.9.3. Tube Installation. There are three types of tubes that were removed for transit. (See figure 4-52a) The 1st IPA tubes (2 ea. 4-1000) are stored in bulk stowage behind the PA Rack. The 2nd IPA tubes (2 ea. 8C25) are stowed in front of the exciter, (see figure 4-52b) and the PA tubes (4 ea. 1086) are shipped separately.

a. Each 4-1000A can be placed into its sockets, V7 or V8, in the exciter. The tube rests flush with the surface and is held in place by the inner spring retainers. The glass chimney fits over the tube and is held into place by the inner spring retainers. The glass chimney is stowed in the bulk stowage behind the PA tube Rack. The plate cap is found bundled in polyurethane rubber along with the 2 IPA filament leads. Secure the plate cap to the plate terminal by means of the set screw. (See figure 4-52c)

Refer to figures 5-51 and 5-52 in the AN/FPN-44 manual.

b. The 2nd IPA tubes are placed into the air funnels that serve as their holders. Unwrap the bundle of leads from the polyurethane packing and allow them to hang freely. The plate lead is attached by a band that fits around the bottom of the tube base. Completely open the band to prevent damage to the contact portion of the band during installation. Place the band around the base and set the tube in the center of the air funnel. Each transmitter has a spanner wrench that is used to secure the terminal nuts on the 2nd IPA & PA tubes (located in 3100 & 3300 shelters, mounted on the wall beside 1A3A11CB2). Use both wrenches. Two common filament lead pairs (brown) go to the two "F2" terminals marked on the tube. The two grid leads (green) go to the terminals marked "G" on the tube (see Fig 6-89/6-90 of the AN/FPN-44 manual). The leads are

fitted by first holding the top nut fast with one spanner wrench and then backing off the lower nut to allow the inside to expand (just like a drill chuck). Fit the expanded lead over the appropriate terminal. Again, by holding the top nut fast, tighten the lower nut until snug. (Double check the tightness after 48 hrs of filament operation). Slip the plate band down until it contacts the copper portion of the tube base and is flush with the base of the air funnel. Position the tube so that the tube rests in the center of the air funnel and all leads are clear of local parts and of the chassis. Tighten the plate band.

Components associated with the PA Tubes to be installed. Refer to Figures 5-70, 5-71, and 6-59, in the AN/FPN-44 manual.

VI	Component	Size	Item Number
PA Caps.	C3, C5	7ufd	4
By Pass Res.	R5, R41	2.5ohms 140W	26
Res. Rack	1A7	8ea 250ohm 250W	19 or 29
1A5 leads	1A6C21-1&2		
Sup. Res.	E5		28
V2			
PA Caps.	C4, C6	7ufd	4
By Pass Res.	R6, R42	2.5ohms 140W	26
Res. Rack	1A8	8ea 250ohm 250W	19 or 29
1A5 leads	1A6C22-1,2		
Sup. Res.	E6		28
V3			
PA Caps.	C13, C15	7ufd	4
By Pass Res.	R23, R43	2.5ohms 140W	26
Res. Rack	1A9	8ea 250ohm 250W	19 or 29
1A5 leads	1A6C23-1,2		
Sup. Res.	E7		28

V4	Component	Size	Item Number
PA Caps.	C14, C16	7ufd	4
By Pass Res.	R24, R44	2.5ohms 140W	26
Res. Rack	1A10	8ea 250ohm 250W	19 or 29
1A5 leads	1A6C24-1,2		
Sup. Res.	E8		28

c. The PA tubes are installed in accordance with the procedure outlined in Step 31, page 19, of Vol III of the AN/FPN-44 Manual. Refer to Figures 5-69 & 5-70 AN/FPN-44 Manual.

4.9.4. Install PA Plate Storage Capacitors (1A6C3 through 6 and 1A6613 through 16). The PA Capacitors (8 each) are stowed behind the exciter in 3200 or 3400 (See figure 4-53a). Remove the capacitors by removing the mounting hardware, two bolts per capacitor. Replace the bolts in the support brackets (red 2 x 4's), as these bolts are used in transit only.

Remove the nylon mounting hardware for the plate storage capacitors from the mounting holes in the top frame members of the tube rack. (See figure 4-53b) Place each capacitor in its holder (part of 1A6, PA Tube Rack) so that the insulators are pointing towards the PA Tank Coil, 1A5. (Refer to Figures 5-70 and 5-71 in the AN/FPN-44 Manual). Secure each capacitor by pushing the bolt with metal washer from front to back; i.e. through the PA Tube Rack frame work, through the spacer (positioned between frame and capacitor mounting flange), through the capacitor mounting flange, add another flat washer, and install the nut. Snug up with wrench (not too tight as the bolt and nut are plastic).

4.9.5. Wire PA Capacitors. Copper Tubing Connectors are stowed on the suppressor resistors and the bypass resistors, where possible. Other connectors are tied to the PA Rack or overhead, near the Resistor Racks.

a. F191 and F190 are secured by one end to the Resistor Rack standoff insulators overhead. A gray wire connects the connectors and the resistor clip plate. Do not remove this wire. Remove hardware holding the connector and install connector as outlined in steps 7 through 12 on page 155 of Volume III, AN/FPN-44/45 Manual. (See figure 4-54a.) Replace hardware.

b. Complete steps 13 and 14 on page 155 of Volume III, AN/FPN-44/45 Manual. The By-pass Resistors and the Suppressor Coils are stowed in the PA water coils (see figure 4-54b). The resistors for the Suppressor Coils are in Bulk Stowage, Item 26.

4.9.6. 21.5 KV Line. The 21.5 KV Line is a small gray wire common to 1A6-1A10 at the end of the resistor racks nearest the harmonic filters. This line must be connected to the power supply. The 21.5 KV Line is coiled near the 31/32 or 33/34 cable runs. Flexible conduit is used to carry the 21.5 KV

line through the shelter to the power supply 1A3A5 as indicated on the banded end of the line.

The resistors for the resistor racks are stowed in a tall red box under the PA tank coil. (See figure 4-55). Gently force the resistors into their retaining clamps and then attach the clip-clamps.

4.9.7. Relocation of the PA Tank 1A5. Since the wiring of the tank coil will be the last step in the work behind the PA Tube Rack, the tank coil should be shifted to allow enough room to complete other installation steps.

a. Remove bolts securing the legs to the floor.

b. Remove strapping securing coil to the wall.

c. LIFT the tank coil when moving. The fiberglass structure was not stressed for sliding.

d. Move the tank coil next to the PA tube rack or to any out of the way location.

4.9.8. Installation of the Feedback Transformer. The feed back transformer is stowed in shelter 3200 or 3400. Mount the transformer around the larger pole (left-handside) (see figure 4-56) with the twin-ax connector facing the twin-ax cable. Connect the cable.

4.9.9. Installation of Harmonic Filters

a. The Harmonic coil is stowed behind the resistors beneath the PA Tank Coil, (see figure 4-55). Mount the coil vertically on the wall near the feedback transformer.

b. The four filter capacitors are stowed near the PA tube rack. (See figures 4-55 and 4-57) The capacitors are secured to the floor under the harmonic coil by the mounting bolts used during stowage. Lined up side-by-side along the wall, the two capacitors nearest to the door should have the large terminal away from the wall. The other two capacitors should have the large terminal near the wall. Designate the capacitors 1A20C1-C4 from left to right.

c. Mount the four swamping resistors vertically on the wall above the capacitors, using stand off insulators and resistor clamps. Install the resistors last.

d. Wiring must be completed using the schematic diagram on 6-137/6-138 of the AN/FPN-44/45 Manual.

4.9.10. Installation of the PA Tank Coil.

a. Move the tank coil to its operating position between the harmonic filter and the PA tube rack; center the coil with the center post of the PA tube rack. Anchor nuts are provided in the floor for mounting the coil in its operating location.

b. Plastic nuts and bolts are in a white cloth bag secured to the cross braces on the coil. Place one bolt through the primary coil, spacer, and secondary coil in each of the eight positions where the cross braces terminate. (Insert bolt with flat washer from outside through to inside.) Secure with flat washer & bolt. Remove the four cross braces running diametrically through the primary and secondary coils by loosening the retaining nuts on the inside of the secondary (inside coil), and runing the retaining nut down to the red cross brace. Remove the bolt from the red cross brace by unscrewing from the primary side (outside coil). Replace each metal bolt with a plastic one.

c. Attach the stand-off insulators on the tank coil. (The insulators & mounting hardware are attached to the wire of the primary coil.)

d. Attach the leads from the secondary coil to the harmonic coil & capacitors 3 or 4 (See 6-137/6-138 of the AN/FPN-44/45 Manual).

e. Secure the primary leads to capacitors 21-24 as banded on the leads. (Read step 50 on page 10 of Vol III of the AN/FPN-44/45 Manual).

4.9.11. Install Dummy Load Air Intake & Exhaust Covers. The dummy load air intake and exhaust rain shields are stowed in the shelter 3600. (See figure 4-58). The Intake Cover has a customized aluminium skirt at the bottom, and is mounted on the right hand side near the air conditioner. Save any spare bolts. The exhaust cover is mounted directly in line with the coupler, beneath the bowl insulator assembly. (See figure 4-43a)

4.9.12. Prepare Antenna Coupler. Other than normal shelter-equipment wiring, there are two other areas associated with the coupler that must be prepared.

a. The vacuum relays are stowed in the Antenna Coupler itself. Relays K1 and 2 are identical items, as are K10 and 11. The relays should be installed with the aid of the schematic diagram 6-167/6-168.

b. The wires connecting the coupler output to the bowl insulators are attached to the piping in the coupler. Connect the bowl insulators.

CAUTION: If the antenna is already connected, place a grounding rod on the bowl insulator feed-throughs. Wind on the antenna can produce a lethal static charge.

c. Check to see that the dummy load resistors are in place and that they were not damaged in transit.

4.9.13. Installation of RG-220U Transmission Cable & Antenna Matching Network (Dog House). The RG-220U Cable is stowed in shelter 3500. When laying out the cable, leave approximately 20 ft of slack at both ends. If cable ends are not prepared, prepare the transmitter end to accept soldered lugs on both the shield & center conductor and span a distance of approx. 2 feet. (Use EIMB Installation Standards section 4-15 as method suggestions). The antenna end must be inserted through the stuffing tube on the bottom side of dog house then prepared to accept soldered lugs and span a distance of approx. 15 inches.

Seal off both ends for moisture proofing. The extra slack can be coiled in one large loop. Entire cable is to be buried if possible. Attach the center lead of the transmitter end to the large bowl and the shield lead to the small bowl of the Bowl Insulator Assembly.

The Antenna Matching Network is stowed in shelter 3600. Place the "dog house" approx. 10 ft from the antenna base with the holes cut out for the bowl insulators facing the antenna base. Remove the plate beneath the dog house containing the bowl insulators by removing the bolts securing the four corners. (The distance between the plate and the bottom of the doghouse is not sufficient to remove the large insulator without removing the plate). Remove the bowls and mount them on the dog house using the same hardware, large bowl over the small one. Replace the plate. The internal piping is stowed in the dog house and must be assembled. Feed the transmission cable through the stuffing tube until the cable extends 2 inches above the top of the insulator near the stuffing tube. Secure stuffing tube. Strip outer jacket from cable to 1/2 inch above stuffing tube flange. Comb out braided shield and custom fit to nearest bolt on the insulator. Remove the inner dielectric to a point flush with the bottom of the metal cap on the top of the insulator. Allow enough center conductor to permit a gradual bend to the lug on top of the stand-off insulator. Trim and solder lug. Custom fit the piping between the bowl insulators and the antenna.

Initially tune the coil to the ninth active turn.

The 1200 ft cable is to be cut in two, one half is to be connected between the dog house and shelter 3600, the other half is to be run parallel to the first half and used as a spare.

4.10. CABLING. The following tables provide the interconnecting cabling information necessary to complete the installation process. Power cabling must be connected between the generators, the shelters, and pallets 4100 and 4200. Signal cabling must be connected between the electronic equipment and the indicated terminal board connectors in various shelters. Fire detection cabling, intercom cabling, and recorder and oscillator wiring must also be connected as indicated in the tables. When large cables are to be uncoiled, they should be unrolled (as a wheel) to prevent kinking. A roller may be used as an axle through the coil or a cable reel made from spare lumber may be employed.

4.10.1. Loran Cabling. Table 4-22A contains the cabling information necessary to connect Loran Cables for AN/FPN-44 Transmitters No. 1 and 2. This may be used in conjunction with figure 4-59. Tables 4-22B through 4-22E contain the information necessary to connect Loran cable for the AN/FPN-46 Timer Synchronizer. The following notes apply.

LORAN CABLING NOTES FOR TABLES 2-22A THROUGH 2-22E

1. Numbers in Parenthesis ( ) pertain to Transmitter #2 (Shelters 3100 and 3200.)

2. An Arrow ⟶ designates a cable which must be wired during set up (or disconnected and pulled during stowage). The arrow is located at the permanently connected end. The arrow head points toward the end to be connected during set up (or disconnected and pulled during stowage.) Wire runs without an arrow are permanently connected.

3. Wires W 711 through W 717 are factory connected in Shelter 2600 and should remain so. However, when a separation of up to 20 feet occurs between Shelter 2600 and 3500, another set of wires also marked W711 through W717 are used for this purpose. These wires are located in the workbench in Shelter 2600.

4. Wires W718 and W719 are also factory connected in Shelter 2600 and should remain so. When the 20-foot separation occurs between Shelters 2600 and 3500, another set of wires will have to be used. These wires are not supplied and will have to be cut from wire stock in a box which is stowed in Shelter 2600. The identification for the wire is MOL 205004.

5. COLOR CODE FOR WIRES:

0 - Black		5 - Green	
1 - Brown		6 - Blue	
2 - Red		7 - Violet	
3 - Orange		8 - Gray	
4 - Yellow		9 - White	

4.10.2. Power and Signal Cabling. Tables 4-23 through 4-26 contain wiring information for power cabling, fire detection cabling, intercom cabling, and communications signal cabling respectively. All cables are tagged with the shelter number and the reference designation of the cable. The following notes apply:

E = External (directly from one shelter to another, not through a pullman enclosure).

P = Via Pullman Enclosure (these wires are routed through appropriate wiremold ducts.)

* = Factory Connected (the ends of cables marked with an asterisk in the table are factory connected and should not be disconnected during restowage. The cables should be pulled back to this point and coiled).

◇ = Disconnect at both ends during restowage and stow in shelter 2700.

For information on connecting power cables to servit posts, refer to paragraph 4.10.4.

CAUTION: When routing cables through internal ducts, do not attempt to snake the cables through the ducts. Open all duct covers and carefully place the cables within the ducts. Failure to observe the above may result in damage to the cables. Coaxial cables W711 and W712 (between the TCG and the exciter) have had the connectors removed to pull the cables out of the 1-5/8" copper tubing. The connectors are tied to the cables and should be installed after the cables are inserted through the 1-5/8" copper tubing, In shelter 3500, a lacing cord is installed in the 1-5/8" copper tube to facilitate cable pulling. When restowing, be sure to pull the lacing cord back in to the copper tube.

WARNING: White conductors are used to carry current in some circuits. Do not assume that white conductors are grounded.

4.10.3. Wiring Primary Heat Exchangers to Transmitter. The wiring procedure used to connect the primary heat exchanger to the transmitter is identical for shelter 3600 and shelter 3700, and is accomplished as follows:

a. Connect three 208 VAC power wires, TB 3-1, -2, and -3.

b. Connect two control wires, W135, to TB3-5 and TB3-10.

4.10.4. Connecting Power Cables to Servit Posts. In order to connect the power cables to the servit posts at the power entrance panels, perform the following procedure:

a. Using the crowfoot wrench or the 20"-long 2-1/2 inch crescent wrench, one man on the external side of the power entrance panel holds the lower nut on the servit post to keep it from turning (see figure 4-60a).

b. Another man, inside the shelter, using the large 0-80 ft-lb. torque wrench, must torque down the inside nut on the servit post (see figure 4-60B) to the required torque value indicated on the external side of the shelter, next to the power entrance panel.

c. The external power cable may now be inserted into the slot on the servit post. The lower nut should be held while the top nut is tightened to obtain a secure connection.

d. Inside the shelter, the cable which is connected to the lug on the servit post should be checked to ensure a tight connection. Tighten the clamp holding the cable if required.

e. One month after the initial application of power, the servit posts should again be torqued to the indicated value and all connections checked for tightness. After the first check, the servit posts should be torqued and inspected quarterly.

WARNING: Before applying power:

i. Torque the servit posts, through the panel, to the value next to the power entrance panel, as described above.

ii. Ensure that all other connections are secure.

iii. Inspect the internal side of the panel for possible shorts.

4.11. PLUMBING. This section contains necessary instructions for connecting and filling the ATLS plumbing systems.

4.11.1 Transmitter Group Plumbing. Figure 4-61 depicts all necessary water and CO_2 piping connections for the transmitter group. Use of Teflon pipe-thread sealing tape is recommended on all threaded fittings to ensure leakproof connections. Sealing tape is located in shelter 1300 and in the fuel system crates stored in shelter 1100.

4.11.2. Connecting Secondary Heat Exchangers.

a. Cut inter-connecting hoses to proper lengths as noted in figure 4-61.

b. Prior to connecting the hoses between the secondary heat exchangers and shelter 3700, the hoses should be flushed with water to remove dirt or sediment. Rotate the hoses during flushing.

c. Connect the hoses to the secondary heat exchangers in accordance with the color coding marked on the heat exchangers and on the pipes in shelter 3700 (see figure 4-61).

d. It is a prime requirement that there be no kinks in the hoses. Therefore, the heat exchangers should be repositioned, if necessary, to allow the hoses to bend freely and not kink. This may require temporary removal of pipe hangers or clamps on the copper piping within shelter 3700 to ensure proper hose alignment.

e. When installing heat exchanger hoses, press the hose all the way onto the nipple (until the hose hits the shoulder). Place two clamps over each joint; one ½ inch from the shoulder on the nipple, and the second ½ inch from the first clamp. Failure to do this, and failure to check the tightness of the clamps daily, may result in the hoses flying off during operation and spraying hot coolant about the area.

NOTE

Before using the heat exchangers, the starting switch on the exchangers must be modified. A staggered-starting kit, including necessary switches and wiring, is stored in shelter 1300. Instructions for making this modification are included in the kit and in the Ellis and Watts Service Manual for the Heat Exchangers.

4.11.3. Filling Secondary Heat Exchangers. To fill the secondary heat exchangers, refer to the Ellis and Watts manual and proceed as follows:

a. Close the two overhead valves in shelter 3700 (see figure 4-62a).

b. Open the air bleeder valves above the primary heat exchanger (see figure 4-62b).

c. In the secondary heat exchanger, remove the lower side panels and open the coolant inlet and coolant outlet valves (see figure 4-62c).

d. Open the radiator bleeder valve (near filler cap) (see figure 4-62d).

e. Open the air bleeder valve on top of the pump (see figure 4-62e).

f. Remove the filler cap, insert the hose, and add water until the water level is up to the top of the sight glass (see figure 4-62f and 4-62g). Keep the water running.

g. Start the pump and allow it to run for a few seconds.

h. Stop the pump and allow the water level to again reach the top of the sight glass.

i. Start the pump. If the pump shuts down because of low water, continue alternately filling the tank and starting the pump until the pump will run continuously.

j. Close the radiator bleeder valve after a steady stream of water is obtained.

k. Close the pump bleeder valve after a steady stream of water is obtained.

l. Close the air bleeder valve in shelter 3700 after a steady stream of water is obtained.

m. The outlet pressure guage should indicate approximately 45-55 lbs.

n. Add water until the level reaches above the middle of the sight glass.

o. Remove the hose from the filler opening.

p. Replace the filler cap.

4.11.4. Filling Primary Heat Exchangers. To fill the primary heat exchangers, see the illustration in the Loran addendum, and proceed as follows:

NOTE

Primary heat exchanger in filters were strapped to the secondary heat exchanger which was stowed in shelter 3700. The filters should be installed before filling the system.

a. Open all valves under the expansion tank.

b. Open the inlet valve on top of the expansion tank.

c. Open drain cock U32.

d. Open float valve U11.

e. Open gate valves U16 and U 23.

f. Open drain cock U31.

g. Open the drain cock under the pump.

h. Open drain cock U4.

i. Open gate valve U9.

j. Insert a funnel into the expansion tank inlet and pour in distilled water to indicate level mark.

k. Start pump.

l. Add water to keep water level to mark.

m. When water comes out of U4, close U31 and pump cock.

n. Repeat step 12.

o. Open drain cock on top of feed line in shelters 3200 and 3400.

p. Observe pressure gauges M4, M5 and M6. If pressure does not build up to 40 to 50 lbs., partially close U16. When pressure is developed, open U16.

q. Close drain cock on top of feed line in shelters 3200 and 3400.

r. Close drain cocks U11 and U32.

s. Repeat step 1.

t. Close inlet valve on top of expansion tank.

4.11.5. Transfer of Heat Exchangers. To transfer the full cooling load of both transmitters to one heat exchanger, proceed as follows:

a. Open the overhead valves in shelter 3700.

b. Shut down the malfunctioning or unwanted secondary heat exchanger.

c. Close the inlet and outlet valves on the malfunctioning or unwanted heat exchanger.

4.11.6. Connecting Secondary Heat Exchanger. To connect each secondary heat exchanger to a single primary heat exchanger, proceed as follows:

a. Close the two overhead valves in shelter 3700.

b. Open the inlet and outlet valves on both secondary heat exchangers.

c. Turn on both secondary heat exchangers.

4.11.7. Shelter 2400 Plumbing. System plumbing for shelter 2400 is accomplished as follows:

a. Open all water shut-off valves located at:
kitchen sink, purefiers, (2), water cooler, water heater, lavatory sink, and water closet.

b. Unscrew the plugs from the waste and the water inlet connectors (located on the outside of the shelter.)

c. Connect the water input hose or pipe connection to the shelter inlet fitting (located outside the shelter.) On the supply end of the input hose or pipe (the part that connects to the water supply), attach the check valve which is supplied with the pump (or equivalent). Connect an external drain hose or pipe to the waste connection for drainage (as appropriate).

4.11.8. Prime the Jacuzzi water pump as follows:

a. Close the inlet valve to the pump.

b. Remove the priming plug and fill the pressure tank to the top with water.

c. Screw the priming plug back into place firmly.

d. Start the motor. If the motor does not continue to run, operate the starter switch again.

e. Open the inlet valve to the pump to suck water into the system and to permit air to escape from the water lines and equipment in shelter 2400.

4.12. SHELTER GUYING. As mentioned in chapter two, a shelter guying system is used to provide stability in case of high winds. Normally, the shelters are guyed after all shelters are in place, after all connections are made, and after the equipment is installed and installation is otherwise completed. This procedure maintains maximum clearance and maneuverability around the shelter complex during installation. It may be prudent, however, to guy the shelters when off-loading or during installation, should high winds occur at these times.

4.12.1. Shelter-to-Ground Guy Installation. The shelter-to-ground guys are used to secure the shelters to the ground. (See figure 4-27 to determine where they are to be installed). To install shelter-to-ground guys, see figure 4-63a and proceed as follows:

a. Place the anchor screw at a 45 degree angle to the ground, 8 1/2 feet out from the shelter to be guyed. (see figure 4-63b). In hard soils, excavate to a depth of 6-12 inches to make it easier to start the anchor into the ground.

b. Screw the anchor into the ground, clockwise, until only approximately six inches of the rod remain above the ground.

NOTE

A length of reinforcement bar is provided in the tool kit for use when additional leverage is required to sink the anchor to the desired depth.

c. Rotate the turnbuckles until the threaded ends of the rods are barely showing inside the body.

d. Remove the nut and bolt from the jaw on the free end.

e. Insert the shelter hold-down ring in the jaw and replace the nut and bolt.

f. Remove the pin from the anchor shackle and insert the cable loop in the shackle. Replace the anchor shackle pin.

WARNING: Exercise care during the installation to prevent uncontrolled unwinding of the cable. Gloves should be worn to protect the hands.

g. If the cable length needs to be adjusted, loosen the wire rope clip until the cable can be slipped through. Lengthen or shorten the cable as required and re-tighten the wire rope clip just above the loop. Be sure the loop thimble is properly positioned before the clip is tightened. Do not apply excessive torque on the clip bolts.

WARNING: Before tightening the turnbuckle, all fittings should be checked for tightness and should be observed during tightening to prevent slippage and injury to personnel.

h. Tighten the guy assembly by hand, rotating the turnbuckle to bring the threaded rods toward each other. Rotate by hand only until firm resistance is reached and all slack is removed.

i. For each shelter-to-ground guy assembly to be installed, repeat steps a through h.

j. If shelter-to-shelter guys are not to be installed, check the level indicator bubbles to see if the shelter requires adjustment. If adjustment is required, release the bottom lock nut on each jack and repeat steps i through o of paragraph 4.8.2.

4.12.2. Shelter-to-Shelter Guy Installation. The shelter-to-shelter guys are used to secure one shelter to another. (see figure 4-27 to determine which shelters are guyed together.) To install shelter-to-shelter guys, see figure 4-64 and proceed as follows:

a. Shelter-to-shelter guy assemblies are stowed in one of the shelters to which they attach.

NOTE

Shelter-to-shelter guying assemblies come in two sizes. The small guy is a 1/2-inch diameter screw with a 6 inch turnbuckle (1/2 x 6-G228) and the long guy is a 5/8-inch diameter screw with a 9 inch turnbuckle, (5/8 x 9-G228). Both have jaw bolt ends. Referring to figure 4-27, choose the proper length guy and proceed to step b.

b. Check the lifting rings to see that they are screwed completely into the shelter corner plates and that no threaded portion shows.

c. Remove the bolt and nut from one jaw end and slip this end over one of the shelter hold-down rings. Replace the bolt.

d. Adjust the length of the turnbuckle to fit to the other shelter's hold-down ring, by rotating the body while preventing the jaw end from rotating.

e. Remove the bolt and nut from the free end and slip this end over the hold-down ring of the adjoining shelter. Replace bolt.

f. Rotate the body of the turnbuckle by hand, bringing the threaded ends of the jaws toward each other.

g. Hand tighten until firm resistance is reached.

h. For each shelter-to-shelter guy installed on the shelter, repeat steps b through g.

i. Check the level indicator bubbles to see if the shelter requires adjustment. If it does, release the bottom lock nut on each jack and repeat steps i through o of paragraph 4.8.2.

TABLE 4-1. INSTALLATION TOOLS

(Located in Shelter 1300)

ITEM NO.	DESCRIPTION	QTY
1	Spintite, 9/16 inch	8
2	Wrench, 2-3/8 inch, Open End	3
3	Screwdriver, Blade Type, 1-1/4 inch long	4
4	Screwdriver, Blade Type, 8 inches Long	4
5	Wrench, 3/4 inch Capacity, Adjustable, 6 inches Long	5
6	Wrench, 1-1/8 inch Capacity, Adjustable, 10 inches Long	3
7	Wrench, Adjustable, 15 inches Long	1
8	Pliers, Slip Joint, 6 inches Long	4
9	Bags, Cloth, 5 inches x 7 inches	30
10	Stud, Alignment, 3/8-16, 3 inches Long	4
11	Tape Measure, 12 feet	1
12	Wrench, Adjustable, 2 1/2 inches capacity, 20 inches Long	1
13	Pliers, 8 inches Long	1
14	Brush, Paint, 1 inch	1
15	Level, 4 feet Long, Aluminum	1
16	Ladder, Straight, 10 feet Long	2
17	Hammer, Sledge, 8 lbs.	3
18	Hammer, Claw, 16 oz.	3
19	Rod, Steel, 3/4 inch Diameter, 5 feet Long	1
20	Cloth Bag, 8 x 15 inches	4
21	Handle, 1/2 inch, Square Drive, 15 inches Long	1

TABLE 4-1. INSTALLATION TOOLS (Continued)

ITEM NO.	DESCRIPTION	QTY
22	Crowfoot, Mod. 1 15/16 inches	1
23	Crowfoot, Mod. 1 11/16 inches	1
24	Crowfoot, Mod. 1 1/4 inches	1
25	Crowfoot, Mod. 15/16 inch	1
26	Wrench, Torque, 14 inches Long. (0-80 Ft. Lbs.)	8
27	Wrench, Allen, 3/8 inch	1
28	Wrench, Allen, 5/6 inch	1
29	Wrench, Allen, 1/4 inch	3
30	Level, Wood	1
31	Wrench, Torque, (0 to 150 In. Lbs.)	4
32	Adapter, Drive, 1/4 inch to 3/8 inch	4
33	Screwdriver, Phillips-3,6 inches Long	1
34	Adapter, 3/8 inch F to 1/2 inch M	1
35	Tool Box, 9 x 7 x 23 inches	1
36	Welding Outfit - consisting of:	1
	Torch Handle	
	Cutting Attachment with size 41 tip	
	Welding Tips w/Mixers Nos. 1-5	
	Two-Stage Oxygen Regulators	
	Two-Stage Acetylene Regulator	
	25-Foot Dual Hose w/Fitting	
	50 MM Goggles	
	Wrench	
	Torch Lighter	

TABLE 4-1. INSTALLATION TOOLS (Continued)

ITEM NO.	DESCRIPTION	QTY
36 (Cont'd)	1 Lb Flux	
	Rod Assortment	
	Instruction Manual	
37	Socket, 7/16 inch, 2 inches deep, 1/2 inch drive	1
38	Socket, 1 5/16 inch, 2 inches deep, 1/2 inch drive	1
39	Socket, 2 3/8 in., regular well, 12 point, 3/4 inch drive	4
40	Socket, 1 1/4 inch, 3 1/4 inch deep wall type, 12 point, 1/2 inch drive	1
41	Socket, 1 1/8 inch, 3 1/4 inch deep wall type, 12 point, 1/2 inch drive	1
42	Socket, 1 inch, 3 1/4 inch deep wall type, 12 point, 1/2 inch drive	1
43	Socket, 3/4 inch, 2 inch deep wall type, 12 point, 3/8 inch drive	1
44	Socket, 9/16 inch, 2 inch deep wall type, 12 point, 3/8 inch drive	1
45	Socket, 1/2 inch, 2 inch deep wall type, 12 point, 3/8 inch drive	1
46	Socket, 9/16 inch, deep wall, 3/8 inch drive	8
47	Handle, Ratchet, 3/4 inch drive	4
48	Extension, 6 inches long, 3/8 inch drive	1
49	Schedule 80 pipe, steel, cadmium plated, 2 inches diameter x 36 inches long	4
50	Spreader Tool (Southco Fastener)	2
51	Wrench, tap and reamer, adjustable, sliding-T handle, for tap sizes 1/4 inch to 1/2 inch	2
52	Thread cutting tap set, NC threads, 1/4 inch to 3/4 inch, plug type	1

TABLE 4-1. INSTALLATION TOOLS (Continued)

ITEM NO.	DESCRIPTION	QTY
53	Thread cutting tap set, NF threads, 1/4 inch to 3/4 inch, plug type	1
54	Grease gun, hand lever operated, hydraulic grip nozzle, 15 oz. capacity	2
55	Grease, automotive and artillery, 1 lb. cans	10
56	Tap, thread cutting, bottoming style, coarse thread, right hand, 3/8-16 UNC	3
57	Tap, thread cutting, bottoming style, fine thread, right hand, 3/8-24 UNF	3
58	Tester, battery electrolyte solution, hydrometer test for specific gravity range 1.130 to 1.310	1
59	Testing Outfit, storage battery, hydrometer tester for specific gravity range 1.100 to 1.300 with thermometer	1
60	Tester, antifreeze solution, for ethylene glycol and methanol solutions, with thermometer and conversion charts, for use in liquid-cooled engines	1
61	Socket, 7/16 inch, 3/8 inch drive, 12 point, regular length	3
62	Socket, 1/2 inch, regular length, 12 point, 3/8 inch drive	3
63	Socket, 9/16 inch 12 point, regular length, 3/8 inch drive	3
64	Socket, 5/8 inch, 12 point, regular length, 3/8 inch drive	3
65	Adaptor, socket wrench, 3/8 inch drive with 1/2 inch square opening	4
66	Adaptor, socket wrench, 1/4 inch drive with 3/8 inch square opening	4
67	Handle, speeder, brace type, 3/8 inch drive	4
68	Pry bar, one end round with tapered point	2

TABLE 4-2. SHELTER 1100 STOWED EQUIPMENT LIST

Fig 4-2 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
1		50019-1142A1-1 (1100)	JACK BOX INSTL. - attached by	1	A
		MS35307-306	Screw, hex hd (1/4-20 by 3/4 lg.)	6	
		MS35338-139	Washer, lock, split 1/4	6	
		MS15795-81D	Washer, flat 1/4	6	
2		(.250DIAx10')	GROUND WIRE	1	A
3		50019-1142B2-1	COTTON BAG ASSY - containing	1	A
		50019-114B1	Bag, Cotton Duck	1	
		2360-4002B1	Shelter Guy	2	
		2360-4010B1	Guy, Shelter to Shelter, -secured by	2	
	30	50019-3200B5-2	Strap Assy	3	
4		50019-1116B2	STEP w/Mailing Bag attached containing step hdw and keys	1	A
5		29"Wx32"Hx44"lg	GASOLINE FUEL PUMP (2 Boxes)	2	A
6		300MCM	REEL - attached by	1	A
	31	14160-1	Strap Assy	4	
	32	50019-1141A1	Frame, Floor Assy consisting of	1	B
	33	50019-1141D6-1	Angle, gusset, attached with	1	
		MS35307-307	Screw, hex hd (1/4-20 by 7/8 lg)	4	
		MS15795-811	Washer, flat 1/4	4	
		MS35338-139	Washer, lock 1/4	4	

TABLE 4-2. SHELTER 1100, STOWED EQUIPMENT LIST (Continued)

Fig 4-2 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35649-2254	Nut, hex 1/4-20	4	
34	50019-1141D6-2	Angle, gusset	1	
	MS35307-307	Screw, hex hd (1/4-20 by 7/8 lg)	4	
	MS15795-811	Washer, flat 1/4	4	
	MS35338-139	Washer, lock 1/4	4	
	MS35649-2254	Nut, hex	4	
35	50019-1141D7	Floor Channel, attached by	3	B
	MS35307-359	Screw, hex hd (3/8-16 by 7/8 lg)	34	
	MS35307-365	Screw, hex hd (3/8-16 by 1 3/4 lg)	6	
	MS15795-815	Washer, flat 3/8	40	
	MS35338-141	Washer, lock 3/8	40	
	50019-2113D10-1	Bushing	6	
7	50019-1119D5-2	POWER ENTRANCE COVER (attached by index no. 36)	1	A
8	50019-1119D5-1	POWER ENTRANCE COVER W/Mailing Bag attached containing Cover hdw (attached by index no. 36)	1	A
9	2360-400301	PULLMAN - containing (attached by index no. 36)	1	A
	Type 55	Interconnecting Duct (4" x 50" Lg)	1	
	MIL-M-15562C	Matting, Floor (3' x 9')	1	
	4 x 6	Cloth Bag, Cotton each containing 33 SST bolts - secured by	2	

TABLE 4-2. SHELTER 1100, STOWED EQUIPMENT LIST (Continued)

Fig 4-2 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
36	50019-3200B5-4	Strap Assy Webbed	2	
	MS51959-67	Screw, flat hd (10-24 by 1" Lg)	8	
10	26"Wx30"Hx144"Lg	FUEL TRANSFER EQUIP (4 boxes), secured by (Boxes are marked showing center of balance and should be restowed so the weight is not on one side	4	B
31	14160-1	Strap Assy - attached to	5	
37	50019-1133D3	Plate, Floor	1	
	FDK-2850M1	Ring and clip	2	
	MS35307-308	Screw, hex hd (1/4-20 by 1" Lg)	4	
	MS51959-110	Screw, flat hd (3/8-16 by 7/8 Lg)	10	
	MS15795-815	Washer, flat 1/4	4	
	MS35338-139	Washer, lock 1/4	4	
38	50019-1141D8	Plate, Floor	2	
	FDK-2850M1	Ring and clip	4	
	MS35308-331	Screw, hex hd (5/16-24 by 5/8 Lg)	8	
	MS35338-140	Washer, lock 5/16	8	
	MS35307-360	Screw, hex hd (3/8-16 by 1" Lg)	16	
	MS35307-366	Screw, hex hd (3/8-16 by 2" Lg)	20	
	MS15795-815	Washer, flat 3/8	36	
	MS35338-141	Washer, lock 3/8	36	

TABLE 4-2. SHELTER 1100, STOWED EQUIPMENT LIST (Continued)

Fig 4-2 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	50019-2113D10-1	Bushing	8	
39	50019-1141A2	Frame, Wall Assy, attached-by	1	B
	MS35307-317	Screw, hex hd (1/4-20 by 2 3/4" Lg)	13	
	MS15795-810	Washer, flat 1/4	13	
	MS35338-139	Washer, Lock 1/4	13	
40	60X52x.09THK	Sheet, Alum 5052-H32	1	B
11		(Not used)		
12	50019-1119B2	AIR CONDITIONER (SM)	1	B
13	29"Wx32"Hx44"Lg	FUEL PUMP (Electric) (1 Box), secured by	1	B
41	13225-2	Strap Assy - attached to	4	
42	50019-1133D2	Plate, Floor	2	
	FDK-2850M1	Ring and clip	5	
	MS35307-308	Screw, hex hd (1/4-20 by 1" Lg)	10	
	MS51959-110	Screw, flat hd (3/8-16 by 7/8 Lg)	20	
	MS15795-815	Washer, flat 1/4	8	
	MS35338-139	Washer, lock 1/4	8	
14	2360-4006B1	WALKWAY, LARGE, secured by	1	B
43	50019-3637B4-2	Bracket, Walkway Instl.	1	
44	50019-3637B4-1 (1142B4)	Bracket, Walkway Instl.	1	
	MS51958-64	Screw, pan hd (10-32 by 5/8 Lg)	4	

TABLE 4-2. SHELTER 1100, STOWED EQUIPMENT LIST (Continued)

Fig 4-2 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35338-138	Washer, lock #10	4	
	MS15795-808	Washer, flat #10	4	
45	50019-1142D7	Mounting Bracket, Bottom, Walkway	1	
	MS35307-308	Screw, hex hd (1/4-20 by 1" Lg)	7	
	MS15795-815	Washer, flat 1/4	7	
	MS35338-139	Washer, lock 1/4	7	
15	2360-4008B1	GROUND ROD, Attached by	1	A
	5165-000-0317-1	Clamp, Loop	4	
	MS51957-43	Screw, pan hd (8-32 by 3/8 Lg)	8	
	MS35338-137	Washer, lock #8	8	
	MS15795-807	Washer, flat #8	8	
16	50019-1142B10	EXTERNAL LIGHT INSTL.	1	B
	MIL-T-7130	Polyurethane 12x12x1/8 in. thK Lacing Cord		A/R
17	MIL-M-15562C	MATTING, FLOOR - secured by	1	N/A
46	50019-3200B5-2		3	
18	2845	CHAIR (attached by index no. 36)	1	N/A
47		Strap Assy		

TABLE 4-3. SHELTER 1200, STOWED EQUIPMENT LIST

Fig 4-3 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-1	WOOD BEAM 2.0x4.0x62.0 attached by	1	A
	MS35307-368	Screw, hex hd 3/8-16x2 1/2	2	
	21-41310-16	Nut, anchor 3/8-16	2	
	MS15795-814	Washer, flat 3/8	2	
1	500MCM	WIRE, REEL, secured by	1	A
31	13225-2	Strap Assy, attached to	5	
32	50019-3542D2	Plate, Mounting attached by	6	
	MS35307-308	Screw hex hd 1/4-20x1	24	
	MS35338-139	Lockwasher	24	
	MS15795-810	Flat washer	24	
33	3 5/8 x 3 5/8	Wood, block	4	
34				
	21-41310-16	Nut, hex 3/8-16	8	
	MS35338-141	Washer, lock 3/8	8	
	MS15795-815	Washer, flat 3/8	8	
	MS35307-375	Screw, hex 3/8-16x4 1/4	8	
2	50019-1142B2-2	COTTON BAG ASSY, containing	1	A
	50019-1142B1	Bag, Cotton Duck	1	
	2360-4002B1	Shelter Guy	2	
31	13225-2	Strap assy	2	
3	50019-1142B12-7	CABLE BOX ASSY, containing	1	A
	50019-1116C2-1 thru -12	Cable Assy	1 ea.	

TABLE 4-3. SHELTER 1200, STOWED EQUIPMENT LIST (Continued)

Fig 4-3 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		50019-1116C9-4	Cable Assy	1	
		1116C11-1	Cable Assy	1	
		1116C11-2	Cable Assy - secured by	1	
	31	13225-2	Strap Assy	3	
	32	50019-3542B1 (50019-3542D2)	Plate Mounting Assy, attached by	6	
		MS35307-308	Screw, hex hd 1/4-20x1	24	
		MS35338-139	Lockwasher	24	
		MS15795-810	Flat washer	24	
4		2360-400-3001	PULLMAN, containing	1	A
			Cloth bag each w/33 sstl. bolts	2	
		50019-1142B6-2	Utility Bag	1	
	31	13225-2	Strap Assy	2	
5			AIR CONDITIONER, secured by	1	A
			Strap, Armadillo (marked 1200)	2	
	31	13225-2	Strap Assy	1	
		2360-GEN-A2-X4	Strap Assy	2	
	35	50019-3700B5-4	Strap Assy	1	
		2360-GEN-A2-X4	Angles with Hardware	2	
6		50019-1142B8 (1200)	LEVELING JACK BOX, attached by	1	A
		MS35307-306	Screw, hex hd 1/4-20x3/4	6	
		MS5338-139	Washer, lock, split	6	
		MS15795-811	Washer, flat	6	

TABLE 4-3. SHELTER 1200, STOWED EQUIPMENT LIST (Continued)

Fig 4-3 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
7	COML	MAILING BAG 1 w/hardware, 1 w/bin keys	2	A
8	REF	STEP	1	A
9	TYPE 55	INTERCONNECTING DUCT, secured by	1	A
36	500193200B5-2	Strap Assy	2	
10	.250DIAx10'	GROUND WIRE	10	A
11	2360-4008B1	GROUND ROD, attached by	1	A
	5165-000-0317-1	Clamp, Loop, attached by	4	
	MS51957-43	Screw, pan hd 8-32x3/8	8	
	MS35338-137	Washer, lock #8	8	
	MS15795-807	Washer, flat #8	8	
12	50019-1142B10	EXTERIOR LIGHT wrapped in Polyurethane 12x12x1/8 in thK	1	A
	MIL-T-7130	Lacing cord		A/R

TABLE 4-4. SHELTER 1300, STOWED EQUIPMENT LIST

Fig 4-4 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
41	MB0388	PORTABLE LIGHT		
1	3/4DIAx5'Lg	STEEL ROD	5'	A
2	.250DIAx10'Lg	GROUND WIRE	10'	A
3	50019-1142B2-3	BAG ASSY, SHELTER - containing	2	A
	50019-1142B1	Bag, Cotton Duck	1	
	2360-4002B1	Shelter Guy	2	
	2360-4009B1	Shelter to Shelter Guy	1	
	50019-3833D9	Mounting Angle - secured by	2	
	Ref	Screw Anchor	2	
30	13225-1	Strap Assy - attached to	2	
31	50019-3542B1	Plate, Mounting Assy - attached by	4	
	MS35307-309	Screw, hex hd, 1/4-20 1/8 lg	16	
	MS15795-810	Washer, flat 1/4	16	
	MS35338-139	Washer, lock 1/4	16	
4	COML	MAILING BAG, COTTON, one w/step hdw, one w/cabinet & workbench keys	3	A
5	2360-1116B1	STEP - attached by	1	A
	50019-1130D1-2	Spacer, step	4	
	MS35307-320	Screw, hex hd, 1/4-20x3 1/2 Lg	4	
	MS35338-139	Washer, lock 1/4	4	
	MS15795-810	Washer, flat 1/4	4	

TABLE 4-4. SHELTER 1300, STOWED EQUIPMENT LIST (Continued)

Fig 4-4 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
6	2360-4007B1	WALKWAY (Small) - attached by	1	A
32	50019-1142D7	Bracket, Walkway, Bot	1	
33	50019-1142D6	Plate, Nut - attached by	1	
	MS35307-308	Screw, hex hd, 1/4-20x1" lg	7	
	MS35338-139	Washer, lock 1/4	7	
34	50019-3637B4-1 (50019-1142B4)	Bracket, Walkaway, Fork	1	
35	50019-3637B4-2 (50019-1142B4)	Bracket, Walkaway, Z - attached by	1	
	MS51958-64	Screw, pan hd 10-32x5/8	4	
	MS35338-138	Washer, lock #10	4	
	MS15795-808	Washer, flat #10	4	
7	50019-1142B8 (1300)	LEVELING JACK BOX MOD - attached by	1	A
	MS35307-306	Screw, hex hd 1/4-20x3/4	6	
	MS35338-139	Washer, lock 1/4	6	
	MS15795-810	Washer, flat 1/4	6	
8	2360-400B-01	PULLMAN - containing two cloth bags w/33 ST STL bolts in each - secured by	1	A
36	50019-3200B5-4	Strap Assy	1	
9	50019-1300B2	SUPPORT ASSY	2	B
10	COML	LADDER 10' Lg	2	B
11	C72	COMB. LEVER, DOLLY	1	B
12	C60	COMB. LEVER, DOLLY - secured by	1	B

TABLE 4-4. SHELTER 1300, STOWED EQUIPMENT LIST (Continued)

Fig. 4-4 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
37	13225-1	Strap Assy	4	
13	50019-1342B1	BULK STOWAGE - secured by	1	B
	FDC1555-127	Net, Cargo	2	
	50019-3642D1	Angle, Support (30 Lg)	4	
	50019-3642D2	Angle, Support (48Lg) - attached by	4	
	MS335307-359	Screw, hex hd 3/8-16x7/8	40	
	MS35338-141	Washer, lock 3/8	40	
	MS15795-814	Washer, flat 3/8 - consisting of	40	
	GFE 1	Crate, 34 x 21 x 34	1	B
	GFE 2	Crate, 25 x 20 x 27	1	B
	GFE 3	Crate, 34 x 21 x 19	1	B
	GFE 4	Crate, 25 x 15 x 14	1	B
	GFE 5	Crate, 25 x 15 x 14	1	B
	P1S3I3G	Hoist Chain (Carton-16x10½ x13)	1	B
	P1S17I15G	Memo Pad (20 per unit) carton- 11 1/4 x 16 1/2 x 13 1/4)	1	B
	P1S7I4G	Grinder Bench Elc (Wood Crate- 25 1/2 x 14 1/2 x 16 1/2	1	B
	P1S15I3G	Mat, Floor, Door (10 per unit)	1	B
	P1S19I1G	Cleaner, Vacuum, House (Carton - 12 1/2 x 12 1/2 x 12 3/4)	1	B
	P1S3I4G	Rope, Manila (Roll- 19 1/2 dia x 13)	1	B

TABLE 4-4. SHELTER 1300, STOWED EQUIPMENT LIST (Continued)

Fig 4-4 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	P1S3I1G	Rope, Manila (Roll 17 1/2 dia x 11 1/2)	1	B
	P1S15I7G	Paper, Toilet (Carton-21 x 21 x 19)	1	B
	P1S15I4G	Can, Safety, Flex. 5 Gal (8 per unit, Carton-11 1/2 x 11 2/4 x 19 1/2)	4	B
	P1S17I35G	Marchant Calculator, Model 8CDT (Carton-13 1/4 x 13 1/2 x 23 1/2)	1	B
14	50019-1142B7	GROUND ROD - attached by	1	B
15	50019-1142B10	EXTERIOR LIGHT wrapped in Polyurethane 12 x 12 x 1/8 in thK	1	B
	MIL-T-7130	Lacing Cord	A/R	
17	Ref	WORKBENCH	1	N/A
		Workbench contains:		
		Manuals as follows:		N/A
	LTA-250	Heat Exchanger	2	
	MOAC513	Large A/C	2	
	LI-L7	System	2	
	FSM	Fire System	2	
	FDU-5B&-3/5A	Pyr-A-Larm	2	
	30-1700	Small A/C	2	
	SR100	Intercom	2	
18	Ref	WORKBENCH	1	N/A
		Workbench contains:		
		Tools as per table 2-1		

TABLE 4-5. SHELTER 2100, STOWED EQUIPMENT LIST

Fig 4-5 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
1		MIL-M-15562C	MATTING, FLOOR 1 1/2'x12 1/2'	1	A
2		MIL-M-15562C	MATTING, FLOOR 3'x12 1/2'	1	A
	30	50019-3200B5-5	Strap Assy	2	
3		50019-1142B6-2	BAG, UTILITY, containing	1	A
		I35 of RFC0001	Hand Set & Cable Access	2	
		MOL201001	Antenna Cplg Unit	1	
4		50019-1142B6-1	BAG, UTILITY, containing	1	A
		RF307E	Manual Remote Control	1	
	31	50019-3200B5-1	Strap Assy	2	
5		MOL206129	ANTENNA GRD WIRE (1000 ft Roll), secured by	1	A
	32	50019-3200B5-5	Strap Assy	2	
6		50019-1142A1-1 (2100)	JACK BOX INSTL., attached by	1	A
		MS35307-306	Screw, hex hd 1/4-20x3/4	6	
		MS15795-810	Washer, flat	6	
		MS35338-139	Washer, lock, split	6	
7		COML	MAILING BAG, COTTON, containing Step hdw	1	A
8		2360-1116B2	STEP, attached by	1	A
		MS35307-308	Screw, hex hd 1/4-20x1	4	
		MS35338-139	Washer, lock	4	
		MS15795-810	Washer, flat	4	
		50019-1130D1-2	Spacer Step, attached by	4	
		MS35307-316	Screw hex hd 1/4-20x2 1/2	4	

TABLE 4-5. SHELTER 2100, STOWED EQUIPMENT LIST (Continued)

Fig 4-5 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS15795-810	Washer, flat 1/4	4	
	MS35338-139	Washer lock 1/4	4	
9	#8	WIRE, GROUNDING (Color Green)	25'	B
10	.250DIAX10'Lg	WIRE, GROUND	10'	B
11		BAG, UTILITY, containing	1	B
	I6 of RFC0001	Guy Material (Roll)	1	
	I8 of RFC0001	Stakes, Base Plate	4	
	I9, 10, 11 of RFC0001	Guy Collector Ring	3	
	I12 of RFC0001	Bolt, Mtg Ant to Base 5/8-18x1 3/4"	4	
	I13 of RFC0001	Washer, Flat 5/8	4	
	I14 of RFC0001	Washer, Lock 5/8	4	
	I15 of RFC0001	Nut, Hex, Ant to Base 5/8-18	4	
	I16 of RFC0001	Bolt, Mtg Ant Sec 1 to 2 3/8-24x3 1/4	6	
	I17 of RFC0001	Washer, Flat 3/8	24	
	I18 of RFC0001	Washer, Lock 3/8	12	
	I27 of RFC0001	Nut, Hex, Mtg Ant Sec 1 to 2 3/8 24	12	
12	I7 of RFC0001	ANCHOR ANTENNA	3	B
13	50019-1142B2-13	BAG ASSY, SHELTER, containing	2	B
	50019-1142B1	Bag, Cotton Duck	2	
	2360-4002B1	Shelter Guy, secured by	4	
33	13225-1	Strap Assy	2	

TABLE 4-5. SHELTER 2100, STOWED EQUIPMENT LIST (Continued)

Fig 4-5 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3200B5-2	Strap Assy, Webbed attached to	3	
34	50019-3542B1 (3542D2)	Plate, Mtg Assy, attached by	4	
	MS35307-308	Screw, hex, hd. 1/4-20x1"	16	
	MS35338-139	Lockwasher	16	
	MS15795-810	Flatwasher	16	
14	2360-4008B1	GROUND ROD	1	B
15	TYPE 55	INTERCONNECTING DUCTS	3	B
16	MOL IT 206128	GROUND RODS (P/O LORAN "C" ANT) secured by	20	B
30	50019-3200B5-5	Strap Assy,	2	
37	50019-2336D8	Angle, Stop, attached by	2	
	MS35307-308	Screw, hex hd 1/4 20x1	6	
	MS15795-810	Washer, flat	6	
	MS35338-139	Washer, lock	6	
17	MOC202021	BASE, ANTENNA	1	B
18	MOL202022	ANTENNA, WHIP w/isolator & mtg hdw, attached by	1	B
31	50019-3200B5-1	Strap Assy	3	
19	MOL203007	CASE, CAMERA C-12	1	A
20	MOL203006	CAMERA, SCOPE C-12	1	A
21	MOL203009	CART, SCOPE secured by	1	A
33	13225-1	Strap Assy attached to	2	

TABLE 4-5. SHELTER 2100, STOWED EQUIPMENT LIST (Continued)

Fig 4-5 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
34	50019-3542B1 (3442D2)	Plate, Mtg Assy attached by	4	
	MS35307-308	Screw, hex hd 1/4-20x1	16	
	MS35338-139	Lockwasher	16	
	MS15795-810	Flat washer	16	
	REF	INTERSHELTER WIRING secured by		
41	MIL-T-7130	Lacing Cord	A/R	
30	50019-3200B5-2	Strap Assy, Webbed	4	

TABLE 4-6. SHELTER 2200, STOWED EQUIPMENT LIST

Fig 4-6 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
1		SK50019-2242D4	TRANSIT PLATE - attached by	1	C
	30	50019-3811B2-1	Stiffener, Trans, Pl. Instl	1	C
		MS35307-317	Screw, hex hd, 1/4-20x2 3/4	4	
		MS15795-810	Washer, flat 1/4	4	
		MS35338-139	Washer, lock 1/4	4	
		50019-2242D3-1	Wood beam	1	
		50019-2243D3-2	Wood beam	1	
2		.250DIAx10'Lg	GROUND WIRE	1	C
3		50019-1142B2-11	BAG, COTTON ASSY - containing	1	C
		50019-1142B1	Bag, Cotton Duck	1	
		2360-4002B1	Shelter Guy - secured by	4	
	31	13225-1	Strap Assy - attached to	2	
	32	50019-3542B1 (3542D2)	Plate, Mounting Assy, - attached by	4	
		MS35307-308	Screw, hex, hd, 1/4-20x1"Lg	16	
		MS15795-810	Washer, flat 1/4	16	
		MS35338-139	Washer, lock 1/4	16	
4		50019-1119D5-7	POWER ENTRANCE COVER	1	C
5		50019-2228B3	POWER ENTRANCE COVER	1	C
		COML	Mailing Bag Containing cover hdw attached	2	
	48	50019-3834D13	Door Stop-secured by	3	
		21-40910-16	Nut 1/4-20	6	

TABLE 4-6. SHELTER 2200, STOWED EQUIPMENT LIST (Continued)

Fig 4-6 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS35338-139	Washer, lock 1/4	6	
		MS35307-305	Screw, hex head 1/4-20 x 5/8	6	
6		2360-4003-01	PULLMAN, containing	2	C
			Pullman Drape RFI	1	
		MIL-M-15562C	Matting, Floor	2	
		COML	Cloth Bag, Cotton each w/23 SST bolts, secured by	4	
	33	50019-3200B5-4	Strap Assy	1	
	34	13225-2	Strap Assy, attached to	1	
	32	50019-3542B1 (3542D2)	Plate, Mounting Assy	2	
		MS35307-308	Screw, hex had 1/4-20x1	8	
		MS15795-810	Washer, flat 1/4	8	
		MS35338-139	Washer, lock 1/4	8	
7		MOL205002	REEL AND CABLE (GFE), secured by	1	B
	35	50019-3200B5-2	Strap Assy, Webbed, attached to	2	
	32	50019-3542B1 (3542D2)	Plate, Mounting Assy, attached by	4	
		MS35307-308	Screw, hex hd 1/4-20x1	8	
		MS15795-810	Washer, flat 1/4	8	
		MS35338-139	Washer, lock 1/4	8	
8		50019-1142A1-1 (2200)	JACK BOX INSTL., attached by	1	A
		MS35307-306	Screw, hex hd 1/4-20x3/4	6	

TABLE 4-6. SHELTER 2200, STOWED EQUIPMENT LIST (Continued)

Fig 4-6 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS15795-810	Washer, Flat	6	
		MS35338-139	Washer, lock, split	6	
	44	MOL122005	Tarpaulin	1	
	45	50019-1342B3	TEMP POWER LIGHT ASSY- secured by	1	
	46	50019-3200B5-5	Strap Assy	2	
9		2360-4006B1	WALKWAY (Large)	1	D
10		50019-2216D11	WALKWAY (Small), attached by	1	D
11		2063-1116B2	STEP w/Mailing Bag attached containing step hardware attached by	1	D
			Screw, hex hd 1/4-20x7/8	4	
		MS35338-139	Washer, lock 1/4	4	
		MS15795-810	Washer, flat 1/4	4	
12		2360-4005-03	PULLMAN DRAPE BRKT ASSY	4	D
13		2360-4008B1	GROUND ROD	1	D
	35	50019-3200B5-2	Strap Assy, Webbed	2	
	31	13225-1	Strap Assy	2	
	33	50019-3200B5-4	Strap Assy, attached to	1	
	41	50019-2242D2	Wood Beam	1	
	42	50019-2242D1	Bumper, Rubber	1	
	14	RFC0001I43	MTG BRKT TTY MACH, attached by	1	A
		MS51957-47	Screw, pan hd 8-32x3/4	2	
		MS51795-807	Washer, flat #8	2	

TABLE 4-6. SHELTER 2200, STOWED EQUIPMENT LIST (Continued)

Fig 4-6 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35338-137	Washer, lock #8	2	
	MS35649-284	Nut, hex no. 8-32	2	
43	50019-3200B5-1	Strap Assy, Webbed, secures chair	2	
		Polyurethane, 1/8 in. thk, wrapped around chair	A/R	
		Styrofoam 24" x 8" x 1	A/R	

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
51	MB10388	PORTABLE LIGHT	1	
1	50019-1142A1-1	JACK BOX INSTL - attached by	1	A
	MS35307-306	Screw, hex hd 1/4-20x3/4	6	
	MS35338-139	Washer, lock, split 1/4	6	
	MS15795-810	Washer, flat 1/4	6	
2	50019-3533B1	AIR CONDITIONER Lg	1	B
3	NO. 8	WIRE GROUND - secured by	12'	B
30	14160-1	Strap Assy	4	
4	50019-1116C16	CABLE ASSY - secured by	1	B
32	50019-3200B5-2	Strap Assy, Webbed	2	
5	2845	CHAIR - secured by	1	N/A
32	50019-3200B5-1	Strap Assy, Webbed	2	
6	50019-2338B5	SPOOL, Wire, MOD - secured by	3	B
33	50019-2338D3	Spacer, Wire Spool	2	
34	13225-1	Strap Assy	12	
7	COML	MAILING BAG, COTTON containing Cover hdw	1	B
8	50019-1119D5-6	POWER ENTRANCE COVER - secured by	1	B
35	50019-3200B5-3	Strap Assy, Webbed	2	
53	50019-2338B5-2	SPOOL, WIRE MOD	3	
54	MOL 122005	TARPAULIN	1	
55	50019-1342B3	TEMPORARY POWER LIGHT ASSY	1	
9	MOL202030	GENERATOR, PORTABLE w/PALLET - secured by	1	B

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (Continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
34	13225-1	Strap Assy	3	
	MS35307-308	Screw, cap, hex hd 1/4-20x1	4	
	MS35338-139	Washer, lock 1/4	4	
10	P/O MOL 20213	BOX GFE	1	B
11	P/O MOL 20213	BOX GFE - secured by	1	B
36	50019-3200B5-5	Strap Assy	2	
34	13225-1	Strap Assy	3	
12	50019-1142B6-2	BAG, UTILITY (2x1 1/2)	1	B
13	MOL202009	HEAD SET	2	
14	MOL202008	HAND KEY - secured by	1	
52	50019-3200B5-4	Strap Assy, Webbed	2	
15	.250DIAx10'	GROUND WIRE	10'	B
16	50019-1142B2-4	BAG ASSY, STOWAGE - containing	1	B
	50019-1142B1	Bag, Cotton Duck	1	
	2360-4002B1	Shelter Guy	4	
	2360-4010B1	Guy, Shelter to Shelter	2	
	2360-4009B1	Guy, Shelter to Shelter	1	
17	50019-2342D1	SPACER, ANCHOR	1	B
18		ANCHOR, ANTENNA - secured by	6	B
34	13225-1	Strap Assy,	3	
32	50019-3200B5-1	Strap Assy, Webbed	3	
37	3013T	Eye Bolt 3/8-16	6	
19		(Not Removed)		

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
20		TTY MANUALS as follows: (GFE)		N/A
	Model 28	ASR Tech Manual	1	
	MD1-6	Manufacturing Data	1	
	295B	TTY Manual	1	
	1169B	TTY Manual	1	
	258B	TTY Manual	1	
	249B	TTY Manaal	1	
	250B	TTY Manual	1	
	246B	TTY Manual	1	
	247B	TTY Manual	1	
	235B	TTY Manual	1	
	1167B	TTY Manual	2	
	1161B	TTY Manual	2	
21		GROUND ROD (For Loran C antenna) - secured by	40	B
31	50019-3200B5-2	Strap Assy, Webbed	4	
		ATTACHING HARDWARE		
39	50019-3811B2-3	Wood Beam 2x4x32 - attached by	1	
	MS35307-368	Screw, hex hd 3/8-16x2 1/2	2	
	21-41310-16	Nut, anchor 3/8-16	2	
	MS15795-814	Washer, flat 3/8	2	
41	50019-2338B4 (2338D5)	Plate Mtg Assy - attached by	8	

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35307-360	Screw, cap, hex hd 3/8-16x1	32	
	MS35338-141	Wahher, lock 3/8	32	
	MS15795-814	Washer, flat 3/8	32	
42	50019-3637B7	Plate Mtg Instl - attached by	2	
	MS35307-308	Screw, hex hd 1/4-20x1	8	
	MS35338-139	Washer, lock 1/4	8	
	MS15795-810	Washer, flat 1/4	8	
43	50019-3542B1 (3542D2)	Plate Mtg Assy	5	
45	50019-2336D5	Plate Mtg, Floor with	4	
	FDK3171	Ring and Clip - attached by	4	
	MS35307-307	Screw, cap, hex hd 1/4-20x7/8	16	
	MS35338-139	Washer, lock 1/4	16	
	MS15795-810	Washer, flat 1/4	16	
46	50019-2336D8	Angle, Stop - attached by	3	
	MS35307-308	Screw, cap, hex hd 1/4-20x7/8	9	
	MS35338-139	Washer, lock 1/4	9	
	MS15795-810	Washer, flat 1/4	9	
22	50019-2338B3	WIRE STOWAGE INSTL - attached by	1	B
	MS51957-89	Screw, pan hd 1/4-20x2 3/4	6	
	MS35338-139	Washer, lock 1/4	6	

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS15795-810	Washer, flat 1/4	6	
23	50019-2336B2	PLATE, ANTENNA INSTL - attached by	1	
	MS51957-91	Screw, pan hd 1/4-20x3	8	
	MS15795-811	Washer, flat 1/4	8	
	MS15795-815	Washer, flat 1/4	8	
	MS35338-139	Washer, lock 1/4	8	
24	MOL202022	ANTENNA, WHIP with	2	B
		Isolator	2	
		Screw, cap hex hd	8	
		Washer, flat 5/8	8	
		Washer, lock 5/8	8	
		Nut, hex 5/8-18	8	
		Screw, cap hex hd	12	
		Washer, flat 3/8	48	
		Washer, lock 3/8	12	
		Nut, hex 3/8-24	24	
32	50019-3200B5-1	Strap Assy, Webbed	3	
25	SK50019-2300D1	TRANSIT PLATE - attached by	1	B
	MS35307-317	Screw, cap, hex hd 1/4-20x2 3/4	6	
	MS15795-811	Washer, flat 1/4	6	
	MS35338-139	Washer, lock 1/4	6	
	50019-2342D2	Spacer, wood	6	

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
26	2360-4008B1	GROUND ROD	1	B
27	50019-1142B10	EXTERNAL LIGHT ASSY	1	A
	MIL-T-7130	Polyurethane 12x12x1/8 in thk leving card		A/R
7	COML	MAILING BAG, COTTON containing CKT Brk Panel and Cabinet keys	2	N/A
28	50019-2342B2	BIN INSTL -containing:	1	N/A
	PM0450	Manual RF301E	2	
		Manual Freq. Shift Converter Model 1946A	2	
		Manual Dual Keyer FSK Type RF2068A	1	
29	50019-2342B1	BIN INSTL - containing:	1	N/A
	0967-191-7010	Rad. Trans. Set Man URT-23	4	
	Model 8890	Bird Dummy Load Instr Book	1	
		Communication System Man	2	
	TD-1	Communication Test Data	1	
	MD1-6	Mfg Data	1	
	50019-1116C14	Cable, External	1	
	MOL203016	Ohmmeter W/Case	2	
	MOL203031	Rectifier Test Set	1	
	MOL202028	SSB Test Set	1	
	50019-1142B6-2	Bag, Utility, containing	2	
		Std Accessory Pack	2	

TABLE 4-7. SHELTER 2300, STOWED EQUIPMENT LIST (continued)

Fig 4-7 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
		Patch Cords	3	
		Dual Keyer FSK Type RF 2068A with manual	1	
	50019-1142B6-1	Bag, Utility, containing	1	
		Cable, W-40, W-41, W-42, W-43	1 set	
		AN/URA-23 Hdw	2 sets	
		Antenna Coupler Hdw	2 sets	
	MOL202029	VHF-FM Port. Transceiver	3	
	MOL203029	Decade Resistor	1	
	MOL202025	Coupler Pressure Kit	1	
	MOL203020	Tube Tester	1	
	50019-1142B6-1	Bag, Utility, containing	1	
		Ring, Guy Collecbor	2	
		Ring, Guy Collector	2	
		Rope, Guy (Roll)	2	
		Stake, Base Plate	8	
		Ring, Guy Collector	2	
		Connector between antenna and coupler	2	
50	50019-2336B3	TELETYPE BRACE - attached by	1	
	MS51957-91	Screw, pan hd 1/4-20x3	4	
	MS35338-139	Washer, lock 1/4	4	
	MS15795-810	Washer, flat 1/4	4	

TABLE 4-8. SHELTER 2400, STOWED EQUIPMENT LIST

Fig 4-8 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-2	WOOD BEAM 2 x 4 x 32	1	A
31	3811B2-3	WOOD BEAM 2 x 4 x 32-attached by	1	B
	MS35307-368	Screw, hex hd 3/8-16 x 2 1/2	2	
	MS15795-814	Washer, flat 3/8	2	
	21-41310-16	Nut, anchor 3/8-16	2	
1	50019-1142B8 (2400)	JACK BOX INSTL MOD attached by	1	A
	MS35307-306	Screw, hex hd 1/4-20 x 3/4	6	
	MS35338-139	Washer, lock, split 1/4	6	
	MS15795-811	Washer, flat 1/4	6	
2	COML	MAILING BAG containing cabinet keys	1	N/A
3	2360-4003-01	PULLMAN - containing	1	A
4	COML	Bag, Cotton - each containing 33 SST bolts - secured by	2	
5	50019-1119B2	AIR CONDITIONER - secured by	1	N/A
32	50019-3200B5-4	Strap Assy	3	
.	2360-GEN-A2-X4	Angle with Hardware	2	
32	50019-3200B5-4	Strap Assy	1	
	2360-GEN-A2-X4	Angle with Hardware	2	
6	Type 55	INTERCONNECTING DUCT-secured by	1	A
33	50019-3200B5-5	Strap Assy	1	
7	2360-4007B1	WALKAWAY SM	1	B

TABLE 4-8. SHELTER 2400, STOWED EQUIPMENT LIST (Continued)

Fig 4-8 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
8	2360-4008B1	GROUND ROD	1	A
9	COML	GROUND WIRE, .250 dia x 10 ft	1	A
10	50019-1142B10	EXTERNAL LIGHT ASSY	1	B
		Polyurethane 12x12x1/8 in. thk	A/R	N/A
	MIL-T-7130	Lacing Cord	A/R	
33	50019-3200B5-5	Strap Assy	6	
39	50019-3200B5-2	Strap Assy	2	
40	50019-3200B5-1	Strap Assy	1	

TABLE 4-9. SHELTER 2500, STOWED EQUIPMENT LIST

Fig 4-9 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
1	50019-2542B1	BULK STOWAGE, Containing	1	A
	P1S19I1G	Vac. Cleaner Hose	1	
	P1S27I4G	Air Blower, Portable	2	
	P1S17I28G	File Vix. Index, 16 slide Kardex C8516	2	
	P1S9I10G	Fan. Circulating 12 in.	3	
	P1S17I13G	Waste Paper Basket (7 per ctn)	1	
	P1S20I6G	Wringer and Bucket	1	
	P1S19I1G	Cleaner, Vacuum House - secured by	1	
	FDC1555-121	Net, Cargo	1	
30	50019-3642D1	Angle, Support, (30)	2	
31	50019-3642D2	Angle, Support (48) - attached by	2	
	MS35307-359	Screw, hex hd 3/8-16 x 7/8 Lg	20	
	MS35338-141	Washer, lock 3/8	20	
	MS15795-814	Washer, flat 3/8	20	
2	P1S20I4G	BROOM	3	A
3	P1S1I2G	RAKE	2	A
4	58x1½x1½	CROWBAR	2	A
5	P1S20I1G	MOP	1	A
6	P1S6I26G	SHOVEL	2	A
7	P1S22I7G	STRETCHER (ctn)	1	A

TABLE 4-9. SHELTER 2500, STOWED EQUIPMENT LIST (Continued)

Fig 4-9 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
8	50019-1142B2-5	BAG ASSY, STOWAGE, containing	1	A
		Screw Anchors	2	
	50019-1142B1	Bag, Cotton Duck	1	
	2360-4002B1	Shelter Guy	2	
	2360-4010B1	Guy, Shelter to Shelter secured by	2	
32	50019-3200B5-1	Strap Assy	2	
33	13225-1	Strap Assy - attached to	2	
34	50019-3542B1 (3542D2)	Plate Mtg Assy - attached by	4	
	MS35307-308	Screw, hex hd 1/4-20x1	16	
	MS35338-139	Washer, lock 1/4	16	
	MS15795-810	Washer, flat 1/4	16	
9	2360-4007B1	WALKAWAY - attached by	1	A
	MS35307-307	Screw, hex hd 1/4-20x7/8	3	
	MS15795-810	Washer, flat 1/4	3	
	MS35338-139	Washer, lock 1/4	3	
10	2360-1116B2	STEP w/Mailing Bag attached containing step hdw	1	A
11	P1S22I4G	ROLL, DUCK COTTON - secured by	1	A
32	50019-3200B5-1	Strap Assy	2	
12	I206129	COPPER WIRE #8, 1,000' REEL	2	A
	50019-1142B6-2	Bag, Utility - secured by	1	
35	50019-3200B5-4	Strap Assy	2	

TABLE 4-9. SHELTER 2500, STOWED EQUIPMENT LIST (Continued)

Fig 4-9 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
13		50019-1142A1-1 (2500)	JACK BOX INSTL MOD - attached by	1	A
		MS35307-306	Screw, hex hd 1/4-20x3/4	6	
		MS35338-139	Washer, lock, split 1/4	6	
		MS15795-810	Washer, flat 1/4	6	
14		2360-4003-01	PULLMAN - containing	1	A
			Cloth Bag each containing 33 SST bolts	2	
15		TYPE 55	INTERCONNECTING DUCT	1	A
16		.250DIAx10'LG	GROUND WIRE	1	A
17		2360-4008B1	GROUND ROD	1	A
18		50019-1142B10	EXTERIOR LIGHT	1	A
19		50019-1119B2	AIR CONDITIONER - secured by	1	N/A
			Polyurethane 12x12x1/8 in. thk		
		MIL-T-7130	Lacing Cord	A/R	
	35	50019-3200B5-4	Strap Assy	1	
		2360-GEN-A2-X4	Strap Assy	2	
20		COML	MAILING BAG, COTTON- containing cabinet keys	1	N/A
	36	50019-3811B2-2	STIFFENER, TRANSIT PLATE	1	N/A
		MS35307-368	Screw, cap hex head 3/8-16UNC-2Ax2 1/2	1	
		21-41310-16	Nut, anchor	1	
		MS35338-141	Washer, flat 3/8	1	

TABLE 4-10. SHELTER 2600, STOWED EQUIPMENT LIST

Fig 4-10 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-1	WOOD BEAM, 2.0x4.0x62.0 lg - attached by	1	B
	MS35307-368	Screw hex hd (3/8-16x2 1/2 lg)	2	
	21-41310-16	Nut, anchor	2	
	MS15795-814	Washer, flat	2	
1	50019-3833A1-2	A/C RACK ASSY, - attached by	1	B
	MS35307-360	Screw, hex hd (375-16x1 lg)	16	
	MS35338-141	Washer, lock, split	16	
	MS15795-814	Washer, flat	16	
	MS35307-308	Screw, hex hd (1/4-20x1 lg)	16	
	MS35338-189	Washer, lock, split	16	
	MS15795-811	Washer, flat (See Vol. I, Para. 2.8.2 Fig. 2-5 for disassembly)	16	
2	50019-1142A1-1 (2600)	JACK BOX INSTL - attached by	1	A
	MS35307-306	Screw, hex hd (1/4-20x3/4 lg)	6	
	MS35338-139	Washer, lock, split	6	
	MS15795-810	Washer, flat	6	
3	50019-1119D5-3	COVER, POWER ENTRANCE with	1	A
		Mailing Bag attached containing cover hdw	1	
4	2360-400301	PULLMAN, containing	2	A
47	MIL-M-15562C	Matting, Floor (2'x3')	2	
46	C17SR1500-3400-9898	Duct	1	

TABLE 4-10. SHELTER 2600, STOWED EQUIPMENT LIST (Continued)

Fig 4-10 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	3/8-16x1"lg	Bolt	132	
	C175R-1500-25200-9898	Tubing, Flex - secured by	1	
31	50019-3200B5-1	Strap Assy	1	
5	TYPE 55	DUCT - attached by	3	B
	QS200-M64S	Breeze Clamp	2	
6	TYPE 55	DUCT - attached by	1	B
	QS200-M96S	Breeze Clamp	2	
7	2360-1116B1	STEP with	2	B
		Mailing Bag attached containing Step hdw - attahced by	1	
	MS35307-308	Screw, hex hd (1/4-20x1" lg)	4	
	MS35307-307	Screw, hex hd (1/4-20x7/8" lg)	4	
	MS35338-139	Washer, lock 1/4	8	
	MS15795-809	Washer, flat 1/4	8	
		Stypofoam 15x48x1/2 in. thk		
8	50019-2228D4	BOOT, CANVAS	1	
9	50019-2614D6	BOOT, CANVAS - attached by	1	
	QS200-M64S	Breeze Clamp	1	
10	REF	INTERSHELTER WIRING - secured by		B
33	50019-3200B5-3	Strap Assy	2	
34	50019-3637B8	Bracket Assy	2	
11	#8	WIRE, GROUND INSUL (COLOR GREEN)	12'	B
12	.250DIAx10'lg	WIRE, GROUND BARE	10'	B

TABLE 4-10. SHELTER 2600, STOWED EQUIPMENT LIST (Continued)

Fig 4-10 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
13		50019-1142B2-9	COTTON BAG ASSY - containing	1	B
		50019-1142B1	Bag, Cotton Duck	1	
		2360-4002B1	Shelter, Guy	4	
		2360-4009B1	Shelter to Shelter, Guy	2	
		COML	Mailing Bag attached - containing	1	
			Workbench Keys - secured by		
	35	13225-2	Strap Assy - attached to	2	
	36	50019-3542B1 (354202)	Plate, Mtg Assy (Floor) - attached by	2	
		MS35307-308	Screw, hex hd (1/4-20x1"lg)	8	
		MS35338-139	Washer, lock 1/4	8	
		MS15795-810	Washer, flat 1/4	8	
	37	50019-3542B1 (3542D2)	Plate, Mtg Assy (Wall)	2	
		MS35307-310	Screw, hex hd (1/4-20x1 1/4" lg)	8	
		MS35338-139	Washer, lock 1/4	8	
		MS15795-810	Washer, Flat 1/4	8	
14		REF	INTERSHELTER WIRING - secured by		B
	38	50019-3200B5-4	Strap Assy	4	
		MIL-T-7130	Lacing Cord	A/R	
15		2360-4007B1	WALKWAY (Small)	1	B
16		2360-4006B1	WALKWAY (Large)	1	C
17		2360-4008B1	GROUND ROD	1	B

TABLE 4-10. SHELTER 2600, STOWED EQUIPMENT LIST (Continued)

Fig 4-10 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
18	50019-1142B10	EXTERNAL LIGHT INSTL	1	A
	MIL-T-7130	Lacing Cord	A/R	
19	REF	INTERNAL WIRING - secured by		N/A
	MIL-T-7130	Lacing Cord	A/R	
43	50019-3200B5-2	Strap Assy	2	
34	50019-3637B8	Bracket Assy - attached by	4	
	MS35307-308	Screw, hex hd (1/4-20x1" lg)	8	
	MS35338-139	Washer, lock	8	
	MS15795-809	Washer, flat	8	
	REF	WORKBENCH - containing	N/A	N/A
20	50019-1116C21-1	CABLE, EXTERNAL W711	1	B
21	-2	W712	1	B
22	-3	W713	1	B
23	-4	W714	1	B
24	50019-1116C21-5	CABLE, EXTERNAL W715	1	B
		Polyurethane 12x12x1/8 in. thk		
25	50019-1116C21-6	CABLE, EXTERNAL W716	1	B
26	50019-1116C21-7	CABLE, EXTERNAL W717	1	B
27	P/O OS-147/FPN	OSCILLOSCOPE HOOD, H.P.	1	
28	H06-120B	TCG OSCILLOSCOPE MANUAL	1	
44	50019-1142B12-4	BOX, CABLE ELECT-secured by	1	
45	13225-2	Strap Assy - attached to	3	

TABLE 4-10. SHELTER 2600, STOWED EQUIPMENT LIST (Continued)

Fig 4-10 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	50019-3542B1	Plate, Mounting Assy attached by	6	
	MS35307-308	Screw, hex head, 1/4-20 x 1 in. lg.	24	
	MS15795-810	Flatwasher, 1/4	24	
	MS35338-139	Lockwasher, 1/4	24	

NOTE: 1. Cables index No. 20 through 26 are provided in two lengths. The longer cables are for up to 20 feet of separation between shelters 2600 and 3500. The shorter cables are for 2 1/2 feet separation between shelters 2600 and 3500.

2. Door from shelter 2600 facing 3500 shelter is removed for operational mode and stowed with door from 3500 in shelter 3500 opposite circuit breaker.

TABLE 4-11. SHELTER 2700, STOWED EQUIPMENT LIST

Fig. 4-11 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-2	WOOD BEAM 2x4x32	1	B
31	50019-3811B2-3	WOOD BEAM 2x4x32	1	A
	MS35307-368	Screw, hex hd, 3/8-16x2 1/2	2	
	MS15795-814	Washer, flat 3/8	2	
	21-41310-16	Nut, anchor 3/8-16	2	
1	50019-1142A1-1 (2700)	JACK BOX INSTL MOD - attached by	1	A
	MS35307-306	Screw, hex hd 1/4-20x3/4	6	
	MS35338-139	Washer, lock, split 1/4	6	
	MS15795-811	Washer, flat 1/4	6	
32	50019-3200B5-5	Strap Assy	1	
2	COML	MAILING BAG, Cotton containing cabinet and desk keys	1	N/A
	MIL-T-7130	Lacing Cord	A/R	
3	2360-2700AZ-J	CHAIR (marked 2700)	2	N/A
4	GFE	WASTEPAPER BASKET	1	N/A
5	16x68x1 thk	STYROFOAM SHEET	1	N/A
33	50019-3200B5-2	Strap Assy	2	
34	CL200M	Bracket (stenciled 2700)	4	
		Bolt 3/8 x 5 1/2	4	
		Lockwasher 3/8	4	
		Flatwasher 3/8	4	
		Pipe sleeve 1/2 x 4 1/2	4	
		Washer 3/8	4	

TABLE 4-11. SHELTER 2700, STOWED EQUIPMENT LIST (Continued)

Fig. 4-11 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
6		2360-4007-B1	WALKWAY SMALL - attached by	1	
7		2360-4003-01	PULLMAN - containing	1	A
8		TYPE 55	DUCT, INTERCONNECTING	1	
9		COML	BAG, CLOTH - each containing 33 SST bolts - secured by	2	
	39	50019-3200B5-4	Strap Assy	1	
10		50019-1119B2	AIR CONDITIONER SM - secured by	1	N/A
		2360-GEN-A2-x4	Strap Assy	2	
			See 3 x 2 3/4 x 34" lg	2	
			Bolt 1/4-20 x 1 1/4 in. lg	6	
			Nut 1/4-20	6	
			Washer 1/4	6	
11		.250 DIA x 12'	GROUND WIRE	12'	B
12		2360-4008B1	GROUND ROD	1	N/A
13		50019-1142B10	EXTERNAL LIGHT ASSY	1	A
		MIL-T-7130	Lacing Cord	A/R	
	33	50019-3200B5-2	Strap Assy	3	
14		50019-2742B1	STORAGE CABINET ASSY - containing	1	N/A
15			Typewriter	1	N/A
16		GFE	GUN CABINET - containing	1	N/A
15			Typewriter	1	N/A
17		MOL 117015	Memo Pad	1	
			Polyurethane 12x12x1/8 in. thk		

TABLE 4-12. SHELTER 3100, STOWED EQUIPMENT LIST

Fig. 4-12 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
1	COML	MAILING BAG, 5.0x8.0 - containing	1	A
	GFE	Keys, Interlock, spare	6	
30	50019-3200B5-3	Strap Assy	2	
2	50019-1142A1-1 (3100)	JACK BOX - attached by	1	A
	MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
	MS35338-139	Washer, lock, 1/4	6	
	MS15795-810	Washer, flat. 1/4	6	
3	2360-4003-01	PULLMAN	1	A
3A	COML	Cloth Bag, 4.0x6.0 - containing	2	
3B	COML	Screw, hex hd, 3/8-16x1.00 SST (each 3A contains 33 of 3B)	66	
3C	50019-3018B1	Conduit, flexible, 1/2DIAx 3 ft Lg	1	
3D	50019-3114B8	Flex bedd, 1/2 DIA	1	
31	COML	Masonite, 36x24 Lg 1/4 in. thk	2	
4	COML	Mailing Bag, 5.0x8.0 - containing	1	A
	GFE	Fuse pullers and gauges		
5	TYPE 55	INTER SHELTER DUCT, 4.0DIAx50.0	1	A
6	TYPE 55	INTER SHELTER DUCT, 6.0DIAx50.0	1	A
30	50019-3200B5-3	Strap Assy	4	
17	50019-3313B3	CHANNEL, Stabilizing - attached by	1	

TABLE 4-12. SHELTER 3100, STOWED EQUIPMENT LIST (Continued)

Fig. 4-12 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35307-364	Screw, hex hd, 3/8-16x1 1/2	4	
	MS35649-2384	Nut, hex, 3/8-16	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-814	Washer, flat, 3/8	4	
7	50019-1119D5-3	COVER, POWER ENTRANCE with mailing bag attached containing cover hardware	1	A
32	50019-3200B5-5	Strap Assy	2	
8	COML	MAILING BAG, 5.0x8.0 - containing step HDW	1	A
	MS35307-360	Screw, hex hd, 3/8-16x1.0	4	
	MS35649-2384	Nut, hex, 3/8-16	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-815	Washer, flat, 3/8	4	
9	2360-1116-B2	STEP - attached by	1	A
	MS35307-306	Screw, hex hd, 1/4-20x3/4	4	
	MS35338-139	Washer, lock, 1/4	4	
	MS15795-810	Washer, flat, 1/4	4	
10	50019-1142B10	EXTERNAL LIGHT	2	A
		Polyurethane 12x12x1/8 in. thk		
	MIL-T-7130	Lacing Cord	A/R	
11	50019-3125D1-1 (31/3200)	WALKWAY	1	A
12	2360-4008B1	GROUND ROD	1	A

TABLE 4-12. SHELTER 3100, STOWED EQUIPMENT LIST (Continued)

Fig. 4-12 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
13		COML	GROUND WIRE, Copper, .250 DIA x 10 ft Lg	1	A
14		50019-1142B2-6	BAG ASSY, STOWAGE - secured by	1	A
15		50019-1142B2-3	BAG ASSY, STOWAGE - secured by	1	A
	37	13225-1	Strap Assy	2	
	38	50019-3542B1	Plate, mounting - attached by	4	
	38A	MS35307-308	Screw, hex hd, 1/4-20x1.0	8	
	38B	MS51957-85	Screw, pan hd, 1/4-20x1 1/2	8	
		MS35338-139	Washer, lock, 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
		2360-4002B1	Guy, shelter	2	
		50019-1142B1	Bag, cotton duck	1	
16		P/O 50019-3100A1	MATTING, FLOOR - secured by	5	
	32	50019-3200B5-5	Strap Assy	2	
	39	50019-3200B5-2	Strap Assy	8	
	40	50019-3200B5-5	Strap Assy	2	
	41	50019-3200B5-4	Strap Assy (secures upper and lower lucite panel)	2	
	39	50019-3200B5-2	Strap Assy (secures shorting bar 1A3A1)	2	
	42	COML	Polyurethane, 20.0x20.0x1/8 thk	3	
		MIL-T-7130	Cord Lacing	A/R	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST

Fig. 4-13 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-1	WOOD BEAM, 2.0x4.0x62.0 lg	1	A
31	50019-3811B2-2	WOOD BEAM, 2.0x4.0x32.0 lg	1	B
	MS35307-368	Screw, hex hd, 3/8-16x2 1/2	3	
	21-41310-16	Nut, anchor, 3/8-16	3	
	MS15795-814	Washer, flat, 3/8	3	
		Cover, transit	2	
1	50019-1142A1-2 (3200)	JACK BOX - secured by	1	A
32	13225-2	Strap Assy	2	
33	50019-3542D2	Plate, mounting - attached by	4	
	MS35307-308	Screw, hex hd, 1/4-20 x 1.0 lg	16	
	MS35338-139	Washer, lock, 1/4	16	
	MS15795-810	Washer, flat, 1/4	16	
33A	MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
	MS35338-139	Washer, lock, 1/4	6	
	MS15795-810	Washer, flat, 1/4	6	
34	COML	GROUND WIRE, No. 8 AWG, green, 12 ft lg	1	B
	MIL-T-7130	Cord, lacing	A/R	
2	8C25	BOX, TUBE, large, USCG - secured by	2	B
32	13225-2	Strap Assy	2	
33	50019-3542B1	Plate, mounting - attached by	6	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS35307-308	Screw, hex hd, 1/4-20x1.0 lg	24	
		MS35338-139	Washer, lock, 1/4	24	
		MS15795-810	Washer, flat, 1/4	24	
3		50019-1142B10	EXTERIOR LIGHT	1	D
		MIL-T-7130	Lacing Cord	A/R	
	35	COML	GROUND WIRE, No. 8 green, 12 ft lg	1	
4		1087487G3	CAPACITOR, Large - secured by	8	
	36	50019-3200B5-5	Strap Assy	12	
		MS15795-810	Washer, flat, 1/4	40	
	38	50019-3232D9	Spacer, block	4	
	39	50019-3232D10	Spacer, block	6	
		MS35307-368	Screw, hex hd, 3/8-16 x 2 1/2 lg	16	
		MS51971-3	Nut, hex, 3/8-16	16	
		MS35338-141	Washer, lock, 3/8	16	
			Polyurethane 12x12x 1/8 in. thk		
		MS15795-814	Washer, flat, 3/8	32	
	40	50019-3232B2	Bracket, hold down - attached by	2	
		MS35307-307	Screw, hex hd, 1/4-20x1.0	8	
		MS35338-139	Washer, lock, 1/4	8	
		MS15795-810	Washer, flat, 1/4	8	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
42	REF	WIRE Bundle	1	
43	50019-3200B5-2	Strap Assy	1	
	COML	Polyurethane	A/R	
5	50019-3242B1	BULK STOWAGE - secured by	1	D
	FDC1555-129	Cargo Net	1	
	50019-3642D1	Angle, support, 30.0 lg attached by	6	
	MS35307-359	Screw, hex hd, 3/8-16x7/8	15	
	MS35338-141	Washer, lock, 3/8	15	
	MS15795-814	Washer, flat, 3/8	15	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	15	
	MS35338-139	Washer, lock, 1/4	15	
	MS15795-810	Washer, flat, 1/4	15	
	X477	Capacitor	2	
	X924	Transformer	1	
	X925	Transformer	1	
	X737	Circuit breaker	1	
	X559	Capacitor	2	
	X476	Capacitor	1	
	X561	Capacitor	1	
	X965	Coil	1	
	X469	Resistor	1	
	X341	Resistor	1	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 413 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		LTA-250	Test data	1	
		MOAC513	Manual, large A/C	1	
		L1-L7	Manual, Litcom	1	
		FSM	Manual, fire system	1	
		FD11-5B&3/5A	Manual, alarm	1	
		30-1700	Manual, small A/C	1	
		CG273-103	Manual, transmitter	3	
		SR100	Manual, intercom	1	
		AN/FPN44	Schematic, transmitter	1	
		TD-4	Test data, transmitter	1	
6		MB10388	PORTABLE LIGHT	1	
7		630	PATCH KIT	1	
8		SK-506	BOX, GLASS MANTLE, (USCG supplied)	2	D
9		4C/1000	BOX, TUBE, (USCG supplied)	2	D
10		50019-3434B1	BOX, STOWAGE, TRANSFORMER	1	D
11		50019-3234B4	BOX, LAPP INSULATOR - secured by	4	D
	45	50019-3200B5-3	Strap Assy	3	
	46	50019-3200B5-1	Strap Assy	3	
	36	50019-3200B5-5	Strap Assy	2	
	47	50019-3542B1	Plate, mounting - attached by	7	
		MS35307-308	Screw, hex hd, 1/4-20x1.0	28	
		MS35338-139	Washer, lock, 1/4	28	
		MS15795-810	Washer, flat, 1/4	28	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
12		COML	WIRE GROUND, .250DIA x 10ft lg	1	D
13		50019-1142B2-7	BAG ASSY, Stowage	1	D
	48	13225-1	Strap Assy	2	
	49	50019-3542B1	Plate, mounting - attached by	4	
		MS35307-310	Screw, hex hd, 1/4-20x1 1/4	16	
		MS35338-139	Washer, lock, 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
		2360-4002B1	Guy, Shelter	1	
		2360-4009B1	Guy, Shelter	1	
		50019-1142B1	Bag, cotton duck	1	
	50	COML	WIRE, 12 AWG, 18.0 lg	1	
14		CB110-C7	CAPACITOR, (USCG supplied) - attached by	4	D
		MS35307-307	Screw, hex hd, 1/4-20x1.0 lg	16	
		MS35338-139	Washer, lock, 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
	51	COML	MAILING BAG, 5.0x8.0 - containing hardware, plastic, (for coil)	1	
		MIL-T-7130	Cord, lacing	A/R	
15		50019-1142B6	BAG, UTILITY - containing	1	D
		TYPE 55	Duct, intershelter, 6. DIA x 50.0 lg	1	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		TYPE 55	Duct, intershelter, 4.0 DIA x 50.0 lg	1	
		C175R-1250-3400-9898	Duct, intershelter, 1.25 DIA x 50.0 lg	1	
16		50019-1142B6	BAG, UTILITY - containing	1	D
		50019-3200B5-3	Strap Assy	1	
		50019-3232D7	Box, styrofoam	1	
		50019-3232D8	Cover, styrofoam	1	
17		50019-1142B6	BAG, UTILITY - containing	1	D
		50019-3206D1	Channel, mtg	2	
		50019-3206D2-1	Channel, mtg	1	
		50019-3206D2-2	Channel, mtg	1	
		50019-3206D3-1	Channel, mtg	1	
		50019-3206D3-2	Channel, mtg	1	
		50019-3206D6	Channel, mtg - secured by	2	
	52	50019-3200B5-4	Strap Assy	2	
17A		50019-3200B5-3	Strap Assy	1	
18		AN/FPN-44	COIL, TANK - secured by	1	D
		50019-3234D1	ROD, Stiffener	4	
	52	50019-3200B5-4	Strap Assy	2	
	32	13225-2	Strap Assy	2	
	37	50019-3542B1 (3542D2)	Plate, mounting - attached by	7	
		MS35307-308	Screw, hex hd, 1/4-20 x 1.0 lg	28	

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35339-139	Washer, lock, 1/4	28	
	MS15795-810	Washer, flat, 1/4	28	
53	50019-3234B2	BUMPER, Rubber	1	
54	50019-3234B1	BUMPER, Rubber - attached by	2	
	MS35307-313	Screw, hex hd, 1/4-20x1 3/4	12	
	MS35338-139	Washer, lock, 1/4	12	
	MS15795-810	Washer, flat, 1/4	12	
55	MIL-M-15562C	MATTING, FLOOR	1	
	COML	Polyurethane - attached by	3	
	MIL-T-7130	Cord, lacing	A/R	
	50019-3200B5-3	Strap Assy	3	
19	50019-3234B3	BOX, Resistor	1	D
20	DO-157B	HARMONIC COIL, (USCG supplied)	1	D
21	50019-3234D2	BASE, Harmonic Coil - attached by	1	D
19A	MS35307-307	Screw, hex hd, 1/4-20x1.0	6	
21A	MS35307-303	Screw, hex hd, 1/4-20x1 1/2	4	
	MS35338-139	Washer, lock, 1/4	10	
	MS15795-810	Washer, flat, 1/4	10	
22	P/O 50019-3206A1	TUBING, Conductor, (from field change 11)	1	
	COML	Polyurethane	A/R	
	MIL-T-7130	Cord, lacing	A/R	
23	2360-4008B1	GROUND ROD	1	D

TABLE 4-13. SHELTER 3200, STOWED EQUIPMENT LIST (Continued)

Fig. 4-13 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
24	GFE	SHORTING ROD - secured by	1	D
43	50019-3200B5-2	Strap Assy	2	
26	COML	P/O PWR AMPL, 2.5 ohms, 140 w	1	
43	50019-3200B5-2	Strap Assy	2	
	COML	Polyurethane	A/R	
	MIL-T-7130	Cord, lacing	A/R	
27	REF	HOSE, Water - secured by	8	
43	50019-3200B5-2	Strap Assy	4	
28	1089179G2	SUPRESSOR, Parasitic secured by	4	
	COML	Polyurethane	A/R	
	MIL-T-7130	Cord, lacing	A/R	
29	COML	RESISTOR, P/O PWR AMPL 130 ohms, 140 W	1	
	COML	Polyurethane	A/R	
	MIL-T-7130	Cord, lacing	A/R	
56	50019-3642D3	Braket, hold down	3	

NOTE: Copper tubing unit to be lifted if unit is over exciter.

TABLE 4-14. SHELTER 3300, STOWED EQUIPMENT LIST

Fig. 4-14 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
1		50019-1142A1-1 (3300)	JACK BOX - attached by	1	B
		MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
		MS35338-139	Washer, lock, 1/4	6	
		MS15795-810	Washer, flat, 1/4	6	
2		COML	MAILING BAG, 5.0x8.0 - secured by	1	B
		MIL-T-7130	Cord, lacing	A/R	
		GFE	Keys, spare	6	
3		2360-4003-01	PULLMAN	1	B
3A		COML	Cloth bag, 4.0x6.0 - containing	2	
3B		COML	Screw, hex hd, 3/8-16 x 1.0 SST (each 3A contains 33 of 3B)	66	
3C		50019-3114B8	Conduit, flexible, 1/2 DIA x 3 ft lg	1	
3D		50019-3D18B1	Flex bend, 1/2 DIA	1	
	30	COML	Masonite, 3 ft x 2 ft x 1/4 in. thk	2	
	31	50019-3200B5-5	Strap Assy	2	
	32	50019-3200B5-4	Strap Assy	1	
4		50019-1119D5-3	COVER, POWER ENTRANCE - secured by	1	
	33	50019-3200B5-1	Strap Assy	2	
		S10B116	Rionut 10-32	7	

TABLE 4-14. SHELTER 3300, STOWED EQUIPMENT LIST (Continued)

Fig. 4-14 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS51958-64	Screw, pan hd 10-32x 5/8 in. lg	7	
		MS35338-138	Washer, lock No. 10	7	
		MS15795-808	Washer, flat No. 10	7	
5		TYPE 55	INTER SHELTER DUCT, 4.0 DIA x 50.0 lg	1	
6		TYPE 55	INTER SHELTER DUCT, 6.0 DIA x 50.0 lg	1	
	34	50019-3200B5-3	Strap Assy	4	
7		50019-3313B3	CHANNEL, Stabilizing - attached by	1	
		MS35307-364	Screw, hex hd, 3/8-16x1 1/2	4	
		MS35649-2384	Nut, hex, 3/8-16	4	
		MS35338-141	Washer, lock, 3/8	4	
		MS15795-814	Washer, flat, 3/8	4	
	35	50019-3200B5-2	Strap Assy (secures shorting bar)	1	
8		50019-1142B10	EXTERNAL LIGHT	2	
			Polyurethane 12x12x1/8 in. thk		
		MIL-T-7130	Lacing Cord	A/R	
9		COML	MAILING BAG, 5.0 x 8.0 - containing step HWR	4	
		MS35307-360	Screw, hex hd, 3/8-16x1.0	4	
		MS35649-2384	Nut, hex, 3/8-16	4	
		MS35338-141	Washer, lock, 3/8	4	
		MS15795-815	Washer, flat, 3/8	4	

TABLE 4-14. SHELTER 3300, STOWED EQUIPMENT (Continued)

Fig. 4-14 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
10		2360-1116-B2	STEP - attached by	1	
		MS35307-306	Screw, hex hd, 1/4-20x3/4	4	
		MS35338-139	Washer, lock, 1/4	4	
		MS15795-810	Washer, flat, 1/4	4	
11		COML	GROUNDING WIRE, copper .250 DIA x 10 ft lg	1	
12		50019-1142B2-6	BAG ASSY, Stowage- secured by	2	
	36	13225-1	Strap Assy	2	
	37	50019-3542B1 (3542D2)	Plate, mounting - attached by	4	
	37A	MS51957-83	Screw, pan hd, 1/4-20x1.0	8	
	37B	MS51957-85	Screw, pan hd, 1/4-20x1 1/2	8	
		MS35338-139	Washer, lock 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
		2360-4002B1	Guy, shelter	2	
13		50019-1142B1	Bag, cotton duck	1	
14		50019-3125D1-1 (3300/3400)	WALKWAY	1	
15		2360-4008B1	GROUND ROD	1	
		50019-3300A1	MATTING, Floor	5	
	42	50019-3200B5-5	Strap Assy	2	
	35	50019-3200B5-2	Strap Assy	5	
	43	COML	Polyurethane, 20.0x20.0x1/8 thk	3	
	49	MIL-T-7130	Cord, Lacing	A/R	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-1	WOOD BEAM, 2.0x4.0x62.0	1	
31	50019-3811B2-2	WOOD BEAM, 2.0x4.0x32.0	1	
	MS35307-368	Screw, hex hd, 3/8-16x2 1/2	3	
	21-41310-16	Nut, anchor, 3/8-16	3	
	MS15795-814	Washer, flat, 3/8	3	
		Cover, transit	2	
1	50019-1142A1-2 (3400)	JACK BOX - secured by	1	C
33	13225-2	Strap Assy	2	
34	50019-3542D2	Plate, mounting - attached by	4	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	16	
	MS35338-139	Washer, lock, 1/4	16	
	MS15795-810	Washer, flat, 1/4	16	
34A	MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
	MS35338-139	Washer, lock, 1/4	6	
	MS15795-810	Washer, flat, 1/4	6	
32	COML	GROUND WIRE, NO. 8 AWG, green, 12 ft lg	1	
	MIL-T-7130	Cord, lacing	A/R	
2	8C25	BOX, TUBE, large, USCG, secured by	2	C
33	13225-2	Strap Assy	3	
34	50019-3542B1	Plate, mounting - attached by	6	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	24	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued).

Fig. 4-15 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS35338-139	Washer, lock, 1/4	24	
		MS15795-810	Washer, flat, 1/4	24	
3		50019-1142B10	EXTERIOR LIGHT	1	C
		MIL-T-7130	Lacing Cord	A/R	
4		COML	POLYURETHANE - secured by	1	C
	35	50019-3200B5-2	Strap Assy	1	
5		50019-3442B1	BULK STOWAGE - secured by	1	D
		FDC1555-129	Cargo Net	1	
		50019-3642D1	Angle Support, 30.0 lg - attached by	6	
		MS35307-359	Screw, hex hd, 3/8-16x7/8	15	
		MS35338-141	Washer, lock, 3/8	15	
		MS15795-814	Washer, flat, 3/8	15	
		MS35307-308	Screw, hex hd, 1/4-20x1.0	15	
		MS35338-139	Washer, lock, 1/4	15	
		MS15795-810	Washer, flat, 1/4	15	
		X972	Transformer	1	
		X1075	Lamp	1	
		P2S8I120T	Tape, insulation, elec, 15 per	1	
		X644	Capacitor	2	
		P2S8I63T	Box, tool, 3 per	1	
		P2S6I125T	RVT-731, SYLASTIC, 8 per	1	
		X882	Relay	1	
		X992	8C25 Tube	1	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	P2S6I140T	Heat gun	1	
	P2S6I136T	Tubing, shrinkable, 1 1/2 dia 3 per	1	
	P2S6I30T	Lug, elec, 50 per	1	
	X1069	Insulator	2	
	X1078	Motor	1	
	X42	Resistor	1	
	X1097	Lamp	1	
	P2S1I1T	Cartridge, ionfilter, 6 per	1	
6	MB10388	PORTABLE LIGHT	1	D
7	630	PATCH KIT	1	D
8	SK-506	BOX, GLASS MANTLE, (U.S.C.G. supplied)	2	D
9	AC/1000	BOX, TUBE, (U.S.C.G. supplied)	2	D
10	50019-3434B1	BOX, STOWAGE, TRANSFORMER	1	D
11	50019-3234B4	BOX, LAPP INSULATOR - secured by	1	D
36	50019-3200B5-3	Strap Assy	2	
37	50019-3200B5-1	Strap Assy	2	
38	50019-3200B5-5	Strap Assy	3	
34	50019-3542D2	Plate, mounting - attached by	7	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	28	
	MS35338-139	Washer, lock, 1/4	28	
	MS15795-810	Washer, flat, 1/4	28	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15. Index No.		Part No.	Nomenclature	Qty Rqd	Opening
12		COML	WIRE, GROUND, .250 dia x 10 ft lg	1	
13		50019-1142B2-7	BAG ASSY, Stowage	1	
	39	13225-1	Strap Assy	2	
	34	50019-3542D2	Plate, mounting - attached by	4	
		MS35307-310	Screw, hex hd, 1/4-20x1 1/4	16	
		MS35338-139	Washer, lock, 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
		2360-4002B1	Guy, shelter	1	
		2360-4009B1	Guy, shelter	1	
		50019-1142B1	Bag, cotton duck	1	
	40	COML	MAILING BAG, 5.0 x 8.0 - containing hardware, plastic, (for coil)	1	
		MIL-T-7130	Cord, lacing	A/R	
			Screw, 55 3/8-16x5.0 lg	8	
		MS15795-815	Washer, flat 3/8	8	
	27	MIL-M-15562	MATTING, FLOOR	1	
	38	50019-3200B5-5	Strap Assy	1	
	35	50019-3200B5-2	Strap Assy	1	
14		50019-1142B6-1	BAG, UTILITY - containing	1	D
		TYPE 55	Duct, intershelter, 6.0 dia x 50.0 lg	1	
		TYPE 55	Duct, intershelter, 4.0 dia x 50.0 lg	1	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	C175R-1250-3400-9898	Duct, intershelter, 1.25 dia x 50.0 lg	1	
15	50019-1142B6-1	BAG, UTILITY - containing	1	D
	50019-3232D7	Box, styrofoam	1	
	50019-3232D8	Cover, styrofoam	1	
29	COML	Resistor, 13 ohms 140 w P/o Pwr AMPL	1	
	No. 2	Tronclip clamp	64	
16	50019-1142B6-1	BAG, UTILITY - containing	1	D
	50019-3206D2-1	Channel, mtg	1	
	50019-3206D2-2	Channel, mtg	1	
	50019-3206D3-1	Channel, mtg	1	
	50019-3206D3-2	Channel, mtg	1	
	50019-3206D6	Channel, mtg - secured by	2	
41	50019-3200B5-4	Strap Assy	4	
33	13225-2	Strap Assy	2	
36	50019-3200B5-3	Strap Assy	1	
34	50019-3542D2	Plate, mounting - attached by	3	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	12	
	MS35338-139	Washer, lock, 1/4	12	
	MS15795-810	Washer, flat, 1/4	12	
17	AN/FPN-44	COIL, TANK	1	
	50019-3234D1	Rod Stiffener	4	
42	50019-3234B1	BUMPER, Rubber	2	
43	50019-3234B2	BUMPER, Rubber - attached by	1	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35307-313	Screw, hex hd, 1/4-20x1 3/4	12	
	MS35338-139	Washer, lock, 1/4	12	
	MS15795-810	Washer, flat, 1/4	12	
44		TUBING, Conductor, (from field change 11)	1	
	COML	Polyurethane - secured by	1	
	MIL-T-7130	Cord, lacing	A/R	
18	2360-4008B1	GROUND ROD	1	
19	50019-3234B3	BOX, RESISTOR	1	
20	DO-157B	HARMONIC COIL, U.S.C.G. supplied	1	
21	50019-3234D2	BASE, Harmonic Coil - attached by	1	
19A	MS35307-307	Screw, hex hd, 1/4-20x1.0	6	
21A	MS35307-312	Screw, hex hd, 1/4-20x1 1/2	4	
	MS35338-139	Washer, lock, 1/4	10	
	MS15795-810	Washer, flat, 1/4	10	
22	CB110-C7	CAPACITOR, U.S.C.G. supplied - attached by	4	
	MS35307-307	Screw, hex hd, 1/4-20x1.0	16	
	MS35338-139	Washer, lock, 1/4	16	
	MS15795-810	Washer, flat, 1/4	16	
22A	COML	Wire, 12AWG, 18.0, lg	8	
23	P/O 50019-3404A1	SHORTING ROD - secured by	1	
35	50019-3200B5-2	Strap Assy	2	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
24		P/O 50019-3406A1	TUBING	1	
25		COML	RESISTOR, P/O PWR AMPL, 2.5 ohms, 140 w	1	
	35	50019-3200B5-2	Strap Assy	5	
		COML	Polyurethane	A/R	
		MIL-T-7130	Cord, lacing	A/R	
26		1089179G2	SUPRESSOR, PARASITIC - secured by	4	
		COML	Polyurethane	A/R	
		MIL-T-7130	Cord, lacing	A/R	
27			FLOOR MATTING		
		COML	Polyurethane	A/R	
		MIL-T-7130	Cord, lacing	A/R	
	51	COML	GROUND, WIRE, NO. 8 AWG, green, 12 ft lg	1	
28		1087487G5	CAPACITOR, Large - secured by	8	
	38	50019-3200B5-5	Strap Assy	18	
	34	50019-3542B1	Plate, mounting - attached by	10	
		MS35307-308	Screw, hex hd, 1/4-20x1.0	40	
	35	50019-3200B5-2	Strap Assy	2	
		COML	Polyurethane 1/8 thk	A/R	
		GFE	Copper tubing from capacitor item 28	-	
		MS35338-139	Washer, lock, 1/4	40	
		MS15795-810	Washer, flat, 1/4	40	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
45	50019-3232D9	Spacer, block	4	
46	50019-3232D10	Spacer, block - attached by	6	
	MS35307-368	Screw, hex hd, 3/8-16x2 1/2	16	
	MS51971-3	Nut, hex, 3/8-16	16	
	MS35338-141	Washer, lock, 3/8	16	
	MS15795-814	Washer, flat, 3/8	32	
47	50019-3232B2	Bracket, hold down - attached by	2	
	MS35307-307	Screw, hex hd, 1/4-20x1.0	8	
	MS35338-139	Washer, lock, 1/4	8	
	MS15795-810	Washer, flat, 1/4	8	
48	50019-3232B1	Bumper, rubber - attached by	8	
	MS35307-313	Screw, hex hd, 1/4-20x1 3/4	32	
	MS35338-139	Washer, lock, 1/4	32	
	MS15795-810	Washer, flat, 1/4	32	
49	REF	WIRE Bundle	1	
35	50019-3200B5-2	Strap Assy	2	
	COML	Polyurethane	A/R	
50	50019-3637B8	Bracket, - attached by	4	
	8L, JN	Jacknut, 1/4 - 20	8	
	MS35307-309	Screw, hex hd, 1/4-20x 1 1/8	8	
	MS35338-139	Washer, lock, 1/4	8	
	MS15795-810	Washer, flat, 1/4	8	

TABLE 4-15. SHELTER 3400, STOWED EQUIPMENT LIST (Continued)

Fig. 4-15 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
24	50019-3642D3	Bracket, hold down	3	

NOTE: Copper tubing unit to be lifted if unit is over exciter.

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST

Fig. 4-16 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
1	COML	MAILING BAG, 5.0x8.0 - containing	1	B
	MS51958-62	Screw, pan hd, 10-32x7/16	14	
	MS35338-138	Washer, lock, No. 10	14	
	MS15795-808	Washer, flat, No. 10	14	
57	SK 50019-1119D5-4	Cover, power entrance	1	B
64	MOL 12205	Tarpaulin, secured by		
	50019-3200B5-5	Strap Assy		
65		Mailing Bag, Cotton 5 x 8 containing		
		Washer, flat, No. 10		
		Washer, lock, No. 10		
		Screw, pan head 10-32 x 7/16 in. lg.		
	SK 50019-1119D5-4	Cover, power entrance	1	B
	Sk 50019-1119D5-5	Cover, power entrance	1	B
	2360-4003-B1	Pullman	1	B
	COML	Cloth Bag, 4.0x6.0 - containing	2	
	COML	Screw, hex hd, 3/8-16x 1.0 lg, SST (each bag contains 33 screws)	66	
30	50019-3200B5-4	Strap Assy	2	
31	50019-2338B4	Plate, mounting - attached by	4	
	MS35307-360	Screw, hex hd, 3/8-16 x 1.0 lg	16	

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST (Continued)

Fig. 4-16 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS35338-141	Washer, lock, 3/8	16	
		MS15795-815	Washer, flat, 3/8	16	
		50019-1119B2	Air Contidioner Small - secured by	1	B
	61	13225-2	Strap Assy	3	
	62	50019-2542B1	Plate, mounting - attached by	2	
		MS35307-307	Screw, hex hd, 1/4-20x7/8	8	
		MS35338-139	Washer, lock, 1/4	8	
		MS15795-810	Washer, flat, 1/4	8	
	63	50019-3533D4	Spacer, wood - attached by	2	
		MS35307-321	Screw, hex hd, 1/4-20x 3 3/4 lg	12	
		MS35338-139	Washer, lock, 1/4	12	
		MS15795-810	Washer, flat 1/4	12	
2		GFE	Spool, 60.0 DIA - secured by	1	B
	34	14160-1	Strap Assy	4	
	35	50019-3538D1	Bracket, hold down - attached by	4	
		MS35307-360	Screw, hex hd, 3/8-16x1.0	12	
		MS35338-141	Washer, lock, 3/8	12	
		MS15795-815	Washer, flat, 3/8	12	
3		COML	WIRING, INTERSHELTER - secured by	1	B
		MIL-T-7130	Lacing Cord	A/R	
	36	50019-3637B8	Bracket Assy - attached by	4	

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST (continued)

Fig 4-16 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS51957-82	Screw, pan hd, 1.4-20x7/8	8	
		MS35338-139	Washer, lock, 1/4	8	
		MS15795-810	Washer, flat, 1/4	8	
4		50019-3500B1	GUARD RAIL - secured by	1	B
		MIL-T-7130	Cord, lacing	A/R	
5		50019-1142A1-2 (3500)	JACK BOX - secured by	1	A
	37	13225-2	Strap Assy	2	
	39	50019-3637B7	Plate, mounting - attached by	2	
	39A	MS35307-308	Screw, hex hd, 1/4-20x1.0	8	
		MS35338-139	Washer, lock	16	
		MS15795-810	Washer, flat	16	
	39B	MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
		MS35338-139	Washer, lock, 1/4	6	
		MS15795-810	Washer, flat, 1/4	6	
6		50019-3737B2	HEAT EXCHANGER - secured by	1	B
	34	14160-1	Strap Assy	8	
	40	50019-3737D7	Angle - attached by	4	
		MS35308-333	Screw, hex hd, 5/16-18x7/8 lg	12	
		MS35338-140	Washer, lock, 5/16	12	
		MS15795-812	Washer, flat, 5/16	12	
	41	50019-3737D6-2	Rail, modified - attached by	2	B

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST (continued)

Fig 4-16 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
56	MS51959-109	Screw, flat hd, 3/8-16x3/4	2	
	MS51959-114	Screw, flat hd, 3/8-16x 1 3/4	14	
42	50019-3834B1-1	Ring & Plate Ass'y - attached by	4	B
	MS35307-360	Screw, hex hd, 3/8-16x1.0	16	
	MS35307-366	Screw, hex hd, 3/8-16x2.0	24	
	MS35338-141	Washer, lock, 3/8	40	
	MS15795-815	Washer, flat, 3/8	16	
7	COML	MAILING BAG, 5.0x8.0 - containing (circuit breaker panel keys)	1	
8	50019-1142B6-2	BAG, UTILITY -containing	1	B
	50019-2614D16	Boot, canvas	1	
	QS200-M965	Breeze clamp	1	
	CR175R1500-3500-9898	Hose, inner duct, 1.5 DIAx36.0 lg	1	B
	TYPE 55	Duct, inter-shelter, 6.0 DIAx50.0 lg	3	B
44	COML	WIRE, Ground, No. 8 - secured by	1	B
	MIL-T-7130	Cord, lacing	A/R	
9	50019-3533B1	AIR CONDITIONER, Large - secured by	1	B
34	14160-1	Strap Assy	4	
45	MS35307-361	Screw, hex hd, 3/8-16x1 1/4	12	

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST (continued)

Fig 4-16 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS35649-2384	Nut, 3/8-16	12	
		MS35338-141	Washer, lock, 3/8	12	
		MS15795-815	Washer, flat, 3/8	24	
	46	50019-3533D1	PLATE, mounting, 47.0x27.5 x.375	1	
		MS35307-308	Screw, hex hd, 1/4-20x7/8	18	
		MS35338-139	Washer, lock, 1/4	18	
		MS15795-810	Washer, flat, 1/4	18	
10		50019-1142B2-2	BAG ASSY, Stowage	1	B
	47	COML	WIRE, Bare, No. 2, 10 ft lg	1	B
11		50019-1142B2-3	BAG ASSY, Stowage - secured by	1	B
	48	13225-1	Strap Assy	4	
12		2360-4008B1	GROUND ROD		B
13		50019-1142B10	EXTERNAL LIGHT	1	B
		MIL-T-7130	Polyurethane 12x12x1/8 in thk Lacing Cord	A/R	
14		COML	MAILING BAG, 5.0x8.0 containing	1	B
		MS35307-360	Screw, hex hd, 3/8-16x1.0	4	
		MS35649-2384	Nut, hex, 3/8-16	4	
		MS35338-141	Washer, lock, 3/8	4	
		MS15795-815	Washer, flat, 3/8	4	
15		2360-1116B1	STEP, - attached by	1	B
		MS35307-320	Screw, hex hd, 1/4-20x3 1/2	2	
		MS35338-139	Washer, lock, 1/4	2	

TABLE 4-16. SHELTER 3500, STOWED EQUIPMENT LIST (continued)

Fig 4-16 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS15795-810	Washer, flat, 1/4	2	
	MS15795-815	Washer, flat, 3/8	2	
15A	50019-1130D1-2	Spacer	2	
15B	MS35307-306	Screw, hex hd, 1/4-20x3/4	4	
	MS35338-139	Washer, lock, 1/4	4	
	MS15795-810	Washer, flat, 1/4	4	
16	2360-4007-B1	WALKWAY, Small	1	B
17	50019-1119D7-4	PLATE, TRANSIT	1	
18	50019-1119D7-5	PLATE, TRANSIT	1	

NOTE: Door facing Shelter 2600 to be removed in operational mode and stowed in Shelter 3500 opposite circuit breaker. Stow door from 2600 in same position.

