

TACTICAL AIR COMMAND PAMPHLET

OPERATIONS
FOR TRAINING
PURPOSES ONLY

TACTICAL AIR CONTROL SYSTEM EQUIPMENT



22 DECEMBER 1971

DEPARTMENT OF THE AIR FORCE
TACTICAL AIR COMMAND

22 November 1971

Operations

TACTICAL AIR CONTROL SYSTEM EQUIPMENT

This pamphlet is intended to provide a reference for the basic characteristics of the major Tactical Air Control System equipment employed by Tactical Air Command.

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✓ Supersedes TACP 55-43, May 1969. (For summary of revised, deleted, or added material, see signature page.)

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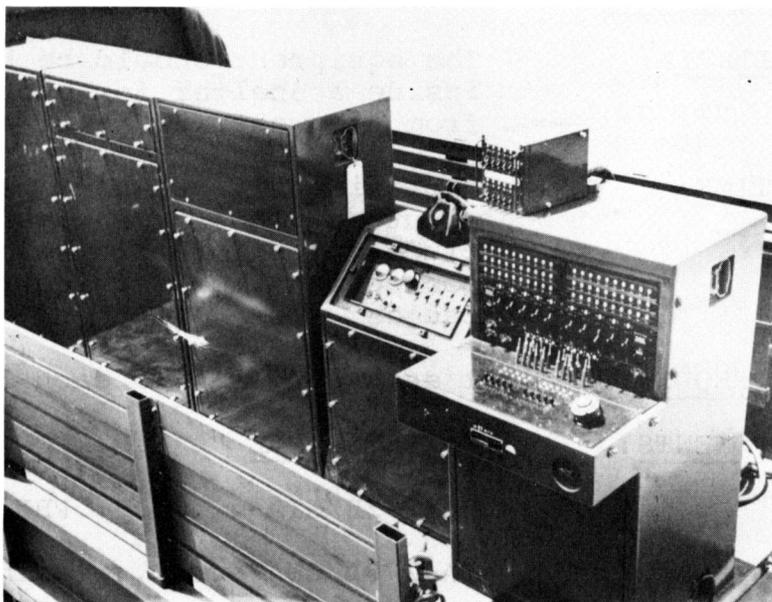
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Chapter 5

TELEPHONE EQUIPMENT



AN/GTA-6A TELEPHONE COMMUNICATION SET

DESCRIPTION: The GTA-6A provides telephone communications for radar stations and their related radar networks. It provides intercommunication between operating personnel at the radar station in addition to communication with outside points in the radar network. DASC uses it for intra-site communications. Completely self-contained, this telephone central group is not dependent on any other type communications or radar set. It is used with the AN/TRC-97A, AN/TRC-66A, AN/TRC-87 and other prime radio equipment, plus the SB-86 and SB-22 switchboards.

CAPABILITIES:

GTA-6A has 40 telephone operator units (10 line boxes). Capable of providing 160 outside wire lines to be used for telephone or radio communication. These are broken down as follows:

Tactical.....	60 ea.
Radio Control.....	20 ea.
Common Battery.....	40 ea.

Magneto (Manual).....20 ea.
Trunk.....10 ea.

FREQUENCY RANGE: NA.

POWER REQUIREMENTS: 115 VAC @ 50/60 Cps, 250 watts.

SITING CRITERIA: The equipment should be housed inside a shelter for protection from the weather.

ERECTION TIME: Approximately two hours and thirty minutes. This time does not include drops for telephone, cross connections, or terminating outside cables.

PERSONNEL REQUIRED: 1 each 36271 and 3 each 36251s.

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	SB-202B/GTA-4.....	PBX Switchboard
	TA-270A/GTA-6.....	Main Distribution Frame Number 1
	TA-285A/GTA-6.....	Main Distribution Frame Number 2
	TA-268A/GTA-6.....	Telephone Relay Rack
	TA-277A/GTA-6.....	Operator's Tele- phone Unit.
	PP-706C/GTA-4.....	Telephone Power Supply.
	J-618/GT.....	Wire Terminal Box
	C-1421A/GTA-6.....	Telephone Line Control (vol limiter)
	CX-1220/U.....	Patching Control Cord
	Telephone EE8A.....	Field Telephone

<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
TA-168/GT.....	Telephone
TP-6A.....	Telephone Set
H-67A/GT.....	Handset
CX2763/U.....	Connecting Electrical Cord Assembly
CX-1204/U.....	Jack Box Extension Cord
BB-207/U.....	Storage Battery
CX-2922/U.....	Telephone Cable Assembly, 26 pr, 50'
CX-2873/U.....	Telephone Cable Assembly, 24 pr. 30'.
CX-2921/U.....	Telephone Cable Assembly, 5 pr, 10'.
CX-2795/U.....	Electrical Power Cable Assembly, 4 conductor, 20'.

MANUFACTURER:

Connecticut Telephone and Electric Corp.

COST:

\$29,278.00.

WEIGHT:

Approximately 4806 lbs.