TABLE 4-17. SHELTER 3600, STOWED EQUIPMENT LIST

Fig 4-17 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
1		50019-1142A1 (3600)	JACK BOX - attached by	1	A
		MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
		MS35338-139	Lockwasher, 1/4	6	
		MS15795-811	Washer, flat, 1/4	6	
	30	13225-1	Strap Assy	2	
	31	50019-3542D2	Mounting Plate - attached by	4	
		MS35307-308	Screw, hex hd, 1/4-20x1.0	16	
		MS35338-139	Lockwasher, 1/4	16	
		MS15795-810	Washer, flat, 1/4	16	
2		COML	GROUND WIRE, NO. 8, green	1	A
2A		COML	GROUND WIRE, Copper .250 DIA x 10 ft	1	A
3		50019-1142B2-8	BAG ASSY -	1	A
		50019-1142B1	Bag, Cotton Duck	1	
		2360-4002B1	Shelter, Guy	2	
		2360-4009B1	Shelter to Shelter, Guy	4	
	32	3200B5-2	Strap Assy	3	
	31	50019-3542D2	Mounting Plate - attached by	6	
		MS51957-82	Screw, hex hd, 1/4-20x1.0	24	
		MS35338-139	Lockwasher, 1/4	24	
		MS15795-810	Washer, flat, 1/4	24	
4		50019-3637B5	INSULATOR ASSY - attached by	1	A
		MS35649-2384	Nut, hex, 3/8-16	4	

TABLE 4-17. SHELTER 3600, STOWED EQUIPMENT LIST (Continued

Fig 4-17 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35338-141	Lockwasher, 3/8	4	
	MS15795-815	Washer, flat, 3/8	4	
	MS35307-360	Screw, hex hd, 3/8-16x1.0	4	
33	50019-3637D6	Channel - attached by	4	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	4	
	MS35338-139	Lockwasher, 1/4	4	
	MS15795-810	Washer, flat, 1/4	4	
40	COML	Polyurethane, 20.0x20.0x1/8	3	
	MIL-T-7130	Cord, lacing	A/R	
40A	50019-3200B5-2	Strap Assy	2	
34	50019-3200B5-4	Strap Assy	1	
34A	50019-3200B5-5	Strap Assy	1	
35	50019-3642D3	Bracket, Hold Down - attached by (existing hardware)	1	
36	50019-32005B-3	Strap Assy	8	
5	50019-3637B2	TUBE STOWAGE COVER	5	A
6	50019-3637B1	TUBE STOWAGE HOUSING - containg Tube Assy, K1,K2,K6,K10,&K11	5	A
6A	50019-3200B5-5	Strap Assy	5	
6B	50019-3200B5-4	Strap Assy	2	
37	50019-3637D7	Support - attached by	2	
	MS35469-2254	Nut, hex, 1/4-20	8	
	MS35338-139	Lockwasher, 1/4	8	

TABLE 4-17. SHELTER 3600, STOWED EQUIPMENT LIST (Continued)

Fig 4-17 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS15795-810	Washer, flat, 1/4	8	
		MS35307-303	Screw, hex hd, 1/4-20x1/2	8	
7		50019-3622B9	RAIN SHIELD (Large)	1	1A
8		2360-3622B10	RAIN SHIELD (Small)	1	1A
8A		TYPE 55	Inter Shelter Duct. 2.0 DIA x 50 lg, qty 2; 4.0 DIA x 50 lg; 6.0 DIA x 50 lg	4	
8B		COML	Cloth Bag 4.0x6.0 - containing	3	
		MS35307-360	Screw, hex hd, 3/8-16x1.0 SST (each 6B contains 33 of 6C)	99	
9		2360-4003-02	PULLMAN - secured by	3	1A
	34	50019-3200B5-4	Strap Assy	4	
	38	13225-2	Strap Assy	2	
	31	50019-3542D2	Mounting Plate - attached by	4	
		MS35307-308	Screw, hex hd, 1/4-20x1.0	16	
		MS35338-139	Lockwasher, 1/4	16	
		MS15795-810	Washer, flat 1/4	16	
10		50019-1142B10	EXTERNAL LIGHT	1	A
			Polyurethane 12x12x1/8 in thk		
		MIL-T-7130	Lacing Cord	A/R	
11		2360-4008B1	GROUND ROD	1	A
12		50019-3018A1	HOSE & CLAMPS - secured by	10	A
	36	50019-3200B5-3	Strap Assy	3	

TABLE 4-17. SHELTER 3600, STOWED EQUIPMENT LIST (Continued)

Fig 4-17 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
13		2360-4006B1	WALKWAY (Large)	1	A
14		2360-4007B2	WALKWAY (Small)	1	A
	42	COML	STYROFOAM, 2.0 thk (in 13&14)	A/R	
15		50019-3628A1	INSULATOR 3700	1	
16		50019-3628A1	INSULATOR 3600-- attached by	1	A
	43	50019-3637D1	Channel	18	
	44	COML	Threaded rod, 1/4-20x21.0	14	
	45	COML	Threaded rod, 1/4-20x8 1/4	4	
		MS35649-2254	Nut, hex, 1/3-20	36	
		MS35338-139	Lockwasher, 1/4	36	
		MS15795-810	Washer, flat, 1/4	36	
17		50019-3642B2	BULK STOWAGE - secured by	1	1A
		FDC1555-128	Cargo Net	1	
		50019-3642D1	Support, Angle - attached by	4	
		MS35307-359	Screw, hex hd, 3/8-16x7/8	20	
		MS35338-141	Lockwasher, 3/8	20	
		MS15795-814	Washer, flat, 3/8	20	
		I560	Capacitor	2	
		I922	Transformer	4	
		I4	Blower	1	
18		COML	MAILING BAG, 5.0x8.0- containing	2	
		COML	Keys, bin	A/R	
	47	No. 8 AWG	Wire, ground		
		MIL-T-7130	Cord, lacing	A/R	

TABLE 4-18. SHELTER 3700, STOWED EQUIPMENT LIST

Fig 4-18 Index No.	Part No.	Nomenclature	Qty RQd	Opening
1	2360-4003-01	PULLMAN	1	A
	COML	CLOTH BAG, 4.0x6.0 - containing	2	
	COML	Screw, hex hd, 3/8-16x1.0 SST (each bag contains 33 screws)	66	
30	13225-1	Strap Assy	2	
2	50019-1142A1-1 (3700)	JACK BOX - attached by	1	A
	MS35307-306	Screw, hex hd, 1/4-20x3/4	6	
	MS35338-139	Washer, lock, 1/4	6	
	MS15795-810	Washer, flat, 1/4	6	
3	50019-3737B2-2	HEAT EXCHANGER - -secured by	1	A
31	14160-1	Strap Assy	6	
32	50019-3834B1-2	Ring and Plate Assy - attached by	2	
	MS35307-360	Screw, hex hd, 3/8-16x1.0	8	
	MS35307-366	Screw, hex hd, 3/8-16x2.0	12	
	MS35338-141	Washer, lock, 3/8	20	
	MS15795-815	Washer, flat, 3/8	16	
33	50019-3737D7	Angle - attached by	2	
	MS35308-333	Screw, hex hd, 5/16x18x7/8	6	
	MS35338-140	Washer, lock, 5/16	6	
	MS15795-812	Washer, flat, 5/16	6	
34	50019-3737D6-1	Rail, heat exchanger - attached by	2	A

TABLE 4-18. SHELTER 3700, STOWED EQUIPMENT LIST (Continued)

Fig 4-18 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
35	MS51959-109	Screw, flat hd, 3/8-16x3 3/4 Lg	4	
	MS51959-114	Screw, flat hd, 3/8-16x1 3/4 Lg	12	
4	50019-3737B3	DOG HOUSE, Modified, - secured by	1	A
31	14160-1	Strap Assy	4	
32	50019-3834B1-2	Ring and Plate Assy - attached by	2	
	MS35307-360	Screw, hex hd, 3/8-16x1.0	8	
	MS35307-366	Screw, hex hd, 3/8-16x2.0	12	
	MS35338-141	Washer, lock, 3/8	20	
	MS15795-815	Washer, flat, 3/8	16	
36	MS35307-363	Screw, hex hd, 3/8-16x1 3/8	5	
	MS35338-141	Washer, lock, 3/8	8	
	MS15795-815	Washer, flat, 3/8	8	
	MS35649-2384	Nut, hex hd, 3/8-16	8	
37	50019-3737D4	Plate, mounting - attached by	2	
	MS35307-359	Screw, hex hd, 3/8-16x7/8	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-815	Washer, flat, 3/8	4	
38	MS35307-367	Screw, hex head, 3/8-16 x 2 1/4	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-815	Washer, flat, 3/8	4	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST

Fig 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
30	50019-3811B2-1	WOOD BEAM, 2.0x4.0x62.0 lg	2	
31	50019-3811B2-2	WOOD BEAM, 2.0x4.0x32.0 lg	2	
	MS35307-368	Screw, hex hd, 3/8-16x2 1/2	6	
	21-41310-16	Nut, anchor, 3.8-16	6	
	MS15795-814	Washer, flat, 3/8	6	
2	50019-1119B2	Air Conditioner, small	3	B
2A	50019-3833A1	AIR CONDITIONER RACK ASSY (Quantity per one rack assy listed)	3	
35	50019-3833D6	Clamp, double	8	
	MS35307-333	Screw, hex hd, 5/16-18x7/8 lg	8	
	P1007	Nut, hex, 5/16-18		
	MS35338-140	Washer, lock, 5/16	8	
	MS15795-811	Washer, flat, 5/16	8	
36	50019-3200B5-2	Strap Assy	3	
60	TD2	Manual, Fire Detector	1	
37	COML	Polyurethane, 24.0x6.0x1.0 lg	9	
38	P1887	Base, post - attached by	4	
38A	MS35307-360	Screw, hex hd, 3/8-16x1.0 lg	16	
	MS35338-141	Washer, lock, 3/8	16	
	MS15795-814	Washer, flat, 3/8	16	
38B	MS35307-333	Screw, hex hd, 5/16-18x 7/8 lg	32	
	MS35338-140	Washer, lock, 5/16	32	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS15795-811	Washer, flat, 5/16 (see Vol. I, Para. 2.8.2 Fig. 2-5 for disassembly)	32	
3	2360-4007-B1	WALKWAY, Small	3	D
4	2360-4006-B1	WALKWAY, Large - attached by	2	E
	MS35307-372	Screw, hex hd, 3/8-16x3 1/2 lg	4	
	MS35649-2384	Nut, hex, 3/8-16	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-814	Washer, flat, 3/8	8	
5	50019-1142A1-1 (3800)	JACK BOX - attached by	1	D
	MS35307-306	Screw, hex hd, 1/4-20x3/4 lg	6	
	MS35338-139	Washer, lock, 1/4	6	
	MS15795-810	Washer, flat, 1/4	6	
6	2360-4008B1	GROUND WIRE, copper, .250 DIA by 10 FT lg	1	D
	MIL-T-7130	Cord, lacing	A/R	
7	2360-4008B1	GROUND ROD, -	1	D
	5165-000-0317-1	Clamp, loop	4	
	MS51957-43	Screw, pan hd,8-32x3/8 lg	8	
	MS35338-137	Washer, lock, NO. 8	8	
	MS15795-807	Washer, flat, NO. 8	8	
8	50019-1142B6-1	BAG, UTILITY - containing	1	B
	2360-4010B1	Guy, shelter to shelter	4	
9	2360-4003-01	PULIMAN	3	B

TABLE 4-18. SHELTER 3700, STOWED EQUIPMENT LIST (Continued)

Fig 4-18 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
39	QS200-M52	CLAMP, Hose, 2.5 dia	24	
40	50019-3200B503	Strap Assy	6	
7	COML	MAILING BAG, Cotton, 5.0 x 8.0 containing	1	A
	MS35307-360	Screw, hex head, 3/8-16 x 1.0	4	
	MS35649-2384	Nut, hex, 3/8-16	4	
	MS35338-141	Washer, lock 3/8	4	
8	2360-4003-1	STEP	1	A
41	COML	Styrofoam, 6.0 x 6.0 x 1.0 thk	4	
	MS15795-815	Washer, flat, 3/8	4	
9	50019-1142B7	GROUND ROD	1	A
10	50019-1142B10	EXTERNAL LIGHT	1	A
		Polyurethane 12 x 12 x 1/8 in. thk		
	MIL-T-7130	Lacing Cord	A/R	
11	COML	GROUND WIRE, Copper, .250 dia x 10 ft lg	1	A
12	P/O 50019-3018A1	HOSE, 2.0 dia x 145 lg	1	A
	P/O 50019-3018A1	HOSE, 2.0 dia x 140 lg	1	A
	P/O 50019-3018A1	HOSE, 1.0 dia x 140 lg	2	A
	P/O 50019-3018A1	CLAMP, Hose, 2.0 dia	8	A
	P/O 50019-3018A1	CLAMP, Hose, 1.0 dia	8	A
42	50019-3200B5-1	Strap Assy	2	
13	50019-1142B2-12	BAG ASSY, Stowage	1	A
	2360-4002B1	Guy, Shelter	3	

TABLE 4-18. SHELTER 3700, STOWED EQUIPMENT LIST (Continued)

Fig 4-18 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	2360-4009B1	Shelter to Shelter, Guy	1	
	50019-1142B1	Bag, Cotton Duck	1	
43	COML	MAILING BAG, 5.0 x 8.0 - containing (3 bin handles)	1	
44	COML	MAILING BAG, 5.0 x 8.0 - containing (3 bin keys I.D. tags)	1	
	MIL-T-7130	Cord, lacing	A/R	
15	438813	DOORS, Swinging - secured by	3	A
30	13225-1	Strap Assy	2	
45	13225-2	Strap Assy	1	
48	COML	Styrofoam, 6.0x6.0x1/2 thk	4	
49	COML	COVER, Masonite, 70 3/4x 35 1/4 x3/26 thk	3	A
49A	MS51971-1	Nut, hex, 1/4-20	12	
	MS35338-139	Washer, lock 1/4	12	
	MS15795-810	Washer flat, 1/4	12	
50	433699	Bracket, Door	12	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
10	COML	Cloth Bag, 4.0x6.0, containing	2	B
	COML	Bolt, hex hd, 3/8-16x1.0 lg, SST (each bag contains 33 bolts)	66	
34	13225-2	Strap Assy	4	
11	MOL203019	STODDARD LOOP ANTENNA (GFE)	1	A
39	50019-3200B5-4	Strap Assy	2	
	50019-3842B4	TEST RACK ASSY & INSTL	1	B
12	MOL203004	Differential Plug-in	1	A
13	MOL203003	High Gain Differential Plug-in	1	A
14	MOL203002	Dual Trace Plug-in	1	A
40	50019-3200B5-5	Strap Assy	5	
15	MOL203034	Regulated Power Supply	1	A
16	MOL203033	DC Power Supply	1	A
40	50019-3200B5-5	Strap Assy	1	
41	40-60DUR	Rubber, 19.0x2.0x0.5 thk	1	
	MS51958-65	Screw, pan hd, 10-32x3/4 lg	10	
	MS35338-138	Washer, lock, No. 10	10	
	MS15795-842	Washer, flat, No. 10	10	
17	MOL203025	Selective Voltmeter, HP	1	A
40	50019-3200B5-5	Strap Assy	1	
	MS51958-65	Screw, pan hd, 10-32x3/4 lg	10	
	MS35338-138	Washer, lock, No. 10	10	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		MS15795-842	Washer, flat, No. 10	10	
18		MOL203001	Oscilloscope, (Tektronic)	1	A
	40	50019-3200B5-5	Strap Assy	1	
		MS51958-65	Screw, pan hd, 10-32x3/4 lg	14	
		MS35338-138	Washer, lock, No. 10	14	
		MS15795-842	Washer, flat, No. 10	14	
19		MOL203027	Hi-Potter (Potronics)	1	A
	40	50019-3200B5-5	Strap Assy	2	
	42	50019-3842D2	Plate, shock mount - attached by	4	
	42A	MS24616-35	Screw, self-tapping	48	
	43	50019-3833D4-1	Channel, side, 23.5 lg - attached by	8	
	43A	MS35307-334	Screw, hex hd, 5/16-18x1.0 lg	16	
		MS35338-140	Washer, lock, 5/16	16	
		MS15795-811	Washer, flat, 5/16	16	
	44	P1887	Base, post - attached by	4	B
	44A	MS35307-360	Screw, hex hd, 3/8-16x1.0 lg	16	
		MS35338-141	Washer, lock, 3/8	16	
		MS15795-814	Washer, flat, 3/8	16	
	44B	MS35307-334	Screw, hex hd, 5/16-18x1.0 lg	32	
		MS35338-140	Washer, lock, 5/16	32	
		MS15795-811	Washer, flat, 5/16	32	
	45	P/O 50019-3842B4	Test Rack Assy	2	B

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
20A	MOL203009	CART, SCOPE, (GFE) - secured by	1	E
39	50019-3200B5-5	Strap Assy	2	
47	50019-3200B5-2	Strap Assy	1	
	COML	Polyurethane, 12.0x12.0x1/8 thk	1	
48	COML	Polyurethane, 12.0x6.0x1/8 thk	4	
49	COML	MAILING BAG, Cotton 5.0x8.0 - containing	1	
		(Keys, for workbench)		
	MIL-T-7130	Cord, lacing	A/R	
20	MOL203017	RF IMPEDANCE BRIDGE (GFE)	1	E
39	50019-3200B5-4	Strap Assy	2	
52	COML	Polyurethane, 12.0x12.0x1/8 thk	2	
	MS35307-308	Screw, hex hd, 1/4-20x1.0	4	
	MS35649-2254	Nut, hex, 1/4-20	4	
	MS35338-139	Washer, lock, 1/4	4	
	MS15795-810	Washer, flat, 1/4	8	
53	REF	Drawer, left, upper - contains	1	
	MOL203008	High Voltage Probe P-6015 (GFE)	1	
	MOL203010	Scape Hoods (GFE)	1	
	MOL203024	AN/PSM-2, Megger (GFE)	1	
	MOL203026	Tong Tester (GFE)	1	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
54	REF	Drawer, left, middle - contains	1	
	MOL203012	Probes P-6012 (GFE)	3	
	MOL203028	Gain Set Adapter (GFE)	1	
	MOL203029	Decade Resistor (GFE)	1	
55	REF	Drawer, left, lower - contains	1	
	MOL203011	Scope Extender (GFE)	1	
	MOL203016	Simpson 260's/case (GFE)	2	
56	REF	Drawer, right, middle - contains	1	
	MD1	Manufacturers Data	1	
	MD2	Manufacturers Data	1	
	MD3	Manufacturers Data	1	
	MD4	Manufacturers Data	1	
	MD5	Manufacturers Data	1	
	MD6	Manufacturers Data	1	
		Instruction manual	1	
		Installation operation maintenance manual	1	
57	REF	Drawer, right, lower - contains	1	
	MS51029-53	Screw, set, 1/4-20x1/2 lg	400	
	MS51029-75	Screw, set, 3/8-16x1/2 lg	400	
	MS51963-109	Screw, set, 3/8-16x1 1/2	150	
	MS51963-112	Screw, set, 3/8-16x2 1/2	100	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MS35307-358	Screw, cap, hex, 3/8-16x3/4 lg	50	
	MS35307-360	Screw, cap, hex, 3/8-16x1.0 lg	50	
	MS35307-361	Screw, cap, hex, 3/8-16x1 1/8 lg	50	
	MS35307-362	Screw, cap, hex, 3/8-16x1 1/4 lg	100	
	MS35307-308	Screw, hex hd, 1/4-20x1.0 lg	50	
	MS51958-62	Screw, pan hd, 10-32x7/16 lg	50	
	MS24616-40	Screw, self-tapping, FH, 10-12x1.0 lg	50	
	MS15795-808	Washer, flat, No. 10	50	
	MS15795-810	Washer, flat, 1/4	50	
	MS15795-814	Washer, flat, 3/8	100	
	MS35338-138	Washer, lock, No. 10	50	
	MS35338-139	Washer, lock, 1/4	50	
	MS35338-141	Washer, lock, 3/8	100	
	B-319-8	Caplug	40	
21	50019-3834D13	DOOR STOP - attached by	2	F
	MS35307-306	Screw, hex hd, 1/4-20x3/4	2	
	MS35338-139	Washer, lock, 1/4	2	
	MS15795-810	Washer, flat, 1/4	2	
22	REF	CABLE - secured by	1	
36	50019-3200B5-2	Strap Assy	1	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	COML	Polyurethane, 12.0 x 12.0 x 1/8 thk	1	
23	REF	CABLING, INTER-SHELTER- secured by	1	B
36	50019-3200B5-2	Strap Assy	2	
	MIL-T-7130	Cord, Lacing	A/R	
24	REF	TRIPOD (GFE) - secured by	1	B
59	50019-3200B5-3	Strap Assy	2	
60	2360-4003-01	PULLMAN	5	
61	50019-1342B3	TEM POW LIGHTING Assy	1	
62	50019-1142B6-2	BAG, Utility containing	1	
	COML	Cap, CO_2 bottle	4	
	54750	Cap, lifting	1	
63	61282	Scale, weighing	1	
		BAG, Cloth 4" x 6" containing	1	
		BOLT, ST STL 3/8-16 x 1 in. lg.	330	
64	50019-1142B6-2	BAG, Utility containing	1	
	50019-3018-B1	PIPE, flexible 1/2"	2	
65	50019-1142B6-1	BAG, Utility	1	
	2360-4010B1	Guy, shelter to shelter	4	
66	13225-2	Strap Assy	2	
		Polyurethane 12x12x1/8 in. thk		
	MIL-T-7130	Cord, lacing	A/R	
68	50019-3200B5-3	Strap Assy	2	

TABLE 4-19. SHELTER 3800, STOWED EQUIPMENT LIST (Continued)

Fig. 4-19 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
	MIL-T-7130	Cord, lacing	A/R	

NOTE: Door opening, facing shelters 3500 and 3600 side has stop angle on floor.

TABLE 4-20. PALLET 4100, STOWAGE INVENTORY LIST

Fig. 4-20 Index No.	Part No.	Nomenclature	Qty Rqd
1	50019-1142B12-2	CABLE BOX ASSY- secured by	1
30	14160-1	Strap Assy	1
31	13225-2	Strap Assy	2
32	FDK-2850M1	Ring & Clip	2
	MS35307-360	Screw, hex hd, 3/8-16x1.0	4
	MS35338-141	Washer, lock, 3/8	4
	MS15795-814	Washer, flat, 3/8	4
33	FDK-3171	Ring & Clip	4
	MS35307-308	Screw, hex hd, 1/4-20x1.0	8
	MS35338-139	Washer, lock, 1/4	8
	MS15795-810	Washer, flat, 1/4	8
	50019-1116C3-4 and - 6	Cable, elec	2
	50019-1116C5-1 thru - 5	Cable, elec	5
	50019-1116C9-2 and - 3	Cable, elec	2
	50019-1116C8-6	Cable, elec	1
	50019-3200B5-2	Strap Assy	4
	50019-1142B9	Box, cable	1
2	50019-1142B12-1	CABLE BOX ASSY- secured by	1
30	14160-1	Strap Assy	1
31	13225-2	Strap Assy	2
32	FDK-2850M1	Ring & Clip	2

TABLE 4-20. PALLET 4100, STOWED EQUIPMENT LIST (Continued)

Fig. 4-20 Index No.	Part No.	Nomenclature	Qty Rqd
	MS35307-360	Screw, hex hd, 3/8-16x1.0	4
	MS35338-141	Washer, lock, 3/8	4
	MS15795-814	Washer, flat, 3/8	4
33	FDK-3171	Ring & Clip	4
	MS35307-308	Screw, hex hd, 1/4-20x1.0	8
	MS35338-139	Washer, lock, 1/4	8
	MS15795-810	Washer, flat, 1/4	8
	50019-1116C4-1 thru - 4	Cable, elec	4
	50019-1116C5-6 thru - 11	Cable, elec	6
	50019-1116C8-5	Cable, elec	1
	50019-1116C13	Cable, elec	1
	50019-3200B5-2	Strap Assy	4
	50019-1142B9	Box, cable	1
3	50019-1142B12	CABLE BOX ASSY	1
4	50019-1142B12-6	CABLE BOX ASSY	1
30	14160-1	Strap Assy	3
31	13225-2	Strap Assy	2
32	FDK-2850M1	Ring & Clip	6
	MS35307-360	Screw, hex hd, 3/8-16x1.0	12
	MS35338-141	Washer, lock, 3/8	12
	MS15795-814	Washer, flat, 3/8	
33	FDK-3171	Ring & Clip	4

TABLE 4-20. PALLET 4100, STOWED EQUIPMENT LIST (Continued)

Fig 4-20 Index No.	Part No.	Nomenclature	Qty Rqd
	MS35307-308	Screw, hex hd, 1/4-20x1.0	8
	MS35338-139	Washer, lock, 1/4	8
	MS15795-810	Washer, flat, 1/4	8
	50019-1116C3-1 and - 2	Cable, elec (part of item 3)	2
	50019-1116C9-1	Cable, elec	1
	50019-1142B9	Box, Cable	1
	50019-1116C3-3 and - 5	Cable, elec (part of item 4)	2
	50019-1142B9	Box, cable	1
34	14096-1	Strap Assy	8
35	50019-3834B2	Plate, tie down	8
	MS35308-487	Bolt, hex hd, 3/4-16x2.0	32
	MS35338-146	Washer, lock, 3/4	32
	MS15795-823	Washer, flat, 3/4	32
36	GFE	Tarpaulin - secured by	1
37	GFE	Strap Assy	2
30	14160-1	Strap Assy	4
32	FDK-2850M1	Ring & Clip	4
	MS35307-360	Screw, hex hd, 3/8-16x1.0	8
	MS35338-141	Washer, lock, 3/8	8
	MS15795-814	Washer, flat, 3/8	8
8	50019-4100B2	CABLE BOX ASSY	1

TABLE 4-20. PALLET 4100, STOWED EQUIPMENT LIST (Continued)

Fig. 4-20 Index No.	Part No.	Nomenclature	Qty Rqd
31	13225-2	Strap Assy	2
32	FDK-2850M1	Ring & Clip	4
	MS35307-360	Screw, hex hd, 3/8-16x1.0	8
	MS35338-141	Washer, lock, 3/8	8
	MS15795-814	Washer, flat, 3/8	8
38	50019-3533D2	Bracket	2
	MS35307-360	Screw, hex hd, 3/8-16x1.0	2
	MS35338-141	Washer, lock, 3/8	4
	MS15795-814	Washer, flat, 3/8	4
	GFE	Cable, 500 MCM x 15 ft lg	12
	50019-4100B3	Box, cable	1
9	50019-3833A2	AIR CONDITIONER, LARGE	1
30	14160-1	Strap Assy	4
32	FDK-2850M1	Ring & Clip	4
	MS35307-360	Screw, hex hd, 3/8-16x1.0	8
	MS35338-141	Washer, lock, 3/8	8
	MS15795-814	Washer, flat, 3/8	8

TABLE 4-21. PALLET 4200, STOWED EQUIPMENT LIST (continued)

Fig 4-21 Index No.		Part No.	Nomenclature	Qty Rqd	Opening
		50019-1116C6-1 thru - 7	Cable, elec	7	
		50019-1116C8-1 thru - 4	Cable, elec	4	
		50019-1116C10-1 and - 2	Cable, elec	2	
		50019-1116C7-1 thru - 6	Cable, elec	6	
		50019-1116C12-1 thru - 4	Cable, elec	4	
		50019-1116C18-1 thru - 14	Cable, elec	4	
		50019-1142B9	Box, cable	1	
3		50019-3500B2	SUPPORT BRACKET	1	
	4				
4		50019-1143D1	RAIL LOADING	40	
	5	50019-4200D1	ANGLE	4	
	31	14160-1	Strap Assy	7	
	32	FDK-2850M1	Ring & Clip	10	
		MS35307-360	Screw, hex hd, 3/8-16 1.0	20	
		MS35338-141	Washer, lock, 3/8	20	
		MS15795-814	Washer, flat, 3/8	20	
	39	MS35649-2384	Nut, hex, 3/8-16	8	
	40	50019-4200B1	Bracket - attached by	2	
		MS35307-362	Screw, hex hd, 3/8-16x1 1/4	24	
		MS35338-141	Washer, lock, 3/8	24	
		MS15795-814	Washer, flat, 3/8	24	

TABLE 4-21. PALLET 4200, STOWED EQUIPMENT LIST

Fig 4-21 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
1	50019-3833A2	AIR CONDITIONER MOUNT INSTL. (2 A/C per unit)	2	
35	50019-353302	Angle attached by	12	
30	MS35307-360	Screw, hex hd, 3/8-16x1.0	24	
	MS35338-141	Washer, lock, 3/8	24	
	MS15795-814	Washer, flat, 3/8	24	
31	14160-1	Strap Assy	8	
32	FDK-2850M1	Ring & Clip	8	
	MS35307-360	Screw, hex hd, 3/8-16x1.0	16	
	MS35338-141	Washer, lock, 3/8	16	
	MS15795-814	Washer, flat, 3/8	16	
33	GFE	Tarpaulin - secured by	2	
34	GFE	Strap Assy	4	
2	50019-1142B12-3	CABLE BOX ASSY - secured by	1	
31	14160-1	Strap Assy	1	
37	13225-2	Strap Assy	2	
2	FDK-2850M1	Ring & Clip	2	
	MS35307-360	Screw, hex hd, 3/8-16x1.0	4	
	MS35338-141	Washer, lock, 3/8	4	
	MS15795-814	Washer, flat, 3/8	4	
38	FDK-3171	Ring & Clip	4	
	MS35307-303	Screw, hex hd, 1/4-20x1.0	8	
	MS35338-139	Washer, lock, 1/4	8	
	MS15795-810	Washer, flat, 1/4	8	

TABLE 4-21. PALLET 4200, STOWED EQUIPMENT LIST (continued)

Fig 4-21 Index No.	Part No.	Nomenclature	Qty Rqd	Opening
41	14096-1	Strap Assy	4	
42	50019-3834B2	Plate, tie down	4	
	MS35308-487	Bolt, hex hd 3/4-16x2.0	16	
	MS35338-146	Washer, lock, 3/4	16	
	MS15795-823	Washer, flat, 3/4	16	

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES

CABLE			FROM				THROUGH JUNCTION BOX			TO			
NUMBER	GAGE	COLOR	SHELTER	UNIT	BLOCK	TERM	SHELTER	BLOCK	TERM	SHELTER	UNIT	BLOCK	TERM
(W101)/ W101	18	91	(3100)/ 3300	1A12	TB1	1	(3200)/ 3400	TB1	1	(3200)/ 3400	1A4	TB4	1
		92	→			2			2				2
		93				3			3				3
		94				4			4				4
		95				5			5				5
		96				6			6				6
		97				7			7				7
		98				8			8				8
		9				9			9				9
		90				10			10				10
(W102)/ W102	18	91	(3100)/ 3300	1A12	TB2	1	(3200)/ 3400	TB2	1	(3200)/ 3400	1A6	TB1	1
		92	→			2			2				2
		93				3			3				3
		94				4			4				4
		--				-			-				-
		96				6			6				6
		97				7			7				7

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
		98				8			8				8
		9				9			9				9
(W112)/ W112	14	91	(3100)/ 3300	1A11K1	---	T1	(3200)/ 3400	TB3	1	(3200)/ 3400	1A4	TB8	1
		92	→			T2			2				2
		93				T3			3				3
(W114)/ W114	16	91	(3200)/ 3400	1A6	TB2	1	(3200)/ 3400	TB3	4	(3100)/ 3300	1A3A3	TB50	1
		92				2			5	←			2
		95				5			6			TB34	2
		97				7			7	←			1
(W115)/ W115	16	98	(3200)/ 3400	1A4	TB5	8	(3200)/ 3400	TB3	8	(3100)/ 3300	1A3A3	TB35	8
		--				-			-	←			-
		90				10			10				10
(W118)/ W118	16	9	(3200)/ 3400	1A4	TB7	1	(3200)/ 3400	TB4	1	(3100)/ 3300	1A3A3	TB34	1
		92				2			2	←			2
(W119)/ W119	14	91	(3100)/ 3300	1A3A6	---	16	(3200)/ 3400	TB4	3	(3200)/ 3400	1A4	TB5	1
			→										

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	CAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
(W120)/ W120	16	98	(3100)/ 3300 →	1A3A3	TB50	8	(3200)/ 3400	TB4	4	(3200)/ 3400	1A4	TB8	10
(W125)/ W125	16	95	(3200)/ 3400	1A4	TB9	5	(3200)/ 3400	TB4	5	(3100)/ 3300	1A3A3	TB51	5
		96				6			6	←			6
(W126)/ W126	16	9	(3200)/ 3400	1A4	TB8	9	(3200)/ 3400	TB4	7	(3100)/ 3300 ←	1A3A3	TB61	9
(W135)/ W135	16	95	(3100)/ 3300 →	1A12	TB2	5	(3200)/ 3400	TB5	2	(3700)/ 3600	1A2	TB1	5
		90	→		TB2	10	→		3	(3700)/ 3600	1A2	TB1	6
(W138)/ W138	14	93	(3200)/ 3400	1A4	TB5	3	(3200)/ 3400	TB5	4	(3100)/ 3300 ←	1A3A4	---	1
		9				9			5				2
(W142)/ W142	16	97	(3200)/ 3400	1A4	TB9	8	(3200)/ 3400	TB5	6	(3100)/ 3300 ←	1A11	TB8	10
(W143)/ W143	16	98	(3200)/ 3400	1A4	TB8	8	(3200)/ 3400	TB5	7	(3100)/ 3300 ←	1A3A8	TB25	11
(W144)/ W144	16	91	(3200)/ 3400	1A4	TB9	1	(3200)/ 3400	TB5	8	(3100)/ 3300 ←	1A3A3	TB9	10
(W163) W163	14	94	(3200)/ 3400	1A4	TB5	4	(3200)/ 3400	TB5	9	(3100)/ 3300 ←	1A3A4	GROUND	STUD

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
W301 (W307)	14	9	3600	4	TB1) (TB5)	1	3400 (3200)	TB6	1	3300/ (3100)	1A11	TB10	33
		9				2			2				40
		9				3			3				47
W348 (W351)	16	9	3600	4	TB2/ TB6	10	3400/ (3200)	TB6	4	3300/ (3100)	1A12	TB5	10
W349 (W351)	16	9	3600	4	TB1/ (TB5)	4	3400/ (3200)	TB6	5	3400/ (3200)	1A4	TB9	4
	16	9				5	←		6	←			5
W302 (W308)	16	9	3600	4	TB2/ (TB6)	1	3400/ (3200)	TB7	1	3300/ (3100)	1A12	TB5	1
		9				2	←		2	←			2
		9				3			3				3
		9				4			4				4
		9				5			5				5
		9				6			6				6
		9				7			7				7
		9				8			8				8
		9				9			9				9

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
W718	14	0	3800	JB	TB4	1	3400	TB8	1	3300	1A11	TB8	7
		2				2	←		2	←			1
		9				3			3				5
		5				4			4				3
		09				5			5				9
		50				6			6				10
		30				7			7				2
		20				8			8				6
		6				9			9				8
(W719)	14	2	3800	JB	(TB3)	2	(3200)	TB8	2	(3100)	1A11	TB8	1
		9				3	←		3	←			5
		5				4			4				3
		09				5			5				9
		50				6			6				10
		30				7			7				2
		20				8			8				6
		6				9			9				8

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
W113/ (W113)	10	0	3300/ (3100)	1A3A3K4		8	3400/ (3200)	TB9	1	3400/ (3200)	1A4	TB8	4
		0	→			9			2				5
		0				10			3				6
W139/ (W139)	10	0	3300/ (3100)	1A3A9	TB1	7	3400/ (3200)		4	3400/ (3200)	1A4	TB10	4
			→										
W169/ (W169)	10	0	3400/ (3200)	1A4	---	GND	3400/ (3200)		5	3300/ (3100)	GND	STUD	
										←			
W170/ (W170)	10	0	3400/ (3200)	1A6	---	GND	3400/ (3200)		6	3300/ (3100)	GND	STUD	
										←			
W172/ (W172)	10	0	3600	1A2	---	GND	3400/ (3200)		7	3300/ (3100)	GND	STUD	
			→							←			
W107	6	0	3300/ (3100)	1A11	TB10	1	3400/ (3200)	TB10	1	3400/ (3200)	1A6T1	---	1
		0	→			9			2				4
		0				4			3				1
		0				11			4				4
		0				16			5				1
		0				24			6				4
		0				19			7		1A6T2		1
		0				26			8				4

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
W122	6	0	3600	1A2	TB1	1	(3200)/ 3400	TB11	1	(3100)/ 3300	1A11K3		T1
	6	0				2	←		2	←			T2
	6	0				3			3				T3
W109	2	0	(3100)/ 3300	1A11	TB10	2	(3200)/ 3400	TB12	1	(3200)/ 3400	1A4	TB10	2
	2	0	→			3			2				1
	2	0				10			3				3
W718/ (W719)	14	0	2600	2A7	TB1/ (TB2)	1				3800		TB4/ (TB3)	
	2		→			2							2
	9					3							3
	5					4							4
	09					5							5
	50					6							6
	30					7							7
	20					8							8
	6					9							9

TABLE 4-22A. TRANSMITTERS NO. 1 AND NO. 2 INTERCONNECTING CABLES (Cont.)

CABLE NUMBER	GAGE	COLOR	FROM SHELTER	FROM UNIT	FROM BLOCK	FROM TERM	THROUGH JUNCTION BOX SHELTER	THROUGH JUNCTION BOX BLOCK	THROUGH JUNCTION BOX TERM	TO SHELTER	TO UNIT	TO BLOCK	TO TERM
W711			2600	2A7		J8				3200	1A4	FL1	J2
W712			2600	2A7		J13				3400	1A4	FL1	J2
W713			2600	2A7		J14				3600	3		J2
W714			2600	2A7		J9				3400	1A4		J4
W715			2600	2A7		J10				3200	1A4		J4
W716			2600	2A7		J11				3400	1A4		J5
W717			2600	2A7		J12				3200	1A4		J5

TABLE 4-22B. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLES

CABLE NO.	FROM	TO	CONNECTOR C.I.G.	CONNECTOR TIMER NO. 1	CONNECTOR TIMER NO. 2
W1	2A5J3	J3	UG421B/U		
W2	2A5J4	J8	UG421B/U		
W3	2A5J7	J2	UG421B/U		
W4	2A5J8	J7	UG421B/U		
W5	2A5J11	J4	UG421B/U		
W6	2A5J12	J9	UG421B/U		
W7	2A5J15	J5	UG421B/U		
W8	2A5J16	J10	UG421B/U		
W9	2A5J19	J1	UG421B/U		
W10	2A5J20	J6	UG421B/U		
W11	2A6J2/J3	J16	UG421B/U		
W12	CB1 2,3	L1A-L1B	BARE TINNED		
W13	CB2 3,4	L2A-L2B	BARE TINNED		
W14	2A6J10	1A5J8 ←	UG88E/U		
W15	2A6J11	1A5J10 ←	UG88E/U		
W101	2A5J1	1A13J4 ←	UG421B/U	UG421B/U	
W102	2A5J5	1A13J8 ←	UG421B/U	UG421B/U	

TABLE 4-22B. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLES (Cont.)

CABLE NO.	FROM	TO	CONNECTOR C.I.G.	CONNECTOR TIMER NO. 1	CONNECTOR TIMER NO. 2
W103	2A5J9	1A13J5 ←	UG421B/U	UG421B/U	
W104	2A5J13	1A13J6 ←	UG421B/U		
W105	2A5J17	1A13J7 ←	UG421B/U	UG421B/U	
W106	2A6J4/J5	1A13J2 ←	UG421B/U	UG421B/U	
W107	2A6J12	1A13J3 ←	UG88E/U	UG913A/U	
W108	2A6TB1	1A13TB2 ←	SOLDER LUG	SOLDER LUG	
W109	2A6TB3	1A13TB5 ←	SOLDER LUG	SOLDER LUG	
W110	2A6TB4	1A13TB6 ←	SOLDER LUG	SOLDER LUG	
W111	2A6TB5	1A13TB7 ←	SOLDER LUG	SOLDER LUG	
W112	2A6TB6	1A13TB8 ←	SOLDER LUG	SOLDER LUG	
W113	2A6TB7	1A13TB9 ←	SOLDER LUG	SOLDER LUG	
W114	2A6TB8	1A13TB10 ←	SOLDER LUG	SOLDER LUG	
W115	2A6TB9	1A13TB3 ←	SOLDER LUG	SOLDER LUG	
W116	TB2, 3 RECORD. #1	1A13TB1 ←	SOLDER LUG	SOLDER LUG	
W117	TB-2	1A13TB12	SOLDER LUG	SOLDER LUG	
W118	1A13J1	1A5J6		UG913A/U	
W119	1A13TB1	1 (OSC)		SOLDER LUG	

TABLE 4-22B. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLES (Cont.)

CABLE NO.	FROM →	TO	CONNECTOR C.I.G.	CONNECTOR TIMER NO. 1	CONNECTOR TIMER NO. 2
W120	1A13TB8	2A6TB7	SOLDER LUG	SOLDER LUG	
W201	2A5J2	1A13J4 ←	UG421B/U		UG421B/U
W202	2A5J6	1A13J8 ←	UG421B/U		UG421B/U
W203	2A5J10	1A13J5 ←	UG421B/U		UG421B/U
W204	2A5J14	1A13J6 ←	UG421B/U		UG421B/U
W205	2A5J18	1A13J7 ←	UG421B/U		UG421B/U
W206	2A6J6/J7	1A13J2 ←	UG421B/U		UG421B/U
W207	2A6J13	1A13J3 ←	UG88E/U		UG913A/U
W208	2A6TB1	1A13TB2 ←	SOLDER LUG		SOLDER LUG
W209	2A6TB10	1A13TB5 ←	SOLDER LUG		SOLDER LUG
W210	2A6TB11	1A13TB6 ←	SOLDER LUG		SOLDER LUG
W211	2A6TB12	1A13TB7 ←	SOLDER LUG		SOLDER LUG
W212	2A6TB13	1A13TB8 ←	SOLDER LUG		SOLDER LUG
W213	2A6TB14	1A13TB9 ←	SOLDER LUG		SOLDER LUG
W214	2A6TB15	1A13TB10 ←	SOLDER LUG		SOLDER LUG
W215	2A6TB16 RECORD. #2	1A13TB3 ←	SOLDER LUG		SOLDER LUG
W216	TB2, 3	1A13TB11 ←	SOLDER LUG		SOLDER LUG

TABLE 4-22B. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLES (Cont.)

CABLE NO.	FROM	TO	CONNECTOR C.I.G.	CONNECTOR XMTR CONTROL	CONNECTOR TIMER NO. 2
W217	TB-2	1A13TB12	SOLDER LUG		SOLDER LUG
W218	1A13J1	← 1A5J7 (OSC)			UG913A/U
W219	1A13TB1	2 (OSC)			SOLDER LUG
W220	1A13TB8	2A6TB14	SOLDER LUG		SOLDER LUG
W701	2A7J2 →	J1		UG421B/U	
W702	2A7J3 →	J2		UG421B/U	
W703	2A7J4 →	J3		UG421B/U	
W704	2A7J5 →	J4		UG421B/U	
W705	2A7J6 →	J5		UG421B/U	
W706	2A7J15 →	J6		UG421B/U	
W707	2A7J16 →	J7		UG421B/U	
W708	2A7J17 →	J8		UG421B/U	
W709	2A7J18 →	J9		UG421B/U	
W710	2A7J19 →	J10		UG421B/U	
W722	2A7TB5	AC POWER		SOLDER LUG	
W723	J3	3TB1 (SEE TABLE 2-20 BC.)			

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
W101		C.I.G.	2A5J1 P1		TIMER #1	1A13J4 P2		LOCAL 100KC	2100	2200
W102		C.I.G.	2A5J5 P1		TIMER #1	1A13J8 P2		TRANSMITTER TRIGGER	2100	2200
W103		C.I.G.	2A5J9 P1		TIMER #1	1A13J5 P2		PHASE CODE SET TRIGGERS	2100	2200
W104		C.I.G.	2A5J13 P1		TIMER #1	1A13J6 P2		PHASE CODE RESET TRIGGERS	2100	2200
W105		C.I.G.	2A5J17 P1		TIMER #1	1A13J7 P2		TRANSMITTER CONTROL SCOPE TRIGGER	2100	2200
W106		C.I.G.	2A6J4/J5 P1		TIMER #1	1A13J2 P2		RECEIVED RF SIGNAL	2100	2200
W107		C.I.G.	2A6J12 P1		TIMER #1	1A13J3 P2		COMM SIG	2100	2200
W108	GRAY WHT-GRAY	C.I.G.	2A6TB1	1 3	TIMER #1	1A13TB2	1 2	120 VAC	2100	2200
W109	WH-BLK BR, BLK (SHIELD)	C.I.G.	2A6TB3	1 2	TIMER #1	1A13TB5	1 2	MASTER RESET	2100	2200
	WH-BLK- RD, BLK (SHIELD)			3 4			3 4	10 KC RESET	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
W109	WH-BLK-YEL, BLK (SHIELD)			5 6			5 6	1/2 GRR RESET	2100	2200
W110	WH-BLK-VIO, BLK (SHIELD)	C.I.G.	2A6TB4	1 2	TIMER #1	1A13TB6	1 2	INVERTED LOCAL INTERVAL	2100	2200
	WH-BLK-BL, BLK (SHIELD)			3 4			3 4	LAST PULSE TRIGGER	2100	2200
	WHT-OR-VIO, BLK (SHIELD)			5 6			5 6	SIMULATOR TRIGGER	2100	2200
W111	WH-BLK-VIO, BLK (SHIELD)	C.I.G.	2A6TB5	1 2	TIMER #1	1A13TB7	1 2	EXTERNAL MASTER RESET	2100	2200
	WH-BLK-OR, BLK (SHIELD)			3 4			3 4	EXTERNAL 10 KC RESET	2100	2200
	WH-BLK-BR, BLK (SHIELD)			5 6			5 6	EXTERNAL 1/2 GRR RESET	2100	2200
W112	GRN, BLK (SHIELD)	C.I.G.	2A6TB6	1 2	TIMER #1	1A13TB8	1 2	PHASE CODE SET TRIGGERS	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
	YEL, BLK (SHIELD)			3 4			3 4	PHASE CODE RESET TRIGGERS	2100	2200
W113	OR	C.I.G.	2A6TB7	1	TIMER #1	1A13TB9	1	NO GO ALARM	2100	2200
	VIO			8			8	STANDBY OPER CONTROL	2100	2200
W114	WH-BLK-OR	C.I.G.	2A6TB8	1	TIMER #1	1A13TB10	1	MASTER BLINK & KEY	2100	2200
	WH-BLK-YEL			2			2	SLAVE KEY	2100	2200
	WH-BLK-RD			3			3	SLAVE BLINK	2100	2200
	WH-BRN-RD			4			4	M LAST PULSE ALARM	2100	2200
	WH-BRN-YEL			5			5	SLAVE LAST PULSE ALARM	2100	2200
	WH-BLK			6			6	M INTERVAL CHOPPER V	2100	2200
	WH-OR			7			7	X INTERVAL CHOPPER V	2100	2200
W114	WH-YEL			8			8	Y INTERVAL CHOPPER V	2100	2200
	WH-GRN			9			9	Z INTERVAL CHOPPER V	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
W115	RED	C.I.G.	2A6TB9	1	TIMER #1	1A13TB3	1	+250V	2100	2200
	WH-RD			2			2	+150V	2100	2200
	WH-RD YEL			4			4	+12V	2100	2200
	WH-RD-VIO			5			5	-12V	2100	2200
	WH-GRN-VIO			6			6	-15V	2100	2200
	WH-VIO			7			7	-150V	2100	2200
W118		TIMER #1	1A13J1 P2		FREQUENCY STANDARD AN/URQ-14	1A5J6		OSCILLATOR 100KC	2100	2200
W119	WH-OR-GRN-WH	TIMER #1	1A13TB1	1	FREQUENCY		A	AFC SIGNAL (A)	2100	2200
				2	STANDARD		B	AFC SIGNAL (B)		
				3	AN/URQ-14		C	AFC SIGNAL (C)		
W120	WH-BLK	TIMER #1	1A13TB8	3	C.I.G.	2A6TB7	3	SELECTED AGC	2100	2200
W201		C.I.G.	2A5J2 P1		TIMER #2	1A13J4 P2		LOCAL 100KC	2100	2200
W202		C.I.G.	2A5J6 P1		TIMER #2	1A13J8 P2		TRANSMITTER TRIGGER	2100	2200
W203		C.I.G.	2A5J10 P1		TIMER #2	1A13J5 P2		PHASE CODE SET TRIGGERS	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
W204		C.I.G.	2A5J14 P1		TIMER #2	1A13J6 P2		PHASE CODE RESET TRIGGERS	2100	2200
W205		C.I.G.	2A5J18 P1		TIMER #2	1A13J7 P2		TRANSMITTER CONTROL SCOPE TRIGGER	2100	2200
W206		C.I.G.	2A6J6/J7 P1		TIMER #2	1A13J2 P2		RECEIVED RF SIGNALS	2100	2200
W207		C.I.G.	2A6J13 P1		TIMER #2	1A13J3 P2		COMM. SIG.	2100	2200
W208	GRAY	C.I.G.	2A6TB1	5	TIMER #2	1A13TB2	1	120VAC	2100	2200
	WHT-GRAY			7			2			
W209	WH-BLK-BRN, BLK (SHIELD)	C.I.G.	2A6TB10	1 2	TIMER #2	1A13TB5	1 2	MASTER RESET	2100	2200
	WH-BLK-RD, BLK (SHIELD)			3 4			3 4	10KC RESET	2100	2200
W209	WH-BLK-YEL, BLK (SHIELD)			5 6			5 6	1/2 GRR RESET	2100	2200
W210	WH-BLK-VIO, BLK (SHIELD)	C.I.G.	2A6TB11	1 2	TIMER #2	1A13TB6	1 2	INVERTED LOCAL INTERVAL	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
	WH-BLK-BLU, BLK (SHIELD)			3 4			3 4	LAST PULSE TRIGGER	2100	2200
	WH-OR-VIO BLK (SHIELD)			5 6			5 6	SIMULATOR TRIGGER	2100	2200
W211	WH-BLK-VIO, BLK (SHIELD)	C.I.G.	2A6TB12	1 2	TIMER #2	1A13TB7	1 2	EXTERNAL MASTER RESET	2100	2200
	WH-BLK-OR, BLK (SHIELD)			3 4			3 4	EXTERNAL 10KC RESET	2100	2200
	WH-BLK-BRN, BLK (SHIELD)			5 6			5 6	EXTERNAL 1/2 GRR RESET	2100	2200
W212	GRN, BLK (SHIELD)	C.I.G.	2A6TB13	1 2	TIMER #2	1A13TB8	1 2	PHASE CODE SET TRIGGERS	2100	2200
	YEL, BLK (SHIELD)			3 4			3 4	PHASE CODE RESET TRIGGERS	2100	2200
W213	ORN	C.I.G.	2A6TB14	1	TIMER #2	1A13TB9	1	NO GO ALARM	2100	2200
	VIO			8			8	STANDBY OPER. CONTROL	2100	2200
W214	WH-BLK-OR	C.I.G.	2A6TB15	1	TIMER #2	1A13TB10	1	MASTER BLINK & KEY	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
	WH-BLK-YEL			2			2	SLAVE KEY	2100	2200
	WH-BLK-RD			3			3	SLAVE BLINK	2100	2200
	WH-BRN-RD			4			4	M LAST PULSE ALARM	2100	2200
	WH-BRN-YEL			5			5	SLAVE LAST PULSE ALARM	2100	2200
	WH-BLK			6			6	M INTERNAL CHOPPER V	2100	2200
	WH-OR			7			7	X INTERVAL CHOPPER V	2100	2200
	WH-YEL			8			8	Y INTERVAL CHOPPER V	2100	2200
	WH-GRN			9			9	Z INTERVAL CHOPPER V	2100	2200
W215	RED	C.I.G.	2A6TB16	1	TIMER #2	1A13TB3	1	+250V	2100	2200
	WH-RD			2			2	+150V	2100	2200
	WH-RD-YEL			4			4	+12V	2100	2200
	WH-RD-VIO			5			5	-12V	2100	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
	WH-GRN-VIO			6			6	-15V	2100	2200
	WH-VIO			7			7	-150V	2100	2200
W218		TIMER #2	1A13J1 P2		FREQUENCY STANDARD AN/URQ-14	1A5J7		OSCILLATOR 100KC	2100	2200
W219	WH-OR-GRN	TIMER #2	1A13TB1	1	FREQUENCY			AFC SIGNAL (A)	2100	2200
	WH-OR-BLU			2	STANDARD			AFC SIGNAL (B)	2100	2200
	WH-OR VIO			3	AN/URQ-14			AFC SIGNAL (C)	2100	2200
W220	WH-BLK-BLK	TIMER #2	1A13TB8	5	C.I.G.	2A6TB14	3	SELECTED AGC	2100	2200
W701		XMTR CONTROL	2A7J2 P1		ENTRANCE BOX	J1 P2		OPERATE XMTR CONTROL SCOPE TRIGGERS	2600	2200
W702		XMTR CONTROL	2A7J3 P1		ENTRANCE BOX	J2 P2		OPERATE XMTR TRIGGERS	2600	2200
W703		XMTR CONTROL	2A7J4 P1		ENTRANCE BOX	J3 P2		OPERATE 100KC	2600	2200
W704		XMTR CONTROL	2A7J5 P1		ENTRANCE BOX	J4 P2		OPERATE PHASE CODE SET TRIGGERS	2600	2200

TABLE 4-22C. TIMER-SYNCHRONIZER SET AN/FPN-46, INTERCONNECTING CABLE FUNCTIONS

CABLE NO.	COLOR	FROM	CONN. & MATING PLUG	PIN NO.	TO	CONN. & MATING PLUG	PIN NO.	FUNCTION	FROM SHELTER	TO SHELTER
W705		XMTR CONTROL	2A7J6 P1		ENTRANCE BOX	J5 P2		OPERATE PHASE CODE RESET TRIGGERS	2600	2200
W706		XMTR CONTROL	2A7J15 P1		ENTRANCE BOX	J6 P2		STANDBY XMTR CONTROL SCOPE TRIGGERS	2600	2200
W707		XMTR CONTROL	2A7J16 P1		ENTRANCE BOX	J7 P2		STANDBY XMTR TRIGGERS	2600	2200
W708		XMTR CONTROL	2A7J17 P1		ENTRANCE BOX	J8 P2		STANDBY 100KC	2600	2200
W709		XMTR CONTROL	2A7J18 P1		ENTRANCE BOX	J9 P2		STANDBY PHASE CODE SET TRIGGERS	2600	2200
W710		XMTR CONTROL	2A7J19 P1		ENTRANCE BOX	J10 P2		STANDBY PHASE CODE RESET TRIGGERS	2600	2200
W722		XMTR CONTROL	2A7TB5		20 VAC POWER D5			120 VAC POWER	2600	2200
W723	BLK (SLV)	ANTENNA 3TB1 COUPLING UNIT			ENTRANCE BOX	J3		RF FROM ACU	ACV	2200

TABLE 4-22D. RECORDER WIRING FUNCTIONS

SYMBOL	COLOR	FROM AN/FPN-46 #1	TO AN/GSH-18	FUNCTION
W116	WH-OR-YEL	1A13TB11-1	TB-3-1	Cycle Comp Recorder 28V
	WH-GRN-BLU	-2	TB-2-15	Cycle Comp Recorder
	WH-BLK-YEL	-3	TB-3-4	Cycle Comp Common
	YEL	-4	TB-3-5	Recorder Common
	BLU	-7	TB-3-2	Recorder 28V
W117	WH-BLK-OR	1A13TB12-1	TB-2-3	M Phase Recorder
	WH-BLK-GRN	-2	TB-2-1	M Envelope Recorder
	WH-OR-VIO	-3	TB-2-7	X PHASE Recorder
	WH-YEL-BLU	-4	TB-2-5	X Envelope Recorder
	WH-YEL-VIO	-5	TB-2-11	Y Phase Recorder
	WH-YEL-VIO	1A13TB12-6	TB-2-9	Y Envelope Recorder
	WH-OR-GRN	-7	TIE	Z Phase Recorder
	WH-YEL-GRN	-8	DO NOT CUT	Z Envelope Recorder

NOTE

THE FOLLOWING CONNECTIONS HAVE BEEN MADE WITHIN THE AN/GSH-18. "TB-3" to "TB-3-6" to TB-2-2, 4, 6, 8 10, 12, 14, 16, and 17". FOR CONNECTIONS FROM AN/FPN-46 #2 AND AN/GSH-18, SYMBOLS W216 AND W217 ARE USED.

TABLE 4-22E. OSCILLATOR WIRING FUNCTIONS

SYMBOL	COLOR	FROM	TO		FUNCTION
W118	-	URQ-14 1A5J6	AN/FPN-46 (#1)	1A13J1P2	Osc. 100KC
W218	-	URQ-14 1A5J7	AN/FPN-46 (#2)	1A13J1P2	Osc. 100KC
W14	-	URQ-14 1A5J8	AN/FPN-46 (C16)	2A6J10	100KC Monitor
W15	-	URQ-14 1A5J10	AN/FPN-46 (C16)	2A6J11	1 MC Monitor

TABLE 4-23. POWER CABLING

Cable No.	Color	From/Shelter	To/Shelter	Notes
W11Gen1-1	BLK	Gen1-A	CB1-A/4100	
W11Gen1-2	RED	Gen1-B	CB1-B/4100	
W11Gen1-3	BLU	Gen1-C	CB1-C/4100	FROM GEN
W11Gen2-1	BLK	Gen2-A	CB2-A/4100	1, 2, 3, & 4
W11Gen2-2	RED	Gen2-B	CB2-B/4100	TO GEN
W11Gen2-3	BLU	Gen2-C	CB2-C/4100	DISC
W11Gen3-1	BLK	Gen3-A	CB3-A/4100	PNL
W11Gen3-2	RED	Gen3-B	CB3-B/4100	E
W11Gen3-3	BLU	Gen3-C	CB3-C/4100	
W11Gen4-1	BLK	Gen4-A	CB4-A/4100	
W11Gen4-2	RED	Gen4-B	CB4-B/4100	
W11Gen4-3	BLU	Gen4-C	CB4-C/4100	
See Notes	BLK	CB1-A/4100	1104B2E21/1100	These GFE Cables have no color code or cable marking.
		CB1-B/4100	E22/1100	
		CB1-C/4100	E23/1100	
		CB2-A/4100	E24/1100	
		CB2-B/4100	E25/1100	
		CB2-C/4100	E26/1100	
		CB3-A/4100	E27/1100	
		CB3-B/4100	E28/1100	
		CB3-C/4100	E29/1100	
		CB4-A/4100	E31/1100	
		CB4-B/4100	E32/1100	
	BLK	CB4-C/4100	1104B2E33/1100	

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W11Gen1-4	BLK	P2-A/1100	Gen1	Mates W/11J2A
W11Gen1-4	RED	P2-B/1100	Gen1	Mates W/11J2B
W11Gen1-4	WHT	P2-C/1100	Gen1	Mates W/11J2C
W11Gen2-4	BLK	P3-A/1100	Gen2	Mates W/11J3A
W11Gen2-4	RED	P3-B/1100	Gen2	Mates W/11J3B
W11Gen2-4	WHT	P3-C/1100	Gen2	Mates W/11J3C
W11Gen3-4	BLK	P4-A/1100	Gen3	Mates W/11J4A
W11Gen3-4	RED	P4-B/1100	Gen3	Mates W/11J4B
W11Gen3-4	WHT	P4-C/1100	Gen3	Mates W/11J4C
W11Gen4-4	BLK	P5-A/1100	Gen4	Mates W/11J7
W11Gen4-4	RED	P5-B/1100	Gen4	Mates W/11J7
W11Gen4-4	WHT	P5-C/1100	Gen4	Mates W/11J7
W11T1-1	BLK	1104B1E11/1100	T1-H1	E
W11T1-2	RED	1104B1E12/1100	T1-H2	E
W11T1-3	BLU	1104B1E13/1100	T1-H3	E
W11T1-4A&B	BLK	T1-X1	1104B1E7/1100	E
W11T1-5A&B	RED	T1-X2	1104B1E8/1100	E
W11T1-6A&B	BLU	T1-X3	1104B1E9/1100	E
W11T1-7A&B	WHT	T1-X0	1104B1E10/1100	E
W11FTP	BLK	11P1A	TB4-1 Fuel	Mates W/11J1
W11FTP	RED	11P1B	TB4-2 Transfer	Mates W/11J1
W11FTP	BLU	11P1C	TB4-3 Pump	Mates W/11J1
W1112-1	BLK	*11A3CB9/1100	12TB1-7/1200	P
W1112-2	WHT	*11A3Neut/1100	12TB1-8/1200	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W1112-3	BLK	*11A3CB6/1100	12TB1-5/1200	P
W1112-4	WHT	*11A3Neut/1100	12TB1-6/1200	P
W1112-5	BLK	*11A3CB15/1100	12TB1-2/1200	P
W1112-6	RED	*11A3CB15/1100	12TB1-1/1200	P, to AC HTR
W1112-7	BLK	*11A3CB14/1100	12TB1-10/1200	P
W1112-8	WHT	*11A3Neut/1100	12TB1-9/1200	P
W1213-1	BLK	*12TB1-10/1200	TB1-6/1300	P, Fire Detection Unit
W1213-2	WHT	*12TB1-9/1200	TB1-5/1300	P, Fire Detection Unit
W1113-1	BLK	*11A3CB13/1100	13TB1-7/1300	Via 1200
W1113-2	WHT	*11A3Neut/1100	13TB1-8/1300	Via 1200
W1113-3	BLK	*11A3CB11/1100	13TB1-9/1300	Via 1200
W1113-4	WHT	*11A3Neut/1100	13TB1-10/1300	Via 1200
W1113-5	BLK	*11A3CB12/1100	13TB1-2/1300	Via 1200
W1113-6	RED	*11A3CB12/1100	13TB1-1/1300	Via 1200 to ACHTR
W1113-7	BLK	*11A3CB8/1100	13TB1-5/1300	Via 1200
W1113-8	WHT	*11A3Neut/1100	13TB1-6/1300	Via 1200
W1135-1A&B	BLK	1104B1E18/1100	3516B1E28/3500	E
W1135-2A&B	RED	E19/1100	3516B1E29/3500	E
W1135-3A&B	BLU	E20/1100	3516B1E30/3500	E
W1123-1	BLK	11J8A/1100	23TB4-1/2300	E } Air Conditioner
W1123-1	RED	11J8B/1100	23TB4-2/2300	E } Air Conditioner
W1123-1	BLU	11J8C/1100	23TB4-3/2300	E } Air Conditioner

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W1121-1	BLK	11J6A/1100	21TB4-1/2100	E — Air Conditioner 1
W1121-1	RED	11J6B/1100	21TB4-2/2100	E — Air Conditioner 1
W1121-1	BLU	11J6C/1100	21TB4-3/2100	E — Air Conditioner 1
W1126-5	BLK	1104B1E14/1100	*2602B1E1/2600	E
W1126-2	RED	E15/1100	*2602B1E2/2600	E
W1126-3	BLU	E16/1100	*2602B1E3/2600	E
W1126-4	WHT	1104B1E17/1100	*2602B1E4/2600	E
W1121-1A	BLK	11J7A/1100	21TB4-1/2100	E — Air Conditioner 2
W1121-1A	RED	11J7B/1100	21TB4-2/2100	E — Air Conditioner 2
W1121-1A	BLU	11J76/1100	21TB4-3/2100	E — Air Conditioner 2
W2226-1	BLK	*26A1CB3-A/2600	2216B3E1/2200	P
W2226-2	RED	*26A1CB3-B/2600	2216B3E2/2200	P
W2226-3	BLK	*26A1CB1-A/2600	2216B3E3/2200	P
W2226-4	RED	*26A1CB1-B/2600	2216B3E4/2200	P
W2226-5	BLK	*26A1CB2-A/2600	2216B3E5/2200	P
W2226-6	RED	*26A1CB2-B/2600	2216B3E6/2200	P
W2526-1	RED	*26A1CB15-C/2600	25TB1-1/2500	P
W2526-2	BLK	*26A1CB15-A/2600	25TB1-2/2500	P
W2526-5	BLK	*26A1CB12-C/2600	25TB1-5/2500	P
W2526-6	WHT	*26A1-Neut/2600	25TB1-6/2500	P
W2526-7	BLK	*26A1CB13-B/2600	25TB1-7/2500	P
W2526-8	WHT	*26A1-Neut/2600	25TB1-8/2500	P
W2426-1	RED	*26A1CB11-C/2600	24TB1-1/2400	Via 2500
W2426-2	BLK	*26A1CB11-A/2600	24TB1-2/2400	Via 2500

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2426-3	BLK	*26A1CB9-B/2600	24TB1-3/2400	Via 2500
W2426-4	WHT	*26A1-Neut/2600	24TB1-4/2400	Via 2500
W2426-7	BLK	*26A1CB8-C/2600	24TB1-7/2400	Via 2500
W2426-8	WHT	*26A1-Neut/2600	24TB1-8/2400	Via 2500
W2426-9	BLK	*26A1CB7-A/2600	24TB1-9/2400	Via 2500
W2426-10	WHT	*26A1-Neut/2600	24TB1-10/2400	Via 2500
W2426-11	BLK	*26A1CB10-B/2600	24TB1-11/2400	Via 2500
W2426-12	WHT	*26A1-Neut/2600	24TB1-12/2400	Via 2500
W2426-13	BLK	*26A1CB21-A/2600	24TB2-1/2400	Via 2500
W2426-14	RED	*26A1CB21-B/2600	24TB2-2/2400	Via 2500
W2426-15	BLK	*26A1CB20-C/2600	24TB2-3/2400	Via 2500
W2426-16	WHT	*26A1-Neut/2600	24TB2-4/2400	Via 2500
W2426-17	BLK	*26A1CB16-C/2600	24TB2-5/2400	Via 2500
W2426-18	WHT	*26A1-Neut/2600	24TB2-6/2400	Via 2500
W2426-19	BLK	*26A1CB4-A/2600	24TB2-7/2400	Via 2500
W2426-20	RED	*26A1CB4-B/2600	24TB2-8/2400	Via 2500
W2426-21	BLU	*26A1CB4-C/2600	24TB2-9/2400	Via 2500
W2426-22	WHT	*26A1-Neut/2600	24TB2-10/2400	Via 2500
W2427-1	BLK	*24TB2-1/2400	27TB1-1/2700	P
W2427-2	RED	*24TB2-2/2400	27TB1-2/2700	P
W2427-5	BLK	*24TB2-5/2400	27TB1-5/2700	P
W2427-6	WHT	*24TB2-6/2400	27TB1-6/2700	P
W2427-7	BLK	*24TB2-3/2400	27TB1-7/2700	P
W2427-8	WHT	*24TB2-4/2400	27TB1-8/2700	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2324-1	BLK	*24TB2-7/2400	2316B1E1/2300	Via 2700
W2324-2	RED	*24TB2-8/2400	2316B1E2/2300	Via 2700
W2324-3	BLU	*24TB2-9/2400	2316B1E3/2300	Via 2700
W2324-4	WHT	*24TB2-10/2400	2316B1E4/2300	Via 2700
W2226-8	BLK	*26A1CB6-C/2600	22P4-A/2200	Mates W/22J4-A
W2226-9	WHT	*26A1-Neut/2600	22P4-B/2200	Mates W/22J4-B
W2526-9	BLK	*26A1CB6-C/2600	25TB1-9/2500	P
W2526-10	WHT	*26A1-Neut/2600	25TB1-10/2500	P
W2425-9	BLK	*25TB1-9/2500	24TB1-13/2400	P
W2425-10	WHT	*25TB1-10/2500	24TB1-14/2400	P
W2427-9	BLK	*24TB1-13/2400	27TB1-9/2700	P
W2427-10	WHT	*24TB1-14/2400	27TB1-10/2700	P
W2327-1	BLK	*27P1A/2700	23P6A/2300	Mates W/23J6A
W2327-1	WHT	*27P1B/2700	23P6B/2300	Mates W/23J6B
CGW13	N/A	FL3/2200	L2A	To Cont. Ind. Permanent Wiring Gp. #2
CGW13	N/A	FL4/2200	L2B	
W2122-6	BLK	*A1TB4-5/2200	21TB2-1/2100	From 2200 Filter Box P
W2122-7	WHT	*A1TB4-6/2200	21TB2-2/2100	
W2122-1	BLK	*22A1CB7/2200	21TB1-1/2100	P
W2122-2	RED	*22A1CB8/2200	21TB1-2/2100	P
W2122-3	BLK	*22A1CB9/2200	21TB1-3/2100	P
W2122-4	RED	*22A1CB10/2200	21TB1-4/2100	P
W2122-5	BLK	*22A1CB11/2200	21A5P1-A/2100	Mates W/21A5J1-A
W2122-5	RED	*22A1CB12/2200	21A5P1-C/2100	Mates W/21A5J1-C

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W35T2-1	BLK	3516B1E7/3500	T2-H1	E
W35T2-2	RED	3516B1E8/3500	T2-H2	E
W35T2-3	BLU	3516B1E9/3500	T2-H3	E
W35T2-4	BLK	T2-X1	3516B2E3/3500	E
W35T2-5	RED	T2-X2	3516B2E4/3500	E
W35T2-6	BLU	T2-X3	3516B2E5/3500	E
W35T2-7	WHT	T2-X0	3516B2E6/3500	E
W35HE1-1	BLK	3516B2E10/3500	TB1-1	To Heat Exchange #1 E
W35HE1-2	RED	3516B2E11/3500	TB1-2	
W35HE1-3	BLU	3516B2E12/3500	TB1-3	
W35HE1-4	BLK	35P1-A/3500	TB2-1	Mates W/35J1 E
W35HE1-4	RED	35P1-B/3500	TB2-2	
W35HE1-4	WHT	35P1-C/3500	TB2-3	
W35HE2-1	BLK	3516B2E13/3500	TB1-1	To Heat Exchange #2 E
W35HE2-2	RED	3516B2E14/3500	TB1-2	
W35HE2-3	BLU	3516B2E15/3500	TB1-3	
W35HE2-4	BLK	35P2-A/3500	TB2-1	Mates W/35J2 E
W35HE2-4	RED	35P2-B/3500	TB2-2	
W35HE2-4	WHT	35P2-C/3500	TB2-3	
CGW322	BLK	3516B1E32/3500	33E1/3300	E
CGW323	RED	3516B1E33/3500	33E2/3300	E
CGW324	BLU	3516B1E34/3500	33E3/3300	E

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3534-1	BLK	3516B2E22/3500	TB4-1/3400	Air Conditioner 1 E
W3534-1	RED	E23/3500	TB4-2/3400	
W3534-1	BLU	E24/3500	TB4-3/3400	
W3534-2	BLK	E25/3500	TB4-1/3400	Air Conditioner 2 E
W3534-2	RED	E26/3500	TB4-2/3400	
W3534-2	BLU	3516B2E27/3500	TB4-3/3400	
CGW329	BLK	3516B1E35/3500	31E1/3100	E
CGW330	RED	3516B1E36/3500	31E2/3100	E
CGW331	BLU	3516B1E37/3500	31E3/3100	E
W3532-1	BLK	3516B2E16/3500	TB4-1/3200	
W3532-1	RED	E17/3500	TB4-2/3200	Air Conditioner #1
W3532-1	BLU	E18/3500	TB4-3/3200	E
W3532-2	BLK	E19/3500	TB4-1/3200	Air Conditioner #2 E
W3532-2	RED	E20/3500	TB4-2/3200	
W3532-2	BLU	3516B2E21/3500	TB4-3/3200	
W3538-1	BLK	*35A3CB24-C/3500	38TB2-1/3800	P
W3538-2	WHT	*35A3-Neut/3500	38TB2-2/3800	P
W3538-3	BLK	*35A3CB22-A/3500	38TB1-1/3800	P
W3538-4	WHT	*35A3-Neut/3500	38TB1-2/3800	P
W3538-5	BLK	*35A3CB23-B/3500	38TB1-3/3800	P
W3538-6	WHT	*35A3-Neut/3500	38TB1-4/3800	P
W3538-7	BLK	*35A3CB18-A/3500	38TB1-5/3800	P
W3538-8	WHT	*35A3-Neut/3500	38TB1-6/3800	P
W3538-9	BLK	*35A3CB20-B/3500	38TB1-7/3800	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3538-10	WHT	*35A3-Neut/3500	38TB1-8/3800	P
W3538-13	BLK	*35A3-CB15-A/3500	38TB1-11/3800	P
W3538-14	WHT	*35A3-Neut/3500	38TB1-12/3800	P
W3538-15	BLK	*35A3CB14-A/3500	38TB1-13/3800	P
W3538-16	WHT	*35A3-Neut/3500	38TB1-14/3800	P
W3538-17	BLK	*35A3CB17-B/3500	38TB1-15/3800	P
W3538-18	RED	*35A3CB17-C/3500	38TB1-16/3800	P
W3538-19	BLK	*35A3CB16-A/3500	38TB1-19/3800	P
W3538-20	WHT	*35A3-Neut/3500	38TB1-20/3800	P
W3538-21	BLK	*35A3CB19-A/3500	38TB1-21/3800	P
W3538-22	WHT	*35A3-Neut/3500	38TB1-22/3800	P
W3538-23	BLK	*35A3CB21-B/3500	38TB1-23/3800	P
W3538-24	RED	*35A3CB21-C/3500	38TB1-24/3800	P
W3435-1	BLK	*35A3CB4-B/3500	34TB1-1/3400	Via 3800
W3435-2	WHT	*35A3-Neut/3500	34TB1-2/3400	Via 3800
W3435-3	BLK	*35A3CB10-C/3500	34TB1-3/3400	Via 3800
W3435-4	WHT	*35A3-Neut/3500	34TB1-4/3400	Via 3800
W3435-5	BLK	*35A3CB6-A/3500	34TB1-5/3400	Via 3800
W3435-6	RED	*35A3CB6-C/3500	34TB1-6/3400	Via 3800
W3435-7	BLK	*35A3CB8-B/3500	34TB1-9/3400	Via 3800
W3435-8	WHT	*35A3-Neut/3500	34TB1-10/3400	Via 3800

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3435-9	BLK	*35A3CB2-A/3500	34TB1-11/3400	Via 3800
W3435-10	WHT	*35A3-Neut/3500	34TB1-12/3400	
W3435-11	BLK	*35A4CB3-A/3500	34TB1-13/3400	
W3435-12	RED	*35A4CB3-B/3500	34TB1-14/3400	
W3435-13	BLK	*35A4CB5-A/3500	34TB1-15/3400	
W3435-14	RED	*35A4CB5-C/3500	34TB1-16/3400	
CGW325	WHT	3516B1E41/3500	33E7/3300	E
CGW326	BLK	3516B1E38/3500	33E4/3300	
CGW327	RED	3516B1E39/3500	33E5/3300	
CGW328	BLU	3516B1E40/3500	33E6/3300	
W3235-1	BLK	*35A3CB3-B/3500	32TB1-1/3200	P
W3235-2	WHT	*35A3-Neut/3500	32TB1-2/3200	P
W3235-3	BLK	*35A3CB9-C/3500	32TB1-3/3200	P
W3235-4	WHT	*35A3-Neut/3500	32TB1-4/3200	P
W3235-5	BLK	*35A3CB5-A/3500	32TB1-5/3200	P
W3235-6	RED	*35A3CB5-C/3500	32TB1-6/3200	P
W3235-7	BLK	*35A3CB7-B/3500	32TB1-9/3200	P
W3235-8	WHT	*35A3-Neut/3500	32TB1-10/3200	P
W3235-9	BLK	*35A3CB1-A/3500	32TB1-11/3200	P
W3235-10	WHT	*35A3-Neut/3500	32TB1-12/3200	P
W3235-11	BLK	*35A4CB4-A/3500	32TB1-13/3200	P
W3235-12	RED	*35A4CB4-B/3500	32TB1-14/3200	P
W3235-13	BLK	*35A4CB6-A/3500	32TB1-15/3200	P
W3235-14	RED	*35A4CB6-C/3500	32TB1-16/3200	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
CGW318	WHT	3516B1E45/3500	31E7/3100	
CGW319	BLK	3516B1E42/3500	31E4/3100	
CGW320	RED	3516B1E43/3500	31E5/3100	E
CGW321	BLU	3516B1E44/3500	31E6/3100	
W3438-1	BLK	*38TB2-1/3800	34TB2-1/3400	P
W3438-2	WHT	*38TB2-2/3800	34TB2-2/3400	P
W3334-1	BLK	*34TB2-1/3400	33TB2-1/3300	P
W3334-2	WHT	*34TB2-2/3400	33TB2-2/3300	P
W3334-3	N/A	*34TB2-10/3400	33TB2-17/3300	P
W3334-17	BLK	*34TB1-9/3400	33TB1-1/3300	P
W3334-18	WHT	*34TB1-10/3400	33TB1-2/3300	P
W3334-19	BLK	*34TB1-11/3400	33TB1-3/3300	P
W3334-20	WHT	*34TB1-12/3400	33TB1-4/3300	P
W3334-21	BLK	*34TB1-13/3400	33TB1-5/3300	P
W3334-22	RED	*34TB1-14/3400	33TB1-6/3300	P
W3334-23	BLK	*34TB1-15/3400	33TB1-7/3300	P
W3334-24	RED	*34TB1-16/3400	33TB1-8/3300	P
W3638-1	BLK	*38TB2-1/3800	36TB2-1/3600	P
W3638-2	WHT	*38TB2-2/3800	36TB2-2/3600	P
W3638-5	BLK	*38TB1-11/3800	36TB1-1/3600	P
W3638-6	WHT	*38TB1-12/3800	36TB1-2/3600	P
W3638-7	BLK	*38TB1-13/3800	36TB1-3/3600	P
W3638-8	WHT	*38TB1-14/3800	36TB1-4/3600	P
W3638-9	BLK	*38TB1-15/3800	36TB1-5/3600	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3638-10	RED	*38TB1-16/3800	36TB1-6/3600	P
W3638-11	BLK	*38TB1-19/3800	36TB1-9	P
W3638-12	WHT	*38TB1-20/3800	36TB1-10	P
W3638-13	BLK	*38TB1-21/3800	36TB1-11	P
W3638-14	WHT	*38TB1-22/3800	36TB1-12	P
W3638-15	BLK	*38TB1-23/3800	36TB1-7	P
W3638-16	RED	*38TB1-24/3800	36TB1-8	P
W3637-1	BLK	*36TB2-1/3600	37TB2-1/3700	P
W3637-2	WHT	*36TB2-2/3600	37TB2-2/3700	P
W3637-3	BLK	*36TB1-9/3600	37TB1-1/3700	P
W3637-4	WHT	*36TB1-10/3600	37TB1-2/3700	P
W3637-5	BLK	*36TB1-11/3600	37TB1-3/3700	P
W3637-6	WHT	*36TB1-12/3600	37TB1-4/3700	P
W3637-7	BLK	*36TB1-13/3600	37TB1-5/3700	P
W3637-8	RED	*36TB1-14/3600	37TB1-6/3700	P
W3238-1	BLK	*38TB2-1/3800	32TB2-1/3200	P
W3238-2	WHT	*38TB2-2/3800	32TB2-2/3200	P
W3132-1	BLK	*32TB2-1/3200	31TB2-1/3100	P
W3132-2	WHT	*32TB2-2/3200	31TB2-2/3100	P
W3132-3	N/A	*32TB2-10/3200	31TB2-17/3100	P
W3132-17	BLK	*32TB1-9/3200	31TB1-1/3100	P
W3132-18	WHT	*32TB1-10/3200	31TB1-2/3100	P
W3132-19	BLK	*32TB1-11/3200	31TB1-3/3100	P
W3132-20	WHT	*32TB1-12/3200	31TB1-4/3100	P

TABLE 4-23. POWER CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3132-21	BLK	*32TB1-13/3200	31TB1-5/3100	P
W3132-22	RED	*32TB1-14/3200	31TB1-6/3100	P
W3132-23	BLK	*32TB1-15/3200	31TB1-7/3100	P
W3132-24	RED	*32TB1-16/3200	31TB1-8/3100	P

TABLE 4-24. FIRE DETECTION CABLING

Cable No.	Color	From/Shelter	To/Shelter	Notes
W1126-1		26P1-D/2600	11P5-D/1100	Mates W/11J5 E
W1126-1		26P1-A/2600	11P5-A/1100	Mates W/11J5 E
W1112-9		*11J5-E/1100	12TB1-11/1200	P
W1112-10		*11J5-B/1100	12TB1-12/1200	P
W1113-9		*11J5-F/1100	13TB1-11/1300	P
W1113-10		*11J5-C/1100	13TB1-12/1300	P
W2526-11		*Term. 9 Trouble Pn1/2600	25TB1-11/2500	P
W2526-12		*Term. 9 Alarm Pn1/2600	25TB1-12/2500	P
W2426-5		*Term. 8 Trouble Pn1/2600	24TB1-5/2400	Via 2500
W2426-6		*Term. 8 Alarm Pn1/2600	24TB1-6/2400	Via 2500
W2426-23		*Term. 7 Trouble Pn1/2600	24TB2-11/2400	Via 2500
W2426-24		*Term. 7 Alarm Pn1/2600	24TB2-12/2400	
W2426-25		*Term. 6 Trouble Pn1/2600	24TB2-13/2400	
W2426-26		*Term. 6 Alarm Pn1/2600	24TB2-14/2400	
W2427-11		*24TB2-11/2400	27TB1-11/2700	P
W2427-12		*24TB2-12/2400	27TB1-12/2700	P
W2427-13		*24TB2-13/2400	27TB1-13/2700	P
W2427-14		*24TB2-14/2400	27TB1-14/2700	P
W2327		*27P1-C/2700	23P6-C/2300	Mates W/23J6-C

TABLE 4-24. FIRE DETECTION CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2327		*27P1-D/2700	23P6-D/2300	Mates W/23J6-D
W3238-3		*38J4-G/3800	32TB2-3/3200	P
W3238-4		*38J4-B/3800	32TB2-4/3200	P
W3238-5		*38J4-C/3800	32TB2-5/3200	P
W3238-6		*38J4-F/3800	32TB2-6/3200	P
W3238-7		*38J4-A/3800	32TB2-7/3200	P
W3238-8	WHT	32TB2-8/3200	*38-X2/3800	P } to CO_2 Time
W3238-9	BLK	32TB2-9/3200	*38-X1/3800	P } Delay Relay
W3238-10		*38J4-H/3800	32TB2-14/3200	P
W3238-11		*38J4-D/3800	32TB2-15/3200	P
W3238-12		*38J4-E/3800	32TB2-16/3200	P
W3132-4		*32TB1-19/3200	31TB2-18/3100	P
W3132-5		*NC Term Door Interlock SW/3200	31TB2-19/3100	P
W3132-6		*32TB1-14/3200	31TB2-3/3100	P
W3132-7		*32TB1-20/3200	31TB2-4/3100	P
W3132-8		*32TB2-10/3200	31TB2-5/3100	P
W3132-9		*32TB2-11/3200	31TB2-6/3100	P
W3132-10		*32TB2-12/3200	31TB2-7/3100	P
W3132-11		*32TB2-19/3200	31TB2-8/3100	P
W3132-13		31TB2-10/3100	*TB3-7/3200	P } to A/C #2 Remote Control
W3132-14		31TB2-11/3100	*TB3-1/3200	P } Unit
W3132-15		31TB2-12/3100	*TB3-7/3200	P } to A/C #1 Remote Control
W3132-16		31TB2-13/3100	*TB3-1/3200	P } Unit

TABLE 4-24. FIRE DETECTION CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3132-25		*32TB2-14/3200	31TB2-14/3100	P
W2226-7		*Term. 5 Trouble Pnl/2600	22P4-F/2200	
W2226-7		*Term. 5 Alarm Pnl/2600	22P4-D/2200	Mates W/22J4
W2226-7		*Term. 4 Trouble Pnl/2600	22P4-E/2200	E
W2226-7		*Term. 4 Alarm Pnl/2600	22P4-C/2200	
W2122-8		*A1TB4-3/2200	21TB2-3/2100	P
W2122-9		*A1TB4-4/2200	21TB2-4/2100	P
W2638-1		26P2-E/2600	38P3-E/3800	Mates W/38J3 E
W2638-1		26P2-A/2600	38P3-A/3800	Mates W/38J3 E
W3638-3		*38J3-G/3800	36TB2-3/3600	P
W3638-4		*38J3-C/3800	36TB2-4/3600	P
W3638-11		*38J3-F/3800	36TB2-5/3600	P
W3638-12		*38J2-B/3800	36TB2-6/3600	P
W3637-9		*36TB2-5/3600	37TB2-3/3700	P
W3637-10		*36TB2-6/3600	37TB2-4/3700	P
W2638-2		26P3-G/2600	38P4-G/3800	
W2638-2		26P3-B/2600	38P4-B/3800	
W2638-2		26P3-C/2600	38P4-C/3800	
W2638-2		26P3-F/2600	38P4-F/3800	Mates W/38J4 E
W2638-2		26P3-A/2600	38P4-A/3800	
W2638-2		26P3-H/2600	38P4-H/3800	

TABLE 4-24. FIRE DETECTION CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2638-2		26P3-D/2600	38P4-D/3800	
W2638-2		26P3-E/2600	38P4-E/3800	
W3132-26		*32TB2-15/3200	31TB2-15/3100	P
W3132-27		*32TB2-16/3200	31TB2-16/3100	P
W2638-3		26P4-G/2600	38P5-G/3800	
W2638-3		26P4-B/2600	38P5-B/3800	
W2638-3		26P4-C/2600	38P5-C/3800	
W2638-3		26P4-F/2600	38P5-F/3800	Mates W/38J5 E
W2638-3		26P4-A/2600	38P5-A/3800	
W2638-3		26P4-H/2600	38P5-H/3800	
W2638-3		26P4-D/2600	38P5-D/3800	
W2638-3		26P4-E/2600	38P5-E/3800	
W3438-3		*38J5-G/3800	34TB2-3/3400	P
W3438-4		*38J5-B/3800	34TB2-4/3400	P
W3438-5		*38J5-C/3800	34TB2-5/3400	P
W3438-6		*38J5-F/3800	34TB2-6/3400	P
W3438-7		*38J5-A/3800	34TB2-7/3400	P
W3438-8	WHT	34TB2-8/3400	*38-X2/3800	P to CO_2 Time
W3438-9	BLK	34TB2-9/3400	*38-X1/3800	P Delay Relay
W3438-10		*38J5-H/3800	34TB2-14/3400	P
W3438-11		*38J5-D/3800	34TB2-15/3400	P
W3438-12		*38J5-E/3800	34TB2-16/3400	P
W3334-4		*34TB1-19/3400	33TB2-18/3300	P
W3334-5		*NC Term. Door Interlock SW/3400	33TB2-19/3300	P

TABLE 4-24. FIRE DETECTION CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3334-6		*34TB1-14/3400	33TB2-3/3300	P
W3334-7		*34TB1-20/3400	33TB2-4/3300	P
W3334-8		*34TB2-10/3400	33TB2-5/3300	P
W3334-9		*34TB2-11/3400	33TB2-6/3300	P
W3334-10		*34TB2-12/3400	33TB2-7/3300	P
W3334-11		*34TB2-19/3400	33TB2-8/3300	P
W3334-13		33TB2-10/3300	*TB3-7/3400	P } to A/C #2 Remote Control
W3334-14		33TB2-11/3300	*TB3-1/3400	P } Unit
W3334-15		33TB2-12/3300	*TB3-7/3400	P } to A/C #1 Remote Control
W3334-16		33TB2-13/3300	*TB3-1/3400	P } Unit
W3334-25		*34TB2-14/3400	33TB2-14/3300	P
W3334-26		*34TB2-15/3400	33TB2-15/3300	P
W3334-27		*34TB2-16/3400	33TB2-16/3300	P
W2638-1	WHT	26P2-H/2600	38P3-H/3800	Mates W/38J3 E
W2638-1	BLK	26P2-D/2600	38P3-D/3800	Mates W/38J3 E
W3538-11		38TB2-5/3800	*F/D Box-1/3500	P
W3538-12		38TB2-6/3800	*F/D Box-7/3500	P

TABLE 4-25. INTERCOM CABLING

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2238-1	ORN	38P1-A/3800	22P1-A/2200	
	WHT	-B	-B	
	GRN	-D	-D	
	WHT	-E	-E	
	BRN	-G	-G	
	WHT	-H	-H	
	SLATE	-K	-K	
	WHT	-L	-L	
	BLU	-N	-N	
	RED	-P	-P	38P1 MATES WITH 38J1/3800.
	HVY BLK	-S	-S	
	HVY RED	-T	-T	22P1 MATES WITH 22J1/2200
	N/A	-U	-U	SHIELD
	ORN	-V	-V	E
	RED	-W	-W	
	GRN	-Y	-Y	
	RED	-Z	-Z	
	BRN	-b	-b	
W2238-1	RED	38P1-C/3800	22P1-C/2200	
W1138-1	ORN	38P2-A/3800	11P6-A/1100	
	WHT	-B	-B	38P2 MATES WITH 38J2/3800.
	GRN	-D	-D	11P6 MATES WITH 11J6/1100
	WHT	-E	-E	
W1138-1	BRN	38P2-G/3800	11P6-G/1100	E

TABLE 4-25. INTERCOM CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W1138-1	WHT	38P2-H/3800	11P6-H/1100	
	SLATE	-K	-K	
	WHT	-L	-L	
	BLU	-N	-N	38P2 MATES WITH 38J2/3800.
	RED	-P	-P	
	HVY BLK	-S	-S	11P6 MATES WITH 11J6/1100
	HVY RED	-T	-T	
	N/A	-U	-U	SHIELD
	ORN	-V	-V	E
	RED	-W	-W	
	GRN	-Y	-Y	
	RED	-Z	-Z	
	BRN	-b	-b	
W1138-1	RED	38P2-C/3800	11P6-C/1100	
W3138-4	ORN	*INTERCOM JCT BOX, SECT A, TERM. 1/3800	INTERCOM JCT BOX, SECT A TERM. 1/3100	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 1A/3800	INTERCOM JCT BOX, SECT A, TERM. 1A/3100	P
	GRN	*INTERCOM JCT BOX, SECT A, TERM. 2/3800	INTERCOM JCT BOX, SECT A, TERM. 2/3100	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 24/3800	INTERCOM JCT BOX, SECT A, TERM. 24/3100	P
W3138-4	BRN	*INTERCOM JCT BOX, SECT A, TERM. 3/3800	INTERCOM JCT BOX, SECT A, TERM. 3/3100	P

TABLE 4-25. INTERCOM CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3138-4	WHT	*INTERCOM JCT BOX, SECT A, TERM. 3A/3800	INTERCOM JCT BOX, SECT A, TERM. 3A/3100	P
	SLATE	*INTERCOM JCT BOX, SECT A, TERM. 4/3800	INTERCOM JCT BOX, SECT A, TERM. 4/3100	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 4A/3800	INTERCOM JCT BOX, SECT A, TERM. 4A/3100	P
	BLU	*INTERCOM JCT BOX, SECT A, TERM. 5/3800	INTERCOM JCT BOX, SECT A, TERM. 5/3100	P
	RED	*INTERCOM JCT BOX, SECT A, TERM. 5A/3800	INTERCOM JCT BOX, SECT A, TERM. 5A/3100	P
	ORN	*INTERCOM JCT BOX, SECT A, TERM. 6/3800	INTERCOM JCT BOX, SECT A, TERM. 6/3100	P
	RED	*INTERCOM JCT BOX, SECT A, TERM. 6A/3800	INTERCOM JCT BOX, SECT A, TERM. 6A/3100	P
	GRN	*INTERCOM JCT BOX, SECT A, TERM. 7/3800	INTERCOM JCT BOX, SECT A, TERM. 7/3100	P
	RED	*INTERCOM JCT BOX, SECT A, TERM. 7A/3800	INTERCOM JCT BOX, SECT A, TERM. 7A/3100	P
	BRN	*INTERCOM JCT BOX, SECT B, TERM. 1/3800	INTERCOM JCT BOX, SECT B, TERM. 1/3100	P
	RED	*INTERCOM JCT BOX, SECT B, TERM. 1A/3800	INTERCOM JCT BOX, SECT B, TERM. 1A/3100	P
W3138-4	HVY BLK	*INTERCOM JCT BOX, SECT B, TERM. 7/3800	INTERCOM JCT BOX, SECT B, TERM. 7/3100	P

TABLE 4-25. INTERCOM CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3138-4	HVY RED	*INTERCOM JCT BOX, SECT B, TERM. 7A/3800	INTERCOM JCT BOX, SECT B, TERM. 7A/3100	P
W3138-4	N/A	*INTERCOM JCT BOX, SECT C, TERM. 1/3800	INTERCOM JCT BOX, SECT C, TERM. 1/3100	SHIELD DRAIN WIRE
W3338-4	ORN	*INTERCOM JCT BOX, SECT A, TERM. 1/3800	INTERCOM JCT BOX, SECT A, TERM. 1/3800	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 1A/3800	INTERCOM JCT BOX, SECT A, TERM. 1A/3800	P
	GRN	*INTERCOM JCT BOX, SECT A, TERM. 2/3800	INTERCOM JCT BOX, SECT A, TERM. 2/3800	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 24/3800	INTERCOM JCT BOX, SECT A, TERM. 24/3800	P
	BRN	*INTERCOM JCT BOX, SECT A, TERM. 3/3800	INTERCOM JCT BOX, SECT A, TERM. 3/3800	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 3A/3800	INTERCOM JCT BOX, SECT A, TERM. 3A/3800	P
	SLATE	*INTERCOM JCT BOX, SECT A, TERM. 4/3800	INTERCOM JCT BOX, SECT A, TERM. 4/3800	P
	WHT	*INTERCOM JCT BOX, SECT A, TERM. 4A/3800	INTERCOM JCT BOX, SECT A, TERM. 4A/3800	P
	BLU	*INTERCOM JCT BOX, SECT A, TERM. 5/3800	INTERCOM JCT BOX, SECT A, TERM. 5/3800	P
W3338-4	RED	*INTERCOM JCT BOX, SECT A, TERM. 5A/3800	INTERCOM JCT BOX, SECT A, TERM. 5A/3800	P

TABLE 4-25. INTERCOM CABLING (Cont'd)

Cable No.	Color	From/Shelter	To/Shelter	Notes
W3338-4	ORN	*INTERCOM JCT BOX, SECT A, TERM. 6/3800	INTERCOM JCT BOX, SECT A, TERM. 6/3800	P
	RED	*INTERCOM JCT BOX, SECT A, TERM. 6A/3800	INTERCOM JCT BOX, SECT A, TERM. 6A/3800	P
	GRN	*INTERCOM JCT BOX, SECT A, TERM. 7/3800	INTERCOM JCT BOX, SECT A, TERM. 7/3800	P
	RED	*INTERCOM JCT BOX, SECT A, TERM. 7A/3800	INTERCOM JCT BOX, SECT A, TERM. 7A/3800	P
	BRN	*INTERCOM JCT BOX, SECT B, TERM. 1/3800	INTERCOM JCT BOX, SECT B, TERM. 1/3800	P
	RED	*INTERCOM JCT BOX, SECT B, TERM. 1A/3800	INTERCOM JCT BOX, SECT B, TERM. 1A/3800	P
	HVY BLK	*INTERCOM JCT BOX, SECT B, TERM. 7/3800	INTERCOM JCT BOX, SECT B, TERM. 7/3800	P
	HVY RED	*INTERCOM JCT BOX, SECT B, TERM. 7A/3800	INTERCOM JCT BOX, SECT B, TERM. 7A/3800	P
W3338-4	N/A	*INTERCOM JCT BOX, SECT C, TERM. 1/3800	INTERCOM JCT BOX, SECT C, TERM. 1/3800	SHIELD DRAIN WIRE

TABLE 4-26. COMMUNICATIONS SIGNAL CABLING

Cable No.	Color	From/Shelter	To/Shelter	Notes
W2223-1		J1/2200	J5/2300	E

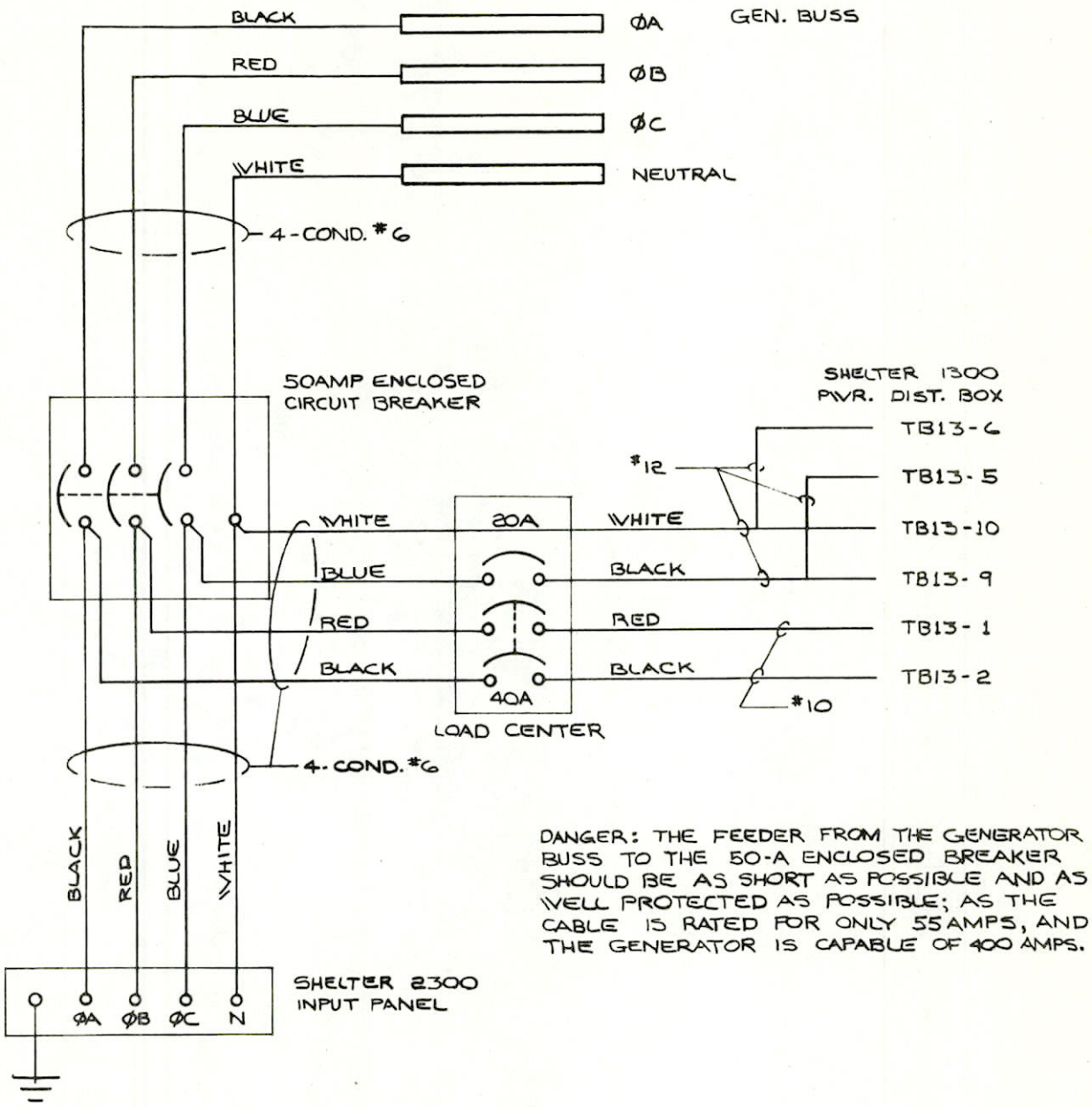


Figure 4-1

Schematic diagram of temporary power connection to shelters 1300 and 2300.

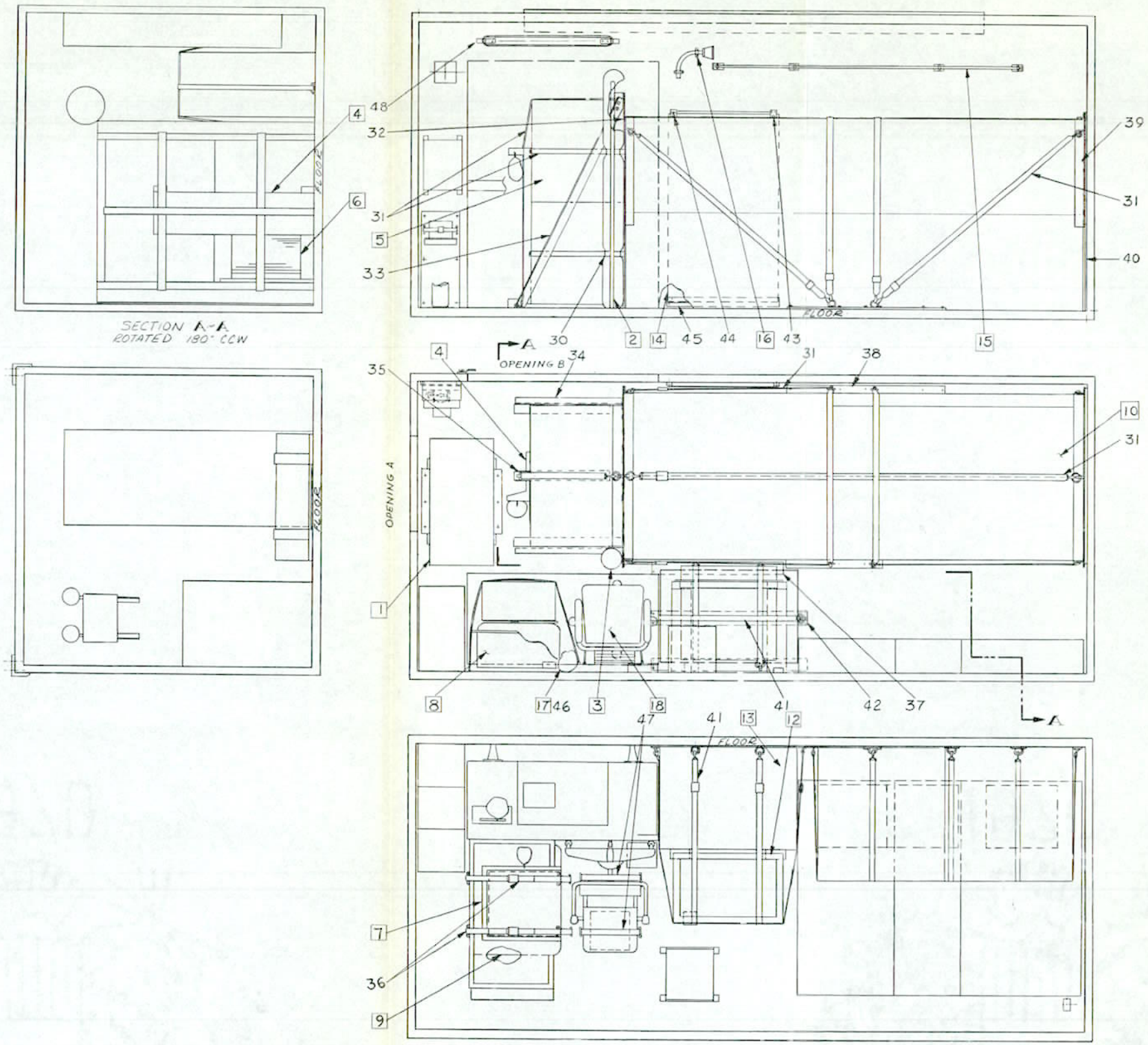
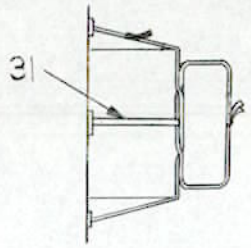
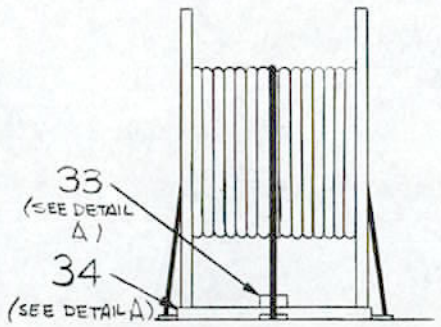


Figure 4-2

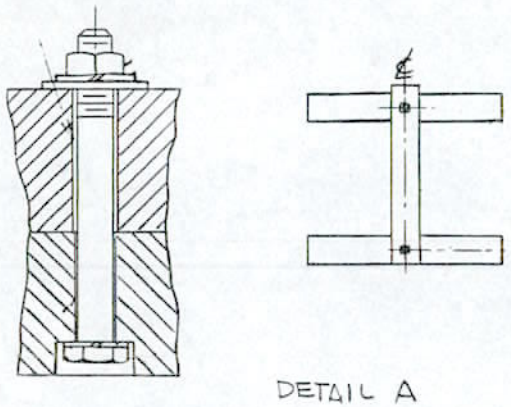
Shelter 1100, location of stowed equipment.



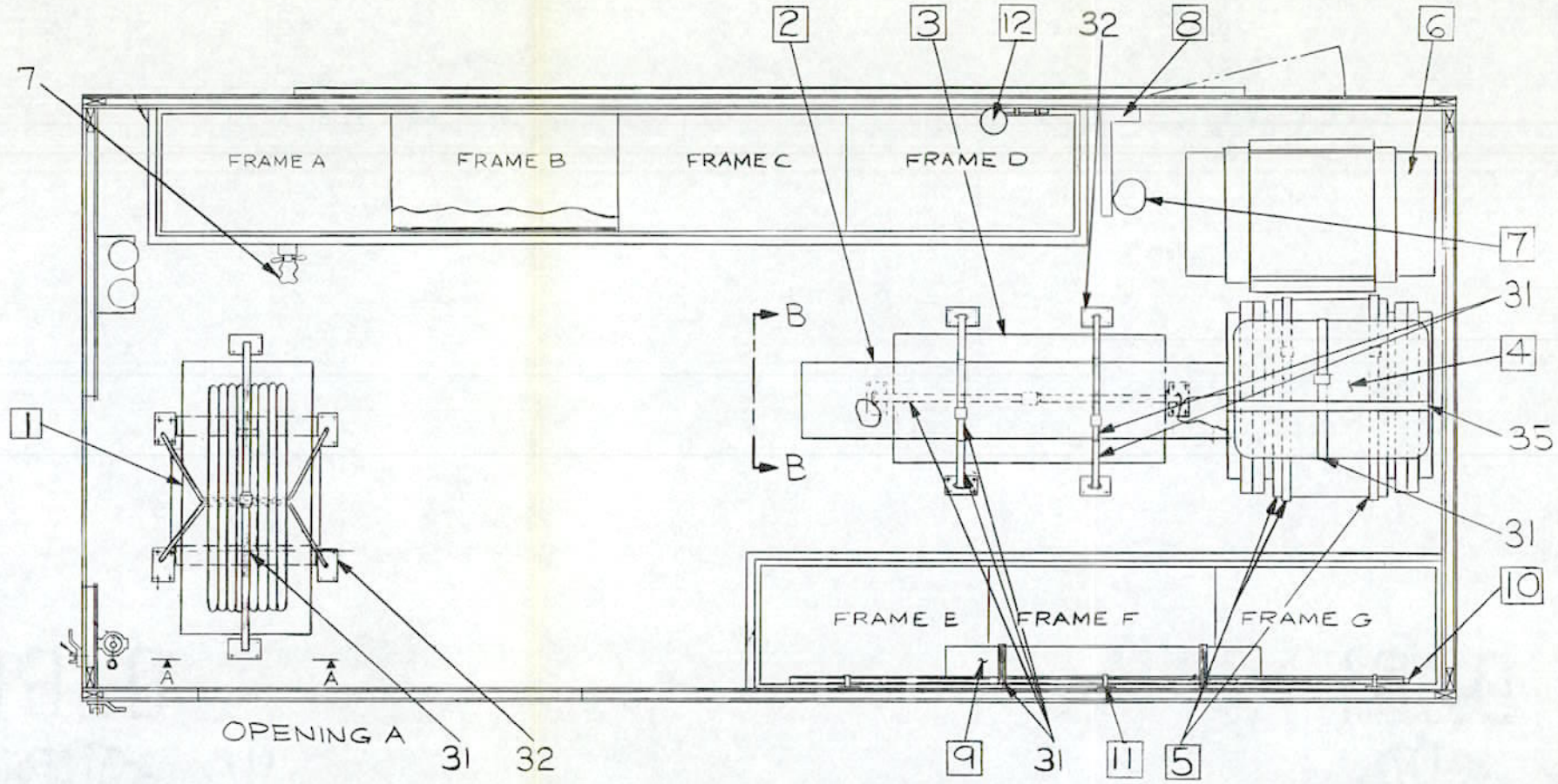
VIEW B-B



VIEW A-A



DETAIL A



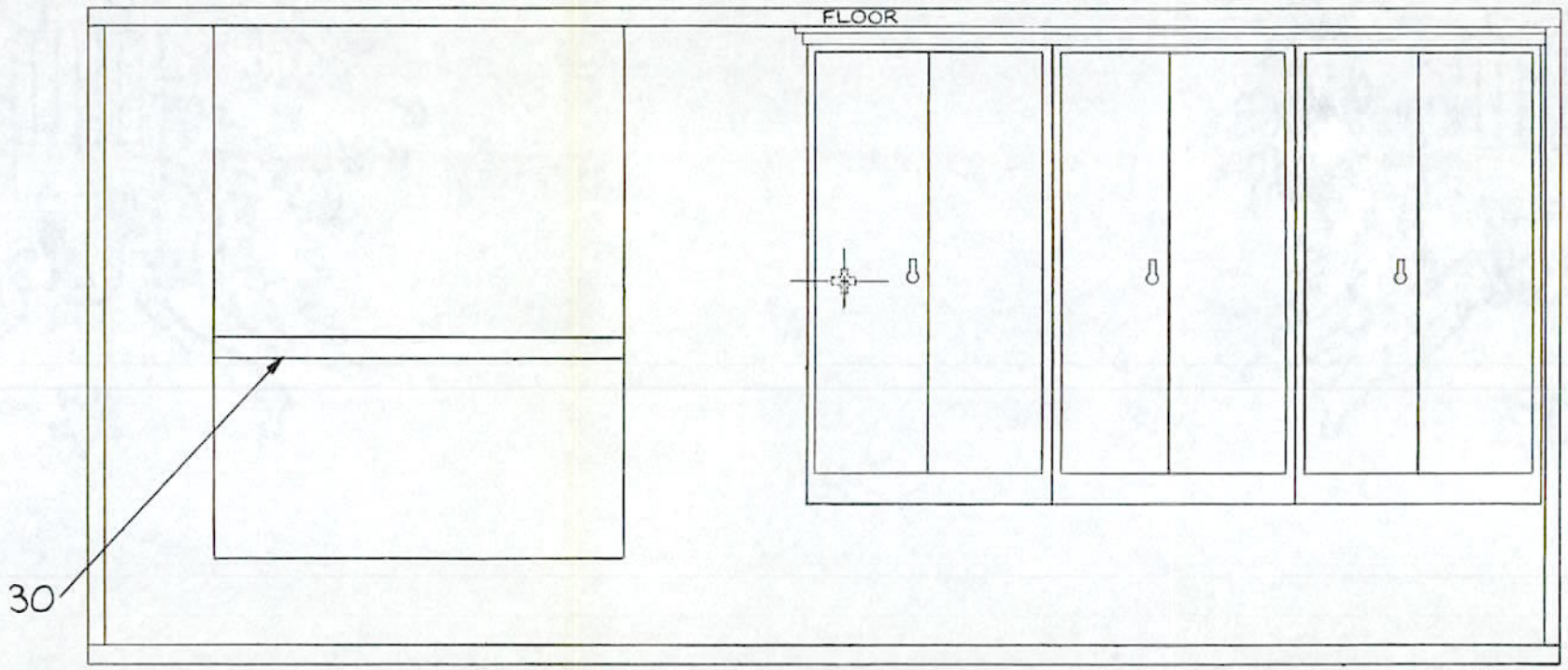


Figure 4-3

Shelter 1200, location of stowed equipment.

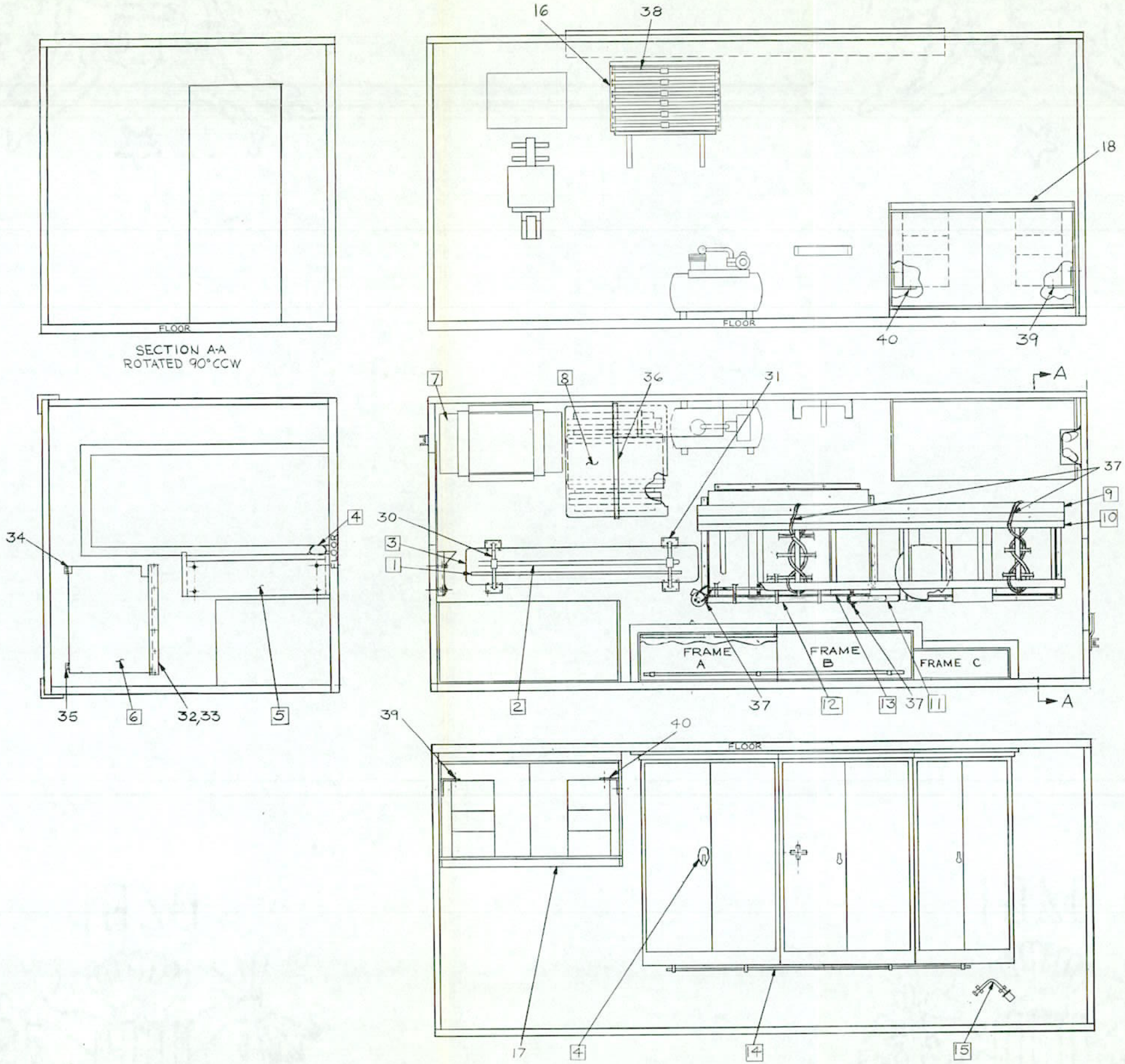


Figure 4-4

Shelter 1300, location of stowed equipment.

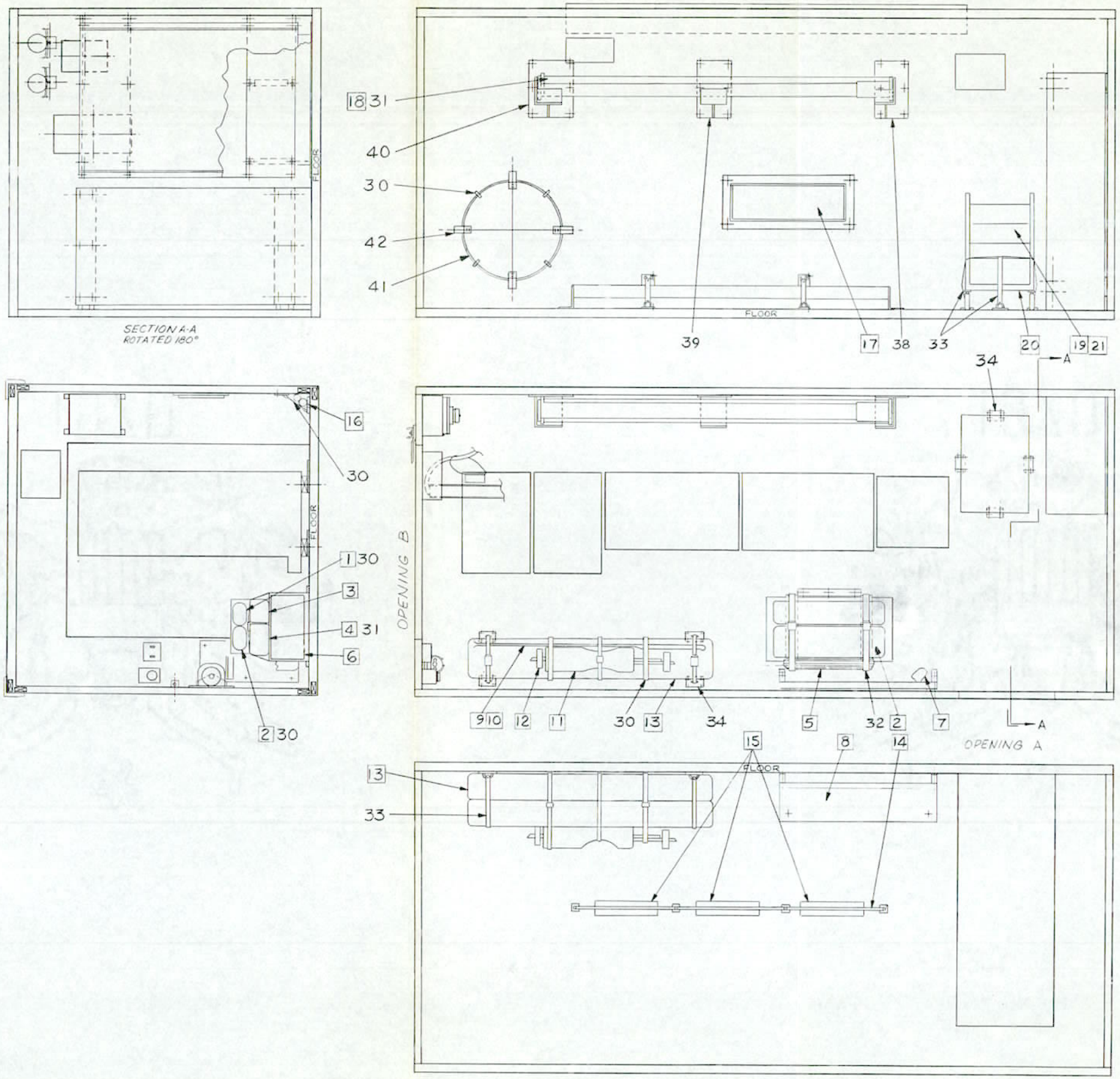
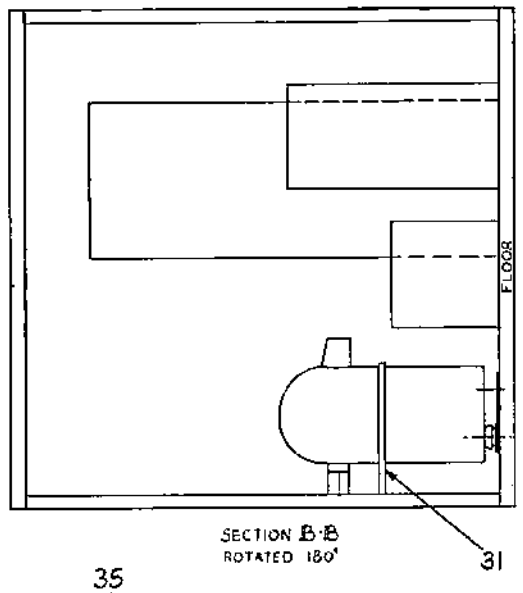
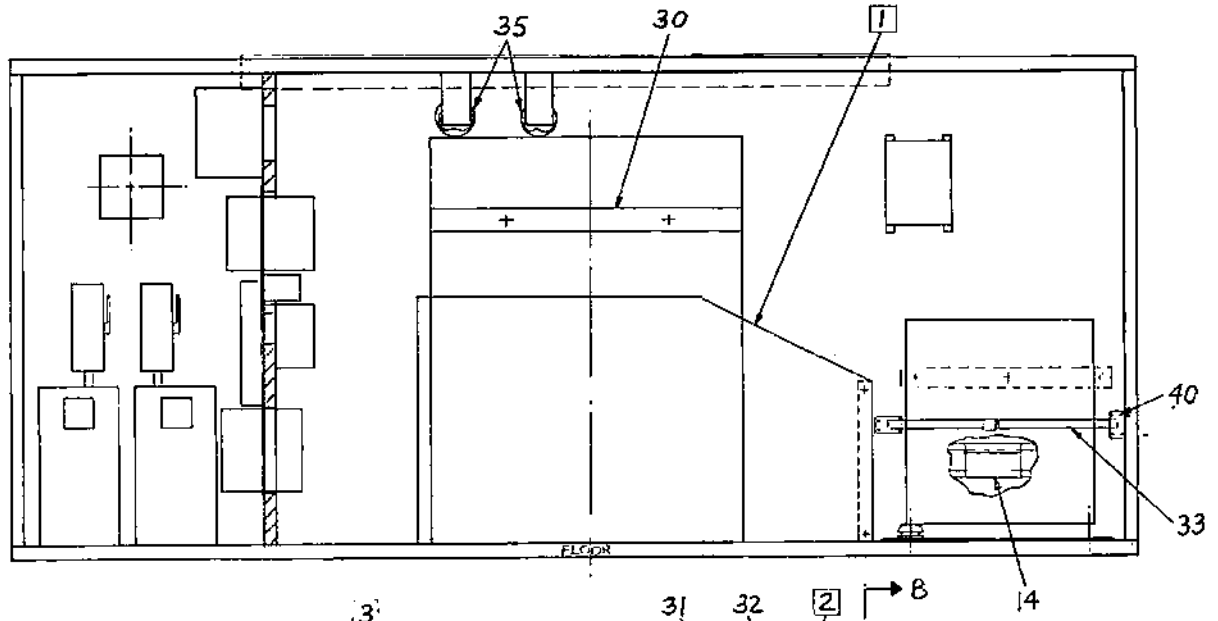
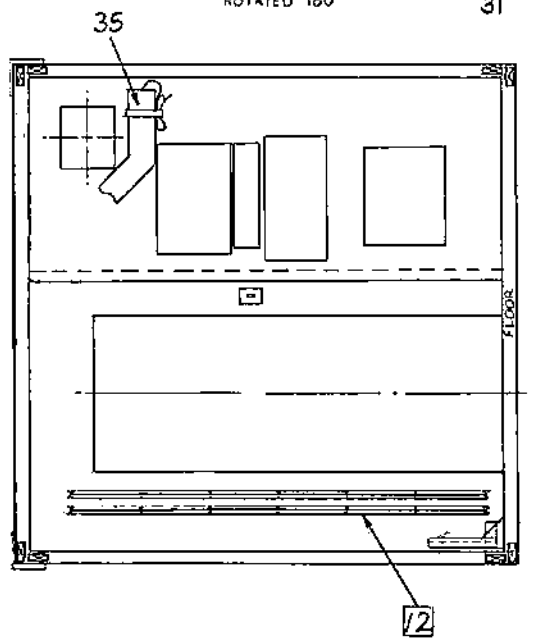


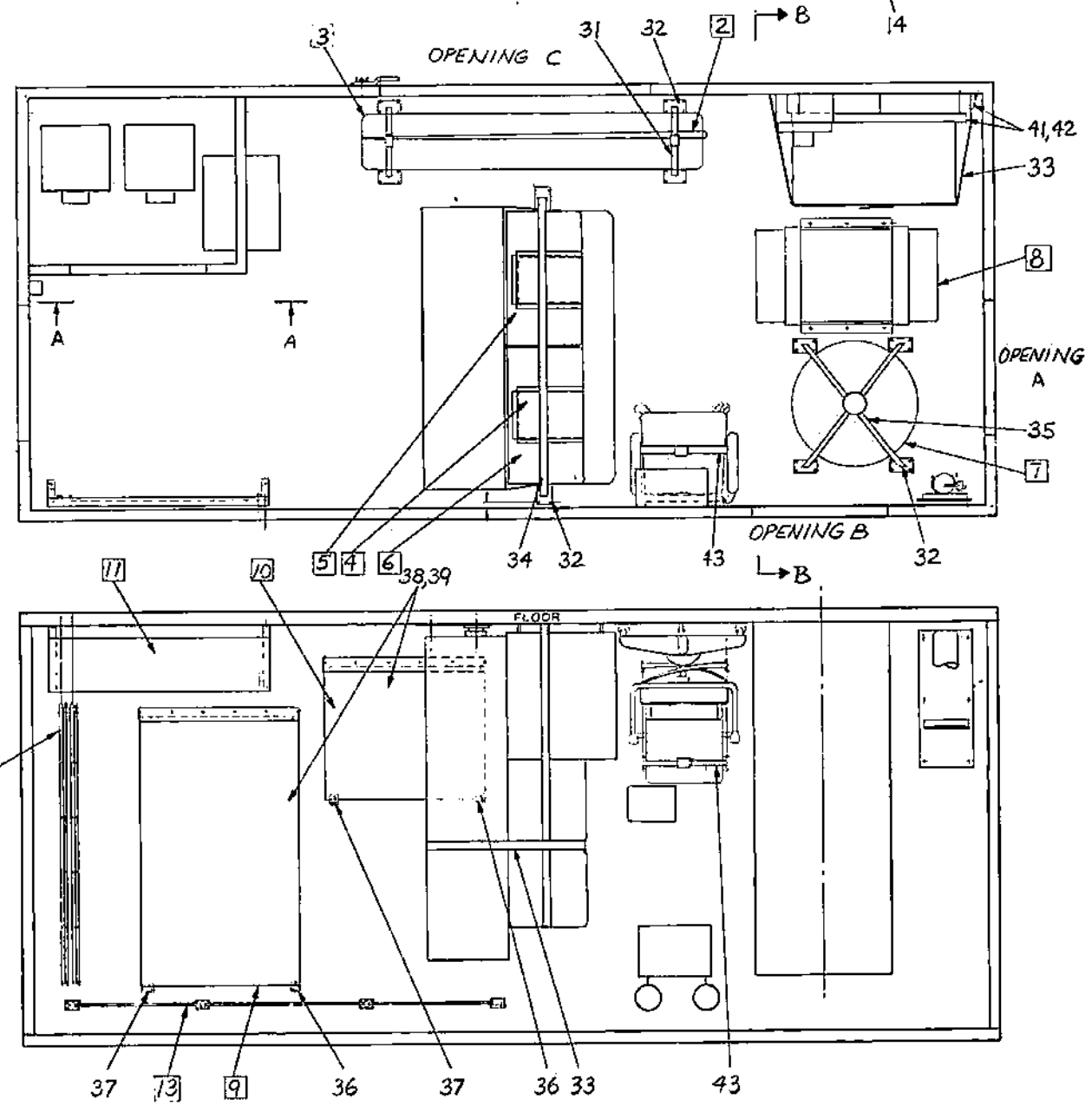
Figure 4-5.

Shelter 2100, location of stowed equipment.









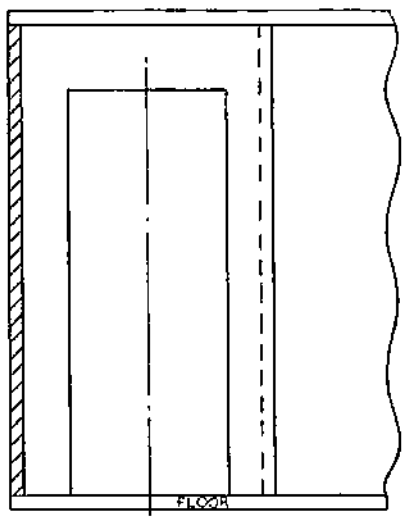


Figure 4-6

Shelter 2200, location of stowed equipment.

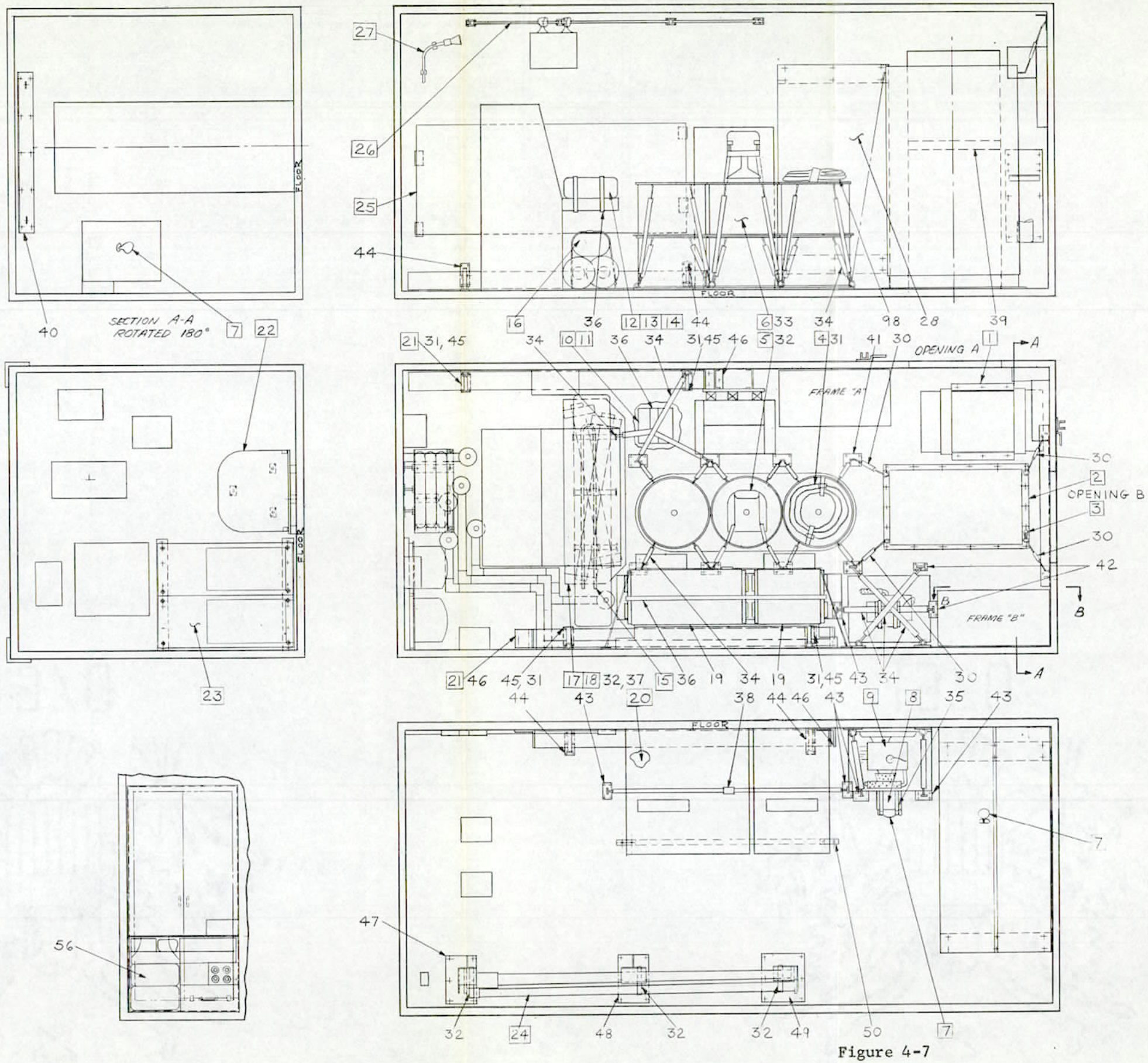
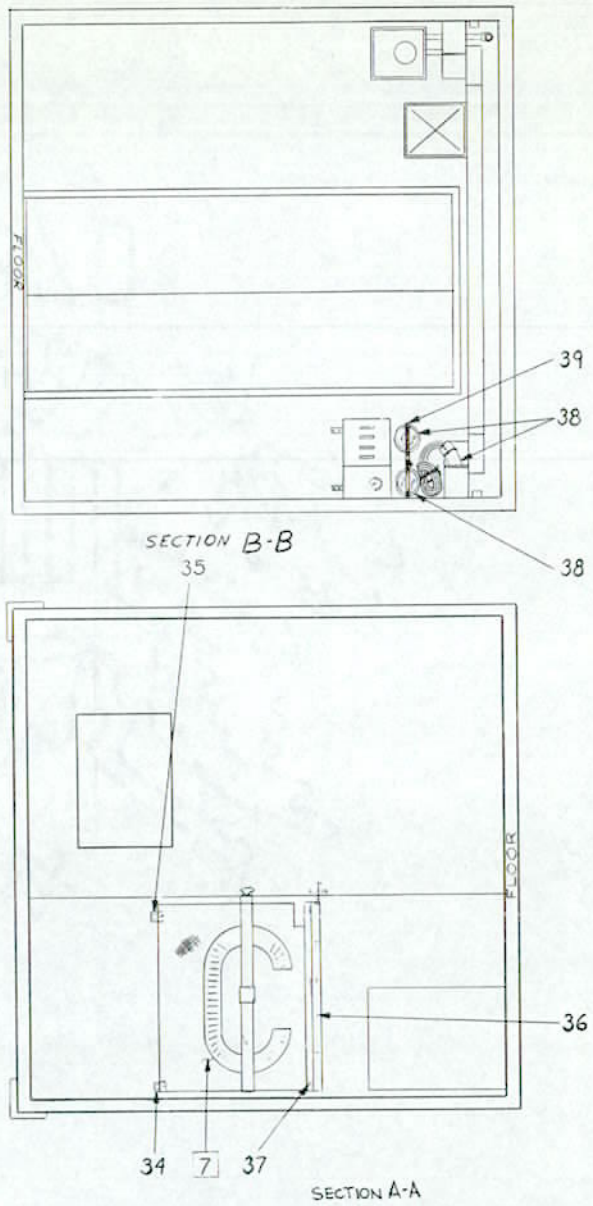


Figure 4-7

Shelter shelter 2300, location of stowed equipment



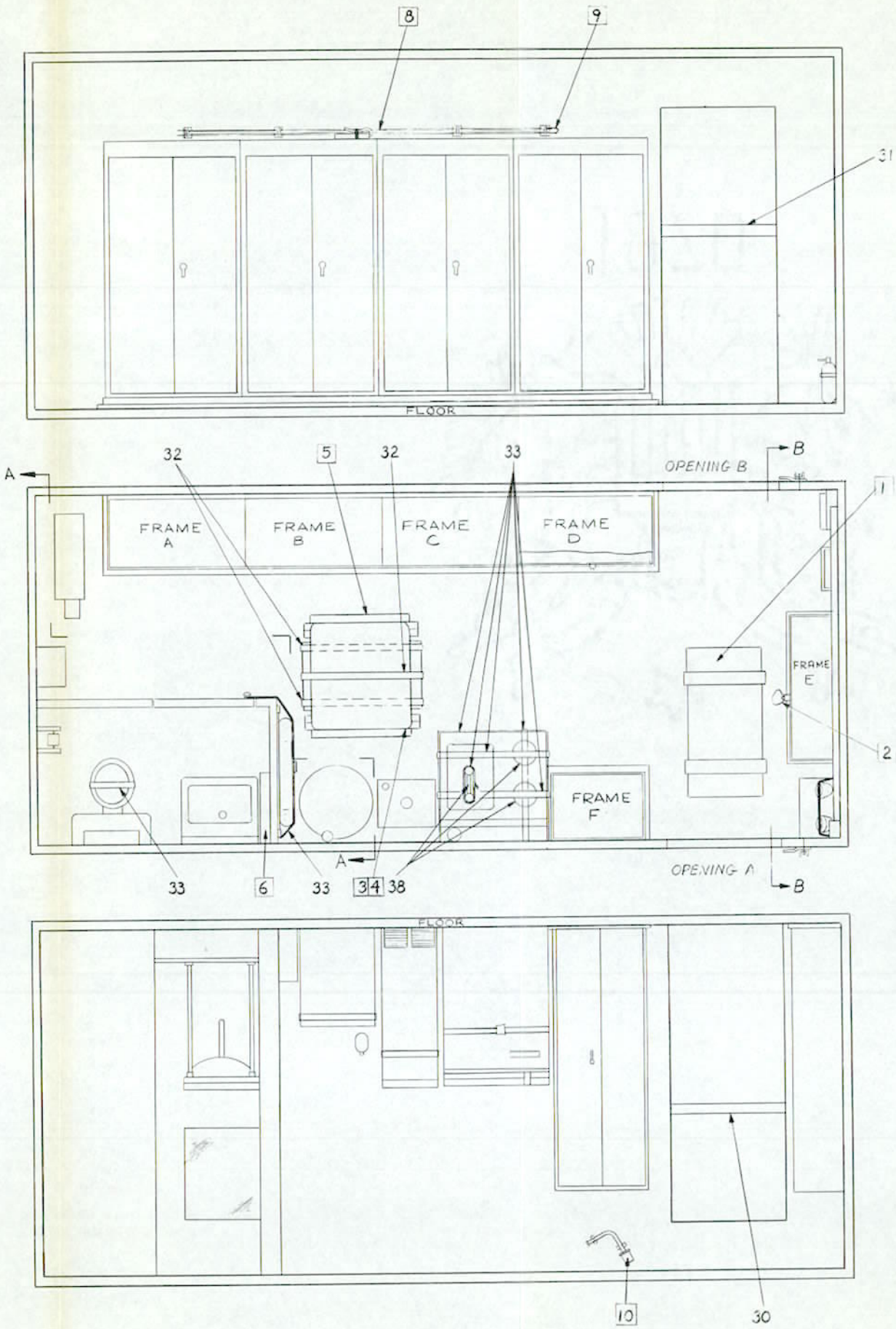


Figure 4-8

Shelter 2400, location of stowed equipment

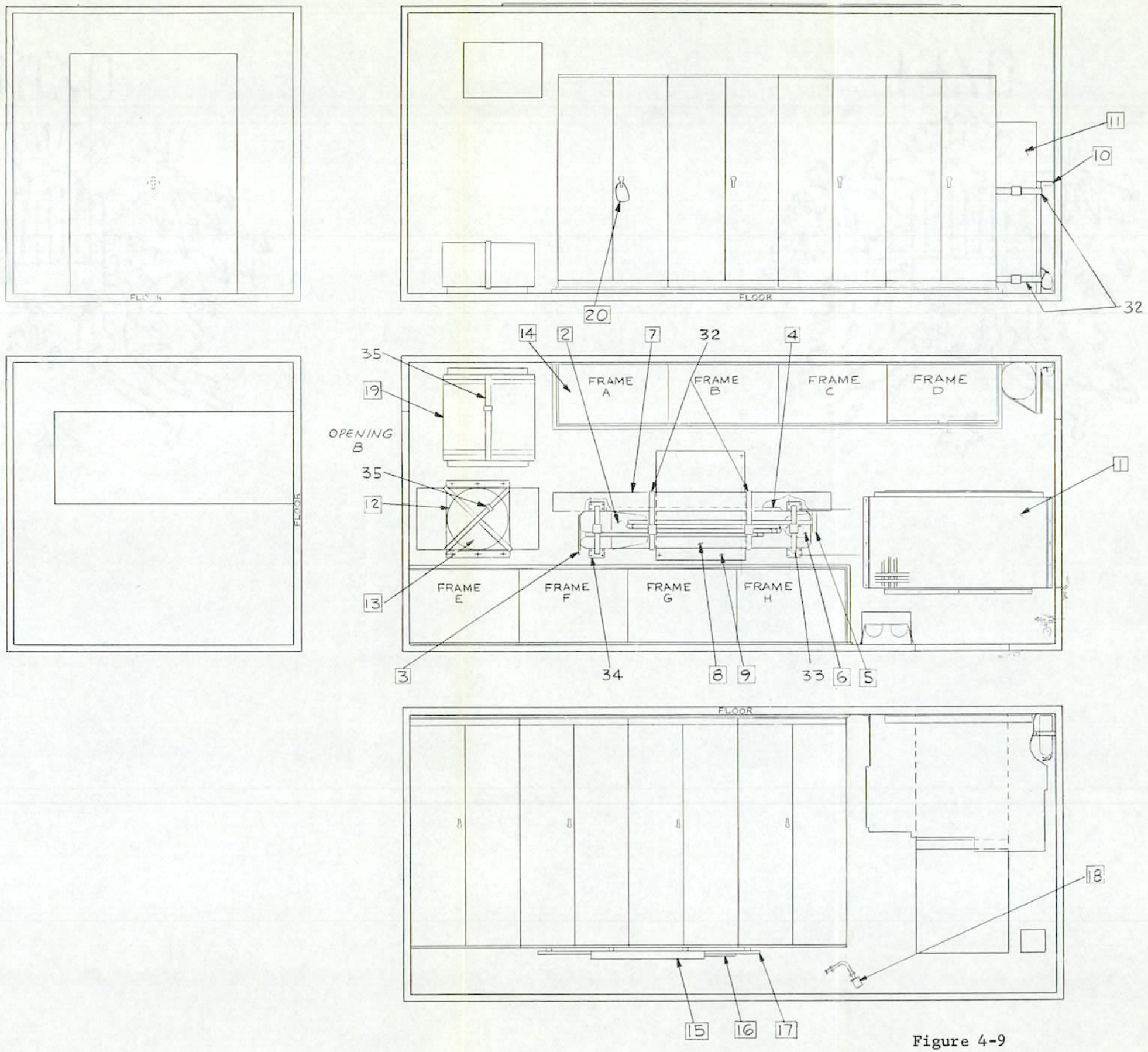


Figure 4-9

Shelter 2500, location of stowed equipment.

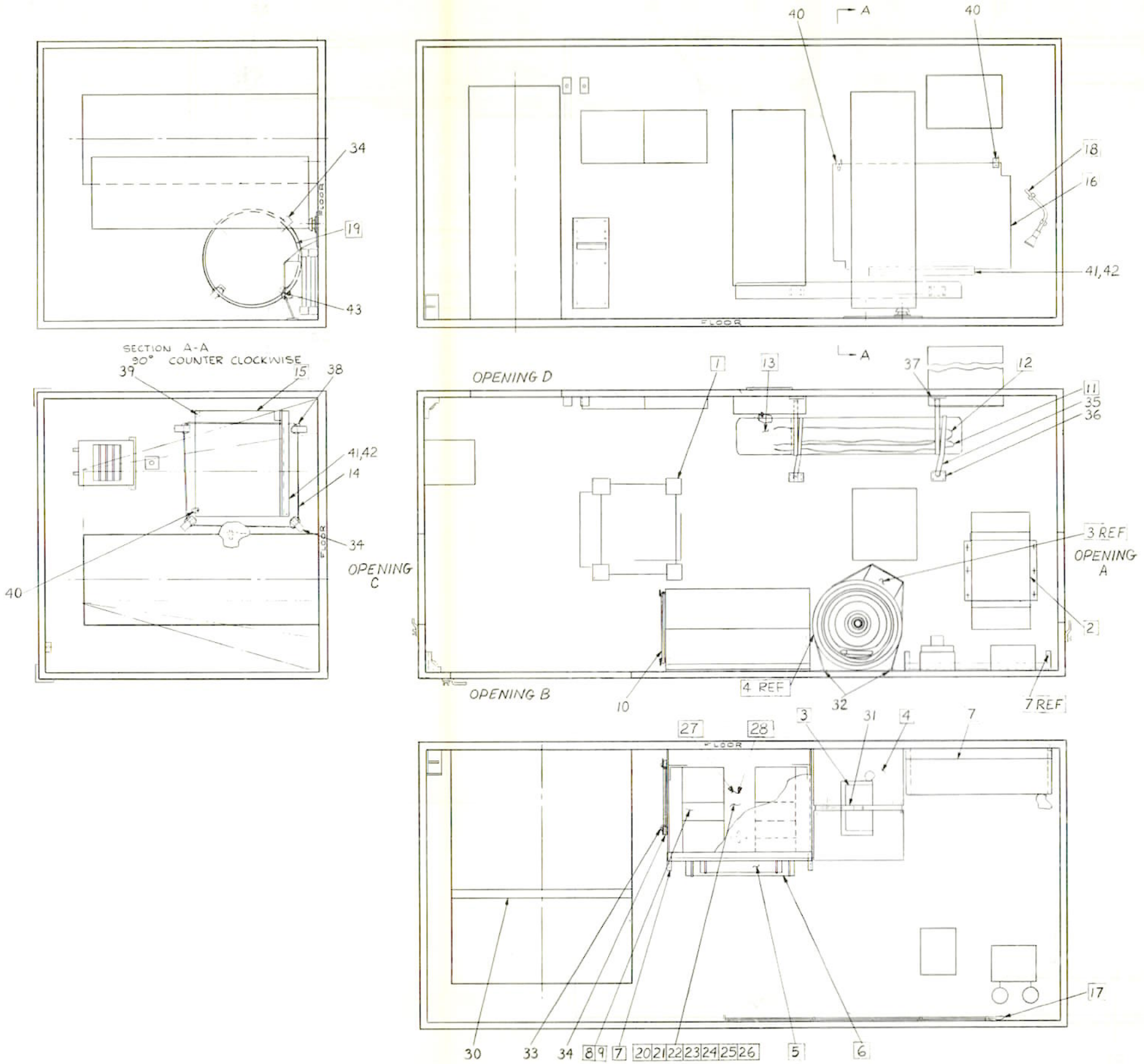
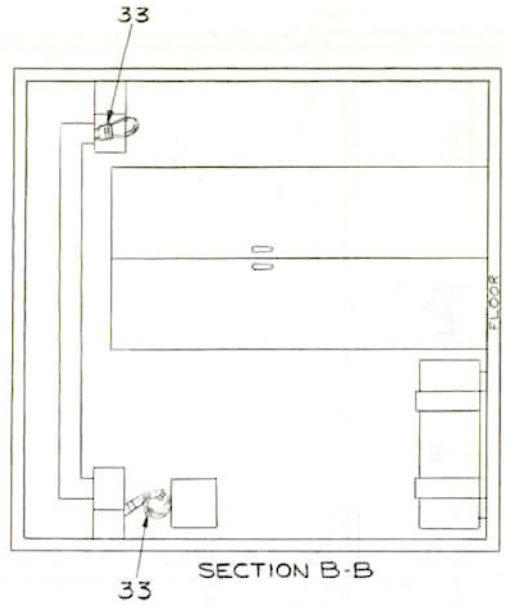
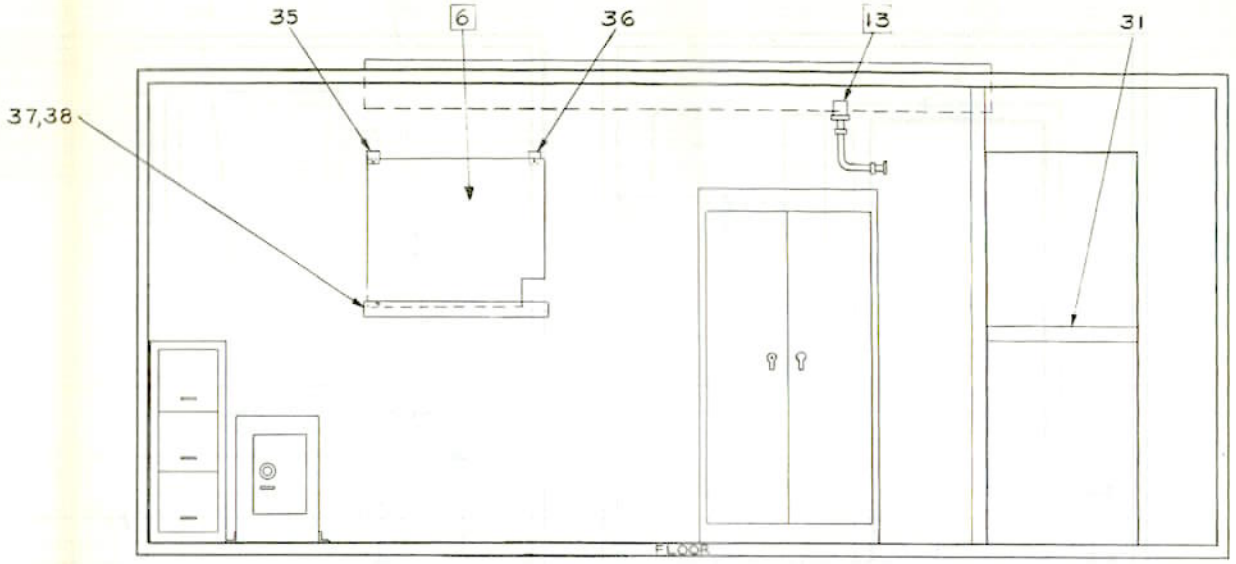


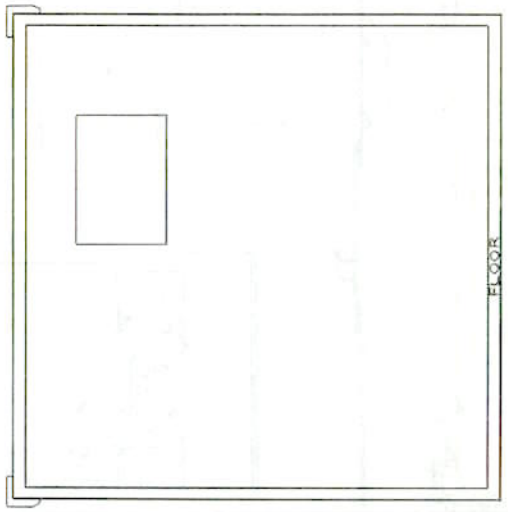
Figure 4-10

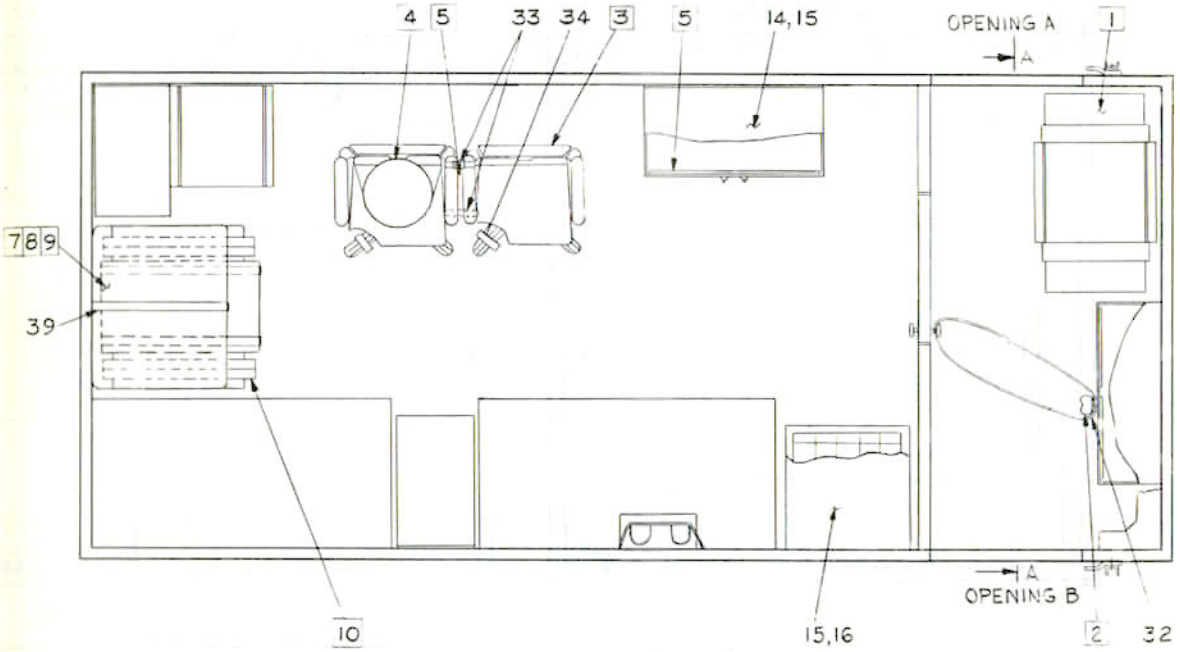
Shelter 2600, location of stowed equipment.



SECTION B-B







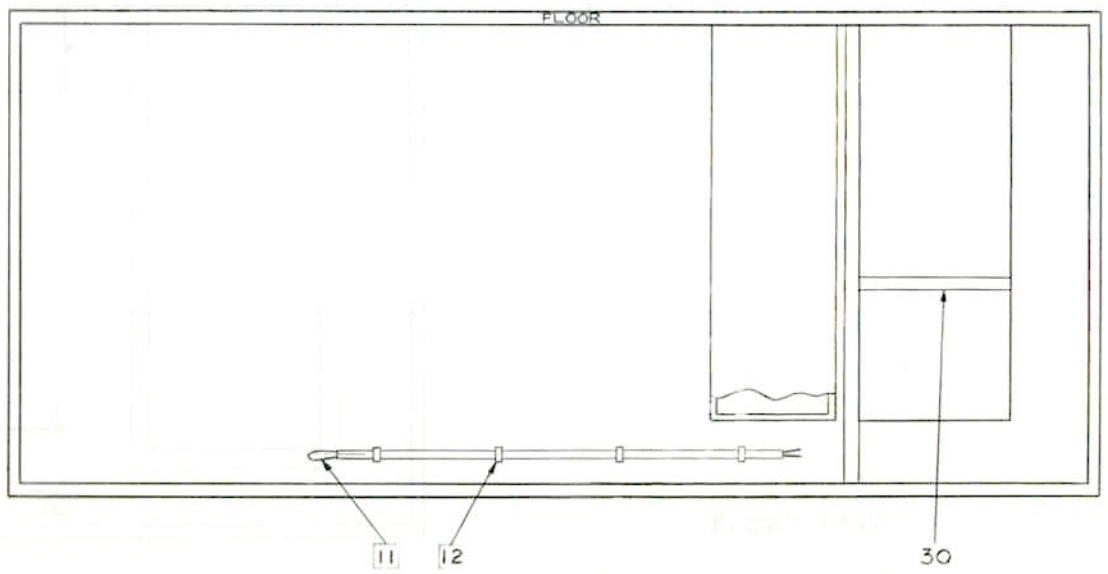
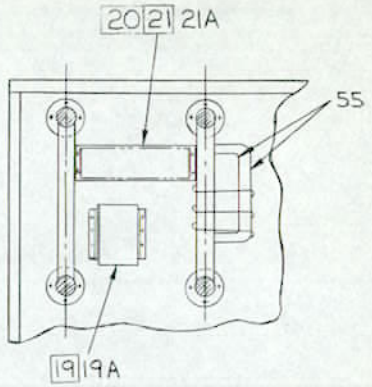
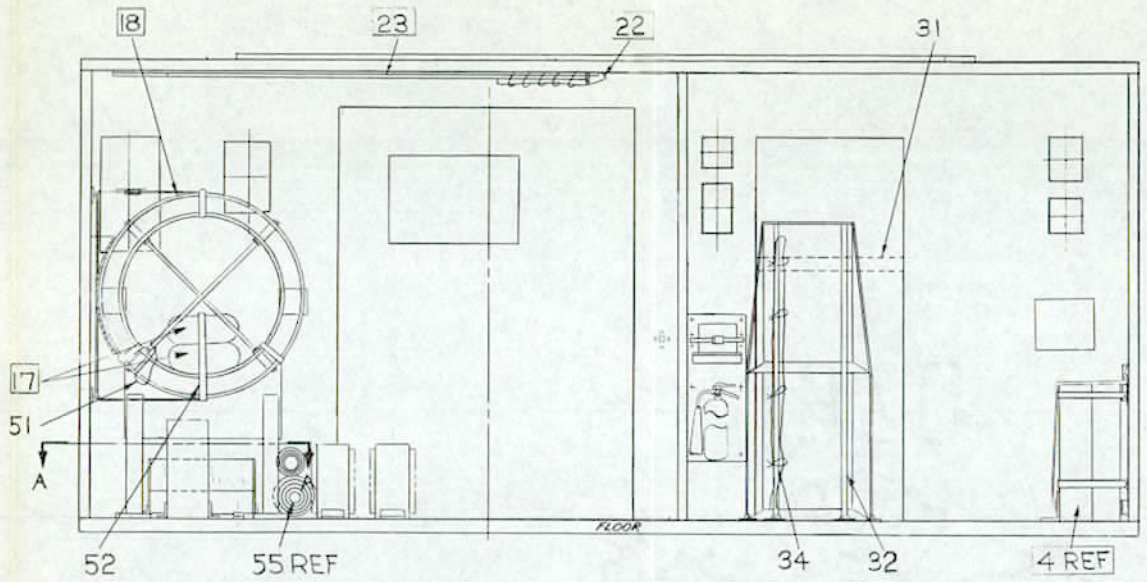
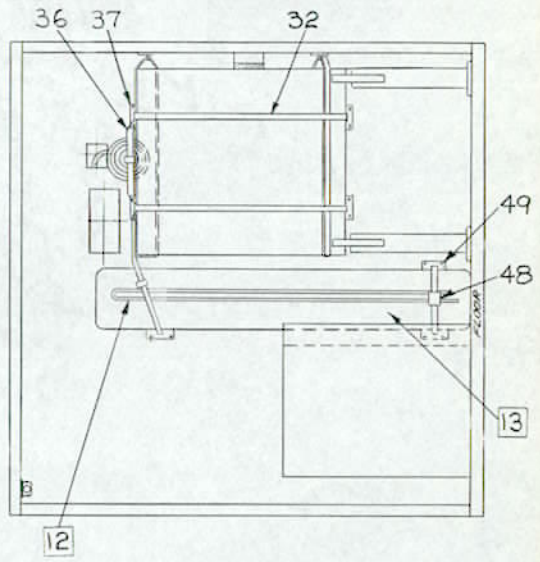


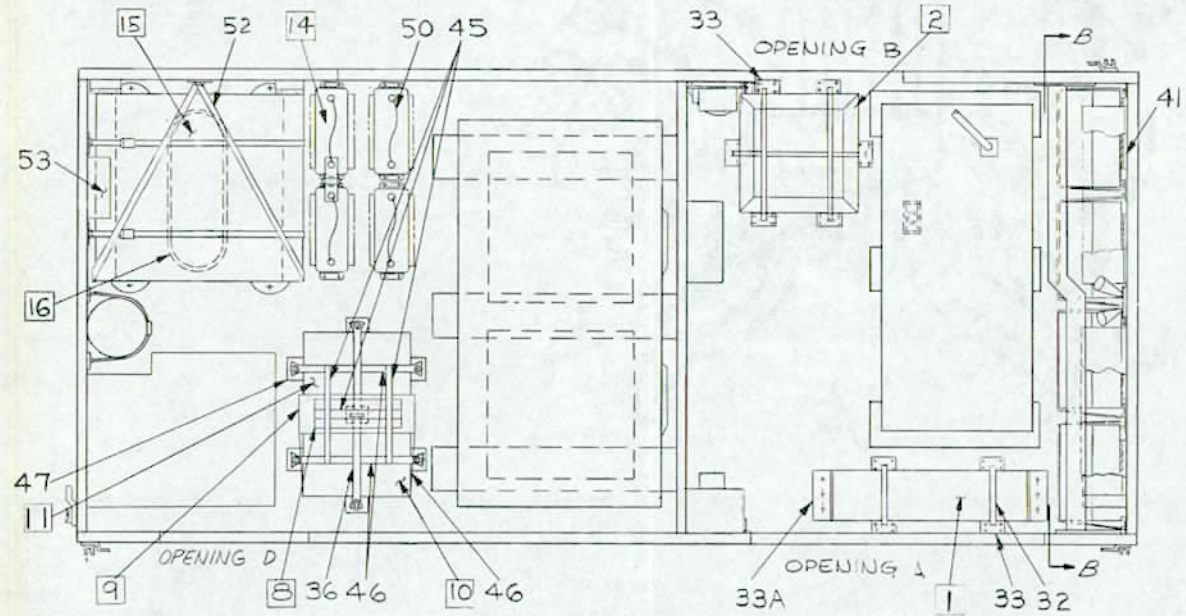
Figure 4-11

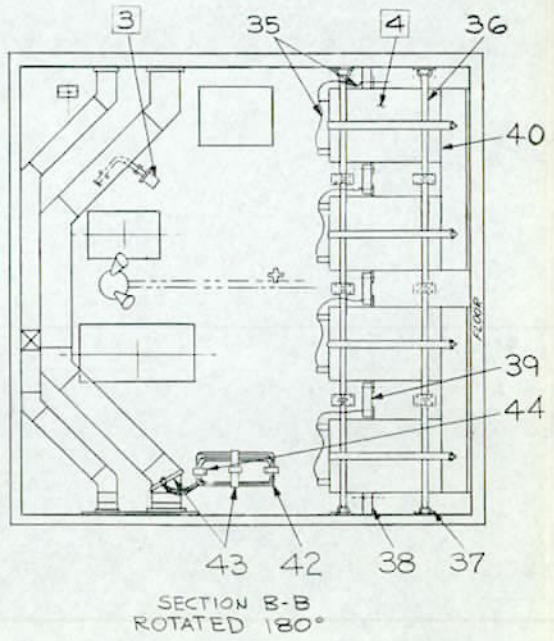
Shelter 2700, location of stowed equipment.











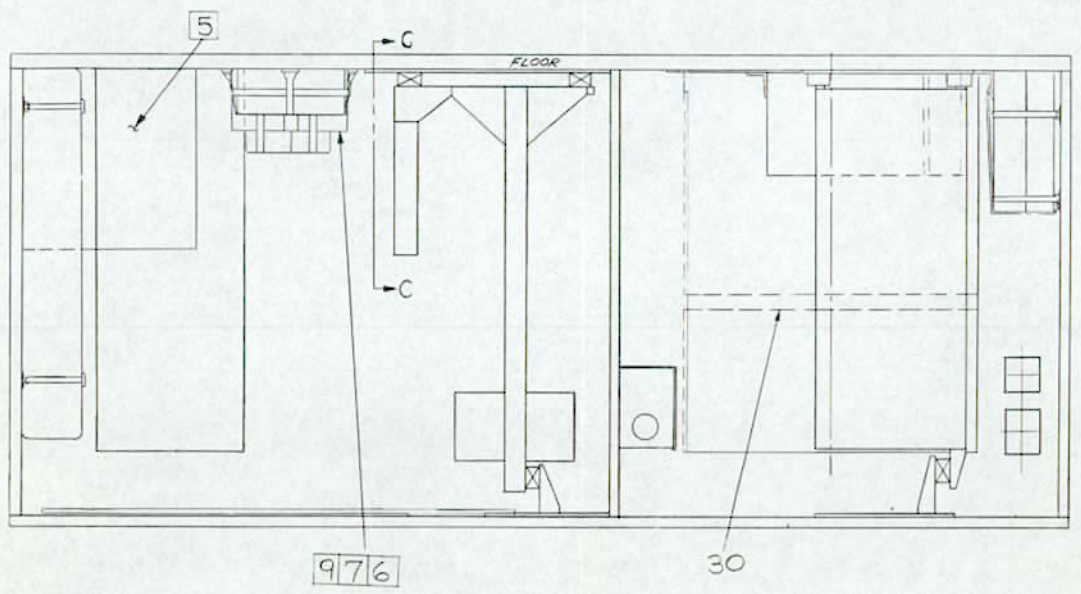
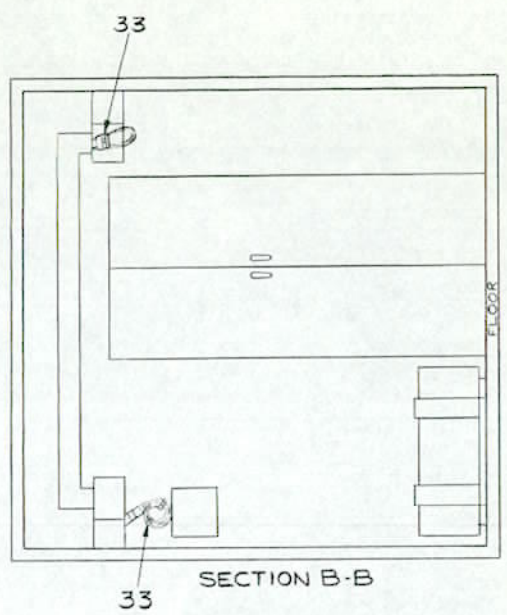
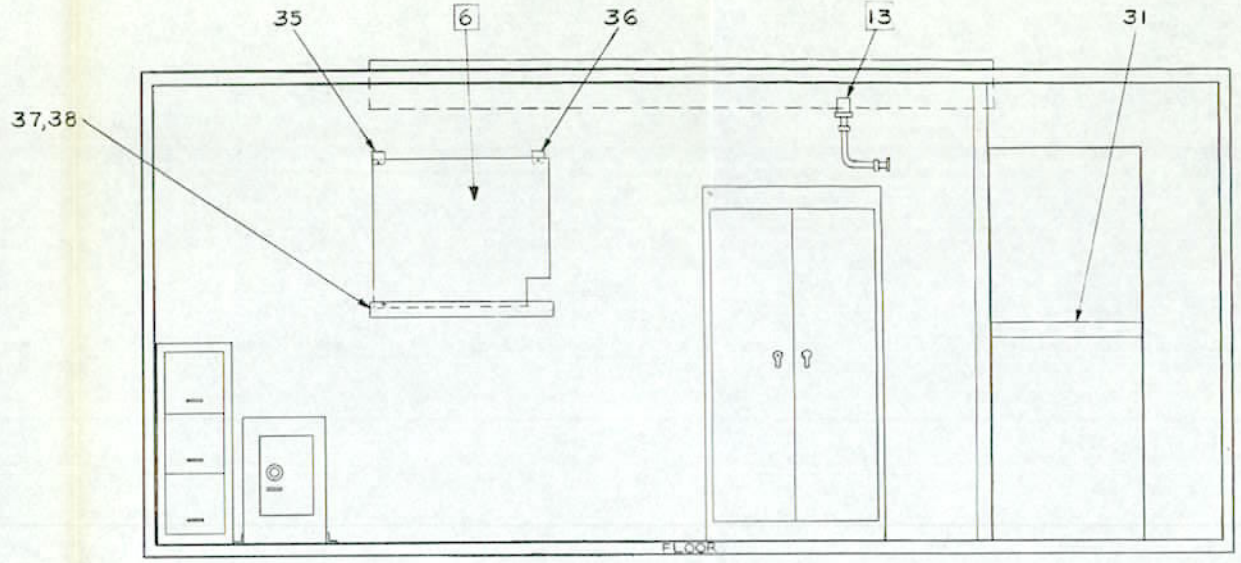
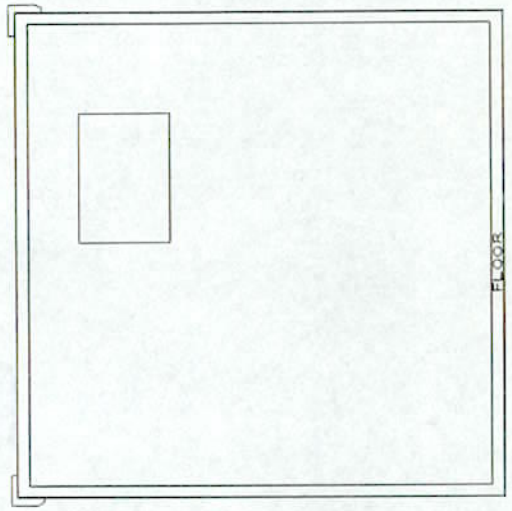


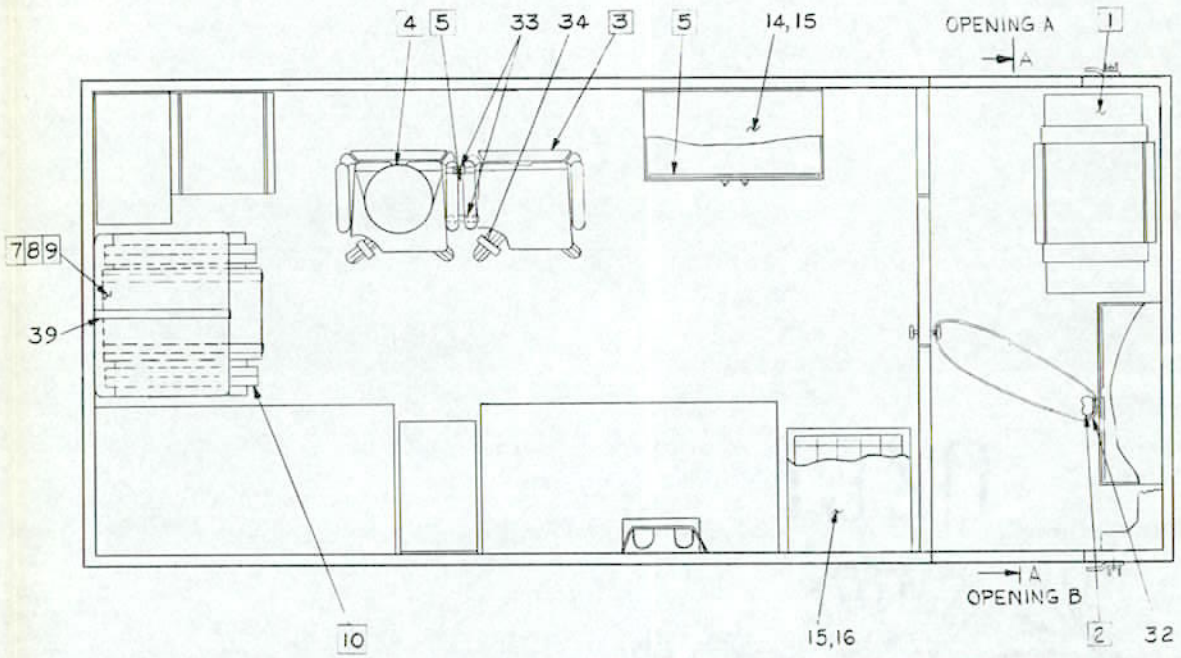
Figure 4-13a

Shelter 3200, location of stowed equipment.









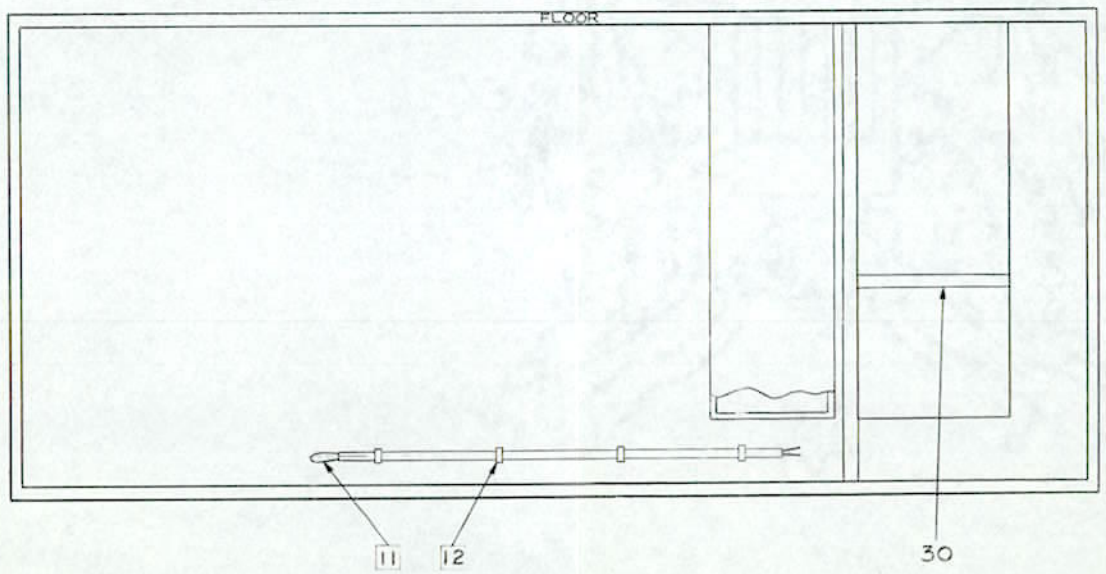


Figure 4-11

Shelter 2700, location of stowed equipment.

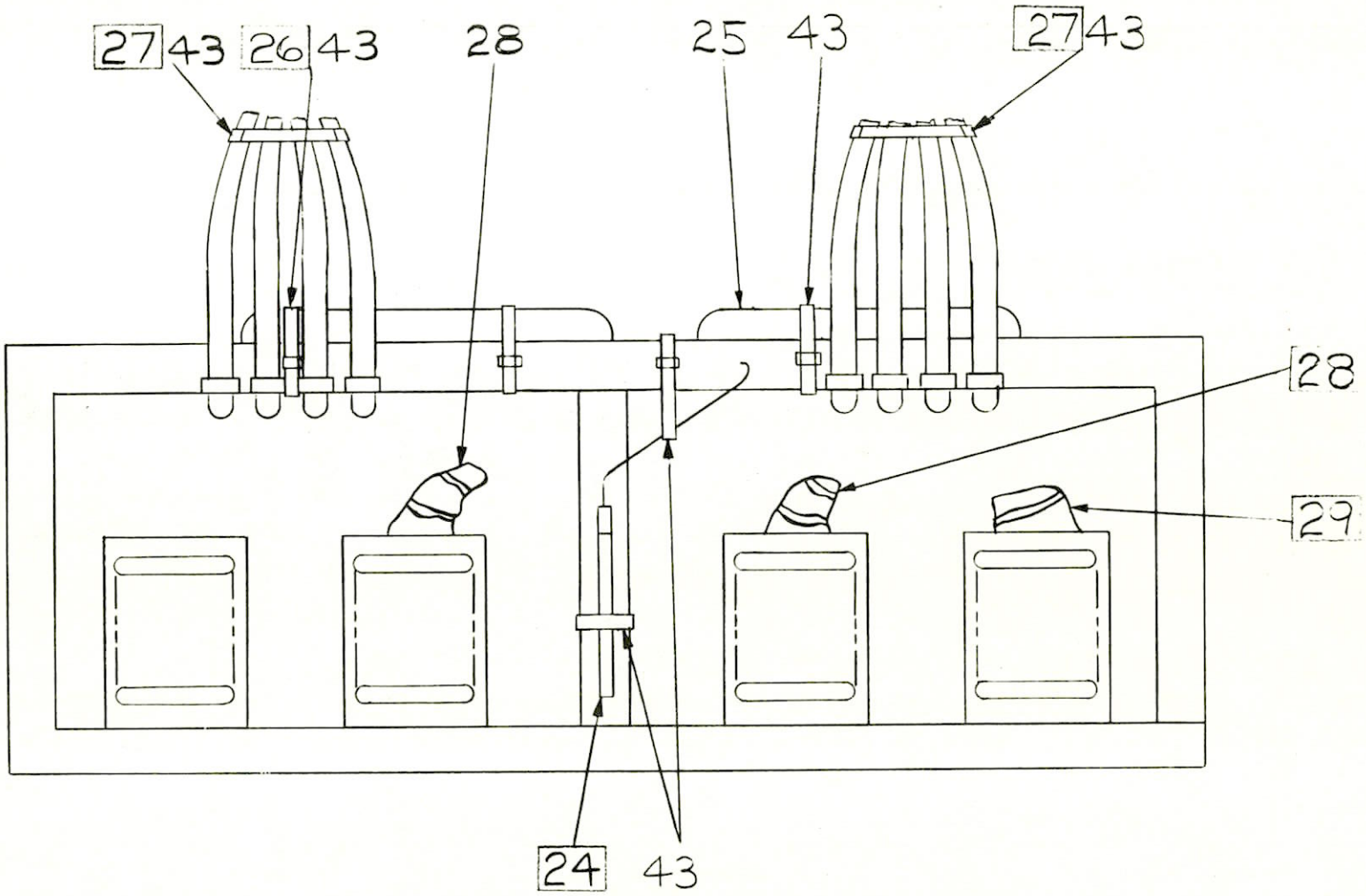


Figure 4-13b

Shelter 3200, location of stowed equipment, Section C-C, rear of PA rack.

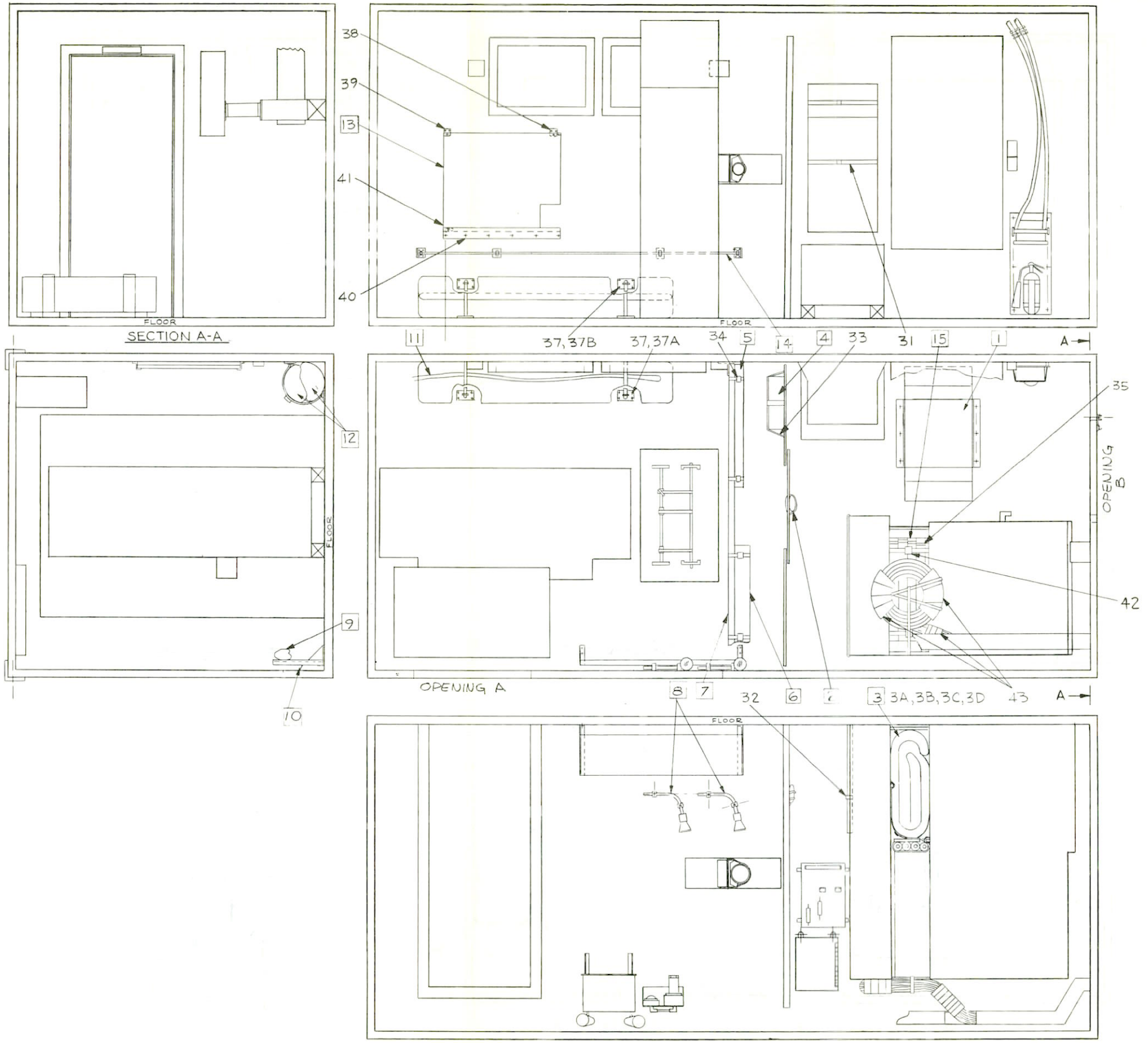


Figure 4-14

Shelter 3300, location of stowed equipment.

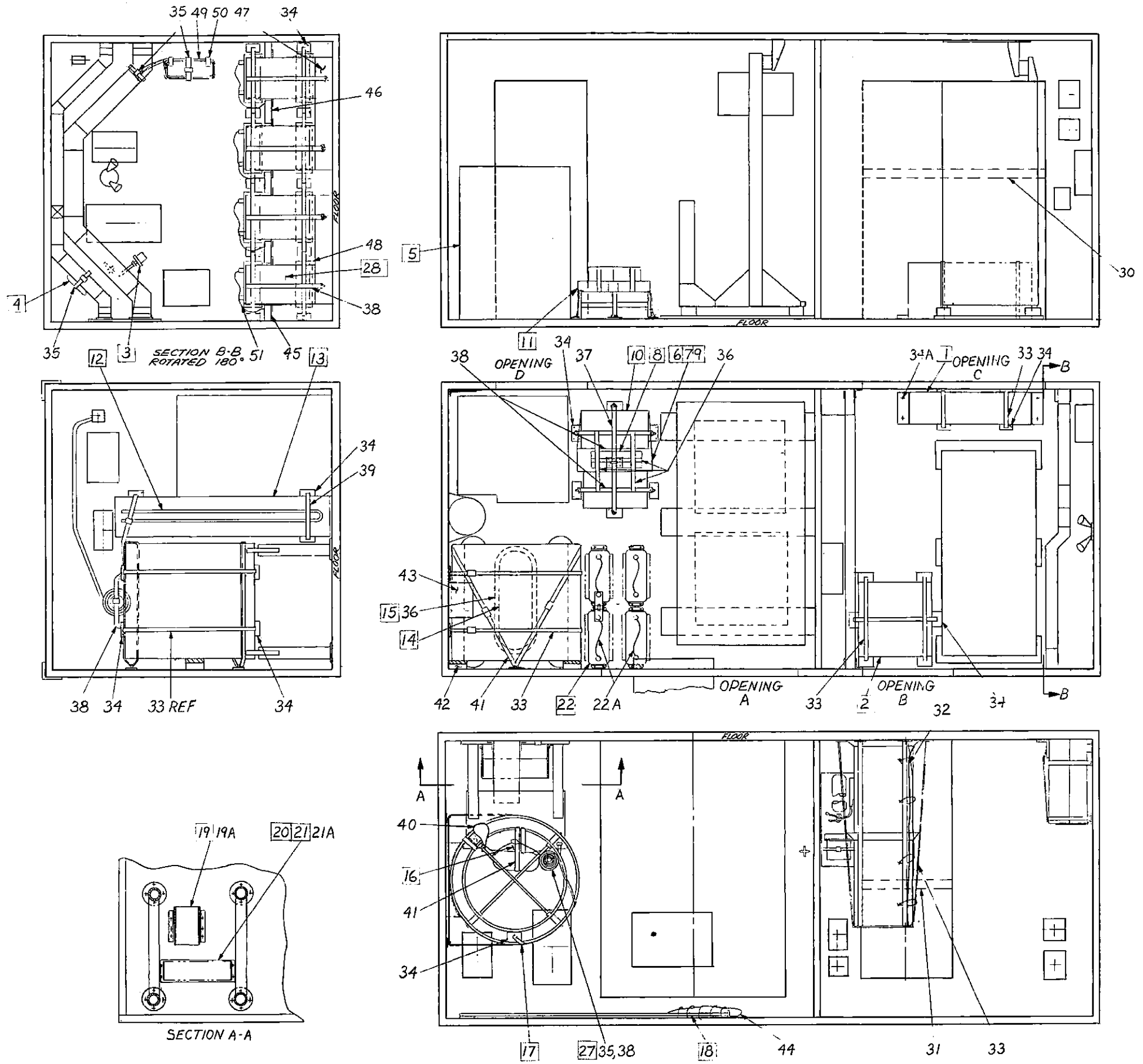
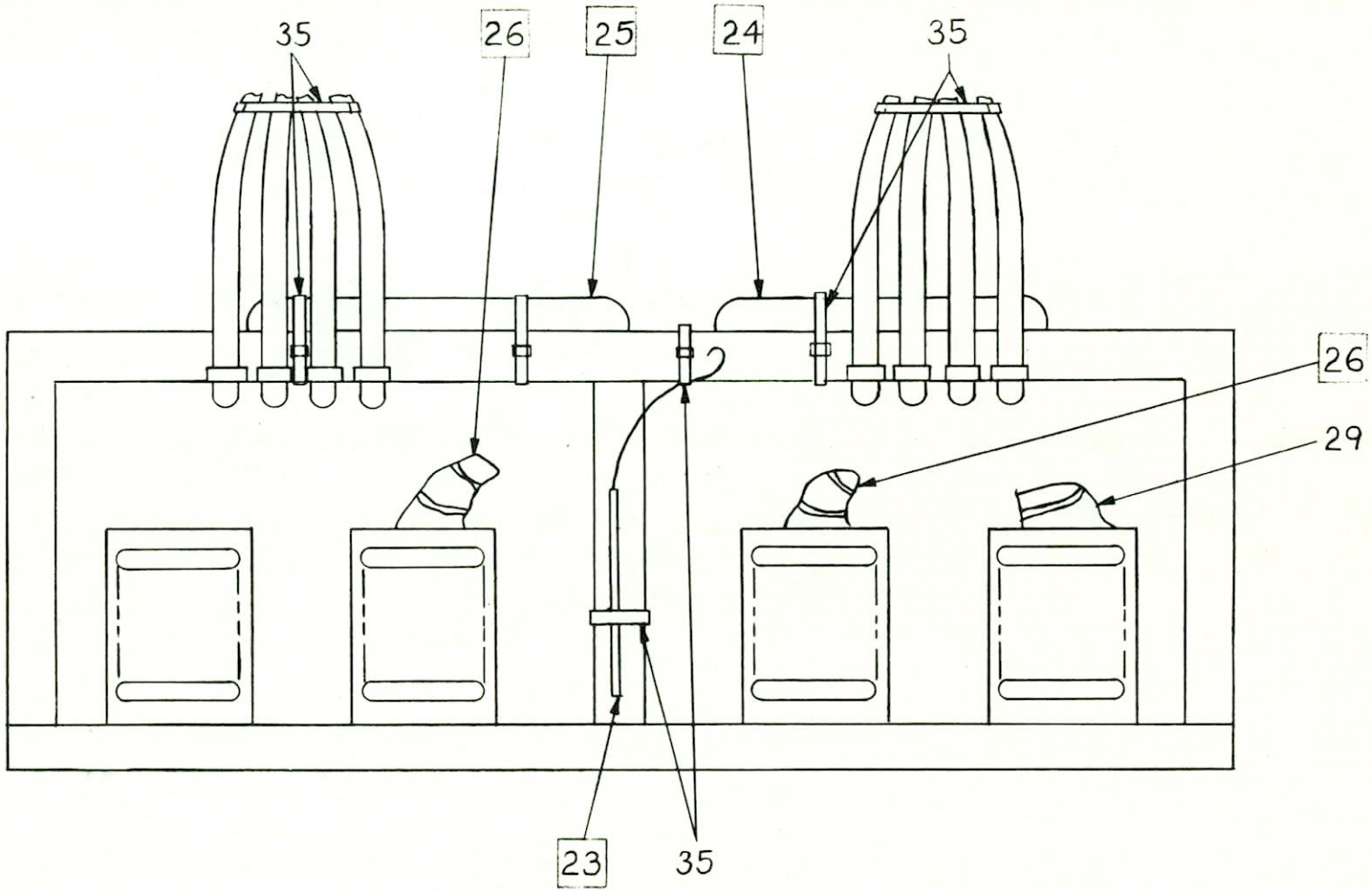


Figure 4-15a

Shelter 3400, location of stowed equipment.



PARTIAL VIEW C-C
SCALE: NONE

Figure 4-15b

Shelter 3400, location of stowed equipment, section C-C, rear of PA rack.

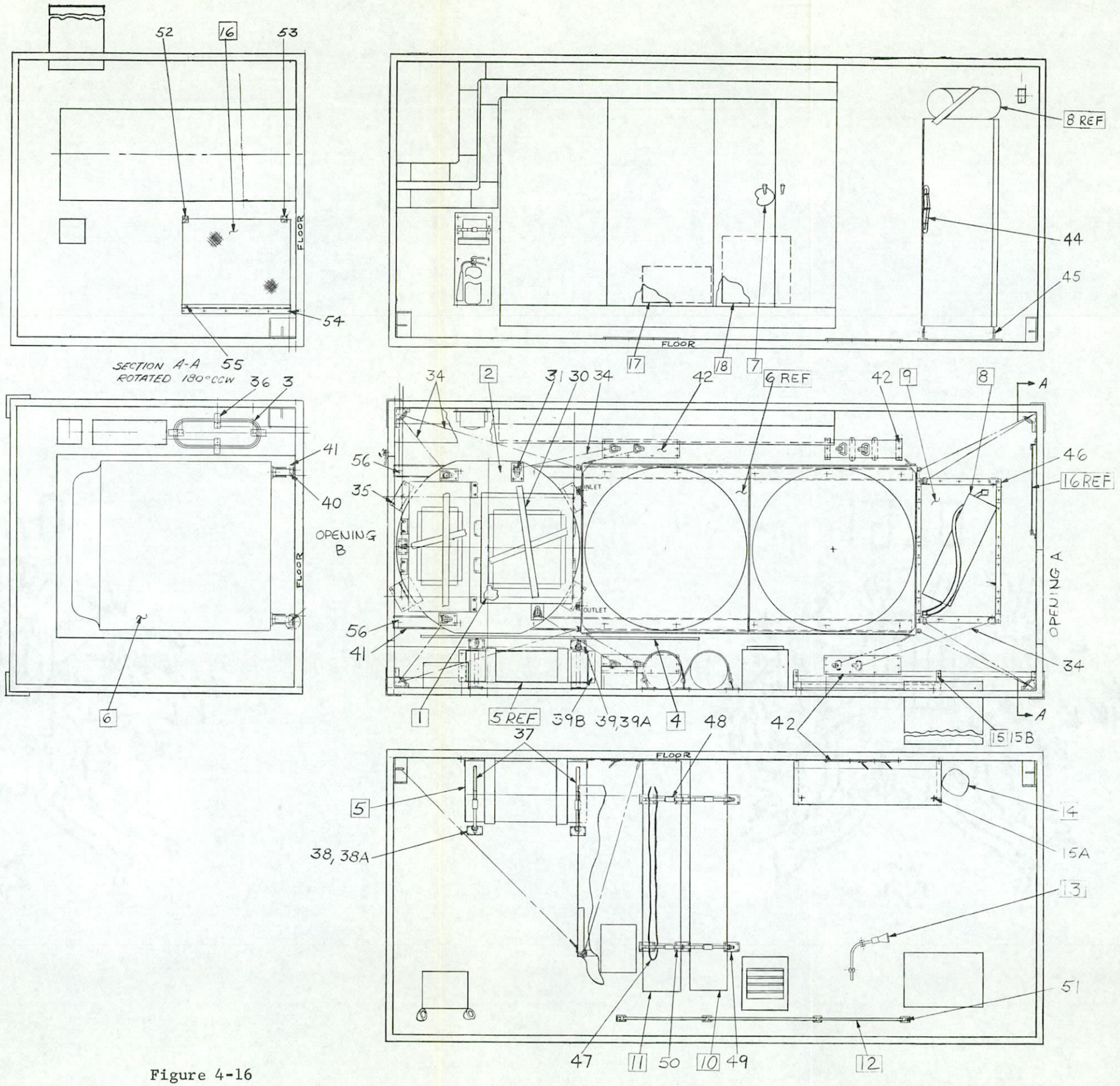
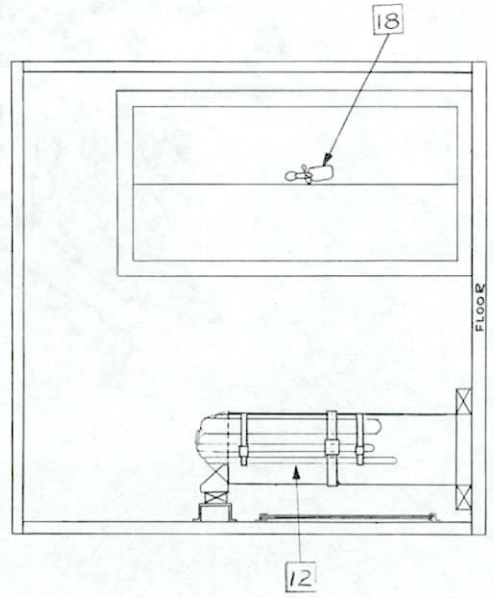
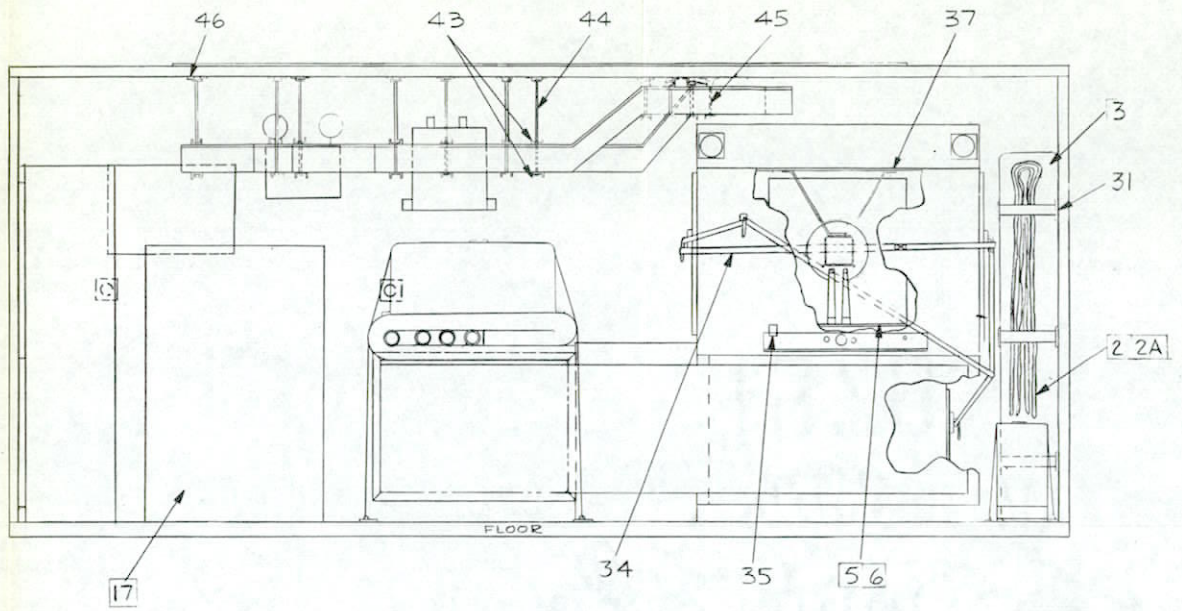
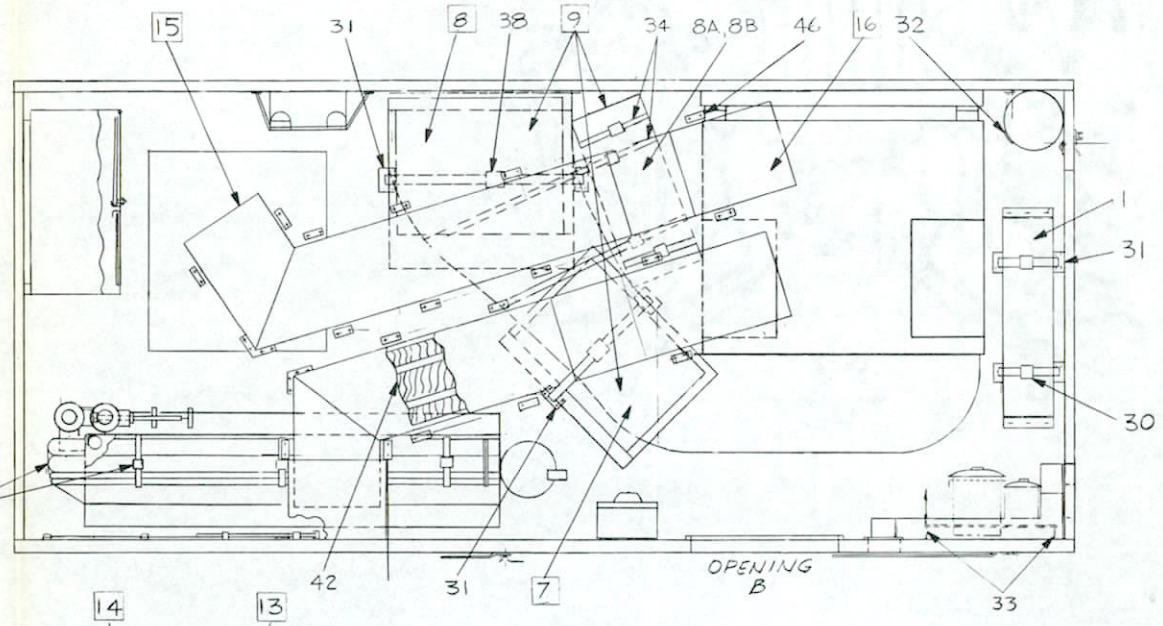


Figure 4-16

Shelter 3500, location of stowed equipment.







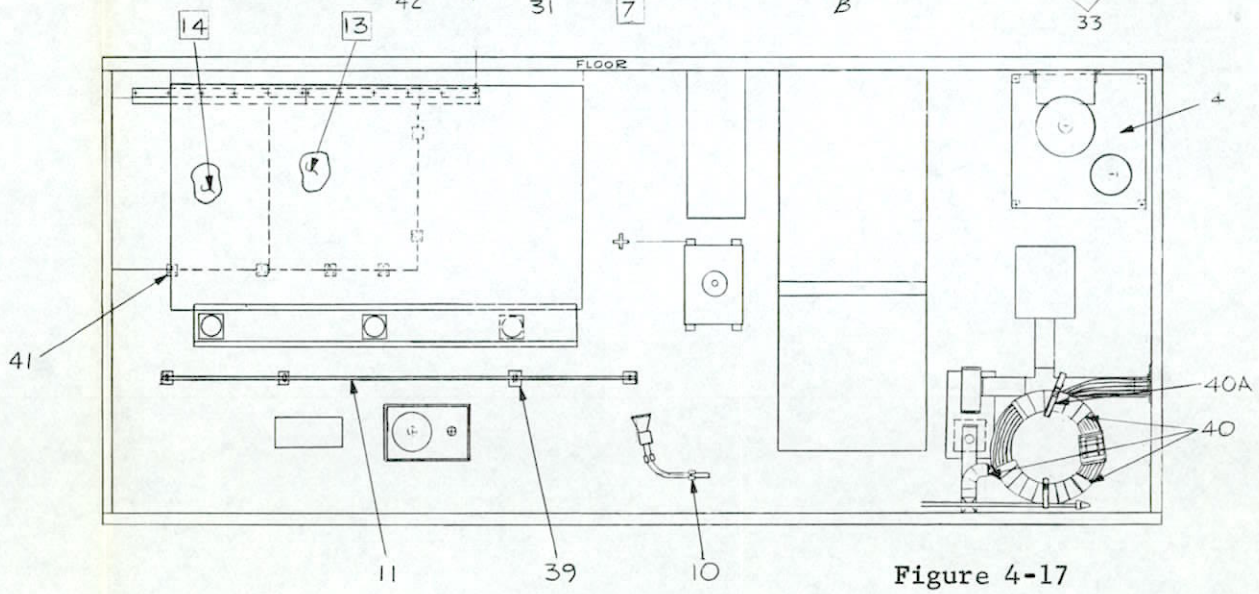


Figure 4-17

Shelter 3600, location of stowed equipment.

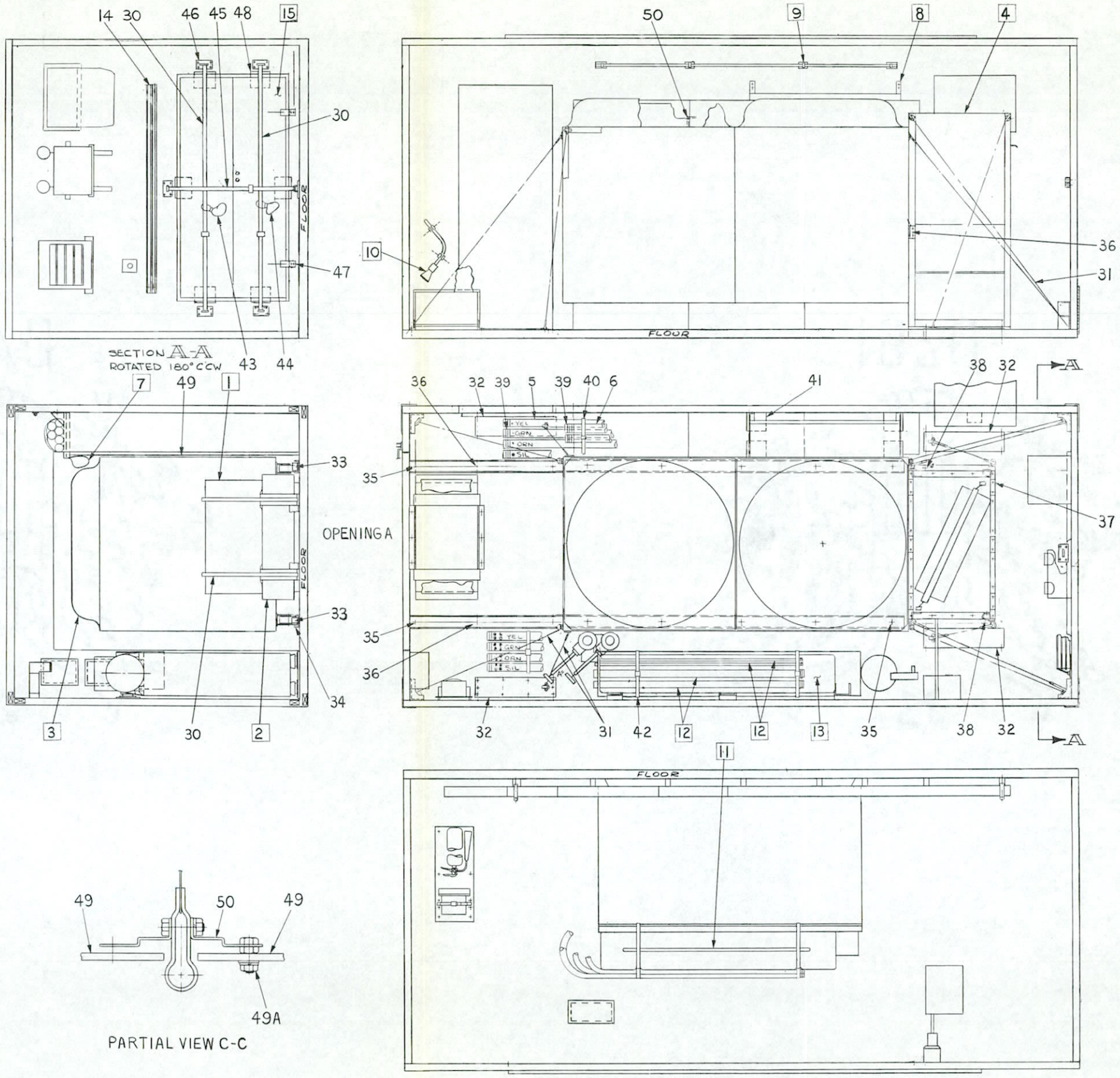


Figure 4-18

Shelter 3700, location of stowed equipment.

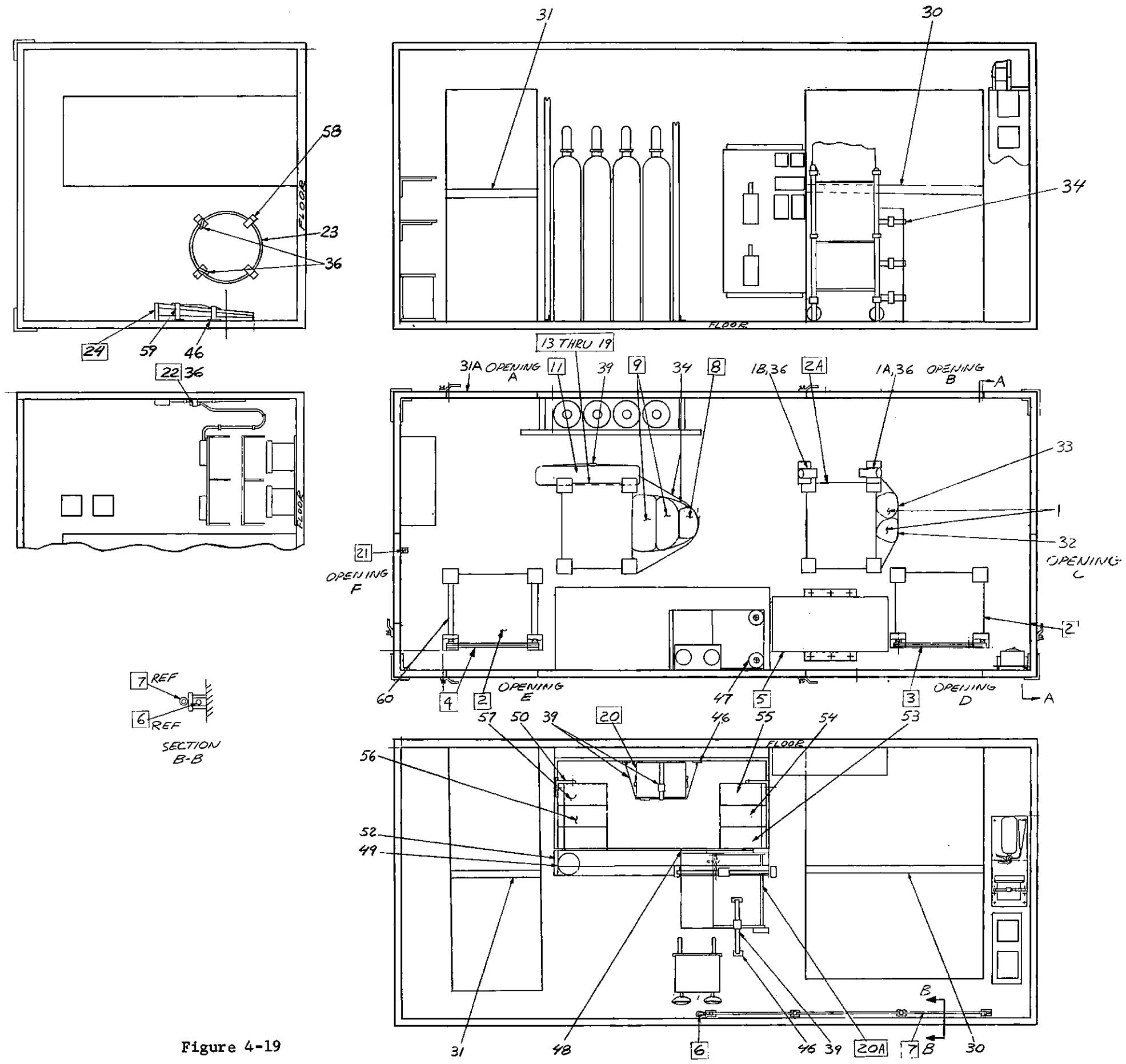
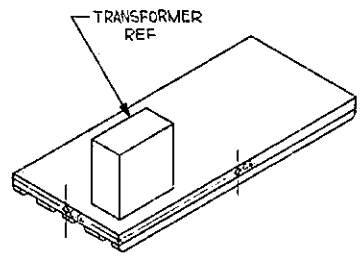
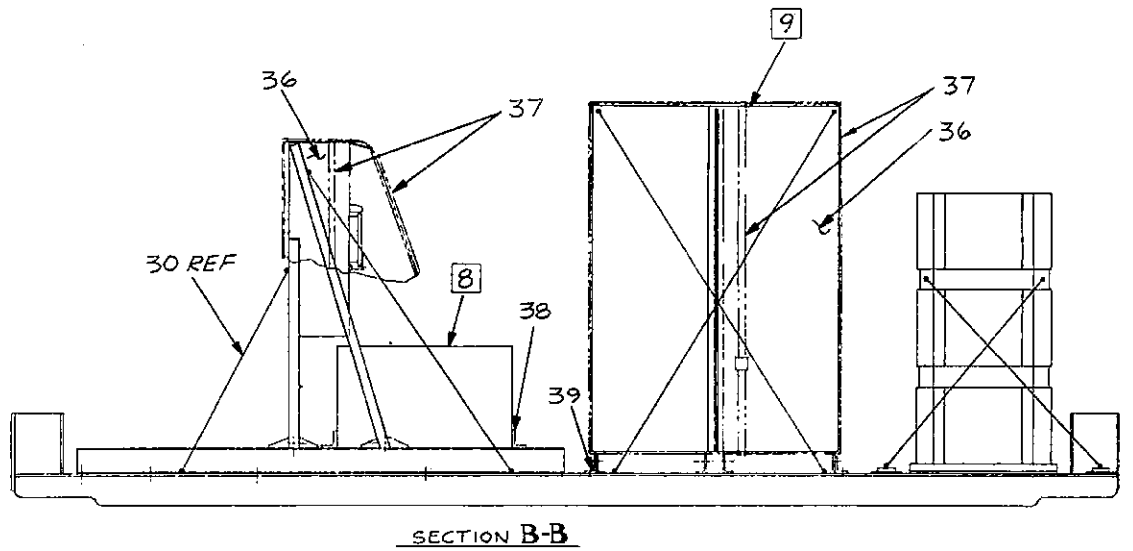


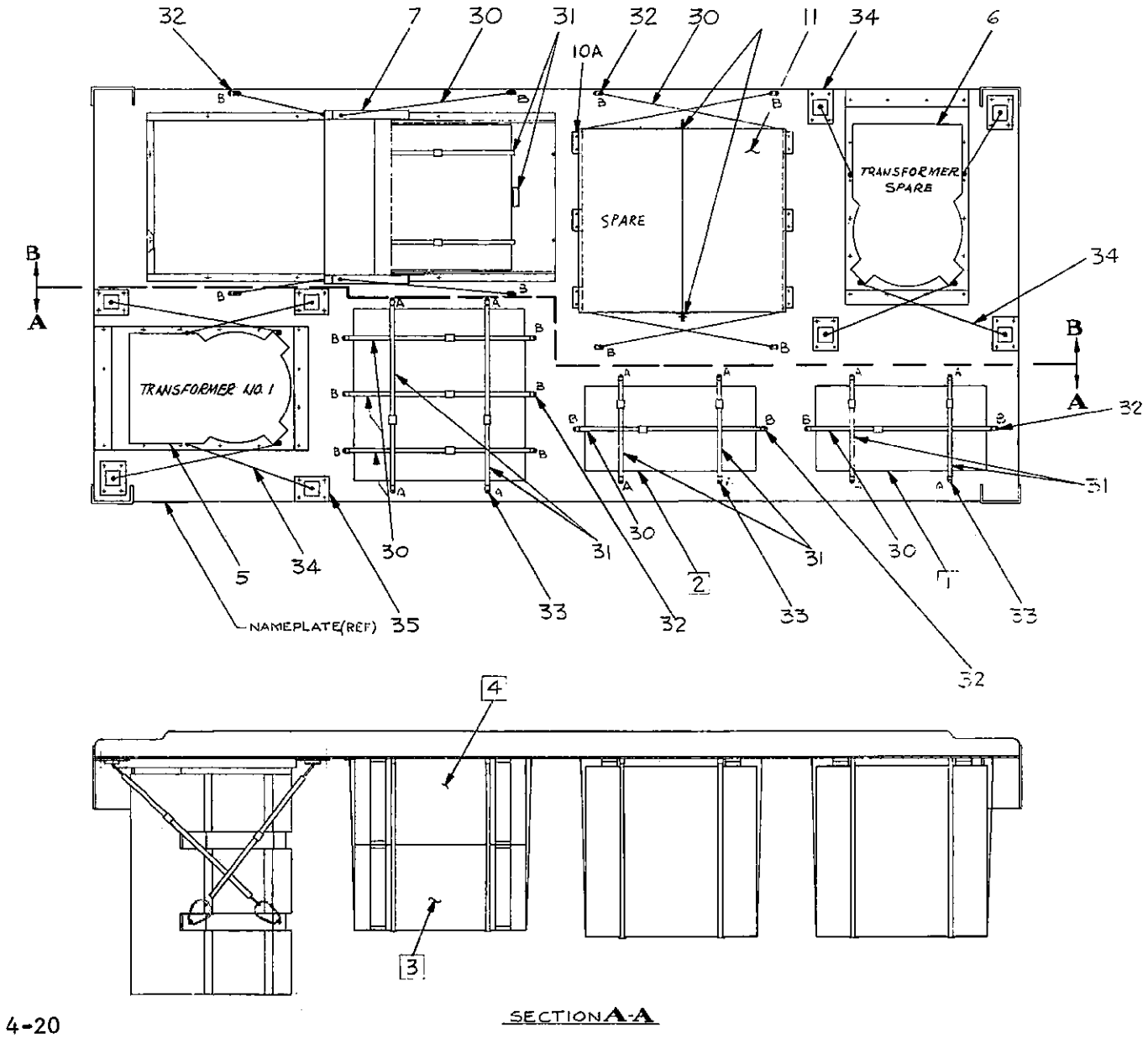
Figure 4-19

Shelter 3800, location of stowed equipment





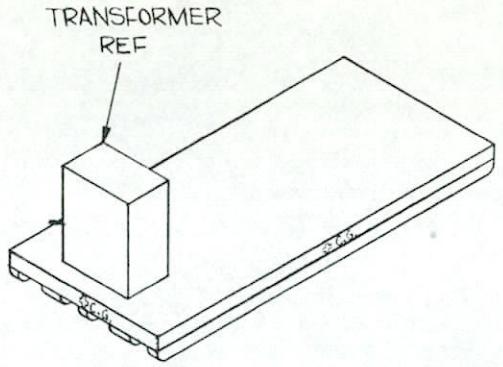
SECTION B-B

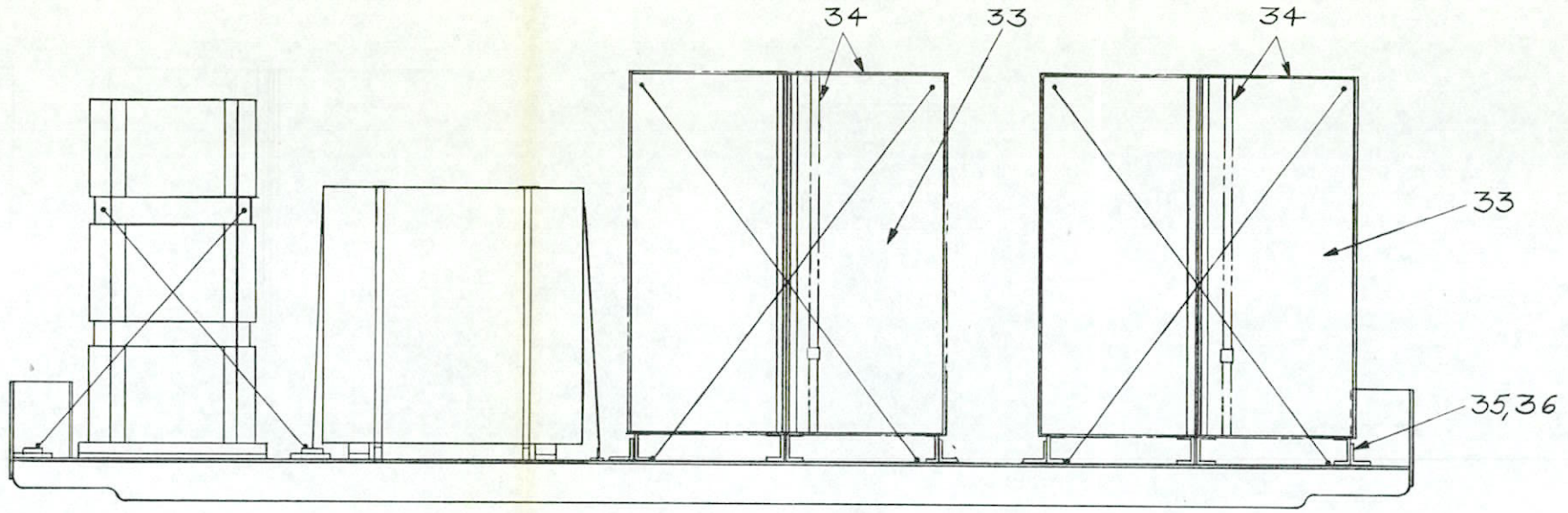


SECTION A-A

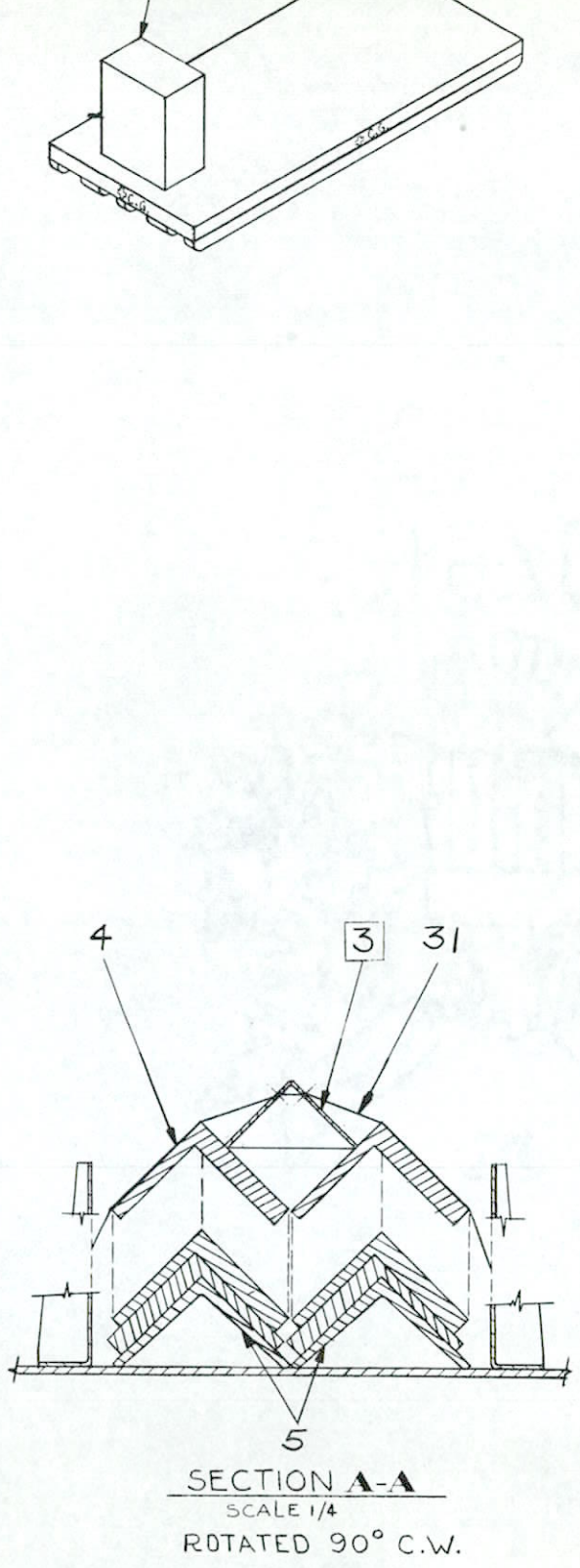
Figure 4-20

Pallet 4100, location of stowed equipment.





SECTION B-B



SECTION A-A
SCALE 1/4
ROTATED 90° C.W.

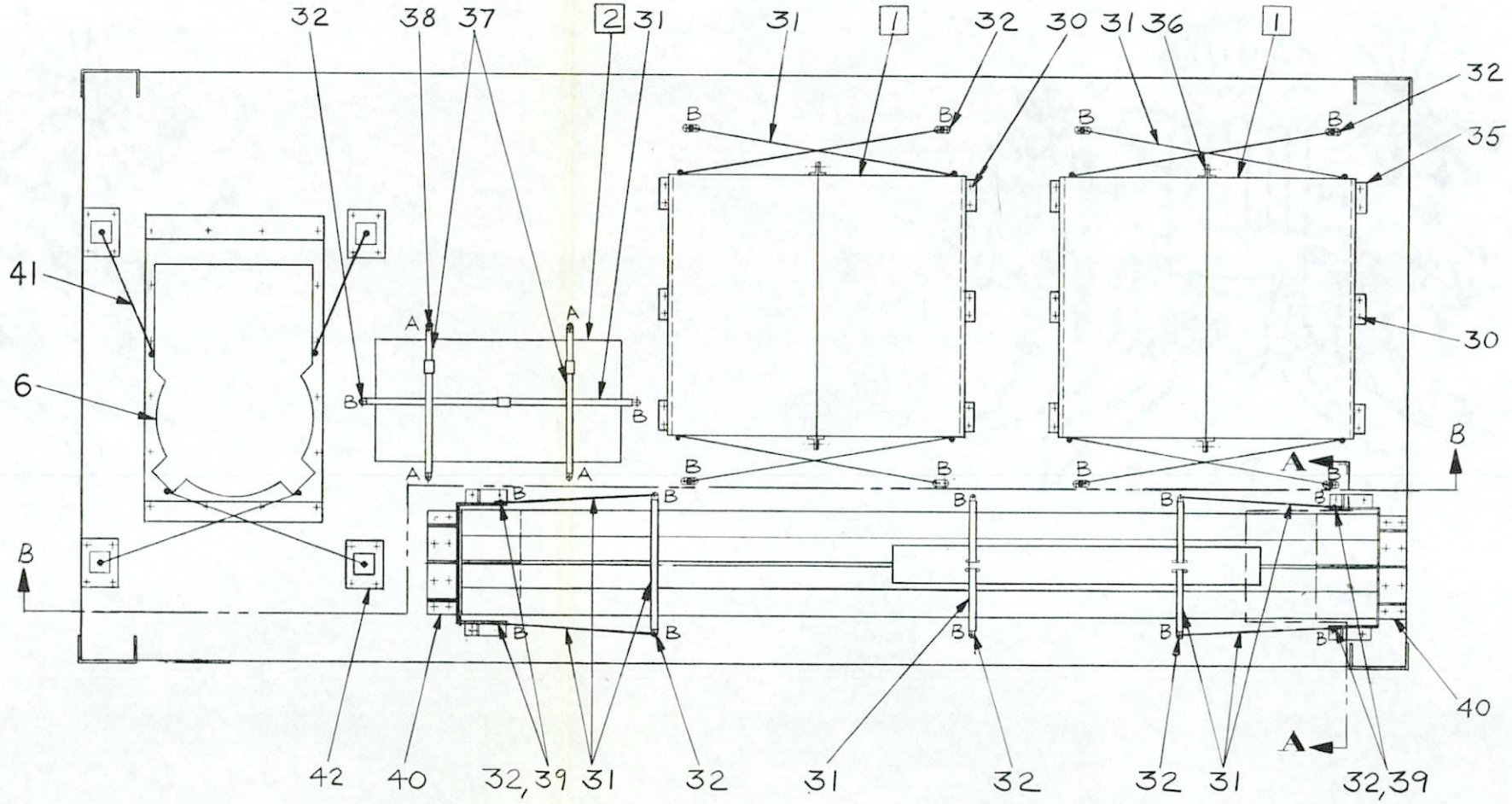


Figure 4-21

Pallet 4100, location of stowed equipment.

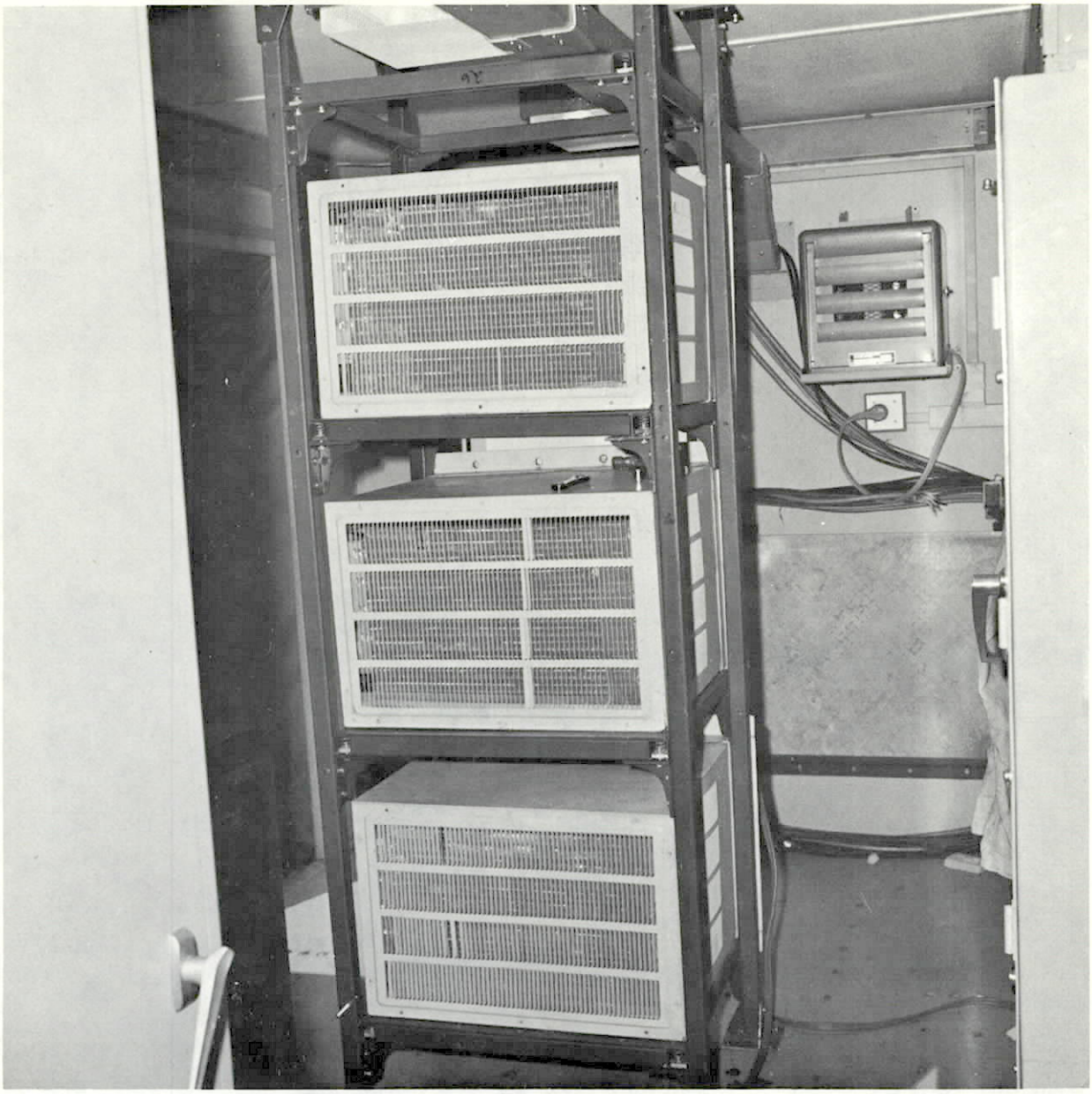


Figure 4-22a

Air conditioner stowage racks.

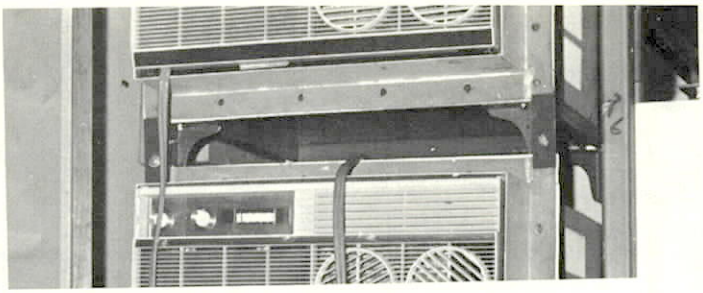


Figure 4-22b

Double Clamps

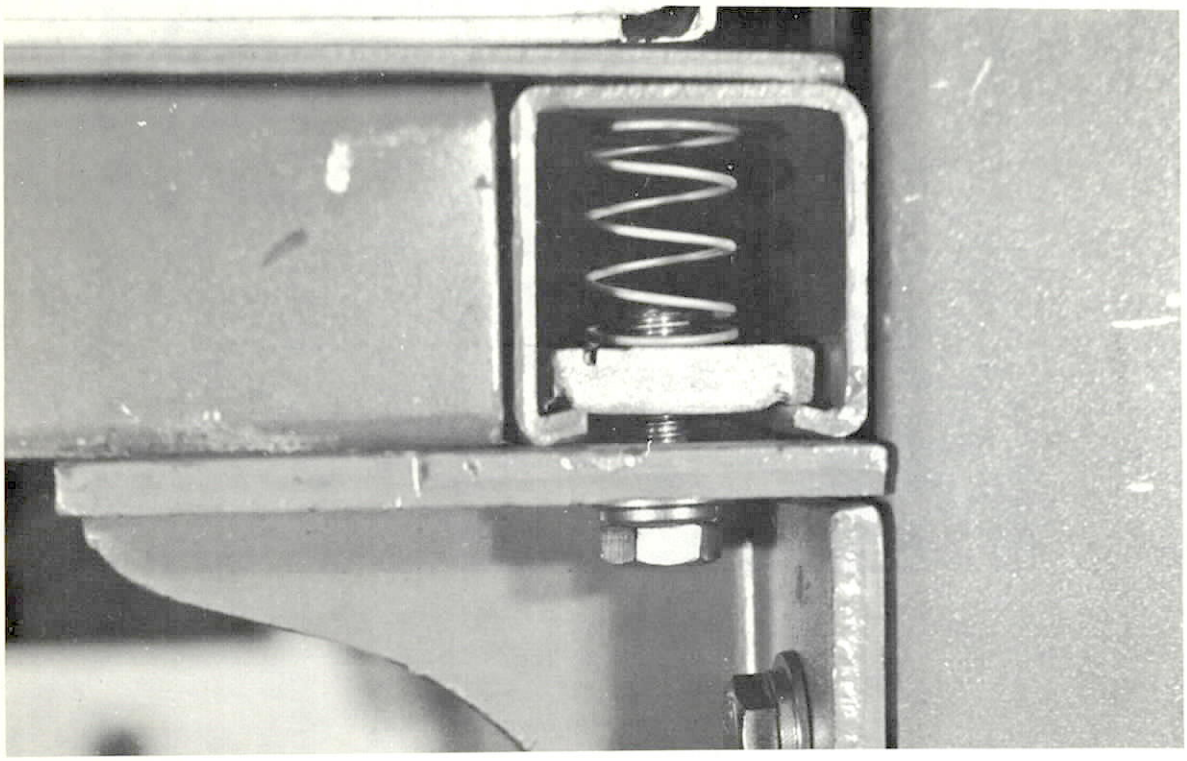


Figure 4-22c

Shelf installation bolts.

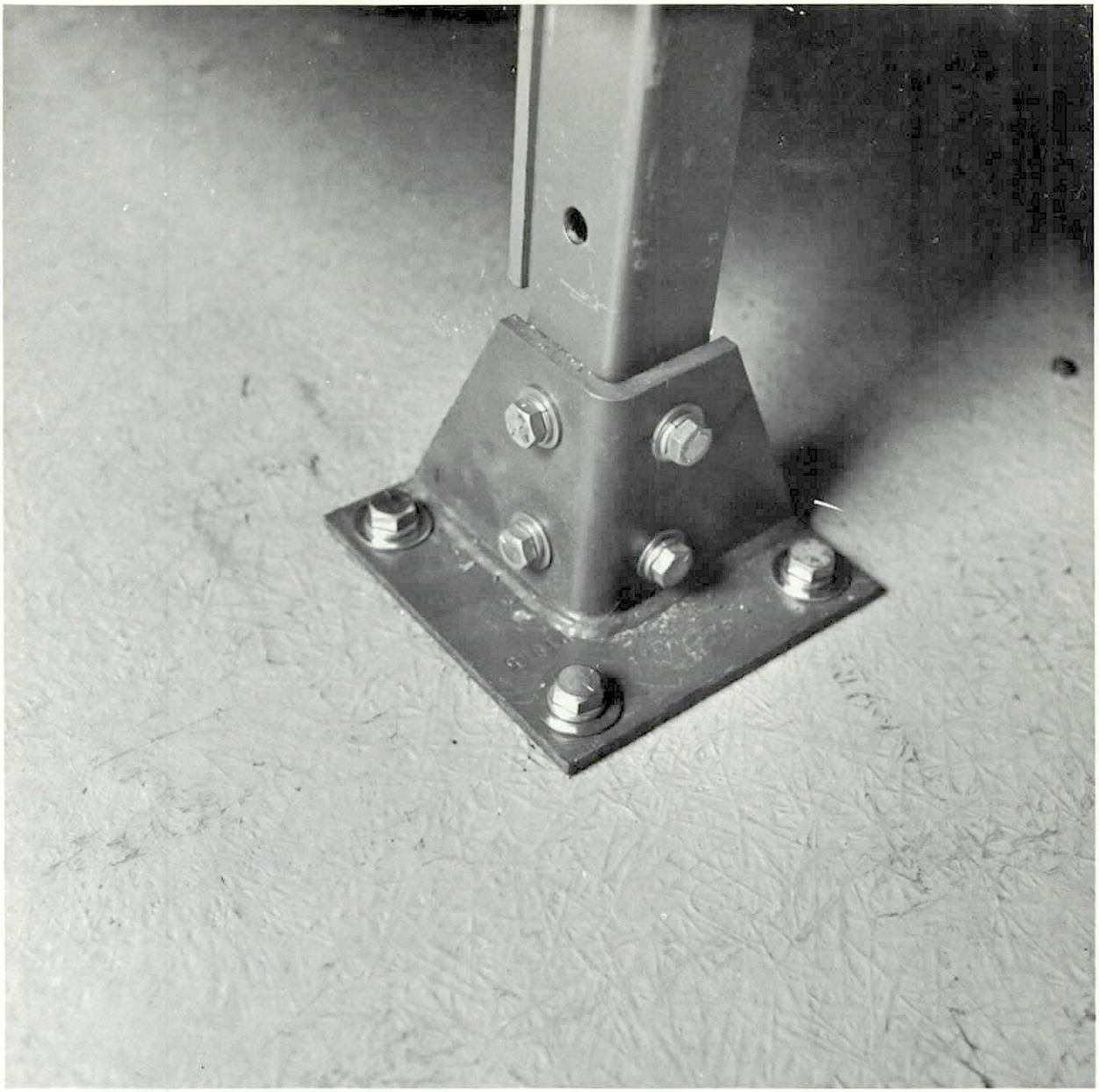


Figure 4-22d

Post base on floor.

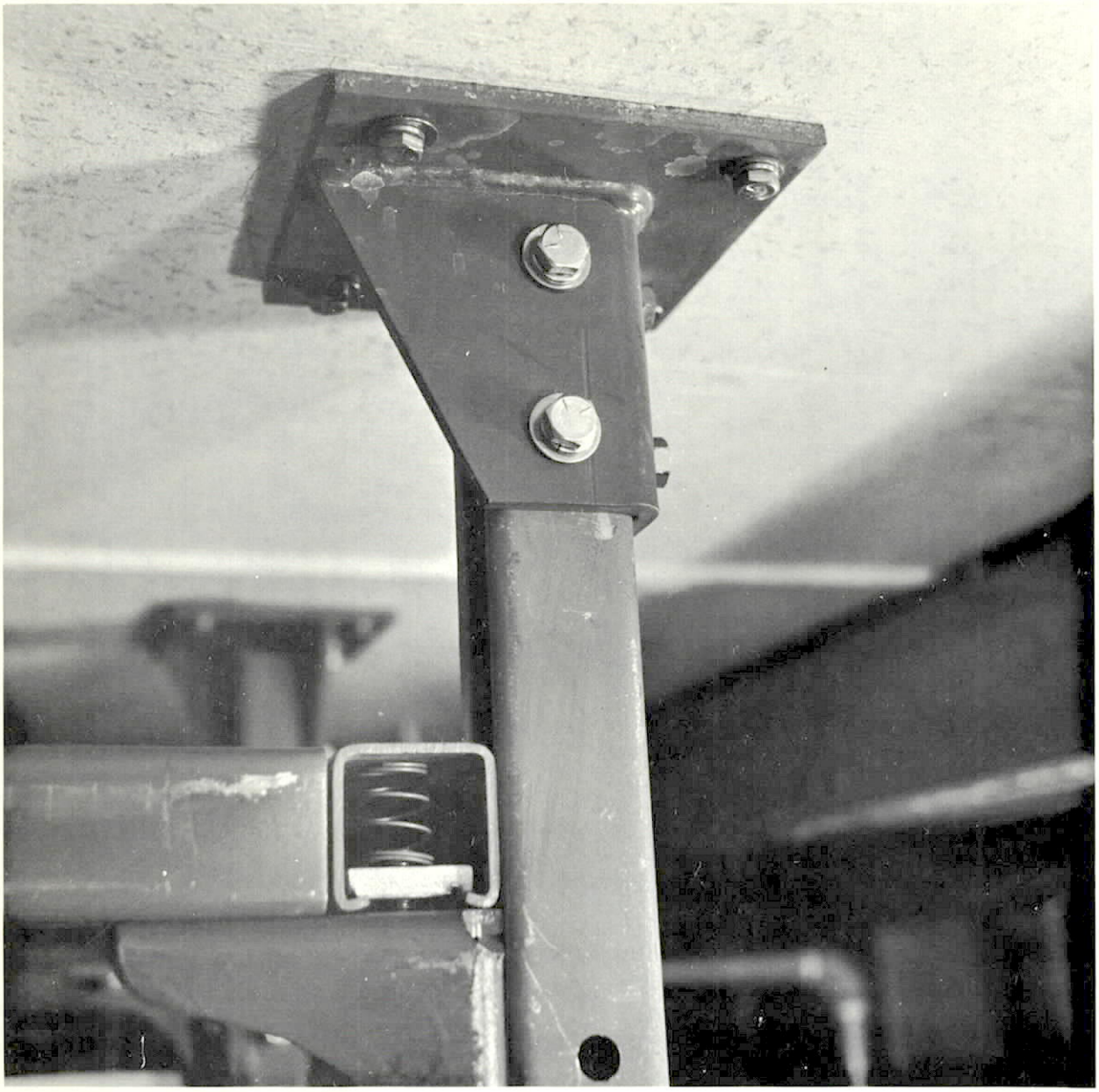


Figure 4-22e

Post base on ceiling.

Figure 4-23

Test equipment stowage rack.

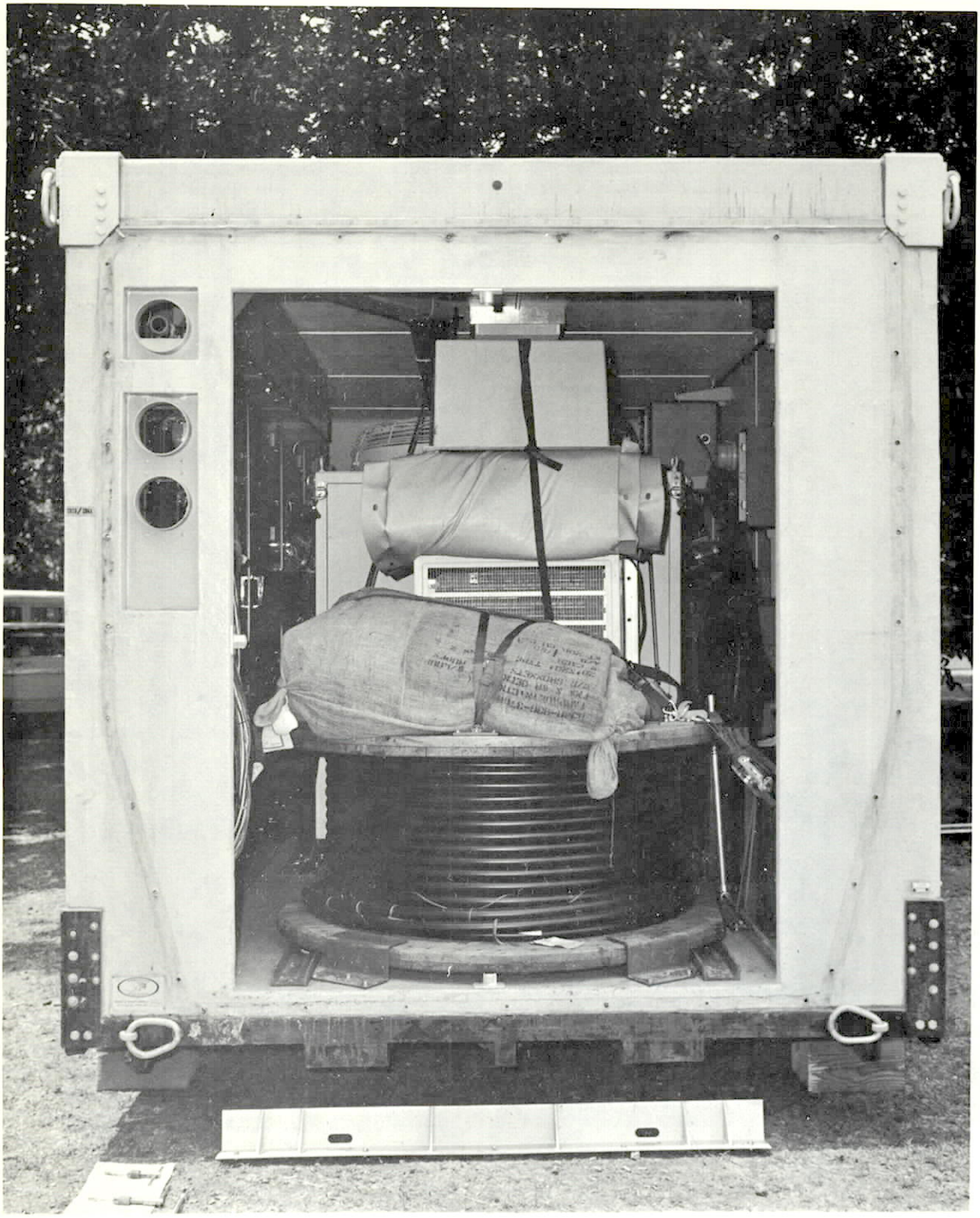


Figure 4-24a

Interior of shelter 3500

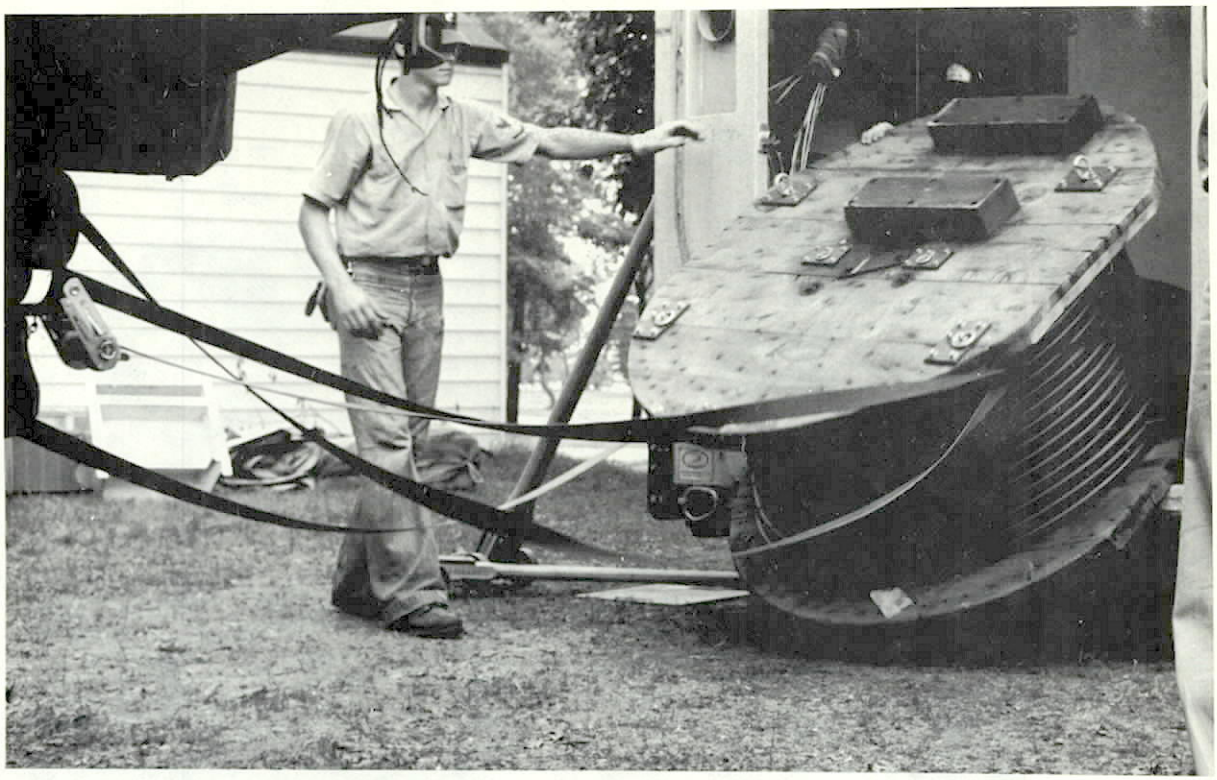


Figure 4-24b

Pulling wire spool from shelter 3500

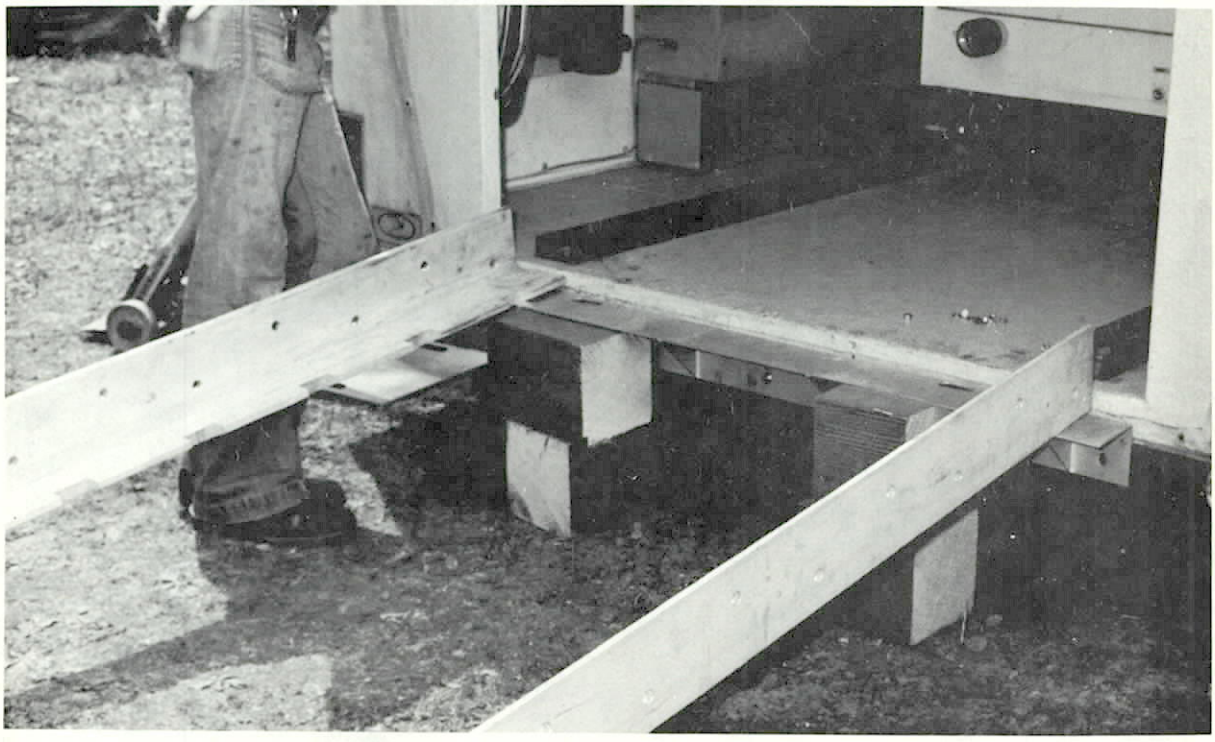


Figure 4-24c

Bracket and rails installed on shelter

Figure 4-24d

Correct alignment of loading rails and floor channels.