CUBE:

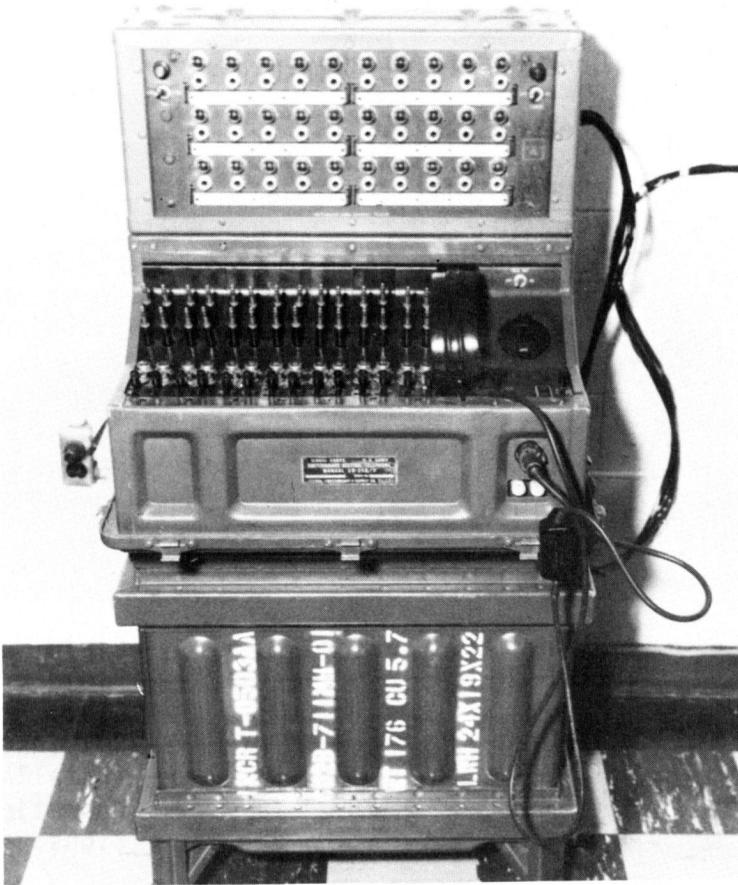
Approximately 278.8 cu. ft.

APPLICABLE TOs:

31W1-2GTA6-11-----Operators' Instructions.
31W1-2GTA6-12-----Service Instructions.
31W1-2GTA6-14-----Illustrated Parts Breakdown.

31W1-2GTA6-36-----PMI Instruc-
tions.

31W1-2GTA6-44-----Non-illustrated
Parts Breakdown.



SB-86/P FIELD SWITCHBOARD

DESCRIPTION: The SB-86/P Manual Telephone Switchboard is a local battery, field type switchboard, capable of serving a maximum of 30 telephone or voice-frequency telegraph lines. If additional equipment (TA-207/P Switchboard Signal Assembly) is available, up to 60 lines can be connected. The SB-86/P may be used to connect voice-frequency teletypewriter circuits together by using a TH-5/TG telegraph terminal, and suitable teletypewriter equipment. Signaling may be accomplished by either operating a hand ringing generator (magneto signaling) or lifting the handset from the cradle (common battery signaling).

CAPABILITY:

Line Circuits.....	30
With additional TA-207/P.....	60
Peak Load.....	15 Calls

FREQUENCY RANGE: NA

POWER REQUIREMENTS:

Batteries BA-200/U, 10 each.
Batteries BA-30, 4 each.

SITING CRITERIA: Protect from dust and moisture; keep warm.

ERECTION TIME: One individual 30 minutes.

PERSONNEL REQUIRED: 2 each 362X4's.

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	SB-248/P.....	Switchboard.
	PP990/G.....	Power Supply.
	TA-207/P.....	Signal Assembly.

MANUFACTURER: Kellogg Switchboard & Supply Company.

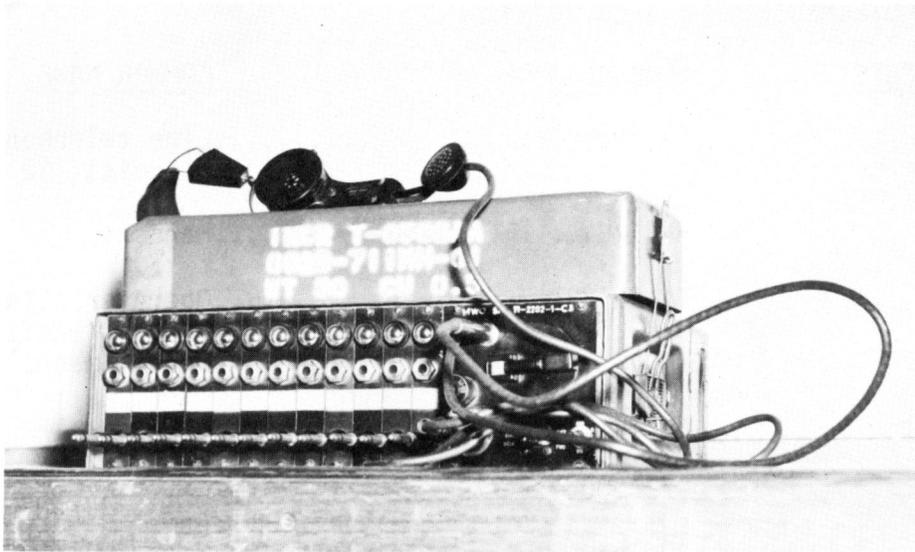
COST: \$3972.00.