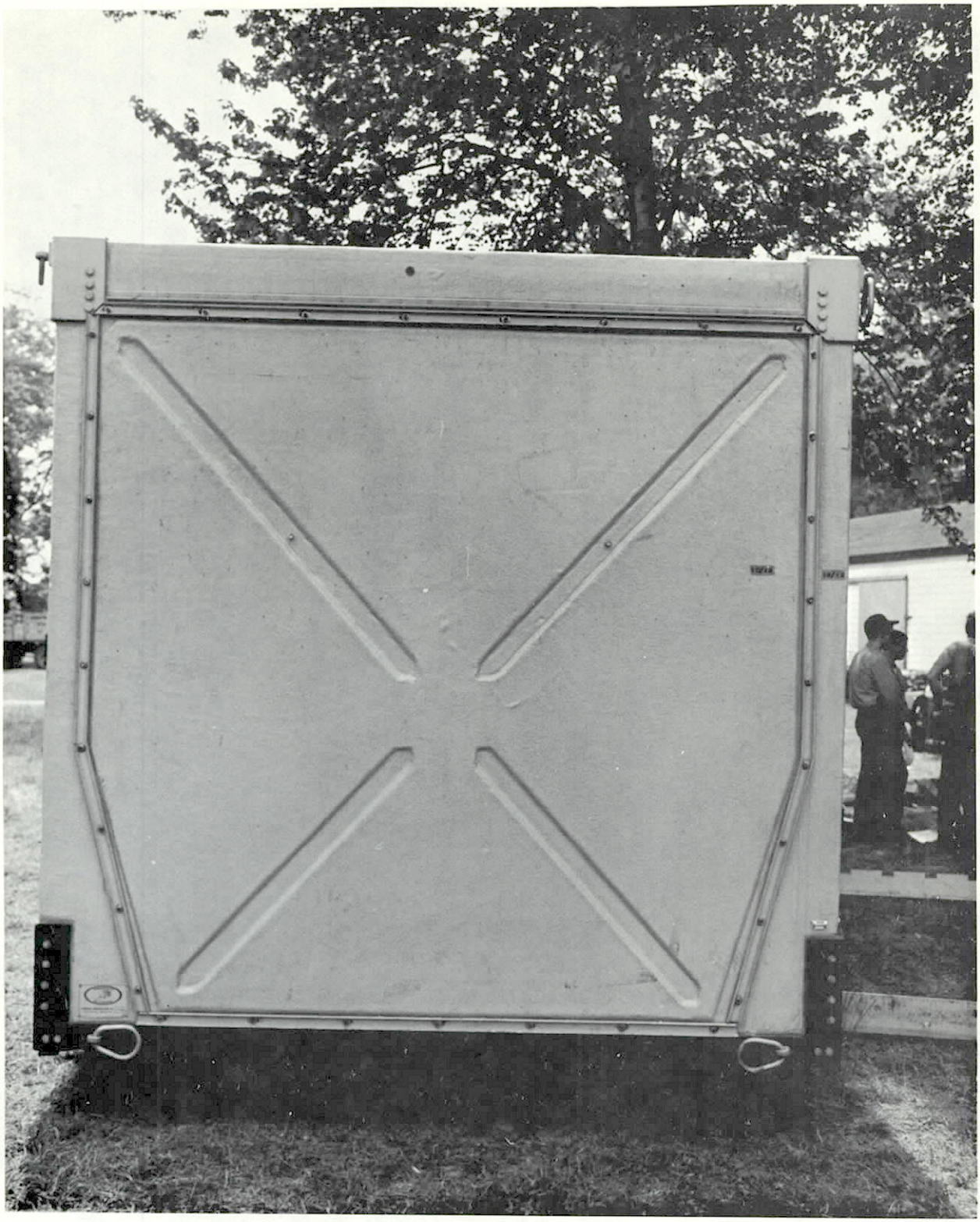


Figure 4-25a

Pullman transit plate.

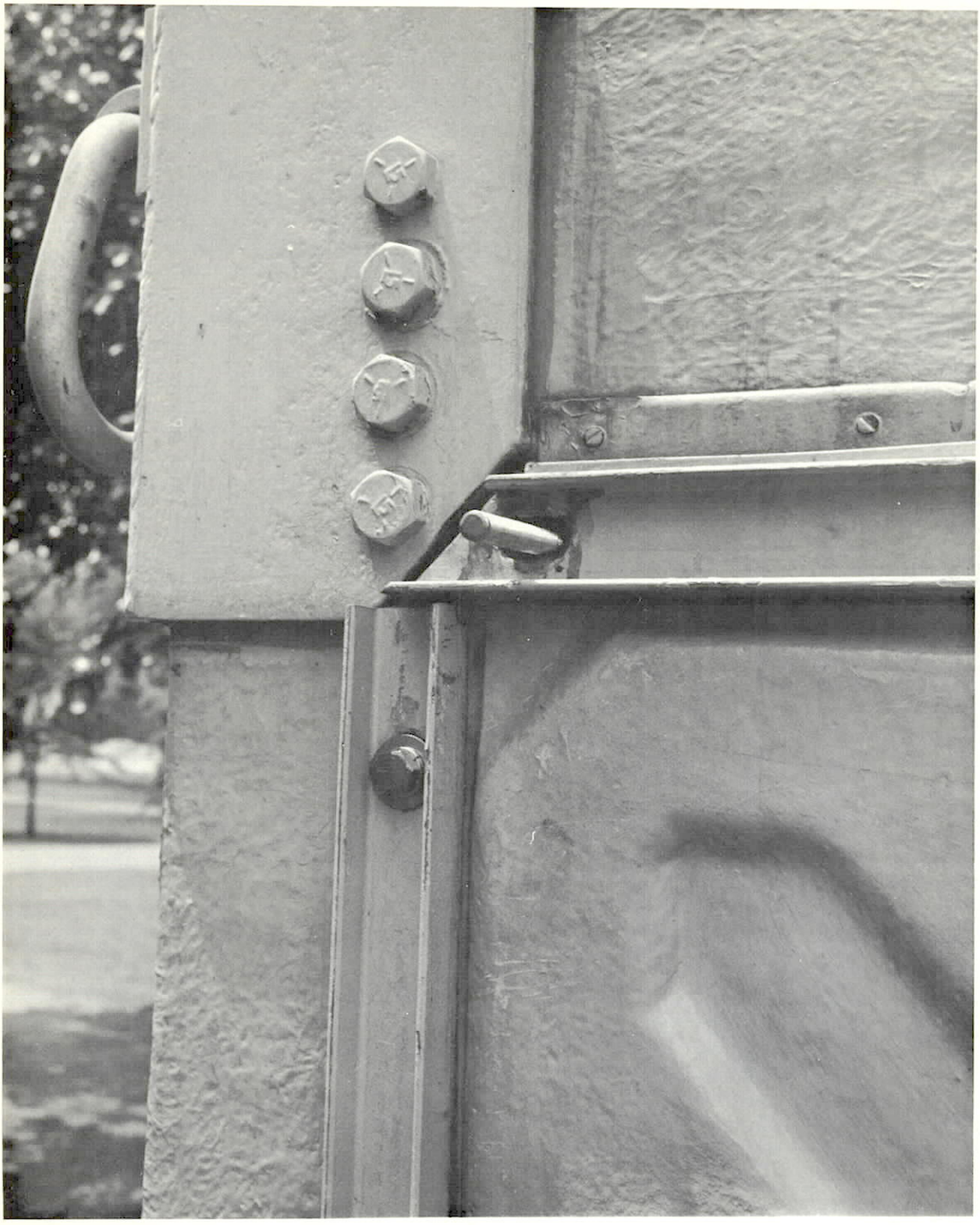


Figure 4-25b

3-inch studs installed at transit plate corners.

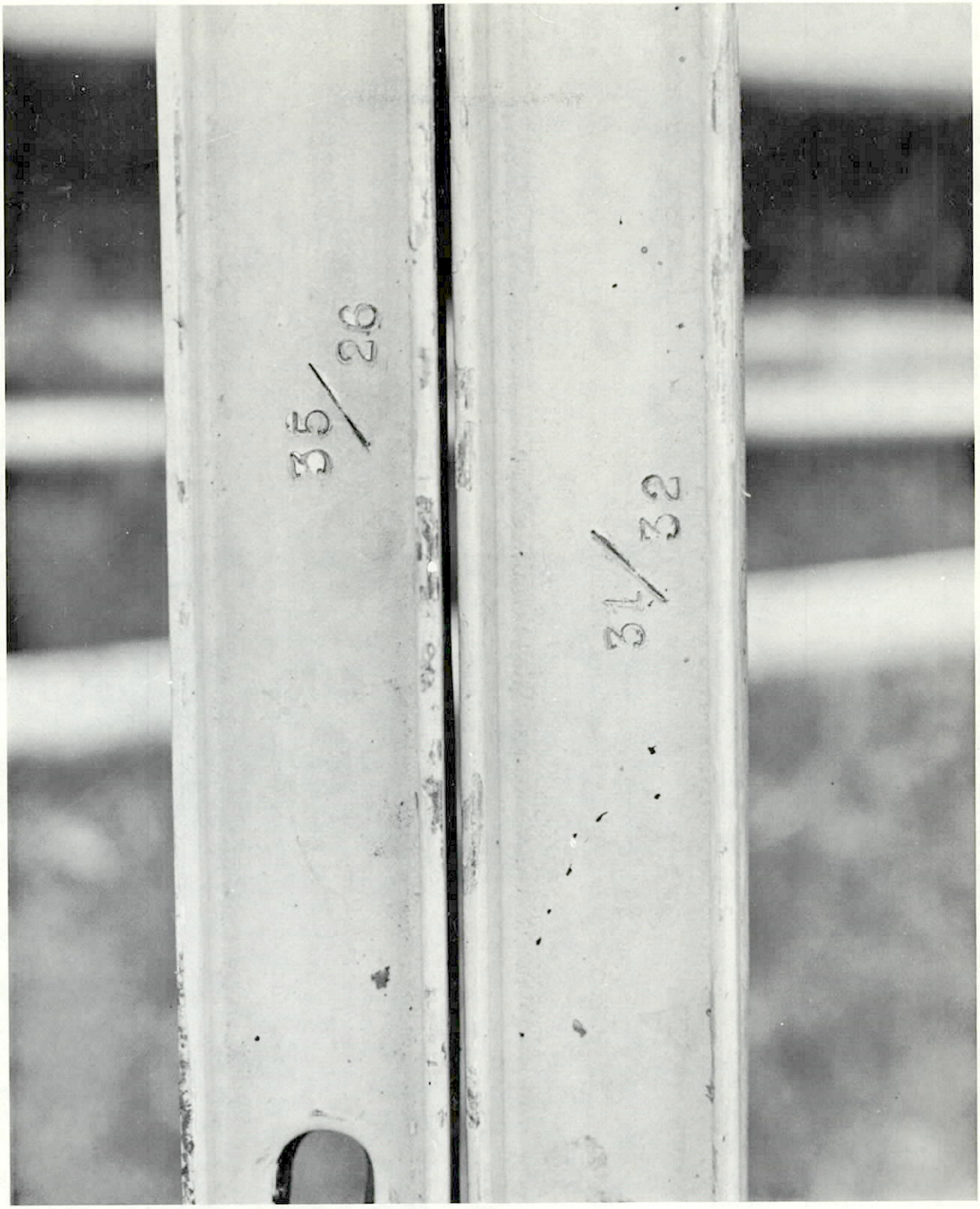


Figure 4-25c

Pullman bracket location marking

Figure 4-26

Leveling jack.

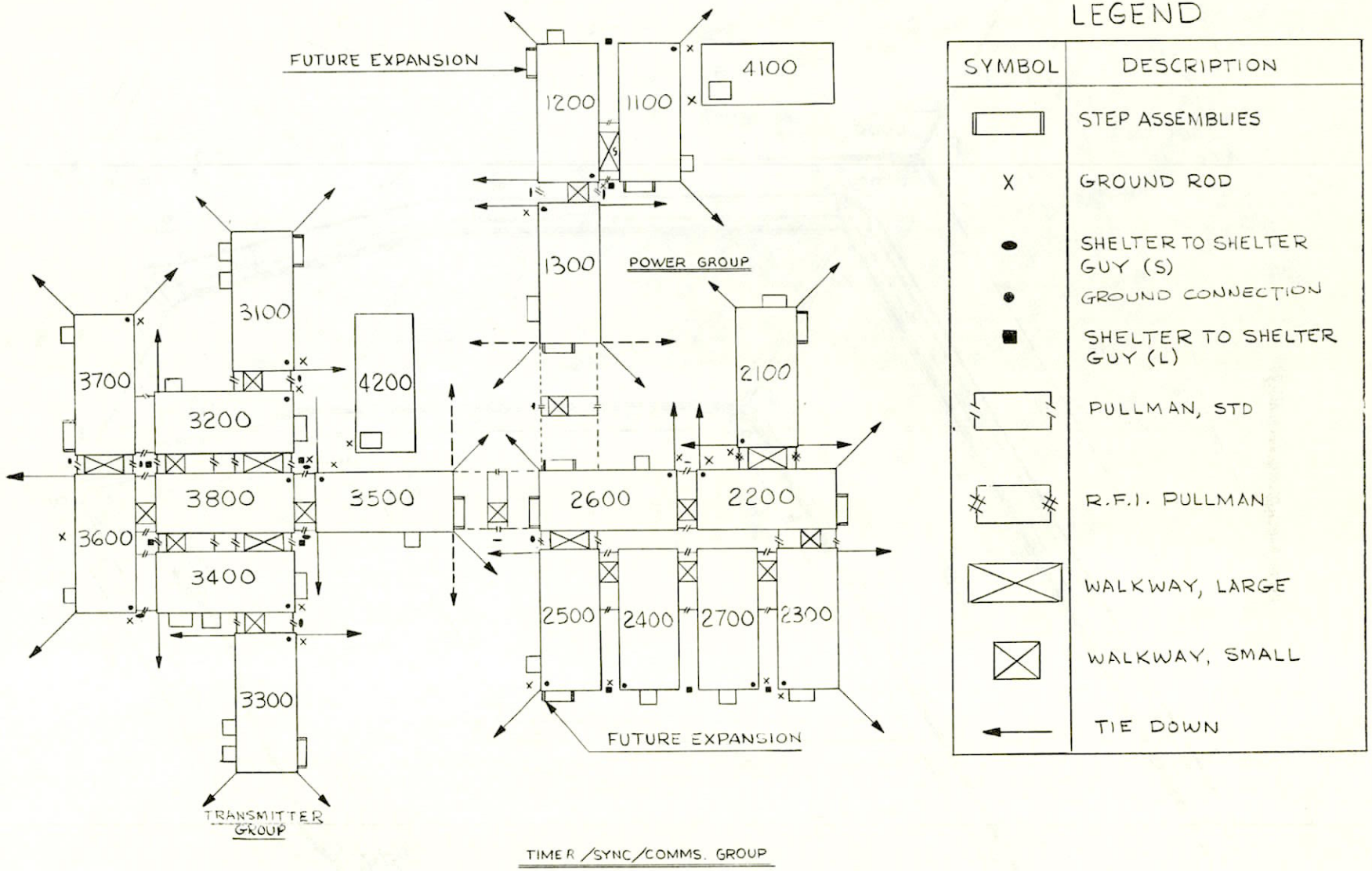


Figure 4-27

Installation locations of guys, steps, grounds rods, and pullman enclosures.

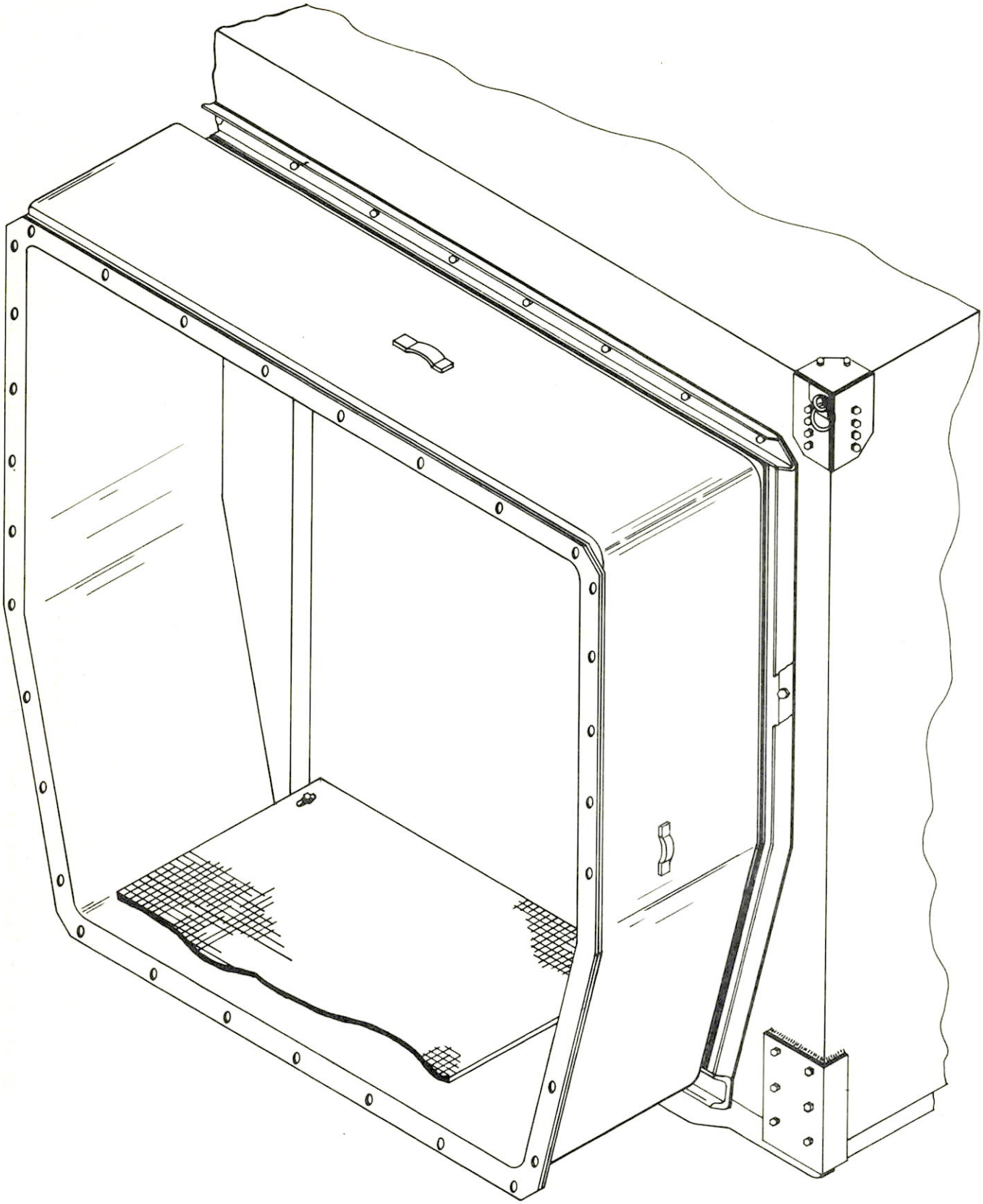


Figure 4-28

Installation of standard pullman enclosure and walkway.

Figure 4-29

Velcro pads on RFI pullman and RFI curtain.

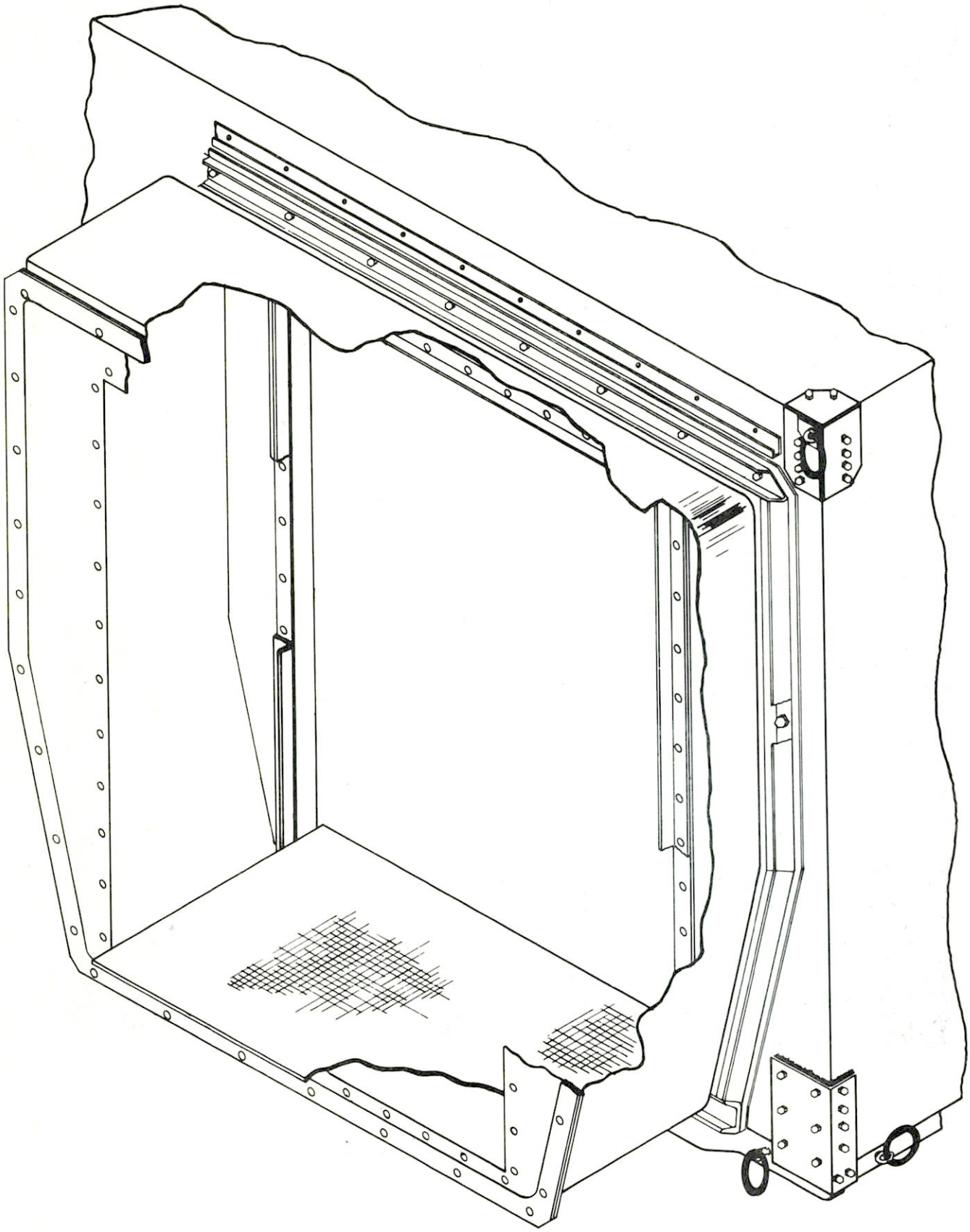


Figure 4-30

Installation of RFI pullman.

Figure 4-31

Installation of RFI curtain retaining brackets.

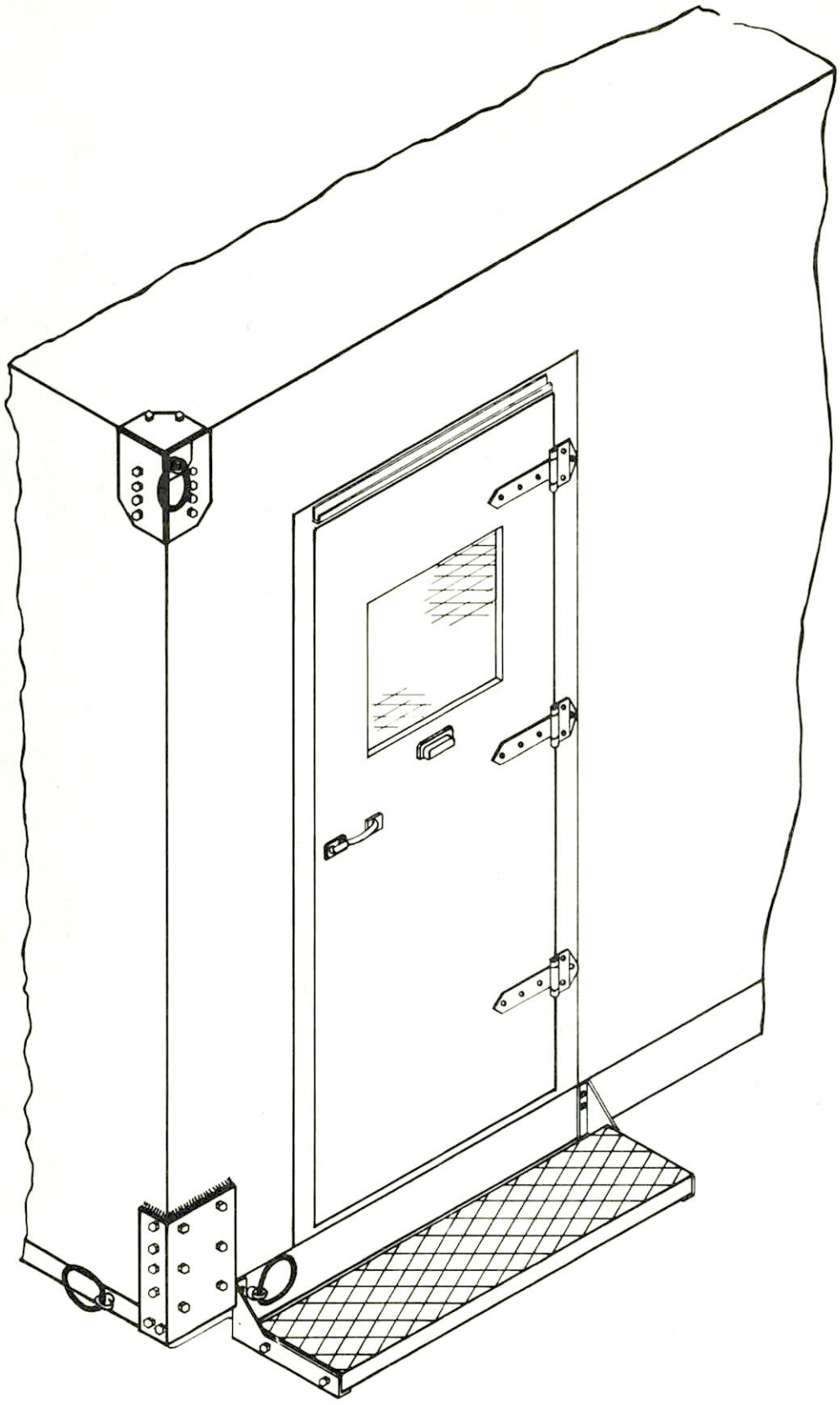


Figure 4-32

Installation of step assembly

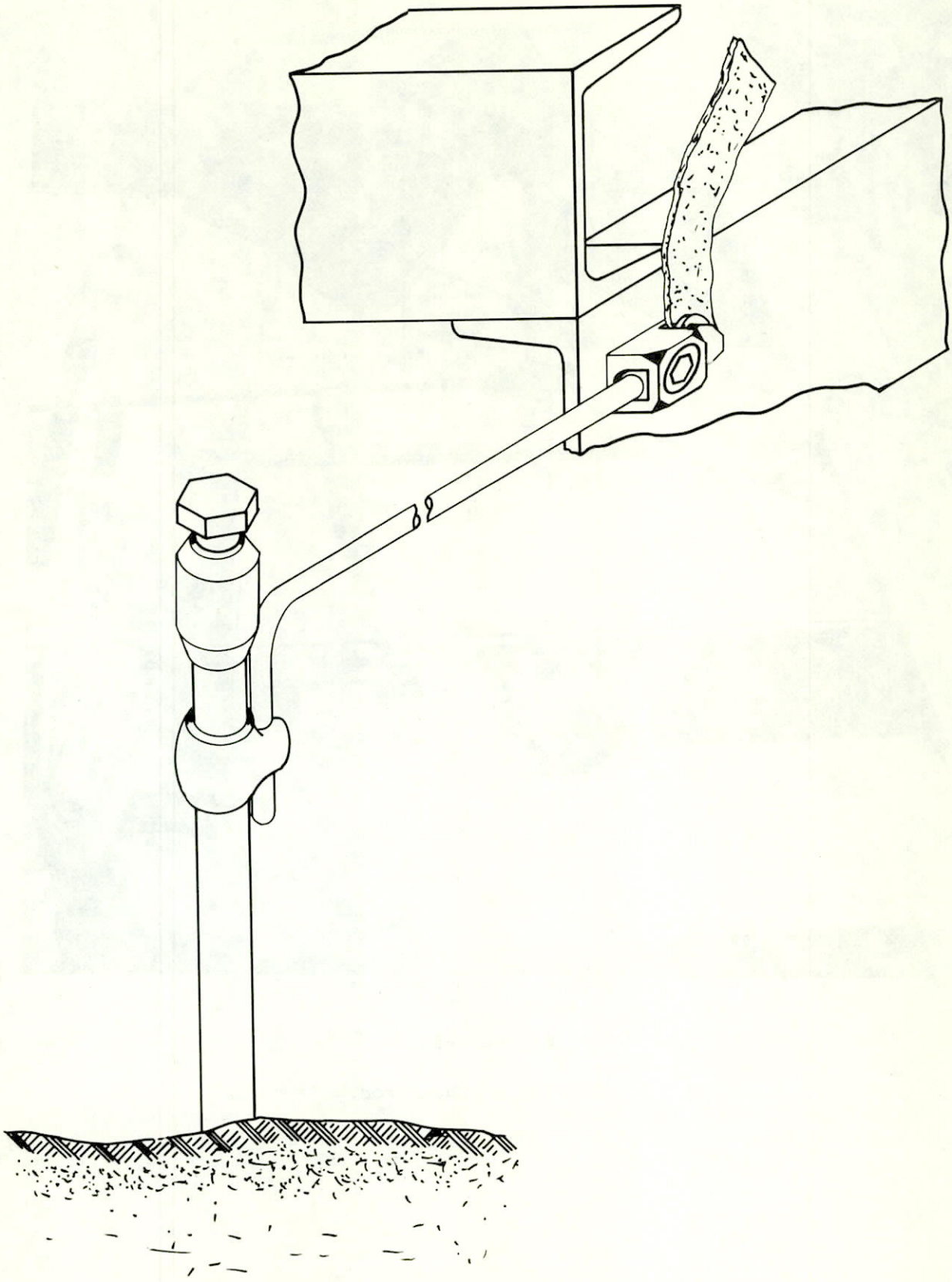


Figure 4-33a

Installation of ground rods.

Figure 4-33b

Driving a ground rod.

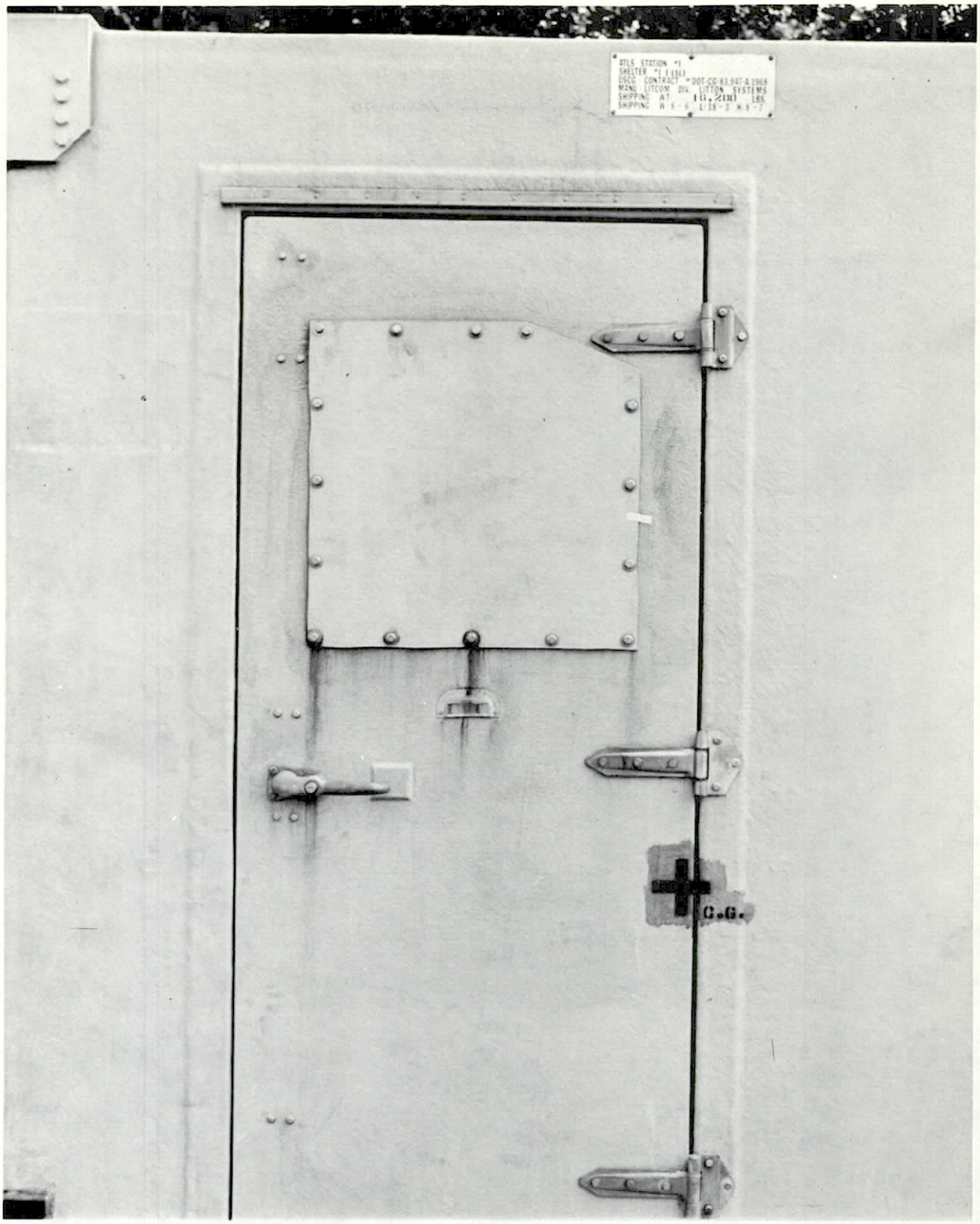


Figure 4-34a

Transit plate over exterior door glass

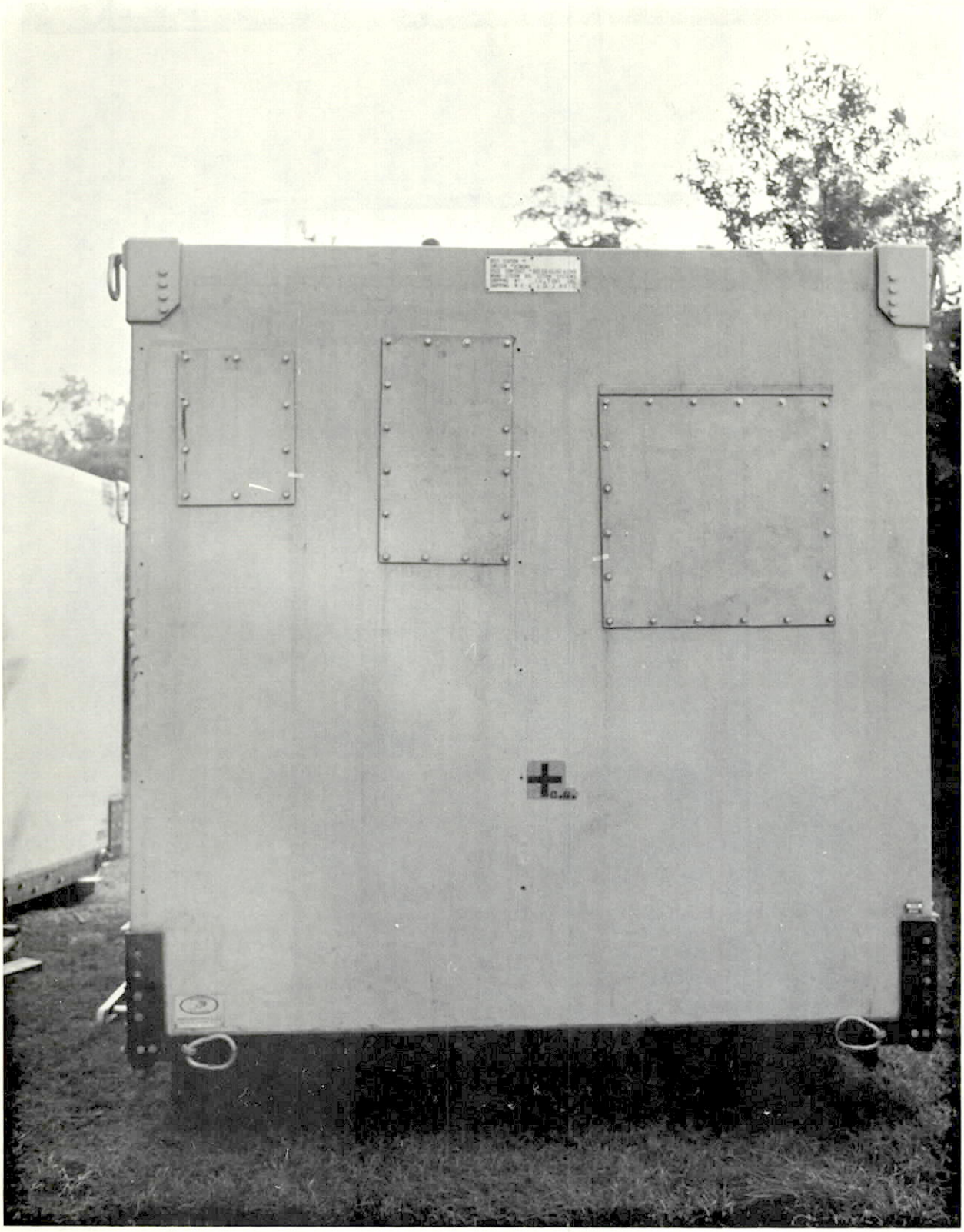
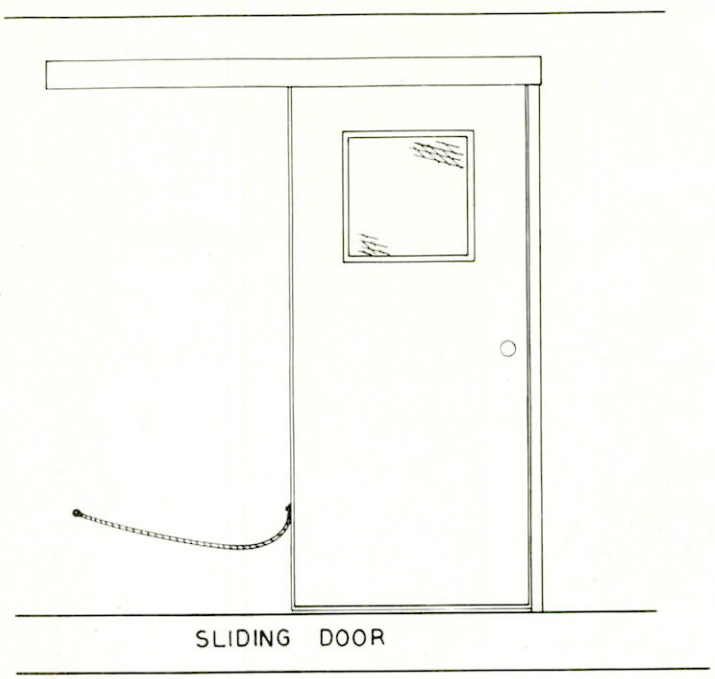
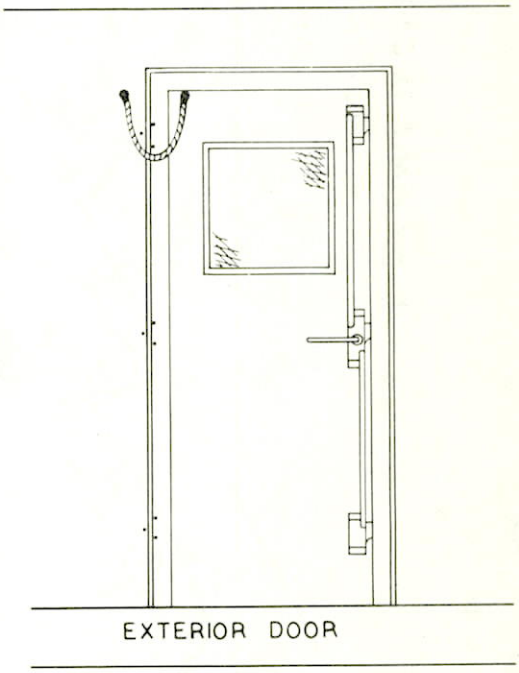
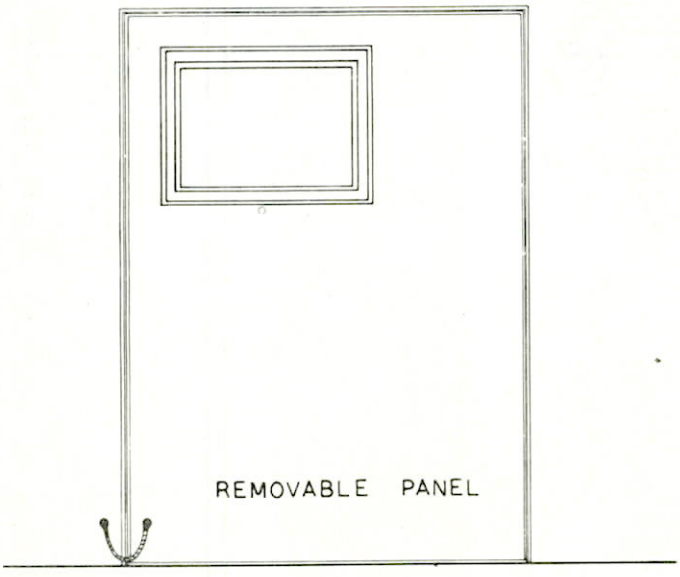


Figure 4-34b

Transit plates over window and air conditioner ports.







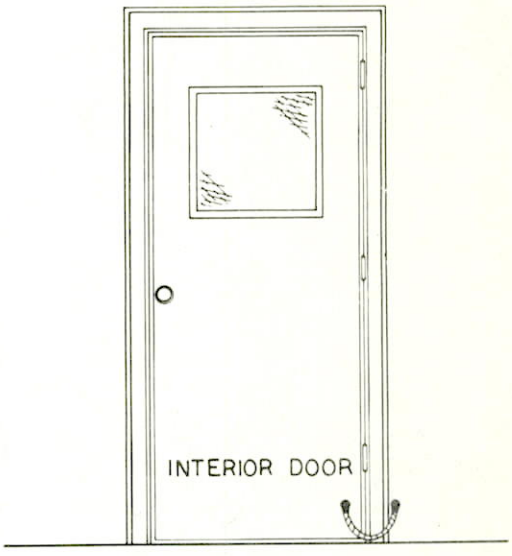


Figure 4-35

Ground straps.

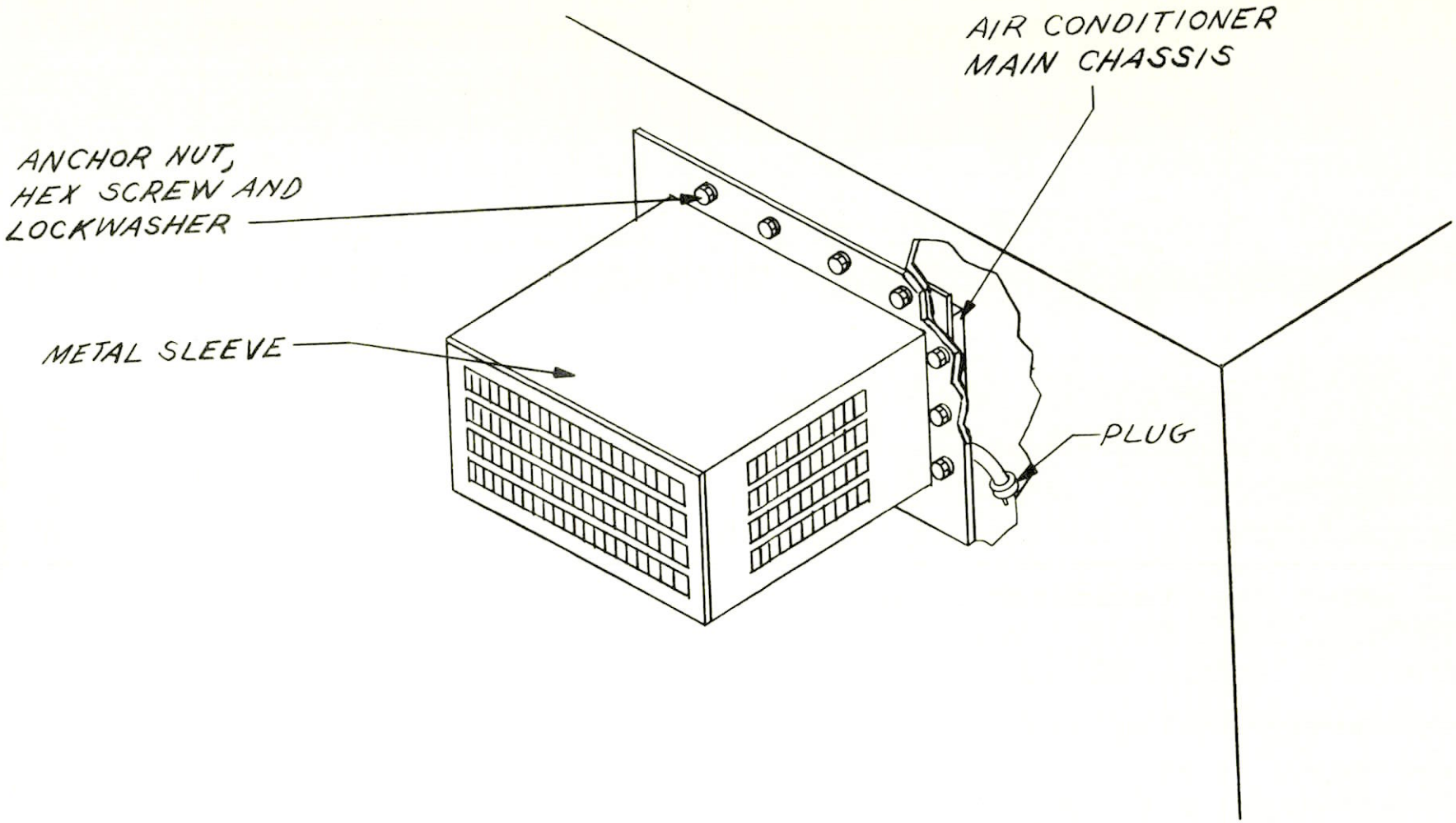


Figure 4-36

Small air conditioner installation

Figure 4-37

Installing small air conditioner sleeve.

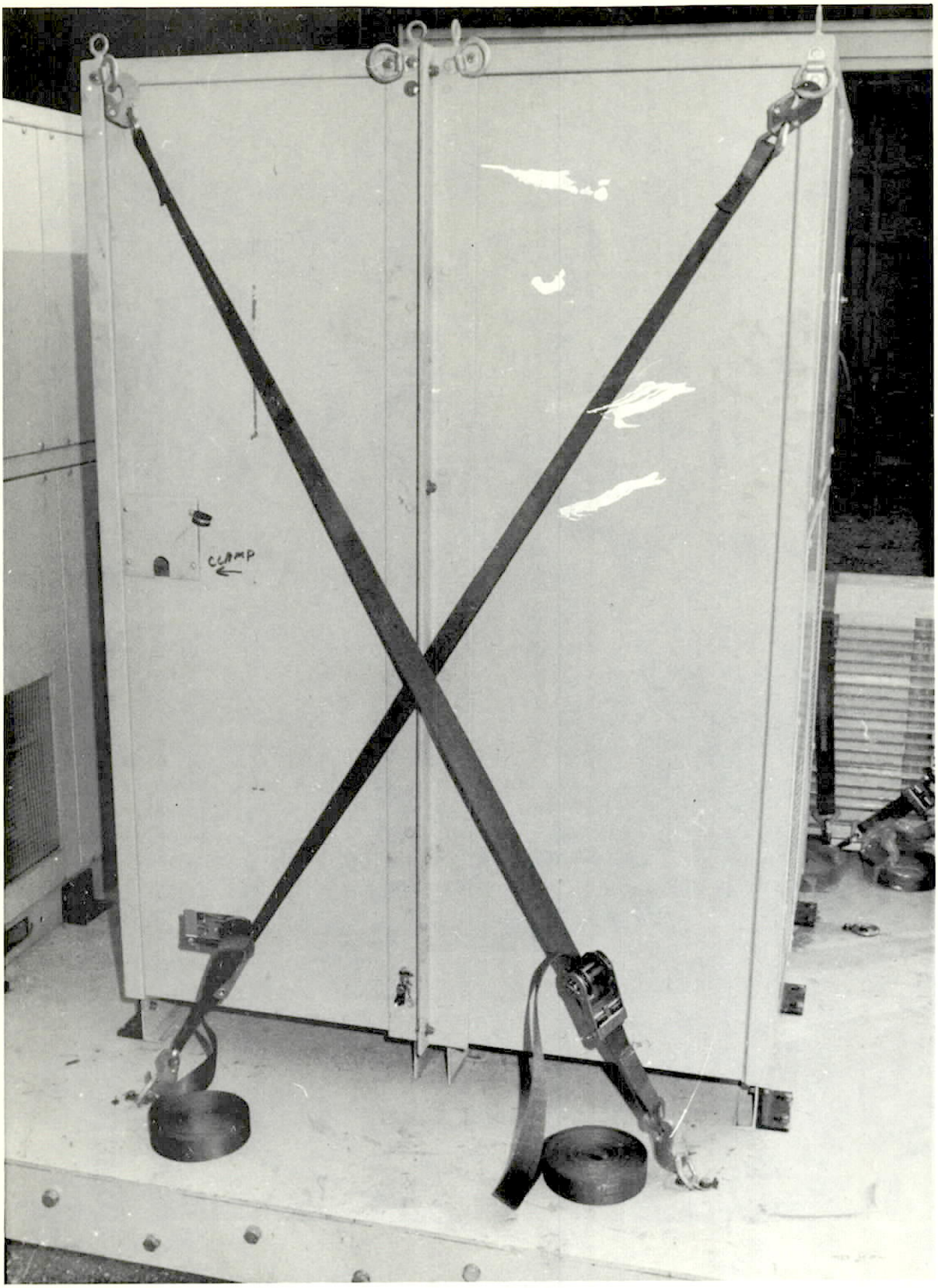


Figure 4-38

Large air conditioner hold-down straps.

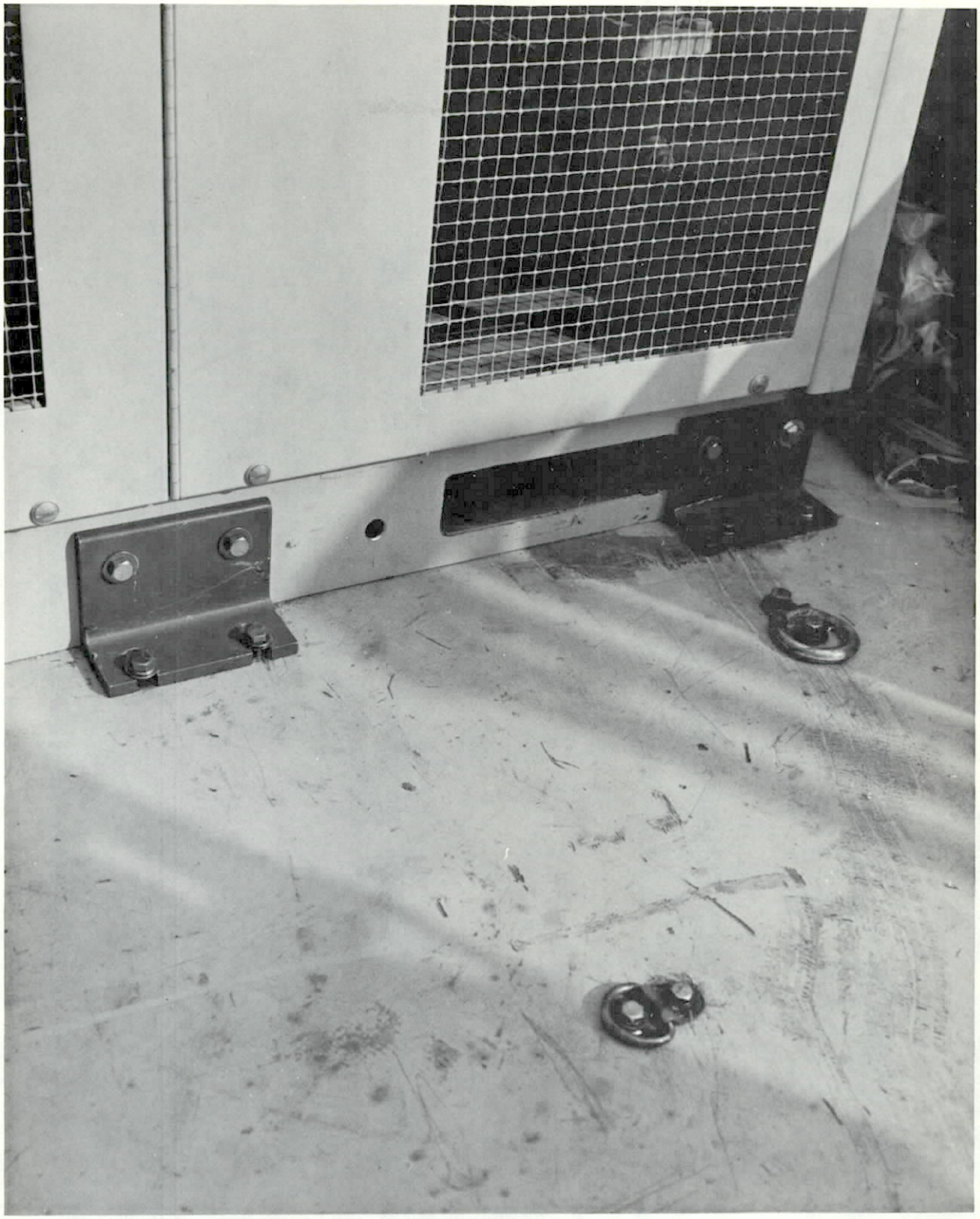


Figure 4-39

Large air conditioner mounting hardware.

Figure 4-40a

Large air conditioner carrying frame.

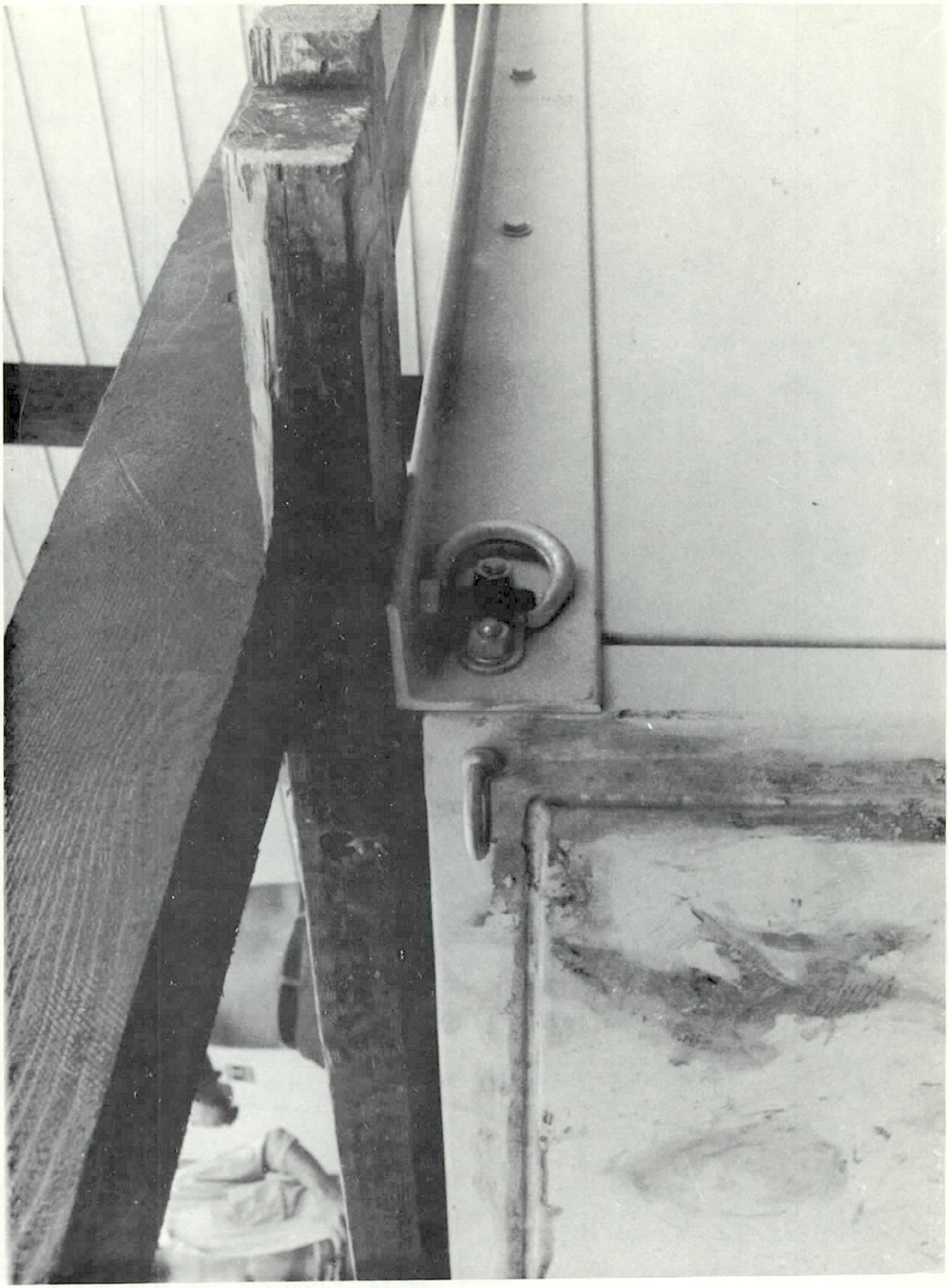


Figure 4-40b

Assembly detail of air conditioner carrying frame.

Figure 4-40c

Carrying a large air conditioner.

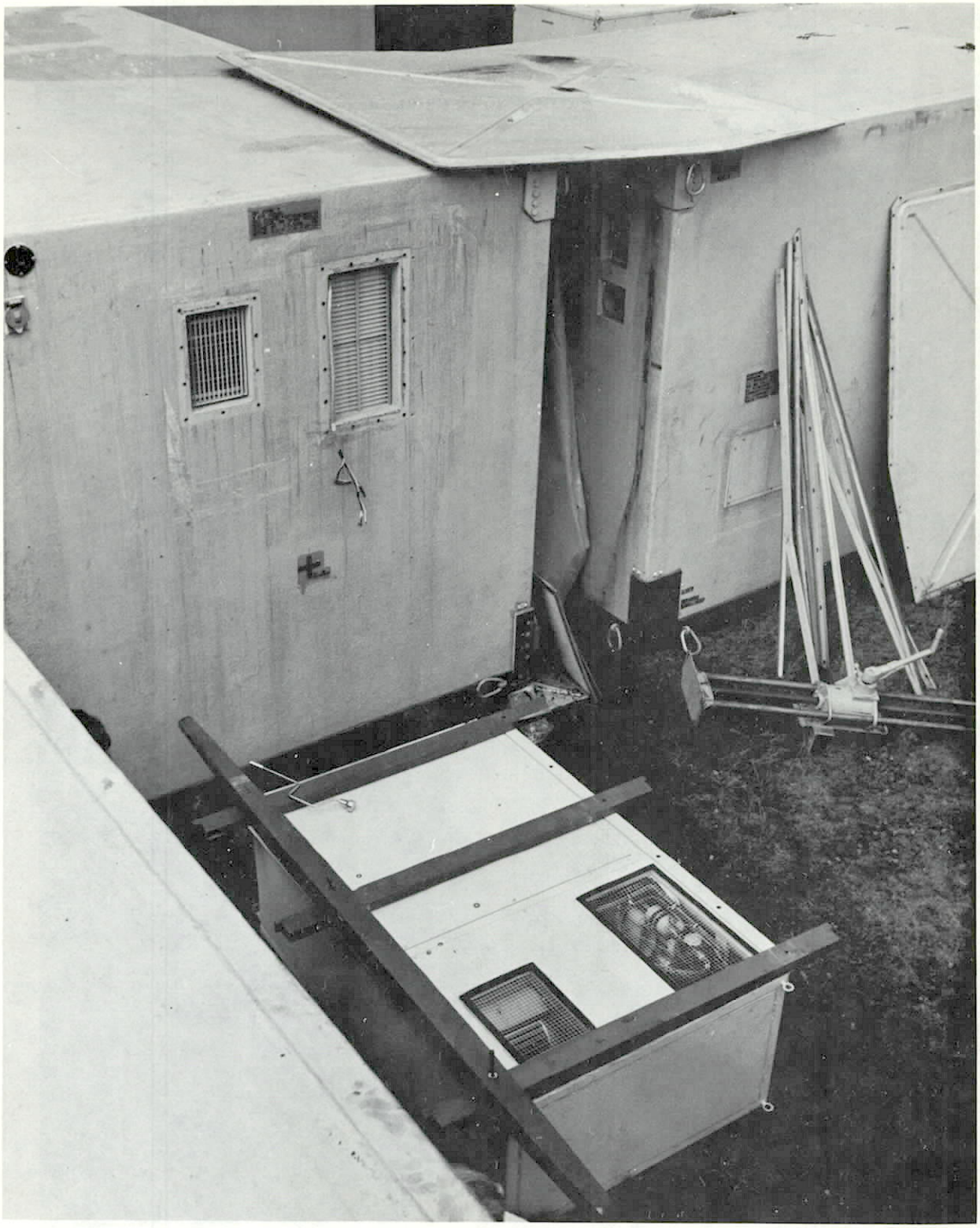


Figure 4-40d

Large air conditioner positioned near its mounting location.

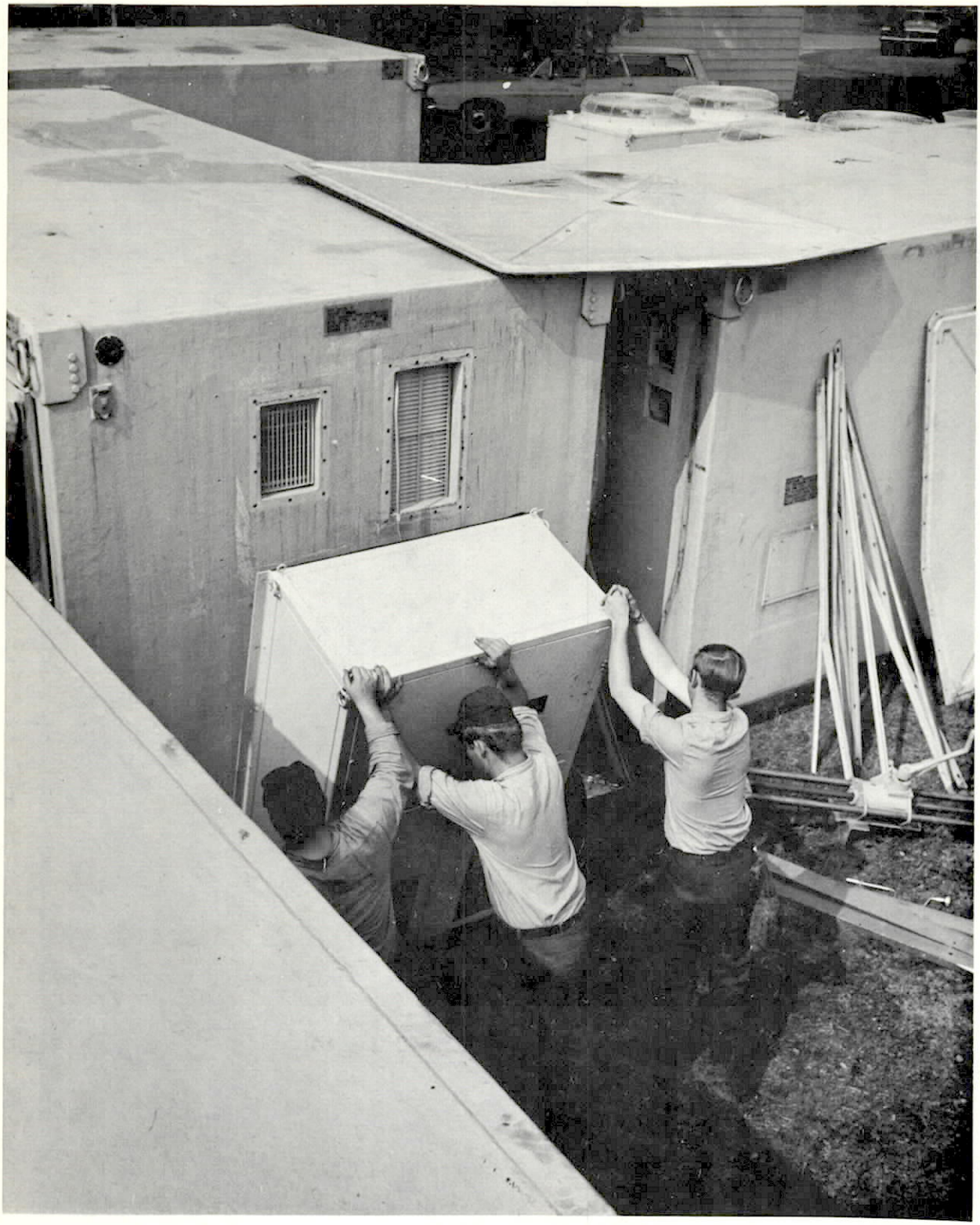


Figure 4-40e

Raising a large air conditioner against the shelter wall.

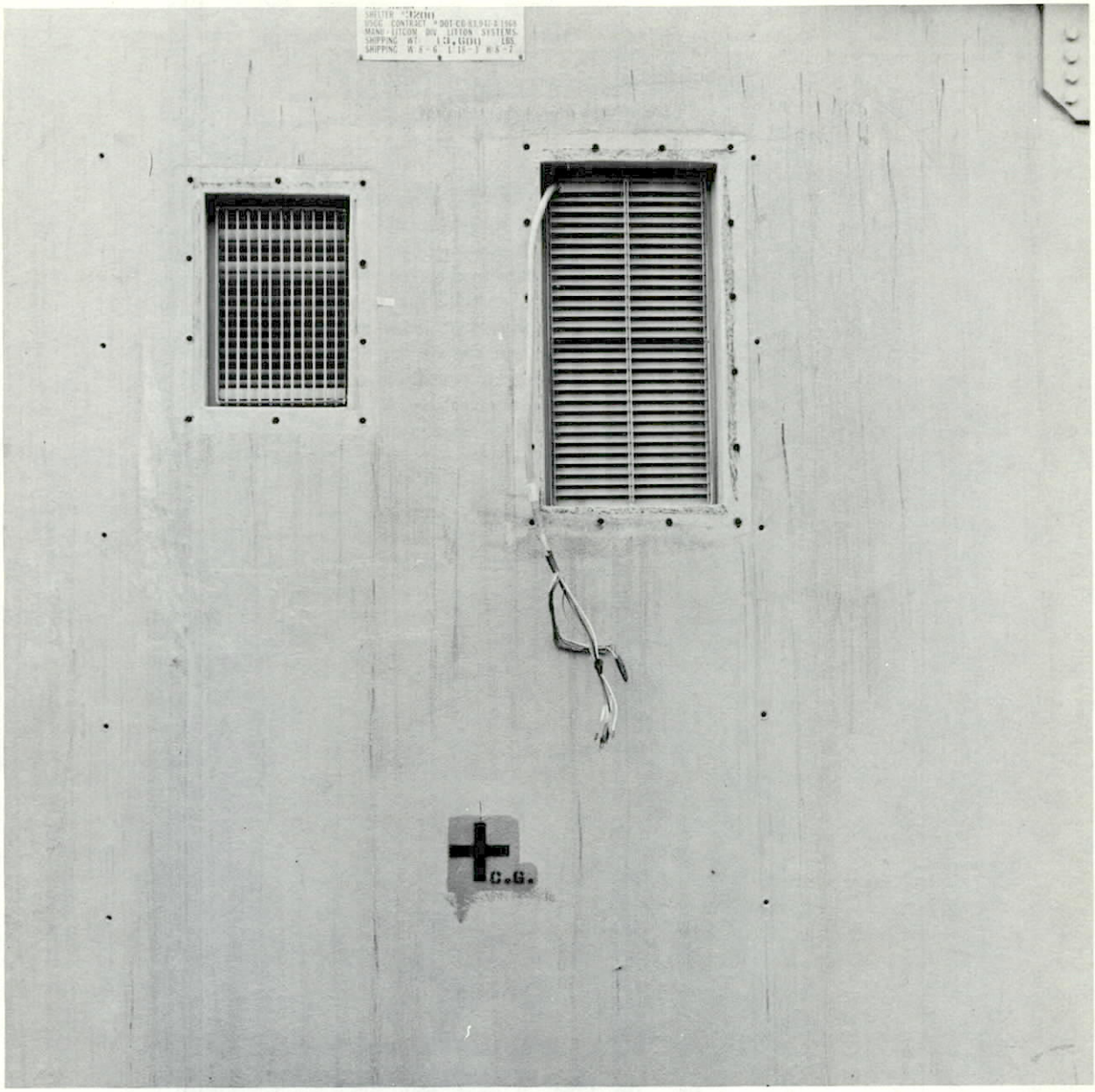


Figure 4-40f

Air conditioner control cable.

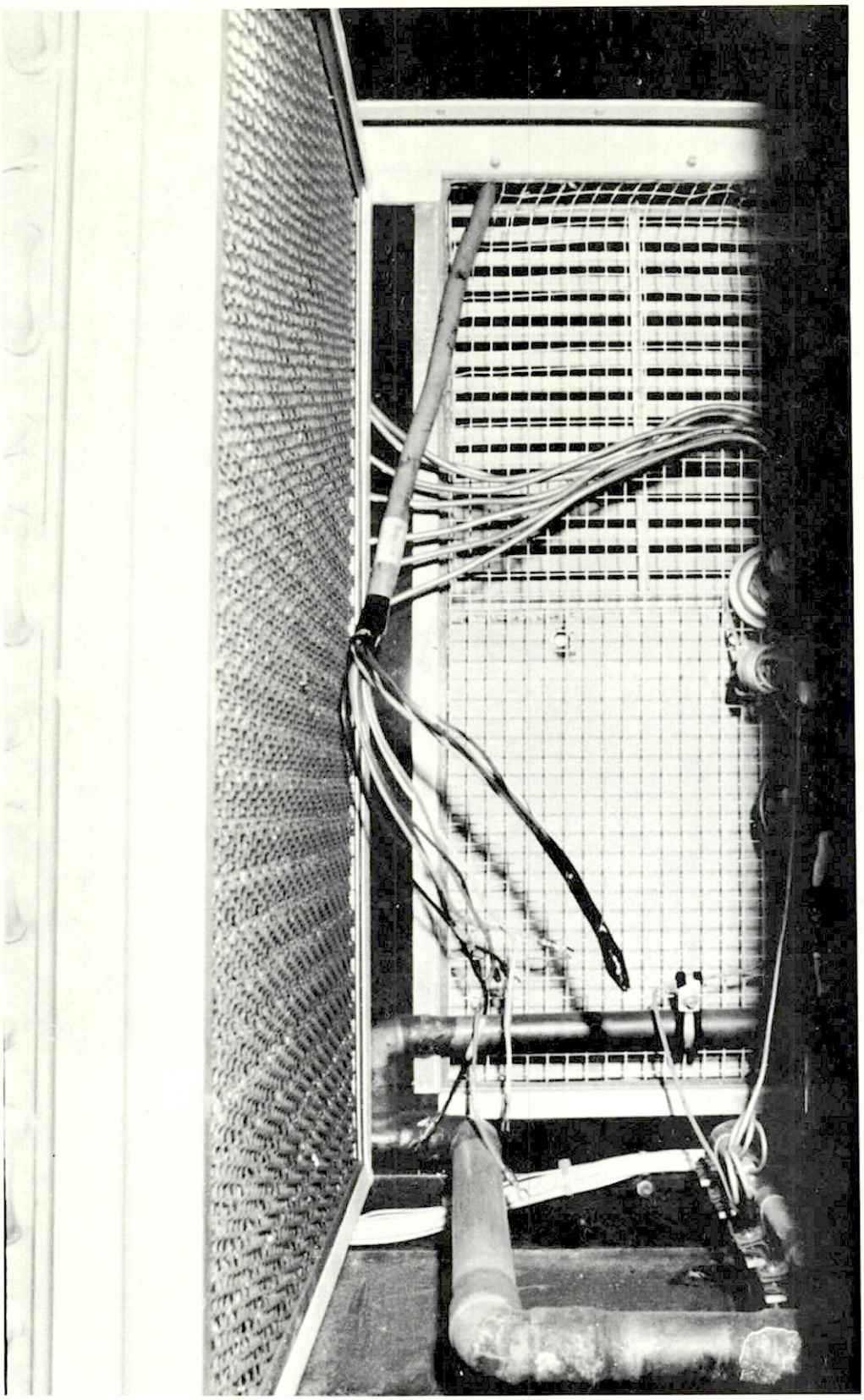


Figure 4-40g

Air conditioner control cable pulled into air conditioner.

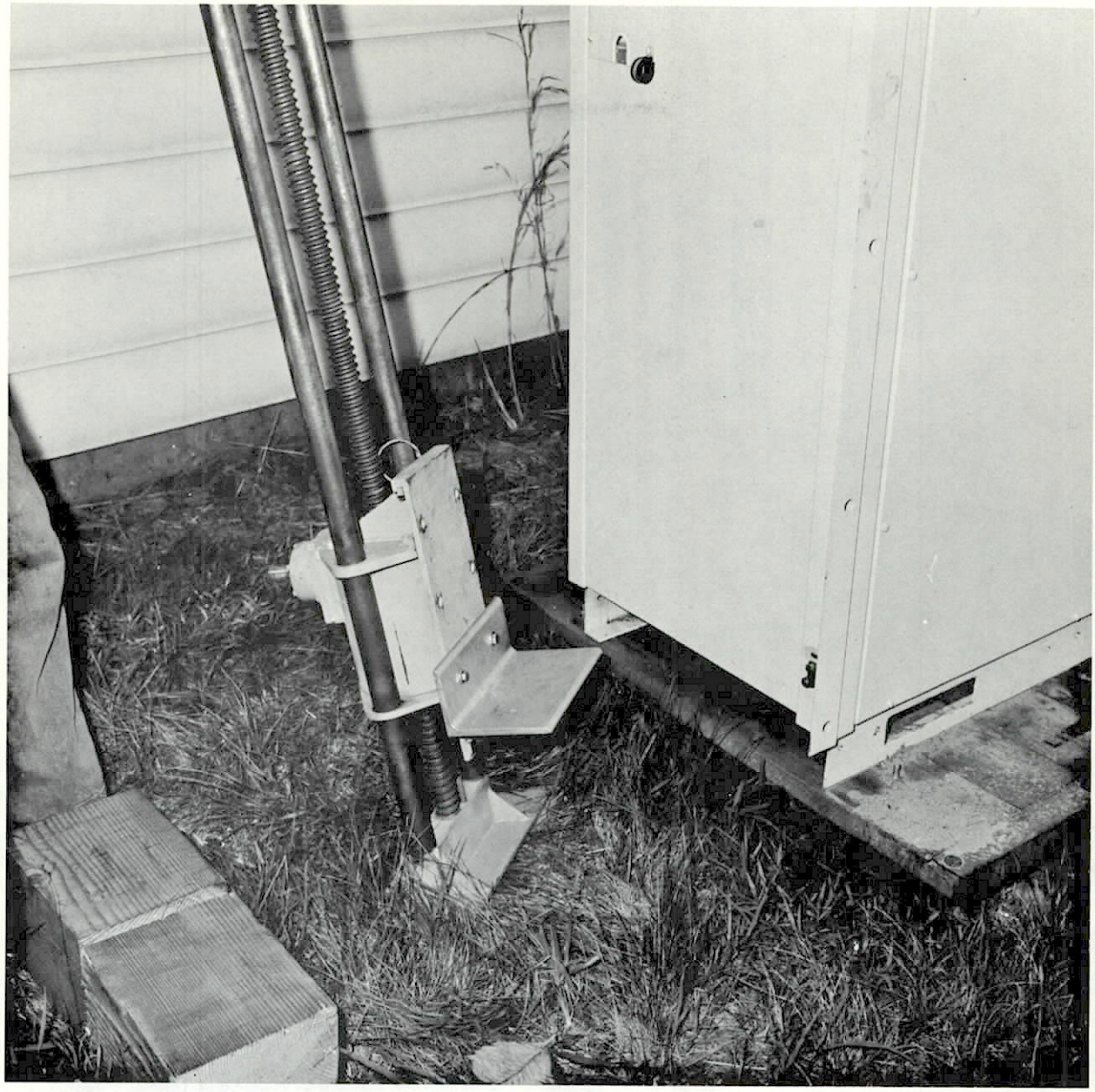


Figure 4-40h

Air conditioner support attached to lifting jack.

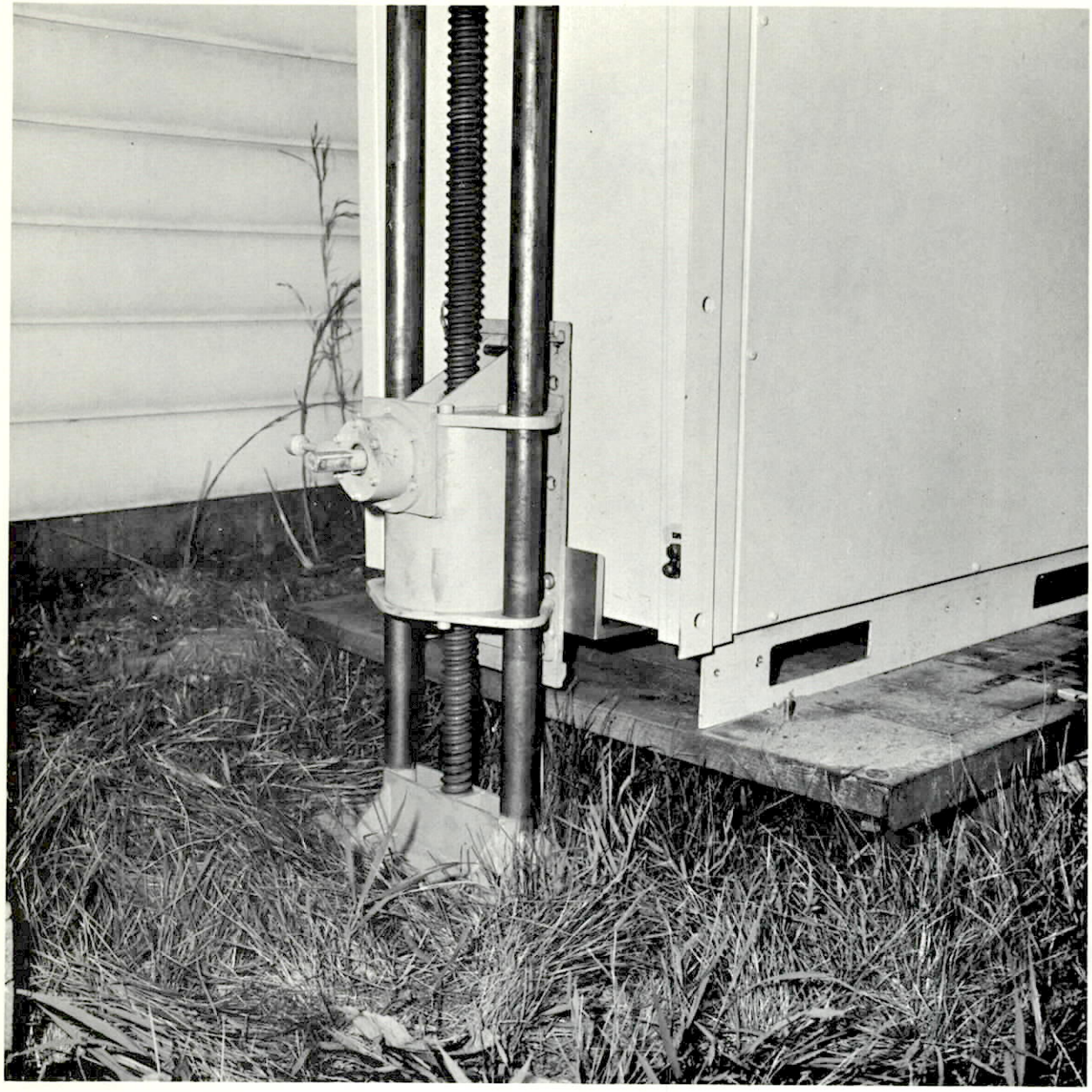


Figure 4-40i

Lifting jack positioned under air conditioner.

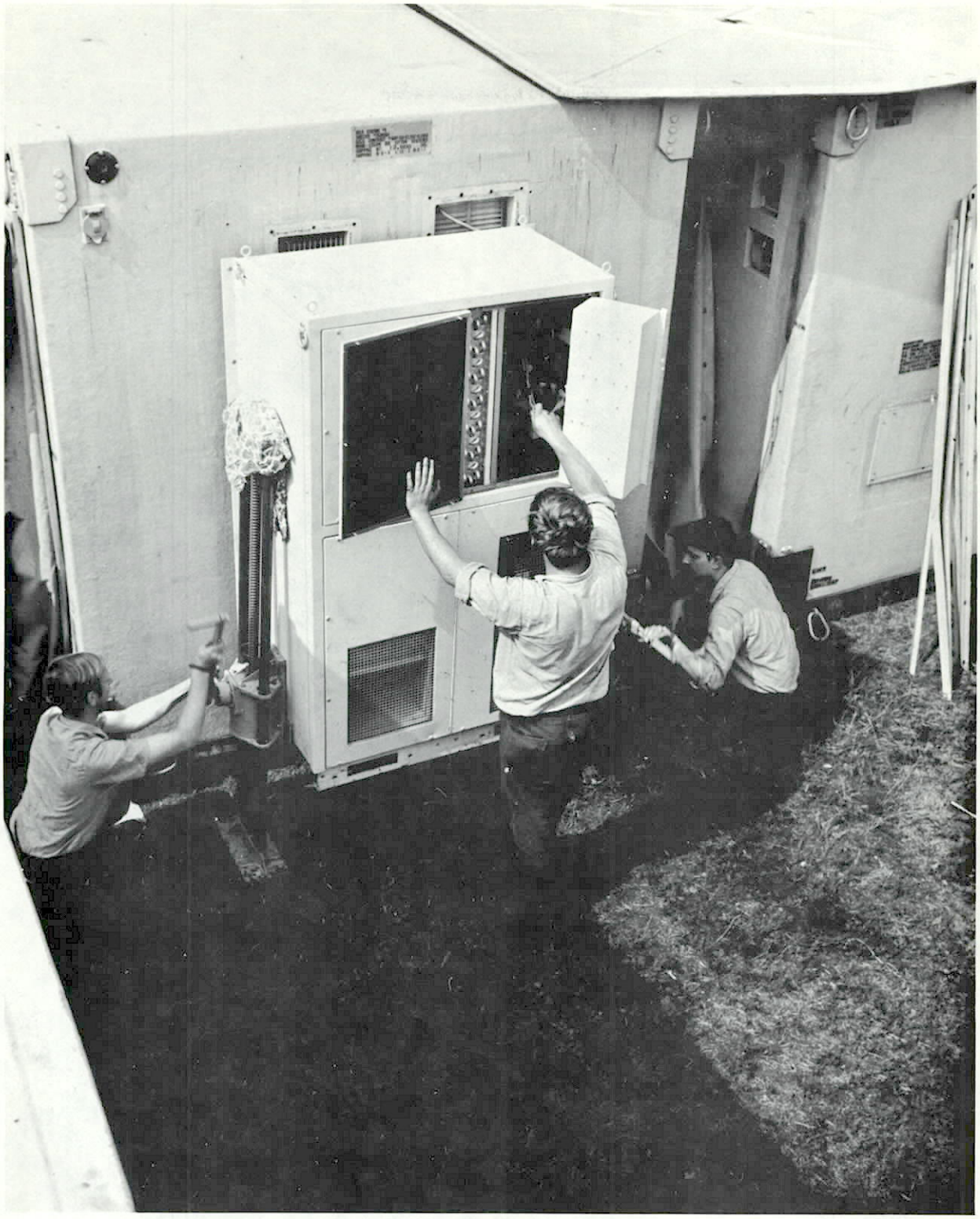


Figure 4-40j

Raising air conditioner on lifting jacks.

Figure 4-41

Exterior light in operating position.

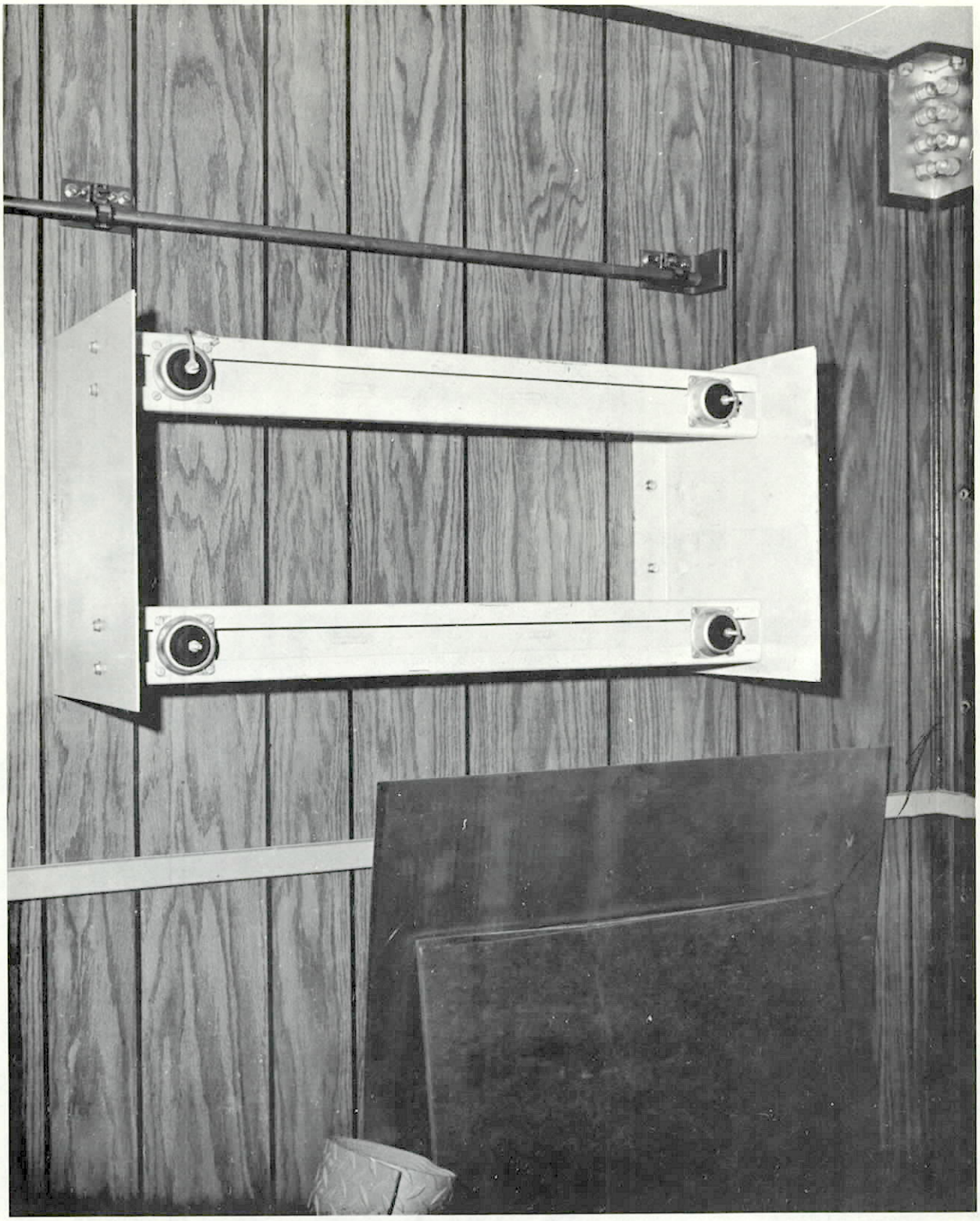


Figure 4-42a

Generator control panel mounting brackets.

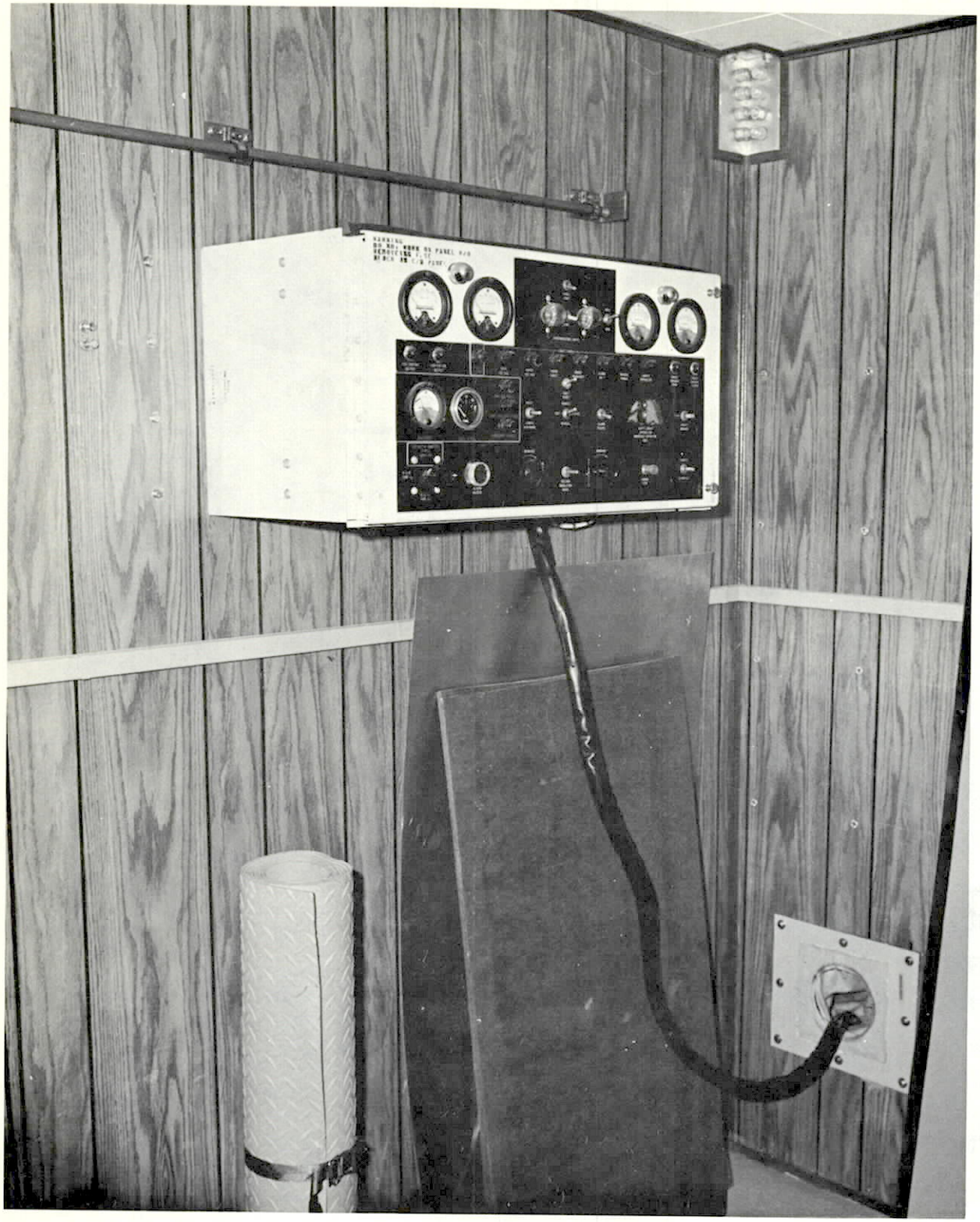


Figure 4-42b

Generator control panel installed in shelter.

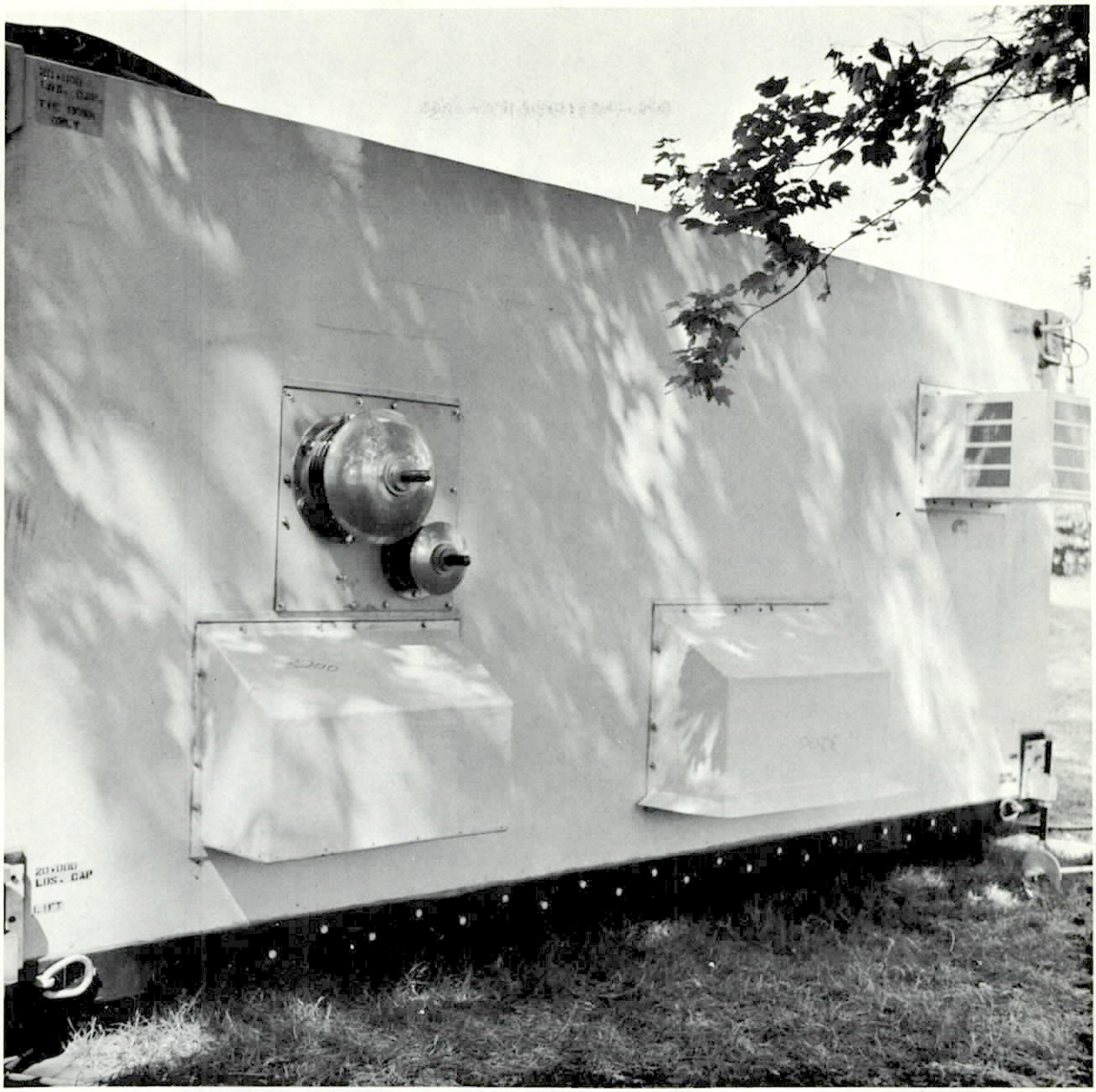


Figure 4-43a

Location of output insulator assembly.

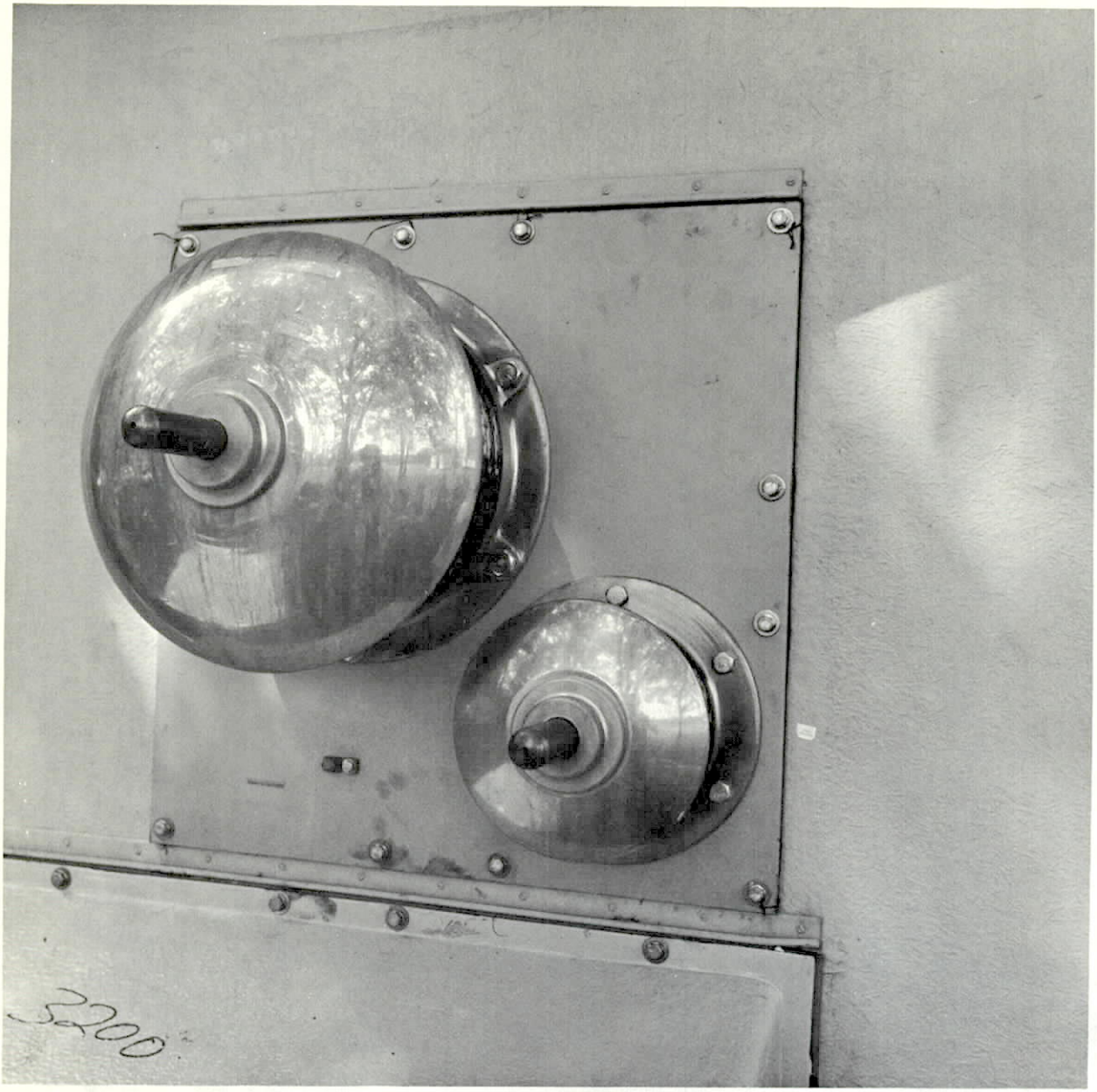


Figure 4-43b

Installation of output insulator assembly.

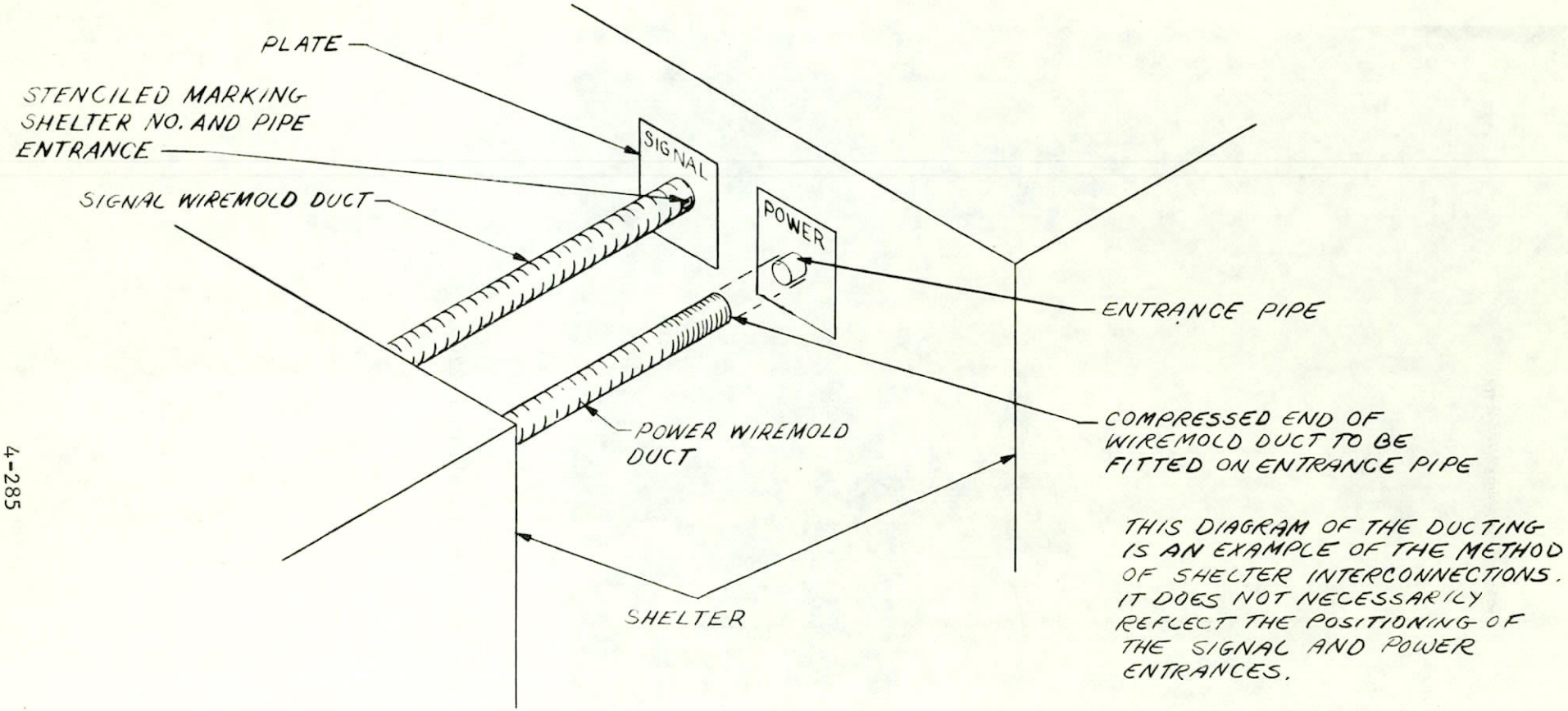


Figure 4-44.

Installation of wiremold ducts.

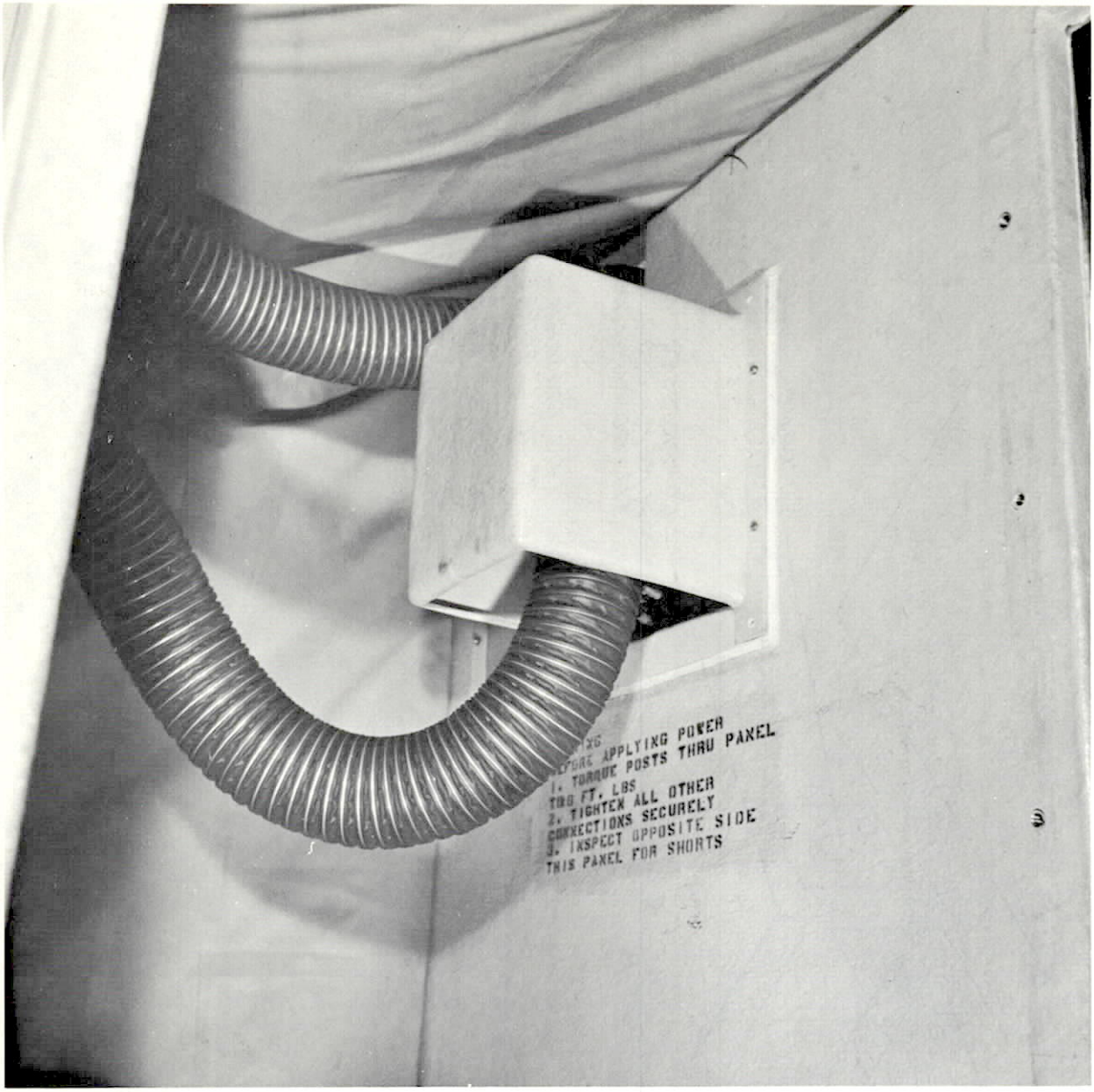
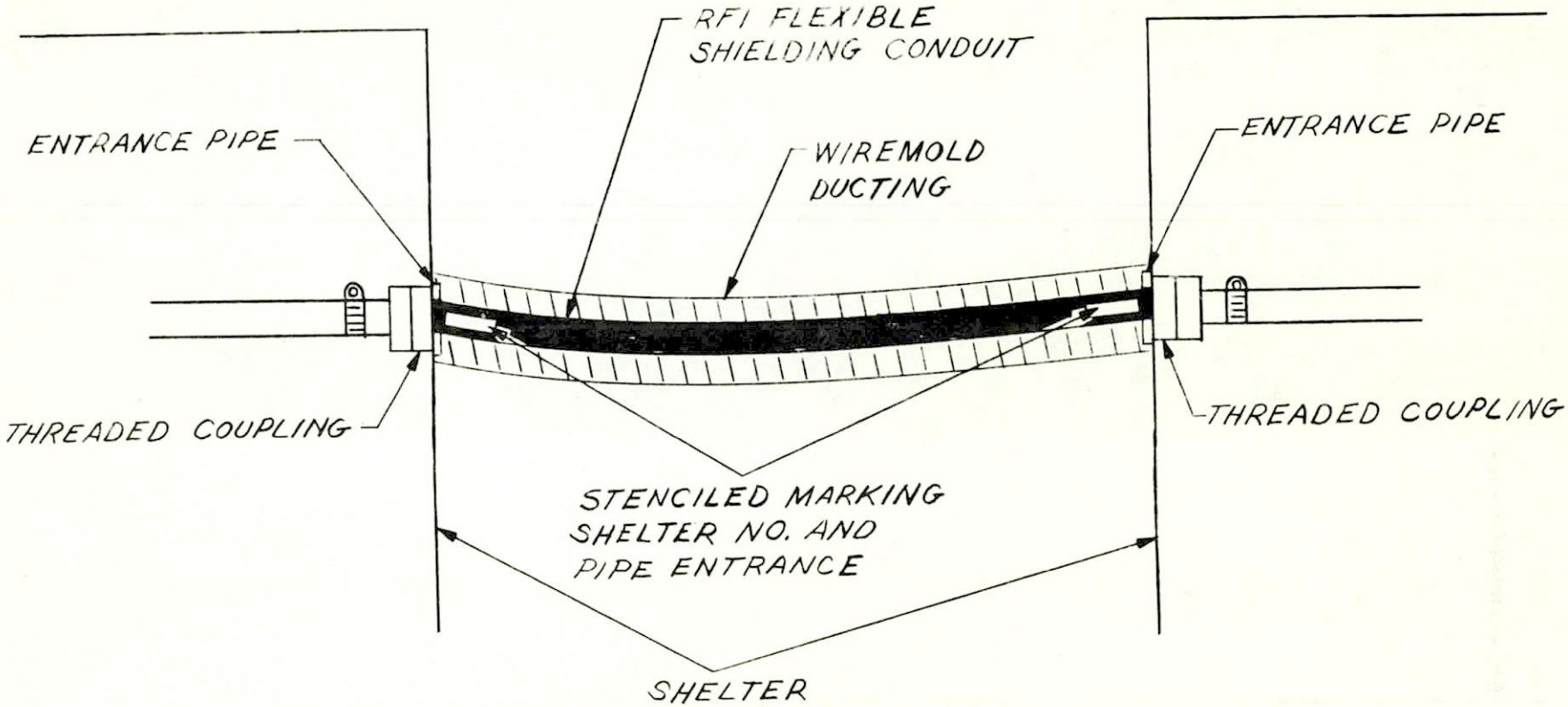


Figure 4-45

Power entrance cover, shelter 2200.



THE FOUR RFI FLEXIBLE SHIELDING CONDUITS WILL BE CONNECTED THROUGH THE WIREMOLD DUCTS BETWEEN THE FOLLOWING SHELTERS:

FROM SHELTER	TO SHELTER
2600	3500
3500	3800
3800	3200
3800	3400

Figure 4-46

Installation of flexible shielding conduits.

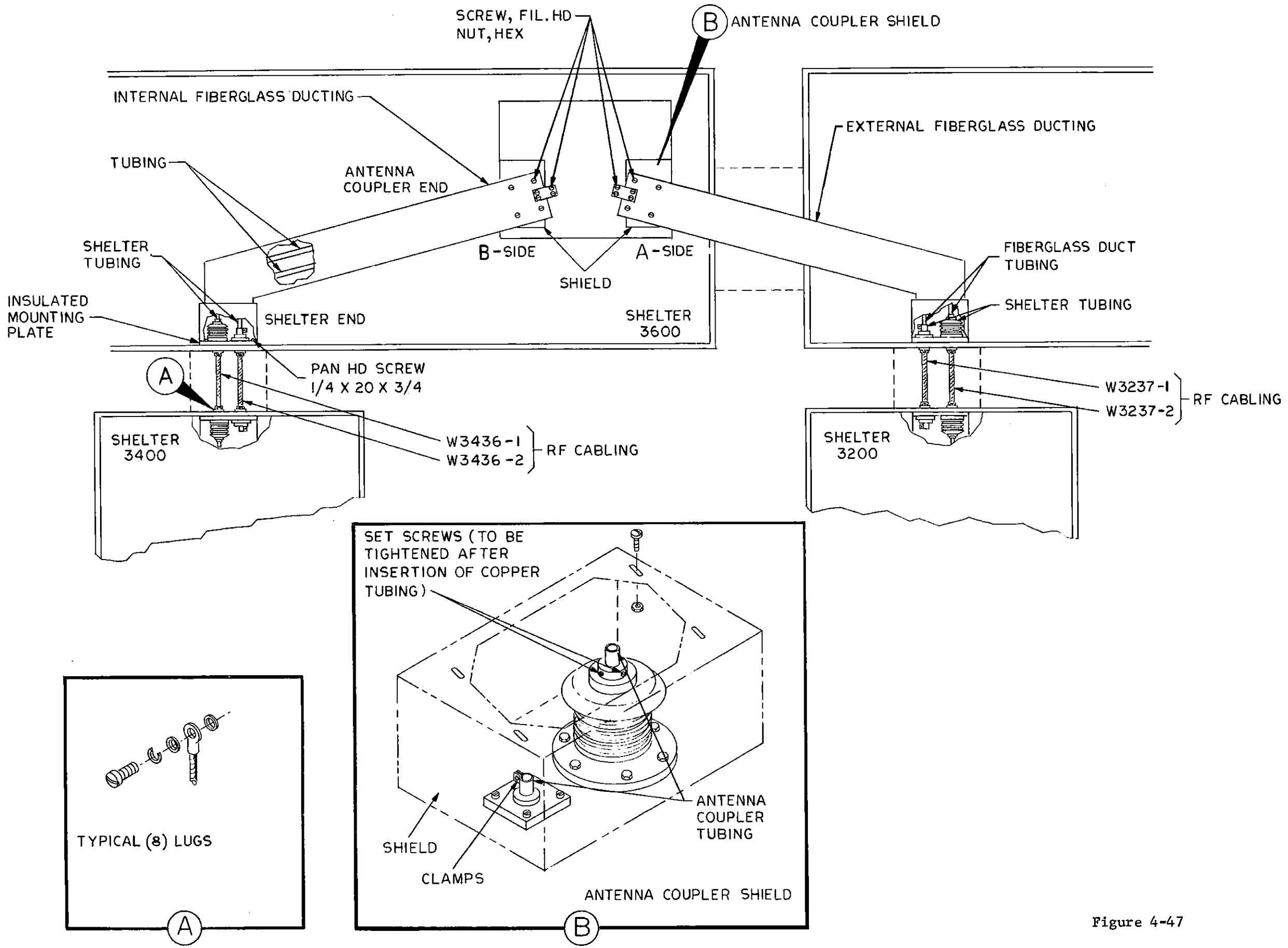


Figure 4-47

Installation of fiberglass ducts.

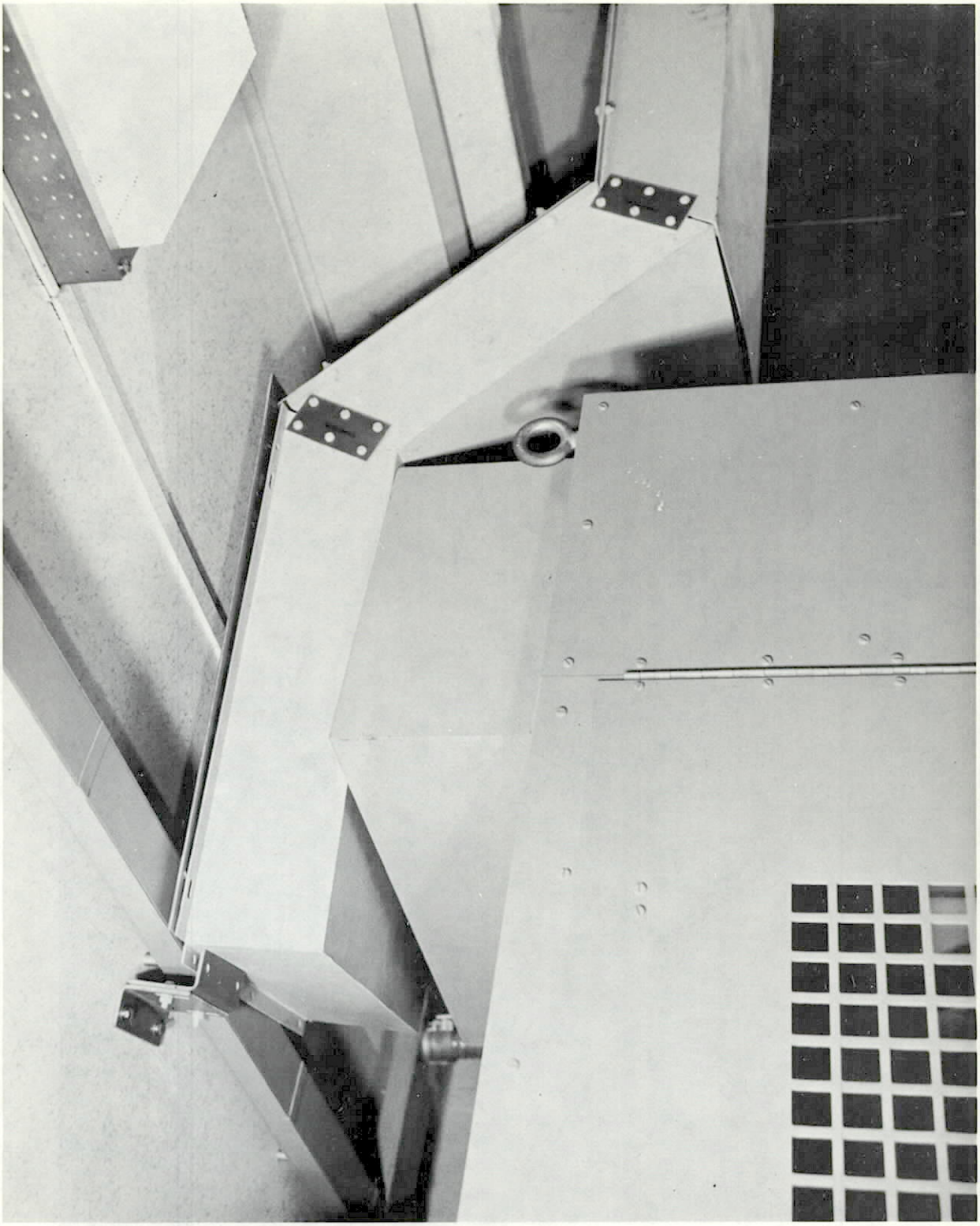


Figure 4-48a

Antenna coupler end of external fiberglass duct.

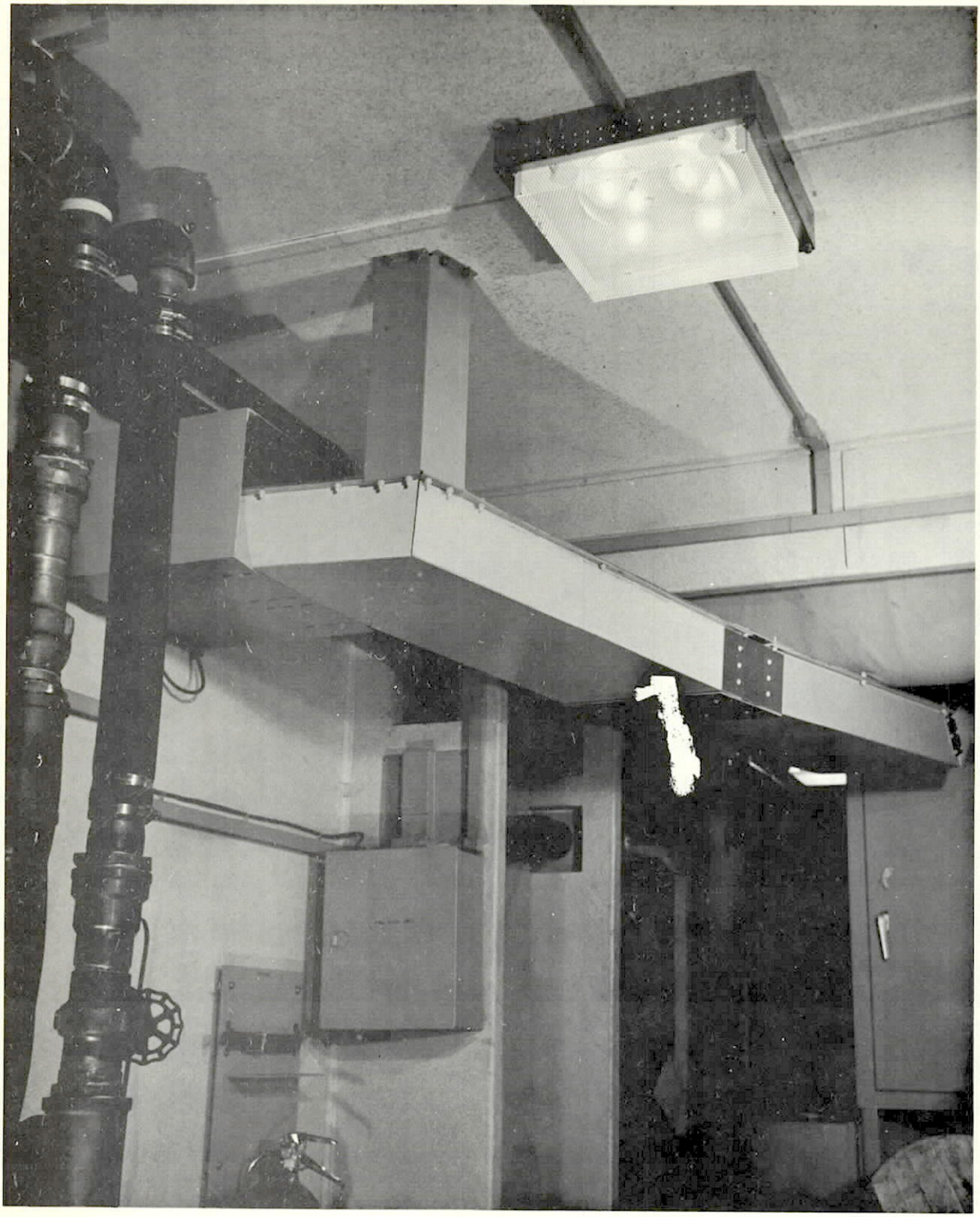


Figure 4-48b

Shelter end of external fiberglass duct

Figure 4-49a

Antenna base plate with perimeter ground wire and ground radials installed.