WEIGHT: 125 lbs.

CUBE: 20 cu. ft.

APPLICABLE TOS:

31W1-2P-102-----	Field Maintenance.
31W1-2P-104-----	Field & Denot Parts List.
31W1-2P-106-----	PMI Instructions.
31W1-2P-111-----	Installation and Operation Instruc- tions.



SB-22/PT FIELD SWITCHBOARD

DESCRIPTION: The SB-22/PT Telephone Switchboard is a portable, immersion-proof field telephone switchboard used for interconnecting local battery lines and line equipment used in conjunction with teletypewriter and remote control radio communications. The SB-22/PT provides switching and signaling of 12 field telephones, 12 teletypewriter circuits, 12 remote control radio circuits or any combination of these facilities. Whenever this switchboard is used to interconnect teletypewriter circuits, a converter such as the TH-5/G and a teletypewriter are required at the switchboard location. This enables the switchboard operator to communicate with the outlying teletypewriter stations. Two SB-22/PT switchboards may be connected in tandem to handle a total of 24 lines.

CAPABILITY: 12 telephones, teletype or remote radio channels.

FREQUENCY RANGE: NA.

POWER REQUIREMENTS: 4 each BA-30 batteries (6 VDC).

SITING CRITERIA: Protect from dampness, dirt, ice or snow.

ERECTION TIME: Approximately 15 minutes by one man.

PERSONNEL REQUIREMENTS: 1 each 362X4.

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	TA-222/PT.....	Line telephone circuits, 12 each.
	H-81/U.....	Handset.
	TA-221/PT.....	Operators' telephone circuit with manual magneto.

MANUFACTURER: North Electric Manufacturing Company.

COST: \$754.00.

WEIGHT: 30 lbs.

CUBE: 3.29 cu. ft.

<u>APPLICABLE TOS:</u>	31W1-2PT-361-----	Operator & Organizational Maintenance.
	31W1-2PT-372-----	Field & Depot Maintenance.
	31W1-2PT-374-----	Non-illustrated Parts List.
	31W1-2PT-101-----	Switchboard.



SB-239/GTA COMMUNICATION PATCHING SWITCHBOARD

DESCRIPTION: The SB-239/GTA Switchboard is designed primarily for operational use as a telephone and teletypewriter patching switchboard. It is part of and dependent upon a fixed field system installation that provides an external power source and a means of intercommunication when the switchboard circuits are completed by plug-in cord assemblies. An electrical meter assembly is included to determine the audio level input and output and the amount of line current flowing through teletypewriter circuits. Terminal blocks in the bottom of the switchboard comprise a distribution frame for cross-connections required by the using agency.

CAPABILITY:

96 Three-jack telephone lines.
48 Three-jack teletype lines.

ERECTION TIME:

4 hours providing cross-connections have previously been made.

MAJOR COMPONENTS:

Elect. Cord Assy.	13"	10 ea
Elect. Cord Assy.	24"	24 ea

MAJOR COMPONENTS: Elect. Cord Asy. 48" 15 ea.
(SN-1021-0001P) Cabinet
1021-0100A Meter Assembly

POWER REQUIREMENTS: Switchboard - 24-26 VDC and -130 VDC
Receptacle Connector - 115 VAC

MANUFACTURER: Insuline Corp. of America
Hallamore Manufacturing Co.

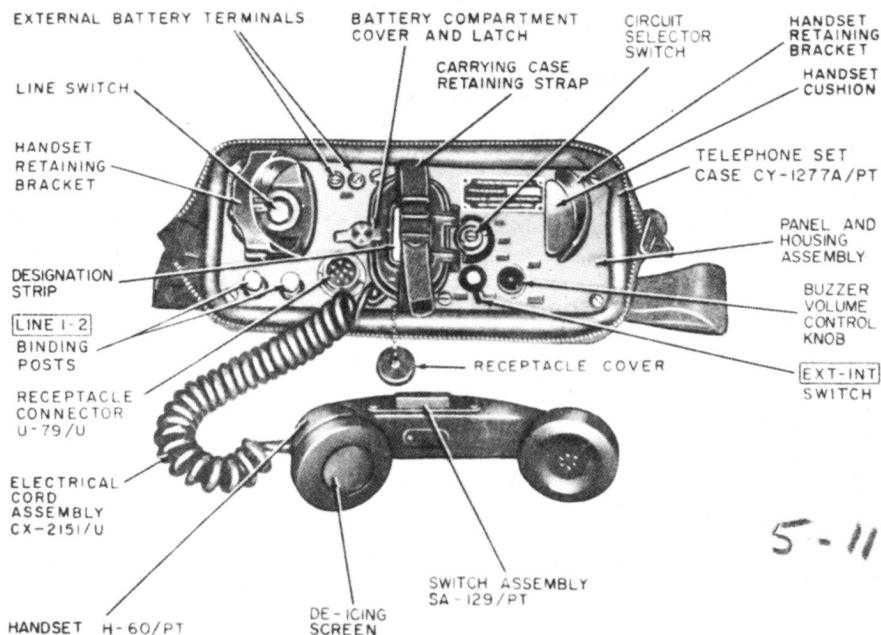
PERSONNEL REQUIRED: 1 each 362X4

COST: \$880.00

WEIGHT: 175 lbs.

CUBE: 17.4 cu. ft.

APPLICABLE TOS: 31W1-2GRA-103 Overhaul Instructions and Parts List
31W1-2GTA-121 Operating Instructions
31W1-2GTA-123 Overhaul Instructions
31W1-2GTA-124 Illustrated Parts Breakdown



TM 2155-1

TA-312/PT FIELD TELEPHONE SET

DESCRIPTION: The TA-312/PT Telephone Set is a local battery (LB) or common battery (CB) manual telephone. It may also be arranged for operation as a local battery telephone using common battery signaling (CBS). It will operate under all outdoor conditions, in groups of two or more, or in conjunction with a switchboard. A receptacle is provided for connecting the Handset-Headset H-144/U, which may be used in place of the handset provided. In addition, the telephone set can be used to control remotely operated radio equipment by operation of the press-to-talk switch on the telephone handset.

CAPABILITY:

The TA-312/PT is capable of one voice telephone transmission up to 250 miles (dependent upon type wire used). It may also be used to remote one radio channel.

POWER REQUIREMENTS:

2 each BA-30 batteries; external power supply 3 VDC .

FREQUENCY RANGE:

Audio frequencies (300-3200 Cps).

PERSONNEL REQUIRED: 362X4. Number of personnel dependent upon the number of units to be installed.

MAJOR COMPONENTS:

<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
H-60/PT.....	Handset.
G-42A/PT.....	Manual Magneto Ringing Generator.

MANUFACTURER: Kellogg Switchboard & Supply Co.

COST: \$56.00

WEIGHT: 9.6 lbs.

CUBE: 0.25 cu. ft.

APPLICABLE TOs: 31W1-2PT-291-----Maintenance Instr. & Illustration Pts Breakdown.

AN/TTC-30

TELEPHONE CENTRAL OFFICE

DESCRIPTION: The AN/TTC-30 consists of two interconnected mobile communications modules which provide automatic switching of four-wire telephone circuits under control of Dual Tone Multi-Frequency (DTMF) signaling. Computer programming techniques are employed to assign telephone subscriber numbers, to route numbers and to program routing instructions. Special features include direct area dialing, automatic alternate routing of calls over switched trunks, and pre-emption privileges for key personnel. Special interface equipment make it compatible with AUTOVON, Army, Commercial and current manual switchboards.

CAPABILITY: 384 subscriber and trunk terminals.

FREQUENCY RANGE: N/A

POWER INPUT: 120/208 VAC, 3-phase, 4-wire, 50/60/400 Hz.

EMERGENCY POWER: 49 volt nickel-cadmium batteries provide one hour operation.

SITING CRITERIA: The site area may have a slope no greater than six percent. Special considerations for siting are not required.

ERECTION TIME: One hour.

PERSONNEL REQUIREMENTS: 1 each 291X0
2 each 362X2

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	QA-8489/TTC-30	Line Shelter
	QA-8491/TTC-30	Operator Shelter
	QA-8490/TTC-30	Air Conditioner

MANUFACTURER: North Electric Co.
Galion, Ohio

COST: \$481,475.00 (Estimated)

WEIGHT:

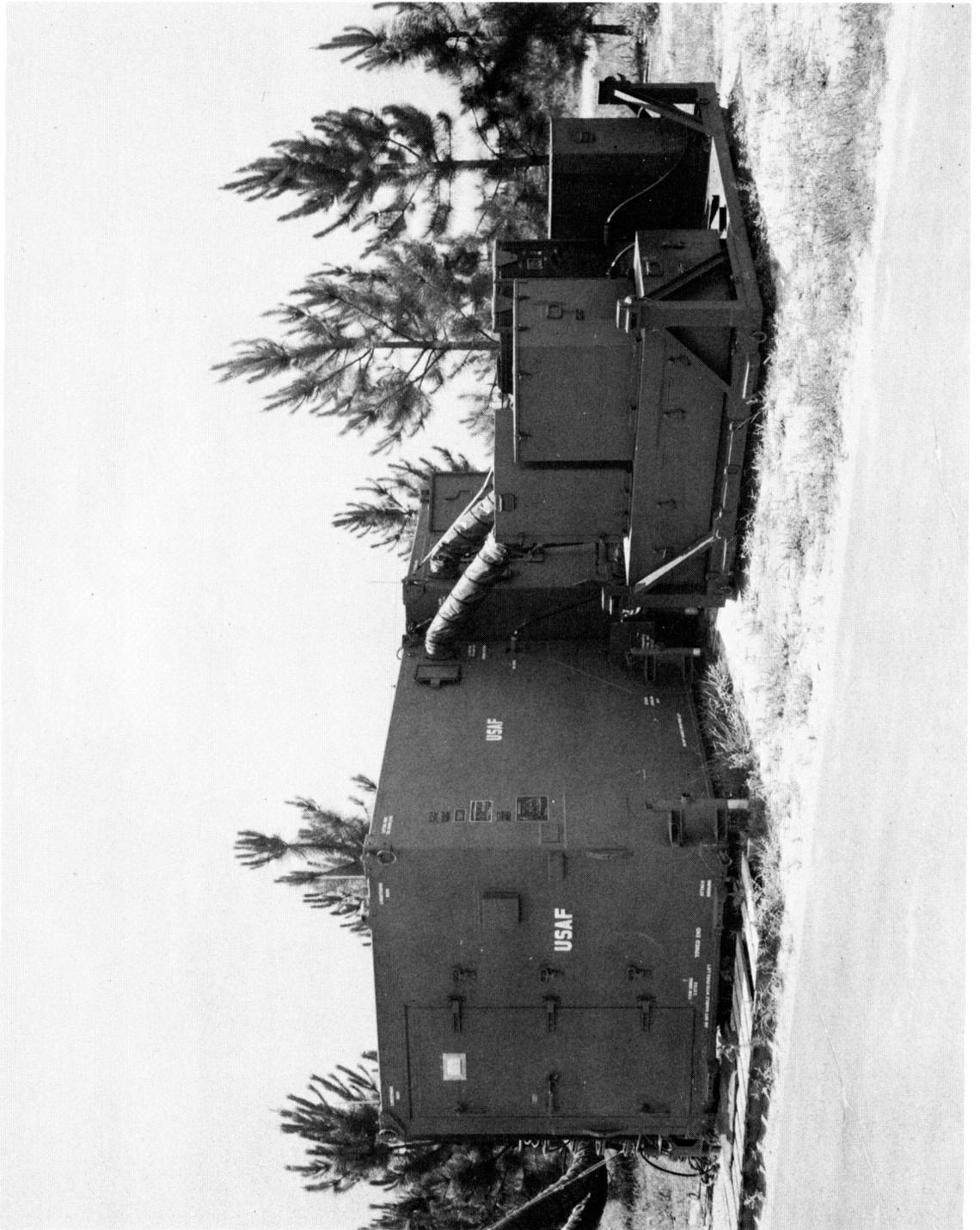
3515 pounds - OA-8491/TTC-30
3524 pounds - OA-8489/TTC-30
3291 pounds - OA-8490/TTC-30

CUBE:

286 cu ft - OA-8491/TTC-30
460 cu ft - OA-8489/TTC-30
460 cu ft - OA-8490/TTC-30

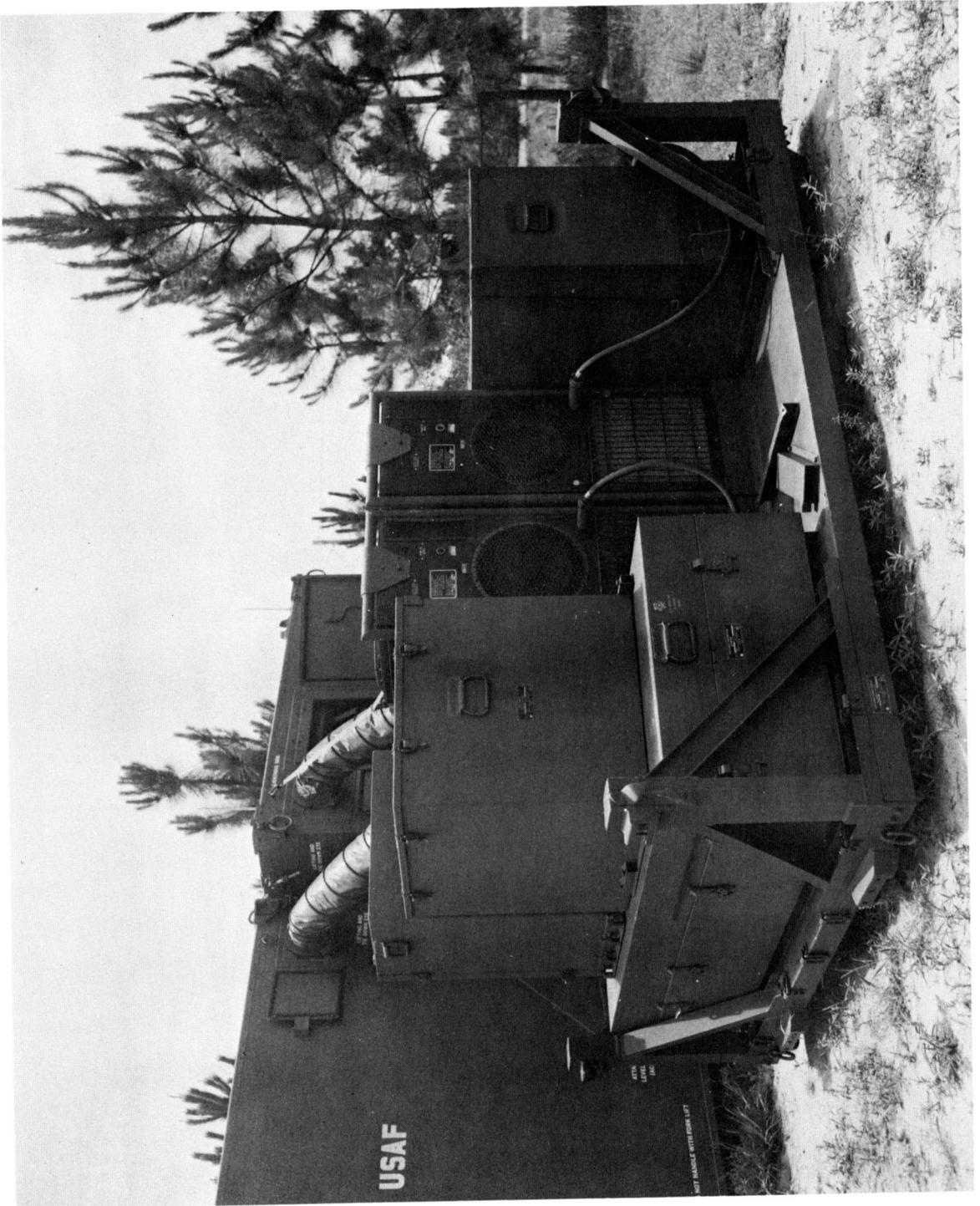
APPLICABLE TOs:

31W1-2TTC30-2
31W1-2TTC30-3
31W1-2TTC30-4
31W1-2TTC30-12
31W1-2TTC30-13
31W1-2TTC30-14
31W1-2TTC30-6WC-1
33D7-76-13-1



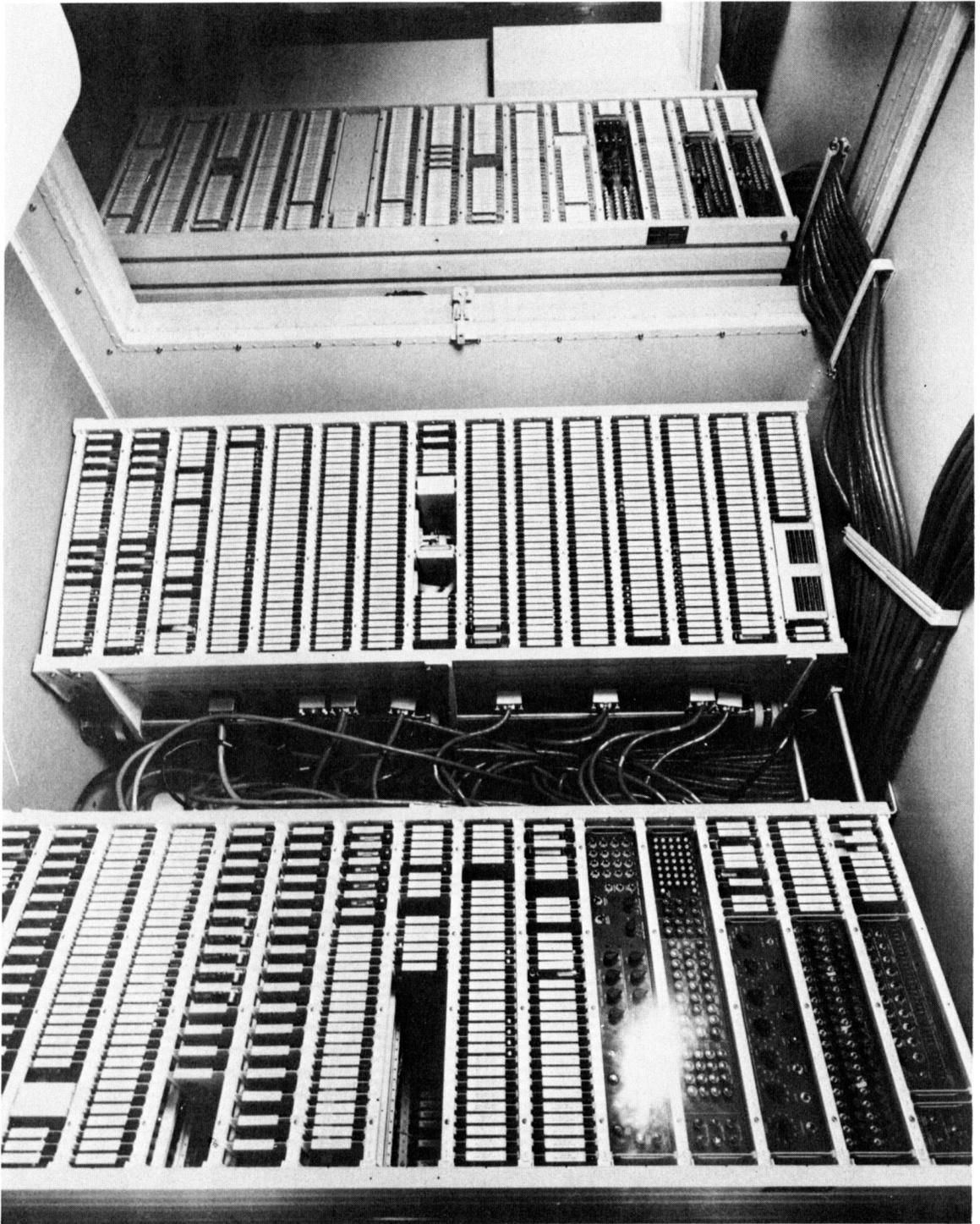
Deployed AN/TTC-30

5-15



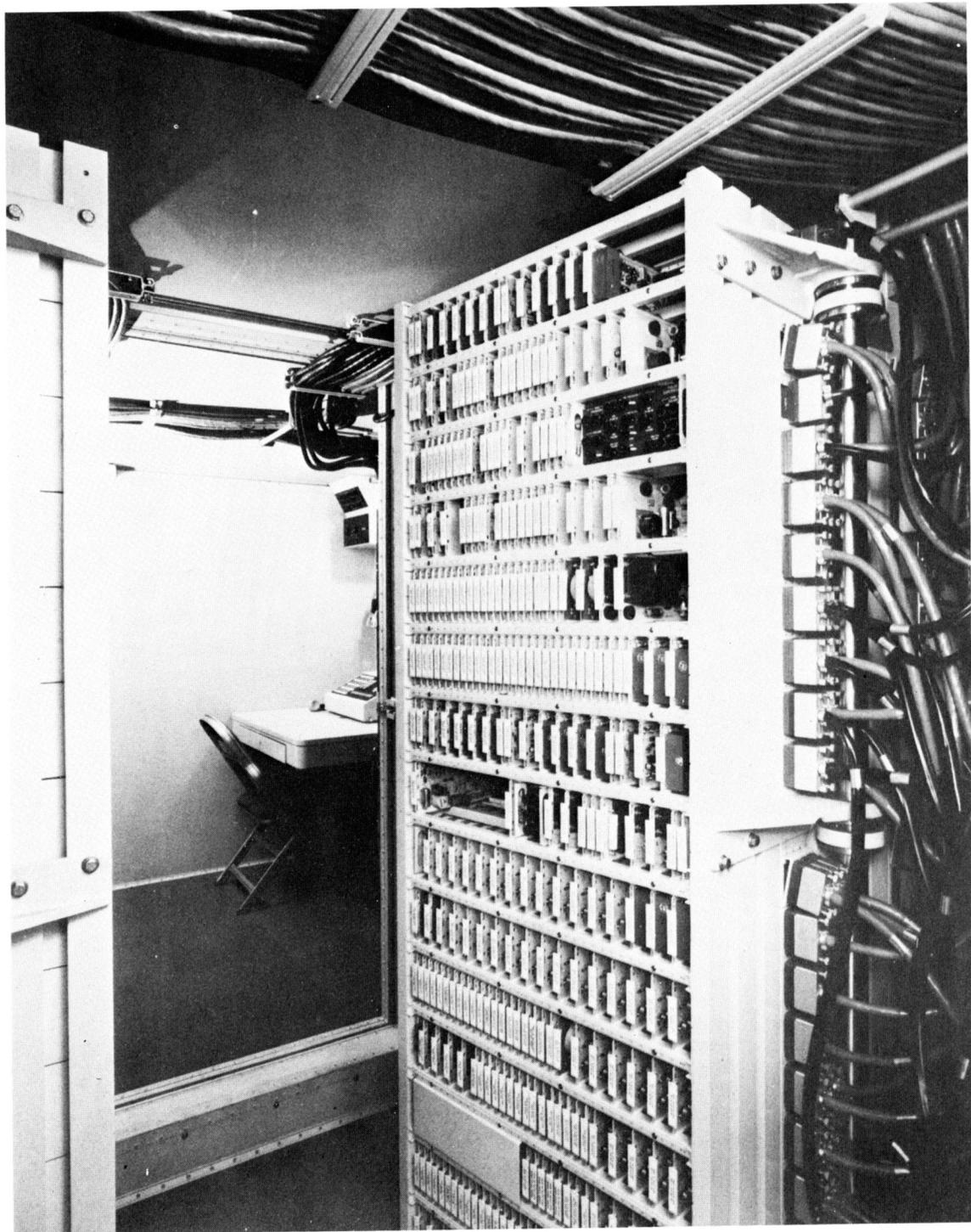
OA 8490/TTC-30 Air Conditioner

5-16

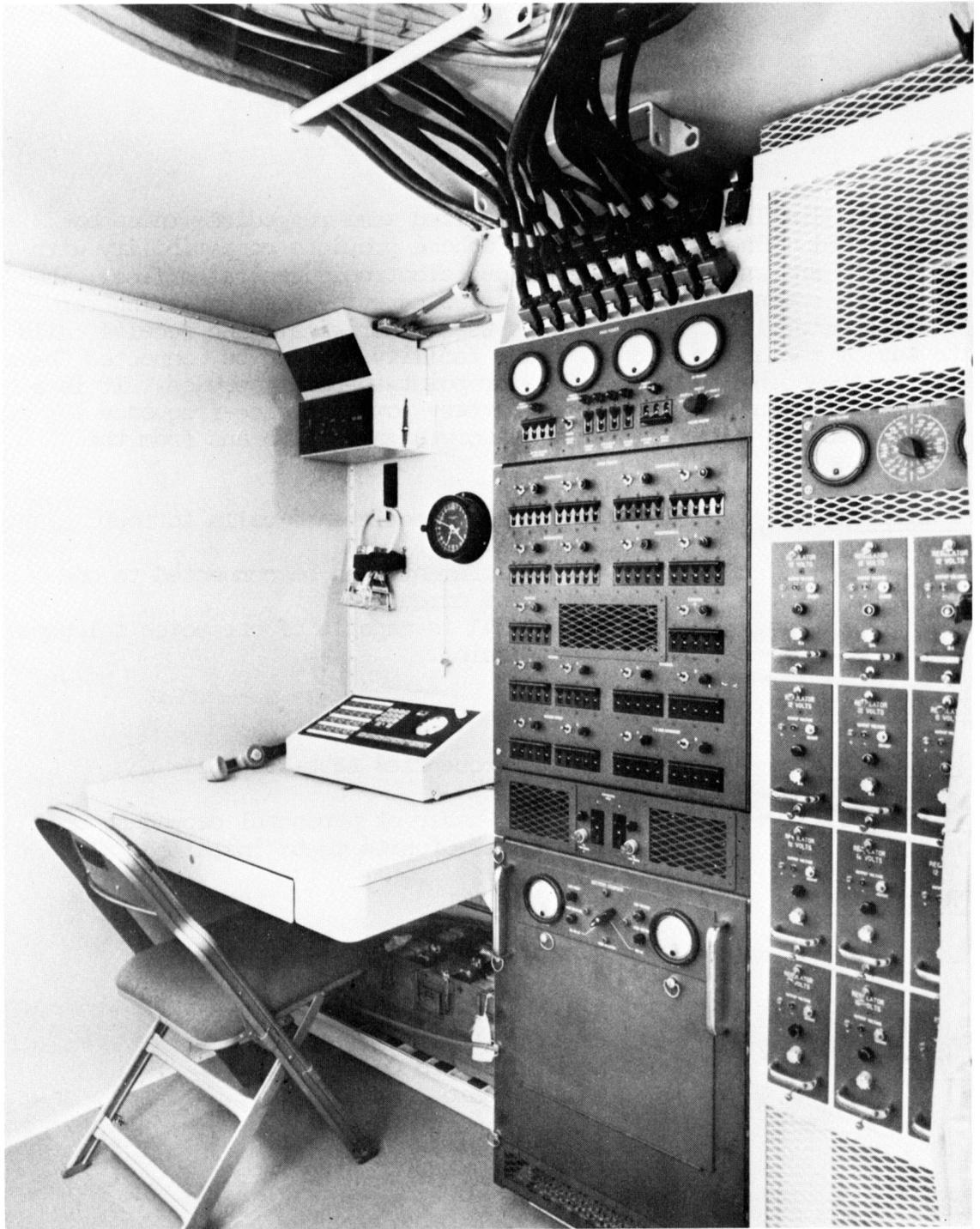


Interior View of AN/TTC-30 (Frame)

5-17



Interior View of AN/TTC-30



Interior View of AN/TTC-30 (Operator's Position)

TA-341

TELEPHONE SET

DESCRIPTION: The TA-341 is a transistorized semi-ruggedized telephone desk instrument. The AC/DC signaling scheme provides compatibility with the AN/TTC-30 and any similarly equipped electronic central office. The Telephone Set comes equipped with a canvas carrying case and sling for field transportability. The TA-341 is used to originate and receive calls by the way of the associated switching