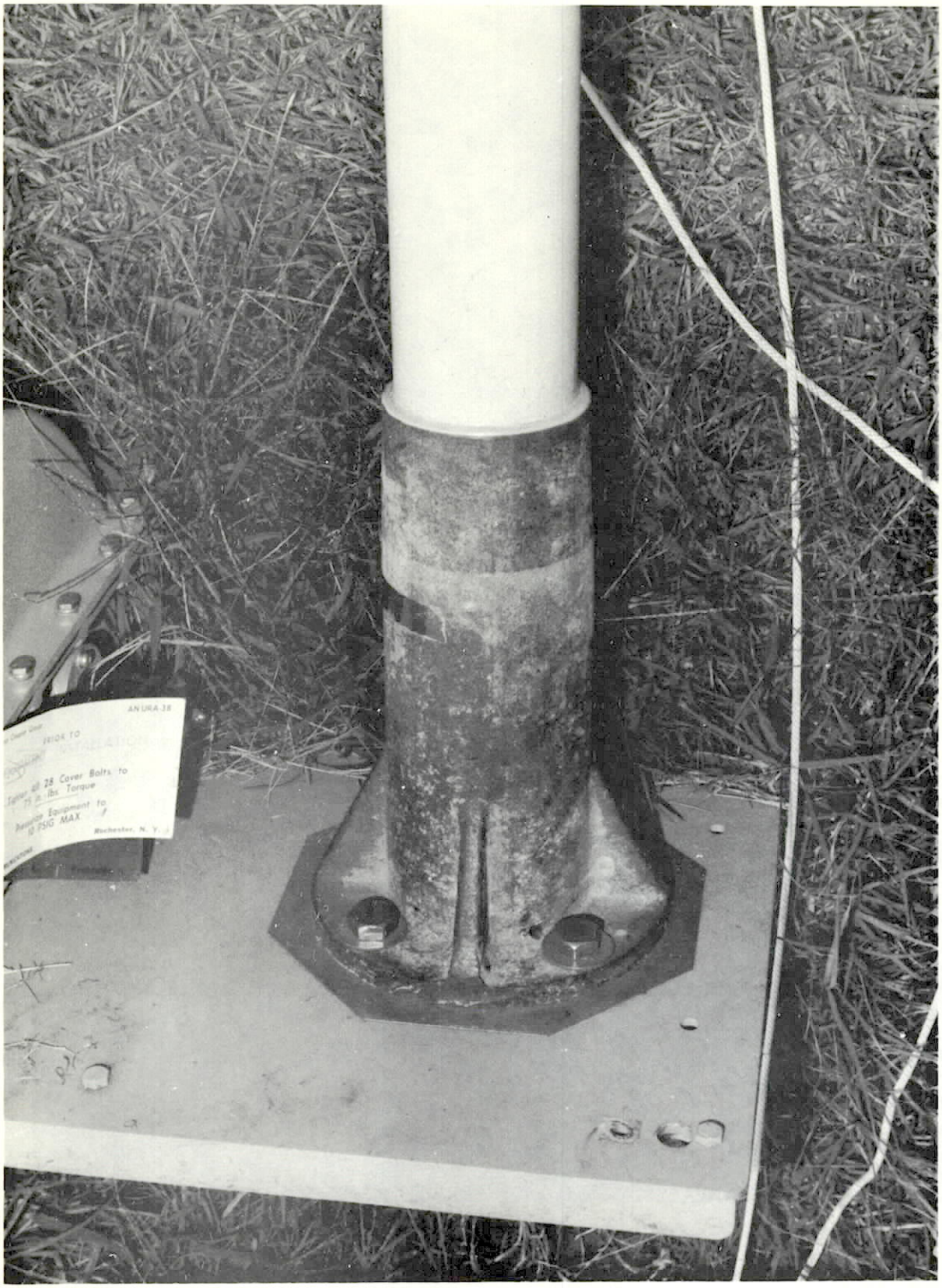


Figure 4-49b

Connection of antenna mast to base plate.

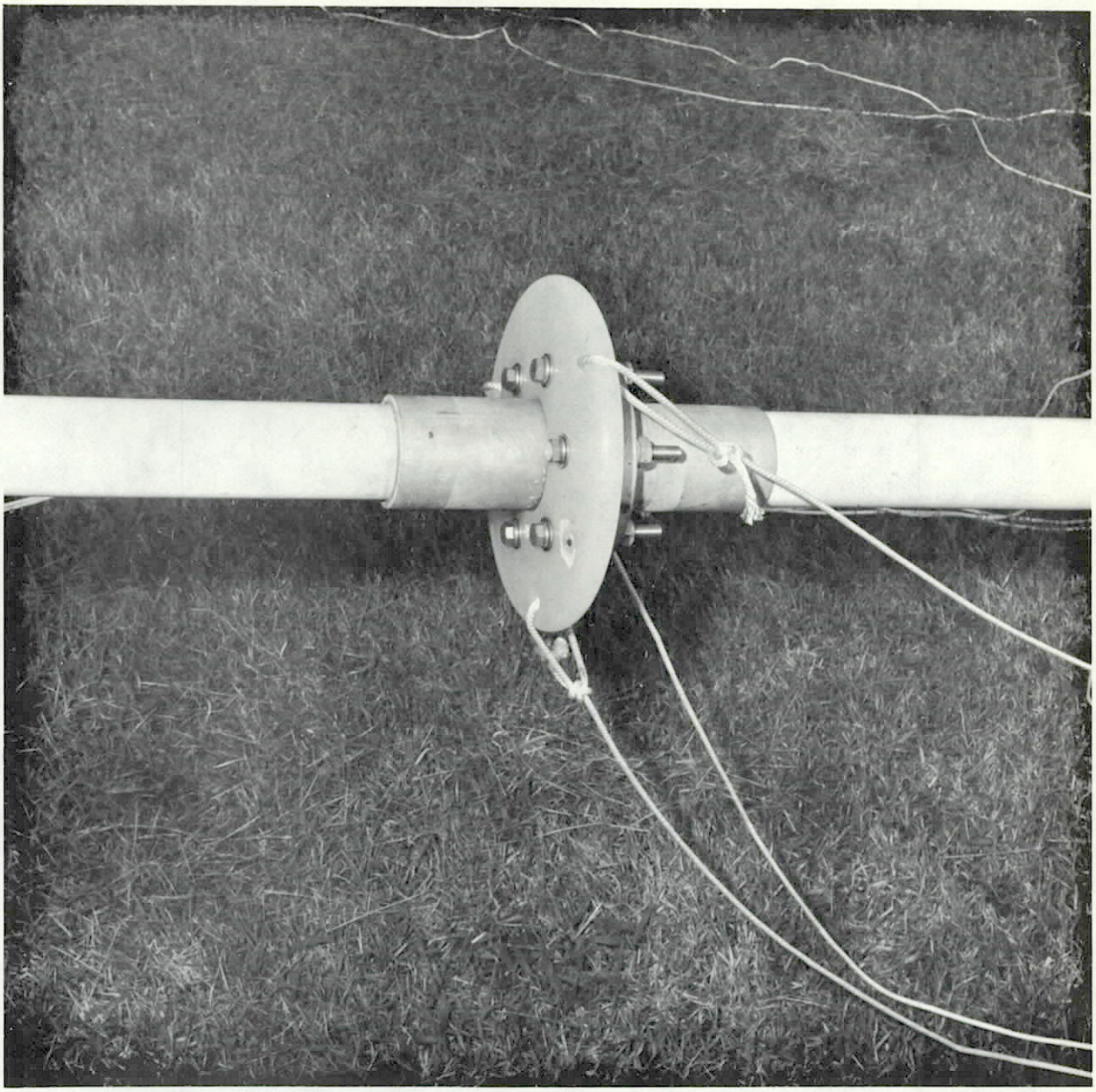
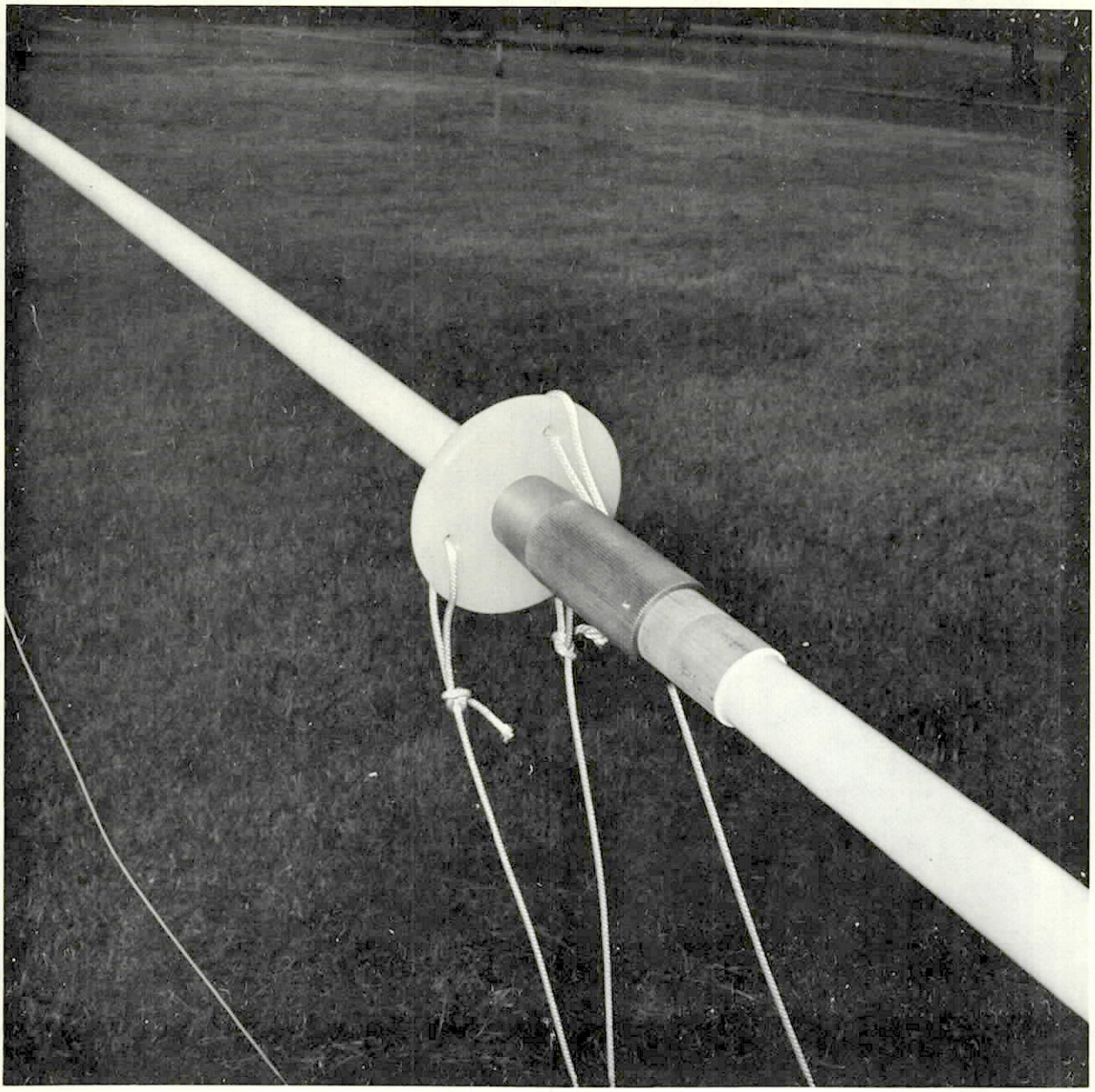


Figure 4-49c

Interconnection and guying of lower mast sections.



Interconnection and guying of upper mast sections.

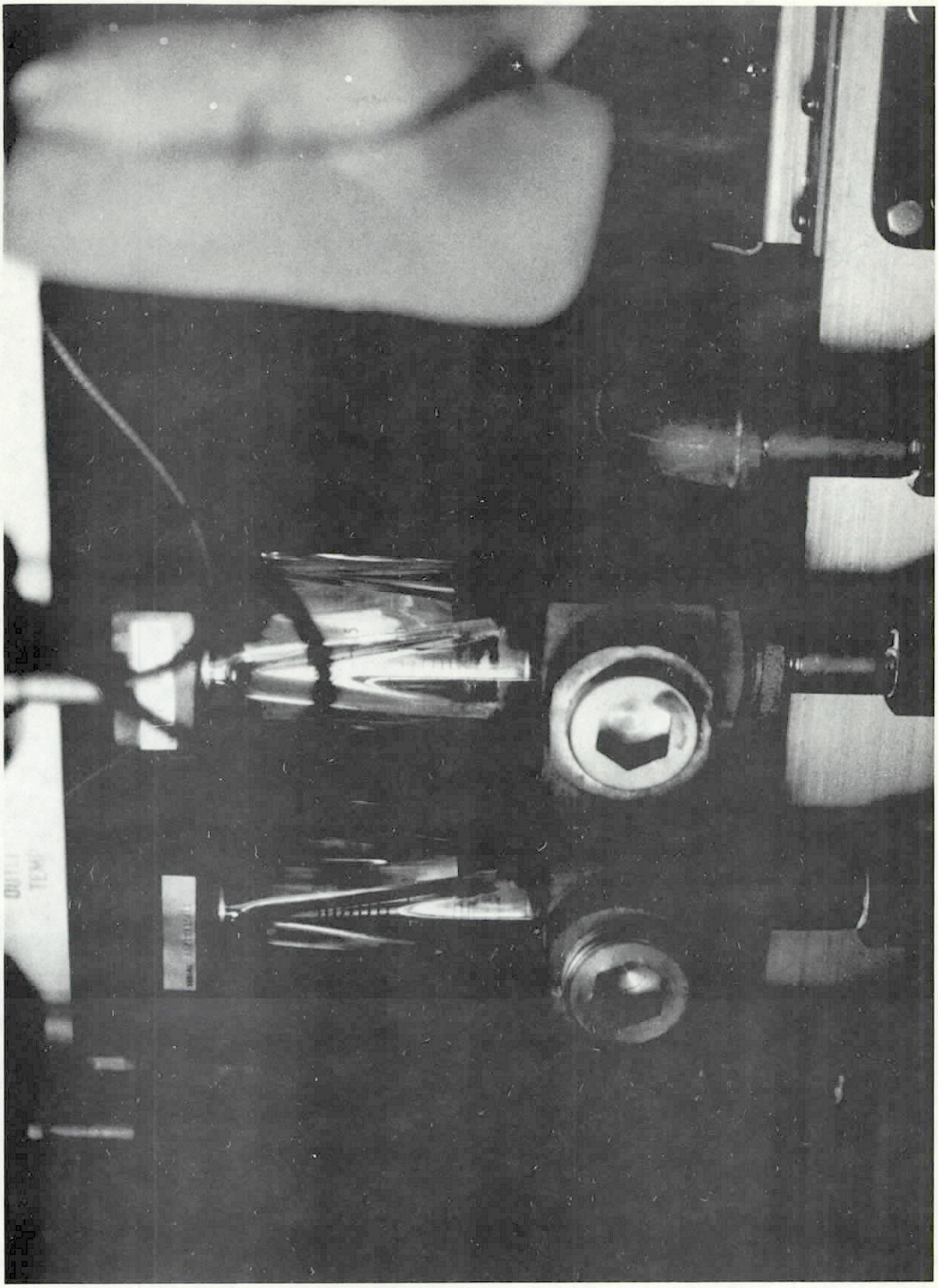


Figure 4-50

Flow meters.

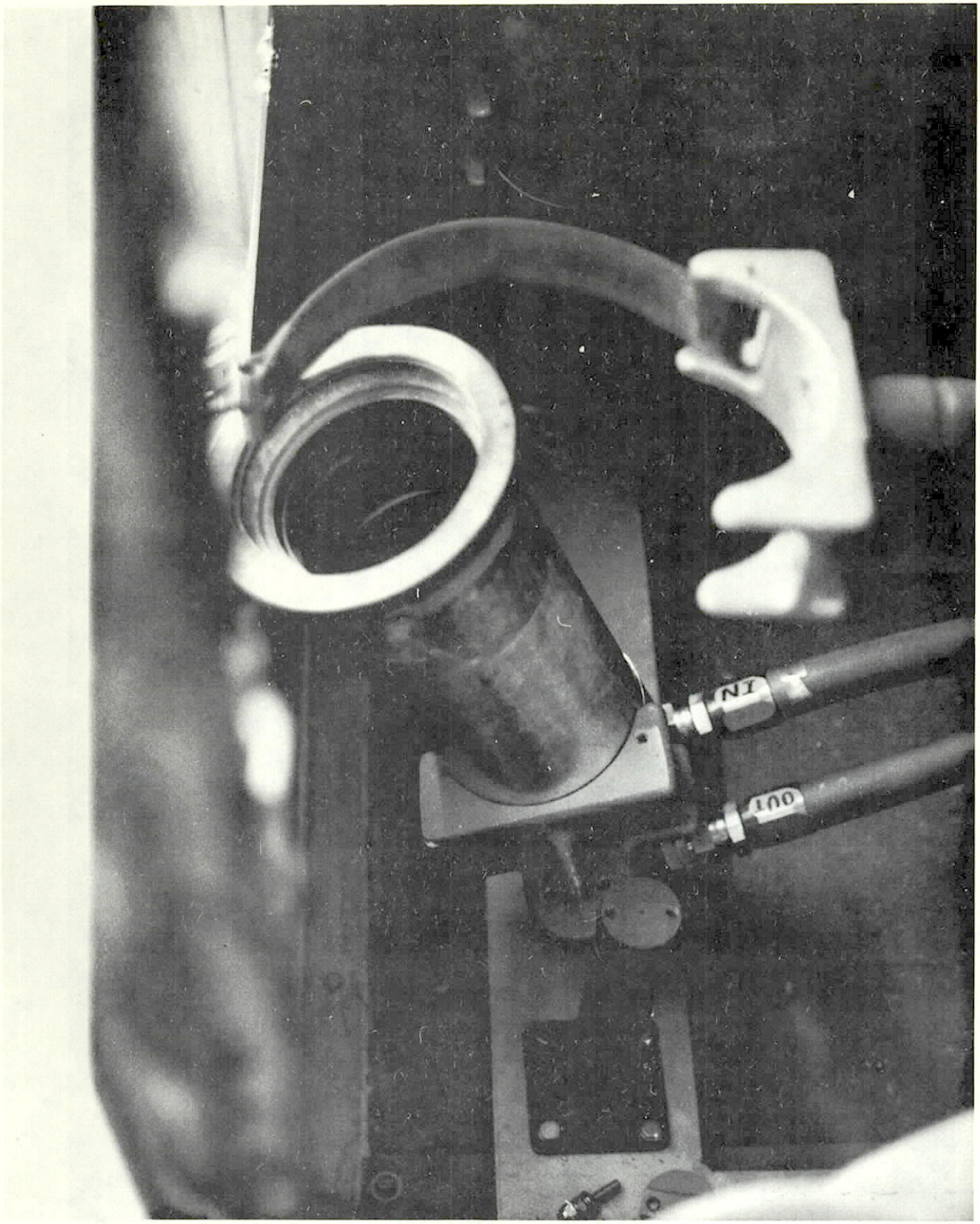


Figure 4-51a

PA tube jacket resting near vertical insulator.

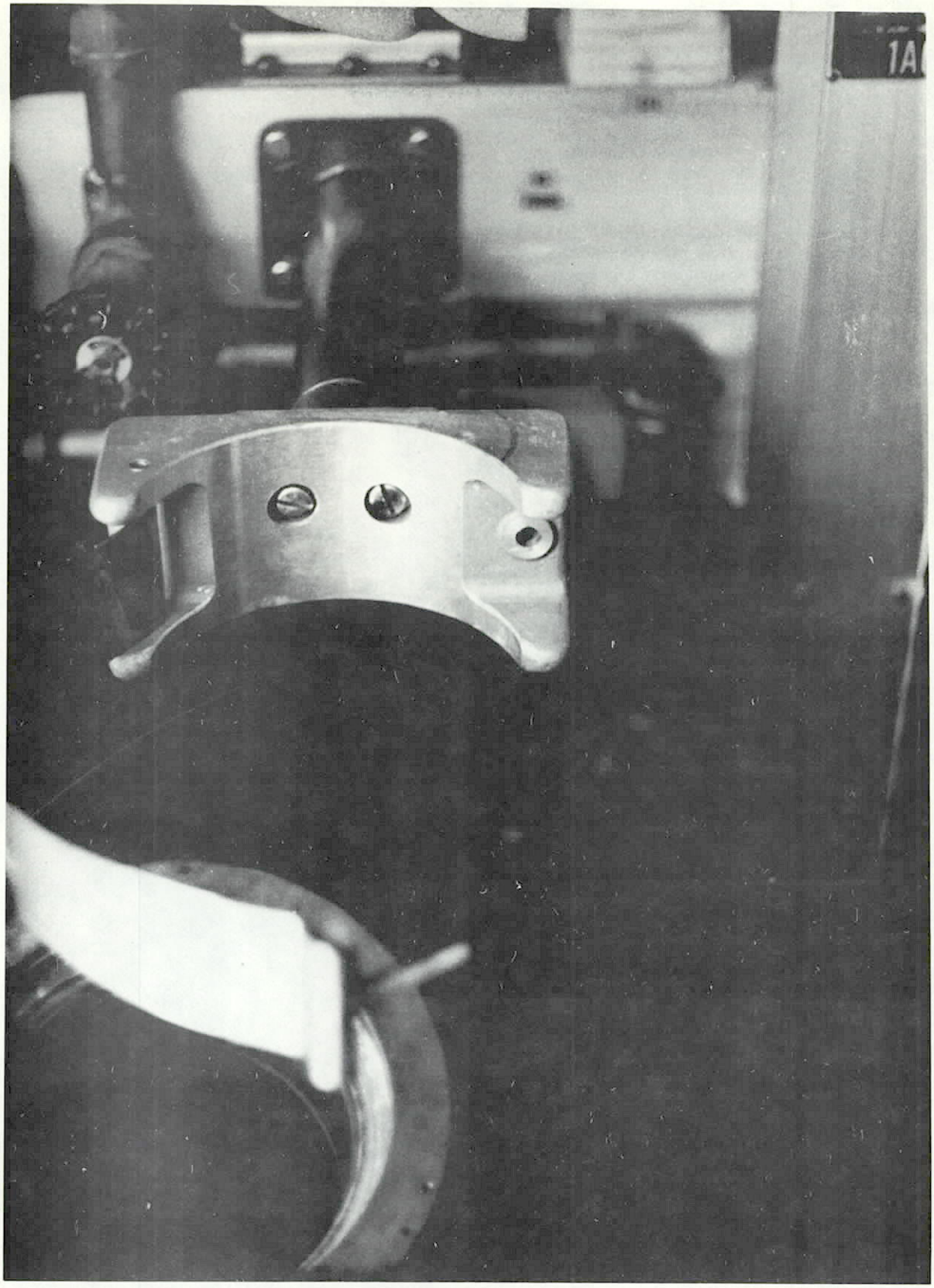


Figure 4-51b

PA tube jacket horizontal insulator.

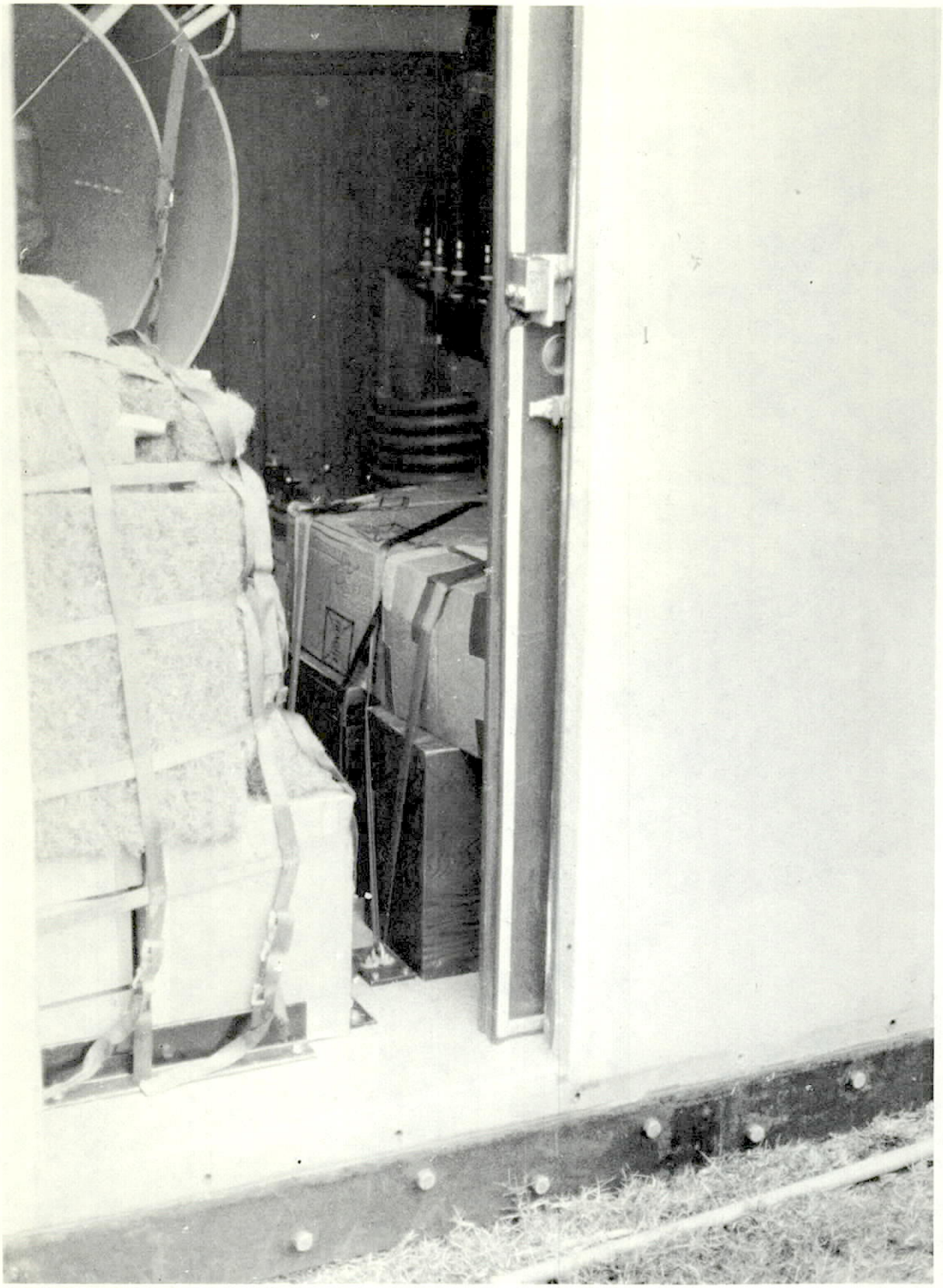


Figure 4-52a

Stowage of 1st IPA tubes.

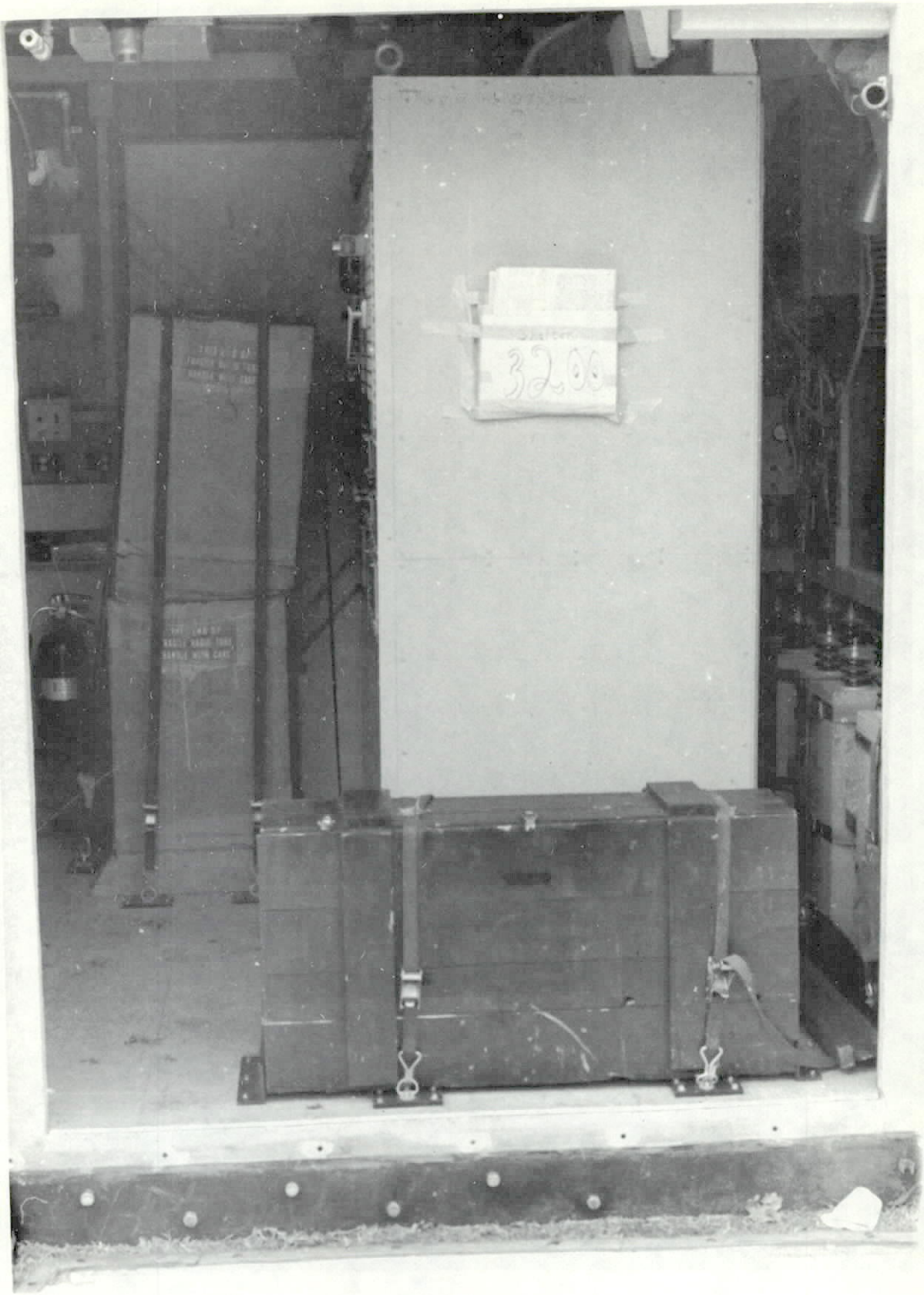


Figure 4-52b

Stowage of 2nd IPA tubes.

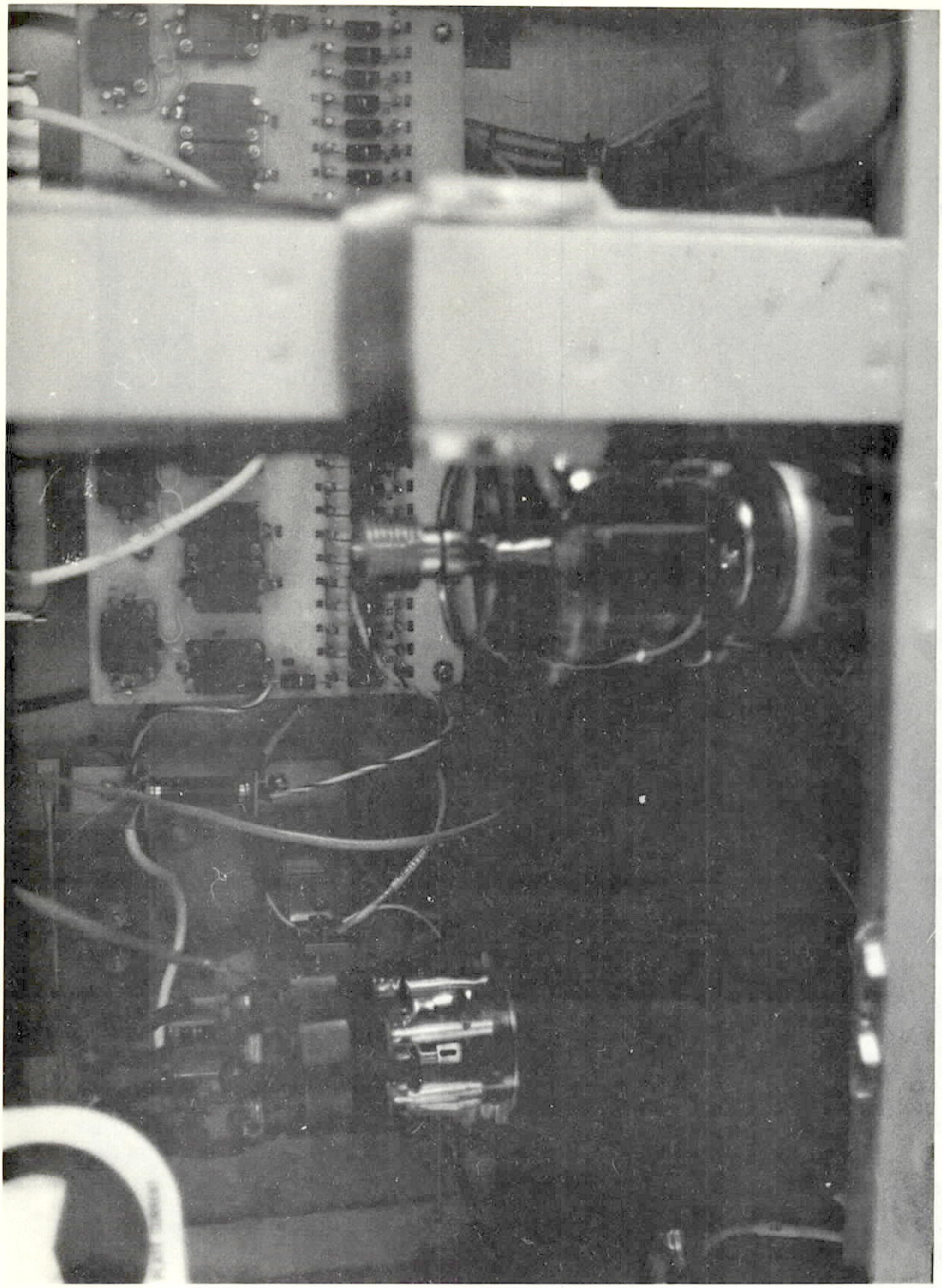


Figure 4-52c

Installation of 1st and 2nd IPA tubes.

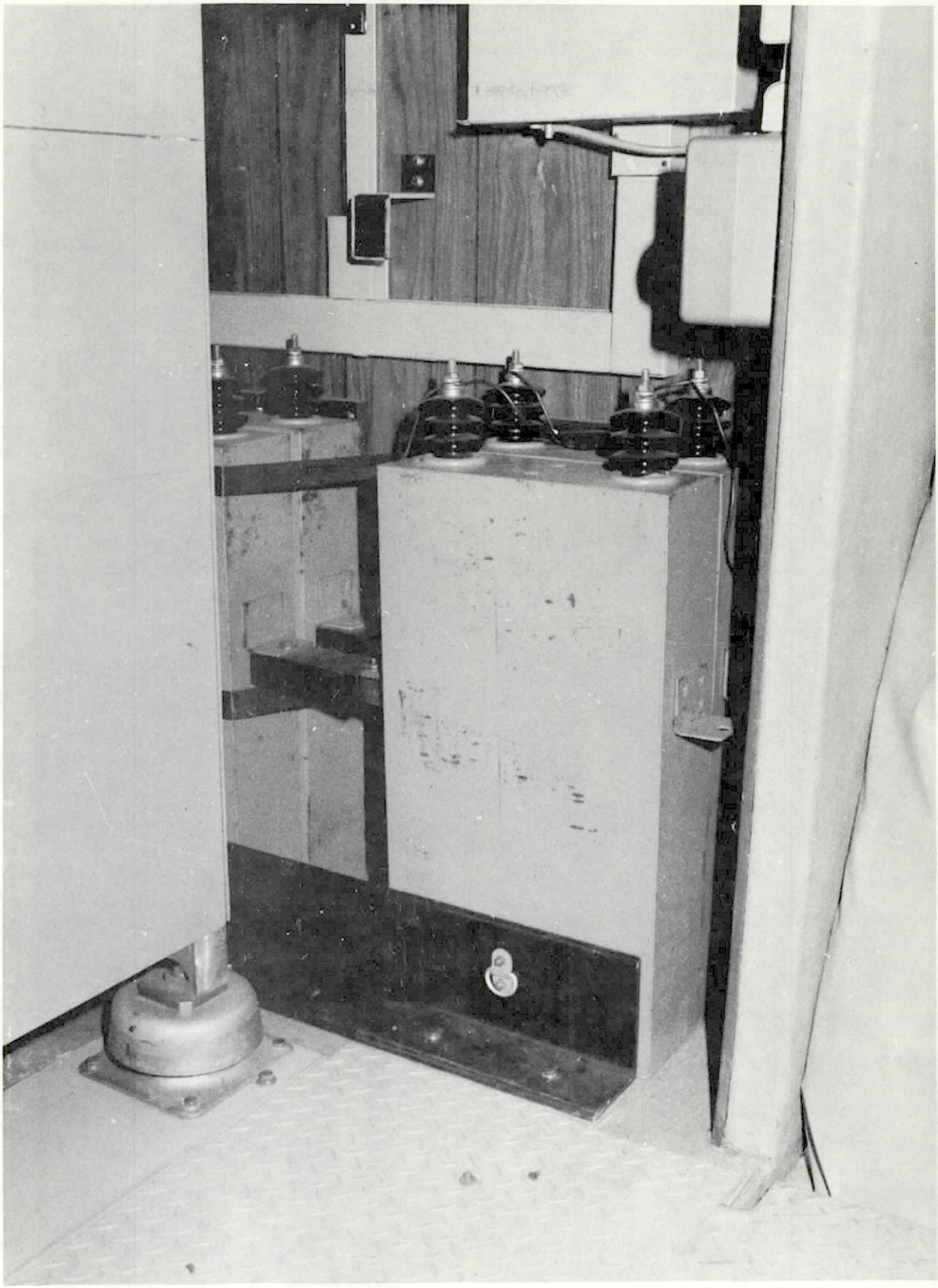


Figure 4-53a

Stowage of PA capacitors.

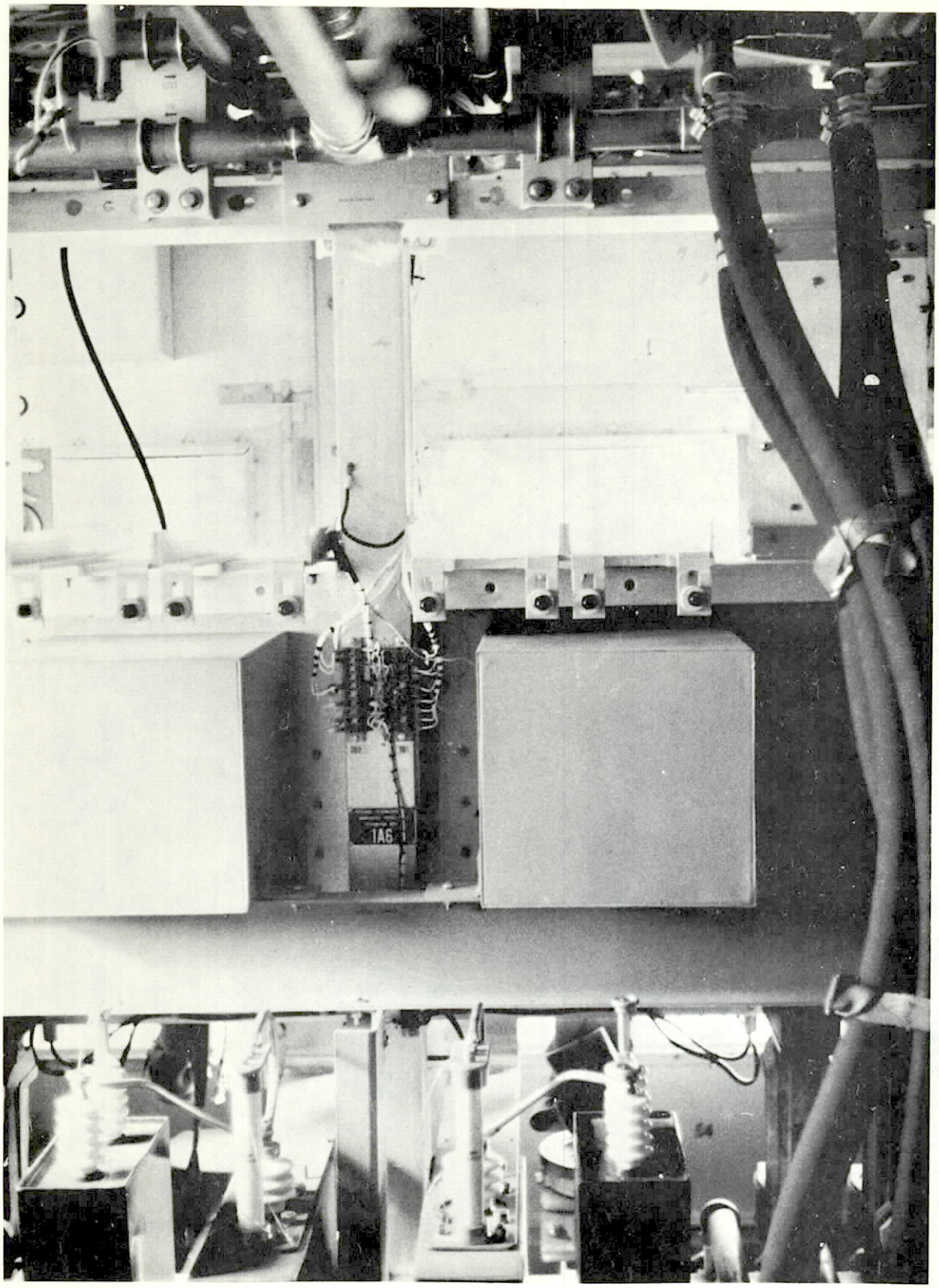


Figure 4-53b

Rear of PA tube rack, showing PA capacitor mounting brackets.

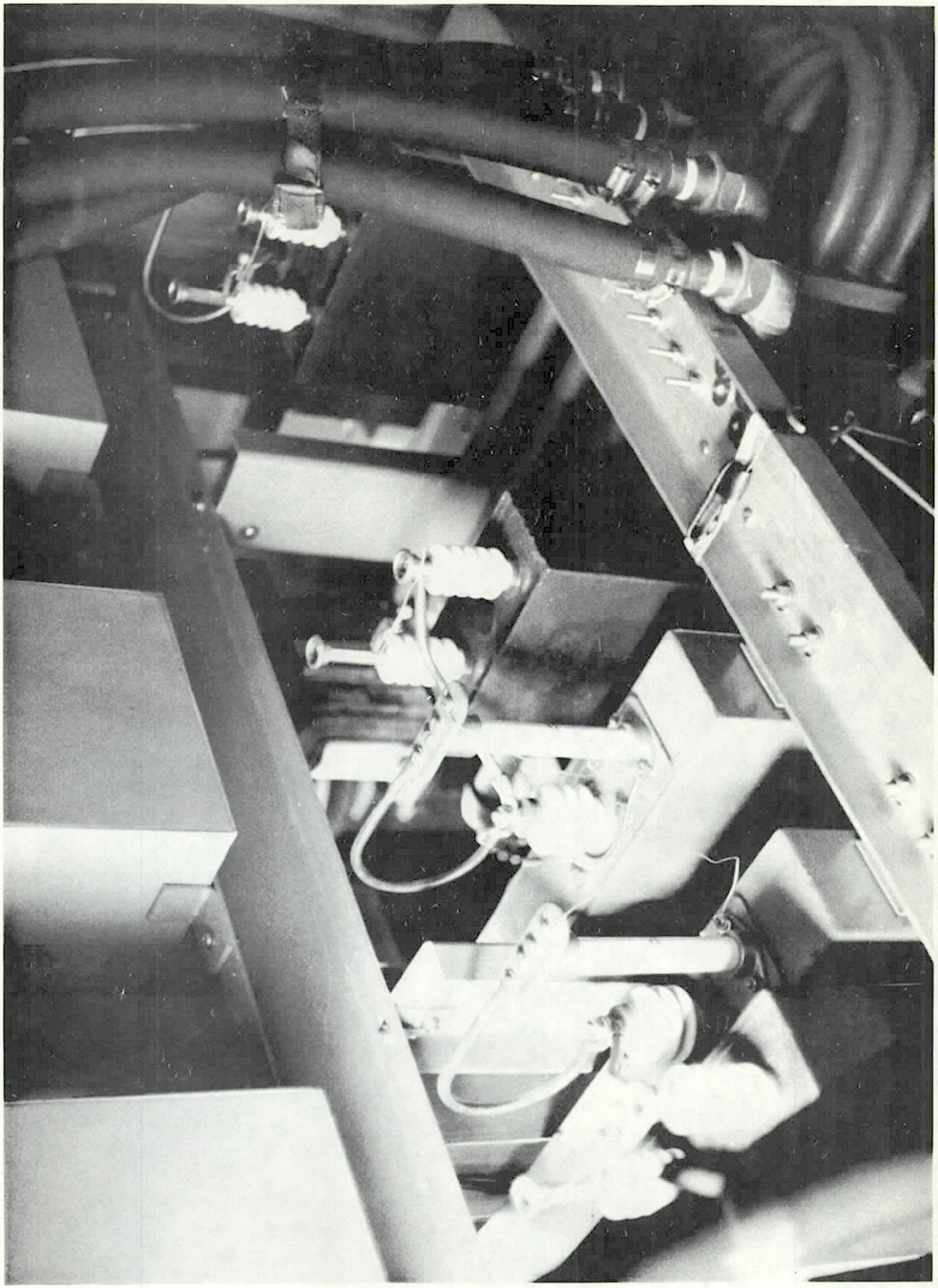


Figure 4-54a

Installation of copper tubing connectors.

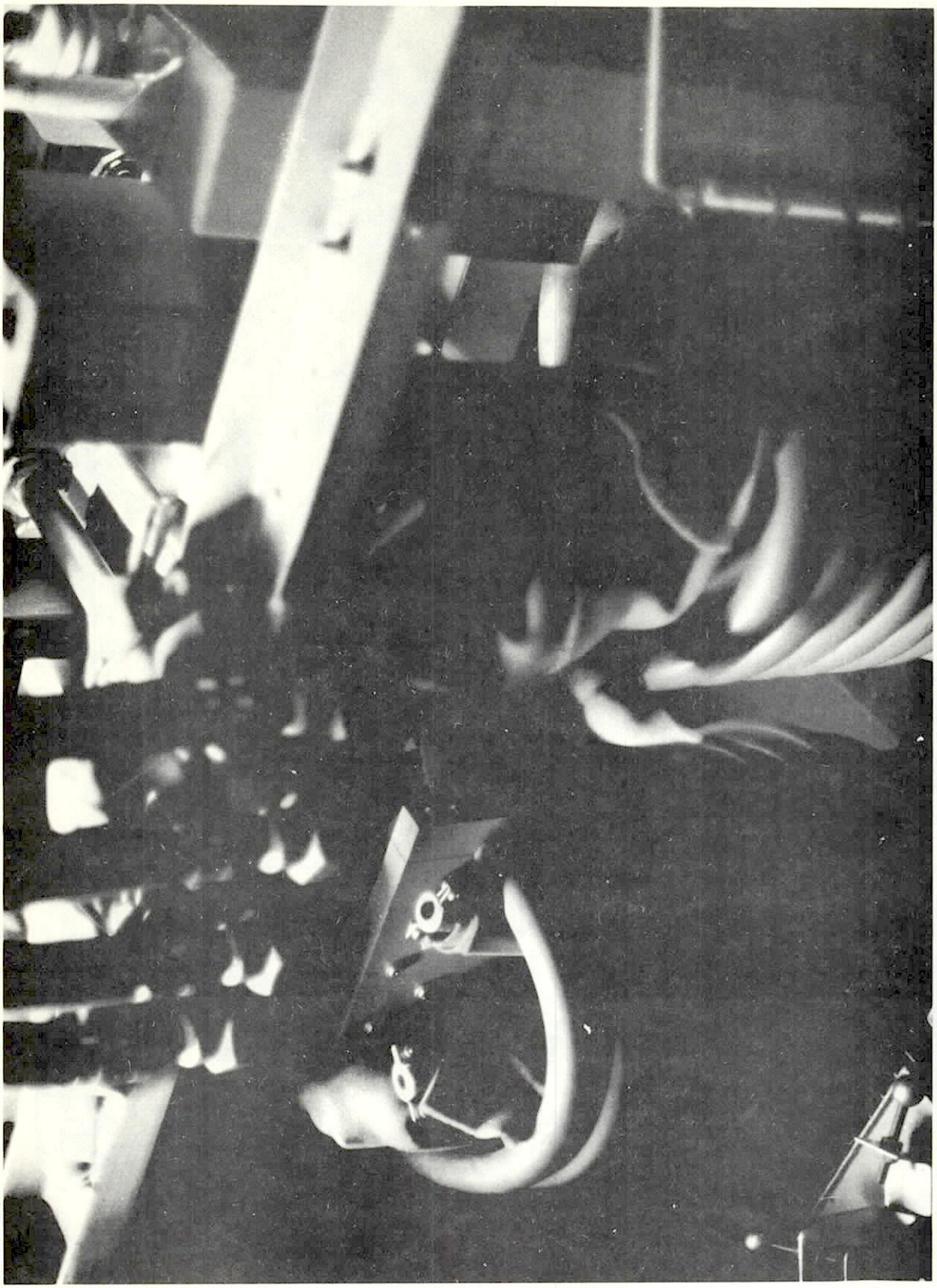


Figure 4-54b

Stowage of by-pass resistors and suppressor coils.

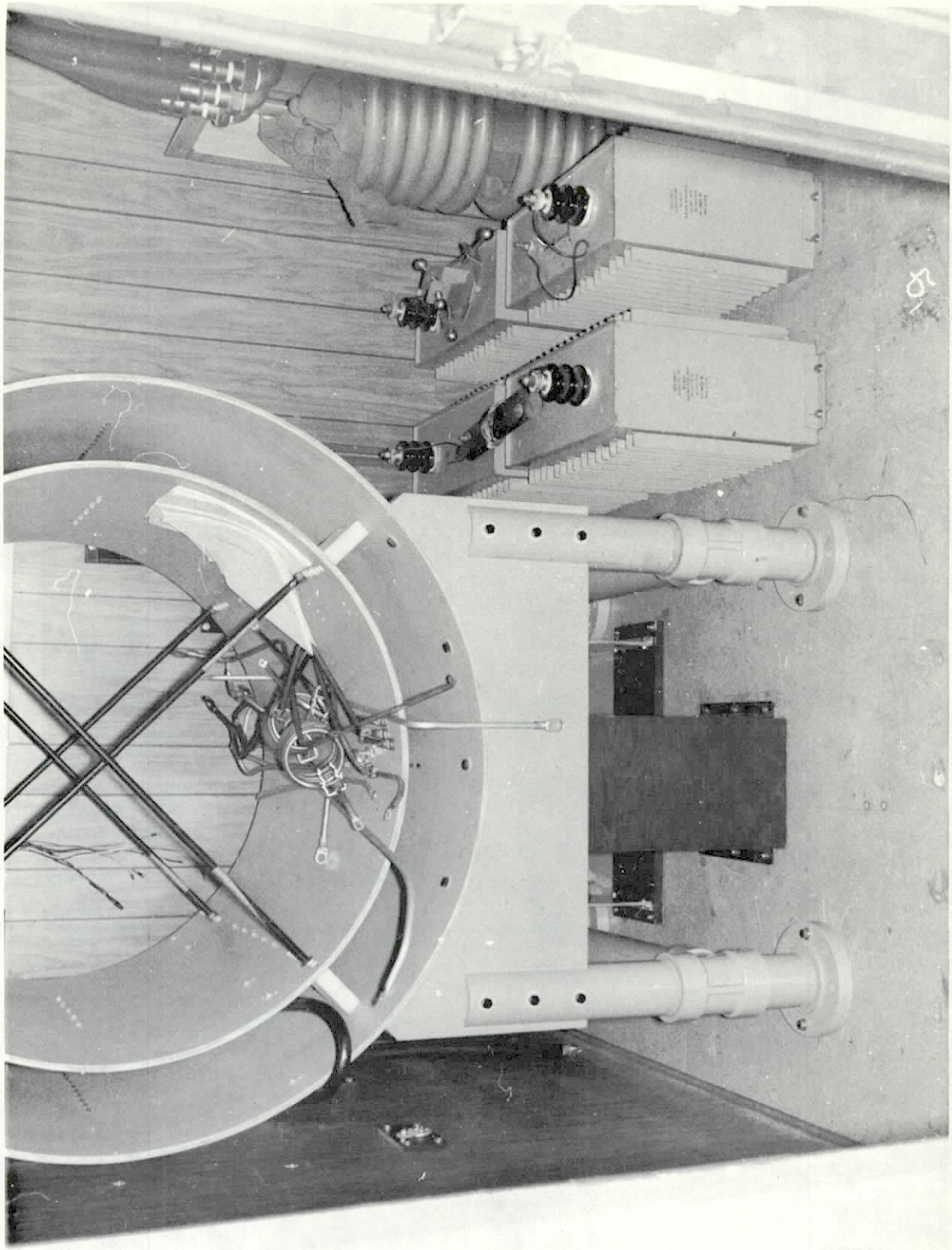


Figure 4-55

PA tank coil, with stowed connectors, resistors, and capacitors

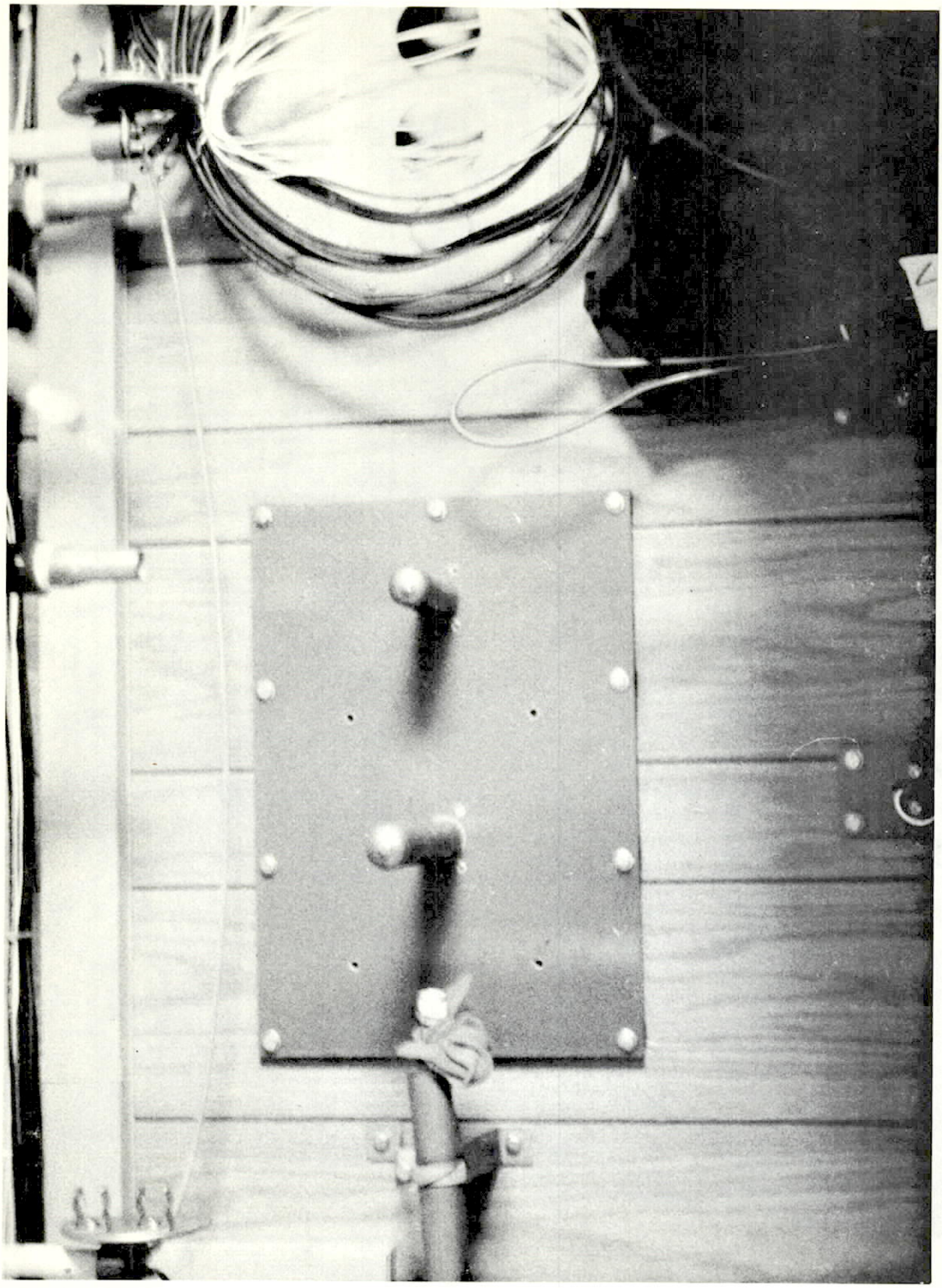


Figure 4-56

Feedback transformer mounting plate.

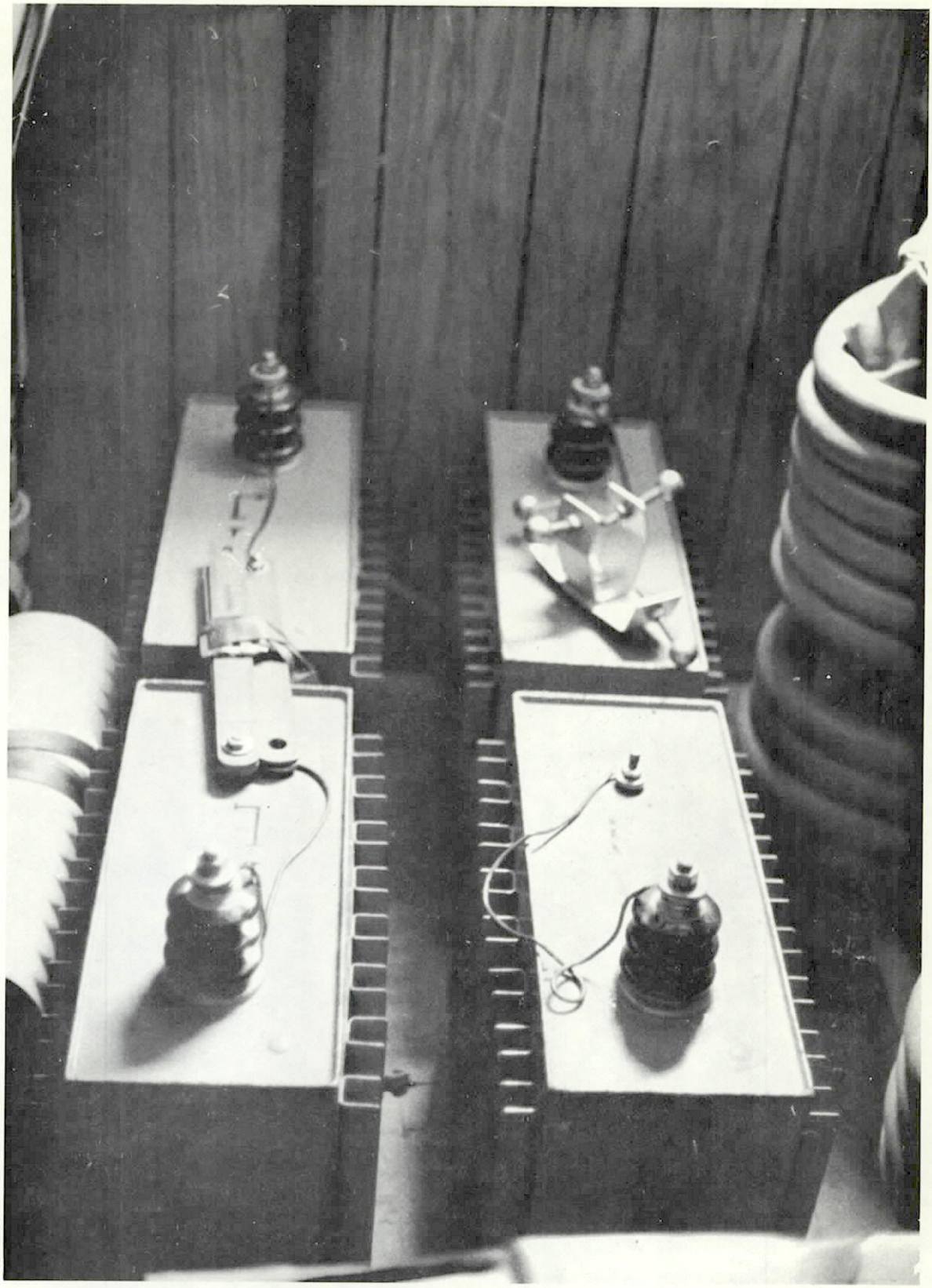


Figure 4-57

Harmonic filter capacitors.

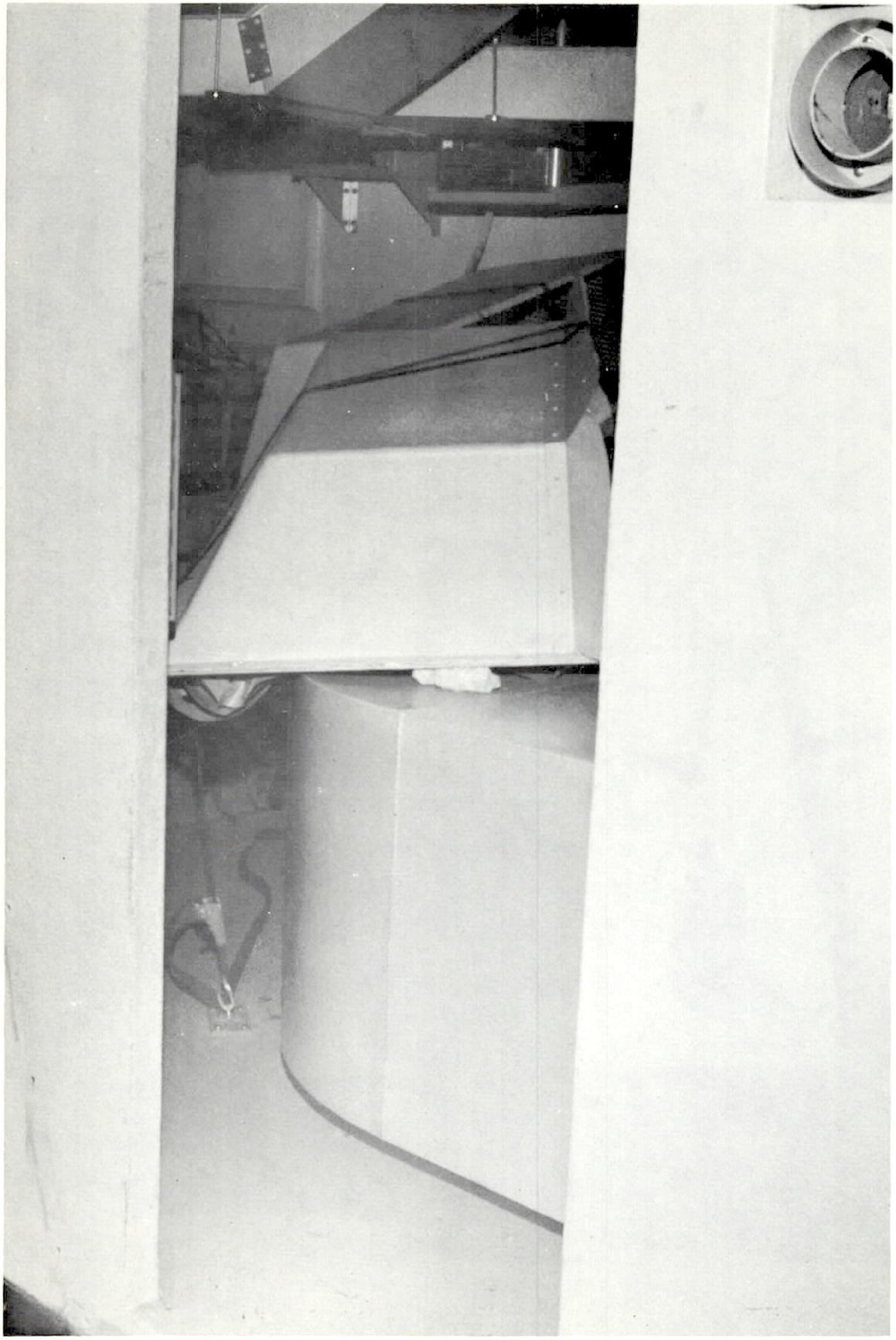


Figure 4-58

Stowage of dummy load air intake and exhaust covers.

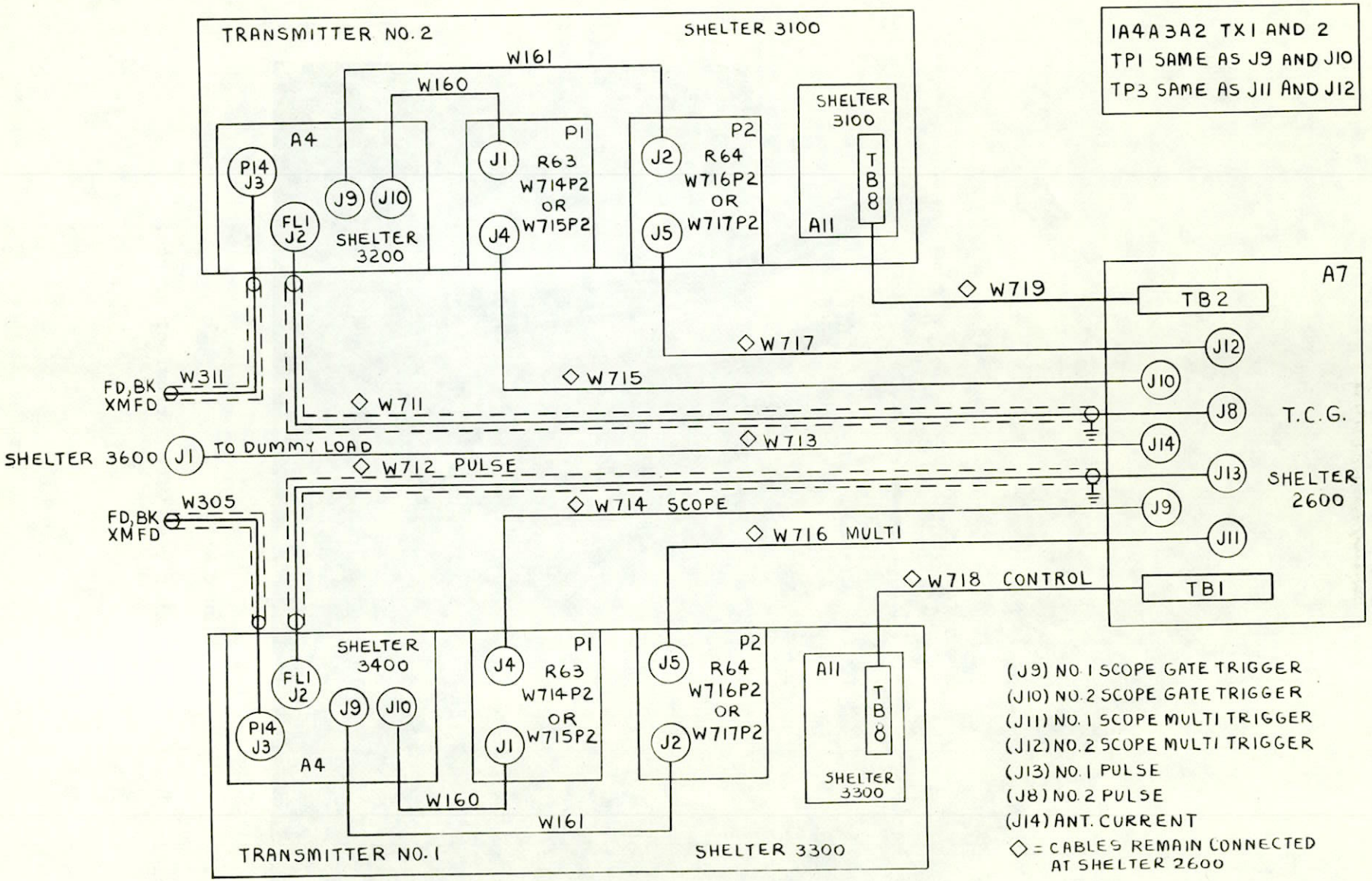


Figure 4-59

Transmitter 1 and 2 cabling diagram.

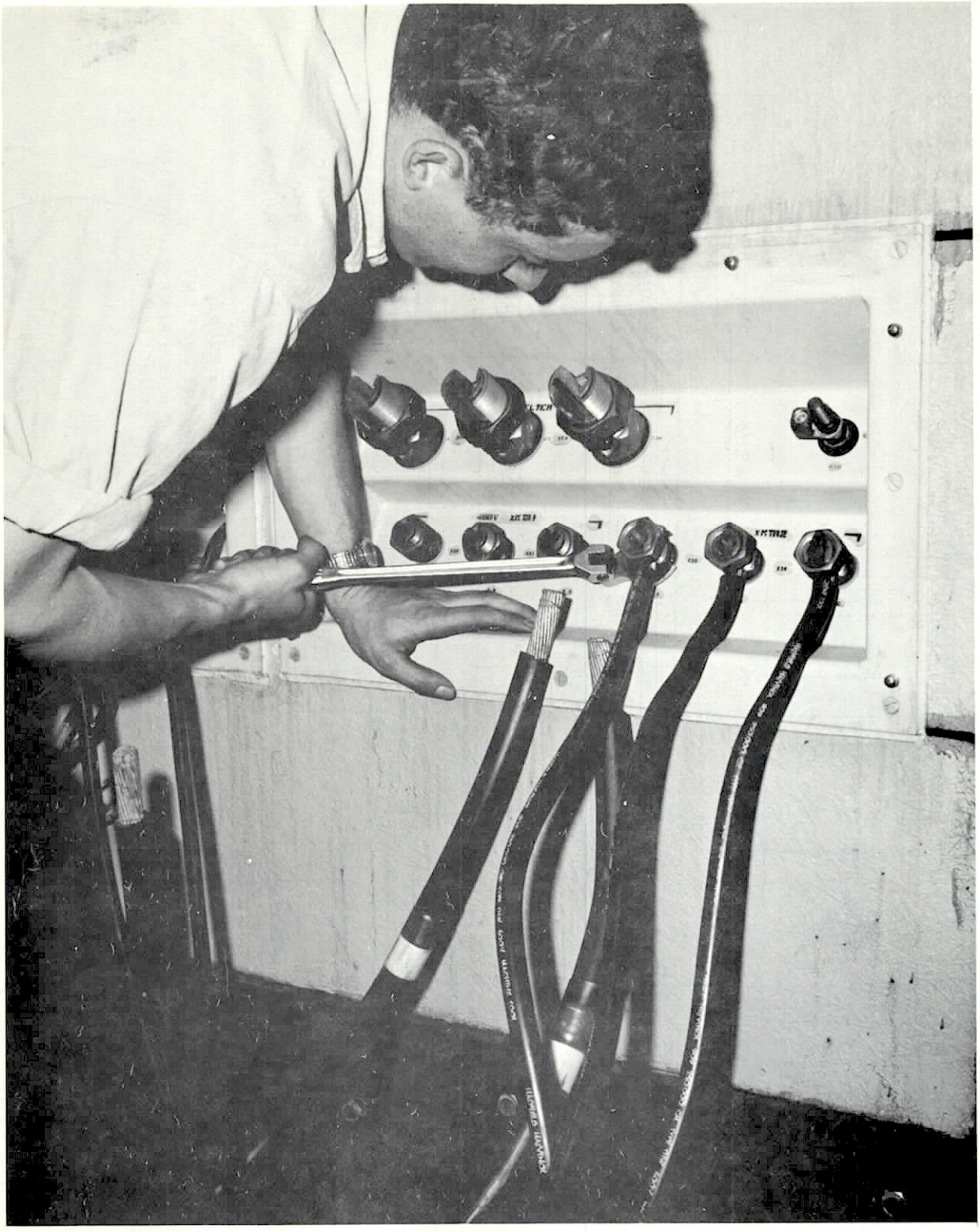


Figure 4-60a

Holding lower nut on servit post with a crowfoot wrench.

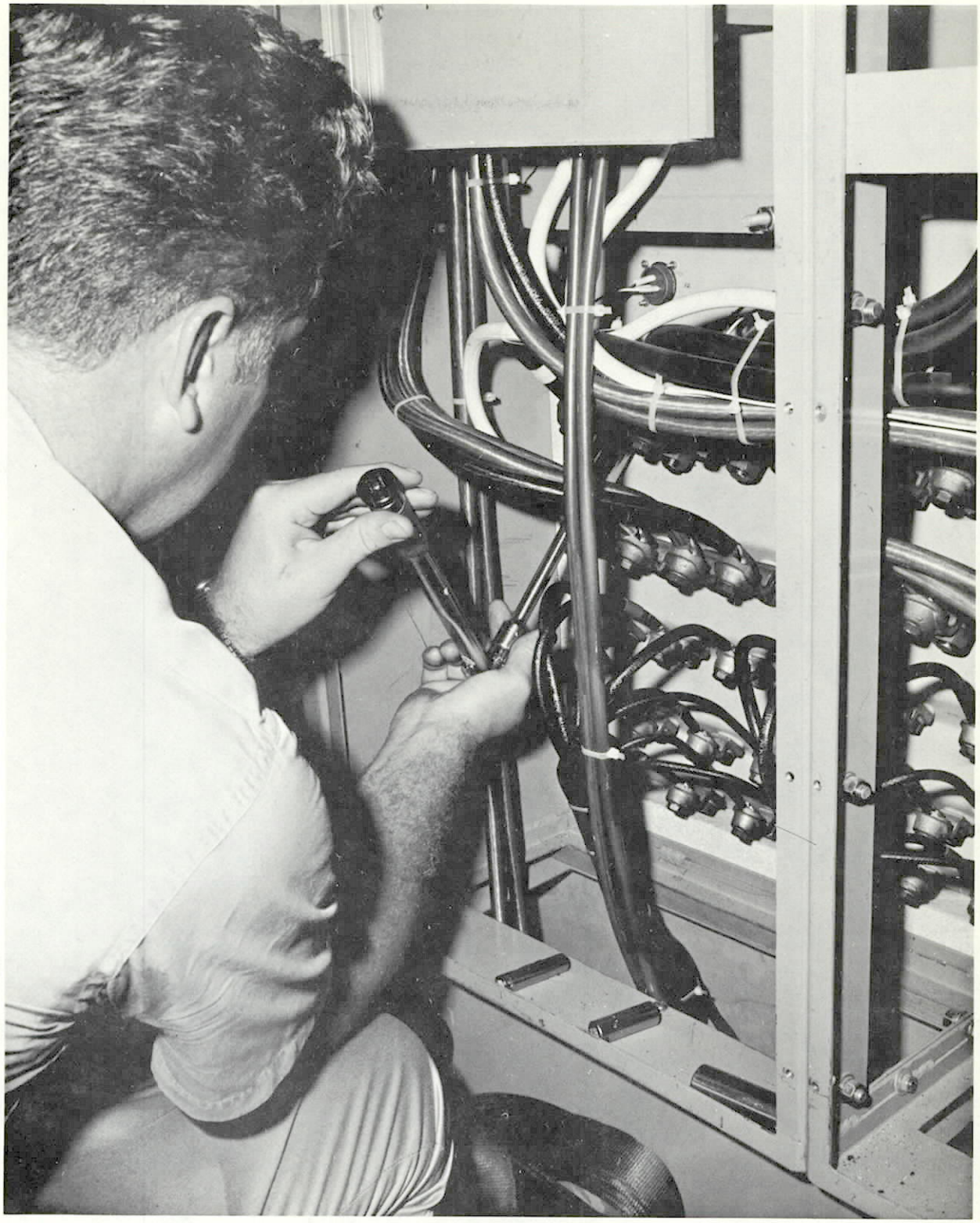


Figure 4-60b

Tightening servit post, using 0-80 ft-lb. torque wrench.

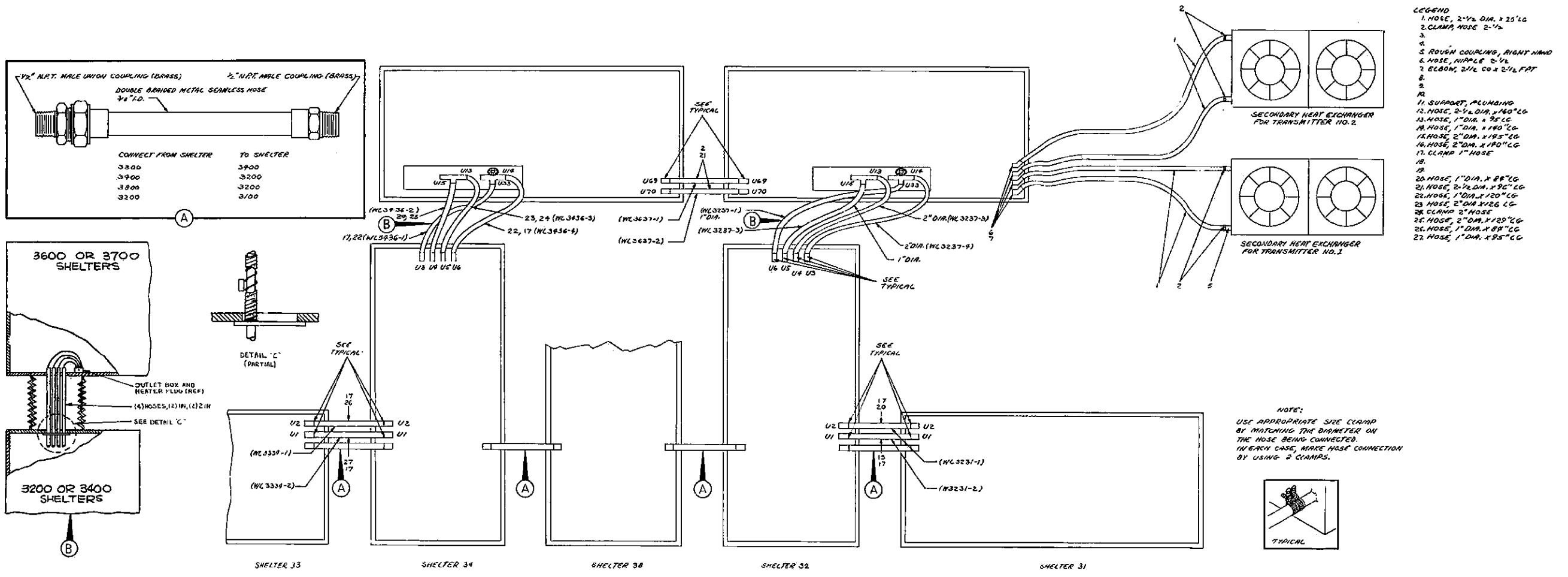


Figure 4-61

Transmitter plumbing.

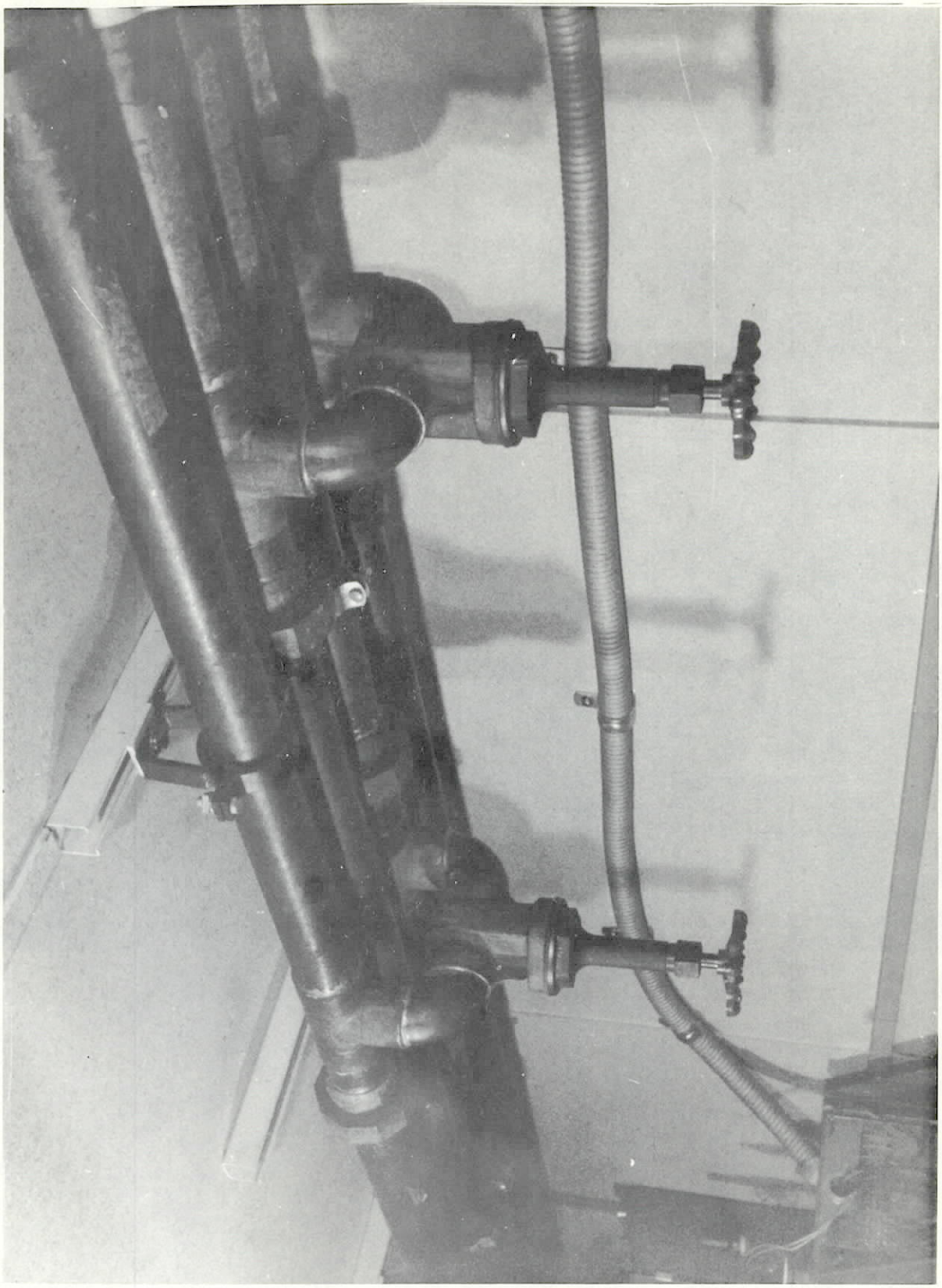


Figure 4-62a

Overhead valves in shelter 3700.

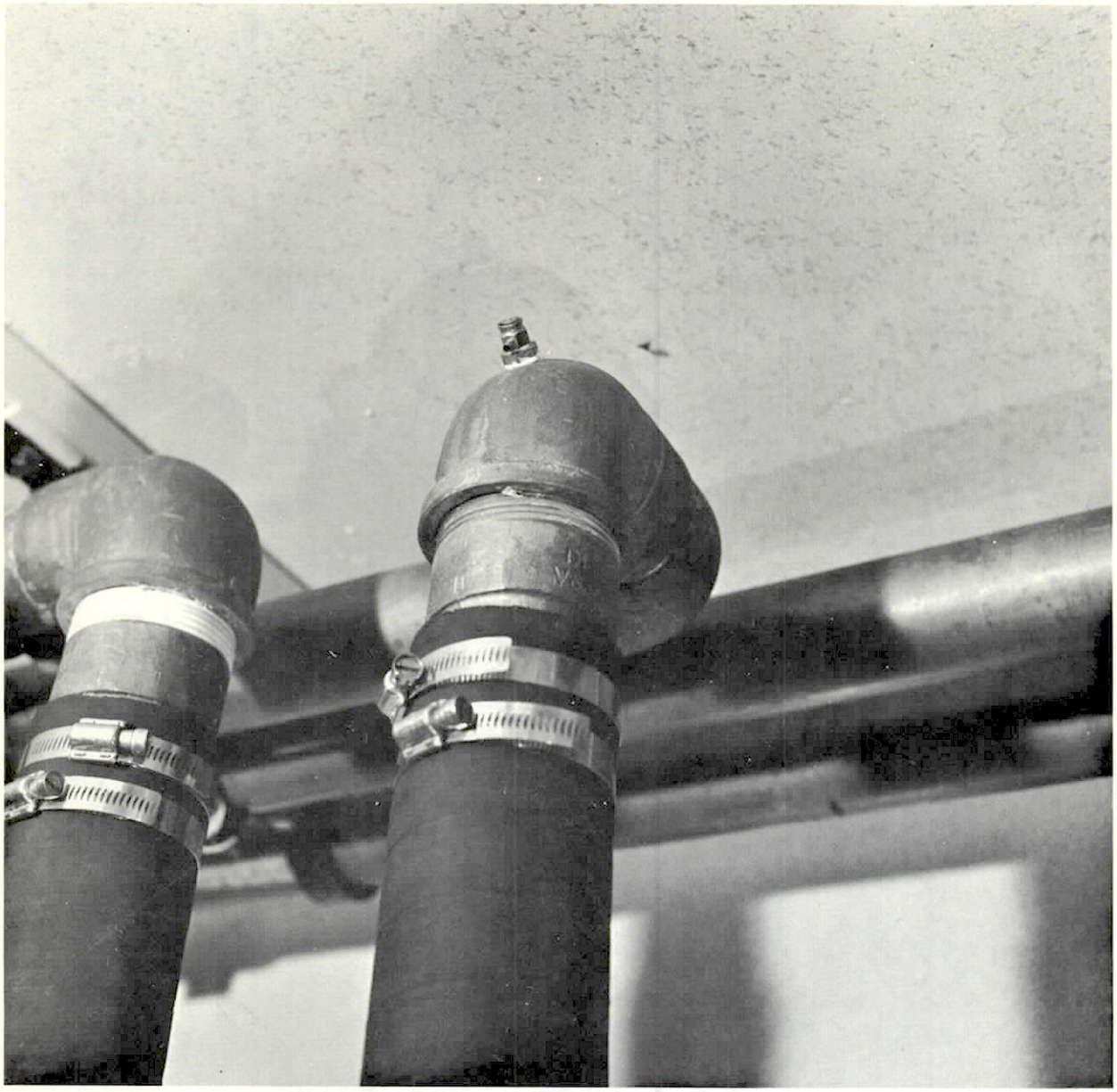


Figure 4-62b

Air bleeder valve.

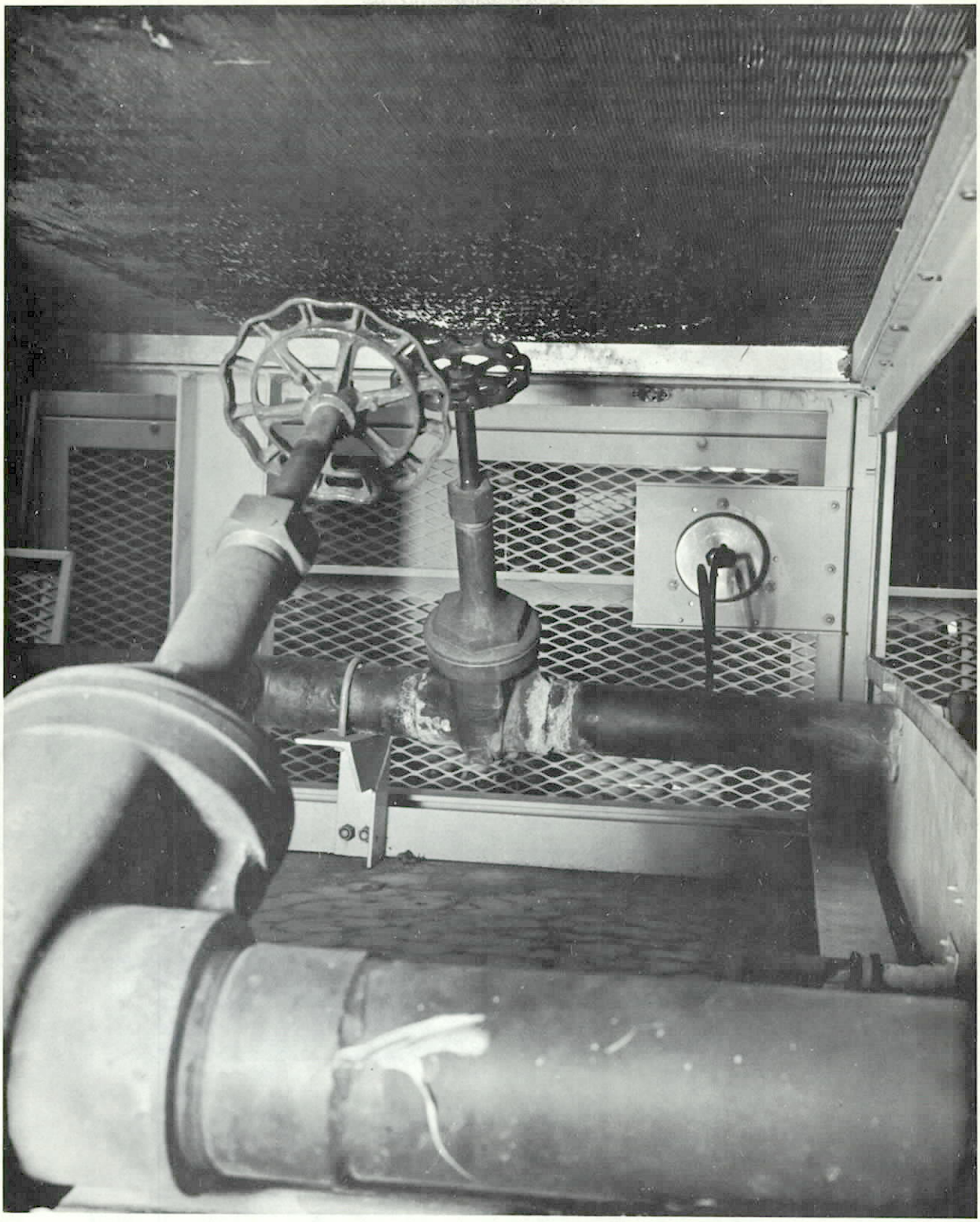


Figure 4-62c

Coolant inlet and outlet valves

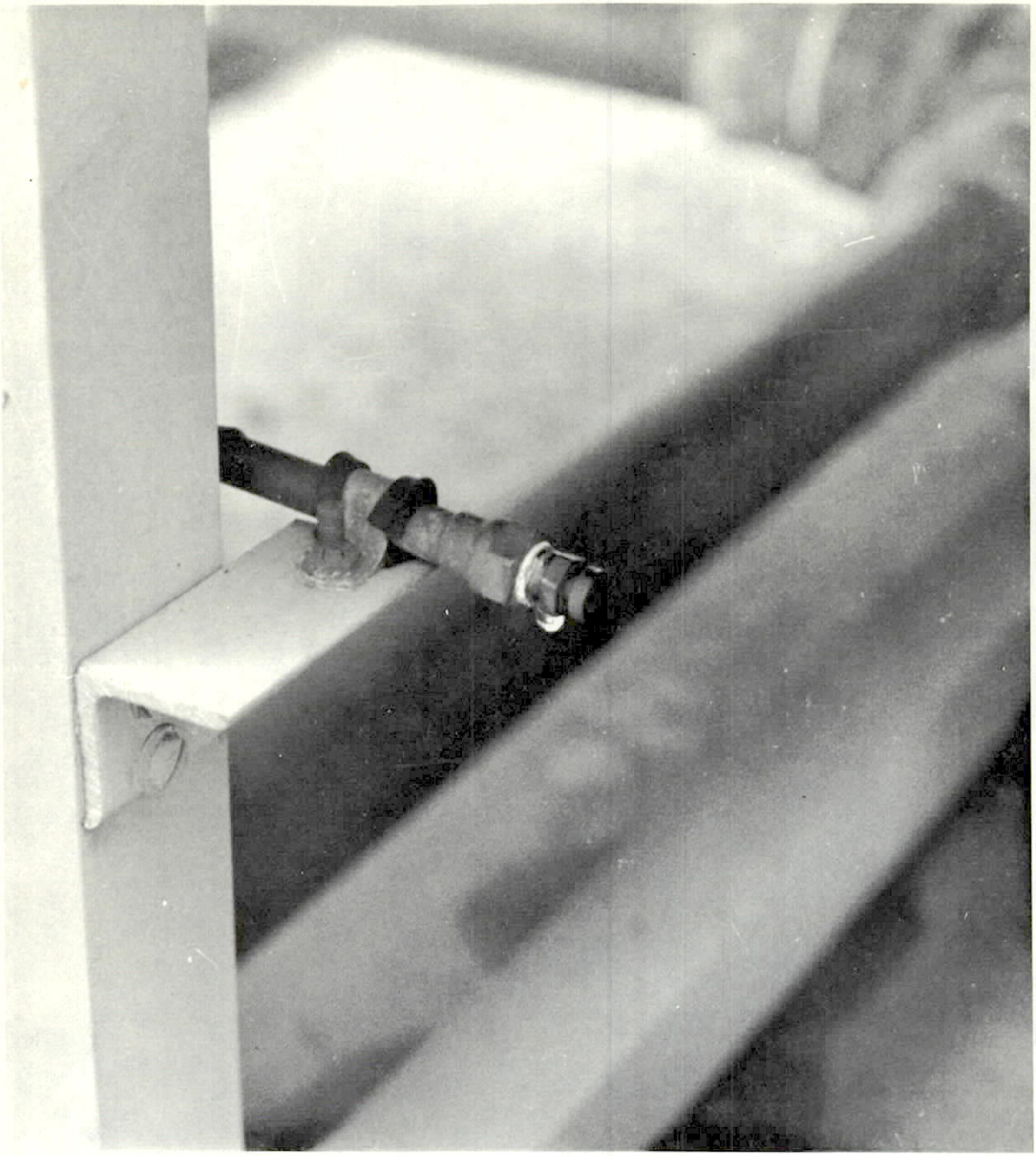


Figure 4-62d

Radiator bleeder valve.

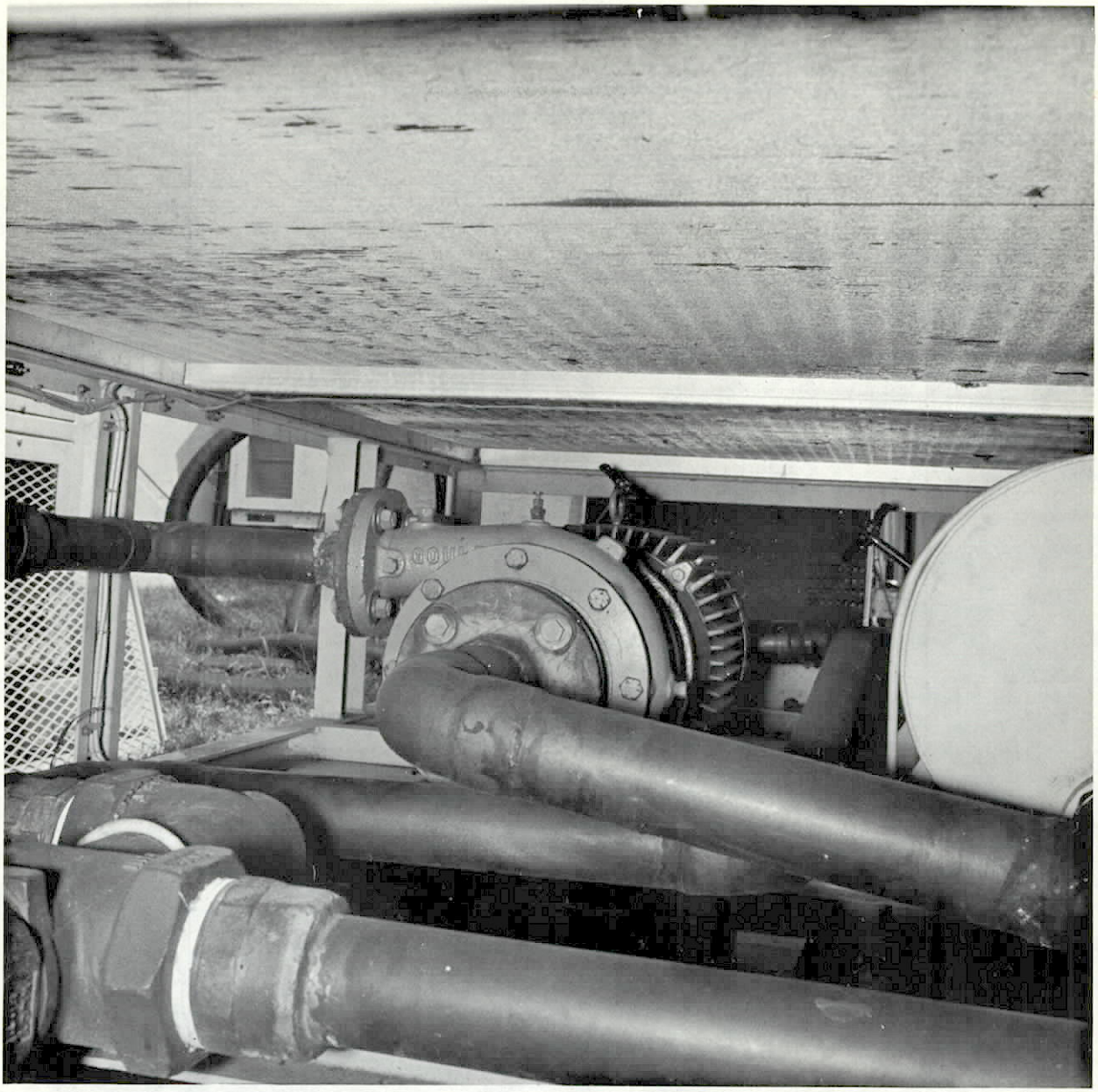


Figure 4-62e

Pump bleeder valve

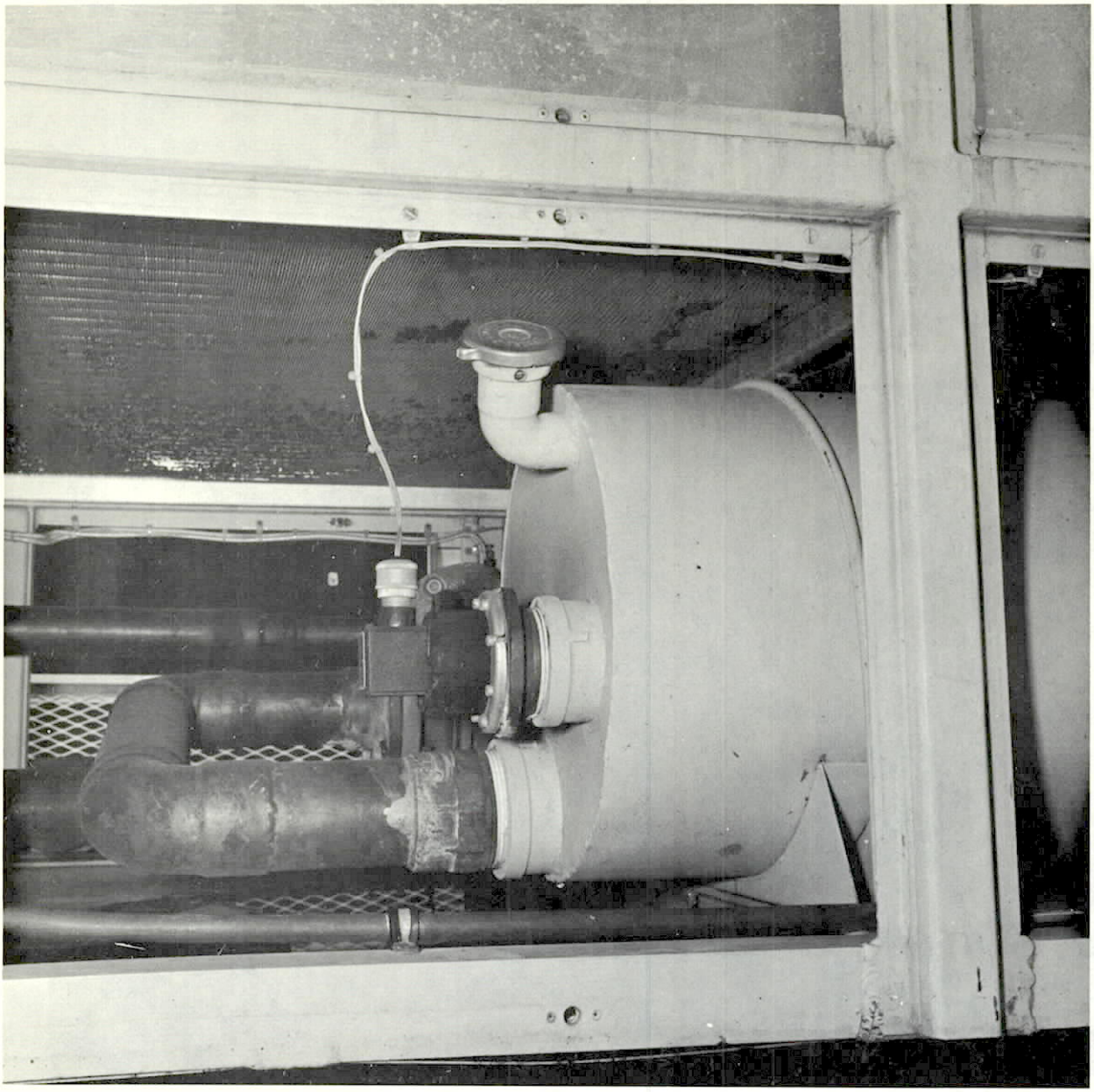


Figure 4-62f

Filler cap.

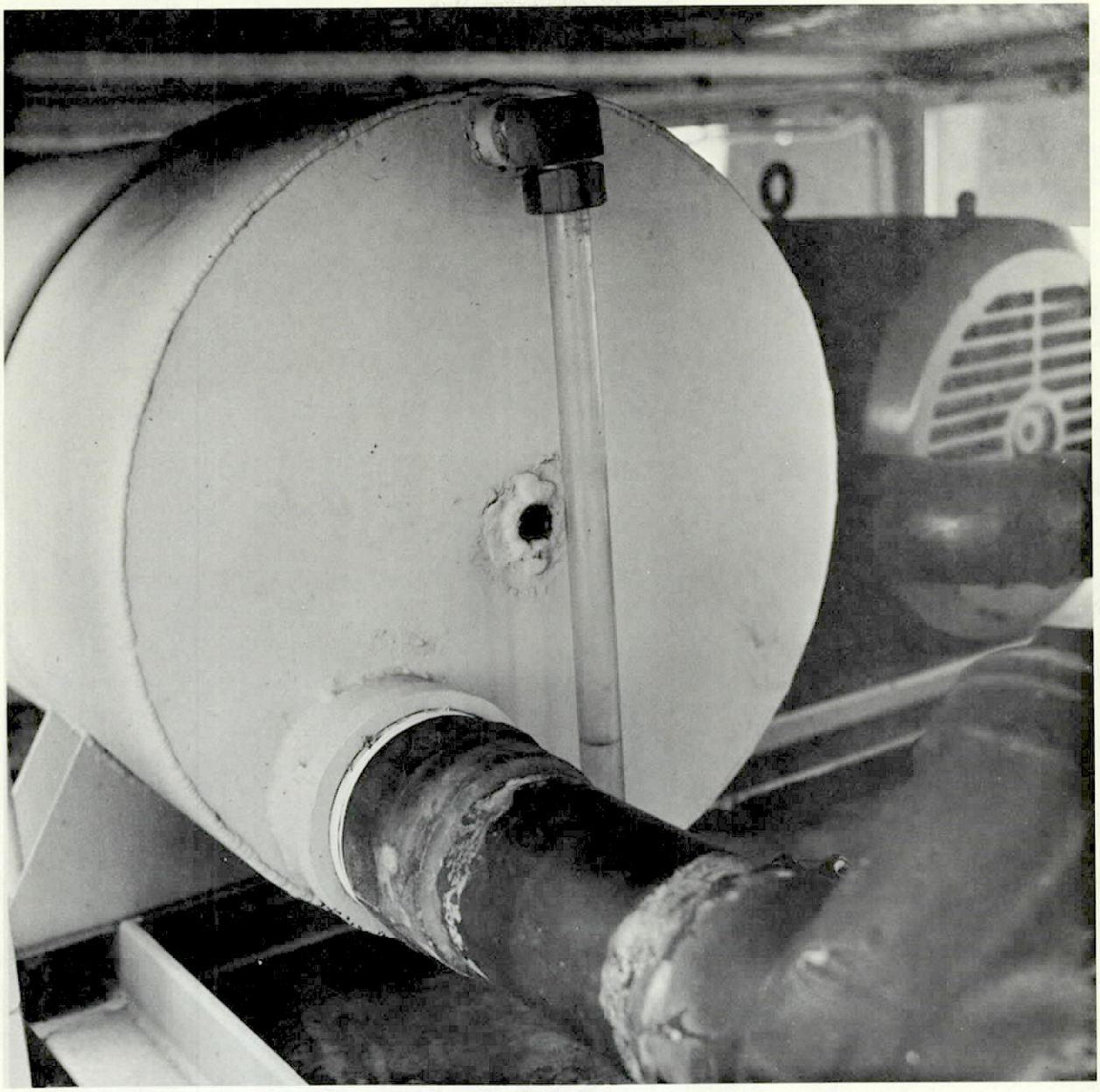


Figure 4-62g

Sight glass.

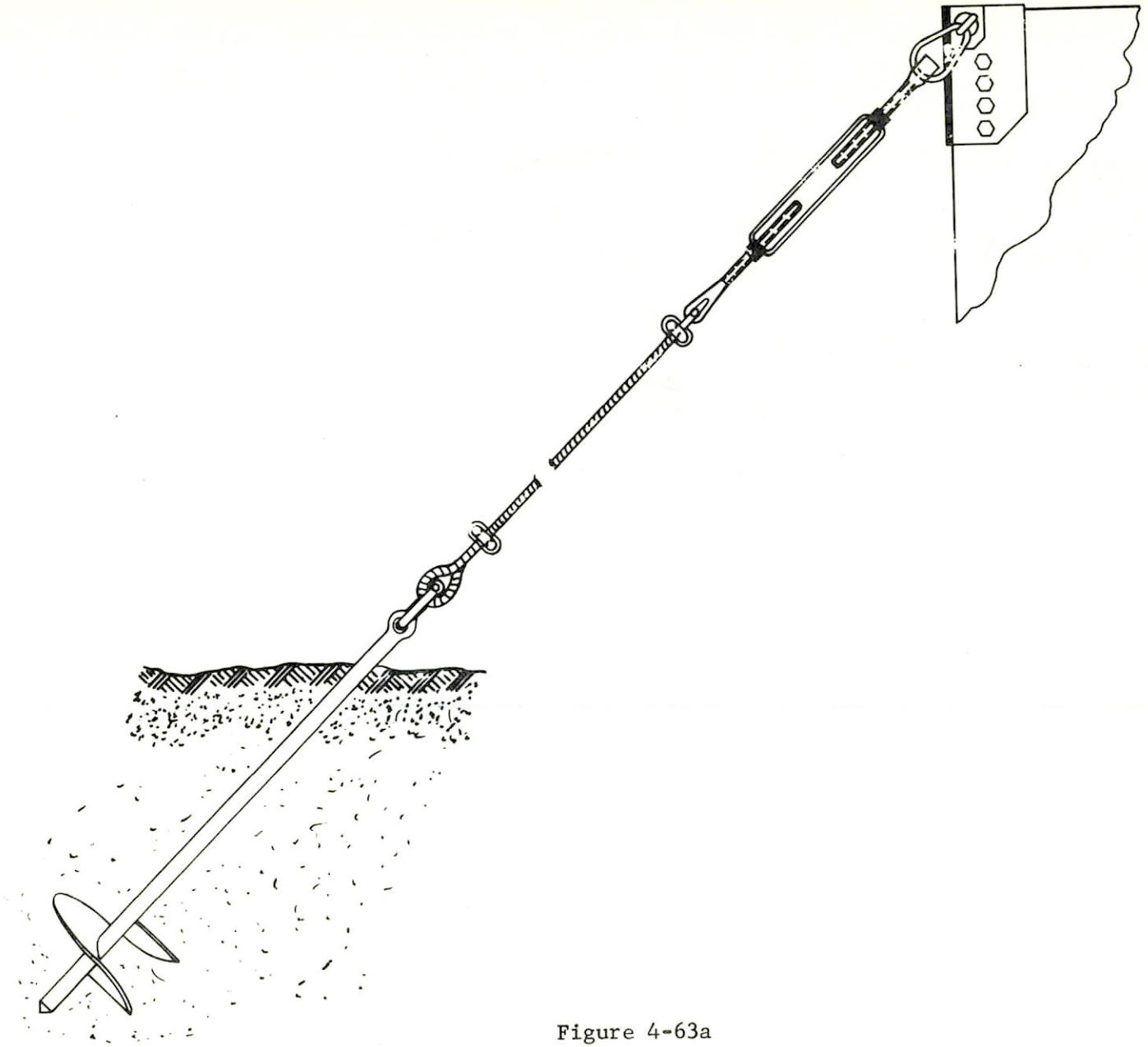
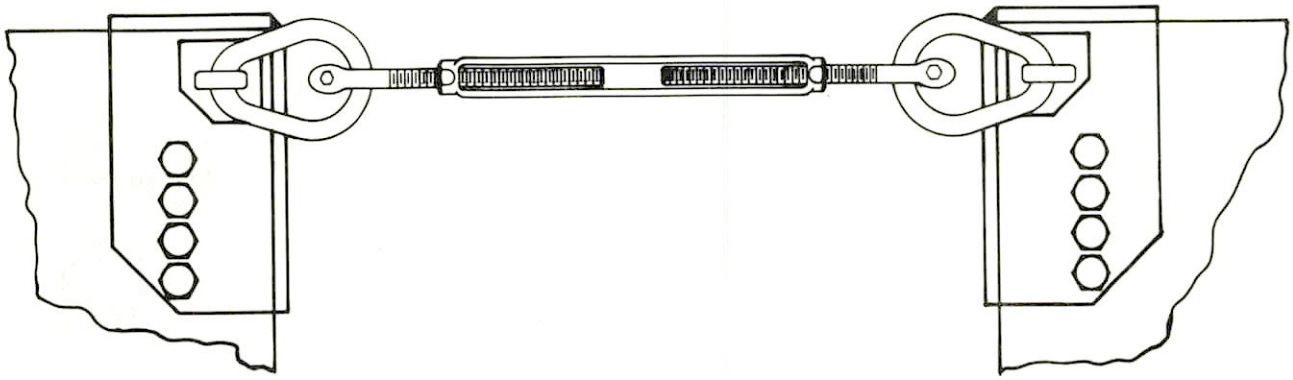


Figure 4-63a

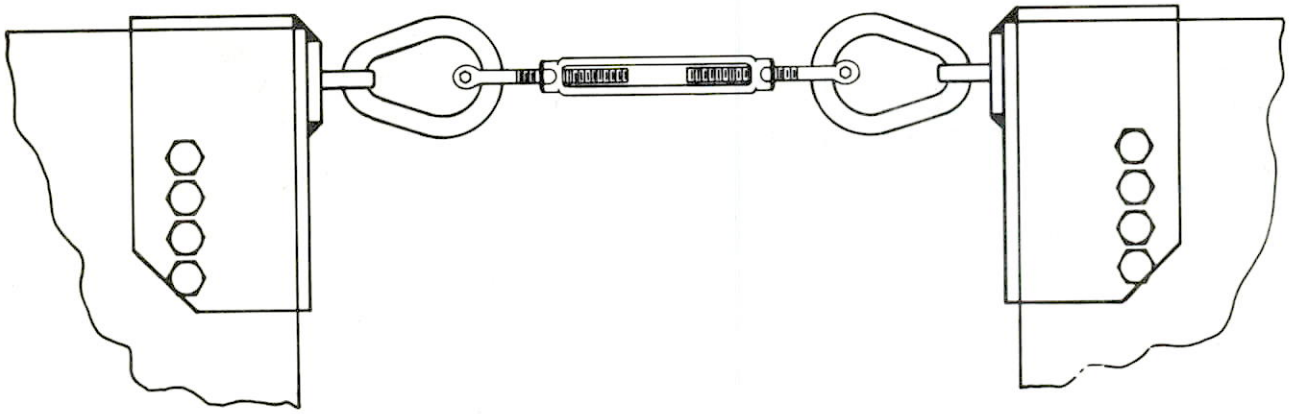
Shelter-to-Ground guy installation

Figure 4-63b

Installing screw-in guy anchor.



SHELTER TO SHELTER GUY (LARGE)



SHELTER TO SHELTER GUY (SMALL)

Figure 4-64

Shelter-to-Shelter guy installation.

CHAPTER 5

INSTALLATION CHECKOUT

Installation checkout is divided into three installation checkout procedures: a power distribution system checkout (paragraph 5.1), an intercom system checkout (paragraph 5.2) and a fire detection and protection system checkout (paragraph 5.3). If at any time during the installation checkout procedures there are signs of improper operation, such as circuit breakers tripping, improper voltage readings, or equipment that does not energize, refer to Chapter 8 of this manual or to the appropriate electrical schematics for fault isolation information.

WARNING: Prior to the application of power, check for a short circuit between each electrical connector and its associated panel. Continuity between any panel and a connector is a dangerous condition which will result in a hot panel when power is applied. If such a short circuit is discovered, do not proceed with the checkout until the cause of the short circuit is discovered and corrected.

5.1 POWER DISTRIBUTION SYSTEM CHECKOUT PROCEDURES. The power distribution system checkout procedures are step-by-step procedures by which power is systematically applied to the station. After each step, the correct power distribution is verified by voltage checks at convenient locations or by turning on specific equipment. To perform the power distribution checkout, proceed as follows:

5.1.1. Check that all circuit breakers in shelters 1100, 2200, 2300, 2600, 3500, and on pallet 4100 are in their respective OFF positions.

5.1.2. Check that the switches or controls for the following equipment are in the OFF position:

Shelter	Equipment
2400	Water Heater
2400	Water Pump
———	Fuel transfer pump
2300	* Large A/C
3200	* Large A/C's #1 & #2
3400	* Large A/C's #1 & #2

* CAUTION: Power must be applied to the large A/C's for at least 30 minutes prior to switching the air conditioner control to "CONDITIONING" in order to preheat the crankcase. See Ellis and Watts Manual.

5.1.3. Check to see that CB1, CB2, CB3, and CB4 on the generator disconnect panel (pallet 4100) are in the ON position.

5.1.4. Consult the generator manual and start up one of the power generators. Adjust the output of the generator to 460 volts, 60 Hz. (As the checkout proceeds, it may be necessary to parallel an additional generator on the line in order to meet load requirements).

5.1.5. Turn the circuit breaker on the generator disconnect panel (pallet 4100) for the generator which is operating to the ON position.

5.1.6. Using a multimeter, check that the voltage between servits E21 and E23, and between E21 and E22 on shelter 1100 is 460 volts.

5.1.7. Repeat step 4, measuring the voltage between the following servits: E24 and E25, E26; E27 and E28, E29; E31 and E32, E33.

5.1.8. Refer to table 5-1 and set the circuit breakers listed in the "Circuit Breaker" column to their respective ON positions sequentially as given in the "Order No." column. Voltage measurements are to be made between the points given in the "Measure Between" column. If correct power distribution is to be verified by turning on equipment, these procedures will be indicated in the "Notes" column.

NOTE

Prior to or immediately upon energizing three-phase loads, such as the large air conditioners, the secondary heat exchangers, and the transmitters, a check should be made for proper phase rotation. This can be accomplished by use of a phase meter or by checking the rotation of 3-phase motors. The preferred method for correcting any discrepancy in phase rotation is to revise the wiring <u>at the load</u>.

5.2. INTERCOM SYSTEM CHECKOUT PROCEDURES. The intercom system checkout procedure consists primarily of communicating over the system. To perform the checkout, proceed as follows:

5.2.1. Check that intercom circuit breaker A3CB20 in transmitter power distribution shelter 3500 is set to the ON position.

5.2.2. In shelter 3800, depress the SHELTER 1100 call button on the intercom and verify that the IN USE lamp lights.

5.2.3. A second man in shelter 1100 should verify that the chime sounds on the intercom in that shelter, and should answer the call by talking naturally into the grille. (It is not necessary for this man to touch any controls in order to answer the call).

5.2.4. When the call to shelter 1100 is answered, the man in 3800 should depress the talk bar and talk naturally into the grille. To receive an answer, he must release the talk bar.

5.2.5. At the conclusion of the conversation, firmly depress the STANDBY button and verify that the IN USE lamp is extinguished.

5.2.6. Repeat steps 2 through 5 with a man positioned, in turn, in shelters 2200, 3100, and 3300.

5.3. FIRE DETECTION AND PROTECTION SYSTEM CHECKOUT PROCEDURES. The fire detection and protection system checkout procedures consist of six separate procedures. These procedures are a smoke detector checkout procedure (paragraph 5.3.1), a heat detector checkout procedure (paragraph 5.3.2), a CO_2 system checkout procedure (paragraph 5.3.3), a power shutdown checkout procedure (paragraph 5.3.4), a CO_2 activation checkout procedure (paragraph 5.3.5), and the annuciator panel testing and adjustment procedure (paragraph 5.3.6).

5.3.1. Smoke Detector Checkout Procedure.

(1) In shelter 3800, at the CO_2 control panel, ensure that the SH31, 32 SYSTEM CUTOUT and SH33, 34 SYSTEM CUTOUT switches are in the OFF position (see Figure 5-1).

(2) Set the following circuit breakers to their respective ON positions:

CB14 (shelter 1100, panel A3)

CB24 (shelter 3500, panel A3)

CB6 (shelter 2600, panel A1)

(3) Verify that the lamps on all fire detectors are on.

(4) Set S1 on all fire detection boxes to the ALARM BELL ON position.

(5) In shelter 2300, depress the reset switch on the smoke detector and verify that the buzzer sounds and that trouble annuciator tab 2300 in shelter 2600 falls. Reset the trouble annuciator.

(6) In shelter 2300, blow smoke directly into the fire detector (cigarette smoke is adequate) and verify the following:

a. In shelter 2600, the 2300 tab on the alarm panel drops, the buzzer sounds, and the bell rings. The bell in the screened room on shelter 2200 also rings.

b. In shelter 2300, the bell on the fire detection box sounds. On the fire detector, the buzzer sounds and the lamp lights.

(7) In shelter 2300, set S1 on the fire detection box to ALARM BELL DISABLE and verify that the bell is disabled.

(8) In shelter 2300, momentarily depress the reset button on the fire detector and set S1 on the fire detection box to ALARM BELL ON. Verify that the detector resets and that the bell is silenced. (Resetting the detector will cause trouble annuciator tab #2300 in shelter 2600 to fall).

(9) In shelter 2600, reset the alarm and trouble annuciator panels and verify that the buzzer and the bell are silenced.

WARNING: The following step (10) involves disconnecting a 115 volt line. Use extreme care when disconnecting and reconnecting the line.

(10) In shelter 2300, simulate a trouble condition by disconnecting the black wire on TB1-6 of the fire detection box and verify the following:

a. In shelter 2600, the 2300 tab on the trouble panel drops and the buzzer sounds.

b. The power lamp on the detector is extinguished.

(11) Reconnect the black wire on TB1-6.

(12) In shelter 2600, reset the trouble annuciator panel and verify that the buzzer is silenced.

(13) Repeat steps 6 through 12 for the following shelters: 1100, 1200, 1300, 2100, 2200, 2400, 2500, 2600, 2700, 3200 (personnel area), 3400 (personnel area), 3500, 3600, 3700, and 3800. (NOTE: For 3200 and 3400 personnel areas, substitute TB2-6 for TB1-6 in steps 10 and 11.)

NOTE

Before performing the following steps, verify that the SH31, 32 SYSTEM CUTOFF and SH33, 34 SYSTEM CUTOFF switches in shelter 3800 are OFF.

(14) In shelter 3200, ensure that S2 on the fire detection box is set to CARBON DIOXIDE AND POWER INTERLOCK DISABLE (see Figure 6-14).

(15) In the CO_2 area in shelter 3200, momentarily depress the reset button on the fire detector and verify that the buzzer sounds as the button is depressed. Trouble annuciator tab #3200 in shelter 2600 will drop. Reset the annuciator before proceeding.

(16) In the CO_2 area in shelter 3200, blow smoke directly into the fire detector (cigarette smoke is adequate) and verify the following:

a. In shelter 2600, verify that the 3200 CO_2 AREA tab on the alarm annuciator panel drops and that the buzzer sounds.

b. In shelters 3100, 3200, and 2600 verify that the bells on the fire detection boxes sound. Verify that the bell in the screened room of shelter 2200 also sounds.

c. In the fire detection box in shelter 3100, measure for continuity between contacts 1A and 1B of relay K2 and for an open between contacts 5A and 5B of relay K2 (see Figure 5-2).

d. In the fire detection box in shelter 3200, measure for an open between contacts 6A and 6B of relay K1.

(17) On the fire detection boxes in shelters 3100 and 3200, set S1 to ALARM BELL DISABLE and verify that the alarm bells are disabled.

(18) In the CO_2 area of shelter 3200, momentarily depress the reset button on the fire detector and verify that the buzzer is disabled and that trouble annuciator tab #3200 drops.

(19) In shelter 2600, reset the alarm and trouble annuciator panels and verify that the buzzer and bell are silenced.

(20) In the fire detection box in shelter 3100, measure for an open between contacts 1A and 1B of relay K2 and for continuity between contacts 5A and 5B of relay K2.

(21) In the fire detection box in shelter 3200, measure for continuity between contacts 6A and 6B of relay K1.

WARNING: The following steps (22 and 23) involve disconnecting a 115 volt line. Use extreme care when disconnecting and reconnecting the line.

(22) In the CO_2 area in shelter 3200, simulate a trouble condition by disconnecting black wire on TB1-6 of the fire detection box and verify the following:

a. In shelter 2600, the 3200 CO_2 AREA tab drops on the trouble annuciator panel and the buzzer sounds.

b. In the fire detection box in shelter 3100, measure for an open between contacts 1A and 1B of relay K2 and for continuity between contacts 5A and 5B of relay K2.

c. In the fire detection box in shelter 3200, measure for continuity between contacts 6A and 6B of relay K1.

(23) Reconnect the black wire on TB1-6 in shelter 3200.

(24) In shelter 2600, reset the trouble annuciator panel and verify that the buzzer is silenced.

(25) Repeat steps 16 through 25 for shelter 3400 CO_2 area substituting 3300 and 3400 for 3100 and 3200 respectively.

(26) Repeat steps 16 through 25 for shelters 3100 and 3300 except that in step 17c measure for continuity between contacts 2A and 2B and 3a and 3b and for an open both places in step 23b. Also, in steps 17d and 23c, substitute shelter 3100 for shelter 3200.

5.3.2. Heat Detector Checkout Procedure.

WARNING: Perform checkout only with transmitter secured.

(1) In shelters 3100 and 3200, set S2 on the fire detection boxes to CARBON DIOXIDE AND POWER INTERLOCK DISABLE.

(2) In shelter 3200, loosen the two screws holding the heat detector. Remove the detector and let in hang by the wires. Connect a clip lead across the two terminals to simulate a high temperature trip. Verify the following:

a. In shelter 2600, 3200 HI TEMP tab drops on alarm annunciator panel and buzzer and bell sound.

b. In the fire detection box in shelter 3200, measure for an open circuit between contacts 6A and 6B of relay K3 to verify transmitter shutdonw.

c. In shelter 2200, the bell in the screened room sounds.

(3) In shelter 3200, remove the clip lead from the detector and reinstall the detector.

a. In shelter 2600, reset the alarm panel.

b. In shelter 3200, measure for continuity between contacts 6A and 6B in the fire detection box.

(4) Repeat steps 2 and 3 for shelter 3100.

(5) In shelters 3300 and 3400, set S2 on the fire detection boxes to CARBON DIOXIDE AND POWER INTERLOCK ON.

(6) Repeat steps 1, 2, 3, 4, and 5 for shelters 3300 and 3400.

5.3.3. CO_2 System Checkout Procedure.

(1) In shelter 3800, ensure that SH31, 32 SYSTEM CUTOFF AND SH33, 34 SYSTEM CUTOFF switches are OFF. Verify that both CO_2 CIRCUIT MONITOR lamps in shelter 2600 are extinguished.

(2) In shelter 3200, set S2 on the fire detection box to POWER INTERLOCK AND CARBON DIOXIDE ON.

(3) In shelter 3800, on the CO_2 control panel, remove the cover on the time delay relay for shelters 3100 and 3200 and measure an open across the contacts (see Figure 5-3).

(4) In shelter 3200, blow smoke directly into the CO_2 area fire detector. Verify the following:

a. In shelter 2600, the 3200 CO_2 AREA tab on the alarm annuciator panel drops and the buzzer and bell sound.

b. In shelters 3100 and 3200, the bells on the fire detector boxes sound.

c. Approximately 30 seconds after the alarms sound, the time delay relay in shelter 3800 energizes.

(5) On the fire detection boxes in shelters 3100 and 3200, set S1 to ALARM BELL DISABLE and verify that the alarm bells are disabled. Reset S1 to ALARM BELL ON.

(6) In shelter 3200, in the CO_2 area, depress the reset button on the fire detector and verify that the detector resets and that the buzzer silences.

(7) In shelter 2600, reset the alarm and trouble annuciator panels and verify that the buzzers and bell are silenced.

(8) Verify that the time delay relay is deenergized.

(9) Repeat steps 4 through 7 for shelter 3100.

(10) Replace the cover on the time delay relay.

(11) Repeat steps 2 through 10, substituting 3400 and 3300 for 3200 and 3100 respectively.

5.3.4. Transmitter Power Shutdown Checkout Procedure.

(1) In shelter 3800, at the CO_2 controls, ensure that the SH31, 32 SYSTEM CUTOFF AND SH33, 34 SYSTEM CUTOFF switches are off. Set S2 on the fire detection boxes to POWER INTERLOCK AND CARBON DIOXIDE ON.

(2) Turn on the air conditioners in shelters 3100 and 3200 (check that circuit breakers CB4 and CB6 on panel 3500A4 and CB5 on panel 3500A3 are set to ON).

(3) Consult the Loran Transmitting Set Manual (CG-273-103) and turn on the transmitters.

(4) In shelter 3200, in the CO_2 area, blow smoke directly into the fire detector (cigarette smoke is adequate) and verify the following:

a. Power is removed from the air conditioners and transmitters in shelters 3100 and 3200.

b. In shelter 2600, the 3200 CO_2 AREA tab on the alarm annuciator panel drops and the buzzer and bell sound.

c. In shelters 3100 and 3200, the bells on the fire detection boxes sound.

d. In shelter 3200, the buzzer sounds on the fire detector.

(5) In shelter 3200, in the CO_2 area, depress the reset button on the fire detector. Reset circuit breakers CB4, CB6, and CB5 and verify that power is restored to the air conditioners and the transmitter.

(6) Repeat steps 2 through 6 for shelters 3100, 3300, and 3400.

5.3.5. CO_2 Activation Checkout Procedure.

(1) In shelter 3800, disconnect the flexible electrical connectors from the discharge plugs of the CO_2 cylinder discharge heads and from the two selector valves (see Figure 5-4 and 5-5).

(2) Using a jumper wire, short the two electrical connectors just removed from the CO_2 cylinders.

(3) Insert the pigtails of a lamp test socket into the flexible connector for the selector valve serving shelters 3100 and 3200 (upper valve). A 40-watt incandescent lamp is adequate for this checkout.

(4) In shelter 3800, set the throwover switch to MAIN and set the SH31, 32 SYSTEM CUTOFF switch to ON.

(5) In shelters 3100 and 3200, verify that the S2 switches on the fire detection boxes are set to POWER INTERLOCK AND CARBON DIOXIDE ON.

(6) In shelter 3200, blow smoke directly into the fire detector in the CO_2 area and verify the following:

a. In shelters 3100 and 3200, alarm bells sound.

b. In shelter 2600, the 3200 CO_2 AREA tab on the alarm annuciator drops and the buzzer and bell sound.

c. In shelter 3800, the test lamp glows after 30 seconds.

This indicates that the CO_2 system would have been activated had the discharge heads been connected.

(7) In shelter 3200, in the CO_2 area, depress the reset button on the fire detector.

(8) In shelter 3800, verify that the test lamp is extinguished.

(9) In shelter 2600, reset the alarm and trouble annuciator panels.

(10) Repeat steps 1 through 9 for shelter 3100, using the reserve switch in step 4.

(11) Repeat steps 1 through 9 for shelters 3300 and 3400.

(12) After the checkout is complete, set the SYSTEM CUTOFF switches to OFF and reconnect the discharge heads on the CO_2 cylinders.

5.3.6. Annuciator Panel Testing and Adjustment.

5.3.6.1. Testing and Adjustment of Annuciator Drop Relays. If the annunciator drops fall from vibration, or fail to fall when activated from the detector, or fail to drop completely when activated, the following adjustment procedure should be performed. (See figure 5-6.)

a. Move the shutter upward by hand until it touches the stop and then release it. The shutter should return to rest on the armature lip. If the shutter sticks at the top, use curved needle nose pliers to adjust the shutter stop tabs forward to limit shutter travel to 1/8" above the armature lip. If the problem persists, the two relay mounting screws should be loosened and the relay lowered slightly to reduce penetration of the right contact rod into the upper clips.

b. Move the shutter to the "cocked" position. Press on the armature as close to the pivot point as possible and hold it in. The shutter should fall past the momentary contacts on the left. If the contacts restrict the fall of the shutter, they should be bent slightly outward so that the contact rod just touches the two contacts during its fall.

c. While holding the shutter up against the stops, press the armature in and then release it. The armature should spring forward with a positive action. If the return spring is weak, the relay should be replaced to avoid false tripping from vibration.

d. Set the shutter in the "cocked" position. Press and then release the armature and allow the shutter to fall slowly while restricting its motion with one finger. If the armature lip scrapes against the back of the shutter as the shutter descends, the armature stop needs adjustment. Using curved needle nose pliers, bend the armature stop back until the armature lip clears the back of the shuttter.

Be sure that the armature lip and the shutter tab still overlap enough to prevent false tripping due to vibration (approximately 1/32").

5.3.6.2. Adjustment of Reset Rack Assembly.

a. Check that all horizontal bars of the reset rack are straight and that they are perpendicular to the vertical members. If not, straighten them.

b. In the resting position, the reset rack should hold the left main contacts closed and the right main contacts open about 1/8" to 3/16". If it does not, bend the reset rack stops to achieve this.

c. Release all of the drops. Lift the reset rack slightly at the center of the bottom bar. The 4 reset rack stops should allow just enough upward travel to reset all the drops. If they do not reset, bend the stops accordingly.

5.3.6.3. Electrical Testing of Annuciator Panels.

a. After all adjustments have been completed, the trouble annuciator should be tested. This can be done at the panel by connecting a clip lead to terminal A (neutral white wire) and touching the other end of the lead to each of terminals 1 through 24 of the trouble panel. As each drop falls, the buzzer at the lower right should sound. It should be possible to silence the buzzer by lifting the reset rack just enough to momentarily close the main contacts on the right. Failure of the buzzer to activate may be caused by improper adjustment of the momentary clips with respect to the left contact rod. See step (b) in paragraph 5.3.6.1. to correct this.

b. The alarm annuciator should be tested similarly, except that terminal "A" is a black wire (115 V.A.C.) and the wires on terminals "14" and "16" should be disconnected before touching the other terminals. The alarm bell in shelter 2600 will ring when the buzzer is activated. This may be silenced after the first drop is tested.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
1	CB1	1100A1	1100E18 and 1100E19 1100E18 and 1100E20	480 volts	
2	CB2	1100A1	1100E11 and 1100E12 1100E11 and 1100E13	480 volts	
3	CB3	N/A	N/A	N/A	Provides 480 volts to secondary distribution panel 1100A2. There are no convenient points to measure voltage.
4	CB1	1100A2	1100E1 and 1100E2 1100E1 and 1100E3	480 volts	
5	CB2	1100A2	1100E4 and 1100E5 1100E4 and 1100E6	480 volts	
6	CB3	110	TB4-1 and TB4-2 TB4-1 and TB4-3 (Fuel Transfer Pump)	480 volts	
7	CB1	3500A1	3500E32 and 3500E33 3500E32 and 3500E34	480 volts	
8	CB2	3500A1	3500E35 and 3500E36 3500E35 and 3500E37	480 volts	
9	CB3	3500A1	3500E10 and 3500E11 3500E10 and 3500E12	480 volts	

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
10	CB4	3500A1	3500E13 and 3500E14 3500E13 and 3500E15	480 volts	
11	CB2	3500A2	3500E16 and 3500E17 3500E16 and 3500E18	480 volts	
12	CB4	3500A2	3500E19 and 3500E20 3500E19 and 3500E21	480 volts	
13	CB1	3500A2	3500E22 and 3500E23 3500E22 and 3500E24	480 volts	
14	CB3	3500A2	3500E25 and 3500E26 3500E25 and 3500E27	480 volts	
15	CB5	3500A2	3500E7 and 3500E8 3500E7 and 3500E9	480 volts	
16	CB1	1100A3	N/A	N/A	Check convenience outlets at generator no. 1 for 115/208 volts.
17	CB2	1100A3	N/A	N/A	Check convenience outlets at generator no. 2 for 115/208 volts.
18	CB3	1100A3	N/A	N/A	Check convenience outlets at generator no. 3 for 115/208 volts.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
19.	CB4	1100A3	N/A	N/A	In shelter 1100 set power switch on emergency light to ON and verify that AC ON lamp lights.
20	CB5	1100A3	N/A	N/A	Check convenience outlets in shelter 1100 for 115 volts.
21	CB6	1100A3	N/A	N/A	In shelter 1200 set power switch on emergency light to ON and verify that AC On lamp lights.
22	CB7	1100A3	N/A	N/A	Wall clock in shelter 1100 runs when CB7 is set to ON.
23	CB8	1100A3	N/A	N/A	In shelter 1300 set power switch on emergency light to ON and verify that AC ON lamp lights.
24	CB9	1100A3	1200TB1-7 and 1200TB1-8	115 volts	
25	CB10	1100A3	N/A	N/A	In shelter 1100 set heater control on heater to HIGH and verify heater operation.
26	CB11	1100A3	1300TB1-9 and 1300TB1-10	115 volts	

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
27	CB12	1100A3	N/A	N/A	In shelter 1300 set heater control to HIGH and verify heater operation.
28	CB13	1100A3	1300TB1-7 and 1300TB1-8	115 volts	
29	CB14	1100A3	TB1-6 and TB1-5 (fire detector box) 1200TB1-10 and 1200TB1-9	115 volts	
30	CB15	1100A3	N/A	N/A	In shelter 1200 set heater control on heater to HIGH and verify operation.
31	CB16	1100A3	1100E17 and 1100E14 1100E17 and 1100E15 1100E17 and 1100E16	115 volts	
31A	CB-17	1100A3	N/A	N/A	Check convenience outlets at generator No. 4 for 115/208 volts.
32	CB1	2600A1	2200E3 and 2200E4	208 volts	
33	CB2	2600A1	2200E5 and 2200E6	208 volts	
34	CB3	2600A1	2200E1 and 2200E2	208 volts	
35	CB4	2600A1	2300E4 and 2300E1	115 volts	

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Curcuit Breaker Panel	Measure Between	Indication	Notes
			2300E4 and 2300E2 2300E4 and 2300E3		
36	CB5	2600A1	2A7TB5-1 and 2A7TB5-2 (shelter 2600)	115 volts	
37	CB6	2600A1	TB1-5 and TB-6 (fire detector box)	115 volts	
38	CB7	2600A1	N/A	N/A	Check convenience outlets in shelter 2400 for 115 volts. Check that exhaust fan in shelter 2400 is enclosed.
39	CB8	2600A1	N/A	N/A	In shelter 2400 set power switch on emergency light to ON and verify that AC ON lamp lights.
40	CB9	2600A1	N/A	N/A	Verify refrigerator and stove operation in shelter 2400.
41	CB10	26001A	2400TB1-11 and 2400TB1-12	115 volts	
42	CB11	2600A1	N/A	N/A	In shelter 2400 set heater control on heater.to HIGH and verify heater operation.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
43	CB12	2600A1	N/A	N/A	In shelter 2500 set power switch on emergency light to ON and verify that AC ON lamp lights.
44	CB13	2600A1	N/A	N/A	Check convenience outlets in shelter 2500 for 115 volts.
45	CB-14	2600A1	N/A	N/A	In shelter 2600 set power switch on emergency light to ON and verify that AC ON lamp lights.
46	CB15	2600A1	N/A	N/A	In shelter 2500 set heater control on heater to HIGH and verify heater operation.
47	CB16	2600A1	N/A	N/A	In shelter 2700 set power switch on emergency light to ON and verify that AC ON lamp lights.
48	CB17	2600A1	N/A	N/A	Check convenience outlets in shelter 2600 for 115 volts.
49	CB18	2600A1	N/A	N/A	Check workbench outlets in shelter 2600 for 115 volts.
50	CB19	2600A1	N/A	N/A	In shelter 2600 set heater control on heater to HIGH and verify heater operation.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
51	CB20	2600A1	N/A	N/A	Check convenience outlets in shelter 2700 for 115 volts.
52	CB21	2600A1	N/A	N/A	In shelter 2700 set heater control on heater to HIGH and verify heater operation.
53	CB1	3500A3	N/A	N/A	Check convenience outlets in shelter 3100 for 115 volts.
54	CB2	3500A3	N/A	N/A	Check convenience outlets in shelter 3300 for 115 volts.
55	CB3	3500A3	N/A	N/A	Check convenience outlets in shelter 3200 for 115 volts.
56	CB4	3500A3	N/A	N/A	Check convenience outlets in shelter 3400 for 115 volts.
57	CB5	3500A3	3200TB1-5 and 3200TB1-6	208 volts	
58	CB6	3500A3	3400TB1-5 and 3400TB1-6	208 volts	
59	CB7	3500A3	N/A	N/A	In shelter 3100 set power switch on emergency light to ON and verify that AC ON lamp lights.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
60	CB8	3500A3	N/A	N/A	In shelter 3300 set power switch on emergency light to ON and verify that AC ON lamp lights.
61	CB9	3500A3	N/A	N/A	In shelter 3200 set power switch on emergency light to ON and verify that AC ON lamp lights.
62	CB10	3500A3	N/A	N/A	In shelter 3400 set power switch on emergency light to ON and verify that AC ON lamp lights.
63	CB11	3500A3	N/A	N/A	Check convenience outlets in shelter 3500 for 115 volts.
64	CB12	3500A3	N/A	N/A	In shelter 3500 set power switch on emergency light to ON and verify that AC ON lamp lights.
65	CB13	3500A3	N/A	N/A	In shelter 3500 set heater control on heater to HIGH and verify heater operation.
66	CB14	3500A3	N/A	N/A	In shelter 3600 set power switch on emergency light to ON and verify that AC ON lamp lights.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
67	CB15	3500A3	N/A	N/A	Check convenience outlets in shelter 3600 for 115 volts.
68	CB16	3500A3	N/A	N/A	In shelter 3700 set power switch on emergency light to ON and verify that AC ON lamp lights.
69	CB17	3500A3	N/A	N/A	In shelter 3600 set heater control on heater to HIGH and verify heater operation.
70	CB18	3500A3	N/A	N/A	In shelter 3800 set power switch on emergency light to ON and verify that AC ON lamp lights.
71	CB19	3500A3	N/A	N/A	Check convenience outlets in shelter 3700 for 115 volts.
72	CB20	3500A3	3800TB1-7 and 3800TB1-8	115 volts	
73	CB21	3500A3	N/A	N/A	In shelter 3700 set heater control on heater to HIGH and verify heater operation.
74	CB22	3500A3	N/A	N/A	Check convenience outlets in shelter 3800 for 115 volts.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
75	CB23	3500A3	N/A	N/A	Check machine tools outlets in shelter 3800 for 115 volts.
76	CB24	3500A3	3800TB2-1 and 3800TB2-2	115 volts	
77	CB25	3500A3	N/A	N/A	Tower lights light when CB25 is set to ON.
78	CB1	3500A4	N/A	N/A	Provides 115/208 volts to relay assembly 1A3A3 in shelter 3300. There are no convenient points to measure voltage. See Loran Transmitter Sets manual for appropriate turn-on procedures.
79	CB2	3500A4	N/A	N/A	Provides 115/208 volts to relay assembly 1A3A3 in shelter 3100. There are no convenient points to measure voltage. See Loran Transmitter Sets manual for appropriate turn-on procedures.
80	CB4	3500A4	3100TB1-5 and 3100TB1-6	208 volts	
81	CB6	3500A4	3100TB1-7 and 3100TB1-8	208 volts	
82	CB3	3500A4	3300TB1-5 and 3300TB1-6	208 volts	

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
83	CB5	3500A4	3300TB1-7 and 3300TB1-8	208 volts	
84	CB1	2300A1	N/A	N/A	In shelter 2300 set power switch on emergency light to ON and verify that AC ON lamp lights.
85	CB2	2300A1	N/A	N/A	Check convenience outlets in shelter 2300 for 115 volts.
86	CB3	2300A1	N/A	N/A	Set PRIMARY POWER switch on Amplifier, Radio Frequency set No. 1 (shelter 2300) to ON and verify that power on lamps light.
87	CB4	2300A1	N/A	N/A	Set PRIMARY POWER switch on Amplifier, Radio Frequency set No. 2 (shelter 2300) to ON and verify that power on lamps light.
88	CB5	2300A1	N/A	N/A	Check CTT-28 KSR and CTT-28 ASR outlets in shelter 2300 for 115 volts.
89	CB6	2300A1	Black and white wires on AC outlet strip	115 volts	AC outlet strip is in console located in shelter 2300.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
90	CB7	2300A1	N/A	N/A	Check Loran C teletype-writer outlets in shelter 2300 for 115 volts.
91	CB13	Filter room shelter 2200	FL1 and FL2 (filter room shelter 2200)	115 volts	
92	CB14	Filter room shelter 2200	FL3 and FL4 (filter room shelter 2200)	115 volts	
93	CB15	Filter room shelter 2200	N/A	N/A	Overhead light in filter room lights.
94	CB9 and CB10	2200A1	N/A	N/A	Check convenience outlets in shelter 2100 for 115 volts. This voltage should remain 115 volts for both switch positions (up or down) of OUTLETS SHELTER 21 switch S5 on panel 2200A1.
95	CB5 and CB6	2200A1	N/A	N/A	Check convenience outlets in shelter 2200 for 115 volts. This voltage should remain 115 volts for both switch positions (up or down) of OUTLETS SHELTER 22 switch S3 on panel 2200A1.

TABLE 5-1. INSTALLATION CHECKOUT PROCEDURES (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Indication	Notes
96	CB7 and CB8	2200A1	N/A	N/A	In shelter 2100 set power switch on emergency light to ON and verify that AC ON lamp lights. Lamp should remain lit for both switch positions (up or down) of LIGHTS SHELTER 21 switch S4 on pane 22000A1.
97	CB3 and CB4	2200A1	N/A	N/A	In shelter 2200 set power switch on emergency light to ON and verify that AC ON lamp lights. Lamp should remain lit for both switch positions (up or down) of LIGHTS SHELTER 22 switch S2 on panel 2200A1.
98	CB11 and CB12	2200A1	A5P1-A and A5P1-C (shelter 2200)	115 volts	
99	CB1 and CB2	2200A1	N/A	N/A	Check CTT- 28ASR outlets in in shelter 2200 for 115 volts. This voltage should remain 115 volts for both switch positions (up or down) of TELETYPE SHELTER 22 switch S1 on panel 2200A1.

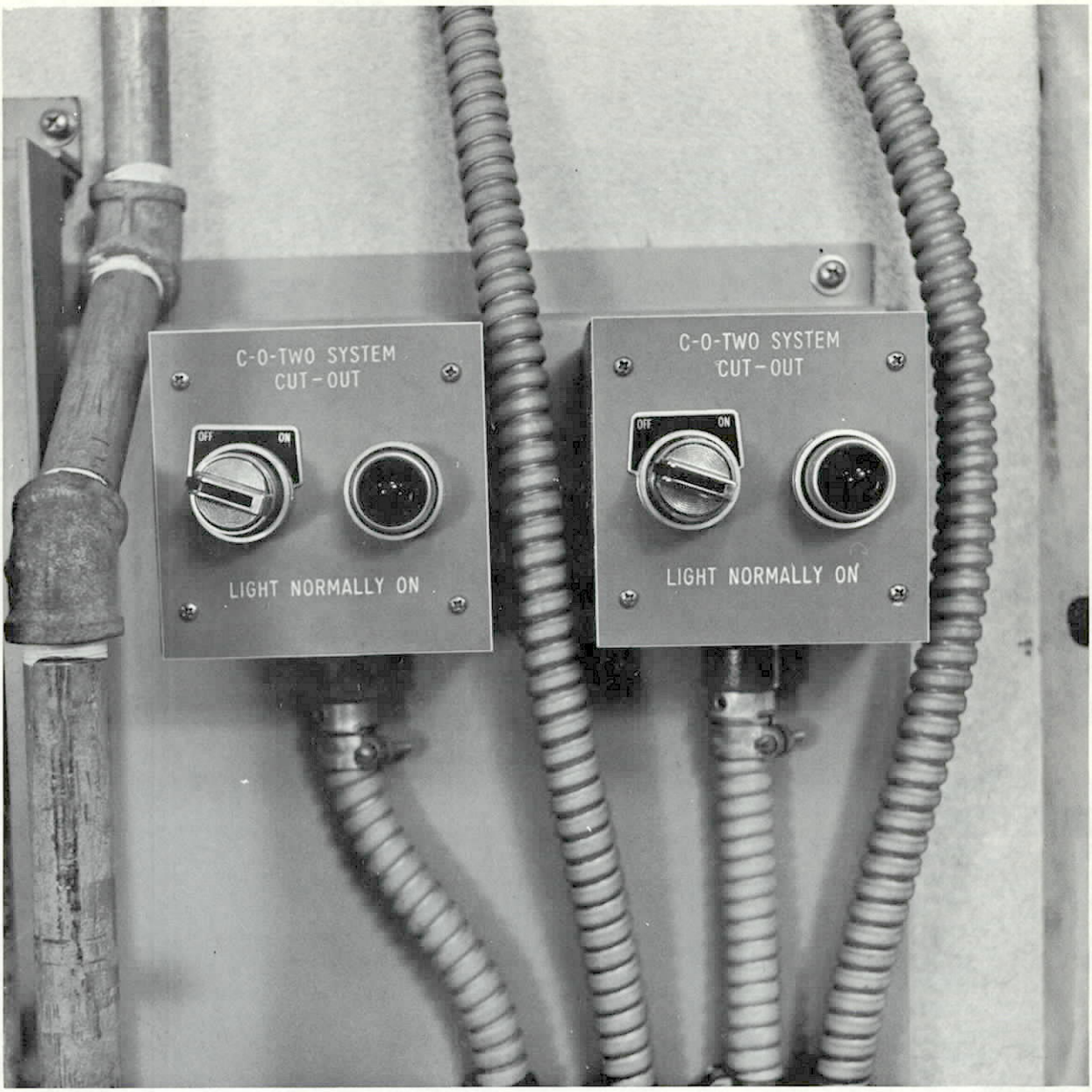


Figure 5-1

CO_2 system cutout switches in the off position, the SH 31-32 switch is on the left and the SH 33-34 switch is on the right.

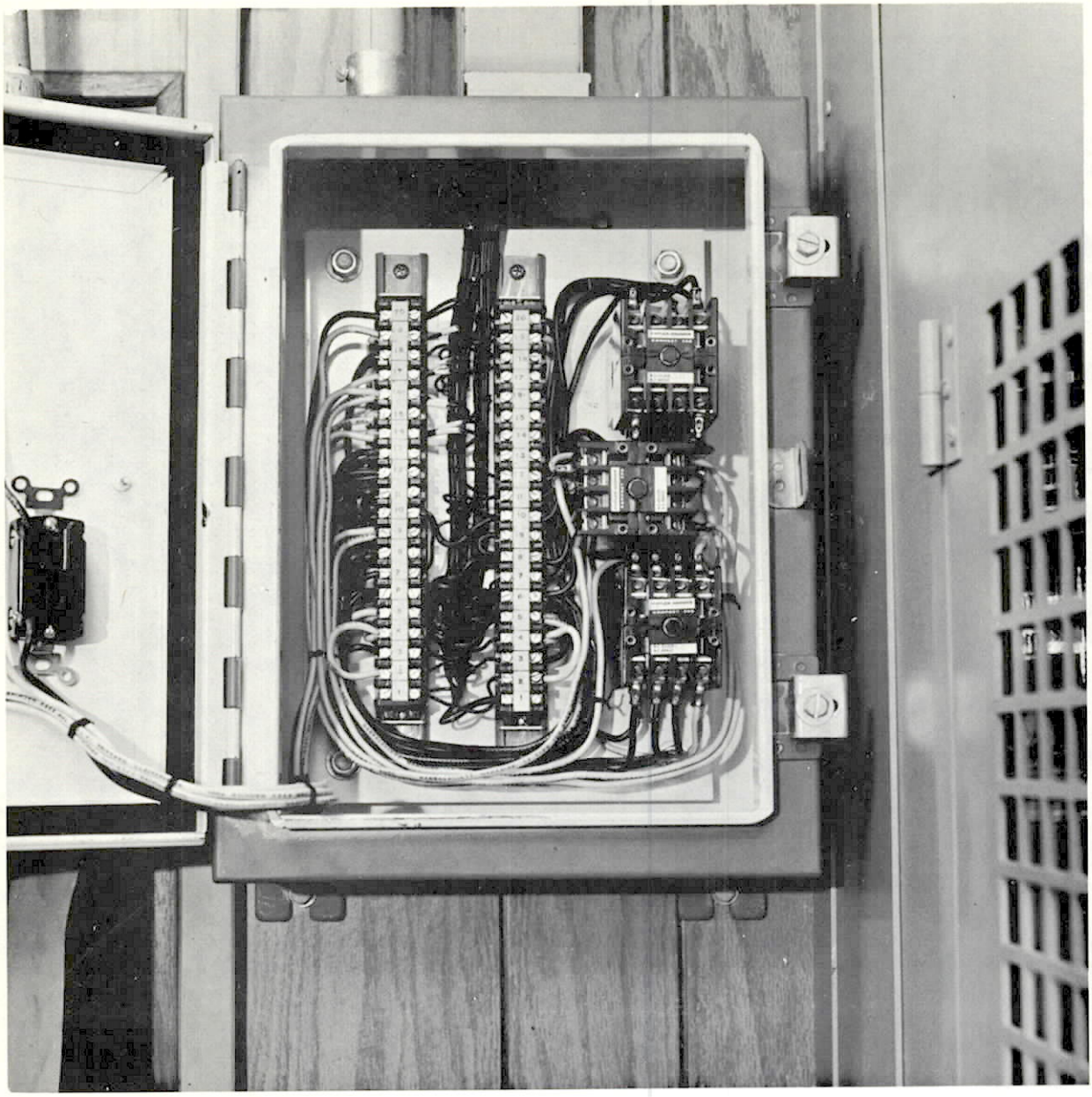


Figure 5-2

Interior of a fire detection box. Relay K1 is lower right, K2 is upper right, and K3 is right center. Some boxes do not have all three relays.

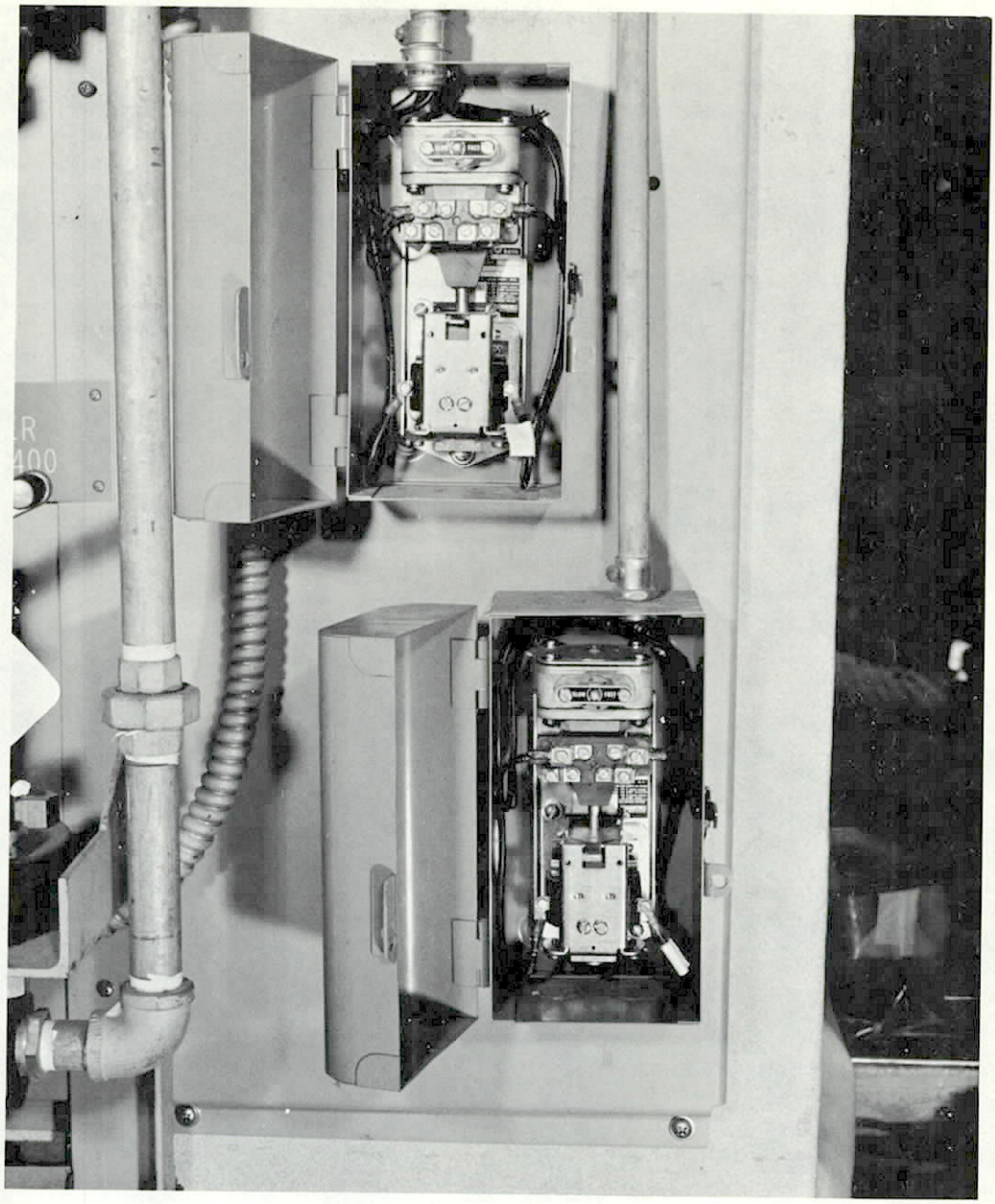


Figure 5-3

CO_2 time delay relays.

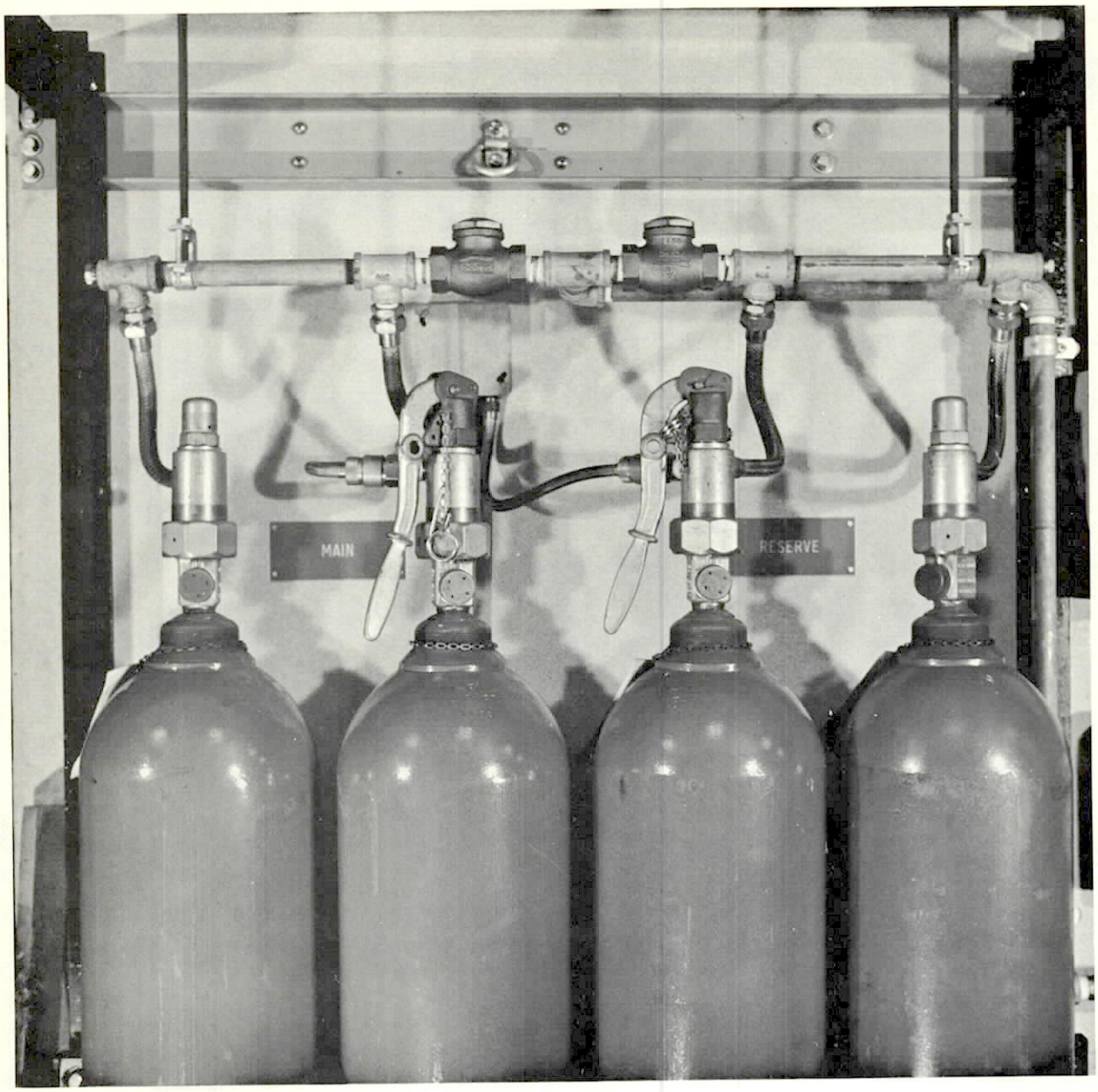


Figure 5-4

CO_2 cylinder discharge heads.

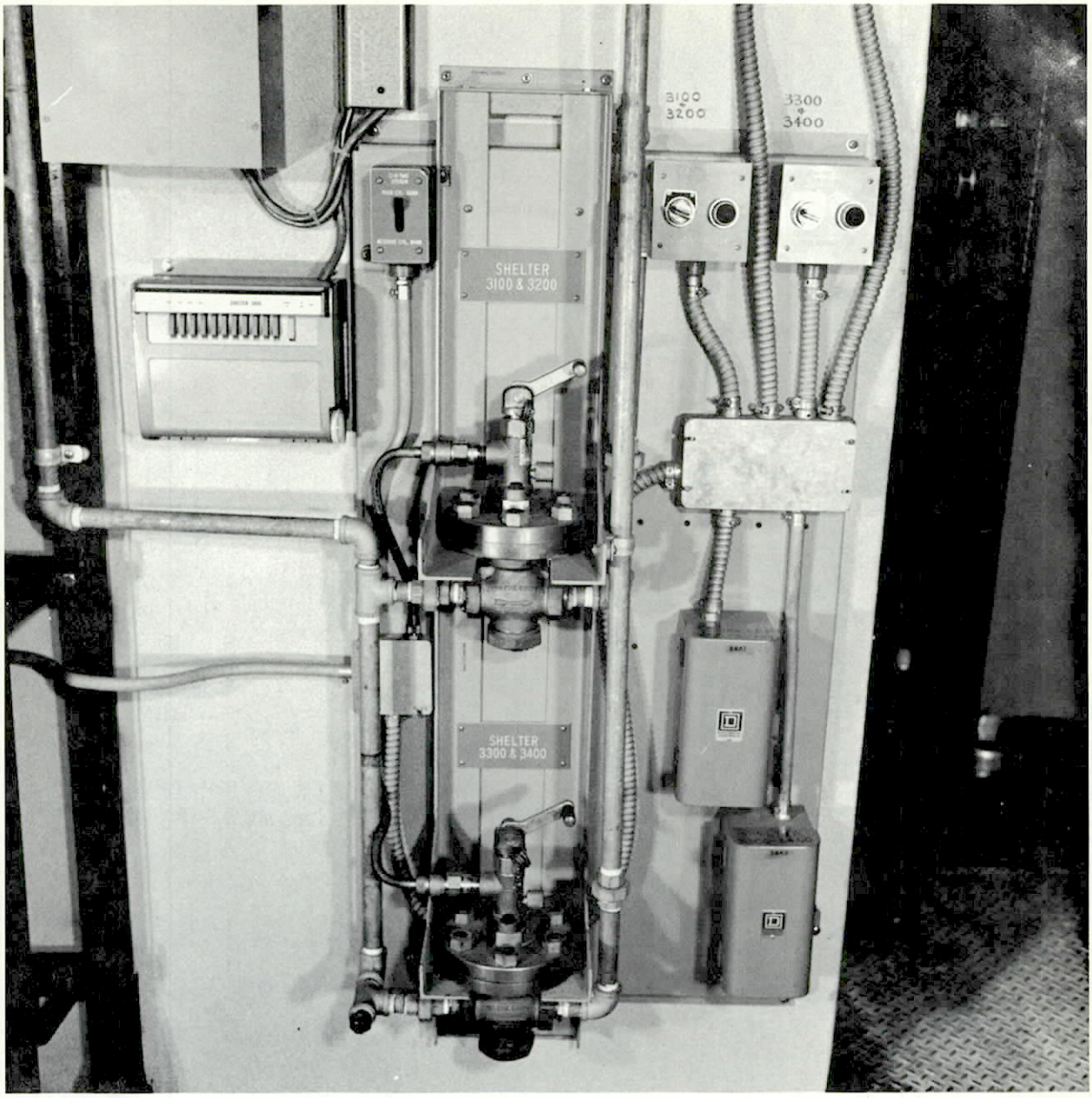


Figure 5-5

CO_2 selector valves

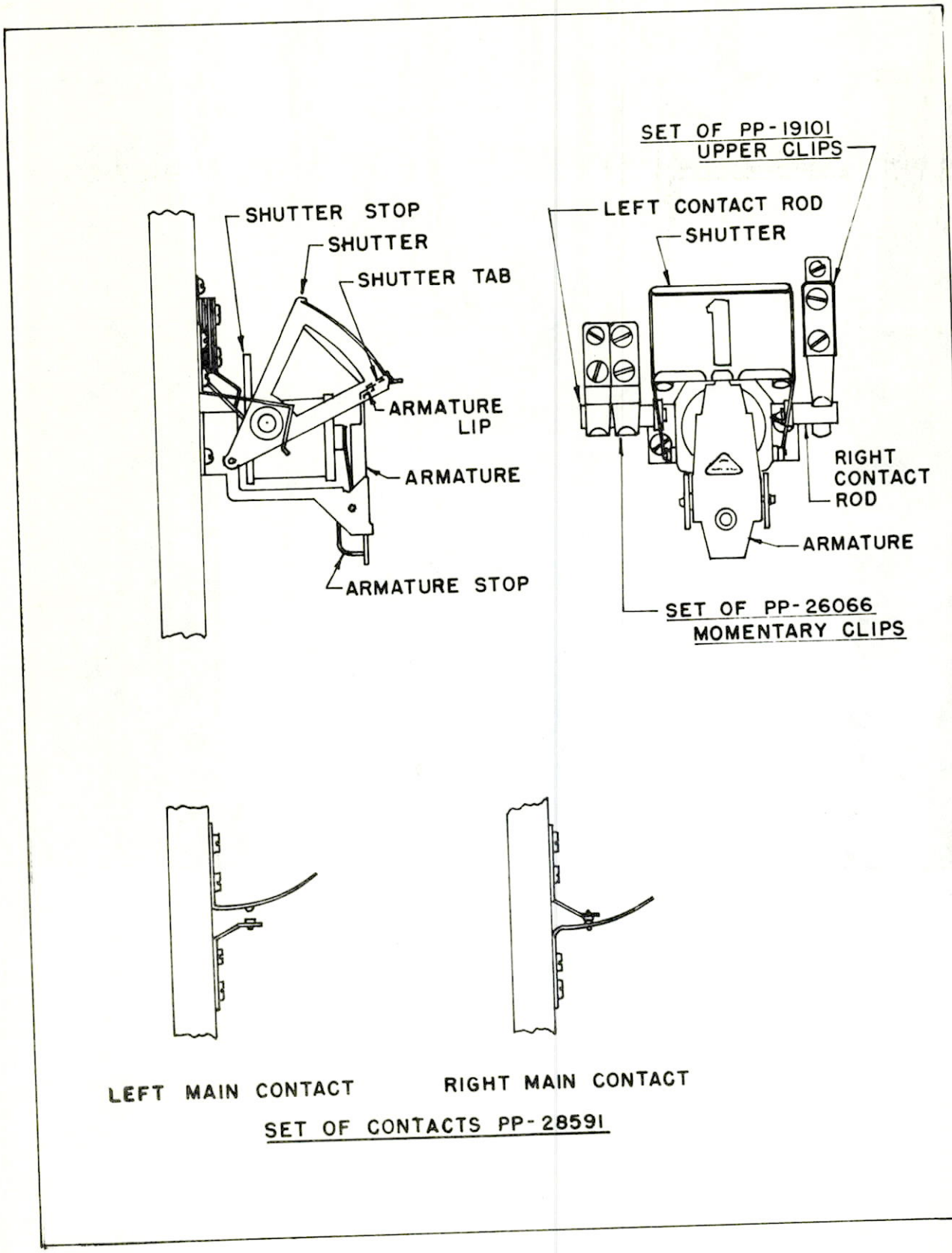


Figure 5-6

Annunciator drop relay.

CHAPTER 6

OPERATION

This Chapter contains power turn-on procedures for the ATLS Operational Facility. These operating procedures supplement the installation check out procedures in the previous chapter. They provide a concise explanation of electrical operation as well as a means of insuring that all circuit breakers are in the proper position for full station operation. (Reference should be made to the appropriate equipment manual for specific equipment turn-on and operating procedures (See Table 1-1)).

6.1. CONTROLS AND INDICATORS. Tables 6-1 through 6-19 list the shelter controls and indicators and explain their functions. Figures 6-1 through 6-19 show these controls and indicators.

6.2. PRE-OPERATIONAL CHECKS. After installation, but before operation, check all terminal block and circuit breaker panel connections for tightness. A loose connection within a circuit breaker panel will be indicated by a local hot spot on the panel. In addition, check all servit post connectors on the power panels for tightness.

WARNING: In shelters 3100, 3200, 3300, and 3400, the air conditioner must be operated only in the RECIRCULATION (closed) position. Check before operation.

6.3. POWER TURN-ON PROCEDURES. To apply power to the shelters, proceed as follows:

NOTE

The smoke detectors in the shelters are very sensitive. Therefore, DO NOT smoke inside the shelters. Smoke will activate the fire detection system.

6.3.1. Set all circuit breakers to the OFF position in shelters 1100, 2200, 2300, 2600, and 3500. (In shelter 2200, set switches S1 through S6 in their center-off position and leave the circuit breakers ON).

6.3.2. Start up one of the power generators and adjust it for 460 V 60Hz operation.

6.3.3. On the generator disconnect panel, set the circuit breaker for the operating generator to the ON position.

6.3.4. In shelter 1100, at the 460V main distribution panel (11A1), set circuit breakers CB1, CB2, and CB3 to the ON position.

6.3.5. Be sure that the following controls are in the OFF position: Shelter 1100-fuel transfer pump; shelter 2100-large air conditioners; shelter 2300-large air conditioner.

6.3.6. In shelter 1100, at the 460 VOLT SECONDARY DISTRIBUTION panel (11A2), set circuit breakers CB1, CB2, and CB3 to the ON position.

6.3.7. In shelter 1100, at the 115/208 VOLT DISTRIBUTION panel (11A3), set circuit breakers CB1 through CB17 to the ON position.

6.3.8. In shelters 2100 and 2300, adjust large air conditioners to 50% Relative humidity and 55° F (only one large air conditioner should be turned on at a time in shelter 2100). Do not turn a large air conditioner on until at least 30 minutes after power is supplied to the air conditioner circuit. (This amount of time is necessary to preheat the air conditioner's crankcase).

6.3.9. In shelter 2400, be sure that the water pump switch and the water heater switch are in the OFF position.

6.3.10. In shelters 1100, 1200, and 1300, on the FIRE DETECTION BOXES, be sure that switch S1 (alarm bell) is in the ON (up) position.

6.3.11. In shelter 2600, at the 115/208 VOLT DISTRIBUTION panel (26A1), set circuit breakers CB1 through CB21 to the ON position.

6.3.12. In shelters 2600, 2500, 2400 and 2700, be sure that switch S1 (alarm bell) at the FIRE DETECTION boxes is in the ON (up) position.

6.3.13. In shelter 2300, at the 115/208 VOLT DISTRIBUTION panel (23A1) set circuit breakers CB1 through CB7 to the ON position.

6.3.14. In shelter 2200, set circuit breaker switches CB13 and CB14 to the ON position.

6.3.15. In shelter 2200, set switches S1 through S6 to the ON position.

6.3.16. In shelters 2100 and 2200, ensure that switch S1 (alarm bell) in the FIRE DETECTION box is in the ON (up) position.

6.3.17. In shelters 3200 and 3400, be sure that the controls for the large air conditioners are in the OFF position (2 in each shelter).

6.3.18. In shelter 3500, at the left-hand 460V distribution panel (35A2), set CB1 through CB5 to the ON position.

6.3.19. In shelter 3500, at the 460V right-hand panel (35A1), set circuit breakers CB1 through CB4 to the ON position.

6.3.20. In shelter 3500, at the left-hand 208V panel (35A4), set circuit breakers CB1 through CB6 to the ON position.

6.3.21. In shelter 3500, at the right-hand 208V panel (35A3), set circuit breakers CB1 through CB25 to the ON position.

6.3.22. In shelters 3100, 3200, 3300, and 3400, ensure that switch S1 (alarm bell) and switch S2 (power interlock and carbon dioxide) are in the ON (up) position.

6.3.23. In shelters 3500, 3600, 3700, and 3800, ensure that switch S1 (alarm bell) is in the ON (up) position.

6.3.24. In shelters 3800, at the CO_2 Control panel, ensure that SH31, 32 SYSTEM CUTOFF switch and the SH33, 34 SYSTEM CUTOFF switch are in the ON (up) position. Ensure that the THROWOVER switch is in the MAIN position.

6.3.25. In shelters 3200 and 3400, adjust the large air conditioners to 50% relative humidity and 75° F. Do not turn a large air conditioner on until at least 30 minutes after power is applied to the air conditioner. (This amount of time is necessary to preheat the air conditioner's crankcase).

6.3.26. In shelter 3800, ensure that the two storage batteries for the intercom system are fully charged and that the liquid level of the batteries is adequate (see paragraph 4.8.15). If charging of the batteries is necessary, an external battery charger must be used. The built-in trickle charger is only capable of maintaining fully charged batteries at full charge. Connect the batteries to the proper battery terminals, observing polarity.

6.3.27. Insert the intercom power supply plug into AC receptacle J6 or J7. In all shelters, at the EMERGENCY LIGHT units, ensure that storage battery liquid levels are adequate (See paragraph 4.8.15).

6.3.28. Set the POWER toggle switch on each EMERGENCY LIGHT unit to the ON position.

6.4. SHUT DOWN PROCEDURE. To disconnect all power from the facility, set CB1, CB2, and CB3 on the 480V main distribution panel (11A1) in shelter 1100 to the OFF position.

6.5. EMERGENCY SHUT DOWN PROCEDURE. In an emergency, all power can be shut down by setting CB1, CB2, CB3, and CB4 on the generator disconnect panel to the OFF position, or by stopping the generators.

TABLE 6-1. SHELTER 1100, 480 VOLT MAIN DISTRIBUTION PANEL 11A1, CONTROLS AND INDICATORS

Fig. 6-1	Control or Indicator	Function
	CB1	Controls application of 480-volts 60-Hz from power input panel 1104B2 to 480 volt circuit breaker panels 35A1 and 35A2 in transmitter power distribution shelter 3500.
	CB2	Controls application of 480-volts 60-Hz from power input panel 1104B2 to step down transformer No. 1. The 3 phase output of the transformer is then applied to 115/208-volt circuit breaker panel 11A3 in power control and distribution shelter 1100.
	CB3	Controls application of 480-volts 60-Hz from power input panel 1104B2 to secondary distribution panel 11A2 in power control and distribution shelter 1100.
	CB4	Spare circuit breaker which controls application of 480-volts 60-Hz from power input panel 1104B2 to power output panel 1104B1.

TABLE 6-2. SHELTER 1100, 480 VOLT SECONDARY DISTRIBUTION PANEL 11A2, CONTROLS AND INDICATORS

Fig. 6-2	Control or Indicator	Function
	CB1	Controls application of 480-volts 60-Hz to large air conditioner unit #1 in timer/synchronizer shelter 2100.
	CB2	Controls application of 480-volts 60-Hz to large air conditioner unit #2 in timer/synchronizer shelter 2100.
	CB3	Controls application of 480-volts 60-Hz to fuel transfer pump.
	CB4	Controls application of 480-volts 60-Hz to large air conditioner unit in communications shelter 2300.

TABLE 6-3. SHELTER 1100, 115/208 VOLT DISTRIBUTION PANEL 11A3, CONTROLS AND INDICATORS

Fig. 6-3	Control or Indictor	Function
	CB1	Controls application of 115/208-volts 60-Hz to generator no. 1.
	CB2	Controls application of 115/208-volts 60-Hz to generator no. 2.
	CB3	Controls application of 115/208-volts 60-Hz to generator no. 3.
	CB4	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems of power control and distribution shelter 1100.
	CB5	Controls application of 115-volts 60-Hz to convenience outlets J7-J18 of power control and distribution shelter 1100.
	CB6	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems of spare parts stowage shelter 1200.
	CB7	Controls application of 115-volts 60-Hz to clock outlet J19 and miscellaneous convenience outlet J20 of power control and distribution shelter 1100.
	CB8	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems of shop and spare parts stowage shelter 1300.
	CB9	Controls application of 115-volts 60-Hz to convenience outlets of spare parts stowage shelter 1200.
	CB10	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in power control and distribution shelter 1100.

TABLE 6-3. SHELTER 1100, 115/208 VOLT DISTRIBUTION PANEL 11A3, CONTROLS AND INDICATORS (Continued)

Fig. 6-3	Control or Indicator	Function
	CB11	Controls application of 115-volts 60-Hz to convenience outlets J6, J7, J10-J16, and the air compressor in shop and spare parts stowage shelter 1300.
	CB12	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in shop and spare parts stowage shelter 1300.
	CB13	Controls application of 115-volts 60-Hz to machine tool outlets J1-J5 in shop and spare parts stowage shelter 1300.
	CB14	Controls application of 115-volts 60-Hz to fire detector units in power control and distribution shelter 1100, spare parts stowage shelter 1200, and shop and spare parts stowage shelter 1300.
	CB15	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in spare parts stowage shelter 1200.
	CB16	Controls application of 115/208-volts 60-Hz to 115/208-volt circuit breaker panel 26A1 in transmitter control shelter 2600, which, in turn, supplies the timer/synchronizer/communications group.
	CB17	Controls application of 115/208-volts 60-Hz to generator no. 4.
	CB18	Spare circuit breaker which controls application of 115/208-volts 60-Hz to output panel 1104B1, Terminals E34-E37.
	CB19	Spare circuit breaker which controls application of 115/208-volts 60-Hz to power output panel 1104B1, Terminals E38-E41.

TABLE 6-4. SHELTER 2200, 115/208 VOLT DISTRIBUTION PANEL, CONTROLS AND INDICATORS

Fig. 6-4	Control or Indicator	Function
	TELETYPE, SHELTER 2200, S1	In up position, applies 115 volts to circuit breakers CB1 and CB2 from transformer 22T1.
		In center position, OFF.
		In down position, applies 115 volts to circuit breakers CB1 and CB2 from transformer 22T2.
	LIGHTS, SHELTER 2200, S2	In up position, applies 115 volts to circuit breakers CB3 and CB4 from transformer 22T1.
		In center position, OFF.
		In down position, applies 115 volts to circuit breakers CB3 and CB4 from transformer 22T2.
	OUTLETS, SHELTER 2200, S3	In up position, applies 115 volts to circuit breakers CB5 and CB6 from transformer 22T1.
		In center position, OFF.
		In down position, applies 115 volts to circuit breakers CB5 and CB6 from transformer 22T2.
	LIGHTS, SHELTER 2100, S4	In up position, applies 115 volts to circuit breakers CB7 and CB8 from transformer 22T1
		In center position, OFF.
		In down position, applies 115 volts to circuit breakers CB7 and CB8 from transformer 22T2.

TABLE 6-4. SHELTER 2200, 115/208 VOLT DISTRIBUTION PANEL, CONTROLS AND INDICATORS (Continued)

Fig. 6-4.	Control or Indicator	Function
	OUTLETS, SHELTER 2100, S5	In up position, applies 115 volts to circuit breakers CB9 and CB10 from transformer 22T1.
		In center position, OFF.
		In down position, applies 115 volts to circuit breakers CB9 and CB10 from transformer 22T2.
	FREQUENCY STANDARD, SHELTER 2100, S6	In up position, applies 115 volts to circuit breakers CB11 and CB12 from transformer 22T2
		In center position OFF.
		In down position, applies 115 volts to circuit breakers CB11 and CB12 from transformer 22T2.
	CB1 & CB2	Control application of 115-volts 60-Hz to teletypewriter outlets J17 and J18 in shelter 2200.
	CB3 & CB4	Control application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in shelter 2200.
	CB5 & CB6	Control application of 115-volts 60-Hz to convenience outlets J5-J16 in shelter 2200.
	CB7 & CB8	Control application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in shelter 2100.
	CB9 & CB10	Control application of 115-volts 60-Hz to convenience outlets in shelter 2100.
	CB11 & CB12	Control application of 115-volts 60-Hz to frequency standard in shelter 2100.

TABLE 6-5. SHELTER 2200, FILTER ROOM, CONTROLS AND INDICATORS

Fig. 6-5A	Control or Indicator	Function
	CB13	Controls application of 208-volts 60-Hz to isolation transformer 22T1 in timer/synchronizer control shelter.
	CB14	Controls application of 208-volts 60-Hz to isolation transformer 22T2 in timer/synchronizer control shelter 2200.
Fig. 6-5B	CB15	Controls application of 115-volts 60-Hz to light and convenience outlet in filter room.

TABLE 6-6. SHELTER 2300, 115/208 VOLT DISTRIBUTION PANEL 23A1, CONTROLS AND INDICATORS

Fig. 6-6	Control or Indicator	Function
	CB1	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems of communication shelter 2300.
	CB2	Controls application of 115-volts 60-Hz to convenience outlets of communications shelter 2300.
	CB3	Controls application of 208-volts 60-Hz to communications transmitter 1 in communications shelter 2300.
	CB4	Controls application of 208-volts 60-Hz to communications transmitter 2 in communications shelter 2300.
	CB5	Controls application of 115-volts 60-Hz to communications teletypewriter outlets J19 and J20 in communications shelter 2300.
	CB6	Controls application of 115-volts 60-Hz to communications console in communications shelter 2300.
	CB7	Controls application of 115-volts 60-Hz to Loran-C teletypewriter J23 and J24 outlets in communications shelter 2300.

TABLE 6-7. SHELTER 2600, 115/208 VOLT DISTRIBUTION PANEL 26A1, CONTROLS AND INDICATORS

Fig. 6-7	Control or Indicator	Function
	CB1	Controls application of 208-volts 60-Hz to power isolation transformer 1 via input panel 2216B3 in timer/synchronizer control shelter 2200.
	CB2	Controls application of 208-volts 60-Hz to power isolation transformer 2 via input panel 2216B3 in timer/synchronizer control shelter 2200.
	CB3	Controls application of 208-volts 60-Hz to the auxiliary heater in timer/synchronizer control shelter 2200.
	CB4	Controls application 115/208-volts 60-Hz to 115/208-volt distribution panel 23A1 in communications shelter 2300.
	CB5	Controls application of 115-volts 60-Hz to electrical equipment cabinet 2A7 in the transmitter control group, unit 2. The transmitter control group unit 2,is located in transmitter control shelter 2600.
	CB6	Controls application of 115-volts 60-Hz to fire detection units in spare parts stowage shelter 2500, transmitter control shelter 2600, spare parts stowage shelter 2400, timer/synchronizer shelter 2100, timer/synchronizer control shelter 2200, communications shelter 2300, and office shelter 2700, and to the alarm and trouble annunciator panels in transmitter control shelter 2600.
	CB7	Controls application of 115-volts 60-Hz to convenience outlets and exhaust fan in spare parts stowage shelter 2400.
	CB8	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in spare parts stowage shelter 2400.

TABLE 6-7. SHELTER 2600, 115/208 VOLT DISTRIBUTION PANEL 26A1, CONTROLS AND INDICATORS (Continued)

Fig. 6-7.	Control or Indicator	Function
	CB9	Controls application of 115-volts 60-Hz to refrigerator and stove in spare parts stowage shelter 2400.
	CB10	Controls application of 115-volts 60-Hz to water pump, water heater, and water cooler in spare parts stowage shelter 2400.
	CB11	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in spare parts stowage shelter 2400.
	CB12	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in spare parts stowage shelter 2500.
	CB13	Controls application of 115-volts 60-Hz to convenience outlets in spare parts stowage shelter 2500.
	CB14	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter control shelter 2600.
	CB15	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in spare parts stowage shelter 2500.
	CB16	Control application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in office shelter 2700.
	CB17	Controls application of 115-volts 60-Hz to convenience outlets J5-J14 in transmitter cntrol shelter 2600.
	CB18	Controls application of 115-volts 60-Hz to work bench convenience outlets J18-J25 in transmitter control shelter 2600.

TABLE 6-7. SHELTER 2600, 115/208 VOLT DISTRIBUTION PANEL 26A1, CONTROLS AND INDICATORS (Continued)

Fig. 6-7	Control or Indicator	Function
	CB19	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in transmitter control shelter 2600.
	CB20	Controls application of 115-volts 60-Hz to convenience outlets in office shelter 2700.
	CB21	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in office shelter 2700.

TABLE 6-8. SHELTER 3500, 480 VOLT DISTRIBUTION PANEL (RIGHT HAND) 35A1, CONTROLS AND INDICATORS

Fig. 6-8	Control or Indicator	Function
	CB1	Controls application of 480-volts 60-Hz to relay assembly 1A3A3 in transmitter no. 1, shelter 3300.
	CB2	Controls application of 480-volts 60-Hz to relay assembly 1A3A3 in transmitter no. 2, shelter 3100.
	CB3	Controls application of 480-Volts 60-Hz to secondary heat exchanger no. 1.
	CB4	Controls application of 480-volts 60-Hz to secondary heat exchanger no. 2.

TABLE 6-9. SHELTER 3500, 480 VOLT DISTRIBUTION PANEL (LEFT HAND) 35A2, CONTROLS AND INDICATORS

Fig. 6-9	Control or Indicator	Function
	CB1	Controls application of 480-volts 60-Hz to large air conditioner no. 1 in transmitter no. 1, shelter 3400.
	CB2	Controls application of 480-volts 60-Hz to large air conditioner no. 1 in transmitter no. 2, shelter 3200.
	CB3	Controls application of 480-volts 60-Hz to large air conditioner no. 2 in transmitter no. 1, shelter 3400.
	CB4	Controls application of 480-volts 60-Hz to large air conditioner no. 2 in transmitter no. 2, shelter 3200.
	CB5	Controls application of 480-volts 60-Hz to step down transformer no. 2.

TABLE 6-10. SHELTER 3500, 115/208 VOLT DISTRIBUTION PANEL (RIGHT HAND) 35A3, CONTROLS AND INDICATORS

Fig. 6-10	Control or Indicator	Function
	CB1	Controls application of 115-volts 60-Hz to convenience outlets in transmitter no. 2, shelter 3100.
	CB2	Controls application of 115-volts 60-Hz to convenience outlets in transmitter no.1, shelter 3300.
	CB3	Controls application of 115-volts 60-Hz to convenience outlets in transmitter no. 2, shelter 3200.
	CB4	Controls application of 115-volts 60-Hz to convenience outlets in transmitter no. 1, shelter 3400.
	CB5	Controls application of 208-volts 60-Hz to power control circuit of small air conditioner (A/C No. 3.) in transmitter no. 2, shelter 3200.
	CB6	Controls application of 208-volts 60-Hz to power control circuit of small air conditioner (A/C No. 3) in transmitter no. 1, shelter 3400.
	CB7	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter no. 2, shelter 3100.
	CB8	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter no. 1, shelter 3300.
	CB9	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter no. 2, shelter 3200.

TABLE 6-10. SHELTER 3500, 115/208 VOLT DISTRIBUTION PANEL (RIGHT HAND) 35A3, CONTROLS AND INDICATORS (Continued)

Fig. 6-10	Control or Indicator	Function
	CB10	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter no. 1, shelter 3400.
	CB11	Controls application of 115-volts 60-Hz to convenience outlets in transmitter power distribution shelter 3500.
	CB12	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter power distribution shelter 3500.
	CB13	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in transmitter power distribution shelter 3500.
	CB14	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in antenna-coupler/ dummy-load shelter 3600.
	CB15	Controls application of 115-volts 60-Hz to convenience outlets in antenna-coupler/dummy-load shelter 3600.
	CB16	Controls application of 115-volts 60-Hz to emergency, interior, and exterior lighting systems in transmitter water distribution shelter 3700.
	CB17	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in antenna-coupler/dummy-load shelter 3600.
	CB18	Controls application of 115-volts 60-Hz to emergency and interior lighting systems in transmitter monitoring shelter 3800.

TABLE 6-10. SHELTER 3500, 115/208 VOLT DISTRIBUTION PANEL (RIGHT HAND) 35A3, CONTROLS AND INDICATORS (Continued)

Fig. 6-10	Control or Indicator	Function
	CB19	Controls application of 115-volts 60-Hz to convenience outlets in transmitter water distribution shelter 3700.
	CB20	Controls application of 115-volts 60-Hz to intercom outlets J6 and J7 in transmitter monitoring shelter 3800.
	CB21	Controls application of 208-volts 60-Hz to air conditioner and heater outlets in transmitter water distribution shelter 3700.
	CB22	Controls application of 115-volts 60-Hz to convenience outlets J8-J17, J22, and J23 in transmitter monitoring shelter 3800.
	CB23	Control application of 115-volts 60-Hz to machine tool outlets J18-J21 in transmitter monitoring shelter 3800.
	CB24	Controls application of 115-volts 60-Hz to CO_2 system, shelter 3800, and fire detector units in transmitter power distribution shelter 3500, transmitter monitoring shelter 3800, transmitter No. 1 shelter 3200, transmitter No. 2 shelter 3400, antenna-coupler/dummy-load shelter 3600, transmitter No. 2 shelter 3100, transmitter No. 1 shelter 3300, and transmitter water distribution shelter 3700.
	CB25	Controls application of 208-volts 60-Hz to tower lights.

TABLE 6-11. SHELTER 3500, 115/208 VOLT DISTRIBUTION PANEL (LEFT HAND) 35A4, CONTROLS AND INDICATORS

Fig. 6-11	Control or Indicator	Function
	CB1	Controls application of 115/208-volts 60-Hz to relay assembly 1A3A3 in transmitter no. 1, shelter 3300.
	CB2	Controls application of 115/208-volts 60-Hz to relay assembly 1A3A3 to transmitter no. 2, shelter 3100.
	CB3	Controls application of 208-volts 60-Hz to power control circuit of air conditioner no. 1 in transmitter no. 1, shelter 3300.
	CB4	Controls application of 208-volts 60-Hz to power control circuit of air conditioner no. 1 in transmitter no. 2, shelter 3100.
	CB5	Controls application of 208-volts 60-Hz to power control circuit of air conditioner no. 2 in transmitter no. 1, shelter 3300.
	CB6	Controls application of 208-volts 60-Hz to the power control circuit of air conditioner no. 2 in transmitter no. 2, shelter 3100.

TABLE 6-12. TYPICAL EMERGENCY LIGHTING SYSTEM, CONTROLS AND INDICATORS

Fig. 6-12	Control or Indicator	Function
	Battery Voltmeter	Indicates output voltage of battery when power switch is set on ON.
	Test Switch	When depressed, floodlights light.
	Hi Charge Lamp	Lights when battery is being charged. Will Extinguish when battery voltage attains 6 volts nominal.
	AC ON Lamp	Lights when power switch is set to ON.
	Power Switch	When set to ON position, applies 115-volts 60-Hz to battery charger and voltage dropout sensor.

TABLE 6-13. FIRE DETECTOR, CONTROLS AND INDICATORS

Fig. 6-13.	Control or Indicator	Function
	Alarm Lamp DS3	Lamp lights when smoke is detected, indicating an alarm condion.
	Power Lamp DS1	Lamp lights when 115-volts 60-Hz is applied to unit.
	Reset Switch S1	When depressed, resets unit to normal supervisory condition. However, as it is depressed, it removes power from part of the unit, causing a trouble indication at the trouble annunciator panel.

TABLE 6-14. FIRE DETECTION BOX, CONTROLS AND INDICATORS

Fig. 6-14	Control or Indicator	Function
	CO_2 Switch S2	Enables/disables CO_2 auto system.
	ALARM ON/DISABLE Switch S1	Disables bell circuit only.

TABLE 6-15. SECONDARY HEAT EXCHANGER, CONTROLS AND INDICATORS

Fig. 6-15	Control or Indicator	Function
	S3	Applies 115-volt control power to heat exchanger No. 1
	S4	Applies 115-volt control power to heat exchanger No. 2
	DS5	Indicates control power is applied to heat exchanger No. 1
	DS6	Indicates control power is applied to heat exchanger No. 2

NOTE: For information on the controls and indicators on the secondary heat exchangers themselves, see the Ellis and Watts LTA-250 Manual.

TABLE 6-16. INTERCOM, CONTROLS AND INDICATORS

Fig. 6-16	Control or Indicator	Function
	Press to Talk Bar	Press bar to talk when iniating call (only)
	Call Buttons	Press to connect circuit desired
	Busy Lamp	Indicates circuit desired is in use
	Volume Control with Private Switch	Raises or lowers received volume to desired level. When pulled out, intercom unit is in a standby mode and no person can intentionally listen from other intercom stations.

TABLE 6-17. CO_2 SYSTEM, CONTROLS AND INDICATORS

	Control or Indicator	Function
Fig. 6-17a	CO_2 SYSTEM MAIN CYL BANK/RESERVE CYL BANK Switch	In MAIN position, two left cylinders are actuated. In RESERVE position, two right cylinders are actuated.
Fig. 6-17b	CO_2 SYSTEM CUT-OUT Switch	In ON Position, CO_2 SYSTEM is set to auto- automatically discharge. In OFF position, CO_2 SYSTEM is set to discharge manually.
Fig. 6-17c	Electrical/Manual Discharge Head	Electrically or manually discharges CO_2 cylinders.
Fig. 6-18c	CO_2 Direction Valve	Electrically or manually directs CO_2 to desired shelter pair.

TABLE 6-18. LARGE AIR CONDITIONER, CONTROLS AND INDICATORS

	Control or Indicators	Function
Fig. 6-18a	Function Selector Switch	Three position switch which selects OFF VENTILATING (fan only), and CONDITIONING
Fig. 6-18b	Temperature Control	Sets desired temperature.
	Humidity Control	Sets desired humidity

TABLE 6-19. ANNUNCIATOR PANEL CONTROLS AND INDICATORS

Fig. 6-19	Control or Indicator	Function
	CO_2 Lamps	Indicates CO_2 system is operational and ready to discharge
	ALARM ANNUNCIATOR	Shows by white flag in window which fire alarm has tripped.
	CIRCUIT TROUBLE ANNUNCIATOR	Shows by flag in window which fire alarm circuit is not functioning properly
	RESET LEVER	Resets Annunciator Panel Drops

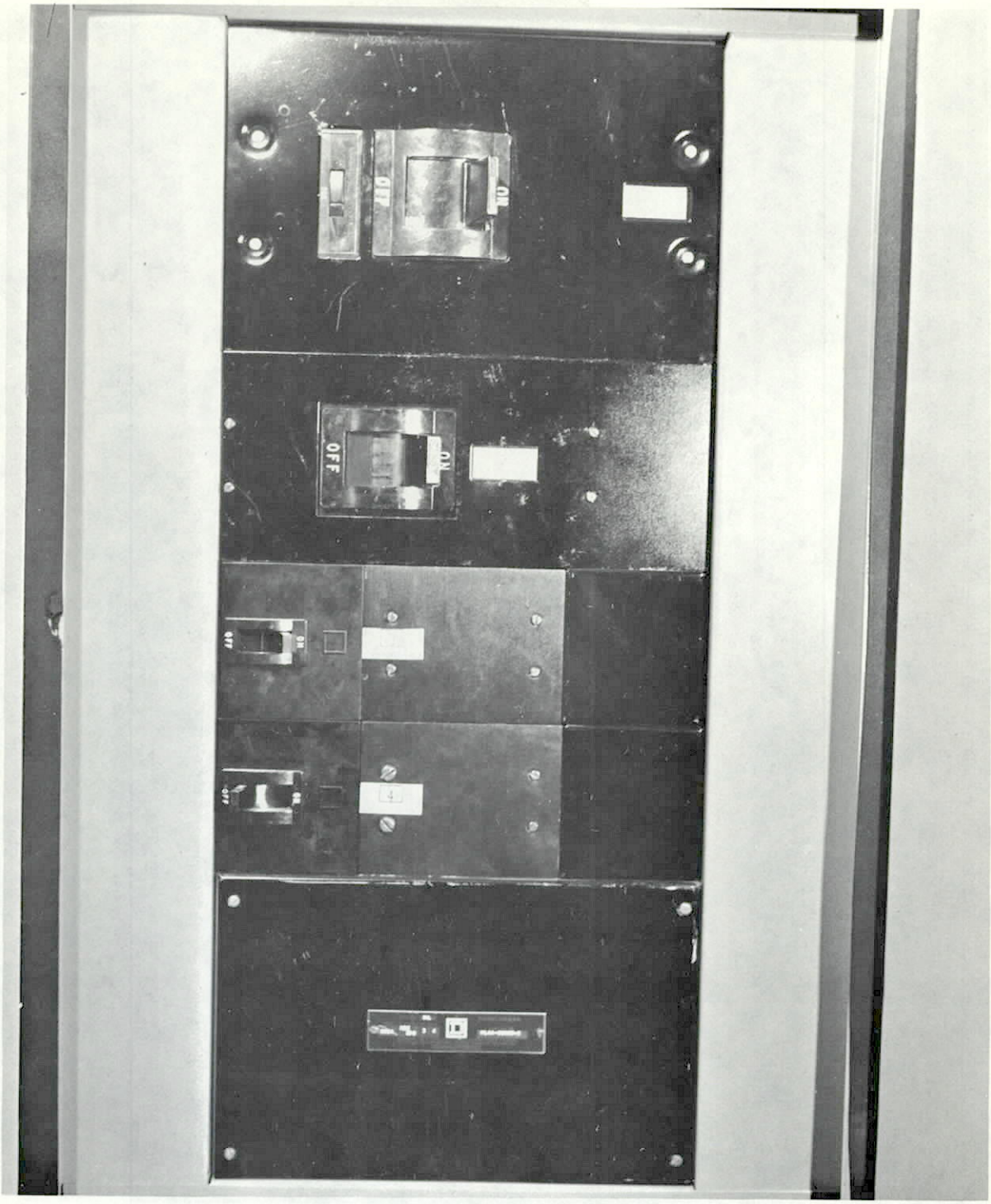


Figure 6-1

Shelter 1100, 480 volt main distribution panel.

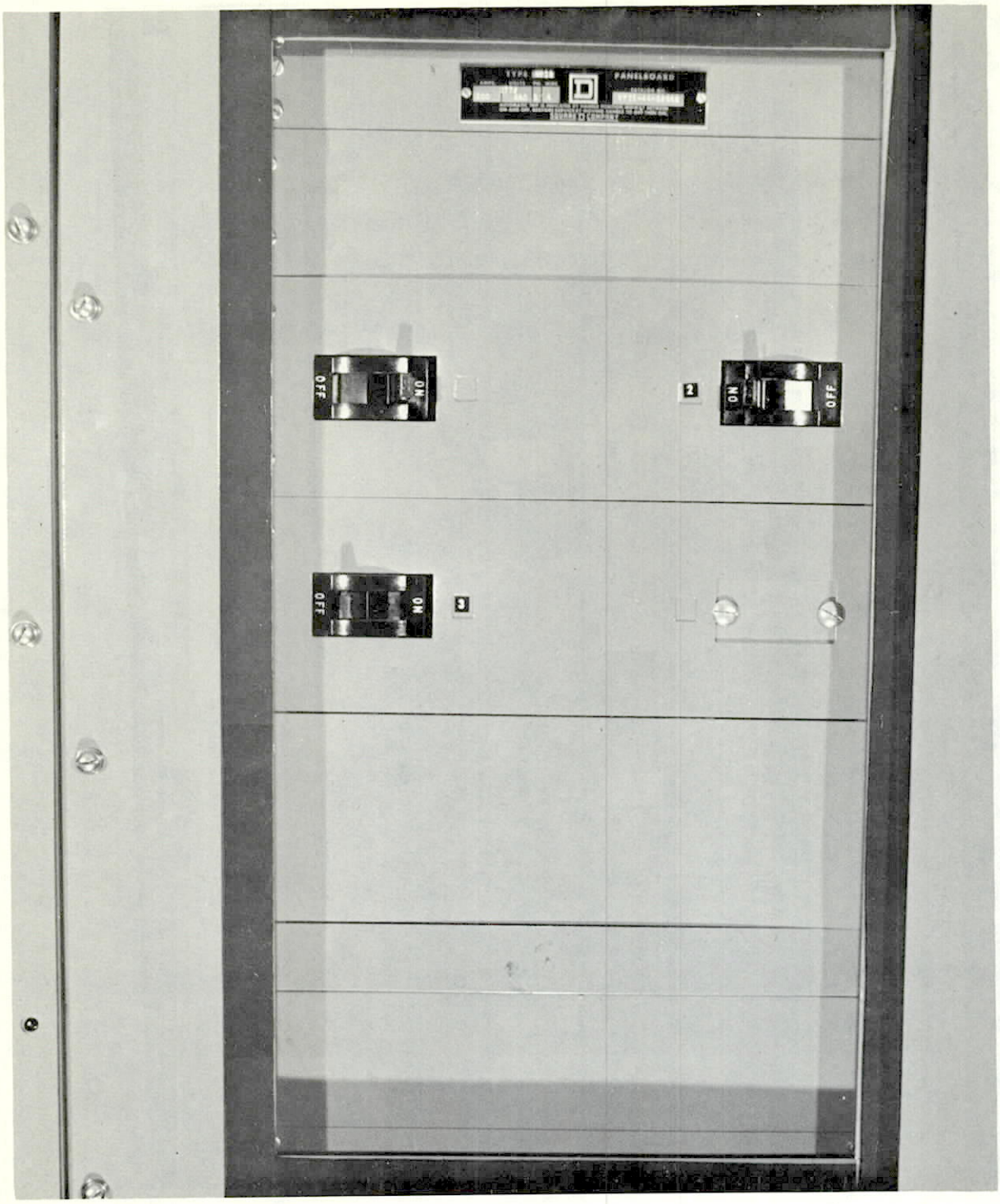


Figure 6-2

Shelter 1100, 480 volt secondary distribution panel.

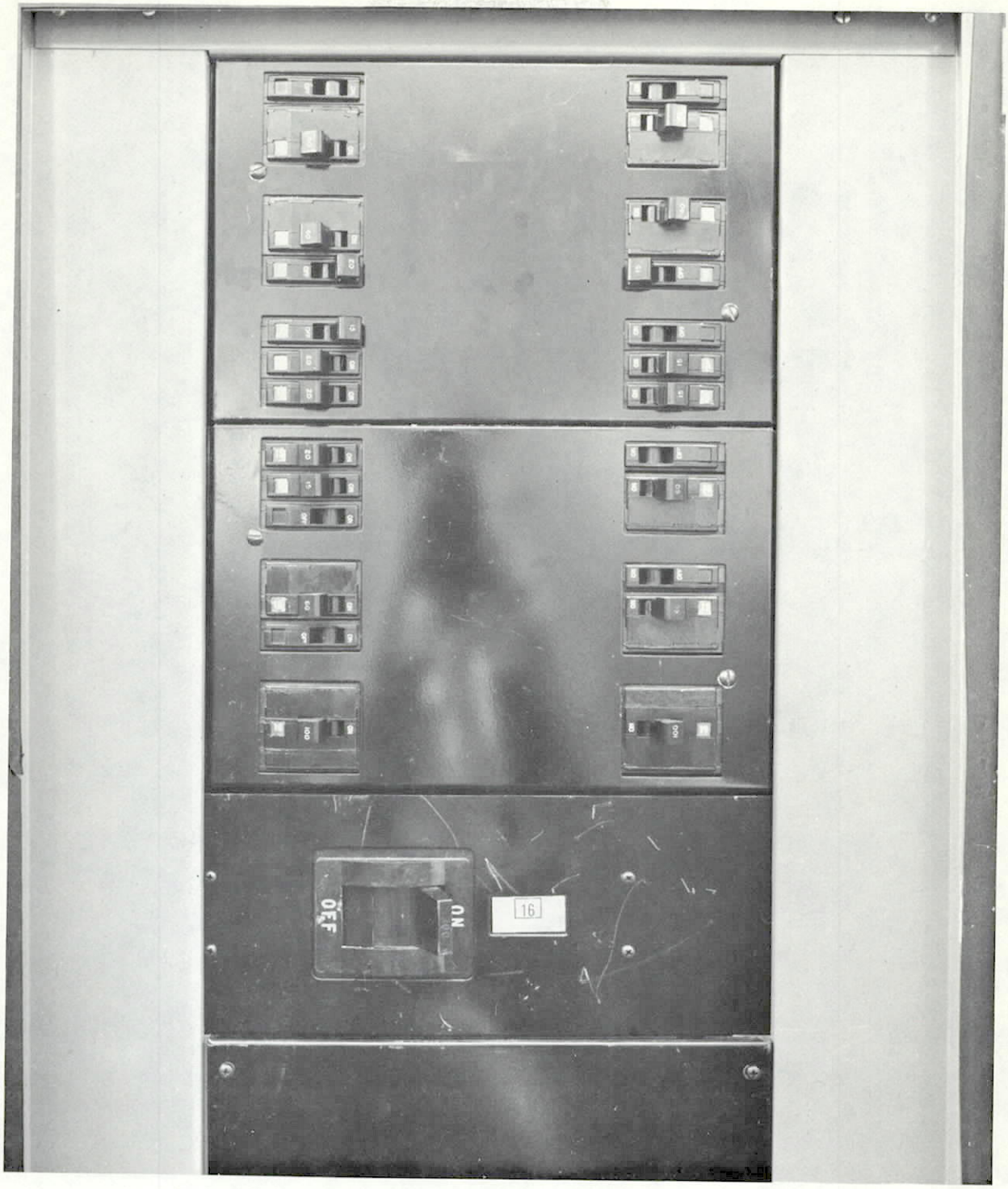


Figure 6-3

Shelter 1100, 115/208 volt distribution panel.

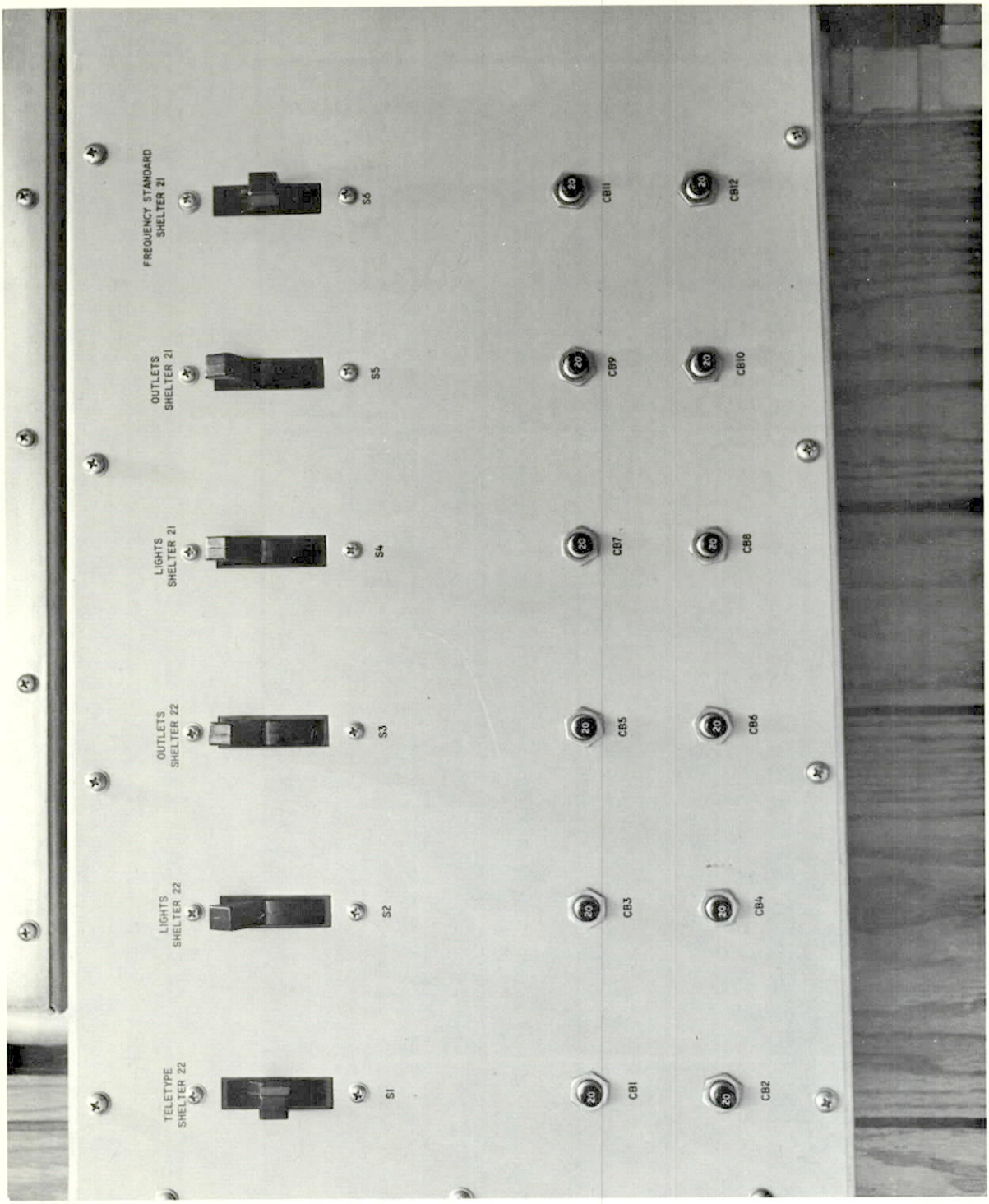


Figure 6-4

Shelter 2200, 115/208 volt distribution panel.

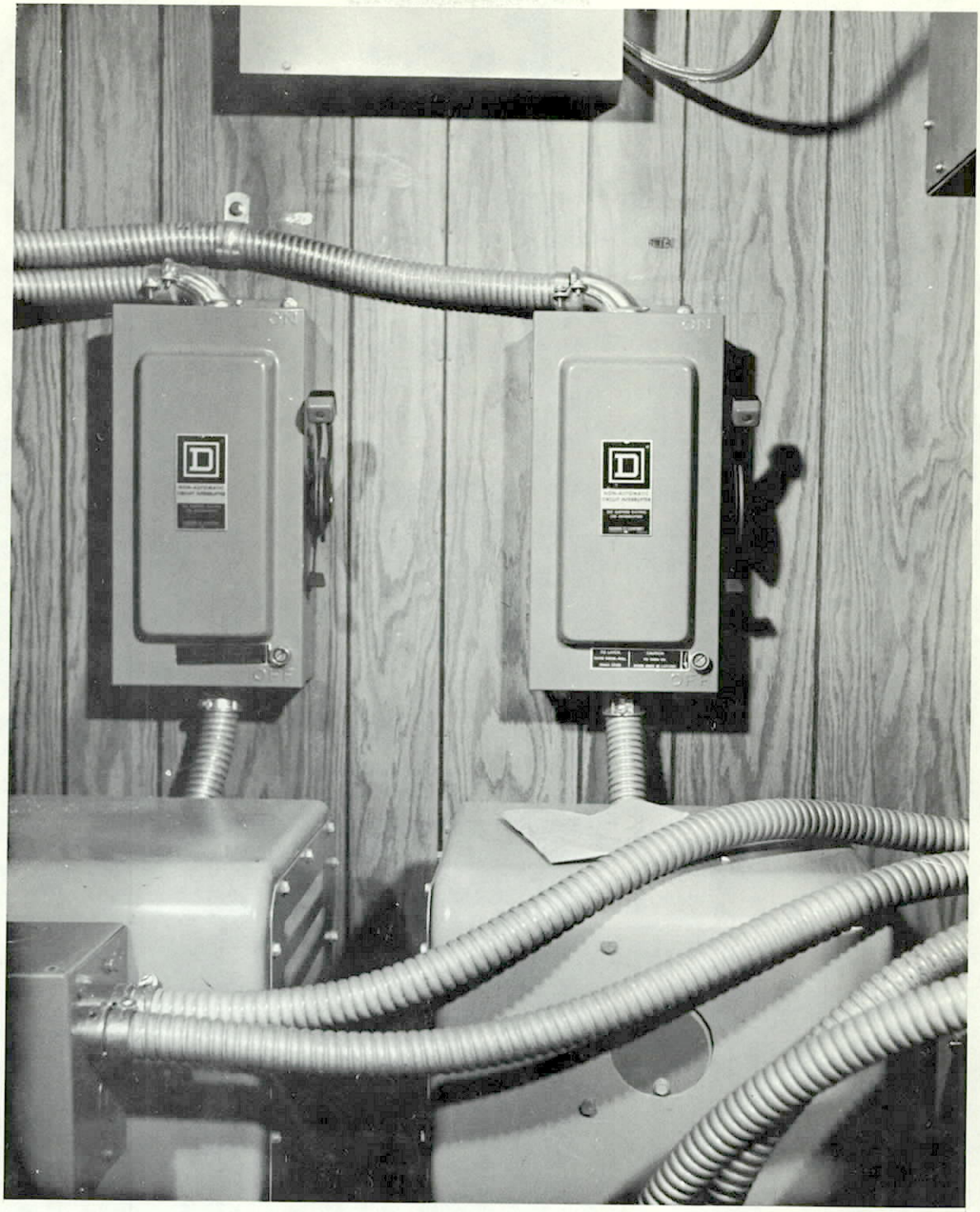


Figure 6-5a

Shelter 2200, filter room, 208 volt circuit breakers.

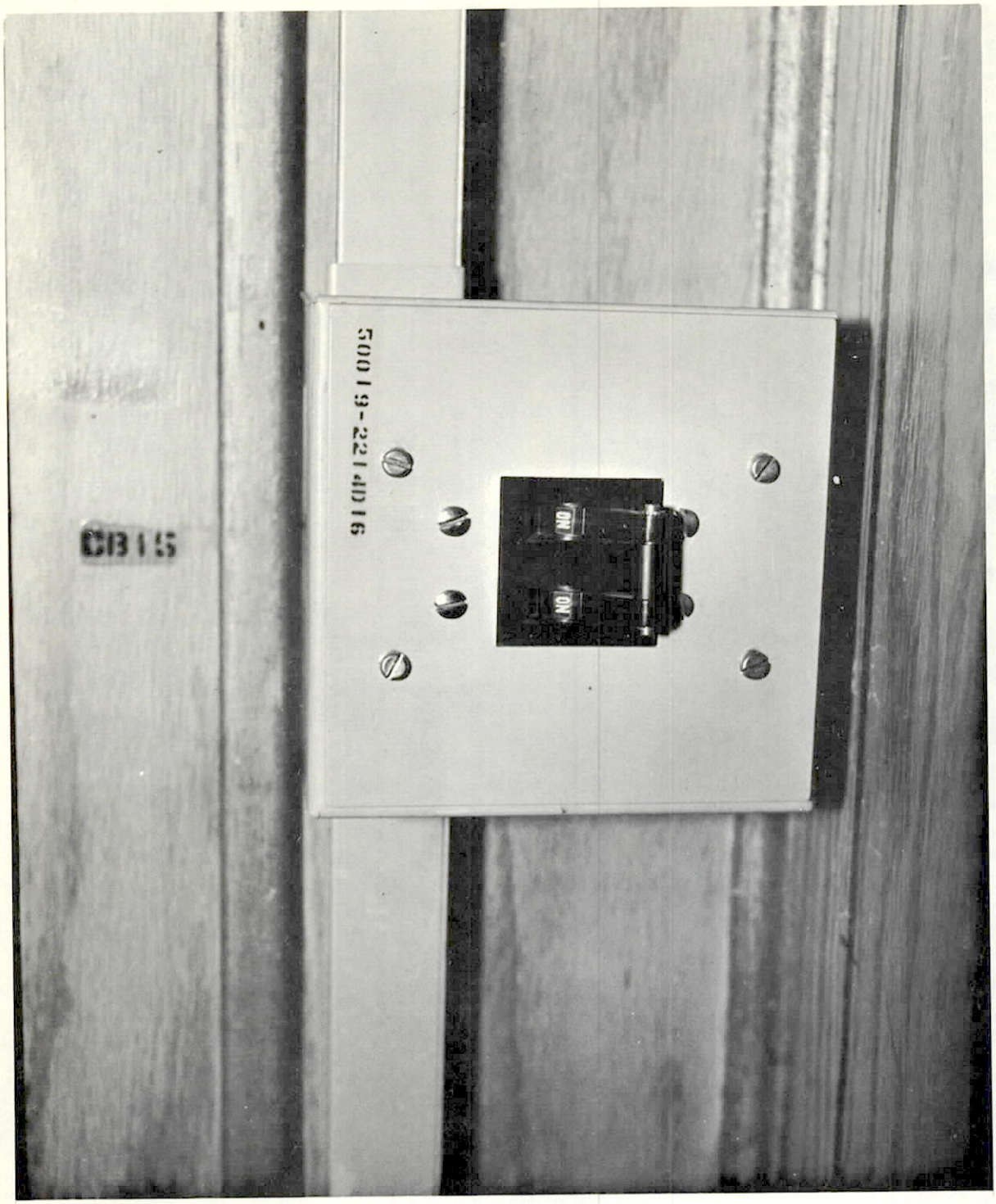


Figure 6-5b

Shelter 2200, filter room, 115 volt circuit breaker.

Figure 6-6

Shelter 2300, 115/208 volt distribution panel.

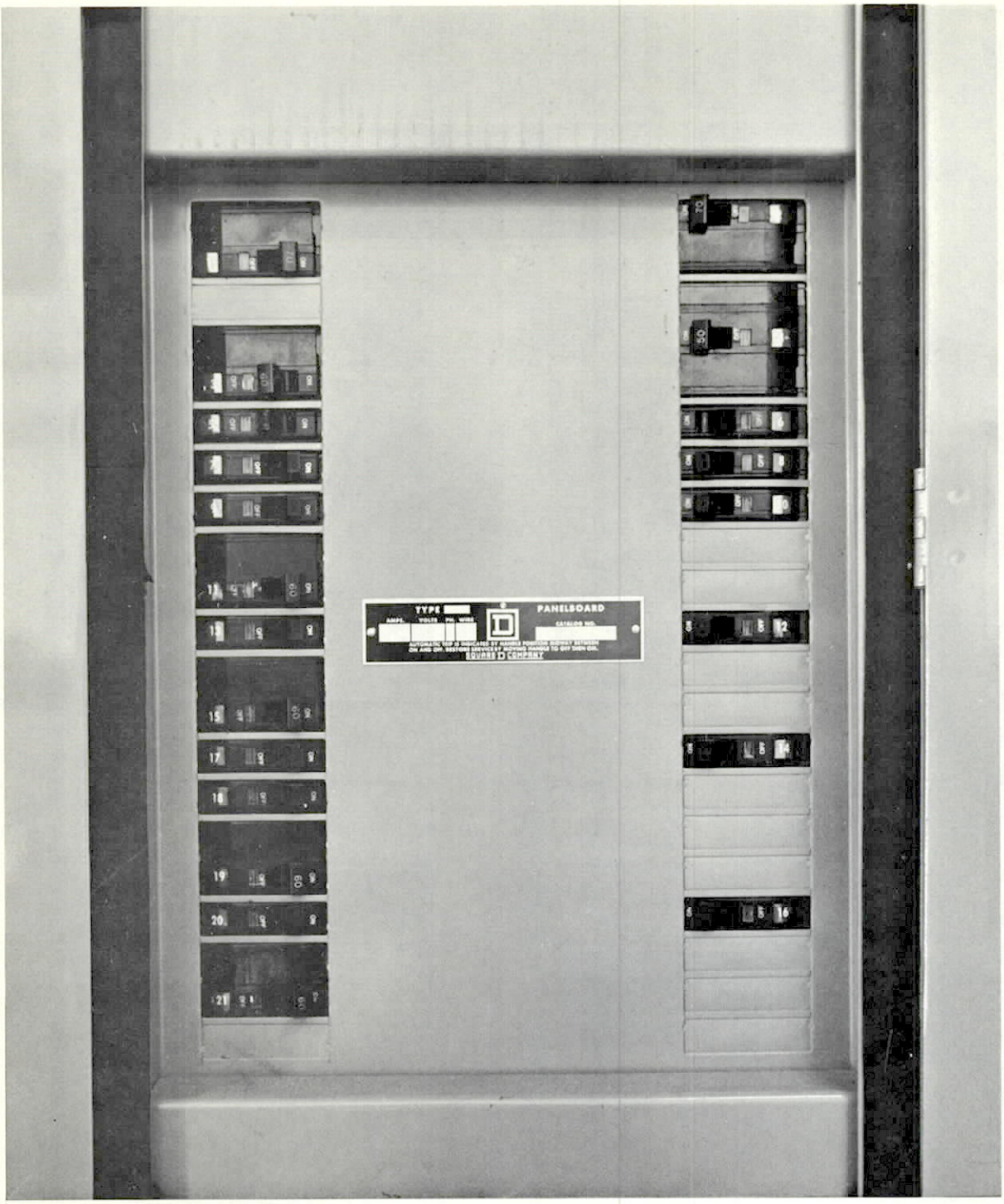


Figure 6-7

Shelter 2600, 115/208 volt distribution panel.

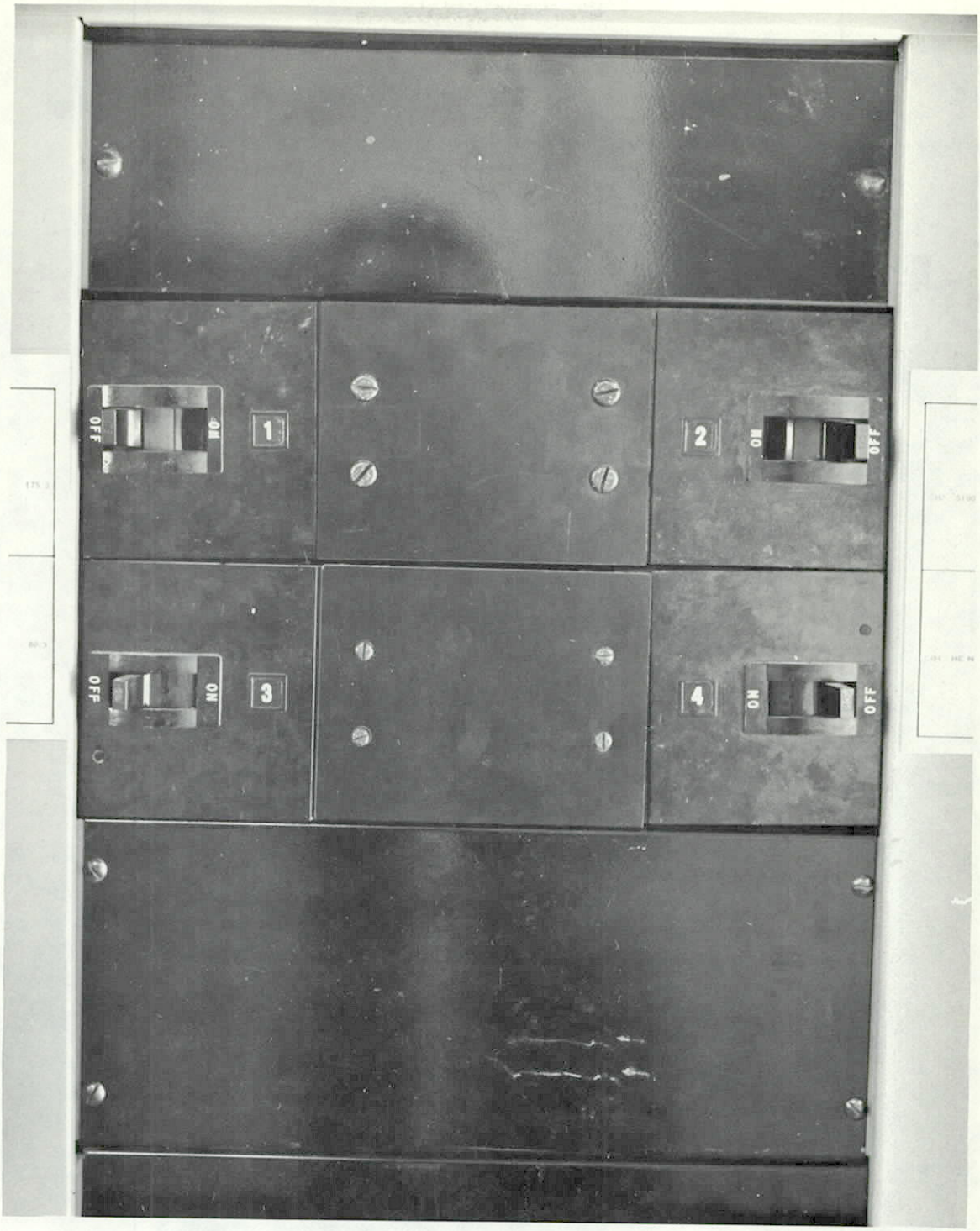


Figure 6-8

Shelter 3500, 480 volt distribution panel (right hand).

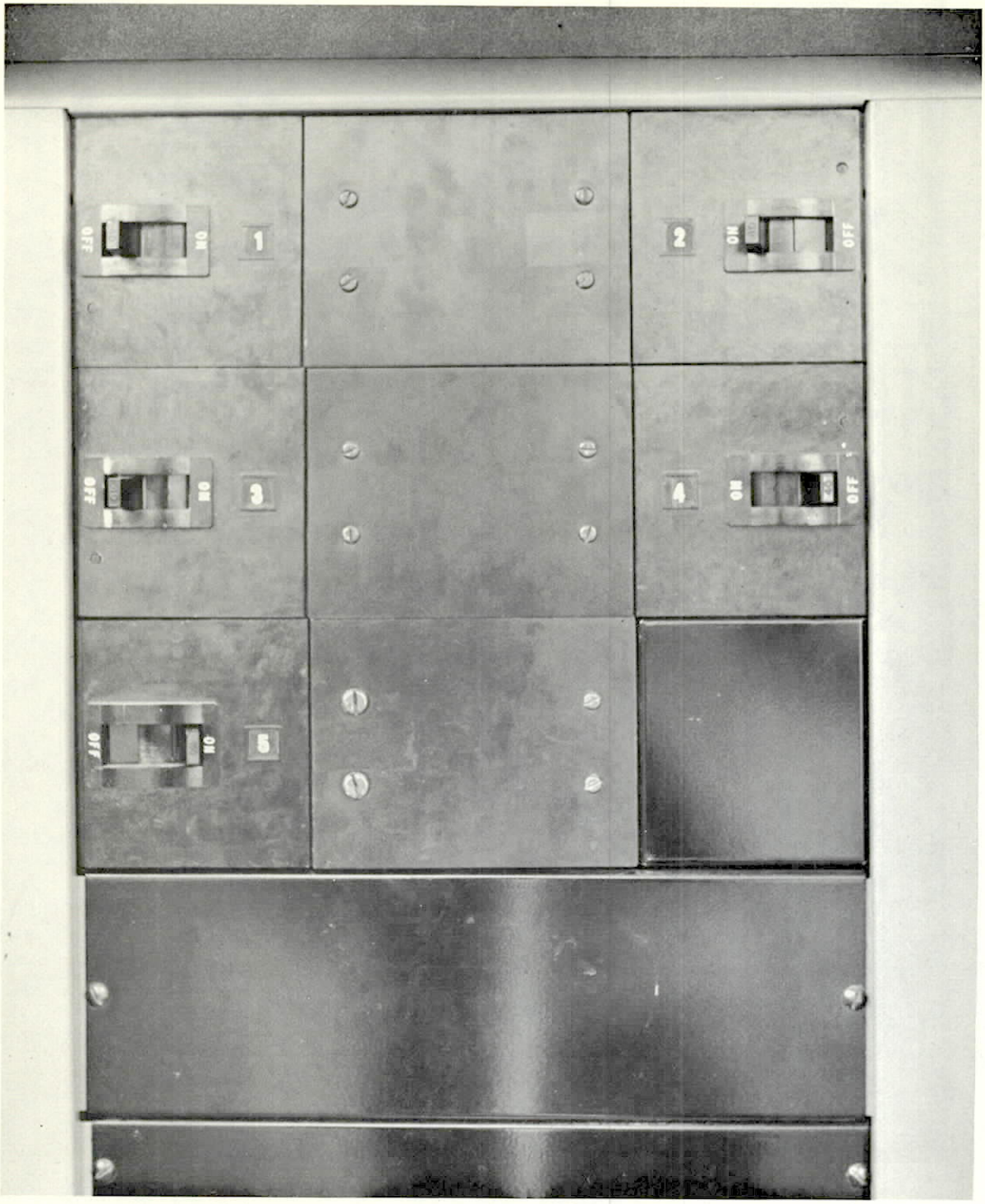


Figure 6-9

Shelter 3500, 480 volt distribution panel (left hand).

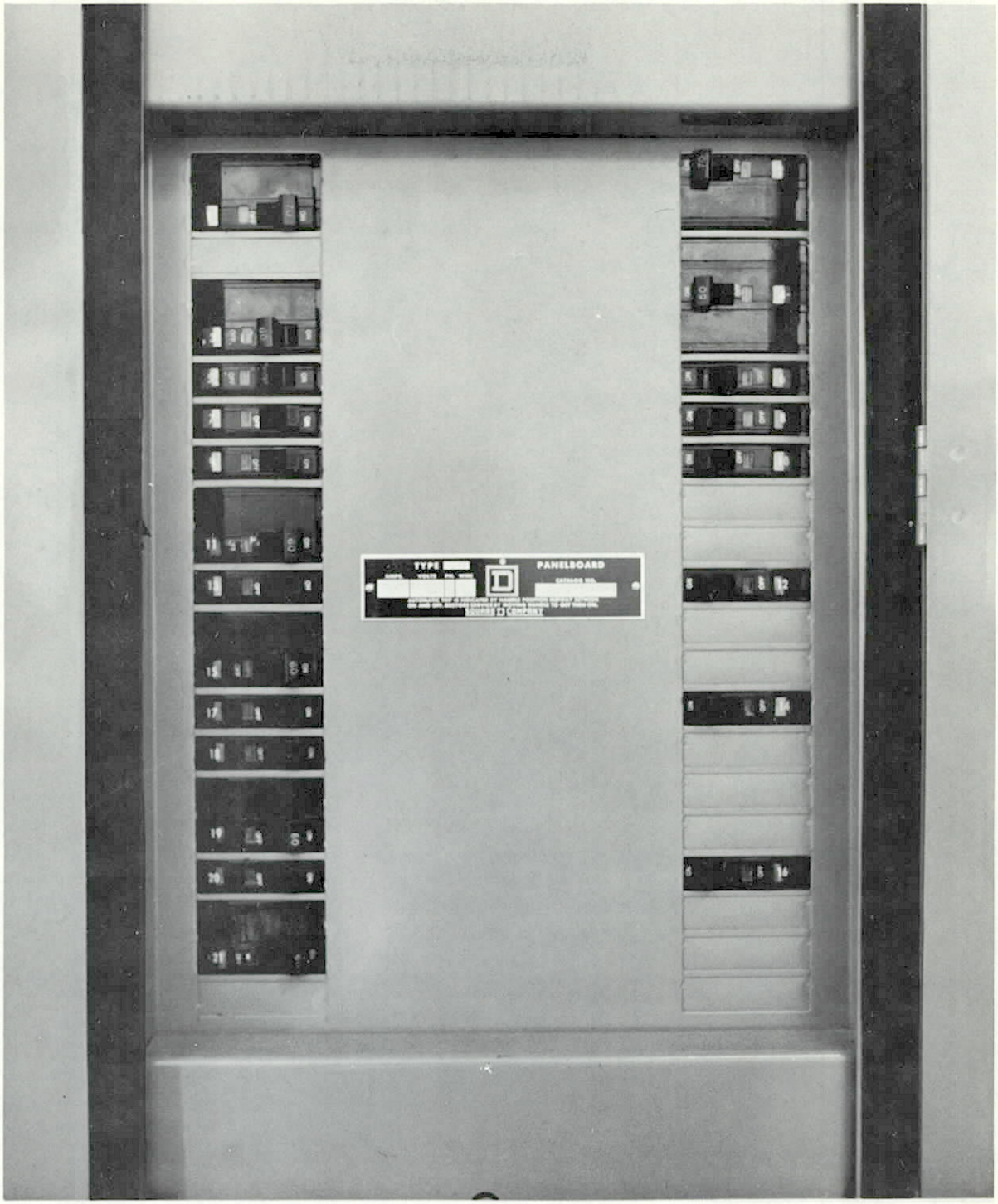


Figure 6-10

Shelter 3500, 115/208 volt distribution panel (right hand).

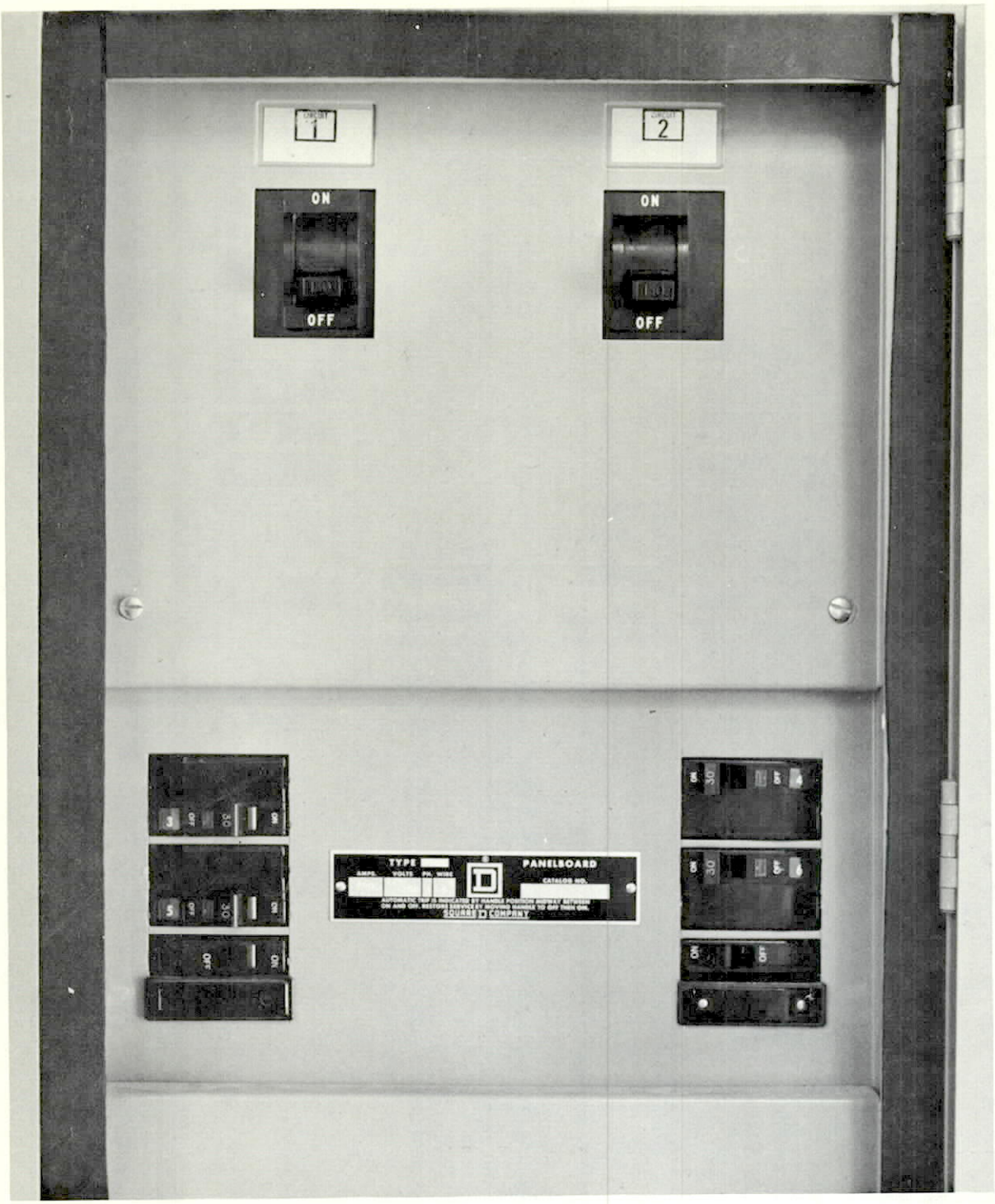


Figure 6-11

Shelter 3500, 115/208 volt distribution panel (left hand).

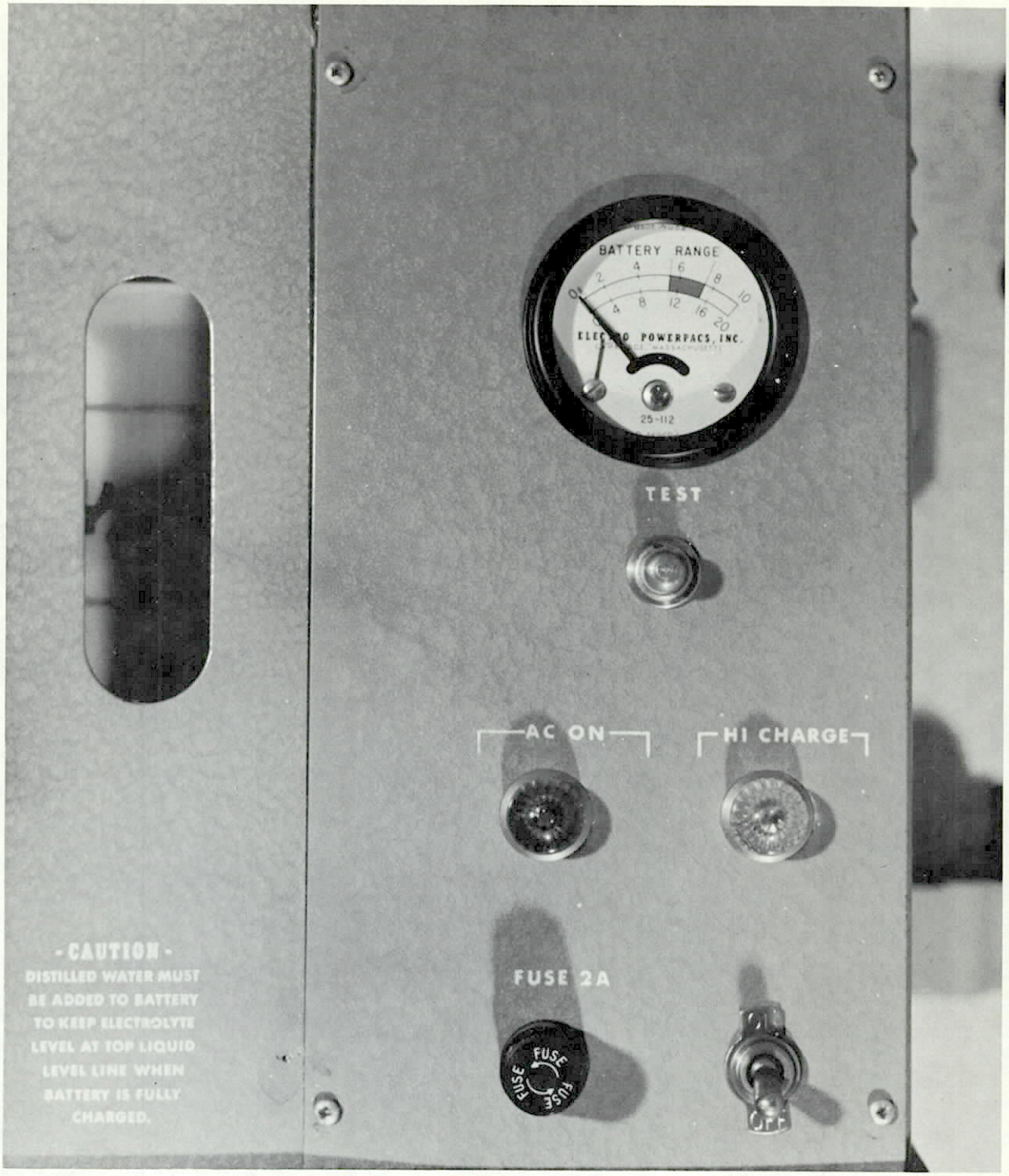


Figure 6-12

Emergency lighting system controls and indicators (typical).

Figure 6-13

Fire detector controls and indicators (typical). Alarm lamp-top center; power lamp-lower left; reset switch-lower right).

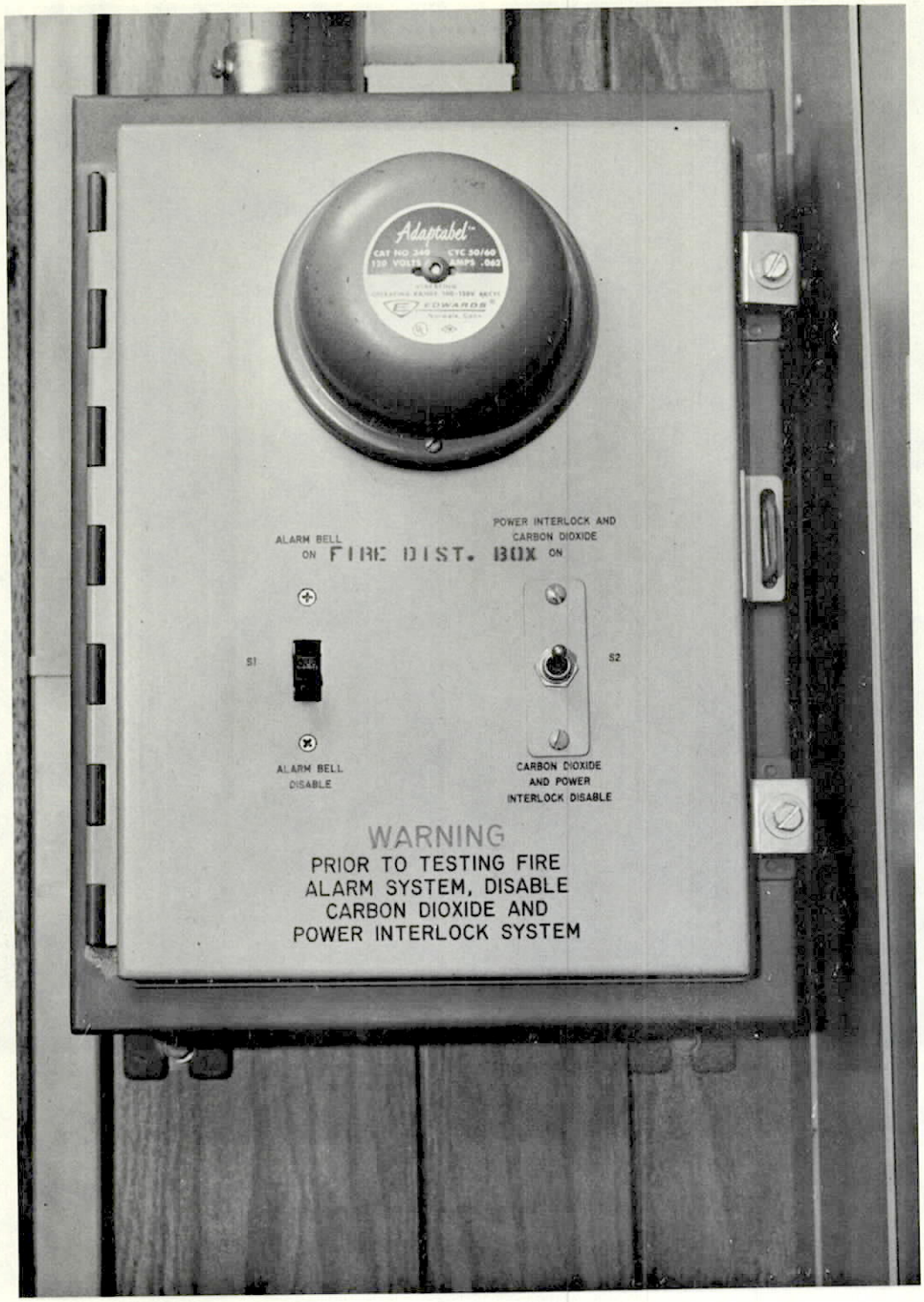


Figure 6-14

Fire detection box controls.

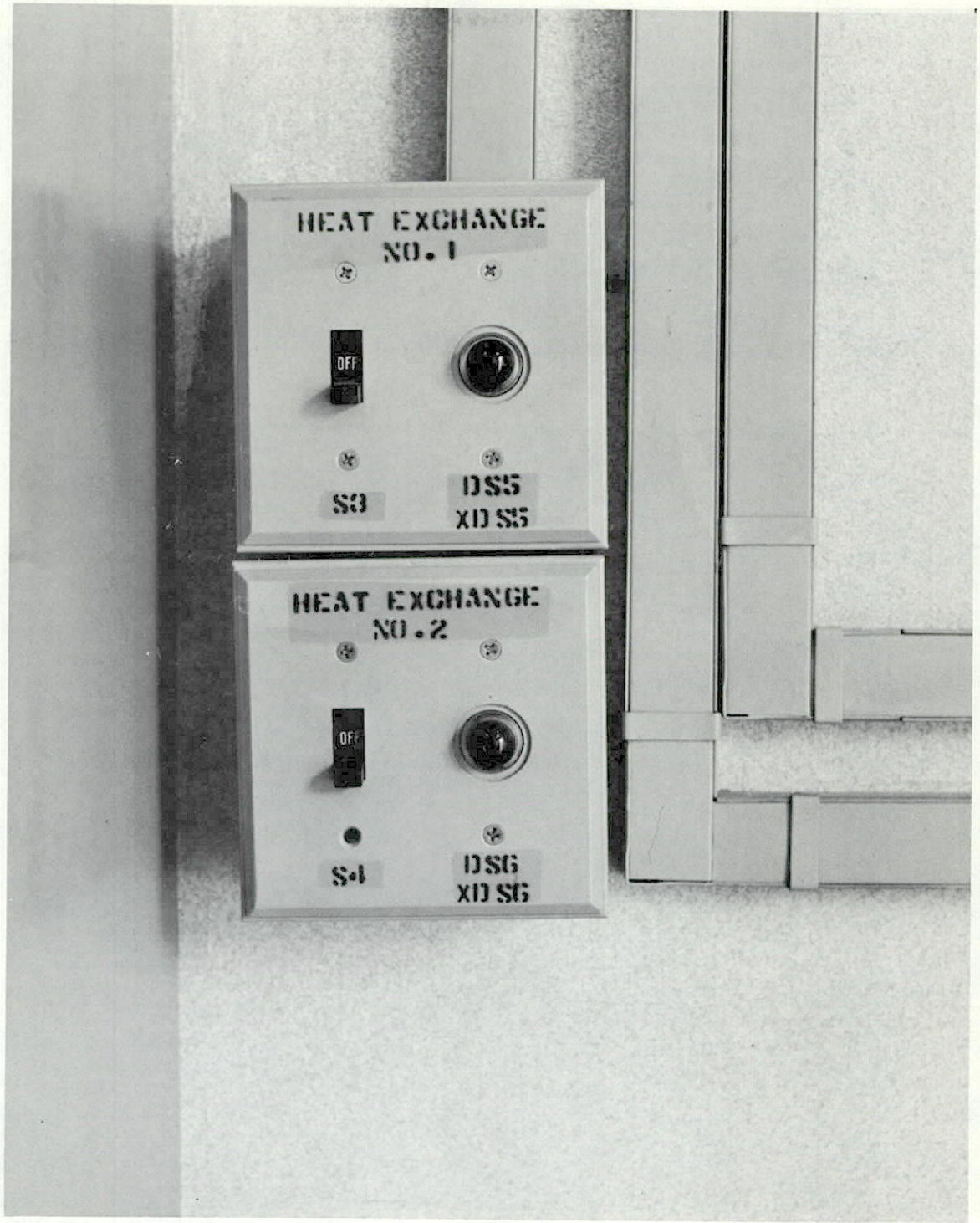


Figure 6-15

Secondary heat exchanger controls and indicators.

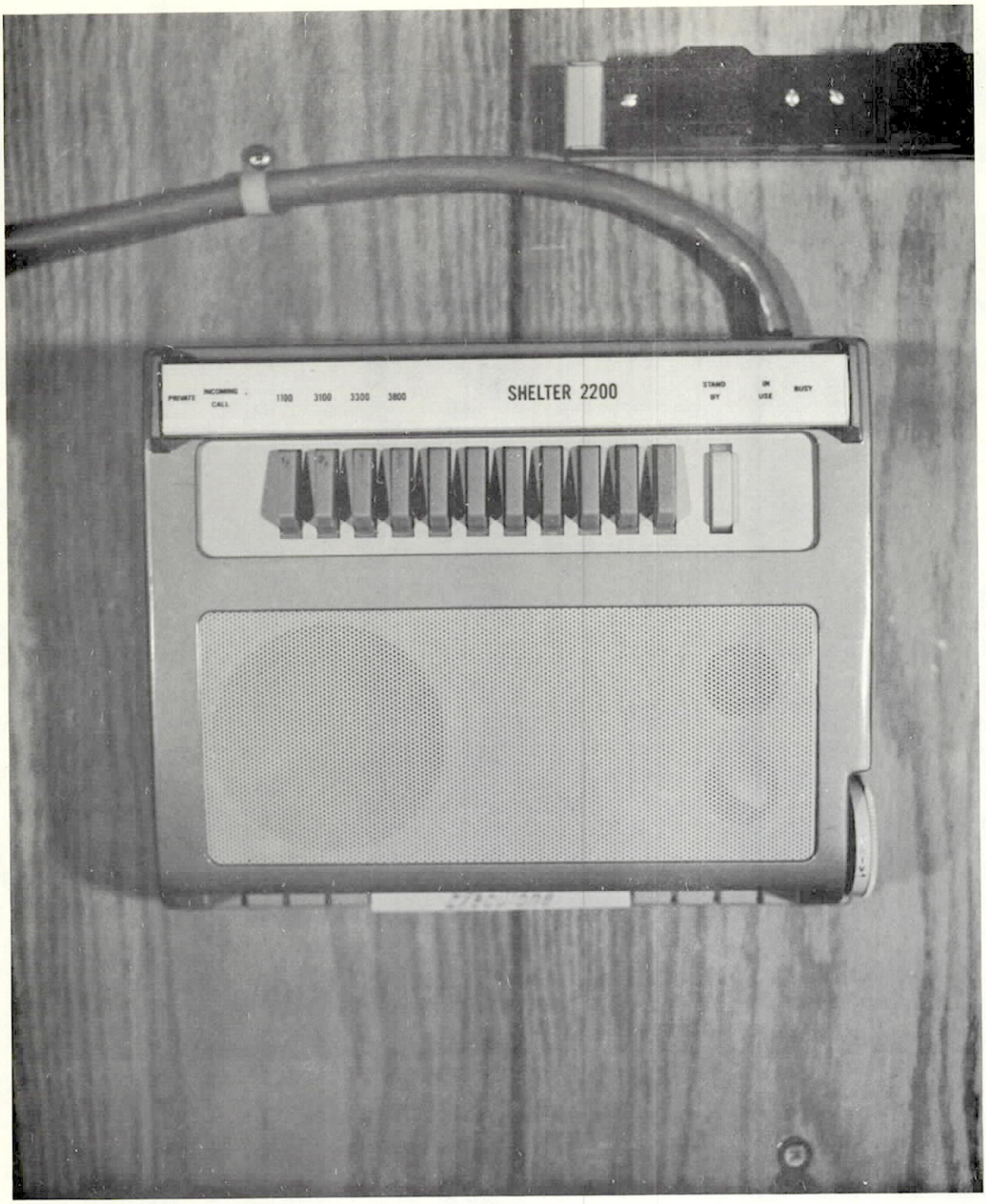


Figure 6-16

Intercom controls and indicators. Press to talk bar-bottom center; volume control and private switch-lower right; call buttons - center; Indicator lamps-behind translucent strip across top.

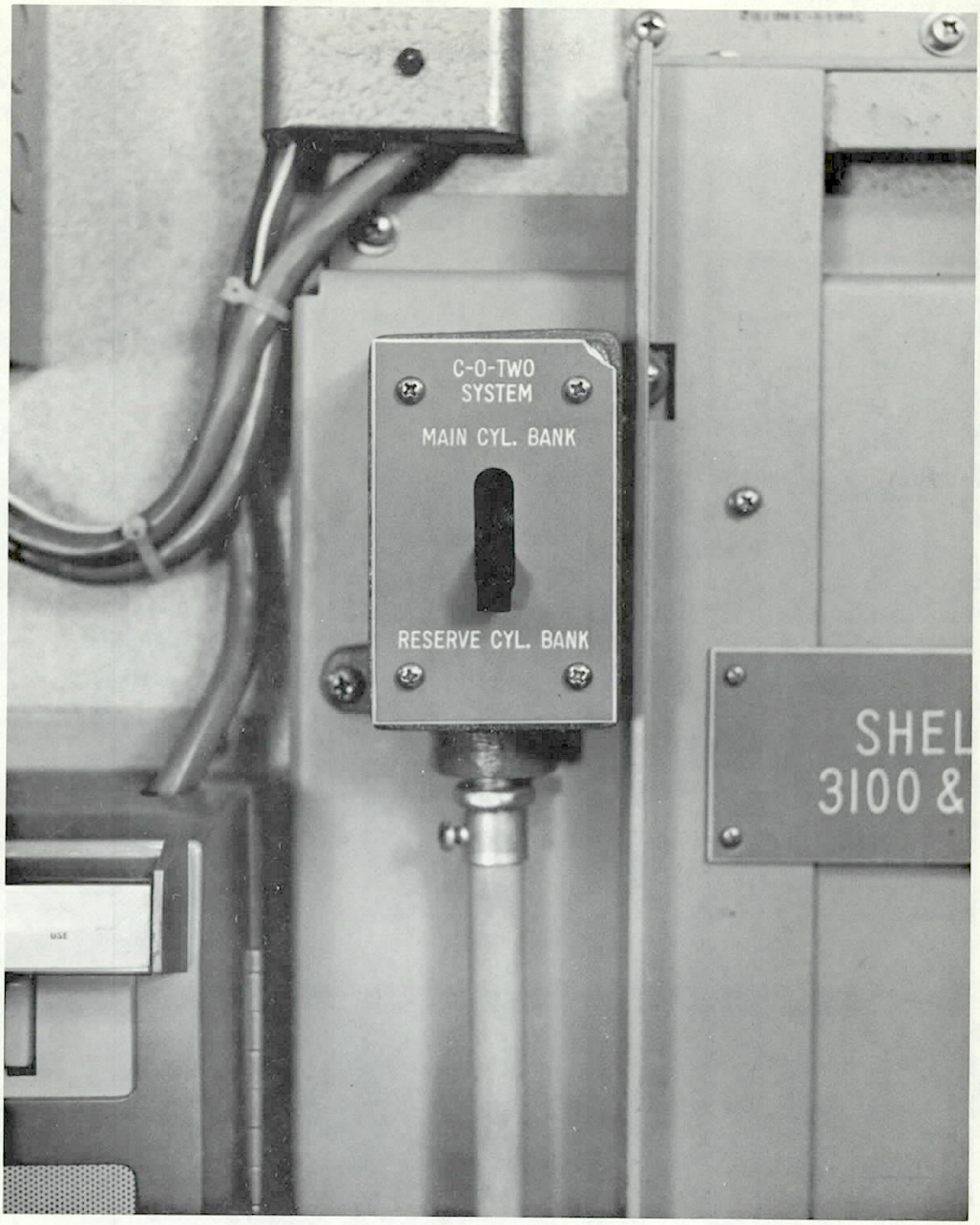


Figure 6-17a

CO_2 system MAIN/RESERVE cylinder-bank switch.

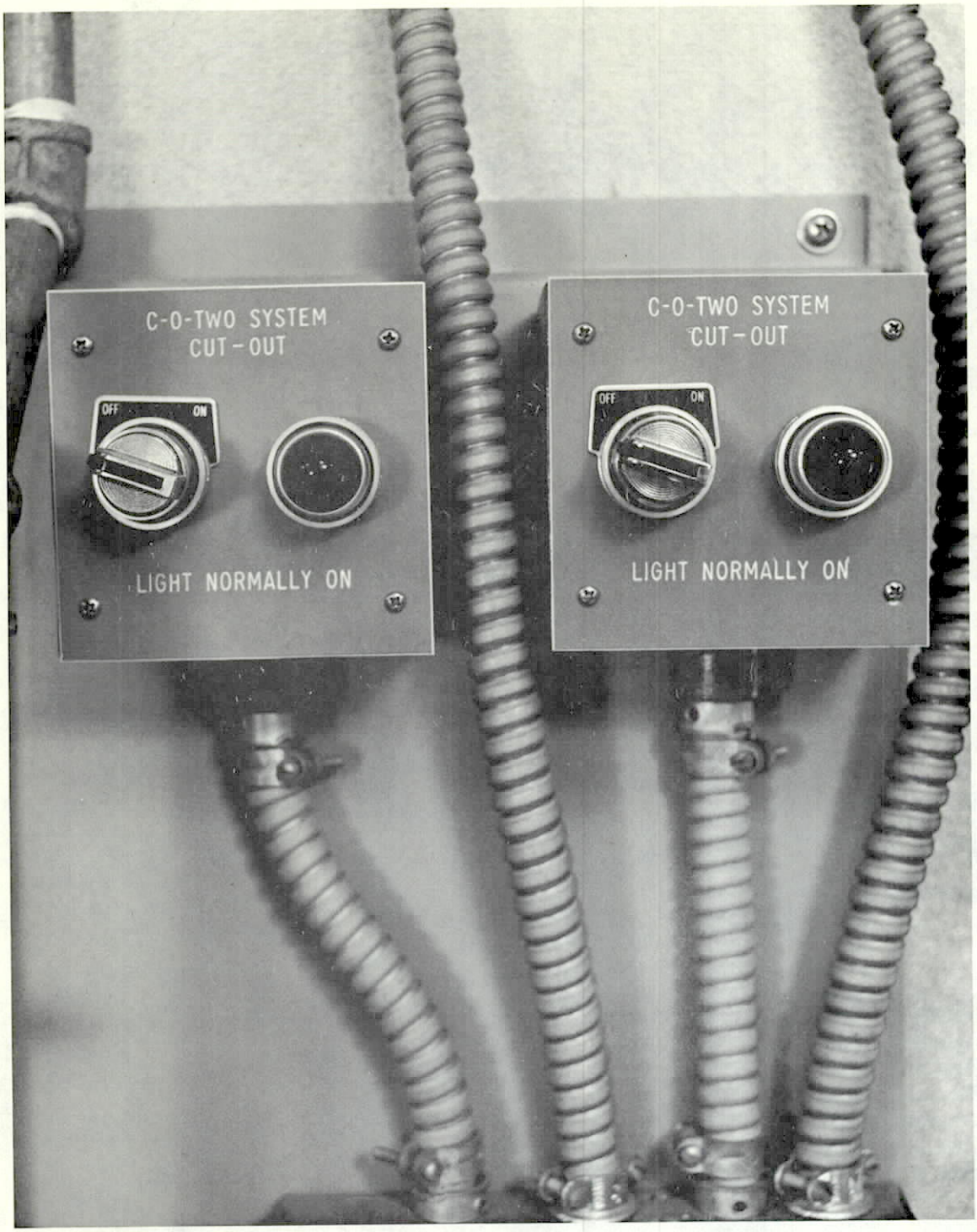


Figure 6-17b

CO_2 system cut-out switch.

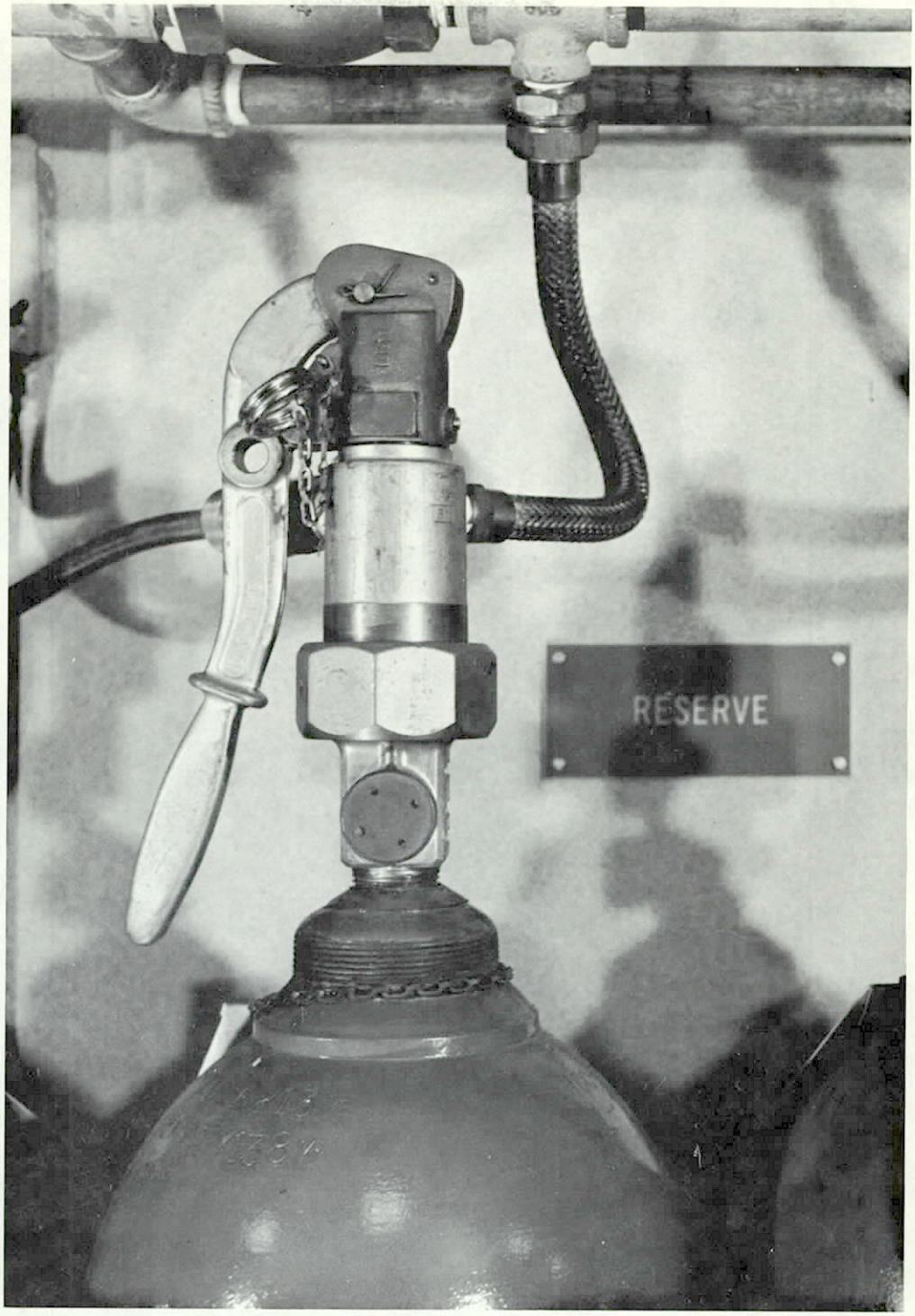


Figure 6-17c

CO_2 cylinder electrical/mechanical discharge head.

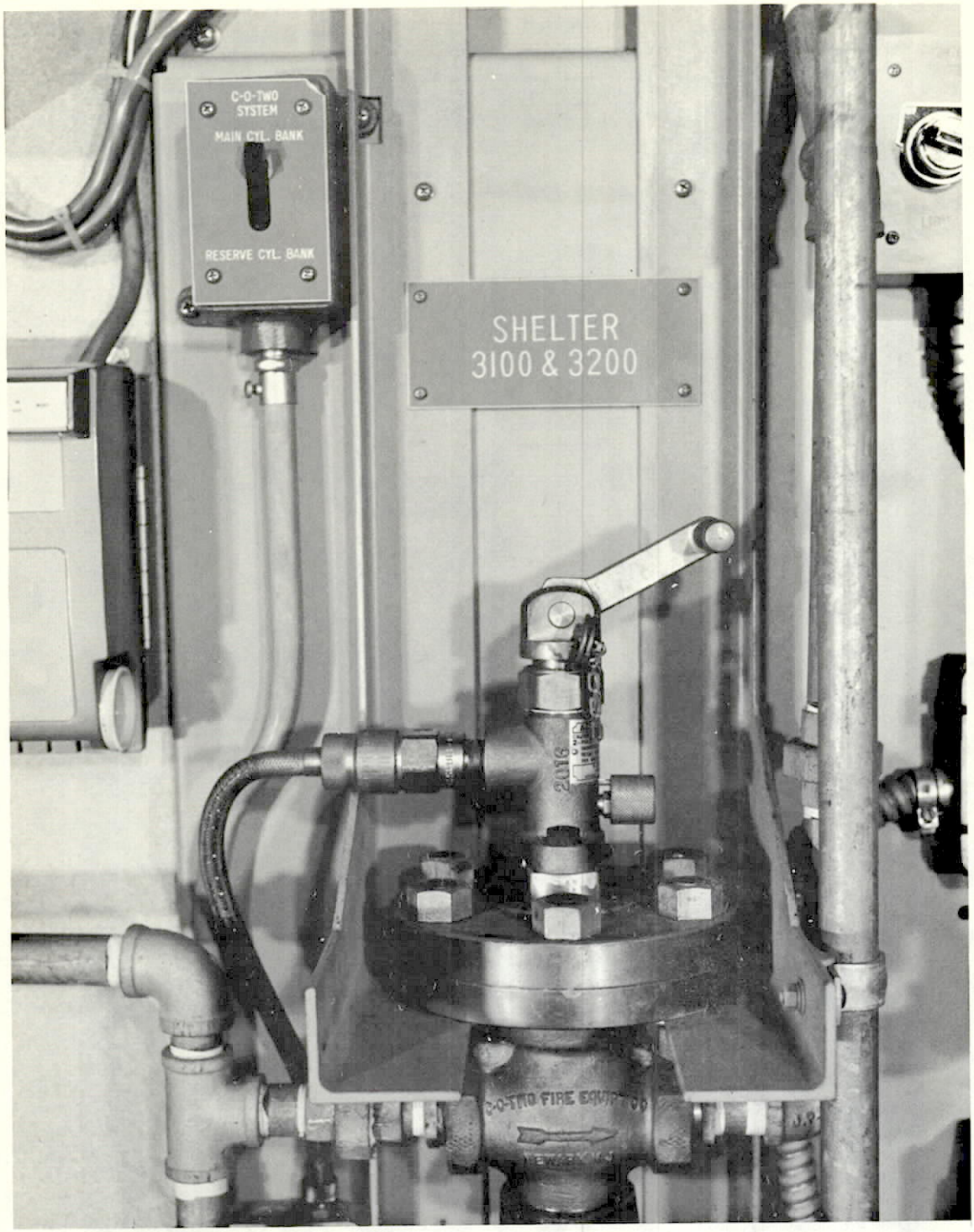


Figure 6-17d

CO_2 direction valve.

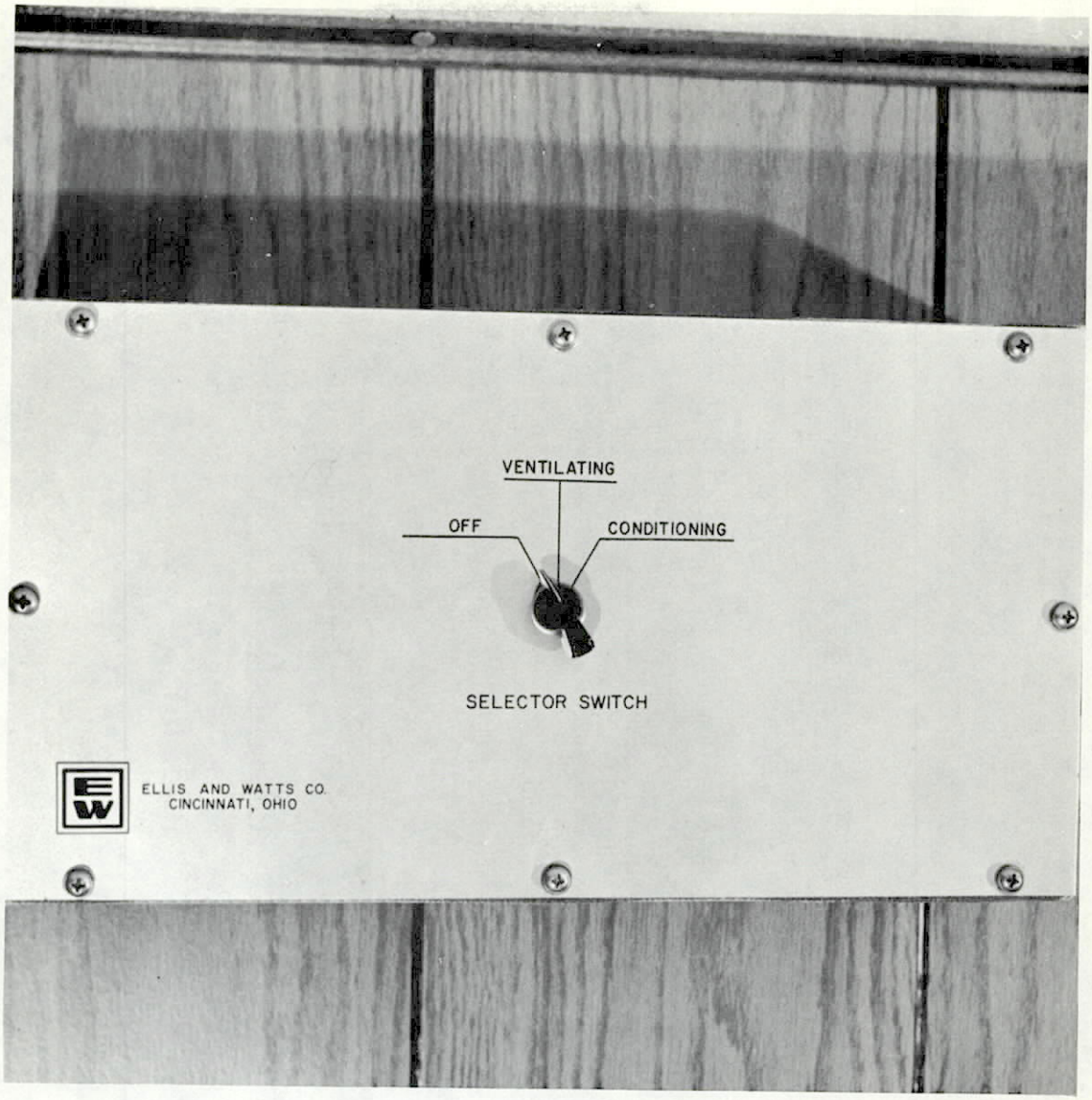


Figure 6-18a

Large air conditioner function selector switch.

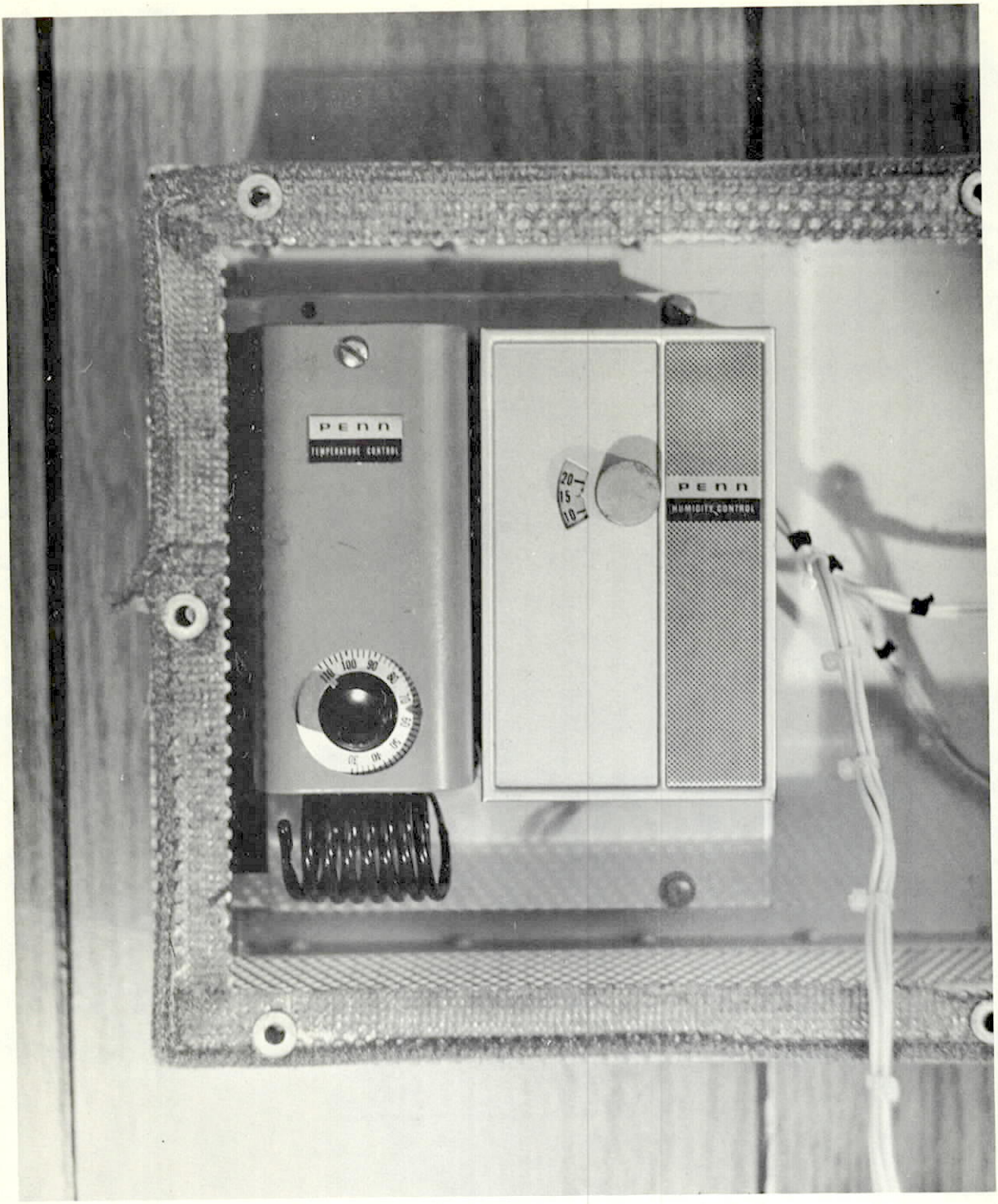


Figure 6-18b

Large air conditioner temperature and humidity controls.

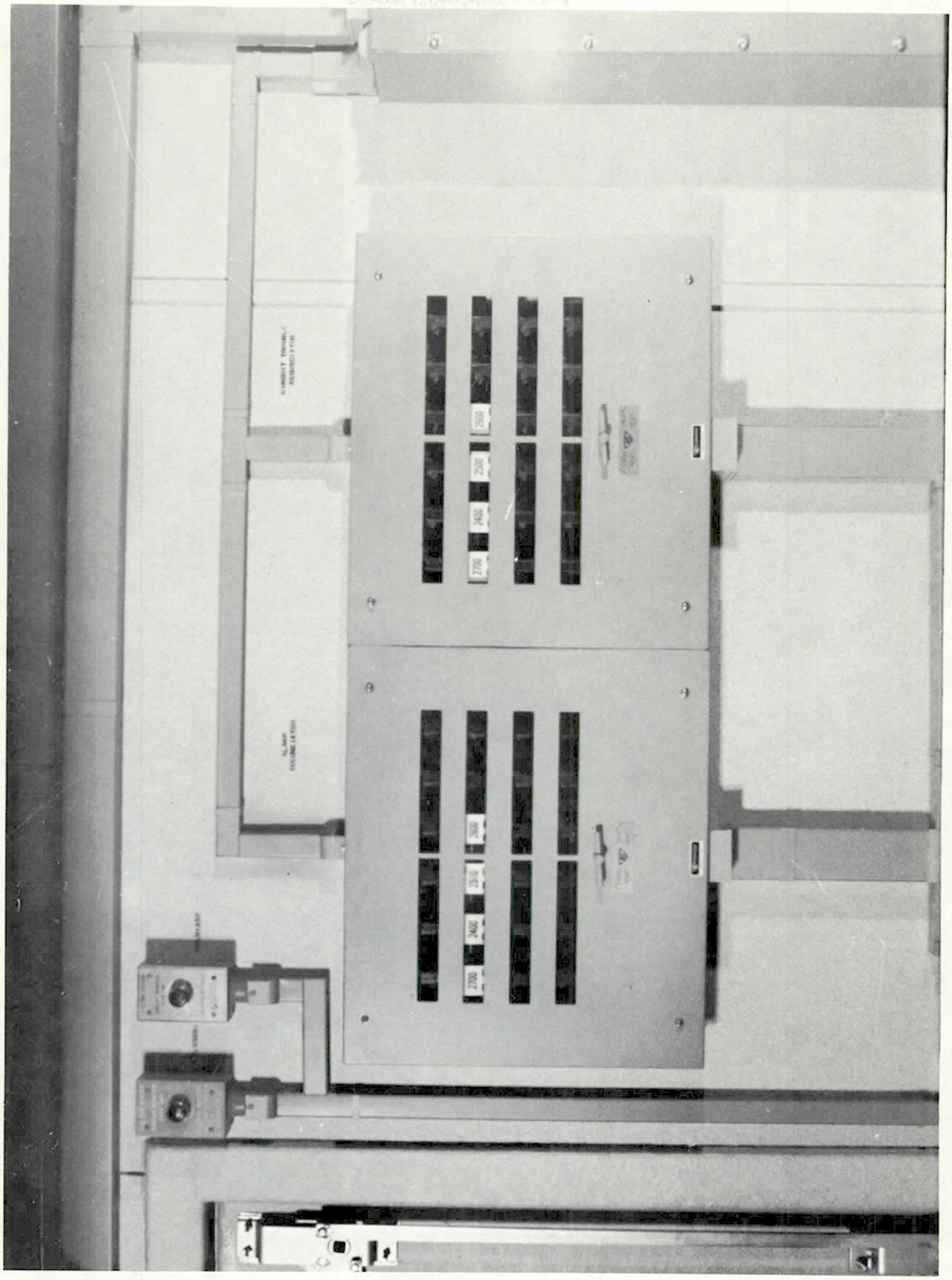


Figure 6-19

CO_2 circuit monitor lamps and fire detector annunciator panels. The monitor lamps are upper left; alarm annunciator panels on the left; circuit trouble annunciator on the right. The reset lever is lower center on each panel.

CHAPTER 7

MAINTENANCE, REPAIR, LUBRICATION, AND SPARE PARTS STOWAGE

This chapter contains information for performing routine maintenance on ATLS equipment (less electronics) and shelter systems, plus repair and lubrication instructions for critical structural components and fittings, and an explanation of the repair parts stowage system.

7.1 MAINTENANCE. Maintenance consists of routine checks and inspections required as preventive measures to avoid breakdown of equipment. Since a majority of the ATLS equipment and systems requiring preventive maintenance have the necessary instructions contained in the appropriate equipment manuals, only a schedule of necessary maintenance is provided in this manual. The schedule is intended to provide easy reference to maintenance procedures and a handy guide for maintenance planning. Also included in the schedule are references to paragraphs in this manual for maintenance of specific ATLS structural or mechanical elements which are not covered by separate service manuals.

7.1.1 Annual Shelter Maintenance.

	Job	Reference
a.	Lubricate leveling jack assembly screws to prevent corrosion.	7.3.1
b.	Lubricate shelter-to-ground turnbuckles.	7.3.2
c.	Lubricate shelter-to-shelter turnbuckles.	7.3.2
d.	Lubricate exterior door hinges.	7.3.2
e.	Lubricate interior door hinges.	7.3.2
f.	Lubricate interior door striker plates.	7.3.2

7.1.2 Quarterly Shelter Maintenance.

	Job	Reference
a.	Check leveling bubbles on shelters to see that the shelters are level.	4.8.2

7.1.2 Quarterly Shelter Maintenance (continued)

	Job	Reference
b.	Check tightness of locking nut on leveling jacks.	4.8.2
c.	Check tightness of leveling jack mounting bolts.	4.8.2
d.	Check tightness of clip bolts on guy wires.	4.12
e.	Check tightness of guying system turnbuckles.	4.12
f.	Check tightness of pullman walkway retaining bolts.	4.8.6
g.	Check tightness of door-step mounting bolts.	4.8.7
h.	Check screw-anchors to see that they are firmly imbedded in the ground.	4.12.1
i.	Check guy system turnbuckle jaw bolts and nuts for corrosion and tightness.	4.12
j.	Check tightness of pullman mounting bolts.	4.8.4
k.	Check tightness of ground wire lug on base. Check electrical continuity.	4.8.8
l.	Check tightness of ground wire clamp on ground rod.	4.8.8
m.	Check electrical continuity of ground.	4.8.8
n.	Check tightness of exterior and interior door hinges.	None.

7.2 REPAIR. Repair procedures are provided so that equipment can be maintained in or returned to working order. The instructions include repainting, replacement of parts, adjustment, and lubricating procedures. Repair instructions not given in this section are contained in the appropriate equipment manuals for the specific equipment.

7.2.1. Repair of Damage to Shelter Structure. Fiberglass Repair Kit. A Fiberglass Repair Kit and instructions for repairing fiberglass are provided in shelters 1300, 2200, 2300, 3200, and 3400. The content of each kit is as follows:

Tools

One putty knife, 1 inch
One metal roller, 1 inch dia. x 4 inches long
One paint brush, 2 inches wide
Two sheets coarse sandpaper
Three 1 oz. measuring cups
Two 53 oz. mixing cups

MATERIALS

One qt. resin (enough to patch approximately 5-6 sq. ft.)
One oz. catalyst
Six sq. ft., 1 1/2 oz. fiberglass mat
Two ozs. chopped fiberglass
One pt. gelcoat

Instructions

To repair the damaged area, proceed as follows:

a. With coarse sandpaper or grinder, sand fiberglass surface for an area of at least 2 inches surrounding the damaged area, until the surface gelcoat is cleaned away.

b. If the hole is a deep gouge, use a backing plate, such as plywood, asbestos board, etc., to close the hole before application of resin.

c. Catalyze resin in the ratio of approximately 100 to 1 (a few drops per cup) for average (75° F) conditions. Catalyst may be increased or decreased to compensate for temperature. If the temperature is cold, use slightly more catalyst; if the temperature is very warm, use slightly less.

d. To cover the damaged area, saturate fiberglass mat or chopped fiberglass and smear or press it over the area to be repaired, overlapping approximately 2 inches into the undamaged area. It is easiest to saturate the fiberglass in the cup of resin and then lift it wet onto the area; however, it may be applied by holding the mat in place and dabbing it with resin until saturated.

e. After the chopped glass or glass mat is applied, roll back and forth several times with the metal roller to smooth the surface. Press all the fibers into the resin and squeeze out the air bubbles.

f. After the resin patch has hardened beyond the tacky stage (usually 1 hour to 1-1/2 hours at normal temperature) sand the surface smooth to blend with the surrounding area.

g. Apply the gelcoat finish by catalyzing the gelcoat in the same ratio as the resin (100-1) and then paint it on over the repaired area. The gelcoat will also take approximately 1 hour to harden.

h. Small scratches or gouges that do not puncture through the fiberglass skin may be repaired by using just the gelcoat, rather than applying fiberglass and resin.

7.2.2. Nutsert Repair Kit. The Nutsert repair kit is stowed in shelter 1300. The contents of the kit are as follows:

Tools

One putty knife, 1 inch
One drill bit, 5/8", with 1/4" shank

Materials

Approximately 500 3/8-16 nutserts
Two qts. Hysol Epoxy Adhesive
One qt. Hysol Epoxy Hardener

To repair a failed nutsert, proceed as follows:

a. Remove the failed nutsert from the wall, using a puller made by inserting a 3/8-16 bolt through a washer and through a piece of pipe which is larger in diameter than the nutsert. By threading the bolt into the nutsert and allowing the pipe to bear against the wall, the nutsert can be pulled out without damaging the wall or enlarging the hole.

b. Remove any debris or old epoxy from the hole by reaming with the 5/8 inch drill. Be careful not to enlarge the diameter of the hole or to deepen it. When fully inserted into the hole, the nutsert should be recessed 1/16 inch.

c. Wash the new nutsert in acetone to remove all grease and contaminants. Allow to dry thoroughly. Do not touch with fingers after cleaning. (Check cardex for location of acetone)

d. Mix the epoxy by placing 2 parts adhesive and 1 part hardener adjacent to each other on a mixing surface, such as a glass or metal plate, in order to judge the correct 2 to 1 proportion. Use care to insure that at least one-half (or more if in question) as much hardener as adhesive is used. Mix thoroughly with a putty knife or stick. Proper adhesion depends on complete mixing. Use epoxy only while fresh; mix only enough epoxy for 2 or 3 fully prepared nutserts, as epoxy dries very quickly.

e. Apply a thin coat of epoxy to all surfaces of the new nutsert and to the inside of the hole, leaving no gaps. Using a bolt threaded into the nutsert as a handle, push the nutsert into the hole, allowing air to escape. If the nutsert cannot be pushed in, use a hammer on the bolt to force it in

until the nutsert is recessed at least 1/16 inch. Be certain that the nutsert is recessed and that it is fully seated against the bottom of the hole and be sure that it is not pushed out again by trapped air inside the hole. Using a small tool, apply epoxy to the front edge of the nutsert, forming a cone-shaped lead-in to the threaded hole. Avoid getting epoxy in the threads.

f. Allow the epoxy to dry for a full 24 hours (longer if weather is damp or cold). Sand the surface flush with sandpaper or a disk sander, if available. Use a large diameter drill to cut a cone-shaped lead-in from the wall surface to the start of the threads. Use a 3/8-16 tap to clean any epoxy and debris out of the threads.

g. Repaint the surface as necessary with gelcoat. The gelcoat must be catalyzed with fiberglass resin catalyst (in the fiberglass repair kit) or with MEK. A few drops per cup is sufficient. Although gel-coat may appear dry after a few hours, allow it to dry a full 24 hours before bolting anything to the surface of the wall.

7.2.3. Exterior Door Adjustment. If the exterior doors leak water or do not latch easily, adjustment can be accomplished as follows:

a. Check the gasket around the door perimeter to make certain it is not damaged.

b. If the door leaks, move the door closer to the door jamb by removing spacers from behind the door hinges on the inside surface of the door.

c. If the door is difficult to latch and the trouble is not in the handle or striker plate, move the door away from the door jamb by adding spacers between the hinges and the inside surface of the door. The spacers can be washers or U-shaped metal plates.

7.2.4. Interior Fastener Replacement. Interior wall fasteners are of two types: "molly" (toggle) bolts or expanding anchor nuts. Expanding anchor nuts are used for floor fasteners.

a. Wall fasteners. Remove the failed fastener with minimum damage to wall. Perform necessary repairs to the wall, using standard techniques. A quantity of various-size replacement fasteners has been provided.

b. Floor fasteners. Remove the defective fastener and any damaged floor tile in the surrounding area. Depending on the severity of the damage to the hole, the hole may be rebuilt, using a plastic or epoxy filler, or the plywood area surrounding the hole may have to be cut out and a new piece of plywood installed. Redrill the hole as cleanly as possible, using a standard twist drill (118° point) of the correct size: 9/16 inch for 3/8 inch fasteners, 1/2 inch for 5/16 inch fasteners, and 7/16 inch drill for 1/4 inch fasteners. Drive the fastener into the hole until it is flush with the surface. Expand the fastener, using a Torque Expander of the correct size. Remove the expander.

7.2.5. Pullman Repair. In the event that a pullman becomes damaged by a puncture or tear, a pullman repair kit is stowed in shelter 1300. The kit consists of the following:

1 pt. MEK (methyl-ethyl-ketone)
1 pt. vinyl adhesive
1 pc. vinyl patching material
1 1" paint brush

NOTE

Two spare pullmans are stowed in shelter 2600.

Pullman damage should be repaired as soon as possible after discovery to avoid allowing water to soak into the sponge rubber padding inside the pullman. If the sponge does become soaked, it is necessary to cut the pullman open and remove the sponge to allow it to dry. After it is thoroughly dry, the sponge rubber can be reinstalled and the pullman patched according to the following procedure (the pullman need not be removed for repair):

a. Cut a piece of vinyl patching material large enough to cover the damaged area for a distance of 2 inches beyond the damage.

b. Soak the paint brush in MEK and use it as a cleaner to clean the patch and the damaged area.

c. Brush some vinyl adhesive on both the patch and the damaged area and allow it to dry for a few minutes.

d. Press the patch onto the damaged area and clamp or weight (if possible) for approximately 1 hour. The repaired area then becomes as serviceable as the remainder of the pullman.

If damage occurs to the pullman mounting holes or the flange, a double thickness patch can be applied by folding the patch over both sides of the flange. The hole can then be recut when the patch is dry.

7.2.6 Replacement of Transit Plate and Pullman Mounting Bracket Gasket. In the event that a transit plate or pullman gasket becomes separated from the plate or bracket, or becomes torn or damaged, or takes a permanent set, the following material has been provided for repair and is stowed in shelter 1300:

1 qt. contact cement
300 ft. silicone sponge gasket

a. Remove the damaged portion of gasket.

b. Throughly clean both the contact surface and any reuseable gasket of all old cement and contaminants, using lacquer thinner, acetone, or MEK.

c. Sand both contact and gasket surfaces with coarse sandpaper for better adhesion.

d. Brush cement on both surfaces and allow it to dry. (Although a new gasket may, in some cases, be self-adhering, it is still recommended that contact cement be used.)

e. Apply the gasket and clamp or weight for about 1 hour. (Bolt holes can be recut after the cement is dry.)

7.2.7 Replacement of Small Air Conditioner Gaskets. When it is necessary to replace a small air conditioner mounting gasket, proceed as follows:

a. From inside the shelter, remove the air conditioner power plug from the socket.

b. Remove the four screws securing the air conditioner to the sleeve, and remove the air conditioner from the sleeve.

c. From outside the shelter, remove the 14 bolts securing the sleeve to the shelter wall.

d. Lower the sleeve to the ground and remove the gasket from the inside lip of the sleeve.

e. Remove all old cement and contaminants from the surface of the sleeve and sand both the sleeve and the new gasket for better adhesion. Clean both surfaces with acetone, MEK, or lacquer thinner. (Although the new gasket may be self-adhering, it is recommended that contact cement be used to fasten the gasket.)

f. Reinstall the sleeve and air conditioner.

7.2.8 Replacement of Large Air Conditioner Mounting Gaskets. Large air conditioner gaskets should be replaced at least twice a year, or more often if necessary. To replace the gasket, proceed as follows:

a. Remove the large air conditioner from the outside wall of the shelter by removing the ten bolts around the perimeter of the unit. (see paragraph 4.8.12)

WARNING: TO AVOID INJURY TO PERSONNEL AND DAMAGE TO THE AIR CONDITIONER, HEAVY WEIGHT LIFTING EQUIPMENT SHOULD BE USED TO REMOVE AND REPLACE THIS UNIT. THE AIR CONDITIONER WEIGHS APPROXIMATELY 850 POUNDS.

b. Remove the worn gasket on the inner lip of the air conditioner mounting bracket and replace it with a new gasket. (Clean the gasket and all surfaces with acetone or lacquer thinner and sand off all old adhesive.)

c. Use contact cement to fasten the new gasket.

d. Observing the same precautions as in step a, replace the air conditioner on the outer wall of the shelter.

7.2.9. Replacement of Water Purifier Filters. To replace the water purifier filter cartridge in the water purifier in shelter 2400, proceed as follows:

a. Remove the wingnut and gasket from the top of the water purifier cover. Ensure that the wingnut gasket is not misplaced.

b. Remove the cover from the top of the water purifier. Ensure that the upper seal and the cover gasket are not misplaced.

c. Remove the filter cartridge from inside the water purifier by lifting straight up.

d. Insert a new filter cartridge into the body of the water purifier.

e. Replace the cover gasket, the upper seal, the cover, the wingnut gasket, and the wingnut.

f. Tighten the wingnut as required.

NOTE

The filter cartridges in place in the water purifiers are Type LP2-1, primarily intended for removal of chlorine and organic tastes (See Ogden Water Purifier Manual). No spare cartridges are provided, but replacements can be ordered from the manufacturer using the ordering information in the Ogden manual. In addition, filters are available which will remove bacteria from contaminated water.

7.2.10. Replacement or Adjustment of Secondary Heat Exchanger Belts. To replace the heat exchanger fan belts, proceed as follows:

a. Loosen the sixteen lion fasteners holding the two plates on the right side of the Secondary Heat Exchanger (facing the electrical control end), and remove the plates.

b. Loosen the 4 bolts which clamp the motor base to the belt tightener assembly. (See figure 7-1)

c. Turn belt tightener screw to move the motor as far as possible toward the fan shaft. (See figure 7-2)

d. Remove the belt and inspect it. Replace with a new belt if needed.

e. Install belt and tighten.

CAUTION: Do not over-tighten. Because of the screw-type tightener, it is easy to over-tighten the belt. Excessive tension on the belt will quickly destroy the bearings in the motor. Test the belt midway between the pulleys to be sure there is plenty of slack.

f. Tighten the 4 bolts which clamp the motor base to the tightener assembly.

g. Replace the side plates.

7.2.11. Temporary Repair of Secondary Heat Exchanger Radiator Leak. The radiator of the secondary heat exchanger consists of an inlet and outlet header, with approximately 40 tubes connected between the headers. Should a leak occur in the radiator, the following procedure will provide a temporary repair until proper repairs can be made.

a. Locate the leak.

b. Using pliers or a similar tool, pinch the tube at each end of the radiator to seal off the leaking tube.

NOTE

Sealing off one tube will reduce the radiator's cooling capacity by 1/40.

7.3. LUBRICATION

7.3.1. Lubrication of Leveling Jack Assemblies. To lubricate leveling jack assemblies, remove all foreign matter from joints and thread surfaces; and, using a clean cloth saturated with grease, apply a thin film of grease to these areas.

7.3.2. Lubrication of Bolts and Hardware. To avoid rusting and deterioration of bolts and hardware, periodic lubrication should be performed using a solvent which meets Federal Specification P-D-680.

7.4. STOWAGE OF REPAIR PARTS. Several large frame cabinets are provided in various shelters for storing the equipment and the spare parts which are necessary to repair faulty equipment. Primary repair parts are stored in cabinets which are housed in seven shelters. The shelters themselves can be grouped into five categories, with one or two shelters holding the spare parts for the equipment in all the shelters in that category. The five categories, the shelters

grouped under each category, and the primary shelter(s) housing the spare parts for that category are listed as follows:

Category	Shelters in Category	Primary Storage Shelters
General (shop, office & housekeeping	1300, 2400, 2700	1300, 2400
Power	1100, 1200	1200
Timer/Synchronizer	2100, 2200, 2500	2500
Communications	2300	2300
Transmitter	3100 Through 3800	3600, 3700

A cardex file system lists spare parts and other stored items numerically by their stock numbers within each of the five categories. Each card in the system has the stock number, plus a number in the column marked "LOCATION" which indicates the exact location of that particular part. An example of this location number, and the breakdown for decoding purposes, follows: (See figure 7-3)

24-A-3-B-2
24 = Shelter 2400
A = Frame A within shelter
3 = Third shelf within frame
B = Second bin
2 = Second compartment in bin

If a spare part is too large to fit into a cabinet, the LOCATION column of the card indicator indicates verbally where the item is stored.

Figure 7-1

Releasing belt tightener clamps (4-bolts) on secondary-cooler fan drive motor

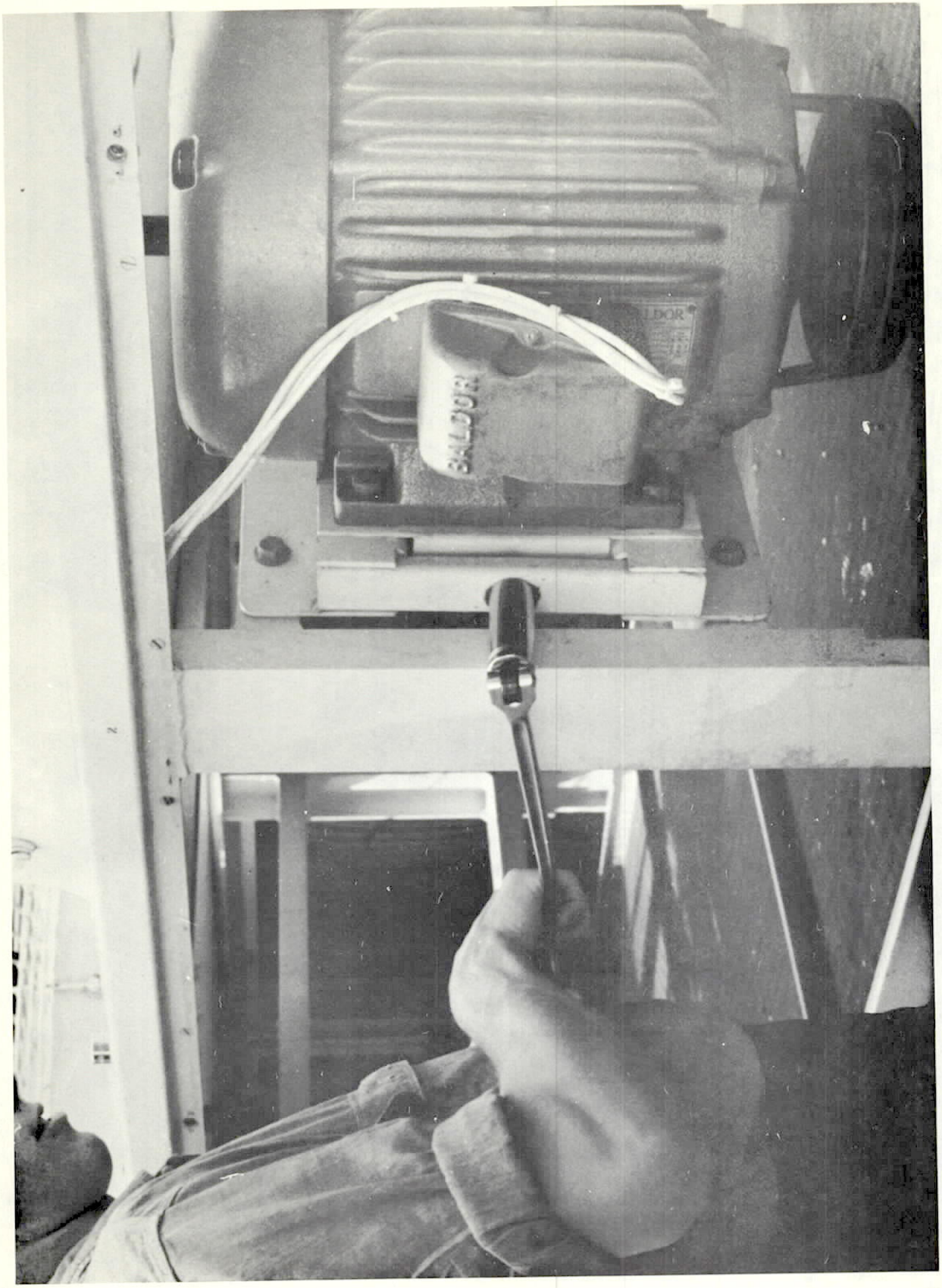


Figure 7-2

Adjusting the belt tightener.

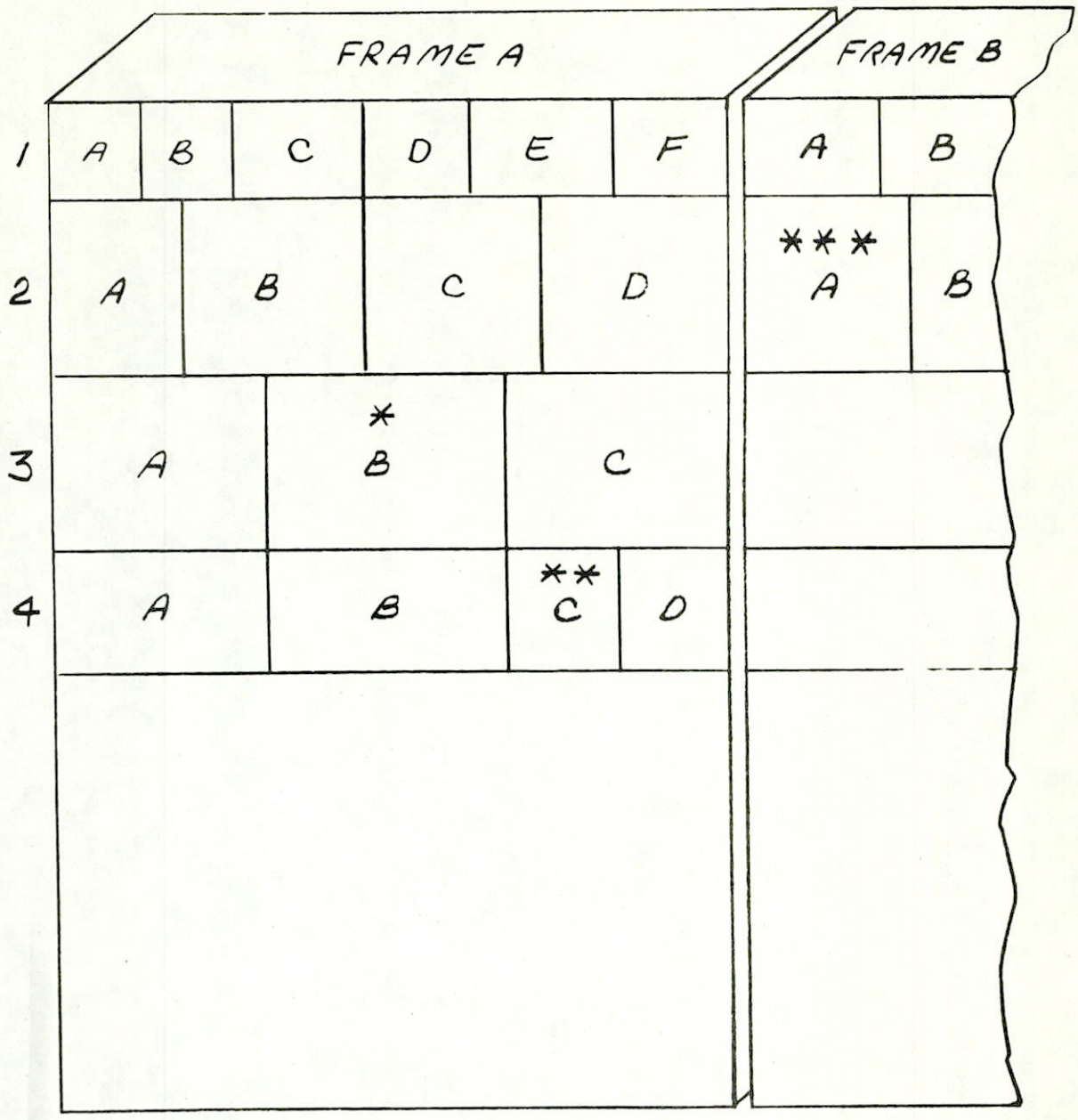


Figure 7-3

Spare parts location code

CHAPTER 8

FAULT ISOLATION

Normally, fault isolation of electrical circuits is accomplished with the aid of system and component schematics, since a total system approach is seldom necessary under usual malfunction conditions. In the event, however, that a systematic trouble-shooting approach is desired, a systematic procedure for isolating a power distribution malfunction is provided in Table 8-1. To use this table, place circuit breakers in the ON position, one at a time, in the order specified in the "Order No." column. After each circuit is turned on, use a multimeter and measure the voltage at the points specified in the "Circuit Breaker Panel" and "Measure Between" columns. If the reading specified in the "Normal Indication" column is not obtained, investigate the components and cables listed in the "Probable Cause" column. See paragraph 2-6 for an explanation of voltage values. A complete set of block diagrams of the facility's power distribution system are provided in figures 8-1 through 8-12. A detailed set of power distribution system schematic diagrams is included in Part A, Section 2, of the Construction and Installation Drawings (See Chapter 10).

TABLE 8-1. FAULT ISOLATION CHART

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
1A	CB1	Generator Disconnect Panel	1100E23 and 1100E22 1100E23 and 1100E21	480 volts	Gen. Disc. Pnl. CB1; all cables and connectors between generator No. 1 and 1104B2. (See fig. 7-1.)
1B	CB2	Generator Disconnect Panel	1100E26 and 1100E25 1100E26 and 1100E24	480 volts	Gen. Disc. Pnl. CB2; all cables and connectors between generator No. 2 and 1104B2. (See fig. 7-1.)
1C	CB3	Generator Disconnect Panel	1100E29 and 1100E28 1100E29 and 1100E27	480 volts	Gen. Disc. Pb1. CB3; all cables and connectors between generator No. 3 and 1104B2. (See fig. 7-1.)
1D	CB4	Generator Disconnect Panel	1100E33 and 1100E31 1100E33 and 1100E32	480 volts	Gen. Disc. Pnl. CB4; all cables and connectors between generator No. 4 and 1104B2. (See fig. 7-1.)
1E	CB1	1100A1	1100E18 and 1100E19 1100E18 and 1100E20	480 volts	1100A1 CB1; all cables and connectors between 1104B2 and 1104B1. (See fig. 7-1)
2	CB2	1100A1	1100E11 and 1100E12 1100E11 and 1100E13	480 volts	1100A1 CB2; all cables and connectors between 1104B2 and 1104B1. (See fig. 7-1)
3	CB3	N/A	N/A	N/A	N/A
4	CB1	1100A2	1100E1 and 1100E2 1100E1 and 1100E3	480 volts	1100A1 CB3; 1100A2 CB1; wiring between 1104B2 and 1104B1. (See fig. 7-1).

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
5	CB2	1100A2	1100E4 and 1100E5 1100E4 and 1100E6	480 volts	1100A2 CB2; wiring between 1100A1 and 1104 B1. (See fig. 7-1).
6	CB3	1100A2	TB4-1 and TB4-2 TB4-1 and TB4-3 (Fuel Transfer Pump)	480 volts	1100A2 CB3; wiring between 1100A1 and 1104 B1, W11FTP (See fig. 7-1).
7	CB1	3500A1	3500E32 and 3500E33 3500E32 and 3500E34	480 volts	3500A1 CB1; W1135-1, 2, 3; wiring between 3516B1 and 3500A1. (See fig. 7-1 and 7-3)
8	CB2	3500A1	3500E35 and 3500E36 3500E35 and 3500E37	480 volts	3500 CB2; wiring between 3516B1 and 3500A1. (See fig. 7-1 and 7-3).
9	CB3	3500A1	3500E10 and 3500E11 3500E10 and 3500E12	480 volts	3500 CB3; wiring between 3516B1 and 3500 A1 (See fig. 7-3).
10	CB4	3500A1	3500E13 and 3500E14 3500E13 and 3500E15	480 volts	3500 CB4; wiring between 3516B1 and 3500 A1. (See fig. 7-3).
11	CB2	3500A2	3500E16 and 3500E17 3500E16 and 3500E18	480 volts	3500 CB2; wiring between 3516B1 and 3500 A2. (See fig. 7-3).
12	CB4	3500A2	3500E19 and 3500E20 3500E19 and 3500E21	480 volts	3500 CB4; wiring between 3500A2 and 3516 B1 (See fig. 7-3).

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
13	CB1	3500A2	3500E22 and 3500E23 3500E22 and 3500E24	480 volts	3500 CB1; wiring between 3500A2 and 3516 B1. (See fig. 7-3).
14	CB3	3500A2	3500E25 and 3500E26 3500E25 and 3500E27	480 volts	3500 CB3; wiring between 3500A2 and 3516 B1 (See fig. 7-3).
15	CB5	3500A2	3500E7 and 3500E8 3500E7 and 3500E9	480 volts	3500 CB5; wiring between 3500A2 and 3516 B1. (See fig. 7-3).
16	CB1	1100A3	N/A	N/A	N/A
17	CB2	1100A3	N/A	N/A	N/A
18	CB3	1100A3	N/A	N/A	N/A
19	CB4	1100A3	N/A	N/A	N/A
20	CB5	1100A3	N/A	N/A	N/A
21	CB6	1100A3	N/A	N/A	N/A
22	CB7	1100A3	N/A	N/A	N/A
23	CB8	1100A3	N/A	N/A	N/A
24	CB9	1100A3	1200TB1-7 and 1200-TB1-8	115 volts	1100A3 CB9; W1112-1,-2 (See fig. 7-2).

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
25	CB10	1100A3	N/A	N/A	N/A
26	CB11	1100A3	1300TB1-9 and 1300-TB1-10	115 volts	1100A3 CB11; W1113-3, 4 (See fig. 7-2).
27	CB12	1100A3	N/A	N/A	N/A
28	CB13	1100A3	1300TB1-7 and 1300-TB1-8	115 volts	1100A3 CB13; W1113-1, 2 (See fig. 7-2).
29	CB14	1100A3	TB1-6 and TB1-5 (fire detector box) 1200TB1-10 and 1200-TB1-9	115 volts	1100A3 CB14; W1112-7, 8 (See fig. 7-2).
30	CB15	1100A3	N/A	N/A	N/A
31	CB16	1100A3	1100E17 and 1100E14 1100E17 and 1100E15 1100E17 and 1100E16	115 volts	1100A3 CB16; wiring between 1104B1 and 1100A3. (See fig. 7-2).
32	CB1	2600A1	2200E3 and 2200E4	208 volts	W1126-1, 2, 3, 4; 2600-A1CB1; W2226-3, 4. (See fig. 7-2 and 7-9).
33	CB2	2600A1	2200E5 and 2200E6	208 volts	2600A1 CB2; W2226-5, 6 (See fig. 7-9).
34	CB3	2600A1	2200E1 and 2200E2	208 volts	2600A1 CB3; W2226-1, 2 (See fig. 7-9).

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
35	CB4	2600A1	2300E4 and 2300E1 2300E4 and 2300E2 2300E4 and 2300E3	115 volts	2600A1 CB4; W2426-19, 20, 21, 22; W2324-1, 2, 3, 4 (See fig. 7-9)
36	CB5	2600A1	2A7TB5-1 and 2A7TB5-2 (shelter 2600)	115 volts	2600A1 CB5, W722 (See fig. 7-9).
37	CB6	2600A1	TB1-5 and TB1-6 (fire detector box)	115 volts	2600A1 CB6 (See fig. 7-9).
38	CB7	2600A1	N/A	N/A	N/A
39	CB8	2600A1	N/A	N/A	N/A
40	CB9	2600A1	N/A	N/A	N/A
41	CB10	2600A1	2400TB1-11 and 2400-TB1-12	115 volts	2600A1 CB10; W2426-11, 12 (See fig. 7-9).
42	CB11	2600A1	N/A	N/A	N/A
43	CB12	2600A1	N/A	N/A	N/A
44	CB13	2600A1	N/A	N/A	N/A
45	CB14	2600A1	N/A	N/A	N/A
46	CB15	2600A1	N/A	N/A	N/A
47	CB16	2600A1	N/A	N/A	N/A
48	CB17	2600A1	N/A	N/A	N/A

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
49	CB18	2600A1	N/A	N/A	N/A
50	CB19	2600A1	N/A	N/A	N/A
51	CB20	2600A1	N/A	N/A	N/A
52	CB21	2600A1	N/A	N/A	N/A
53	CB1	3500A3	N/A	N/A	N/A
54	CB2	3500A3	N/A	N/A	N/A
55	CB3	3500A3	N/A	N/A	N/A
56	CB4	3500A3	N/A	N/A	N/A
57	CB5	3500A3	3200TB1-5 and 3200-TB1-6	208 volts	3500A3 CB5; W3235-5, 6 (See Fig. 7-5).
58	CB6	3500A3	3400TB1-5 and 3400-TB1-6	208 volts	3500A3 CB6; W3435-5, 6 (See Fig. 7-6).
59	CB7	3500A3	N/A	N/A	N/A
60	CB8	3500A3	N/A	N/A	N/A
61	CB9	3500A3	N/A	N/A	N/A
62	CB10	3500A3	N/A	N/A	N/A
63	CB11	3500A3	N/A	N/A	N/A

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
64	CB12	3500A3	N/A	N/A	N/A
65	CB13	3500A3	N/A	N/A	N/A
66	CB14	3500A3	N/A	N/A	N/A
67	CB15	3500A3	N/A	N/A	N/A
68	CB16	3500A3	N/A	N/A	N/A
69	CB17	3500A3	N/A	N/A	N/A
70	CB18	3500A3	N/A	N/A	N/A
71	CB19	3500A3	N/A	N/A	N/A
72	CB20	3500A3	3800TB1-7 and 3800TB1-8	115 volts	3500A3 CB20, W3538-9, 10 (See fig. 7-4).
73	CB21	3500A3	N/A	N/A	N/A
74	CB22	3500A3	N/A	N/A	N/A
75	CB23	3500A3	N/A	N/A	N/A
76	CB24	3500A3	3800TB2-1 and 3800TB2-2	115 volts	3500A3 CB24; W3538-1, 2 (See fig. 7-4).
77	CB25	3500A3	N/A	N/A	N/A
78	CB1	3500A4	N/A	N/A	N/A

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
79	CB2	3500A4	N/A	N/A	N/A
80	CB4	3500A4	3100TB1-5 and 3100TB1-6	208 volts	3500A4 CB4; W3235-11, 12; W3132-21, 22. (See fig. 7-4).
81	CB6	3500A4	3100TB1-7 and 3100TB1-8	208 volts	3500A4 CB6, W3132-23, 24; W3235-13, 14. (See fig. 7-5).
82	CB3	3500A4	3300TB1-5 and 3300TB1-6	208 volts	3500A4 CB3; W3435-11, 12; W3334-21, 22. (See fig. 7-6).
83	CB5	3500A4	3300TB1-7 and 3300TB1-8	208 volts	3500A4 CB5; W3435-13, 14; W3334-23, 24. (See fig. 7-6).
84	CB1	2300A1	N/A	N/A	N/A
85	CB2	2300A1	N/A	N/A	N/A
86	CB3	2300A1	N/A	N/A	N/A
87	CB4	2300A1	N/A	N/A	N/A
88	CB5	2300A1	N/A	N/A	N/A
89	CB6	2300A1	Black and white wires on AC outlet strip	115 volts	2300A1 CB6 (See fig. 7-10).
90	CB7	2300A1	N/A	N/A	N/A

TABLE 8-1. FAULT ISOLATION CHART (continued)

Order No.	Circuit Breaker	Circuit Breaker Panel	Measure Between	Normal Indication	Probable Cause
91	CB13	Filter room shelter 2200	FL1 and FL2 (filter room shelter 2200)	115 volts	2200CB13, 22T1 (See fig. 7-11).
92	CB14	Filter room shelter 2200	FL3 and FL4 (filter room shelter 2200)	115 volts	2200CB14, 22T2 (See fig. 7-11).
93	CB15	Filter room shelter 2200	N/A	N/A	N/A
94	CB1 and CB2	2200A1	N/A	N/A	N/A
95	CB3 and CB4	2200A1	N/A	N/A	N/A
96	CB5 and CB6	2200A1	N/A	N/A	N/A
97	CB7 and CB8	2200A1	N/A	N/A	N/A
98	CB9 and CB10	2200A1	N/A	N/A	N/A
99	CB11 and CB12	2200A1	A5P1-A and A5P1-C (shelter 2200)	115 volts	2200A1 CB11, 12; W2122-5 Blk, Red. (See fig. 7-11).

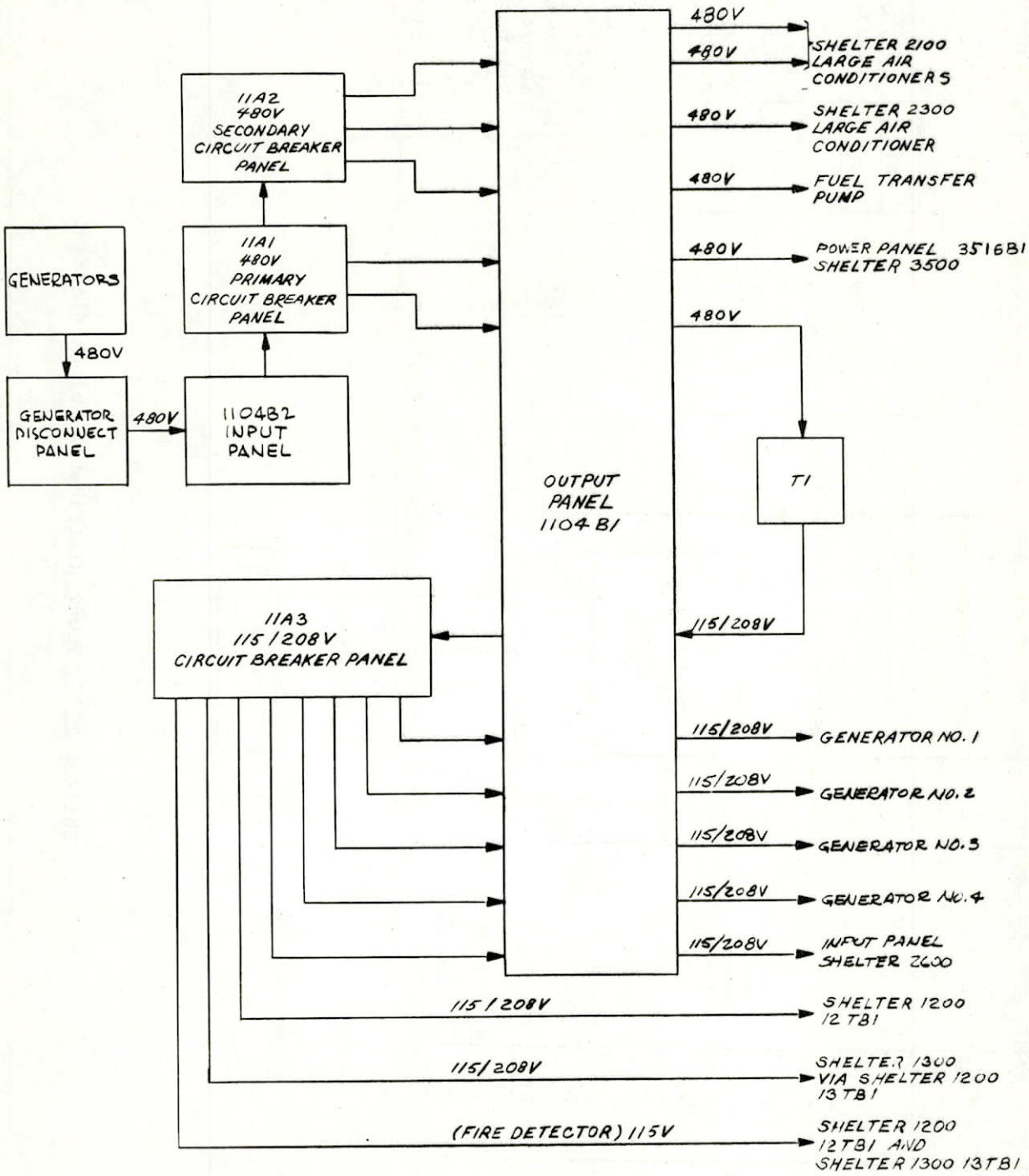


Figure 8-1

Shelter 1100, power distribution block diagram.

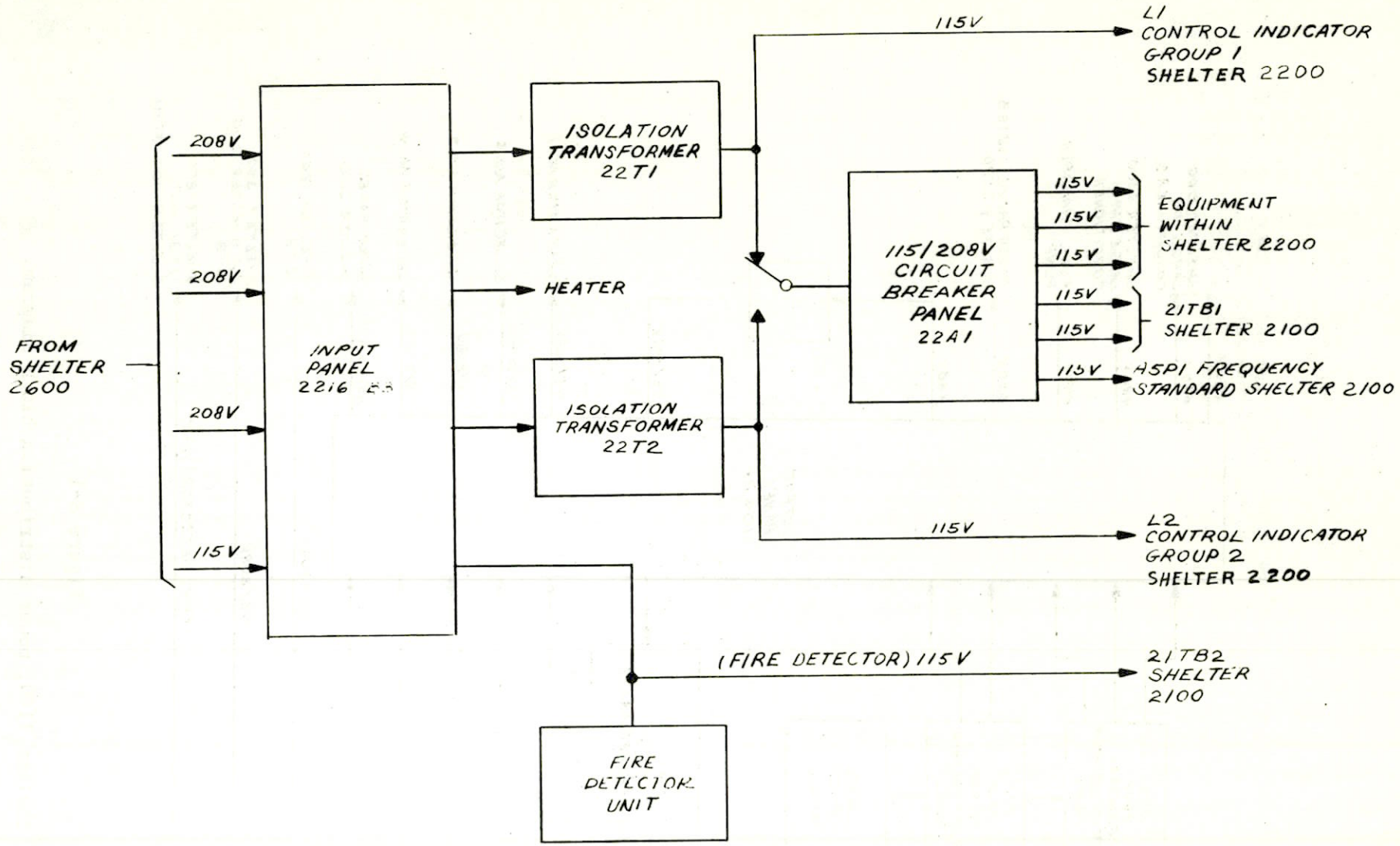


Figure 8-2

Shelter 2200, Power distribution block diagram.

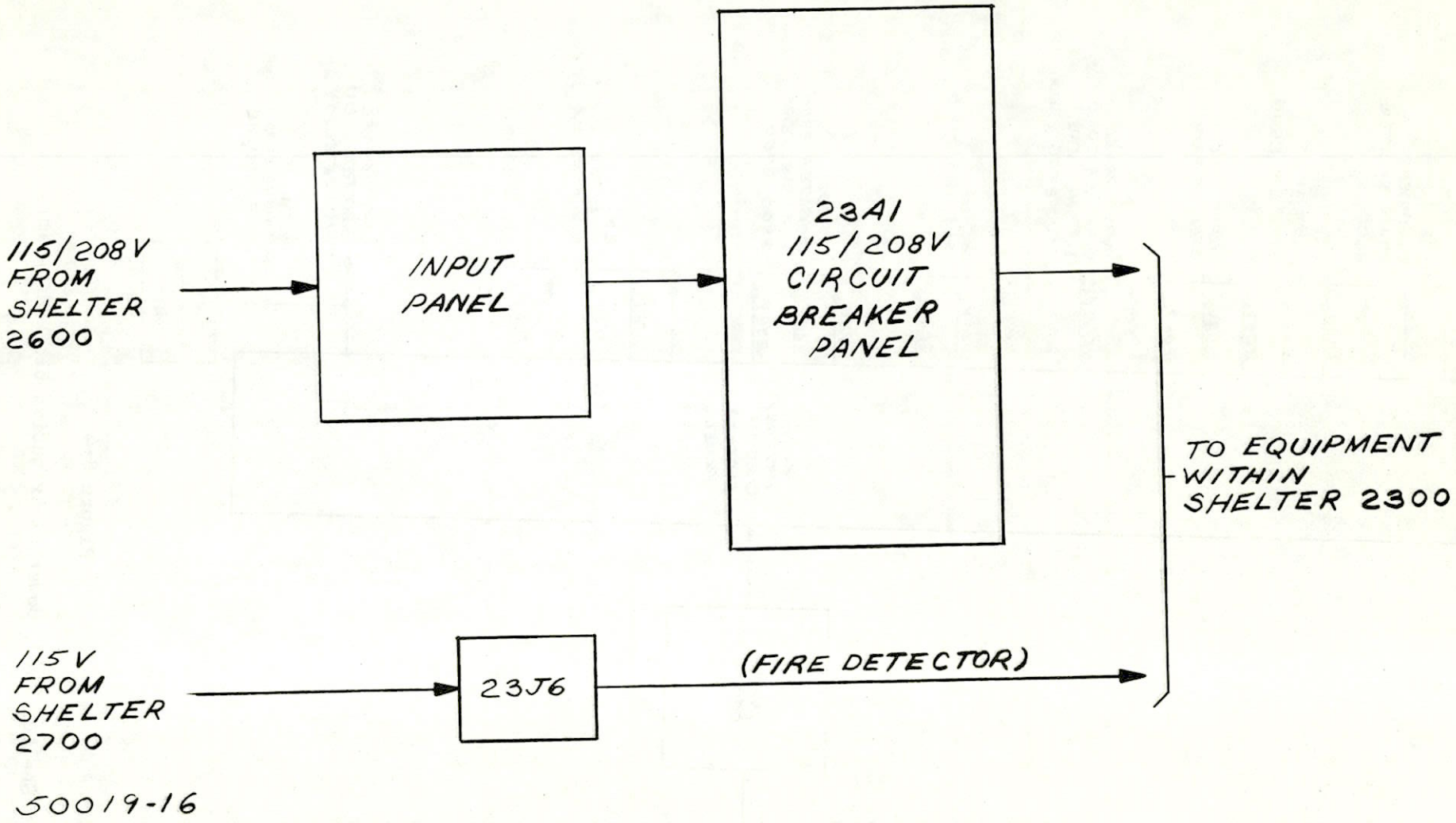


Figure 8-3

Shelter 2300, power distribution block diagram.

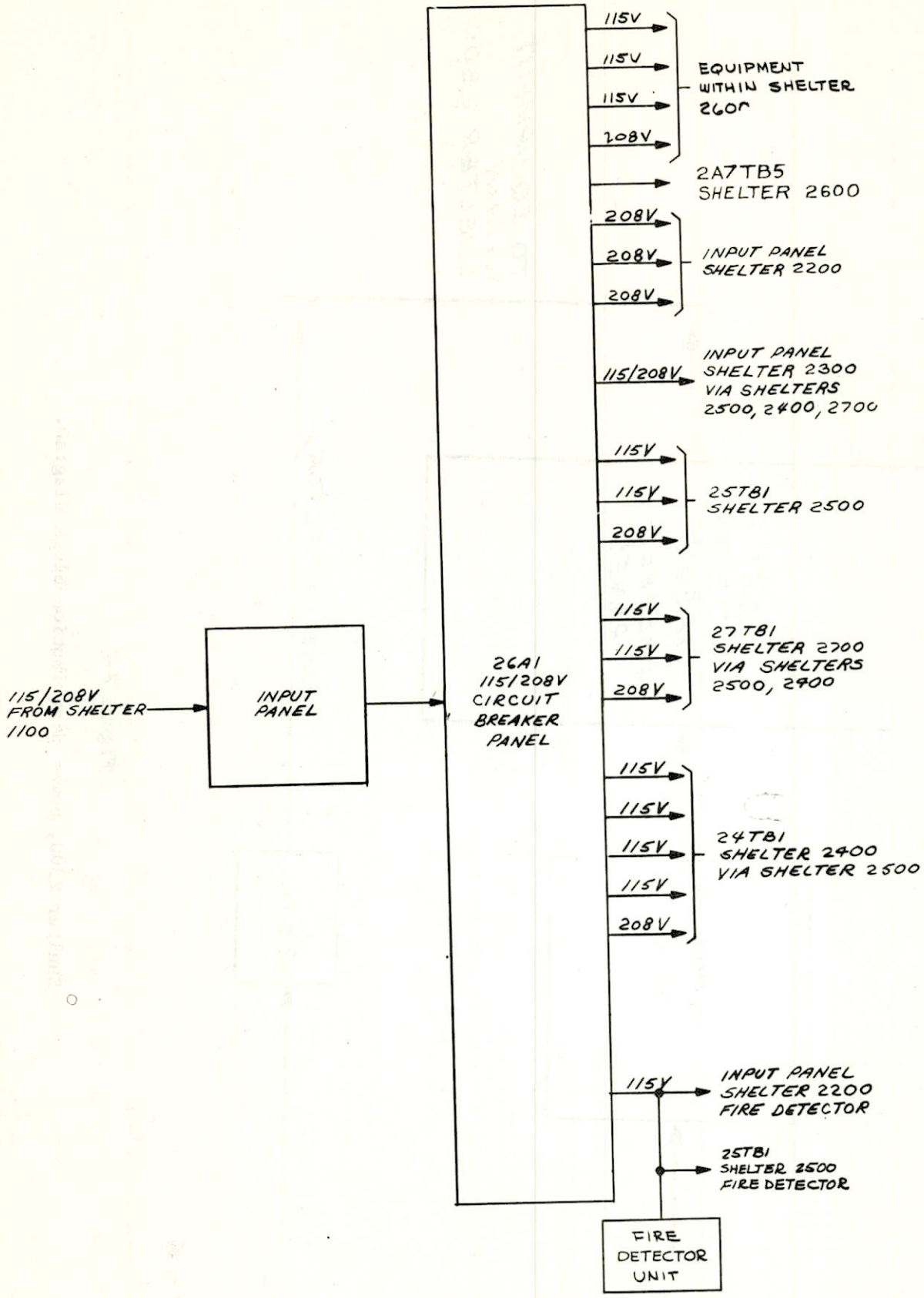


Figure 8-4

Shelter 2600, power distribution block diagram.

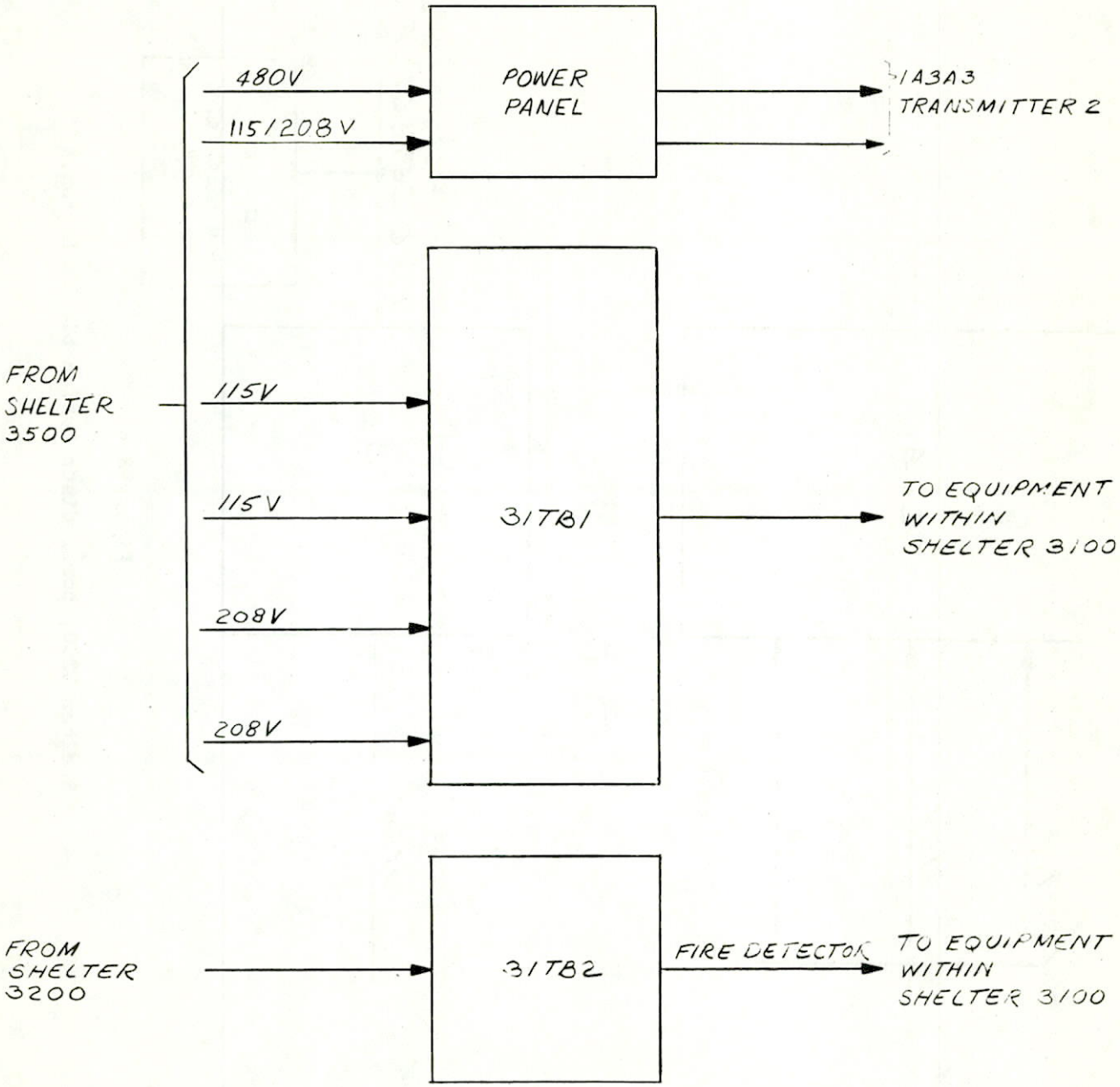


Figure 8-5

Shelter 3100, power distribution block diagram.

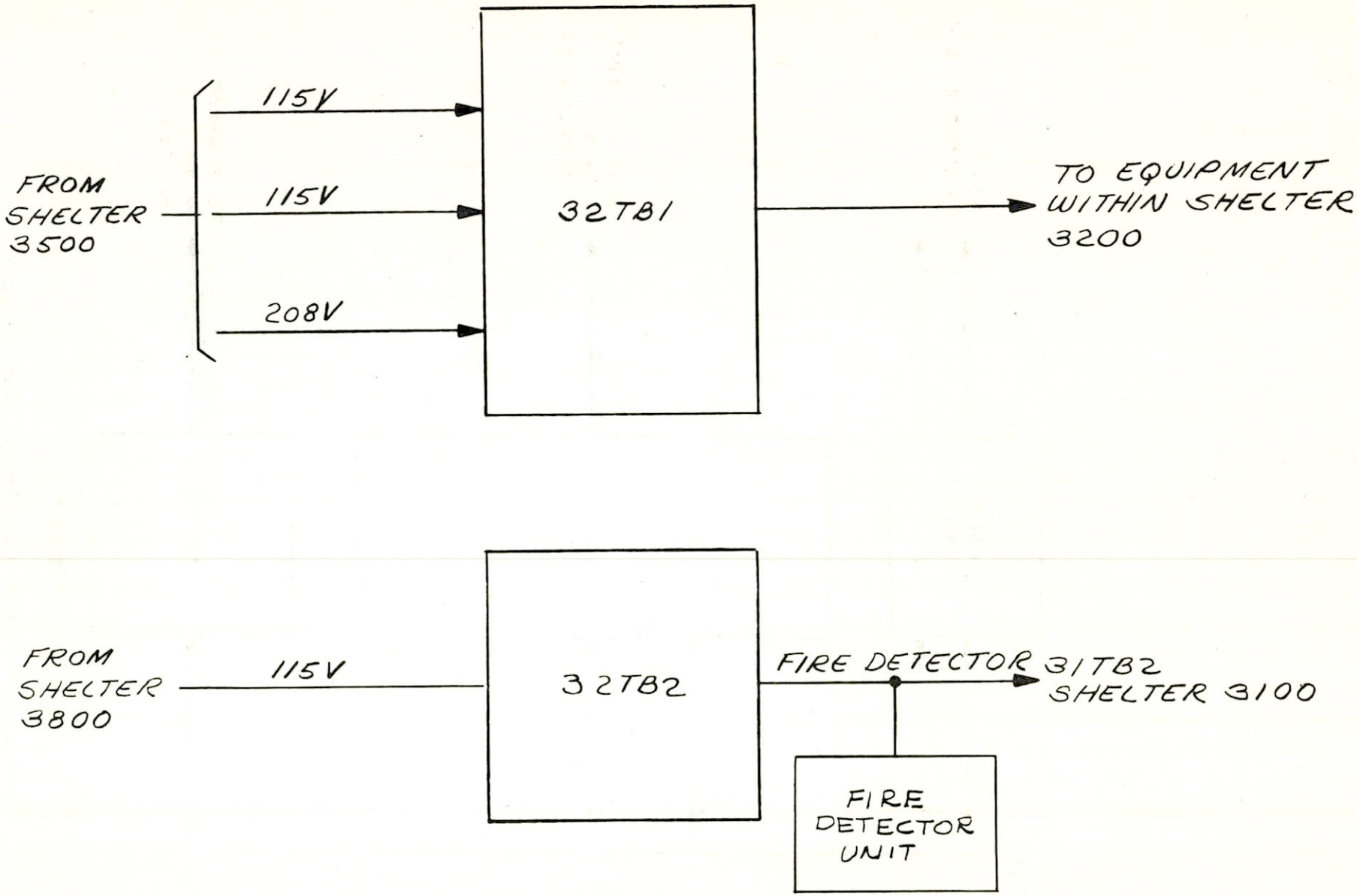


Figure 8-6

Shelter 3200, power distribution block diagram.

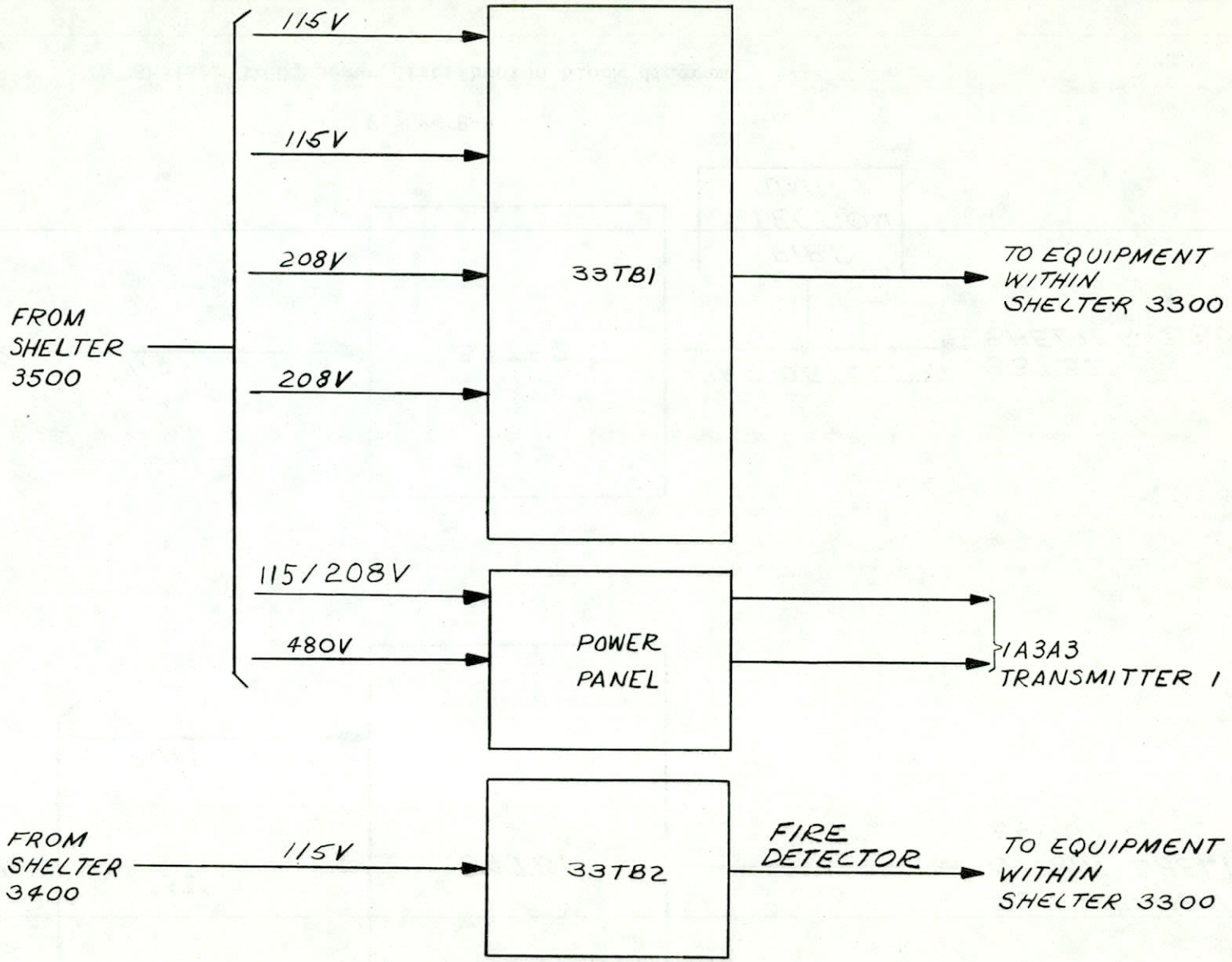


Figure 8-7

Shelter 3300, power distribution block diagram.

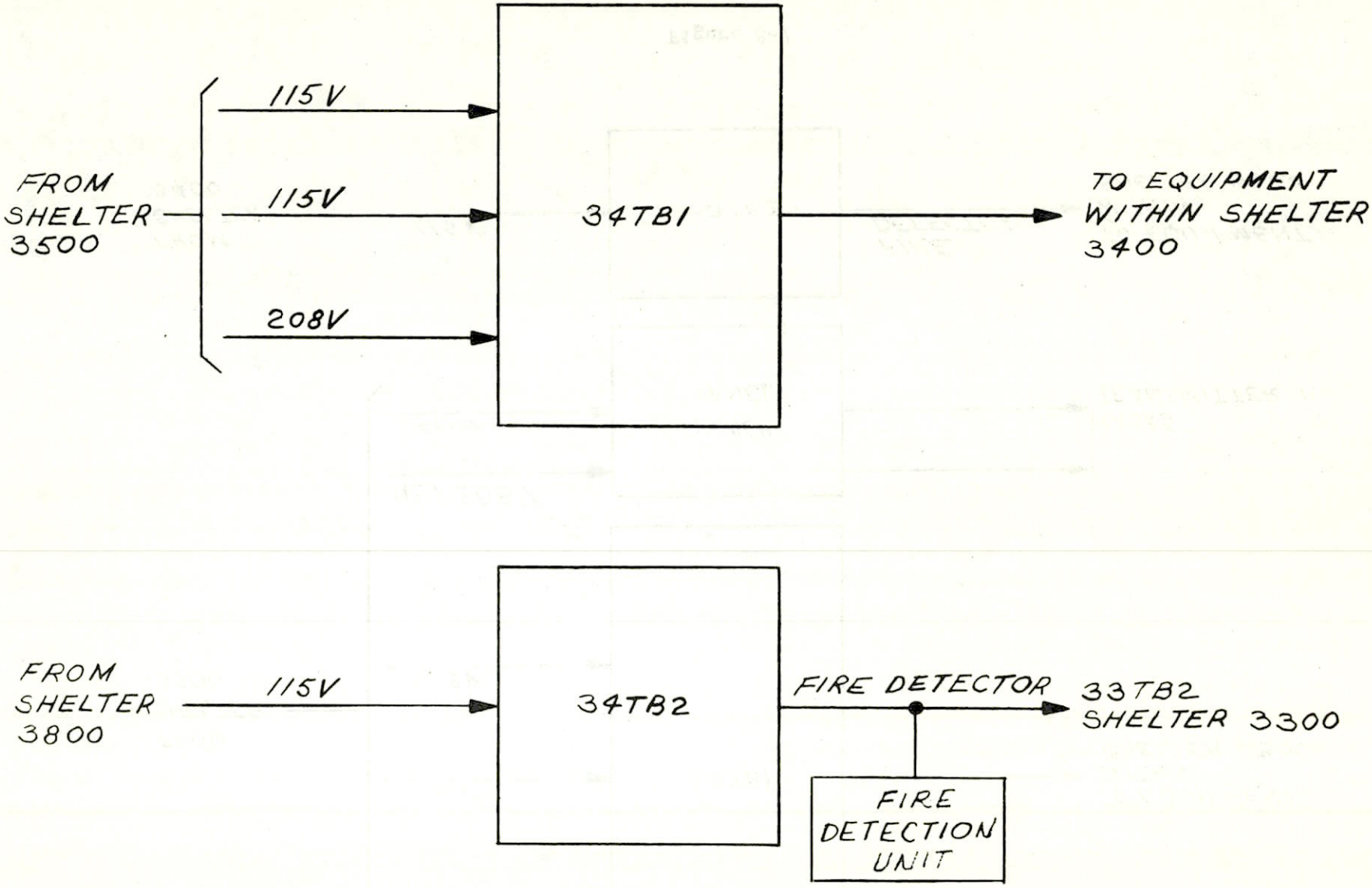


Figure 8-8

Shelter 3400, power distribution block diagram.

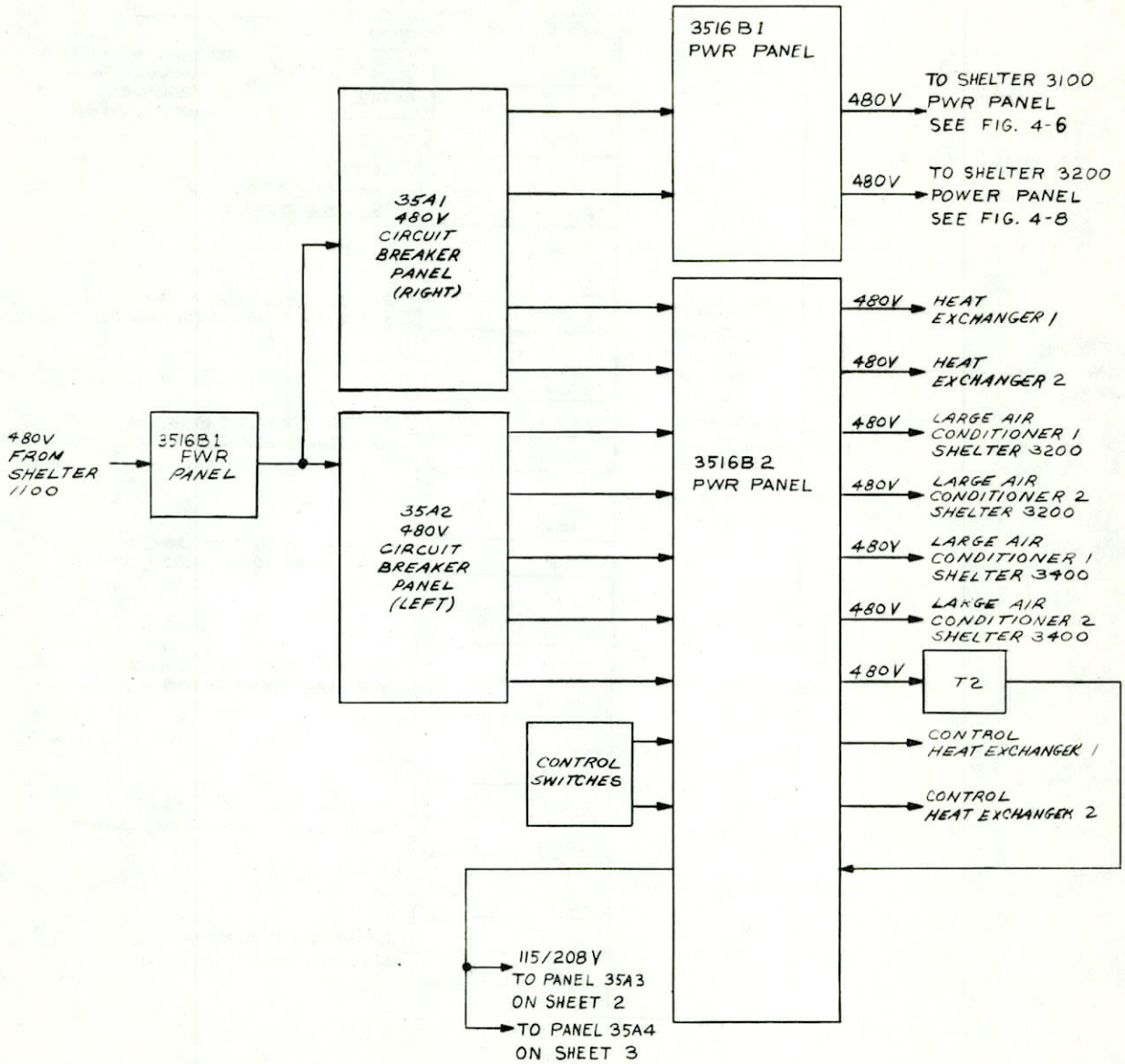


Figure 8-9a

Shelter 3500, power distribution block diagram.

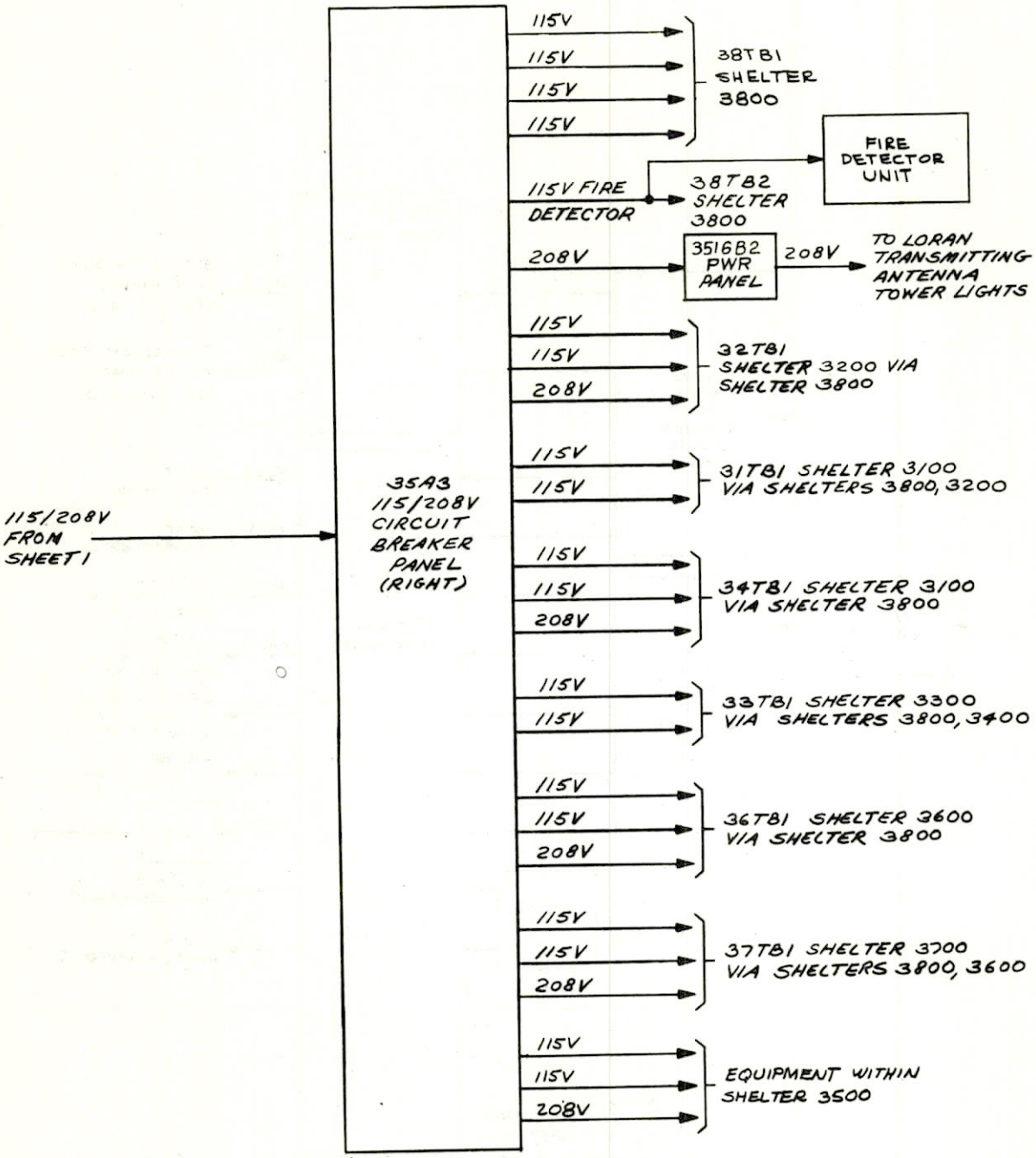


Figure 8-9b

Shelter 3500, power distribution block diagram.

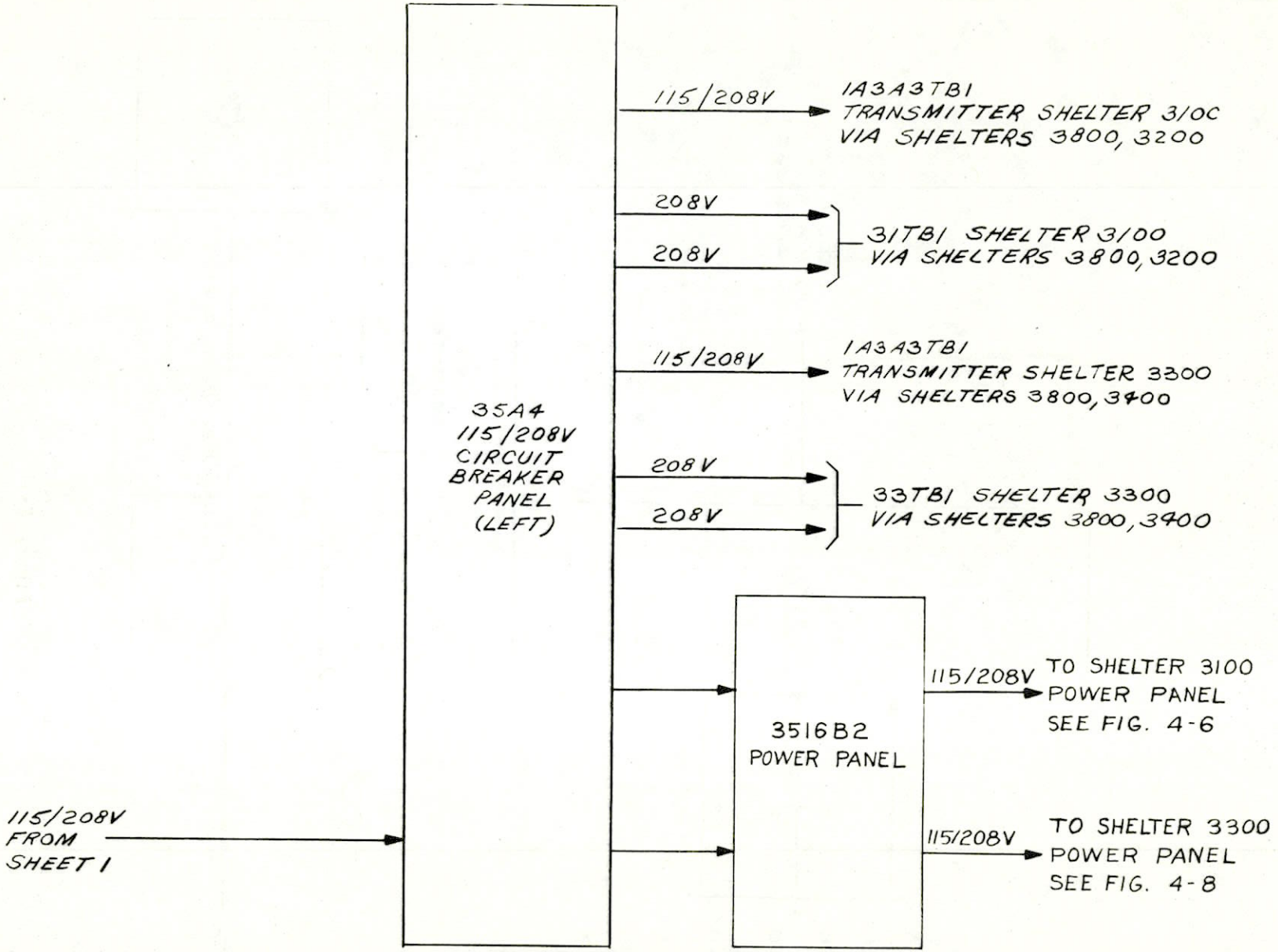


Figure 8-9c

Shelter 3500, power distribution block diagram.

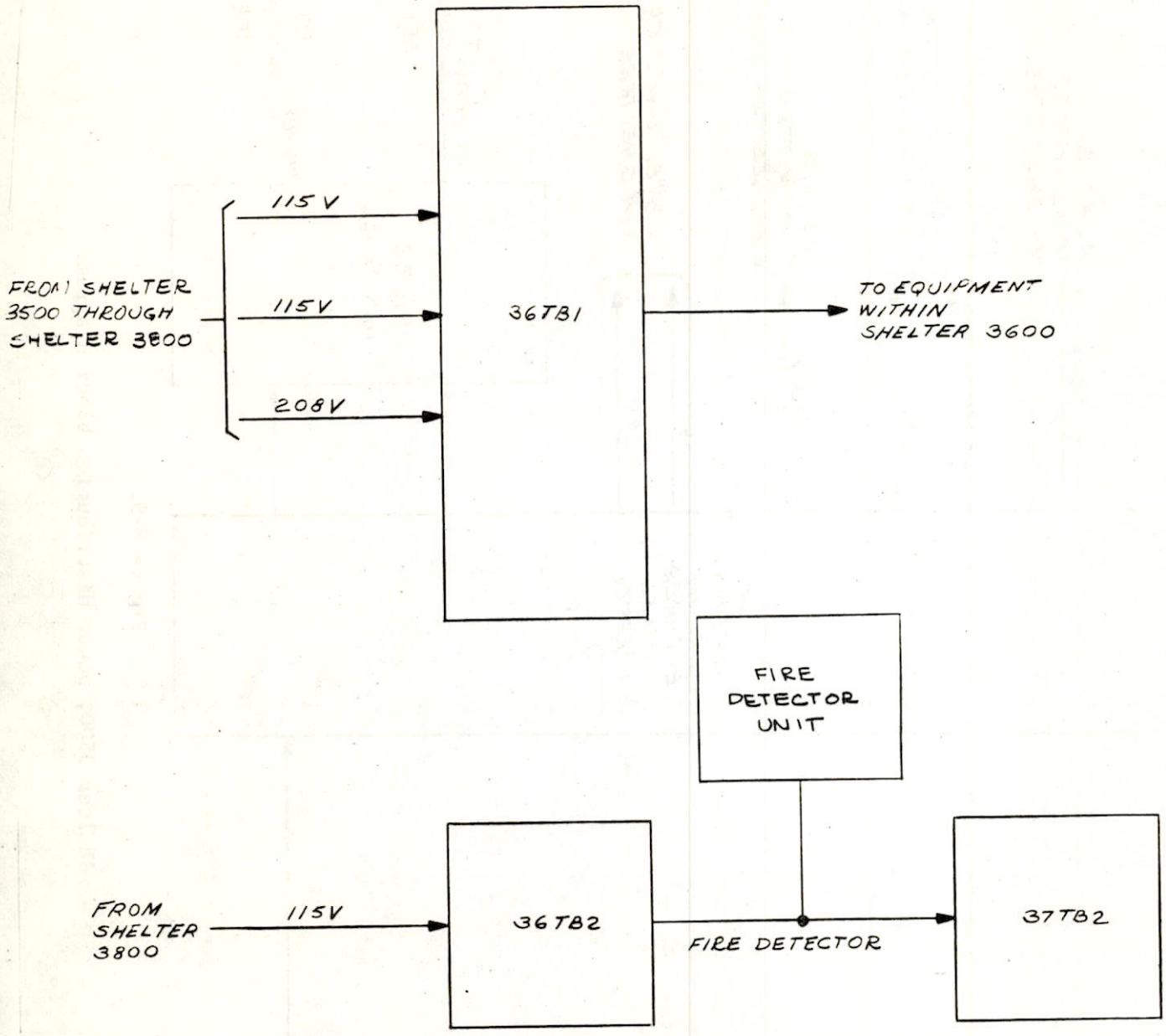


Figure 8-10

Shelter 3600, power distribution block diagram.

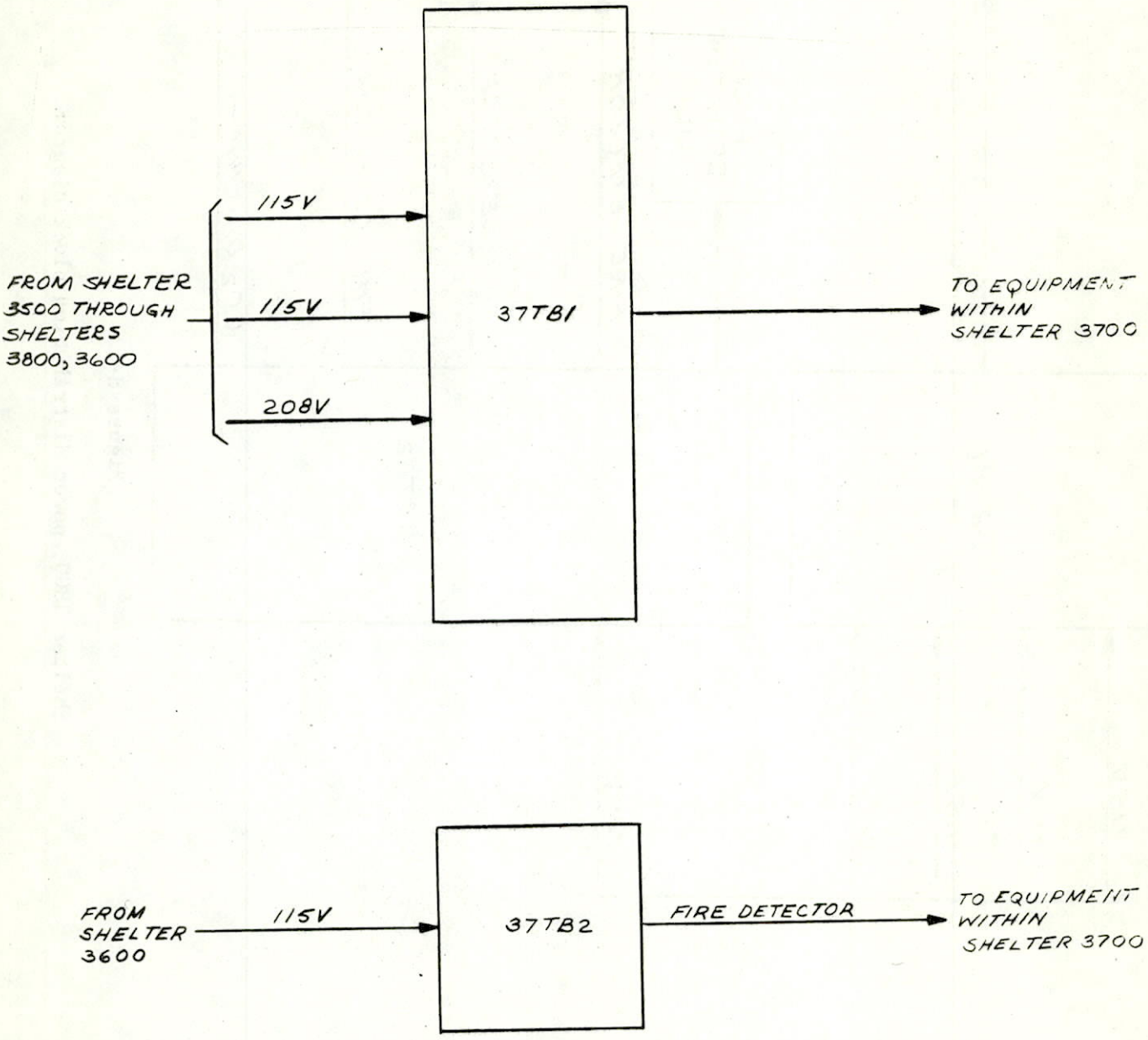


Figure 8-11

Shelter 3700, power distribution block diagram.

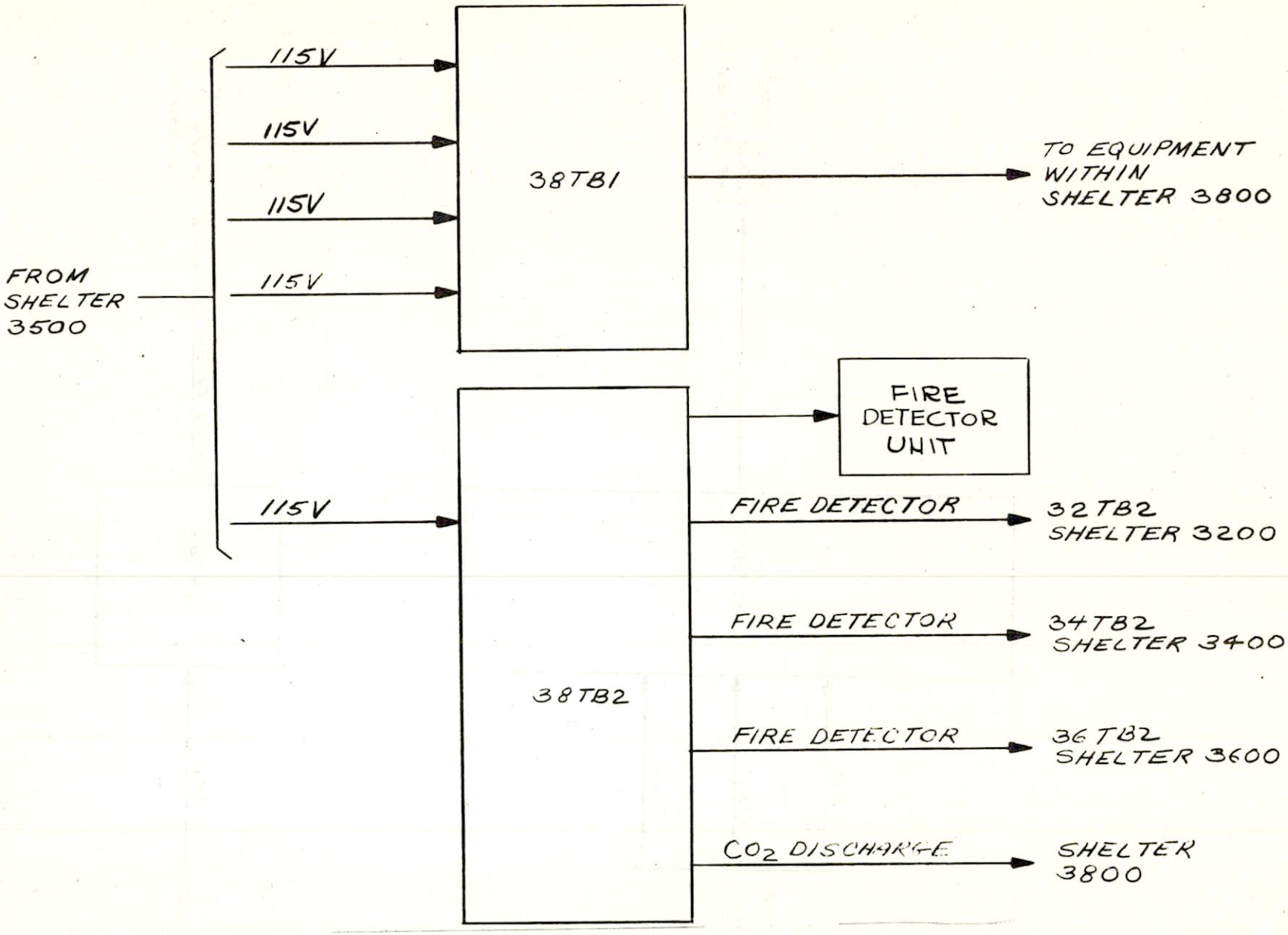


Figure 8-12

Shelter 3800, power distribution block diagram.

CHAPTER 9

DISASSEMBLY AND RESTOWAGE

This Chapter presents the sequence for disassembly, restowage, and shipment of an ATLS station. In general, disassembly procedures are the reverse of the installation procedures. Normally, the need for lighted and heated or cooled working areas throughout the disassembly operation make disassembly in stages desirous. However, the case may arise in which it is more advantageous to dismantle the entire station simultaneously. To accomplish the former, follow the Installation Sequential Chart in reverse, plus the detailed guidelines in the following paragraphs, using extreme care that all disconnected wiring is deenergized. If the decision is made to dismantle the whole station at once, all power should be shutdown so disassembly can be carried out on all components simultaneously.

9.1. STOWAGE OF CABLE IN BOXES. Experience has shown that in order to place all the cables back into the red cable boxes from which they were removed, it is necessary to coil the cable into the box, taking advantage of all space available. Coiling the cables first and then placing them in the cable boxes wastes too much space, resulting in an inability to fit all the cables into the boxes. A convenient method of coiling the cables into the boxes is to make a turntable, consisting of a small wooden platform with 3 or 4 metal casters (see figure 9-1). The box can be placed on the platform and rotated by 1 or 2 men while another feeds the cable in, removing twists and kinks (see figure 9-2). After each cable is coiled into the box, it should be bound separately to facilitate removal. If possible, tape the ends of the cable with rubber or vinyl tape to prevent moisture from entering the cable while in storage. Be certain that the cables are stored in the correct boxes.

9.2. DRAINING PRIMARY AND SECONDARY HEAT EXCHANGERS.

9.2.1. Secondary Heat Exchangers. The secondary heat exchangers are most conveniently drained before the hoses to the primary side are disconnected. Proceed as follows:

a. Open the radiator air vent located just inside the bottom housing panel, near the reservoir tank filler cap.

b. Remove the reservoir tank filler cap.

c. Open the air vent in the top of the pump.

d. Open the air vents in the elbows of the lines running to the primary heat exchangers (near the ceiling in shelters 3700 or 3600).

e. Drain the unit by opening the 2 gate valves in the 1/2 inch tubing running to the drain fitting on the end of the unit.

f. After the flow has subsided, tip the unit toward the control panel end and then toward the drain end to eliminate any trapped water.

g. Drain the pump by removing the plug in the bottom of the pump. Replace the plug.

h. Close all drains, valves, and vents and replace the filler cap.

9.2.2. Primary Heat Exchangers. The primary heat exchanger has many valves and fittings which can trap water, so it is necessary to open all drain and vent cocks to thoroughly remove all water and avoid freezing damage. To avoid draining water on the shelter floor, place cans under the drain cocks or use rubber tubing to run the water outside the shelter. See the illustration in the loran addendum and proceed as follows:

a. Open all gate valves.

b. Open the air bleeder valves on the elbows of the lines going to the secondary coolers.

c. Open drain cocks U12, U19, U27, U28, U29, U30, U31, and U32.

d. Open the drain cocks under the pump and under the filters (U66) and on the ends of the manifolds (U5 and U6).

e. Open the drain plugs (U42 and U43).

f. Loosen the packing nut and drain all the valves which are oriented upside-down.

g. Loosen the fittings and drain the tees above valves M8 and M7.

h. Remove filters (U66) and stow.

After all water is removed, close all valves, cocks, and bleeders and tighten all loosened fittings.

NOTE

If compressed air is available, it may be used to blow out trapped water by applying air to U13 and U14.

9.3. LOADING SECONDARY HEAT EXCHANGERS INTO SHELTERS 3500 and 3700. The following procedure describes the loading of the secondary heat exchangers

into the 3500 and 3700 shelters. The procedure is identical for both shelters. Refer to figures 4-24c and 4-24d.

a. Loosen the fan drive belts and make certain that all panels are securely in place and that all lion fasteners are tight. Obtain one support bracket (50019-3500B2) and two loading rails (50019-1143D1) from pallet assembly 4200.

b. Obtain five bolts (3/8-16 x 3/4) and five flat washers (3/8 inch) from the workbench in shelter 3800.

c. Attach the support bracket to the shelter, using one bolt and washer on each end. Using a 9/16 inch wrench, make the bolts snug but do not fully tighten them.

d. Set a pair of loading rails (50019-1143D1) on the support bracket and adjust the support bracket until the rails are even with the floor of the shelter. Tighten the two bolts securely.

e. Insert the remaining three bolts with washers into the support bracket holes and tighten them securely, using a 9/16 inch wrench.

f. Align the rails, extending from the shelter with the rails on which the secondary heat exchanger is resting.

g. Turn the caster wheels under the heat exchanger so they will be in trailing position.

h. Move the heat exchanger up the rails and into the shelter.

NOTE

As the heat exchanger enters the shelter, it may be necessary to use a lever to raise the heat exchanger wheels onto the stowage rails in the shelter.

i. Remove the rails which are resting on the support bracket and remove the five bolts holding the support bracket.

j. Stow the two sets of rails and the support bracket on pallet assembly 4200, and stow the five bolts and washers in the work-bench drawer of shelter 3800.

If a fork-lift truck is available, it may be used to load the secondary heat exchangers. If the fork truck is driven into the drain end of the unit with the forks beneath the frame members, 2 nylon stowage straps may be run from the lifting eyes on the opposite end of the unit to the upper frame structure of the fork truck. When the unit is lifted by means of the forks, the ratchet take-ups on the straps may be tightened to support the control panel end of the unit. The unit can then be guided into the shelter.

9.4. GROUND ROD REMOVAL. Unless the ground rods were installed in sandy or soft earth or if the station has been in operation for a long period of time, ground rod removal may be difficult. Removal can be attempted, however, by proceeding as follows:

a. Using a lifting jack fitted with a large air conditioner lifting bracket and a short length of chain or rope, wrap the rope or chain around the ground rod and lifting bracket so that when the jack is operated, the rod will be pulled upward.

b. Install a ground wire clamp above the rope or chain so that it will not slip off.

c. Operate the jack until the ground rod can be pulled out by hand.

9.5. SHELTER STOWAGE. Replace all station material in its original stowage condition and location in accordance with Tables 4-2 through 4-21. The following are general guidelines.

a. After the bins and workbenches in a shelter are properly stowed, lock all the doors and place all the keys in one bag. Fasten the bag to any convenient bin door handle in that shelter.

b. Unplug all heaters and lash the cord to the mounting bracket.

c. Place all circuit breakers in the OFF position.

d. Place all light switches and wall switches in the OFF position.

e. Tape all desk drawers and unlockable doors closed.

f. Close all circuit breaker panels and latch securely.

g. Make certain all transit plate braces are in place inside the pullman openings on the sides of the shelters.

h. Make a final inspection of the shelter to see that all stowage is secure and that no items will be abraded or damaged if the shelter is bumped or experiences severe vibration.

9.6. STORAGE CONTAINERS. Normally, the containers, crates and cartons which were used for original storage of ATLS equipment should be reused for restowage purposes. Should new cartons, crates, or containers be required, they should be fabricated using the dimensions on appropriate A2 series drawings and materials equivalent in strength to the original container materials. (See ATLS Drawings-Part A Section 1 and Part A Section 7.

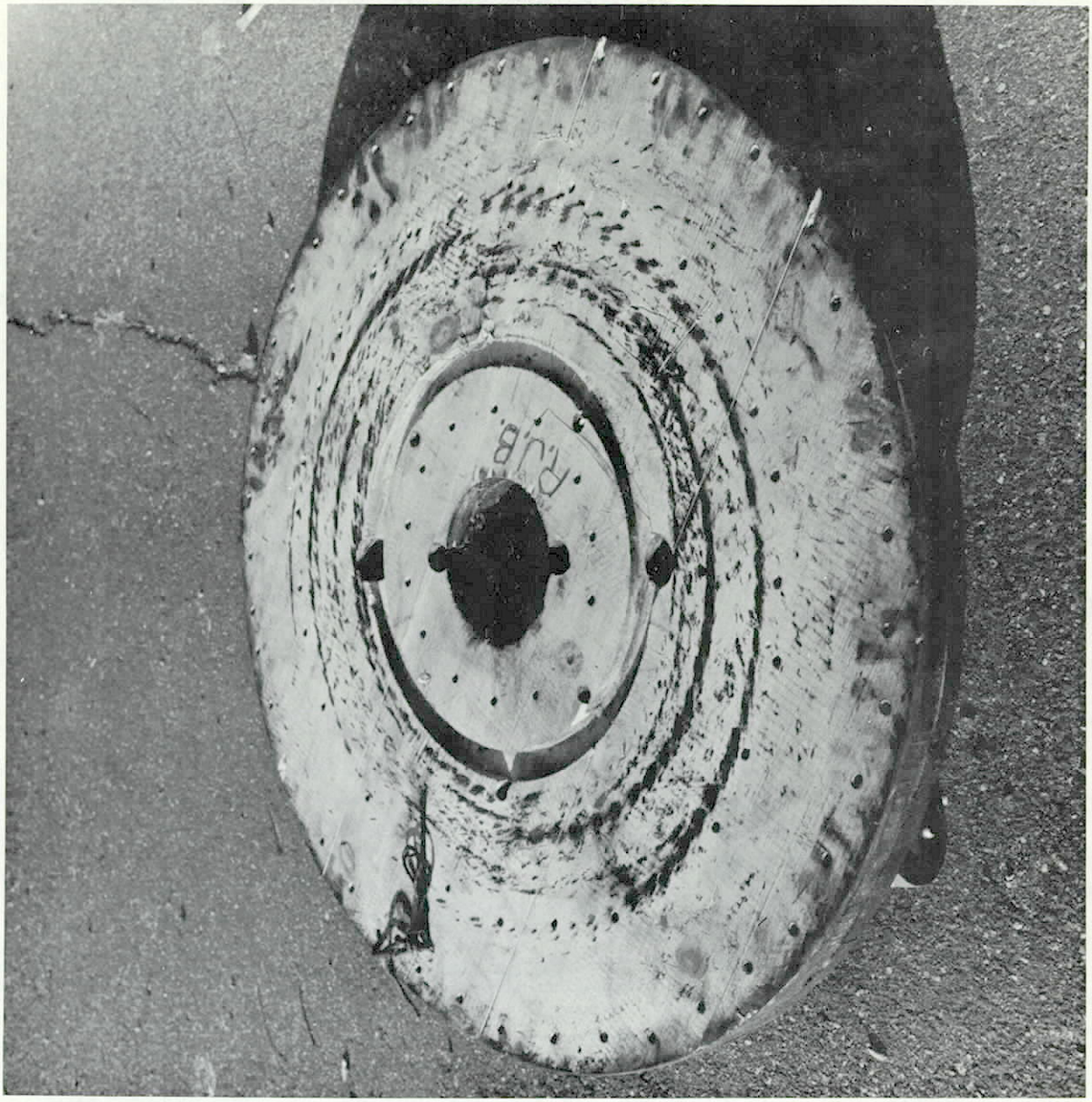


Figure 9-1

Typical turntable, constructed from scrap materials and chair casters, for use in coiling cables.

Figure 9-2

Coiling cable in a cable box

CHAPTER 10

CONSTRUCTION AND INSTALLATION DRAWINGS

10.1. GENERAL. This Chapter contains a listing of all ATLS drawings. These drawings include basic construction, dimension, and equipment installation details; stowage layouts; equipment modifications; wiring schematics; and similar information. The drawings are to be used in support of preceding written instructions and for general information, maintenance, and repair purposes. Not listed are drawings and schematics pertinent to the internal construction and wiring of specific equipment, such as the generators, fuel system, air conditioners, heat exchangers, and electronic equipment. These drawings may be found in the appropriate equipment manuals.

10.2. DRAWING CLASSIFICATIONS AND CONTENTS. Drawings are grouped and listed in two basic classifications, Part A and Part B. Each part is subdivided by subject matter for ease of reference. Part A drawings are those considered necessary for deployment, installation, operation, and basic maintenance of an ATLS facility. They are separately bound and are stowed in shelter 1300. Part B drawings include supplementary details which are normally not required by field personnel. Part B drawings are filed at Coast Guard Headquarters (ECV-2); copies of specific Part B drawings will be prepared and forwarded upon request, on an as-needed basis.

a. Part A Drawings are subdivided into seven sections as follows:

(1) Section 1 - Installation and Stowage, General: Consisting of the general ATLS facility layout and shelter and pallet assembly operating and stowage layouts.

(2) Section 2 - Schematic: Consisting of electrical power, fire detection, and intercom wiring schematics.

(3) Section 3 - Electrical: Consisting of power panel, circuit breaker, conduit, main cable, and electrical fixture and fitting details.

(4) Section 4 - Electronic: Consisting of electronic equipment cabinets, and electronic equipment wiring and hardware modifications and assemblies; signal and antenna entrance box/panel assemblies; associated equipment details; transmitter cooler, air duct, and antenna coupler installation and assembly details.

(5) Section 5 - Mechanical: Consisting of workbench, desk, cabinet, air conditioner, heater, and similar equipment installation details; hardware assemblies; shock mount installations; critical gasket details; plumbing systems; CO_2 piping and extinguisher installations.

(6) Section 6 - Structural: Consisting of general shelter construction and framing details; wall, ceiling, window, and floor cross-sections; door assemblies; transit plate, doorstep, jack, walkway, skid, and pullman details.

(7) Section 7 - Stowage, Detailed: Consisting of specific details on all brackets, holddowns, plates, fixtures, straps, assemblies, storage boxes, and other items used solely for storage purposes (i.e., those items which are usually removed from shelters or pallets when in the operating mode).

b. Part B Drawings are subdivided into four sections: Section 1 - Electrical; Section 2 - Electronic; Section 3 - Mechanical; and Section 4 - Structural. Each section contains details on sub-assemblies, minor components, and hardware of the main assemblies listed in the respective sections of Part A. When appropriate, reference is made on the Part B drawings list to the applicable main assembly drawing.

ATLS DRAWINGS

PART A

Section 1 - Installation and Stowage, General

Drawing Number	Sheet #	Drawing Title/Description
50019-1000A1	1	Major Parts List, ATLS Station Assembly
50019-1000A1	2	General Layout, ATLS Station Assembly
50019-1000A1	3	Guying, Pullman, and Walkway Plan, Complete ATLS Facility
50019-1000A1	4	Guying, Pullman, and Walkway Plan, Partial ATLS Facility
50019-1100A1	1&2	Operating Layout, Shelter 1100 (Power Control and Distribution Shelter)
50019-1100A2	1&2	Stowage Layout, Shelter 1100 (Power Control and Distribution Shelter)
50019-1200A1	1	Operating Layout, Shelter 1200 (Power Spare Parts Shelter)
50019-1200A2	1&2	Stowage Layout, Shelter 1200 (Power Spare Parts Shelter)
50019-1300A1	1	Operating Layout, Shelter 1300 (Shop and Spare Parts Shelter)
50019-1300A2	1&2	Stowage Layout, Shelter 1300 (Shop and Spare Parts Shelter)
50019-2100A1	1	Operating Layout, Shelter 2100 (Timer/ Synchronizer Shelter)
50019-2100A2	1&2	Stowage Layout, Shelter 2100 (Timer/ Synchronizer Shelter)
50019-2200A1	1&2	Operating Layout, Shelter 2200 (Timer/ Synchronizer Control Shelter)
50019-2200A2	1&2	Stowage Layout, Shelter 2200 (Timer/ Synchronizer Control Shelter)

Section 1 - Installation and Stowage, General (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2300A1	1	Operating Layout, Shelter 2300 (Communications Shelter)
50019-2300A2	1, 2, 3	Stowage Layout, Shelter 2300 (Communications Shelter)
50019-2400A1	1	Operating Layout, Shelter 2400 (Spare Parts and Household Shelter)
50019-2400A2	1&2	Stowage Layout, Shelter 2400 (Spare Parts and Household Shelter)
50019-2500A1	1	Operating Layout, Shelter 2500 (Spare Parts Shelter)
50019-2500A2	1	Stowage Layout, Shelter 2500 (Spare Parts Shelter)
50019-2600A1	1	Operating Layout, Shelter 2600 (Transmitter Control Shelter)
50019-2600A2	1&2	Stowage Layout, Shelter 2600 (Transmitter Control Shelter)
50019-2700A1	1	Operating Layout, Shelter 2700 (Office Shelter)
50019-2700A2	1&2	Stowage Layout, Shelter 2700 (Office Shelter)
50019-3100A1	1&2	Operating Layout, Shelter 3100 (Transmitter #2 Shelter)
50019-3100A2	1	Stowage Layout, Shelter 3100 (Transmitter #2 Shelter)
50019-3200A1	1&2	Operating Layout, Shelter 3200 (Transmitter #1 Shelter)
50019-3200A2	1, 2, 3	Stowage Layout, Shelter 3200 (Transmitter #1 Shelter)
50019-3300A1	1&2	Operating Layout, Shelter 3300 (Transmitter #2 Shelter)

PART A

Section 1 - Installation and Stowage, General (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3300A2	1&2	Stowage Layout, Shelter 3300 (Transmitter #2 Shelter)
50019-3400A1	1&2	Operating Layout, Shelter 3400 (Transmitter #1 Shelter)
50019-3400A2	1, 2, 3	Stowage Layout, Shelter 3400 (Transmitter #1 Shelter)
50019-3500A1	1	Operating Layout, Shelter 3500 (Transmitter Power Distribution Shelter)
50019-3500A2	1&2	Stowage Layout, Shelter 3500 (Transmitter Power Distribution Shelter)
50019-3600A1	1	Operating Layout, Shelter 3600 (Antenna Coupler/Dummy Load Shelter)
50019-3600A2	1&2	Stowage Layout, Shelter 3600 (Antenna Coupler/Dummy Load Shelter)
50019-3700A1	1	Operating Layout, Shelter 3700 (Transmitter Water Distribution Shelter)
50019-3700A2	1&2	Stowage Layout, Shelter 3700 (Transmitter Water Distribution Shelter)
50019-3800A1	1	Operating Layout, Shelter 3800 (Transmitter Monitoring Shelter)
50019-3800A2	1&2	Stowage Layout, Shelter 3800 (Transmitter Monitoring Shelter)
50019-4000B1	1&2	ATLS Site Installation, Spacing Details
50019-4100A2	1&2	Stowage Layout, Pallet Assembly 4100
50019-4200A2	1&2	Stowage Layout, Pallet Assembly 4200

ATLS DRAWINGS

PART A

Section 2 - Schematic

Drawing Number	Sheet #	Drawing Title/Description
50019-1000E1	1	Complete Facility Power Schematic
50019-1000E1	2	Shelter 1100 Power Schematic (Panels 11A1, 11A2, 1104B1)
50019-1000E1	3	Shelter 1100 Power Schematic (Panels 11A3, 1104B1, Convenience outlets)
50019-1000E1	4	Shelter 3500 Power Schematic (Panels 35A1, 3516B1)
50019-1000E1	5	Shelter 3500 Power Schematic (Panel 35A3, Convenience outlets)
50019-1000E1	6	Shelters 3100 and 3200 Power Schematic
50019-1000E1	7	Shelters 3300 and 3400 Power Schematic
50019-1000E1	8	Shelters 3600 and 3700 Power Schematic
50019-1000E1	9	Shelter 3800 Power Schematic
50019-1000E1	10	Shelter 2600 Power Schematic
50019-1000E1	11	Shelter 2300 Power Schematic
50019-1000E1	12	Shelter 2200 Power Schematic
50019-1000E1	13	Shelter 2100 Power Schematic
50019-1000E1	14	Shelter 1100 Power Schematic (Panel 1104B1; continued from 50019-1000E1, sht. 3)
50019-1000E1	15	Shelter 1100 Power Schematic (Generators to panel 1104B2)
50019-1000E2	1	Shelters 1100, 1200, and 1300 Fire Detection Schematic

PART A

Section 2 - Schematic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1000E2	2	Shelters 2100 and 2200 Fire Detection Schematic
50019-1000E2	3	Shelters 2400, 2500, and 2600 Fire Detection Schematic (See Dwg. 50019-1000E2, Rev E, Sht 9)
50019-1000E2	4	Shelters 2300 and 2700 Fire Detection Schematic
50019-1000E2	5	Shelters 3100 and 3200 Fire Detection Schematic (See Dwg. 50019-1111E2, Rev B, sht 1)
50019-1000E2	6	Shelters 3300 and 3400 Fire Detection Schematic (See Dwg. 50019-1111E2, Rev B, sht 2)
50019-1000E2	7	Shelter 3500 Fire Detection Schematic
50019-1000E2	8	Shelters 3600, 3700, and 3800 Fire Detection Schematic
50019-1000E2	9	Shelter 2600 Fire Detection Schematic (Detailed)
50019-1000E3	1	Shelter 2200 Intercom Schematic
50019-1000E3	2	Shelter 1100 Intercom Schematic
50019-1000E3	3	Shelters 3100 and 3800 Intercom Schematic
50019-1000E3	4	Shelter 3300 Intercom Schematic
50019-1000E4	1	Shelter 3800 CO_2 System Schematic
50019-1000E5	1	Large air conditioner and 1A3A3 Transmitter Wiring Modifications
50019-1000E6	1	Shelters 1200, 1300 Power Schematic (120V)

PART A

Section 2 - Schematic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1000E6	2	Shelters 2400, 2500, Power Schematic (120V)
50019-1000E6	3	Shelter 2700 Power Schematic (120V)
50019-1111E1	1	Fire Detector Box Schematic
50019-1111E2	1	Fire Detector Control Box Schematic, Shelter 3100
50019-1111E2	2	Fire Detector Control Box Schematic, Shelter 3300
50019-1111E3	1	Fire Detector Control Box Schematic, Shelter 3200
50019-1111E3	2	Fire Detector Control Box Schematic, Shelter 3400
50019-2200E1	1&2	Signal Wiring Schematic, Shelter 2200
50019-2300E1	1, 2, 3	Signal Cabling Schematic, Shelter 2300

ATLS DRAWINGS

PART A

Section 3 - Electrical

Drawing Number	Sheet #	Drawing Title/Description
50019-1000E5	1	Large Air Conditioner Wiring Modifications (See Part A, Sect II, Schematics)
50019-1104B1	1&2	Power Output Panel Assembly, Shelter 1100
50019-1104B2	1	Power Input Panel Assembly, Shelter 1100
50019-1104D1	1	Power Output Panel Construction Details, Shelter 1100
50019-1104D2	1	Power Input Panel Constructions Details, Shelter 1100
50019-1111D2	1	Fire-Detector Intershelter-Cable Connection-Panel Construction Details, Shelter 1100
50019-1116A1	1	Raceway Installation, Shelter 1100
50019-1116B3	1	Power Distribution Box (Typical)
50019-1116C1	1	Ground Jumper Construction Details.
50019-1116C2	1	Cable, External, Generator to Disconnect Panel
50019-1116C3	1	Cable, External, Shelter 1100 to 3500
50019-1116C4	1	Cable, External, Shelter 1100 to 2600
50019-1116C5	1	Cable, External, Shelter 1100 to Transformer #1
50019-1116C6	1	Cable, External, Shelter 3500 to Transformer #2
50019-1116C7	1	Cable, External, Shelter 3500 to Heat Exchanger (480V)

PART A

Section 3 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1116C8	1	Cable, External, Shelter 3500 to 3200/3400
50019-1116C9	1	Cable, External, Shelter 1100 to Generator (208V)
50019-1116C10	1	Cable, External, Shelter 3500 to Heat Exchanger (120V)
50019-1116C11	1	Cable, External, Shelter 3800 to 1100/2200
50019-1116C12	1	Cable, External, Shelter 2600 to 1100/3800
50019-1116C13	1	Cable, External. Shelter 1100 to Fuel Transfer Pump
50019-1116C14	1	Cable, External, Shelter 2700 to 2300
50019-1116C15	1	Cable, External
50019-1116C16	1	Cable, External, Communications, Shelter 2200 to 2300
50019-1116C17	1	Cable, Internal, Large Air Conditioner Control
50019-1116C17	2	Cable, Internal, Large Air Conditioner Control (Schematic)
50019-1116C18	1	Cable, External, Shelter 3500 to 3100/3300
50019-1116C19	1	Cable, External, Shelter 1100 to Large Air Conditioners
50019-1116C21	1	Cable, External (See Wire Table for Description)
50019-1119B5	1	Electric Heater Modification

PART A

Section 3 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1119B5	2	Electric Heater (Thermostat and Wiring Details)
50019-1121B1	1	Interior Ceiling Light Fixture Installation (Typical) (See Dwg. 50019-1223B1)
50019-1121B2	1	Emergency Light Installation (Typical)
50019-1123B1	1	Exterior Light Receptacle Installation (Typical)
50019-1123B2	1	Exterior Light Assembly (Typical)
50019-1125A1	1	Intercom and Junction Box Installation (Typical)
50019-1223B1	1	Interior Ceiling Light Fixture, Modification (Typical)
50019-1342B3	1	Extension Cord (Temporary Power and Lighting Assembly) Construction
50019-2116A1	1	Raceway Installation, Shelter 2100
50019-2216A1	1&2	Raceway Installation, Shelter 2000
50019-2216A2	1	Power Distribution Box Assembly, Shelter 2200
50019-2216B3	1	Power Input Panel Assembly, Shelter 2200
50019-2216B5	1	Transformer Assembly and Installation, Shelter 2200
50019-2314A1	1	Raceway Installation, Shelter 2300
50019-2316B1	1	Power Entrance Panel Assembly, Shelter 2300
50019-2316B2	1	Circuit Breaker Box Installation, Shelter 2300

PART A

Section 3 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2602B1	1	Power Input Panel Assembly, Shelter 2600
50019-2611B1	1	Fire Detector Panel Assembly, Shelter 2600
50019-2616A1	1	Raceway Installation, Shelter 2600
50019-2616B1	1	Circuit Breaker Installation, Shelter 2600
50019-3114A1	1&2	Raceway Installation, Shelter 3100
50019-3114B6	1	Spare Fuse Panel Assembly and Installation, Shelter 3100
50019-3200B1	1	Switch Installation, Removable Door, Shelter 3200
50019-3216A1	1&2	Raceway Installation, Shelter 3200
50019-3219B1	1	Remote Control Unit Modification and Installation (Large Air Conditioner), Shelters 3200, 3400
50019-3301A1	1	Control Panel Assembly
50019-3314A1	1&2	Raceway Installation, Shelter 3300
50019-3314B4	1	Power Distribution Panel Assembly, Shelters 3100, 3300
50019-3416A1	1&2	Raceway Installation, Shelter 3400
50019-3421B2	1	Emergency Light Installation, Shelters 3200 and 3400
50019-3516A1	1	Raceway Installation, Shelter 3500
50019-3516B1	1	Power Input Panel Assembly, Shelter 3500
50019-3516B2	1&2	Power Input Panel Assembly, Shelter 3500

PART A

Section 3 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3516B3	1	Circuit Breaker Installation, Shelter 3500
50019-3616A1	1&2	Raceway Installation, Shelter 3600
50019-3716A1	1	Raceway Installation, Shelter 3700
50019-3811B1	1	Signal and Fire Detector Panel Assembly, Shelter 3800
50019-3816A1	1&2	Raceway Installation, Shelter 3800
50019-3842B2	1	Battery Rack Installation, Shelter 3800

ATLS DRAWINGS

PART A

Section 4 - Electronic

Drawing Number	Sheet #	Drawing Title/Description
50019-1000E5	1	1A3A3 Transmitter Wiring Modification (See Part A, Section II, Schematics)
50019-2214A1	1	Signal Entrnace Box Assembly, Shelter 2200
50019-2214A2	1	Filter Box Assembly, Shelter 2200
50019-2214B1	1, 2, 3	Signal Entrance Box Construction, Shelter 2200
50019-2214B2	1, 2, 3	Filter Entrance Box Construction, Screen Room, Shelter 2200
50019-2214B3	1	Signal and Intercom Panel Assembly Shelter 2200
50019-2228B1	1	Antenna Entrance Panel Assembly, Shelter 2200
50019-2311B1	1	Remote Control and TTY Panel Assembly, Shelter 2300
50019-2314B1	1	Antenna Panel Assembly, Shelter 2300
50019-2601A1	1	Transmitter Control Group Assembly, Shelter 2600
50019-2614A1	1, 2, 3	Transmitter Input Assembly, Shelter 2600
50019-2614D16	1	Boot, Canvas, Construction Details (See 50019-2614A1)
50019-3102A1	1	Knife Switch Assembly, Shelter 3100
50019-3114B8	1	22½ KVA Flexible Conduit Assembly, Shelter 3100
50019-3200B2	1	Transformer Assembly and Installation, Shelters 3200 and 3400

Drawing Number	Sheet #	Drawing Title/Description
50019-3206A1	1&2	Field Change #11 and Coil Installation, Shelter 3200
50019-3302A1	1	Knife Switch Assembly, Shelter 3300
50019-3303A1	1	Switch Unit, 1A3A1, Assembly and Modification (See 50019-3306A1)
50019-3304A1	1	Power Supply PP-3815/FPN Modification, Shelters 3100, 3300
50019-3306A1	1&2	Inductrol Unit, CN-940/FPN, 1A3A8, Modification & Assembly, Shelters 3100, 3300
50019-3307A1	1	Voltage Regulator, CN-941/FPN, 1A3A9, Modification and Assembly, Shelters 3100 and 3300
50019-3310A1	1	MT-2929/FPN-44 Equipment Rack Modification, Shelters 3100, 3300
50019-3402A1	1&2	Exciter Modification and Assembly, Shelters 3200, 3400
50019-3404A1	1, 2, 3	Power Amplifier Modification and Assembly, Shelters 3200, 3400
50019-3405A1	1	Resistor Rack Assembly, Shelters 3200, 3400
50019-3406A1	1&2	Field Change #11 and Coil Installation, Shelter 3400
50019-3601A1	1	Liquid Cooler Assembly HD601/FPN-44, 1A2, Shelter 3600
50019-3601B1	1	Liquid Cooler, HD601/FPN-44, 1A2, Modification
50019-3603A1	1&2	Antenna Coupler and Dummy Load Assembly, Shelter 3600

PART A

Section 4 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3615B1	1	Insulator Assembly and Installation, Shelter 3600
50019-3622B1	1	Air Duct, Large, Dummy Load, Shelter 3600
50019-3622B4	1	Air Duct, Small, Dummy Load, Shelter 3600
50019-3622B5	1	Joint, Flexible, Small, Shelter 3600
50019-3622B6	1	Joint, Flexible, Large, Shelter 3600
50019-3622B9	1&2	Rain Shield, Fiberglass, Large (Dummy Load Air Intake)
50019-3622B10	1	Rain Shield, Fiberglass, Small (Dummy Load Air Exhaust)
50019-3628A1	1	Cover & Shield Installation, Antenna Lead
50019-3701A1	1	Liquid Cooler Assembly, Shelter 3700

ATLS DRAWINGS

PART A

Section 5 - Mechanical

Drawing Number	Sheet #	Drawing Title/Description
50019-1102A1	1	Desk and File Installation, Shelter 1100
50019-1119A1	1	Small Air Conditioner Installation (Typical)
50019-1119A2	1	Electric Heater Installation (Typical)
50019-1119B2	1	Small Air Conditioner Wall Bracket Construction Details
50019-1119D6	1	Small Air Conditioner Gasket Construction Details
50019-1130A1	1	Fire Extinguisher & First Aid Kit Installation.
50019-1143D1	1	Aircraft Loading Rail Construction (See Part A, Structural)
50019-1300B2	1	Lifting Rails, Wood, 4" x 4", for Large Air Conditioners, Construction Details
50019-2113A1	1&2	Equipment Shock Mount Installation, Shelter 2100 (Details generally applicable to all ATLS equipment shock mount installations)
50019-2119A1	1	Large Air Conditioner Installation (Typical)
50019-2119B2	1	Large Air Conditioner Assembly (Typical)
50019-2119B3	1	Remote Control Installation, Large Air Conditioner (Typical)
50019-2119B5	1	RFl Vent Panel And Louver Installation & Assembly, Small, Shelter 2100 Large Air Conditioner (Details generally applicable to other RFI vent and Louver Assemblies)

PART A

Section 5 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2119D1	1	Frame Gasket, Large, Large Air Conditioner (Construction)
50019-2228D5	1	Gasket, Screen Cover, Shelter 2200 (Construction)
50019-2342B1	1	Storage Cabinet Installation and Assembly, Shelter 2300 (details generally applicable to all ATLS storage cabinets)
50019-2342B2	1&2	Storage Cabinet Installation and Assembly, Shelter 2300 (details generally applicable to all ATLS storage cabinets)
50019-2600B1	1	Work Bench Assembly and Installation, Shelter 2600
50019-2600D1	1	Crowfoot Wrench, Open End, Modified (stored in Shelter 1300)
50019-2642B1	1	Tool Holder Assembly, Shelter 2600
50019-3018A1	1	Plumbing System, Transmitter Group
50019-3018A2	1	CO_2 System, Transmitter Group
50019-3018B1	1	½" Flexible Connector Assembly, CO_2 System (see 50019-3018A2)
50019-3125D1	1	Walkway, Construction Details, Shelters 3100 to 3300, 3200 to 3400 (see 2360-4006-B1)
50019-3212A1	1	Partition Assembly, Shelter 3200, 3400 (see 2360-3204-B1)
50019-3224B1	1	Lock Assembly and Installation, Sliding Door, Shelters 3200, 3400
50019-3224B3	1	Latch Installation, Sliding Door, Shelters 3200, 3400

PART A

Section 5 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3312A1	1	Screen Partition, Modification and Assembly, Shelters 3100, 3300
50019-3500B2	1	Support Bracket for Unloading Heat Exchangers, Construction Details
50019-3613A1	1,2,3	Equipment Shock Mount Installation, Shelter 3600
50019-3713A1	1&2	Equipment Shock Mount Installation, Shelter 3700
50019-3716B3	1	Plumbing Boot, Secondary Heat Exchanger Hose Entry, Shelter 3700 (Construction)
50019-3737B7	1	Heating Cable Application, Piping (see 50019-3018A1)
50019-3800B1	1	Workbench Assembly and Installation, Shelter 3800
50019-3801A1	1&2	CO_2 Installation, Shelter 3800 (see 50019-3018A2)
50019-3801B1	1	Panel Assembly, CO_2 System, Shelter 3800 (see 50019-3801A)

ATLS DRAWINGS

PART A

Section 6 - Structural

Drawing Number	Sheet #	Drawing Title/Description
2360-1100-A1	1	General Assembly, Shelter 1100
2360-1101-B1	1	Basic Building Cross-Sections; Ceiling, Wall, Floor; Shelter 1100 (applicable to shelters 1200, 2700)
2360-1101-02	1	Floor Framing (Typical)
2360-1101-03	1	Wall-Stud/Roof-Joist Spacing (Typical)
2360-1101-04	1	Opening Details, Paneled Interior (Typical)
2360-1101-05	1	Pullman Connection Nutsert Plan and Section (Typical) (see 2360-1112-B1 and 2360-4003-01)
2360-1102-B1	3	Door Assembly, Exterior (generally applicable to shelters 3500, 3700)
2360-1112-B1	1	Transit Plate Assembly, Pullman Connection; Gasket and Nutsert Details (Typical) (details generally applicable to all transit plate assemblies, Part B)
2360-1112-01	1	Transit Plate, Pullman, Construction (typical of details contained on other transit plate construction drawings, Part B)
2360-1115-B1	1	Leveling Jack Installation (Typical)
2360-1116-B1	1	Doorstep Installation, Exterior (Typical)
2360-1117-B1	1	Skid Assembly, (Typical)
2360-1120-B1	1	Ground Lug Assembly (Typical)
2360-1200-A1	1	General Assembly, Shelter 1200

PART A

Section 6 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-1300-A1	1	General Assembly, Shelter 1300
2360-2100-A1		General Assembly, Shelter 2100
2360-2101-02	1	Opening Cross-Section Details, RFI Interiors, Typical (Shelters 2100, 2200)
2360-2200-A1	1	General Assembly, Shelter 2200
2360-2201-B1	2	Basic RFI Building Cross-sections; Ceiling, Wall Floor; Shelter 2200 (sheet 1 applicable to shelter 2100)
2360-2201-03	2	Opening and Wall Cross-section details, Interior Partition, Shelter 2200
2360-2202-B1	2	Door Assembly, RFI, Exterior, Exterior Opening, Shelter 2200
2360-2203-B1	2	Door Assembly, RFI, Exterior, Interior Opening, Shelter 2200
2360-2204-B1	2	Door Assembly, Interior Partition, Shelter 2200
2360-2300-A1	1	General Assembly, Shelter 2300
2360-2301-B1	1	Basic Building Cross-sections; Ceiling, Wall, Floor, Shelter 2300 (applicable to shelter 2400)
2360-2301-02	1	Window Construction Details, Shelter 2300 (applicable to shelter 2700)
2360-2400-A1	1	General Assembly, Shelter 2400
2360-2401-01	2	Interior Layout and Floor Construction, Shelter 2400 (details on sheet 1 typical of information contained on other shelter interior layout drawings listed in Part B)

PART A

Section 6 - Structural (Continued)

Drawing Number	Sheet	Drawing Title/Description
2360-2402-B1	2	Door Assembly, Interior Partition, Shelter 2400
2360-2500-A1	1	General Assembly, Shelter 2500
2360-2501-B1	1	Basic Shelter Cross-section; Ceiling, Wall, Floor; Shelter 2500 (applicable to shelters 1300, 2600, 3500, 3600, 3700, 3800)
2360-2600-A1	1	General Assembly, Shelter 2600
2360-2700-A1	1	General Assembly, Shelter 2700
2360-2702-B1	2	Door Assembly, Interior Partition, Shelter 2700
2360-3100-A1	1	General Assembly, Shelter 3100
2360-3101-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor; Shelter 3100 (applicable to shelters 3200, 3300, 3400)
2360-3101-02	1	Additional Floor Framing, Shelter 3100 (see 2360-1101-02)
2360-3101-03	1	Opening and Wall Cross-section Details, Aluminum Interior, Paneled (Typical)
2360-3102-B1	2	Door Assembly, Exterior, Shelter 3100 (Typical)
2360-3103-B1	3	Door Assembly, Interior, Shelter 3100 (Typical)
2360-3200-A1	1	General Assembly, Shelter 3200
2360-3201-02	1	Nutsert Pattern, Large Air Conditioner Mounting, (Typical)
2360-3204-B1	3	Sliding Door Assembly, (Typical) (Shelter 3200, 3400)

PART A

Section 6 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-3205-B1	1	Removable Panel Assembly, Shelter 3200, Typical (Generally applicable to shelters 3100, 3300, 3400)
2360-3205-01	1	Removable Panel Details, Shelter 3200, Typical (see 2360-3205-B1)
2360-3300-A1	1	General Assembly, Shelter 3300
2360-3400-A1	1	General Assembly, Shelter 3400
2360-3500-A1	1	General Assembly, Shelter 3500
2360-3501-02	1	Opening and Wall Details, Painted Interior, Shelter 3500 (Typical)
2360-3600-A1	1	General Assembly, Shelter 3600
2360-3700-A1	1	General Assembly, Shelter 3700
2360-3800-A1	1	General Assembly, Shelter 3800
2360-3802-B1	2	Door Assembly, Interior, Right hand, Shelter 3800 (Typical)
2360-4001-B1	1	Shelter Lift Sling Assembly
2360-4001-A1	1	Shelter-to-Ground Guy Assembly (Typical)
2360-4003-B1	1	Pullman Assembly (Typical)
2360-4003-B2	1	Pullman Bracket Assembly (Typical)
2360-4003-01	2	Pullman Enclosure Construction Details (Typical) (Sheet 2 missing)
2360-4005-B1	1	RFI Pullman Assembly, Shelters 2100, 2200
2360-4005-01	1	RFI Pullman Construction Details

PART A

Section 6 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-4006-B1	1	Walkway Installation, Large (small walkway details are similar; see Part B)
2360-4008-B1	1	Ground Rod Installation (Typical)
50019-1143D1	1	Aircraft Loading Rail Construction

ATLS DRAWINGS

PART A

Section 7 - Stowage, Detailed

Drawing Number	Sheet #	Drawing Title/Description
50019-1133D2	1	50" Floor Bracket, Shelter 1100
50019-1133D3	1	40" Floor Bracket, Shelter 1100
50019-1141A1	1	Floor Frame Assembly, Shelter 1100
50019-1141A2	1	Wall Frame Assembly, Shelter 1100
50019-1141B1	1	Angle Assembly (for use on 50019-1141A1)
50019-1141B2	1	Angle Assembly (for use on 50019-1141A1)
50019-1141B3	1	Angle Assembly (for use on 50019-1141A1)
50019-1141B4	1	Plate Assembly (for use on 50019-1141A1)
50019-1141B5	1	Plate Assembly (for use on 50019-1141A1)
50019-1141B6	1	Plate Assembly (for use on 50019-1141A2)
50019-1141B7	1	Plate Assembly (for use on 50019-1141A2)
50019-1141D1	1	42½" Spacer (for use on 50019-114A2)
50019-1141D2	1	10½" Spacer (for use on 50019-1141A2)
50019-1141D3	1	58½" Spacer (for use on 50019-1141A2)
50019-1141D6	1	Gusset Angle, Shelter 1100
50019-1141D7	1	Floor Channel, Shelter 1100
50019-1141D8	1	Floor Plate, Shelter 1100

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1142A1	1	Leveling Jack Box Installation
50019-1142B1	1	Stowage Bag (Cotton Duck) for Shelter Guys and Guy Anchors, Construction Details
50019-1142B3	1	Walkway Stowage Bracket
50019-1142B4	1	Walkway Stowage Bracket
50019-1142B7	1	Ground Rod Stowage Installation (Typical)
50019-1142B8	1&2	Leveling Jack Box Construction
50019-1142B9	1	Electrical Cable Box Construction
50019-1142B10	1	Exterior Light Stowage Installation
50019-1142B11	1	Emergency Light Tie Down Assembly
50019-1142B12	1&2	Electrical Cable Stowage Instructions
50019-1142D6	1	Plate Nut (Typical)
50019-1142D7	1	Walkway Mounting Bracket, Botton (Typical)
50019-1142D9	1	Ground Rod Stowage Bracket, End (Typical)
50019-1142D11	1	Ground Bar Mounting Plate (Typical)
50019-1142D13	1	Leveling Jack Box Mounting Angle (for use with 50019-1142A1)
50019-1142D14	1	Leveling Jack Box Mounting Angle (for use with 50019-1142A1)
50019-1143D1	1	Aircraft Loading Rail Construction (see Section V-Mechanical (Operating)

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1342B1	1	Bulk Stowage Details, Shelter 1300
50019-1342D1	1	Drawer Bracket, Shelters 1300, 2600, 3800
50019-2136B1	1	Antenna Bracket, Right, Shelter 2100
50019-2136B2	1	Antenna Bracket, Center, Shelter 2100
50019-2136B3	1	Antenna Bracket, Left, Shelter 2100
50019-2142B1	1	Frequency Standard Scope Stowage Installation, Shelter 2100
50019-2142D1	1	Spacer (see 50019-2142B1)
50019-2142D2	1	Spacer (see 50019-2142B1)
50019-2142D4	1	Bracket (see 50019-2142B1)
50019-2142B2	1	Test Equipment Rack Stowage Installation Shelter 2100
50019-2242D1	1	Rubber Bumper, Shelter 2200
50019-2242D2	1	Wood Beam, Shelter 2200
50019-2242D3	1	Wood Beam, Shelter 2200
50019-2336B1	1	Wall Bracket Assembly, Shelter 2300
50019-2336B2	1	Antenna Base Plate Stowage Installation, Shelter 2300
50019-2336B3	1	Brace, Teletype Assembly, Shelter 2300
50019-2336D1	1	Antenna Bracket, Right, Shelter 2300
50019-2336D2	1	Antenna Bracket, Center, Shelter 2300
50019-2336D3	1	Antenna Bracket, Left, Shelter 2300

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2336D4	1	Wall Mounting Plate, Copper Rods, Shelter 2300
50019-2336D5	1	Floor Mounting Plate, Copper Rods, Shelter 2300
50019-2336D6	1	Spacer, Antenna (see 50019-2336B2)
50019-2336D7	1	Wall Bracket (see 50019-2336B1)
50019-2336D8	1	Stop Angle, Shelter 2300
50019-2336D9	1	Spacer (see 50019-2336B1)
50019-2336D10	1	Spacer (see 50019-2336B1)
50019-2338B1	1	Floor Mounting Plate, Shelter 2300
50019-2338B2	1	Wire Stowage Platform, Shelter 2300
50019-2338B3	1	Wire Stowage Installation, Shelter 2300
50019-2338B4	1	Mounting Plate Assembly, Shelter 2300
50019-2338B5	1	Wire Spool, Modified, Shelter 2300
50019-2338D1	1	Bracket, Wire Stowage, Shelter 2300 (see 50019-2338B3)
50019-2338D2	1	Wood Support, Stowage, Shelter 2300 (see 50019-2338B3)
50019-2338D4	1	Spacer, Wire Spool, (Shelter 2300)
50019-2338D5	1	Mounting Plate, General (see 50019-2338B4)
50019-2342D1	1	Anchor Spacer, Shelter 2300
50019-2342D2	1	Wood Spacer, Shelter 2300
50019-2542B1	1	Bulk Stowage, Shelter 2500

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2642B2	1	Wall Mounting Plate (see 50019-2642B1)
50019-2642D1	1	Shelf Bracket (see 50019-2642B1)
50019-2642D2	1	Angle, Hold Down (see 50019-2642B1)
50019-2642D3	1	Bottom Plate (see 50019-2642B1)
50019-3200B3	1	Mounting Plate, Wall (typical)
50019-3232B1	1	Bumper, Large Capacitors, Shelters 3200, 3400
50019-3232B2	1	Holdown Bracket, Large Capacitors, Shelters 3200, 3400
50019-3232D1	1	Angle, Water Jacket Box, Shelters 3200, 3400
50019-3232D3	1	Holdown Bracket, Large Coils, Shelter 3200
50019-3232D4	1	Mounting Plate, Shelters 3200, 3400
50019-3232D5	1	Channel, Modified, Shelters 3200,3400
50019-3232D6	1	Bracket, Shelters 3200, 3400
50019-3232D7	1	Styrofoam Box, Construction, Shelters 3200, 3400
50019-3232D8	1	Styrofoam Cover, Construction, Shelters 3200, 3400
50019-3232D9	1	Block Spacer, Shelters, 3200, 3400
50019-3232D10	1	Block Spacer, Shelters, 3200, 3400
50019-3234B1	1	Block Bumper, Tank Coil, Shelters 3200, 3400

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3234B2	1	Block Bumper, Curved, Tank Coil, Shelters 3200, 3400
50019-3234B3	1	Resistor Box Assembly, Shelters 3200, 3400
50019-3234B4	1	Box, Lapp Insulator, Shelters 3200, 3400
50019-3234D1	1	Stiffener Rod, Tank Coil, Shelters 3200, 3400
50019-3234D2	1	Base, Harmonic Coil, Shelters 3200, 3400
50019-3242B1	1&2	Bulk Stowage, Shelter 3200
50019-3434B1	1	Stowage Box, Transformer Installation, Shelters 3200, 3400
50019-3434D1	1	Stowage Bracket, Coil Drum, Shelter 3400
50019-3442B1	1&2	Bulk Stowage, Shelter 3400
50019-3533B1	1	Large Air Conditioner Stowage Installation, Shelter 3500
50019-3533D1	1	Mounting Plate, Large Air Conditioner (see 50019-3533B1)
50019-3533D4	1	Wood Spacer, Small Air Conditioner (see 50019-3533B1)
50019-3533D2	1	Support Bracket, Large Air Conditioner (see 50019-3538B1)
50019-3538B1	1	Wire Spool Assembly and Stowage Installation, Shelter 3500
50019-3538D1	1	Holddown Bracket, Wire Spool, Shelter 3500

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3542B1	1	Mounting Plate Assembly (Typical)
50019-3542D2	1	Mounting Plate Tie-Down (see 50019-3542B1)
50019-3631B1	1	Base Plate Assembly, Shelter 3700
50019-3631B2	1	Base Plate Assembly, Shelter 3700 (Typical)
50019-3637B1	1	Tube Stowage Housing Assembly, Styrofoam, Shelter 3600
50019-3637B2	1	Tube Stowage Cover Assembly, Shelter 3600
50019-3637B3	1	Beam Clamp Installation
50019-3637B4	1	Walkway Bracket Installation
50019-3637B5	1	Insulator Assembly Stowage Installation
50019-3637B6	1	Support Assembly and Stowage Installation
50019-3637B7	1	Mounting Plate, Stowage Installation
50019-3637B8	1	Bracket Assembly (Typical)
50019-3637D1	1	Channel, Shelter 3600
50019-3637D2	1	Insulator Support (see 50019-3637B6)
50019-3637D3	1	Mounting Pad, Shelter 3600
50019-3637D4	1	Mounting Pad (see 50019-3637B6)
50019-3637D5	1	Angle (see 50019-3637B6)
50019-3637D6	1	Channel (see 50019-3637B5)
50019-3637D7	1	Support, Shelter 3600
50019-3637D8	1	Spacer, Shelter 3600

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3642B2	1	Bulk Stowage, Shelter 3600
50019-3642D1	1	Angle Support, 30" Long (Typical)
50019-3642D2	1	Angle Support, 48" Long (Typical)
50019-3737D4	1	Mounting Plate, Dog House, Shelter 3700
50019-3737D5	1	Angle Bracket, Heat Exchanger and Dog House
50019-3737D6	1	Rail, Heat Exchanger
50019-3737D7	1	Angle, Shelter 3500, 3700
50019-3811B2	1	Stiffener Installation, Transit Plate (Typical)
50019-3833A1	1	*Small Air Conditioner Stowage Rack, Assembly and Installation, Shelter 3800
50019-3833A2	1	Large Air Conditioner Mounting, Pallets
50019-3833D3	1	Shelf, Small Air Conditioner Stowage Rack (see 50019-3833A1)
50019-3833D4	1	Channel, Small Air Conditioner Stowage Rack (see 50019-3833A1)
50019-3833D6	1	Clamp, Double (see 50019-3833A)
50019-3833D7	1	Angle, Base (see 50019-3833A)
50019-3833D8	1	Channel (see 50019-3833A1)
50019-3833D9	1	Mounting Angle, Shelter 1300
50019-3834A1	1	Power Transformer Mounting Installation, Pallets
50019-3834B1	1	Ring and Plate Assembly (Typical)

PART A

Section 7 - Stowage, Detailed (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3834B2	1	Plate, Tie-down, Pallets
50019-3834D1	1	Mounting Plate, Transformer (see 50019-3834A1)
50019-3834D3	1	Wall Plate, Tie-down, Large (see 50019-3834B1)
50019-3834D4	1	Nut Plate (see 50019-3834A1)
50019-3834D15	1	Gasket, Rubber (see 50019-3834A1)
50019-3842B4	1	*Test Equipment Stowage Rack, Assembly and Installation, Shelter 3800
50019-3842B5	1	Gusset Weldment Assembly (see 50019-3842B4)
50019-3842B6	1	" " " "
50019-3842B7	1	Ground Rod Assembly and Stowage Installation, Shelter 3800
50019-3842D1	1	Bracket (see 50019-3842B4)
50019-3842D2	1	Plate, Shock Mount (see 50019-3842B4)
50019-3842D3	1	Plate, Top (see 50019-3842B4)
50019-4100B1	1	Generator Disconnect Panel Stowage Assembly, Pallet 4100
50019-4100B2	1	Cable Stowage Box Assembly, Pallet 4200
50019-4100B3	1	Cable Stowage Box Construction (see 50019-4100B2)
50019-4100B4	1	Generator Disconnect Panel Modification, Pallet 4100
50019-4200B1	1	Bracket Assembly, Pallet 4200
50019-4200D1	1	Angle, Pallet 4200

ATLS DRAWINGS

PART B

Section 1 - Electrical

Drawing Number	Sheet #	Drawing Title/Description
50019-1111A1	1	Fire Detector and Control Box Mounting Details
50019-1111B1	1	Fire Detector Control Box Assembly Details
50019-1111B2	1	Fire Detector Intershelter Calbe Connection Panel, Jack Details
50019-1111D1	1	Fire Detector Control and Power Disable Box, Labeling Details
50019-1111D4	1	Fire Detector Box Mounting Channel, Construction Details
50019-1111D5	1	Fire Detector Box Switch Plate Construction
50019-1111F1C	1&2	Fire Detector Wire Run List #1
50019-1111F2C	1&2	Fire Detector Wire Run List #2
50019-1111F3	1	Fire Detector Wire Run List #3
50019-1114B1	1	Entry Boot for Generator Control Panel Signal Cables, Shelter 1100 (Construction Details)
50019-1114D1	1	Box, Enclosure, Shelter 1100
50019-1114D2	1	Plate Assembly (Wiremold Duct Connection)
50019-1114D3	1	Plate Assembly (Wiremold Duct Connection)
50019-1114D4	1	Plate Assembly (Wiremold Duct Connection)
50019-1116B4	1	Circuit Breaker Mounting Details, Shelter 1100

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1116D1	1	Bushing, Power Panel
50019-1116D2	1	Washer, Power Panel
50019-1116D3	1	Washer, Power Panel
50019-1116D4	1	Circuit Breaker Modification, Shelter 1100
50019-1116D5	1	Circuit Breaker Modification, Shelter 1100
50019-1116D6	1	Circuit Breaker Modification, Shelter 1100
50019-1116D7	1	Plate, Flat
50019-1116D8	1	Label Card, Main Dist. Panel, Shelter 1100
50019-1116D9	1	Label Card, Secondary Panel, Shelter 1100
50019-1116D10	1	Label Card, Secondary Panel, Shelter 1100
50019-1116D11	1	Label Card, Panel, Shelter 1100
50019-1116D12	1	Label Card, Panel, Shelter 1100
50019-1116D13	1	Cable Tag (Type and Nomenclature)
50019-1119D5	1	Power Entrance Cover, Construction Details
50019-1121B3	1	Interior Light Fixture, Cover Construction Details
50019-1123B3	1	Exterior Plate for Exterior Light, Construction Details
50019-1123D2	1	Interior Plate for Exterior Light, Construction Details

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-1125D1	1	Label Strip, Intercom
50019-2114B1A	1	Plate Assembly, Equipment Cable Duct, Shelter 2100
50019-2114B2	1	Duct, Equipment Cable (Typical)
50019-2114B2	1	Duct, Equipment Cable (Typical)
50019-2114B3	1	Plate Assembly, Equipment Cable Duct., Shelter 2100
50019-2114D1	1	Duct, Cable, Shelter 2100
50019-2114D2	1	Duct, Cable, Shelter 2100
50019-2114D3	1	Mounting Strip, Label (Typical)
50019-2114D4	1	Duct, Flexible, Cable (Typical)
50019-2114D5	1	Mounting Bracket (see 50019-2116A1)
50019-2114D6	1	Joint, Cable Duct (Typical)
50019-2114D7	1	Channel Joint, Cable Duct, Shelter 2100
50019-2114D8	1	Duct, Cable, Shelters 2100, 2200
50019-2114D9	1	Duct, Cable, Shelters 2100, 2200
50019-2114D10	1	Duct, Cable, Shelters 2100, 2200
50019-2114D11	1	Plate, Cable Duct, Shelters 2100, 2200
50019-2114D12	1	Angle, Bracket, Cable Duct, Shelter 2100
50019-2114D13	1	Bus Plate, Cable Duct (Typical)
50019-2117B1	1	Insulator Post (see 50019-2116A1, 2216A1, 2616A1)
50019-2117B2	1	Ground Strap (see 50019-2116A1, 2216A1, 2616A1)

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2117D1	1	Ground Strap, Shelter 2100
50019-2117D2	1	Ground Strap, Shelter 2100
50019-2117D3	1	Ground Strap, Shelter 2100
50019-2117D4	1	Bus Bar (see 50019-2116A1)
50019-2117D5	1	Bus Bar (see 50019-2116A1)
50019-2200D2	1	Cover Plate (see 50019-2216A1)
50019-2214B3	1	Signal and Intercom Panel Assembly, Shelter 2200
50019-2214B4	1	Plate Assembly (see 50019-2216A1)
50019-2214B5	1	Duct, Cable (see 50019-2216A1)
50019-2214B6	1	Duct Assembly (see 50019-2216A1)
50019-2214D2	1	Duct, Cable (see 50019-2216A1)
50019-2214D3	1	Duct, Cable (see 50019-2216A1)
50019-2214D5	1	Duct, Cable (see 50019-2216A1)
50019-2214D11	1	Tee Channel (see 50019-2216A1)
50019-2214D12	1	Cover (see 50019-2216B1)
50019-2214D13	1	Duct, Cable (see 50019-2216A1)
50019-2214D14	1	Duct, Cable (see 50019-2216A1)
50019-2214D15	1	Duct, Cable (see 50019-2216A1)
50019-2214D16	1	Cover (see 50019-2216A1)
50019-2214D17	1	Duct Cover (see 50019-2216A1)
50019-2214D18	1	Duct Cover (see 50019-2216A1)

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2114D19	1	Duct Cover (see 50019-2216A1)
50019-2214D20	1	Copper Shielding, Shelter 2200
50019-2216B1	1&2	Power Distribution Panel Assembly, Shelter 2200
50019-2216B2	1	Junction Box Assembly, Shelter 2200
50019-2216B4	1	Signal and Intercom Panel Assembly, Jack Details, Shelter 2200
50019-2216D2	1&2	Cover, Power Distribution Panel (see 50019-2216A2)
50019-2216D4	1	Tube, Threaded, Shelter 2200
50019-2216D5	1	Nut, Hexagon, Shelter 2200
50019-2216D6	1	Cover, Junction Box, Shelter 2200
50019-2216D7	1	Bracket, Filter, Shelter 2200
50019-2216D8	1	Channel, Wing, Shelter 2200
50019-2216D9	1	Angle, (see 50019-2216B5)
50019-2216D10	1	Mounting Angle (see 50019-2216B5)
50019-2216D11	1	Mounting Angle (see 50019-2216B5)
50019-2217D1	1	Bus Bar (see 50019-2216A1)
50019-2217D2	1	Ground Strap (see 50019-2216A1)
50019-2217D3	1	Bus Bar (see 50019-2216A1)
50019-2217D4	1	Bus Bar (see 50019-2216A1)
50019-2217D5	1	Ground Strap (see 50019-2216A1)
50019-2217D6	1	Bus Bar (see 50019-2216A1)

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2217D7	1	Bus Bar (see 50019-2216A1)
50019-2217D8	1	Bus Bar (see 50019-2216A1)
50019-2217D9	1	Bus Bar (see 50019-2216A1)
50019-2217D10	1	Bus Bar (see 50019-2216A1)
50019-2217D11	1	Angle (see 50019-2216A1)
50019-2219B1	1&2	Electric Heater, Modified
50019-2316D2	1	Circuit Breaker Box Modification, Shelter 2300 (see 50019-2316B2)
50019-2316D3	1	Panel Label Card, 208V Circuit Breaker, Shelter 2300
50019-2316D5	1	Power Entrance Adapter (see 50019-2316B1)
50019-2611A1	1	Fire Detection System Annunciator, Modification, Shelter 2600
50019-2611D1	1	Fire Detection Panel Construction, Shelter 2600
50019-2611D2	1	Label Tag, Annunciator, Shelter 2600
50019-2614D1	1	Channel, Cable (see 50019-2616A1)
50019-2614D2	1	Hanger Bracket (Typical)
50019-2614D3	1	Angle Bracket (Typical)
50019-2614D4	1	Adapter (Typical)
50019-2616B2	1	Plate Assembly (see 50019-2616A1)
50019-2616D1	1	Circuit Breaker Modification (see 50019-2616B1)
50019-2616D3	1	Label Cord, Circuit Breaker Panel Shelter 2600

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2616D4	1	Label Card, Circuit Breaker Panel, Shelter 2600
50019-2622D1	1	Angle (see 50019-2616A1)
50019-2622D2	1	Bus Bar (see 50019-2616A1)
50019-2622D3	1	Bus Bar (see 50019-2616A1)
50019-2622D4	1	Bus Bar (see 50019-2616A1)
50019-2622D5	1	Bus Bar (see 50019-2616A1)
50019-3114B1	1	Plate Assembly (see 50019-3114A1)
50019-3114B2	1	Junction Box (see 50019-3114A1)
50019-3114B3	1	Channel, Cable, Modification (see 50019-3114A1)
50019-3114B4	1	Channel, Cable, Modification (see 50019-3114A1)
50019-3114B5	1	Channel, Cable, Modification (see 50019-3114A1)
50019-3114D2	1	Cover, High Voltage (see 50019-3114A1, 3314A1)
50019-3114D3	1	Plate, Flat (see 50019-3114A1, 3314A1)
50019-3114D4	1	Cover (see 50019-3114A1, 3314A1)
50019-3114D5	1	Corner Brace (see 50019-3114B6)
50019-3125B1	1	Bar Support, Intercom
50019-3200D5	1	Backup Plate (see 50019-3200B1)
50019-3206D13	1	Support Bracket (see 50019-3216A1)
50019-3211D1	1	Fire Detector Modification (Labeling).

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3216D1	1	Square D Modification (see 50019-3216A1)
50019-3221D1	1	Fixture Box (see 50019-3216A1)
50019-3301B1	1&2	Frame Assembly (see 50019-3301A1)
50019-3301B2	1	Gusset Plate, Top (see 50019-3301A1)
50019-3301B3	1	Light Cover (see 50019-3301A1)
50019-3301B4	1	Control Indicator Panel, Modified (see 50019-3301A1)
50019-3301B5	1	Support Bracket, Right (see 50019-3301A1)
50019-3301B6	1	Zee Angle (see 50019-3301A1)
50019-3301D1	1	Support Bracket (see 50019-3301A1)
50019-3301D2	1	Gusset Plate, Bottom (see 50019-3301A1)
50019-3301D3	1	Support Bracket, Left (see 50019-3301A1)
50019-3301D5	1	Hinge, Modified (see 50019-3301A1)
50019-3301D6	1	Hinge, Lower, Modified (see 50019-3301A1)
50019-3301D7	1	Hinge, Upper, Modified (see 50019-3301A1)
50019-3301D8	1	Indicator Panel, Modified, SB-1894/FPN-44 (see 50019-3301A1)
50019-3301D9	1	Channel (see 50019-3301A1)
50019-3301D11	1	Support Bracket (see 50019-3301A1)
50019-3301D12	1	Indicator Panel, Modified (see 50019-3301A)
50019-3301D14	1	Standoff, Hex (see 50019-3301A1)
50019-3314B1	1	Junction Box, Shelter 3300

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3314B2	1	Plate, Indicator Light (Typical)
50019-3314D1	1	Switch Plate Modification (Typical)
50019-3314D2	1	Panel, Power Input, Construction Details, Shelters 3100, 3300
50019-3317B1	1	Ground Plate Assembly (see 50019-3114A1, 3314A1)
50019-3317D1	1	Plate (see 50019-3317B1)
50019-3317D2	1	Channel (see 50019-3317B1)
50019-3414B1	1	Plate Assembly (see 50019-3416A1)
50019-3416B1	1	Junction Box, Transmitter Control (see 50019-3416A1)
50019-3416B2	1	Box, Modification (see 50019-3416B1)
50019-3416D2	1	Plate, Terminal Mounting (see 50019-3416B1)
50019-3421B1	1	Mount, Emergency Light (see 50019-3421B2)
50019-3514B1	1	Joint, Channel, Cable (Upper) (see 50019-3516A1)
50019-3514B2	1	Interconnect Plate Assembly (see 50019-3516A1)
50019-3514B3	1	Interconnect and Power Entrance Plate Assembly (see 50019-3516A1)
50019-3514D1	1	Joint, Channel, Cable (Lower) (see 50019-3516A1)
50019-3514D3	1	Channel, Cable (see 50019-3516A1)
50019-3516B4	1	Wireway Assembly (see 50019-3516B3)

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3516B5	1	Wireway Assembly (see 50019-3516B3)
50019-3516D2	1	Circuit Breaker Modification (see 50019-3516B3)
50019-3516D3	1	Circuit Breaker Modification (see 50019-3516B3)
50019-3516D4	1	Circuit Breaker Modification (see 50019-3516B3)
50019-3516D5	1	Wireway Modification (see 50019-3516B3)
50019-3516D6	1	Wireway Modification (see 50019-3516B3)
50019-3516D7	1	Spacer (see 50019-3516B3)
50019-3516D8	1	" "
50019-3516D9	1	" "
50019-3516D10	1	" "
50019-3516D11	1	Label Card, Circuit Breaker Panel, Shelter 3500
50019-3516D12	1	" " "
50019-3516D13	1	" " "
50019-3516D14	1	Label Card, Circuit Breaker Panel, Shelter 3500
50019-3516D15	1	" " "
50019-3516D16	1	" " "
50019-3516D17	1	" " "
50019-3516D18	1	" " "
50019-3601D7	1	Plate, Connector (see 50019-3616A1, 3716A1)

PART B

Section 1 - Electrical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3616B2	1	Plate Assembly (see 50019-3616A1)
50019-3616B3	1	Plate Assembly (see 50019-3616A1) (Typical)
50019-3616B4		Plate Assembly (see 50019-3616A1)
50019-3616B5	1	" " "
50019-3616B6	1	Ground Plate Assembly (see 50019-3616a1)
50019-3616D1	1	Mounting Plate (see 50019-3616A1)
50019-3716B2	1	Plate Assembly (see 50019-3716A1)

ATLS DRAWINGS

PART B

Section 2 - Electronic

Drawing Number	Sheet #	Drawing Title/Description
50019-2101A1	1	Timer/Synchronizer Group Cabinet Modification and Assembly, Shelter 2100
50019-2102A1	1	Recorder Cabinet Modification and Assembly, Shelter 2100
50019-2102D1	1	Mounting Plate (for use with 50019-2102-A1 & 50019-2103A1)
50019-2103A1	1	Frequency Standard Cabinet Modification & Assembly, Shelter 2100
50019-2103D1	1	Plate, Recorder Base (for use with 50019-2102A1)
50019-2103D2	1	Gusset, Frequency Standard Cabinet (for use with 50019-2103A1)
50019-2103D3	1	Bottom Gusset, Frequency Standard Cabinet (for use with 50019-2103A1)
50019-2103D4	1	Angle (for use with 50019-2103A1 & 2102A1)
50019-2103D5	1	Bottom Gusset, Frequency Standard Cabinet (for use with 50019-2103A1)
50019-2201A1	1	Control Indicator Group Cabinet Modification and Assembly, Shelter 2200
50019-2201B1	1	TTY Paper Spindle Latch Modification, Shelter 2200
50019-2214B3	1	Signal & Intercom Panel Assembly, Shelter 2200 (see Section I, Part B).
50019-2214D1	1	Cover, Signal Entrance Box, Shelter 2200 (see 50019-2214A1)
50019-2214D10	1	Cover, Filter Entrance Box, Shelter 2200 (see 50019-2214A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2214D21	1	Adaptor Plate, Pipe Clamp (see 50019-2214A1)
50019-2214D22	1	Insulating Washer (see 50019-2214A2)
50019-2214D23	1	Bushing (see 50019-2214A2)
50019-2214D24	1	Plate (see 50019-2214A2)
50019-2228D2	1	Insulator (see 50019-2228B1)
50019-2228D3	1	Gasket (see 50019-2228B1)
50019-2228D5	1	Gasket, Screen Cover (see Section V, Part A)
50019-2301A1	1	Communications Console Cabinet Modification and Assembly, Shelter 2300
50019-2301D1	1	Support Bracket, Communications Console (see 50019-2301A1)
50019-2304D1	1	Spacer Plate, Teletype, Shelter 2300, 2200
50019-2311B2	1	Box Enclosure and Connector Assembly, Shelter 2300
50019-2601D1	1	Stabilizer Bracket, Transmitter Control, Shelter 2600 (see 50019-2601A1)
50019-2614B2	1	Adapter, Assembly (see 50019-2614A1)
50019-2614B3	1	Adapter, Assembly (see 50019-2614A1)
50019-2614B4	1	Copper Shielding (see 50019-2614A1)
50019-2614B5	1	Copper Shielding, Shelter 3500 (see 50019-2614A1)
50019-2614B6	1	Copper Shielding (see 50019-2614A1)
50019-2614B7	1	Copper Shielding (see 50019-2614A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2614B8	1	Copper Shielding, Shelter 3400 (see 50019-2614A1)
50019-2614B9	1	Copper Shielding (see 50019-2614A1)
50019-2614B10	1	Junction Box, Copper Shielding (see 50019-2614A1)
50019-2614B11	1	Angle Bracket Assembly (see 50019-2614A1)
50019-2614D5	1	Adapter (see 50019-2614A1)
50019-2614D6	1	Adapter (see 50019-2614A1)
50019-2614D9	1	Coupling (see 50019-2614A1)
50019-2614D10	1	Spacer (see 50019-2614A1)
50019-2614D11	1	Plate (see 50019-2601A1)
50019-2614D12	1	Spacer (see 50019-2614A1)
50019-2614D13	1	Angle Bracket (see 50019-2614A1)
50019-2614D14	1	Cover, Junction Box (see 50019-2614A1)
50019-3102D1	1	Mounting Bracket, Rear, Knife Switch Assembly (see 50019-3102A1)
50019-3102D2	1	Mounting Bracket, Top Rear, Knife Switch Assembly (see 50019-3102A1)
50019-3102D3	1	Mounting Bracket, Top Forward, Knife Switch Assembly (see 50019-3102A1)
50019-3200B6	1	Clamp Assembly (see 50019-3200B2)
50019-3200D3	1	Fixed Inductor Assembly (Typical)
50019-3200D4	1	Mounting Plate (see 50019-3200B2)
50019-3200D6	1	Gasket (see 50019-3200B2)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3200D7	1	Gasket (see 50019-3200B2)
50019-3200D9	1	End Cap, Antenna, Input (see 50019-3200D3)
50019-3206B1	1	Harmonic Coil Assembly (see 50019-3206A1)
50019-3206B2	1	Capacitor Group Assembly (see 50019-3206A1)
50019-3206B3	1	Resistor Group Assembly (see 50019-3206-A1)
50019-3206B5	1	Conductor Assembly Tubing (see 50019-3206A1)
50019-3206B6	1	Conductor Assembly Tubing (see 50019-3206A1)
50019-3206B7	1	Conductor Assembly Tubing (see 50019-3206A1)
50019-3206D1	1	Mounting Channel (see 50019-3206B1)
50019-3206D2	1	Mounting Channel, Capacitor Group (see 50019-3206B2)
50019-3206D3	1	Mounting Channel, Capacitor Group (see 50019-3206B2)
50019-3206D4	1	Jumper Strip, Flat (see 50019-3206B2)
50019-3206D5	1	Jumper Strip, Flat (see 50019-3206B2)
50019-3206D6	1	Mounting Channel, Resistor Group (see 50019-3206B3)
50019-3206D7	1	Support Bracket (see 50019-3206A1)
50019-3206D8	1	Conductor Tubing (see 50019-3206A1)
50019-3206D9	1	Conductor Tubing (see 50019-3206A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3302B1	1	Relay Assembly RE-744/FPN-44, 1A3A3, Modification (see 50019-3302A1)
50019-3302B2	1&2	Power Supply Set OA-4783/FPN-44, 1A3A3, Modification (see 50019-3302A1)
50019-3302D1	1	Mounting Bracket, Center, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D2	1	Mounting Bracket, Rear, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D3	1	Mounting Bracket, Top Rear, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D4	1	Mounting Bracket, Top Forward, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D5	1	Mounting Angle, Bottom, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D7	1	Mounting Plate, Bottom, Power Supply Set 1A3A3
50019-3302D8	1	Holddown Bracket, Power Supply Set 1A3A3 (see 50019-3302A1)
50019-3302D9	1	Shield (see 50019-3302A1)
50019-3303D1	1	Support Angle, Bottom (see 50019-3303-A1)
50019-3303D2	1	Support Angle, Top (see 50019-3303A1)
50019-3304B1	1	Mounting Channel (see 50019-3304A1)
50019-3304D1	1	Mounting Gusset (see 50019-3304A1)
50019-3305D6	1	Mounting Bracket, Voltage Divider CN-942/FPN, Shelter 3100, 3300
50019-3306B2	1	Support Channel, Inductrol Housing (see 50019-3306A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3306D1	1	Floor Mounting Brackets, Front and Rear, Inductrol (see 50019-3306A1)
50019-3306D2	1	Support, Duct (see 50019-3306A1)
50019-3310D1	1	Bracket, Equipment Rack (see 50019-3310A1)
50019-3402B2	1	Spacer Plate, Exciter, Shelters 3200, 3400
50019-3402D1	1	Stabilizer Bracket, Exciter, (see 50019-3402A1)
50019-3402D2	1	Spacer, Exciter, Shelters 3200, 3400
50019-3402D3	1	Bracket, Capacitor (see 50019-3402A1)
50019-3402D4	1	Bracket, Capacitor (see 50019-3402A1)
50019-3402D5	1	Trim, Exciter (see 50019-3402A1)
50019-3403D1	1	Bushing (see 50019-3406A1)
50019-3404B2	1	Angle, Top Stabilizer, Power Amplifier (see 50019-3404A1)
50019-3404B3	1	Angle, Top Stabilizer, Power Amplifier (see 50019-3404A1)
50019-3404D1	1	Channel, Support, P.A. (see 50019-3404A1)
50019-3404D2	1	Channel, Bottom Support, P.A. Shelters 3200, 3400
50019-3404D3	1	Channel, Bottom Support, P.A. Shelters 3200, 3400
50019-3404D4	1	Channel, Bottom Dupport, P.A., Shelters 3200, 3400
50019-3404D5	1	Spacer Plate, P.A. (see 50019-3404A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3404D6	1	Mounting Plate, Adj., P.A. (see 50019-3404A1)
50019-3404D7	1	Mounting Plate, Rear, P.A. (see 50019-3404A1)
50019-3404D8	1	Channel, Mounting, P.A. (see 50019-3404A1)
50019-3404D9	1	Mounting Plate, Adj., P.A. (see 50019-3404A1)
50019-3404D10	1	Mounting Plate, Rear, P.A. (see 50019-3404A1)
50019-3404D11	1	Plate, Top Stabilizer, P.A. (see 50019-3404A1)
50019-3404D12	1	Plate, Top Stabilizer, P.A. (see 50019-3404A1)
50019-34004D13	1	Angle, Mounting, P.A. (see 50019-3404-A1)
50019-3404D14	1	Channel, Support, P.A. (see 50019-3404A1)
50019-3404D15	1	Channel, Support, P.A. (see 50019-3404A1)
50019-3404D16	1	Channel, Mounting (see 50019-3404A1)
50019-3414D17	1	Angle, Mounting (see 50019-3404A1)
50019-3405D1	1	Resistor Rack Modification (see 50019-3405A1)
50019-3405D2	1	Angle, Resistor Rack (see 50019-3405A1)
50019-3405D3	1	Bracket, Resistor (see 50019-3405A1)
50019-3405D4	1	Bracket, Resistor (see 50019-3405A1)

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Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3405D5	1	Bracket, Resistor (see 50019-3405A1)
50019-3406B4	1	Conductor Tubing (see 50019-3406A1)
50019-3406D1	1	Conductor Tubing (see 50019-3406A1)
50019-3406D2	1	Conductor Tubing (see 50019-3406A1)
50019-3406D3	1	Conductor Tubing (see 50019-3406A1)
50019-3601B2	1	Demineralizer Modification, Shelter 3600 (see 50019-3601B1)
50019-3601D1	1	Base, Liquid Cooler (see 50019-3601A1)
50019-3601D2	1	Gusset, Shock Mount (see 50019-3601A1)
50019-3601D3	1	Gusset, Shock Mount (see 50019-3601A1)
50019-3601D4	1	Gusset, Shock Mount (see 50019-3601A1)
50019-3601D5	1	Support Bracket, Tank (see 50019-3601B1)
50019-3601D6	1	Support Bracket, Tank (see 50019-3601B1)
50019-3603D1	1	Bracket, Shock Mount (see 50019-3601A1)
50019-3603D2	1	Bracket, Shock Mount (see 50019-3603A1)
50019-3603D3	1	Cap End, Antenna (see 50019-3603A1)
50019-3615B2	1	Cable, Internal (see 50019-3603A1)
50019-3615D1	1	Mounting Plate (see 50019-3615B1)
50019-3615D2	1	Gasket (see 50019-3615B1)
50019-3615D3	1	Gasket (see 50019-3615B1)
50019-3622B2	1	Bracket, Bottom (see 50019-3603A1)
50019-3622B3	1	Angle (see 50019-3603A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3622B7	1	Frame, Flexible Joint, Small (see 50019-3622B5)
50019-3622B8	1	Frame, Flexible Joint, Large (see 50019-3622B6)
50019-3622B11	1	Access Plate, Duct, Shelter 3600
50019-3622D1	1	Gasket, 2 hole (Typical)
50019-3622D2	1	Gasket, Large (see 50019-3603A1)
50019-3622D3	1	Angle, Small (see 50019-3603A1)
50019-3622D4	1	Angle, Large (see 50019-3603A1)
50019-3622D5	1	Bracket, Shelter 3600
50019-3622D6	1	Spring, Shelter 3600
50019-3622D7	1	Gasket (see 50019-3622B1)
50019-3622D8	1	Strap, 4 hole (see 50019-3622B5, 3622B6)
50019-3622D9	1	Strap, 5 hole (see 50019-3622B5, 3622B6)
50019-3622D10	1	Duct, Flexible, Small (see 50019-3622B5)
50019-3622D11	1	Duct, Flexible, Large (see 50019-3622B6)
50019-3628B1	1	Pipe and Fitting Assembly (see 50019-3628A1)
50019-3628D1	1	Gusset, (see 50019-3628A1)
50019-3628D2	1	Tubing (see 50019-3628A1)
50019-3628D3	1	Tubing (see 50019-3628A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3628D4	1	Gusset (see 50019-3628A1)
50019-3628D5	1	Cover (see 50019-3628A1)
50019-3628D6	1	Cover (50019-3628A1)
50019-3628D7	1	Shield (50019-3628A1)
50019-3628D8	1	Shield (see 50019-3628A1)
50019-3628D9	1	Shield (see 50019-3628A1)
50019-3628D10	1	Shield (see 50019-3628A1)
50019-3628D11	1	Shield (see 50019-3628A1)
50019-3628D12	1	Shield (see 50019-3628A1)
50019-3628D13	1	Cover (see 50019-3628A1)
50019-3628D14	1	Bracket (see 50019-3628A1)
50019-3628D15	1	Cover (see 50019-3628A1)
50019-3628D16	1	Cover (see 50019-3628A1)
50019-3628D17	1	Cover (see 50019-3628A1)
50019-3628D18	1	Cover (see 50019-3628A1)
50019-3628D19	1	Cover (see 50019-3628A1)
50019-3628D20	1	Cover (see 50019-3628A1)
50019-3628D21	1	Shield (see 50019-3628A1)
50019-3628D22	1	Shield (see 50019-3628A1)
50019-3628D23	1	Shield (see 50019-3628A1)
50019-3628D24	1	Tubing (see 50019-3628A1)
50019-3628D25	1	Tubing (see 50019-3628A1)

PART B

Section 2 - Electronic (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3628D26	1	Tubing (see 50019-3628A1)
50019-3628D27	1	Tubing (see 50019-3628A1)
50019-3628D29	1	Clamp (see 50019-3628A1)
50019-3628D30	1	Shield, Support (see 50019-3628A1)
50019-3628D31	1	Spacer, Electrical (see 50019-3628A1)
50019-3628D32	1	Inductor, Fixed (see 50019-3628A1)
50019-3628D33	1	Support, Side (see 50019-3628A1)
50019-3628D34	1	Support, Bottom (see 50019-3628A1)
50019-3628D35	1	Support, Top (see 50019-3628A1)
50019-3628D36	1	Coupling (see 50019-3628A1)
50019-3701D1	1	Base, Liquid Cooler (see 50019-3701A1)
50019-3701D2	1	Bracket, Shock Mount, Liquid Cooler (see 50019-3701A1)
50019-3737B3	1	Dog House Modification

PART B

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Section 3 - Mechanical

Drawing Number	Sheet #	Drawing Title/Description
50019-1119D3	1	Electric Heater Bracket, Lower, Construction Details
50019-1119D4	1	Electric Heater Bracket, Upper, Construction Details
50019-1119D5	1	Power Entrance Cover Construction Details (see Electrical Section)
50019-1119D7	1	Metallic Transit Plate, Circuit Breaker, Interior
50019-1130B1	1	Fire Extinguisher Plate Assembly
50019-1130D1	1	Spacer, Fire Extinguisher Plate
50019-1142B2	1	Stowage Bag (Cotton Duck) for Shelter Guys and Guy Anchors (Labeling Details)
50019-1142B6	1	Utility Bag, Cotton, for Stowage of Bolts and Nuts
50019-1242B1	1	Storage Cabinet Assembly, Shelter 1200 (see 50019-2342B1 and B2)
50019-1300B1	1	Weldment Assembly, Shelter 1300
50019-1342B2	1	Storage Cabinet Assembly, Shelter 1300 (see 50019-2342B1 and B2)
50019-2113B2	1	Floor Plate, Shock Mount Assembly (see 50019-2113A1)
50019-2113B3	1	Floor Plate, Shock Mount Assembly (see 50019-2113A1)
50019-2113B4	1	Floor Plate, Shock Mount Assembly (see 50019-2113A1)
50019-2113D2	1	Ceiling Plate (see 50019-2113A1)

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Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2113D3	1	Bracket, Shock Mount (see 50019-2113A1)
50019-2113D4	1	Bracket, Shock Mount (see 50019-2113A1)
50019-2113D6	1	Bracket, Shock Mount (see 50019-2113A1)
50019-2113D10	1	Bushing, Shock Mount (see 50019-2113 2113A1)
50019-2119B6	1	RFI Vent Panel and Louver Installation and Assembly, Large, Shelter 2100, Large Air Conditioner (see 50019-2119B5)
50019-2119D2	1	Remote Control Modification, Large Air Conditioner
50019-2119D4	1	RFI Vent Panel (Detail) (see 50019-2119B5)
50019-2119D5	1	Angle (see 50019-2119B5)
50019-2119D6	1	Angle (see 50019-2119B5)
50019-2133D1	1	Plate, Mounting, A/C
50019-2133D2	1	Spacer, Plate'
50019-2133D3	1	Spacer, Bar
50019-2133D4	1	Wood Beam
50019-2201D1	1	Floor Plate, Desk Leg, Shelter 2200.
50019-2202D1	1	Angle, Shelter 2200
50019-2213A1	1 & 2	Equipment Shock Mount Installation, Shelter 2200 (see 50019-2113A1)
50019-2213B1	1	Floor Plate, Shock Mount Assembly (see 50019-2213A1)

PART B

Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2213B2	1	Floor Plate, Shock Mount Assembly (see 50019-2213A1)
50019-2219B2	1	RFI Vent Panel Installation and Assembly, Shelter 2200 (see 50019-2119B5)
50019-2219D1	1	Bracket, Electric Heater (Construction) Shelter 2200.
50019-2228B2	1	Screen Assembly, Shelter 2200
50019-2228B3	1	Cover, Screen, Shelter 2200
50019-2307B1	1	Wall Mount, Dummy Load, Shelter 2300
50019-2313A1	1 & 2	Equipment Shock Mount Installation, Shelter 2300 (see 50019-2113A1)
50019-2313B1	1	Wall Plate, Transmitter Rack, Shelter 2300
50019-2313B2	1	Floor Plate, Transmitter Rack, Shelter 2300
50019-2313B3	1	Floor Plate, Teletype, Shelter 2300
50019-2313B4	1	Floor Plate, Communications Console, Shelter 2300)
50019-2442B1	1	Storage Cabinet Assembly, Shelter 2400 (see 50019-2342B1 and B2)
50019-2542B2	1 & 2	Storage Cabinet Assembly, Shelter 2500 (see 50019-2342B1 and B2)
50019-2613A1	1 & 2	Equipment Shock Mount Installation, Shelter 2600 (see 50019-2113A1)
50019-2613B1	1	Floor Plate, Transmitter Control (see 50019-2613A1)
50019-2700D2	1	Plastic Cover (Typical)

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Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-2742B1	1	Storage Cabinet Assembly, Shelter 2700 (see 50019-2342B1 and B2)
50019-3018D3	1	Pipe Support, Tramsmitter Plumbing (see 50019-3018A1)
50019-3100D1	1	Warning Plate, Air Conditioner, Shelter 3100 (Labeling Details)
50019-3113A1	1, 2, 3	Equipment Shock Mount Installation, Shelter 3100 (see 50019-2113A1)
50019-3114B7	1	CO_2 Divider Plate, Shelter 3100
50019-3114D1	1	Bracket, Fire Detectors, Shelter 3100-3300
50019-3200D1	1	Striker (Warning) plate, Shelters 3100, 3200, 3300, 3400
50019-3200D2	1	Angle Bracket, Shelters 3100, 3200, 3300, 3400
50019-3200D8	1	Warning Plate, CO_2 System (Typical)
50019-3212D1	1	Panel Modification, Front (see 50019-3212A1)
50019-3212D2	1	Panel Modification, Front (see 50019-3212A1)
50019-3212D3	1	Panel Modification, Front (see 50019-3212A1)
50019-3212D4	1	Angle Modification, Corner (see 50019-3212A1)
50019-3212D5	1	Angle Modification, Corner (see 50019-3212A1)
50019-3212D6	1	Support Angle Modification (see 50019-3212A1)

PART B

Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3212D7	1	Support Chennel Modification (see 50019-3212A1)
50019-3212D8	1	Trim Strip Modification (see 50019-3212A1)
50019-3212D9	1	Top Angle (see 50019-3212A1)
50019-3212D10	1	Trim Strip Modification (see 50019-3212A1)
50019-3213A1	1 & 2	Equipment Shock Mount Installation, Shelter 3200 (see 50019-2113A1)
50019-3224B2	1	Rivet Assembly, Latch, Sliding Door (see 50019-3224B3)
50019-3224D1	1	Angle Lock Mounting (see 50019-3224B1)
50019-3224D2	1	Angle, Latch (see 50019-3224B3)
50019-3224D3	1	Block Mounting (see 50019-3224B2)
50019-3302D6	1	Floor Plate (see 50019-3313A1)
50019-3312B1	1	Saddle, Modification (see 50019-3312A1)
50019-3312B2	1	Panel, Fixed, Modification and Assembly (see 50019-3312A1)
50019-3312B3	1	Panel, Fixed, Modification and Assembly (see 50019-3312A1)
50019-3312D1	1	Support, Top. Modification (see 50019-3312A1)
50019-3312D3	1	Angle, Channel Mounting, Modification (see 50019-3312A1)
50019-3312D4	1	Angle, Channel Mounting, Modification (see 50019-3312A1)

PART B

Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3312D5	1	Channel (Roller), Modification (see 50019-3312A1)
50019-3312D7	1	Bracket, Lock (see 50019-3312B2)
50019-3312D8	1	Angle, Upright, Righthand (see 50019-3312A1)
50019-3312D9	1	Angle, Upright, Adjustable (see 50019-3312A1)
50019-3312D10	1	Door, Right Hand, Modified (see 50019-3312A1)
50019-3312D11	1	Angle, Upright, Left and Right (see 50019-3312A1)
50019-3312D12	1	Upright, Lefthand (see 50019-3312A1)
50019-3313A1	1,2,3	Equipment Shock Mount Installation, Shelter 3300 (see 50019-2113A1)
50019-3313B2	1	Mounting Plate, Inductrol (see 50019-3313A1)
50019-3313B3	1	Stabilizing Channel Assembly (see 50019-3313A1)
50019-3313B4	1	Mounting Plate (see 50019-3313A1)
50019-3313B5	1	Plate, Shock Mounting, Power Supply PP-3815/FPN (see 50019-3313A1)
50019-3313B6	1	Mounting Plate, Resistor Rack and Control Panel (see 50019-3313A1)
50019-3313D1	1	Mounting Plate, Power Supply and Inductrol (see 50019-3313A1)
50019-3313D2	1	Angle Bracket, Inductrol (see 50019-3313A1)
50019-3313D4	1	Bushing (see 50019-3313A1)

PART B

Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3413A1	1 & 2	Equipment Shock Mount Installation, Shelter 3400 (see 50019-2113A1)
50019-3413B2	1	Floor Plate, Power Amplifier (see 50019-3413A1)
50019-3413B3	1	Floor Plate, P.A. (see 50019-3413A1)
50019-3413B5	1	Floor Plate, Exciter (see 50019-3413A1)
50019-3413D1	1	Ceiling Plate (see 50019-3413A1, 3213A1, 2613A1)
50019-3413D2	1	Bracket, Stabilizer, P.A. shelters 3200, 3400
50019-3413D3	1	Bracket, Stabilizer, Exciter, Shelters 3200, 3400
50019-3427D1	1	Clamp, Shelters 3200, 3400
50019-3427D2	1	Clamp, Shelters 3200-3400
50019-3500B1	1	Guard Rail, Shelter 3500
50019-3613B1	1 & 2	Floor Plate (see 50019-3613A1)
50019-3613B2	1	Wing Channel (see 50019-3613A1)
50019-3613B3	1	Floor Plate (see 50019-3613A1)
50019-3613B4	1	Wing Channel (see 50019-3613A1)
50019-3642B1	1	Storage Cabinet Installation and Assembly Shelter 3600 (see 50019-2342B1 and B2)
50019-3713B1	1	Floor Plate Assembly (see 50019-3713A1)
50019-3713B2	1	Wall Plate Assembly (see 50019-3713A1)

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Section 3 - Mechanical (Continued)

Drawing Number	Sheet #	Drawing Title/Description
50019-3716B1	1	Plate Assembly, Secondary Heat Exchanger Hose Entry, Shelter 3700
50019-3737B2	1	Heat Exchanger Modification (Tie-downs)
50019-3742B1	1	Storage Cabinet Installation and Assembly, Shelter 3700 (see 50019-2342B1 and B2)
50019-3801B2	1	Bracket Assembly, CO_2 System (see 50019-3801A1)
50019-3801B3	1	Bracket Assembly, CO_2 System (see 50019-3801A1)
50019-3801B4	1	Panel Assembly (see 50019-3801B1)
50019-3801D2	1	Bracket (see 50019-3801A1)
50019-3801D3	1	Spacer, Top (see 50019-3801A1)
50019-3801D4	1	Spacer (see 50019-3801A1)
50019-3834B3	1	Mounting Bracket Assembly, Shelter 3800
50019-3834B4	1	Mounting Bracket Assembly, Shelter 3800
50019-3834D4	1	Plate
50019-3834D5	1	Mounting Bracket, Large (see 50019-3834B4)
50019-3834D6	1	Anchor, Eye Bolt, Shelter 3800
50019-3834D11	1	Mounting Bracket, Large (see 50019-3834B3)

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Section 4 - STRUCTURAL

Drawing Number	Sheet #	Drawing Title/Description
50019-3800D1	1	Skid Modification, Shelter 3800 and 1200
2360-1101-01	1	Interior Layout, Shelter 1100
2360-1102-01	1	Hardware Details, Exterior Door (Typical)
2360-1103-B1	1	Lift Bracket Assembly, Left Hand (Typical)
2360-1103-01	1	Lift Bracket, Exterior, Left Hand (Typical) (see 2360-1103-B1)
2360-1103-02	1	Lift Bracket, Interior, Left Hand (Typical) (see 2360-1103-B1)
2360-1104-B1	1	Lift Bracket Assembly, Right Hand (Typical)
2360-1104-01	1	Lift Bracket, Exterior, Right Hand (Typical) (see 2360-1104-B1)
2360-1104-02	1	Lift Bracket, Interior, Right Hand (Typical) (see 2360-1104-B1)
2360-1105-B1	1	Jack Plate Assembly, Left Hand (Typical)
2360-1105-01	1	Jack Plate, Left Hand (Typical) (see 2360-1105-B1)
2360-1106-B1	1	Jack Plate Assembly, Right Hand (Typical)
2360-1106-01	1	Jack Plate Right Hand (Typical) (see 2360-1106-B1)
2360-1107-B1	1	Step Panel Installation, Cable Connection, Large, Shelter 1100

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Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-1108-B1	1	Step Panel Installation, Cable Connection, Small, Shelter 1100
2360-1109-B1	1	Temporary Cover Plate, Shelter 1100
2360-1110-B1	1	Transit Plate Assembly, 8" x 10" opening, Gasket and Nutsert Details, Shelter 1100
2360-1110-01	1	Transit Plate, 8" x 10" Opening, Construction, Shelter 1100 (see 2360-1110-B1)
2360-1111-B1	1	Transit Plate Assembly, Small Air Conditioner, Gasket and Nutsert Details, (Typical)
2360-1111-01	1	Transit Plate, Small Air Conditioner, Construction, (Typical) (see 2360-1111-B1)
2360-1112-02	1	Hand Strap, Transit Plate, Construction, (Typical) (see 2360-1112-B1)
2360-1114-B1	1	Level Indicator Installation, (Typical)
2360-1115-B2	1	Leveling Jack Assembly, Construction Details (Typical)
2360-1116-01	1	Doorstep Support Detail, Left hand (see 2360-1116-B2)
2360-1116-B2	1	Doorstep Assembly, Exterior, (Typical)
2360-1116-02	1	Doorstep Support Detail, Right hand (see 2360-1116-B2)
2360-1117-01	1	Skid Detail, 6" Channel, left hand (see 2360-1117-B1)
2360-1117-02	1	Skid Detail, 6" Channel, right hand (see 2360-1117-B1)

PART B

Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-1117-03	1	Skid Detail, 3" Channel, End (see 2360-1117-B1)
2360-1117-04	1	Skid Detail, 3" Channel, Intermediate (see 2360-1117-B1)
2360-1117-05	1	Skid Detail, 9" Channel (see 2360-1117-B1)
2360-1117-06	1	Skid Detail, 9" I-Beam (see 2360-1117-B1)
2360-1117-07	1	Skid Detail, 3" Channel, Cross-member (see 2360-1117-B1)
2360-1118-B1	1	Identification Plate, Manufacturer
2360-1201-B1	1	Basic Building Cross-sections; Ceiling, Wall, Floor, Shelter 1200
2360-1201-01	1	Interior Layout, Shelter 1200
2360-1301-B1	1	Basic Building Cross-sections; Ceiling, Wall, Floor, Shelter 1300
2360-1301-01	1	Interior Layout, Shelter 1300
2360-2101-B1	1	Basic Building Cross-Sections; Ceiling, Wall, Floor, Shelter 2100
2360-2101-01	1	Interior Layout, Shelter 2100
2360-2102-01	1	Ground Bar, RFI Pullman Connection, Large Access Opening, Typical (Shelters 2100, 2200)
2360-2201-01	1	Interior Layout, Shelter 2200
2360-2201-02	1	Interior Details, Shelter 2200
2360-2205-B1	1	Step Panel Installation, Cable Connection, 6" x 8" Opening, Shelter 2200

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Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-2206-B1	1	Step Panel Installation, Power Cable Connection, 12" x 12" Opening, Shelter 2200
2360-2301-01	1	Interior Layout, Shelter 2300
2360-2302-B1	1	Transit Plate Assembly 24" x 24" Opening, Gasket and Nutsert Details, Shelter 2300
2360-2302-01	1	Transit Plate, 24" x 24" Opening, Construction (see 2360-2302-B1)
2360-2303-B1	1	Step Panel Installation, Remote Control and Fire Detection Cable Connection, 10" x 8" Opening, Shelter 2300
2360-2304-B1	1	Step Panel Installation, Antenna Cable Connection, 10" x 8" Opening, Shelter 2300
2360-2305-B1	1	Step Panel Installation, Power Cable Connection, 8" x 8" Opening, Shelter 2300
2360-2401-B1	1	Basic Building Cross-sections, Ceiling Wall, Floor, Shelter 2400
2360-2403-B1	1	Transit Plate Assembly, 11¼" x 11¼" Opening, Gasket and Nutsert Details, Typical
2360-2403-01	1	Transit Plate, 11¼" x 11¼" Opening, Construction (see 2360-2403-B1)
2360-2501-01	1	Interior Layout, Shelter 2500
2360-2601-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 2600
2360-2601-01	1	Interior Layout, Shelter 2600

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Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-2602-B1	1	Step Panel Installation, Cable Connection, 22½" x 12" Opening, Shelter 2600
2360-2603-B1	1	Transit Plate Assembly, 8" x 6" Opening, Gasket and Nutsert Details, Shelter 2600 (Typical)
2360-2603-01	1	Transit Plate, 8" x 6" Opening, Construction Shelter 2600 (see 2360-2603-B1)
2360-2701-B1	1	Basic Shelter Cross-Sections; Ceiling, Wall, Floor, Shelter 2700
2360-2701-01	1	Interior Layout, Shelter 2700
2360-2701-02	1	Window Construction Details, Shelter 2700 (Typical)
2360-3101-01	1	Interior Layout, Shelter 3100
2360-3101-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 3100
2360-3104-B1	1	Removable Panel Assembly, Shelter 3100 (see 2360-3205-B1)
2360-3104-01	1	Removable Panel Details, Shelter 3100 (see 2360-3104-B1)
2360-3201-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 3200
2360-3201-01	1	Interior Layout, Shelter 3200
2360-3202-B1	1	Transit Plate Assembly, 12-3/16" x 24-3/16" Opening, Gasket and Nutsert Details, Shelter 3200 (Typical)

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Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-3202-01	1	Transit Plate, 12-3/16" x 24-3/16" Opening, Construction (see 2360-3202-B1)
2360-3203-B1	1	Transit Plate Assembly, 9-3/4" x 14-3/8" Opening, Gasket and Nutsert Details, Shelter 3200 (Typical)
2360-3203-01	1	Transit Plate, 9-3/4" x 14-3/8" opening, Construction (see 2360-3203-B1)
2360-3301-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 3300
2360-3301-01	1	Interior Layout, Shelter 3300
2360-3302-B1	1	Door Assembly, Interior, Shelter 3300 (see 2360-3103-B1)
2360-3401-B1	1	Basic Shelter Cross-Sections, Ceiling, Wall, Floor, Shelter 3400
2360-3401-01	1	Interior Layout, Shelter 3400
2360-3402-B1	3	Sliding Door Assembly, Shelter 3400 (see 2360-3204-B1)
2360-3403-B1	1	Removable Panel Assembly, Shelter 3400 (see 2360-3205-B1)
2360-3403-01	1	Removable Panel Details, Shelter 3400 (see 2360-3403-B1)
2360-3501-B1	1	Basic Shelter Cross-Sections; Ceiling, Wall, Floor, Shelter 3500
2360-3501-01	1	Interior Layout, Shelter 3500

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Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-3502-B1	3	Door Assembly, Exterior, Shelter 3500 (see 2360-1102-B1)
2360-3503-B1	1	Step Panel Installation, Cable Connection, 22½" x 22", Shelter 3500
2360-3504-B1	1	Step Panel Installation, Cable Connection, 22½" x 12", Shelter 3500
2360-3505-B1	1	Transit Plate Assembly, 8" x 8" Opening, Gasket and Nutsert Details, Shelter 3500
2360-3505-01	1	Transit Plate, 8" x 8" Opening, Construction (see 2360-3505-B1)
2360-3601-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 3600
2360-3601-01	1	Interior Layout, Shelter 3600
2360-3602-B1	1	Transit Plate Assembly, 39" x 27" Opening, Gasket and Nutsert Details, Shelter 3600
2360-3602-01	1	Transit Plate, 39" x 27" Opening, Construction (see 2360-3602-B1)
2360-3603-B1	1	Transit Plate Assembly, 34" x 24-3/4" Opening, Gasket and Nutsert Details, Shelter 3600
2360-3603-01	1	Transit Plate, 34" x 24-3/4" Opening, Construction (see 2360-3603-B1)
2360-3604-B1	1	Transit Plate Assembly, 23" x 23" Opening, Gasket and Nutsert Details, Shelter 3600
2360-3604-01	1	Transit Plate, 23" x 23" Opening, Construction (see 2360-3604-B1)

PART B

Section 4 - Structural (Continued)

Drawing Number	Sheet #	Drawing Title/Description
2360-3701-B1	1	Basic Shelter Cross-sections; Ceiling, Wall, Floor, Shelter 3700
2360-3701-01	1	Interior Layout, Shelter 3700
2360-3702-B1	2	Door Assembly, Exterior, Shelter 3700 (see 2360-1102-B1)
2360-3703-B1	1	Transit Plate Assembly, 7" x 20" Opening, Gasket and Nutsert Details, Shelter 3700
2360-3703-01	1	Transit Plate, 7" x 20" Opening, Construction (see 2360-3703-B1)
2360-3801-B1	1	Basic Building Cross-sections; Ceiling, Wall, Floor, Shelter 3800
2360-3801-01	1	Interior Layout, Shelter 3800
2360-3803-B1	2	Door Assembly, Interior, Left-hand, Shelter 3800 (see 2360-3802-B1)
2360-3804-B1	1	Step Panel Installation, 8" x 8" Opening, Cable Connection, Shelter 3800
2360-4001-01	1	Lift-Sling Spreader-Bar Construction Details
2360-4002-B1	1	Shelter-to-Ground Guy Assembly, Typical (see 2360-4001-A1)
2360-4005-02	1	RFI Pullman Drape, Construction Details
2360-4005-03	1	RFI Pullman Drape, Bracket Assembly
2360-4007-B1	1	Walkway Installation, Small (see 2360-4006-B1)
2360-4009-B1	1	* Shelter-to-Shelter Guy Installation, Large, Typical
2360-4010-B1	1	* Shelter-to-Shelter Guy Installation, Small, Typical

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
1a.	Generator No. 3 - Unload	Para. 3.8	8
	and place in position.	3.10	
2a.	Shelter 1300 - Place in		8
	temporary position.	Table 3-2	
2b.	Obtain key and open	System	1
	exterior door.	manual	
2c.	Obtain key to open workbench -	Para. 4.3	1
	then get pliers and open work-		
	bench drawers.		
2d.	Obtain 9/16-inch socket wrench	Para. 4.8.1	1
	secured on workbench and remove		
	large transit plate from shelter	Table	
	end. Pliers and screwdrivers	4-1	
	are attached to workbench in		
	handling bag.		
2e.	Remove installation tools.	Table 4-1	2
3.	Generator No. 2 - Unload and	Para. 3.8	8
	place in position.	3.10	
4a.	Shelter 2300 - Remove transit	Para	2
	plates.	4.8.1	
4b.	Place in temporary position.	Table 3-2	8
4c.	Remove large air conditioner		10
4d.	Unstow shelter		4

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

| ITEM | UNIT AND TASK | MANUAL REFERENCE | SEQUENCE → MANPOWER REQUIREMENTS | | |

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
7d.	Install pullman (one side	Para. 4.8.4	3 1
	only) to on the 38/35 wall of	4.8.5	
	shelter 3800.		
7e.	Connect wiremold ducting and	Para. 4.8.8	2 1 1
	power cables between 3800 and		
	3500.		
7f.	Perform installation checkout	Para. 5.1	1
	(power)		
7g.	Connect AN/FPN-44 cables to	Table 4-22	2 2 2
	shelters 3500.		
8a.	Shelter 1100-Place in position.	Para. 3.8	8 8
		3.10	
8b.	Remove transit plates.	Para. 4.8.1	2
8c.	Unstow shelter.	Table 4-2	6 6 6 6 6 6 6 6
8d.	Install leveling jacks and level	Para. 4.8.2	4
	shelter.		
8e.	Install exterior door step.	Para. 4.8.7	2
	air-conditioner and exterior	4.8.11	
	light. Remove one rail.	4.8.13	
		4.6.3	
8f.	Unpack and install generator	Para. 4.8.15	2 2
	control panels.		

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
8g.	Connect cables between	Table 4-23	2 2 2 1
	generator 3, generator dis-		
	connect panel, transformer and		
	shelter 1100.		
8h.	Perform installation checkout		1
	(power).	Para. 5.1	
9a.	Shelter 3200-Place in position.	Para. 3.8	8 8
		3.10	
9b.	Remove transit plates.	Para. 4.8.1	2
9c.	Unstow shelter.	Table 4-13	2 4 2
9d.	Install leveling jacks and	Para. 4.8.2	4
	level shelter.		
9e.	Install small air conditioner.	Para. 4.8.11	2
	and exterior light.	Para. 4.8.3	
9f.	Install large air conditioners.	Para. 4.8.12	10 4
9g.	Install pullman enclosures.	Para. 4.8.4	2 2
	flexible ducts, walkways, and	Para. 4.8.19	
	exterior light.	Para. 4.8.6	
		Para. 4.8.13	
9h.	Connect power cables.	Para. 4.10.2	2 2
9i.	Perform installation checkout (power)	Para. 5.1	1
9j.	Assemble AN/FFN-44.	Para. 4.9.	2 2 2 2 1 2 2 2 1

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
9k.	Wire AN/FPN-44 to shelter 3800.	Para. 4.10.1	29: 1, 30: 1, 31: 1
91.	Connect CO2 plumbing to shelter 3800	Para. 4.11.1	36: 1, 37: 1
10a.	Pallet 4200-Place in position.	Para. 3.8 3.10	9: 8, 10: 8
10b.	Unstow four large air conditioners and cable box.	Para. 4.8.12	11: 2, 12: 2
10c.	Carry two large air conditioners to shelter 3200, and two to shelter 3400.	Para. 4.8.12	11: 10, 12: 10
11a.	Shelter 3500-Move from temporary position to permanent position.	Para. 3.10	11: 8, 12: 8
11b.	Unstow shelter.	Table 4-16	14: 2
11c.	Install leveling jacks and level shelter.	Para. 4.8.2	15: 4
11d.	Install small air-conditioners exterior light, doorstep, pullman, and walkway.	Para. 4.8.11 Para. 4.8.13 Para. 4.8.7 Para. 4.8.4 Para. 4.8.6	15: 1, 17: 2, 19: 1

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
11e.	Connect cables between trans-	Para. 4.10.1	1
	former (4200) and shelter 3500.		
11f.	Connect cables to shelters 1100.	Table 4-23	1
11g.	Perform installation checkout	Para. 5.1	1
	(power).		
12a.	Shelter 3100-Place in position.	Para. 3.8	8 8
		3.10	
12b.	Remove transit plates.	Para. 4.8.1	2
12c.	Unstow shelter.	Table 4-12	2 2
12d.	Install leveling jacks and	Para. 4.8.2	4
	level shelter.		
12e.	Install small air-conditioners,	Para. 4.8.11	2 2 2
	exterior light, doorstep.	Para. 4.8.13	
		Para. 4.8.7	
12f.	Install pullman, flexible ducts	Para. 4.8.4	2 2 2
	and walkway.	Para. 4.8.19	
		Para. 4.8.6	
12g.	Connect power cables to shelter	Para. 4.10.2	1
	3200.		
12h.	Perform installation checkout	Para. 5.1	1
	(power).		
12j.	Connect external power cables from	Para. 4.10.2	1 1 2 2
	shelters 3500 to shelter 3100.		

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

| ITEM | UNIT AND TASK | MANUAL REFERENCE | SEQUENCE → MANPOWER REQUIREMENTS | | |

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45)
14f.	Install two large air-conditioners.	Para. 4.8.12	4 4
14g.	Install two pullmans, flexible ducts and walkway to shelter 3800	Para. 4.8.4 Para. 4.8.19 Para. 4.8.6	2 2
14h.	Connect power cables.	Table 4-23	1 1
14i.	Perform installation checkout (power).	Para. 5.1	1
14j.	Assemble AN/FPN-44.	Para. 4.9.	2 2 2 2 2 2 2 2
14k.	Wire AN/FPN-44 to shelters 3800	Para. 4.10.1	1 1 1
15a.	Shelter 3300-Remove transit plates.	Para. 4.8.1	2
15b.	Place in permanent position.	Para. 3.8	8 8
15c.	Unstow shelter.	Table 4-14	2 2
15d.	Install leveling jacks and level shelter.	Para. 4.8.2	4
15e.	Install small air-conditioners, exterior lights, and doorstep, and remove one rail.	4.8.11 4.8.13 4.8.7 4.6.3	2 2

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
15f.	Install pullman, flexible ducts	Para. 4.8.4	24: 2; 25: 2
	and walkway.	Para. 4.8.19	
		Para. 4.8.6	
15g.	Connect power cable to shelter	Table 4-23	30: 1; 31: 1
	3400.		
15h.	Perform installation checkout	Para. 5.1	32: 1
	(power).		
15i.	Connect external power cables	Table 4-23	39: 2; 40: 2
	from shelter 3500.		
15j.	Complete AN/FPN-44 wiring.	Para. 4.10.1	42: 1; 43: 1; 44: 2
15k.	Connect CO2 plumbering to	Para. 4.11.1	40: 1
	shelter 3400.		
15l.	Connect water lines to shelter	Para. 4.11.1	39: 1
	3400.		
16a.	Shelter 3700-Move from temporary	Para. 3.10	17: 8; 18: 8
	position to permanent position.		
16b.	Unstow shelter.	Table 4-15	19: 2
16c.	Install leveling jacks and	Para. 4.8.2	20: 4
	level shelter.		

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
16d.	Install small air-conditioner	Para. 4.8.11	21: 2; 22: 2
	exterior light and doorstep,	Para. 4.8.13	
	and remove one rail.	Para. 4.8.7	
		Para. 4.6.3	
16e.	Install flexible ducts.	Para. 4.8.19	22: 1
16f.	Connect power cables to shelter	Table 4-23	24: 1; 25: 1
	3800.		
16g.	Perform installation checkout	Para. 5.1	29: 1
	(power).		
16h.	Wire primary heat exchanger to	Para. 4.10.3	42: 1
	transmitter No. 2.		
16i.	Install pullman to shelter 3200	Para. 4.8.4	36: 2; 37: 2
	only and connect water lines to	Para. 4.11.1	
	shelter 3200.		
16j.	Install and connect R-F lines		37: 2; 38: 4
	to shelter 3200, and connect	Para. 4.8.4	
	pullman to shelter 3700.	4.10.1	
17a.	Secondary Heat Exchanger	Para. 3.8	19: 2
	No. 1-Place in position	Para. 3.10	
18	Secondary Heat Exchanger	Para. 3.8	25: 2
	No. 2-Place in position.	Para. 3.10	

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
19a.	Shelter 3600-Remove	Para. 4.8.1	2
	transit plates.		•
19b.	Place in position.	Para. 3.8,	8 8
		3.10	
19c.	Unstow shelter.	Table 4-17	2 2
19d.	Install leveling jacks and	Para. 4.8.2	4
	level shelter.		
19e.	Install small air-conditioner,	Para. 4.8.11	2
	exterior lights.	Para. 4.8.13	
19f.	Install pullman between 3600	Para. 4.8.4	2
	and 3400, and connect R-F	Para. 4.10.1	
	cables to 3400.		
19g.	Install pullman flexible ducts,	Para. 4.8.19	2
	and walkway between 3600 and	Para. 4.8.6	
	3700.	Para. 4.8.4	
19h.	Install pullman, flexible ducts,	Para. 4.8.4	2
	and walkway between 3600 and	Para. 4.8.19	
	3800.	Para. 4.8.6	

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
19i.	Connect power cables to shelter	Table 4-23	28: 1; 29: 1
	3800.		
19j.	Perform installation checkout	Para. 5.1	30: 1
	(power).		
19k.	Install dummy load relays.	Loran Addendum	41: 2; 42: 2
19l.	Install output insulators.	Para. 4.8.6	41: 2
19m.	Wire primary heat exchanger to	Para. 4.10.3	37: 1
	transmitter.		
19n.	Install water lines between	Para. 4.11.1	38: 2
	3600 and 3400.		
19o.	Connect R-F cables between	Para. 4.10.1	39: 2; 40: 2
	3600, 3400, and 3700		
19p.	Install water lines between	Para. 4.11.1	39: 2
	3600 and 3700		
19q.	Generator 1-Place in position.	Para. 3.8	21: 8; 23: 8
		3.10	
20a.	Shelter 1200-Place in position.	Para. 3.8	25: 8; 26: 8
		3.10	
20b.	Remove transit plates.	Para. 4.8.1	26: 2

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
20c.	Unstow shelter.	Table 4-3	26: 2
20d.	Install leveling jacks and level shelter	Para. 4.8.2	27: 4
20e.	Remove one rail and install small air-conditioner, doorstep and exterior light.	Para. 4.6.3 Para. 4.8.11 Para. 4.8.7 4.8.13	28: 2
20f.	Install pullman, flexible ducts, and walkway between 1100, and 1200.	Para. 4.8.4 Para. 4.8.19 Para. 4.8.6	29: 2
21a.	Shelter 1300-Move from temporary position to permanent position.	Para. 3.8 3.10	23: 8 24: 8
21b.	Unstow shelter.	Table 4-4	26: 2 27: 2
21c.	Install leveling jacks and level shelter.	Para. 4.8.2	28: 4
21d.	Install small air-conditioners, doorstep and exterior light.	Para. 4.8.11 Para. 4.8.13 Para. 4.8.7	30: 2

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
21e.	Install pullman, flexible ducts	Para. 4.8.4	32: 2; 34: 2
	and walkway between 1200 and	Para. 4.8.19	
	1300.	Para. 4.8.6	
21f.	Connect power cables between	Table 4-23	35: 2; 36: 2
	1100, 1200, and 1300.		
21g.	Perform installation checkout	Para. 5.1	37: 2
	(power).		
22a.	Shelter 2600-Place in position.	Para. 3.8	26: 8; 27: 8
		3.10	
22b.	Remove transit plates.	Para. 4.8.1	27: 2
22c.	Unstow shelter.	Table 4-10	29: 2; 31: 2
22d.	Install leveling jacks and	Para. 4.8.2	31: 4; 32: 4
	level shelter.		
22e.	Remove one rail and install	Para. 4.6.3	34: 1; 35: 2
	small air-conditioner, door-	Para. 4.8.11	
	step and exterior light.	Para. 4.8.7	
		4.8.13	
22f.	Install pullman between 2600	Para. 4.8.4	34: 2; 35: 2
	and 3500 if required.		
22g.	Connect power cables between	Table 4-23	36: 2; 37: 2
	1100 and 2600.		
22h.	Perform installation (power) checkout.	Para. 5.1	38: 2

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
23a.	Shelter 2200-Remove transit plates.	Para. 4.8.1	26: 2
23b.	Place in position.	Para. 3.8 3.10	25: 8; 26: 8
23c.	Unstow shelter.	Table 4-6	28: 2
23d.	Install leveling jacks and level shelter.	Para. 4.8.2	32: 4
23e.	Remove one rail and install doorstep.	Para. 4.6.3 Para. 4.8.13	33: 1
23f.	Install pullman, flexible ducts and walkway between 2200 and 2600.	Para. 4.8.4 Para. 4.8.19 Para. 4.8.6	33: 2
23g.	Connect power cables to 2200.	Table 4-23	34: 2
23h.	Perform installation checkout (power).	Para. 5.1	39: 1
24a.	Shelter 2100-Remove transit plates.	Para. 4.8.1	30: 2
24b.	Unstow antenna and antenna coupler and erect.	Para. 4.8.20	30: 2; 31: 2

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
24c.	Place shelter in position.	Para. 3.8	28: 8; 29: 8
		3.10	
24d.	Unstow shelter.	Table 4-5	32: 2
24c.	Install leveling jacks and	Para. 4.8.2	34: 4
	level shelter.		
24f.	Install large air-conditioner.	Para. 4.8.12	35: 4
24g.	Remove one rail and install	Para. 4.6.3	35: 1
	doorstep.	4.8.7	
24h.	Install pullman, flexible ducts	Para. 4.8.4	35: 2; 36: 2
	and walkway between 2100 and	Para. 4.8.19	
	2200.	Para. 4.8.6	
24i.	Connect power cables.	Table 4-23	38: 1
24j.	Perform installation (power) checkout.	Para. 5.1	39: 1
24k.	Connect AN/FPN-46 wires.	Para. 4.10.1	41: 2; 42: 2; 43: 2; 44: 2
25a.	Shelter 2500-Remove transit	Para. 4.8.1	29: 2
	plates.		
25b.	Place shelter in position.	Para. 3.8	28: 8; 29: 8
		3.10	
25c.	Unstow shelter.	Table 4-9	33: 4

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45)
25d.	Install leveling jacks and level shelter.	Para. 4.8.2	4
25e.	Install air-conditioner, doorstep and exterior light.	Para. 4.8.11 Para. 4.8.7 Para. 4.8.13	2 2
25f.	Connect power cables.	Table 4-23	2
26a.	Shelter 2400-Remove transit plates.	Para. 4.8.1	2
26b.	Place shelter in position.	Para. 3.8 3.10	8 8
26c.	Unstow shelter.	Table 4-8	2
26d.	Install leveling jacks and level shelter.	Para. 4.8.2	4
26e.	Install small air-conditioner and exterior light.	Para. 4.8.11 Para. 4.8.13	2
26f.	Install pullman, flexible ducts and walkway between 2400 and 2500.	Para. 4.8.4 4.8.19 4.8.6	2 2
26g.	Connect power cables.	Table 4-23	2
26h.	Perform installation (power) checkout.	Para. 5.1	1

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45)
27a.	Shelter 2700-Remove transit plates.	Para. 4.8.1	31: 2
27b.	Place shelter in position.	Para. 3.8 3.10	30: 8; 31: 8
27c.	Unstow shelters.	Table 4-11	33: 2
27d.	Install leveling jacks and level shelter.	Para. 4.8.2	34: 4
27e.	Install small air-conditioner and exterior light.	Para. 4.8.11 4.8.13	35: 2
27f.	Install pullman, flexible ducts and walkway between 2700 and 2400.	Para. 4.8.4 Para. 4.8.19 Para. 4.8.6	35: 2; 36: 2
27g.	Connect power cables.	Table 4-23	40: 2
27h.	Perform installating checkout (power)	Para. 5.1	41: 1
28a.	Shelter 2300-Unstow antennas, jackbox, large air-conditioner, and generator.	Para. 4.6	5: 4; 6: 4
28b.	Erect antennas and antenna couplers.	Para. 4.8.20	5: 4; 6: 4

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.

INSTALLATION SEQUENTIAL CHART

| ITEM | UNIT AND TASK | MANUAL REFERENCE | SEQUENCE → MANPOWER REQUIREMENTS | | |

INSTALLATION SEQUENTIAL CHART

ITEM	UNIT AND TASK	MANUAL REFERENCE	SEQUENCE → MANPOWER REQUIREMENTS
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
32	Connect all external grounds.	Para. 4.8.8	2 2 2 2 2
33	Connect cables to large air conditioners.	Para. 4.10.2	2 2
34	Provide house-keeping water.	Para. 4.11.7	2
35	Connect cables to secondary heat exchangers.	Table 4-23	4

EACH VERTICAL BOX INDICATES EQUAL TIME BLOCKS.