facility, or can be connected "back-to-back" with another Telephone Set for point-to-point service. It is a four-wire instrument and uses local battery power. Voice-frequency tones are used for digital and supervisory signaling to and from the AN/TTC-30.

CAPABILITIES: Can initiate conference calls to four stations.
Five instruments can be connected to one telephone circuit.
The TA-341 is capable of one voice telephone transmission.

POWER REQUIREMENTS: 6.4 VDC

FREQUENCY RANGE: Audio Frequencies (300-3500 Hz)

PERSONNEL REQUIRED: 362X4. Number of personnel dependent upon the number of units to be installed.

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	H-60	Handset
	N/A	Base

MANUFACTURER: North Electric Co.
Galion, Ohio

COST: \$260.00

WEIGHT: 7 pounds

CUBE:

1 cu ft

APPLICABLE TOs:

USAF TO not available

US Army TO IM11-5805-348-14 is presently being used.



TA-341 Field Telephone Set

5-22

AN/TTC-32

TELEPHONE CENTRAL

DESCRIPTION: The AN/TTC-32 is a semi-automatic, cordless, non-blocking switchboard. It provides audio functions under control of an operator within the Direct Air Support Center (DASC) complex. The switchboard performs switching functions required to establish and control intra- and inter-communications with the Electronic Telephone Central Office AN/TTC-30, Telephone Set TA-720, and Manual Telephone Switchboard SB-22.

CAPABILITIES: 20 links through which calls can be established.
40 subscriber lines (terminations).
20 (maximum) two party conversations.

FREQUENCY RANGE: N/A

PRIMARY POWER REQUIREMENTS: 120/208 VAC, 400 Hz, 3-phase, 4-wire.

EMERGENCY POWER: 51.5 VDC silver-zinc battery maintains operation for one hour.

PERSONNEL REQUIRED: To be determined.

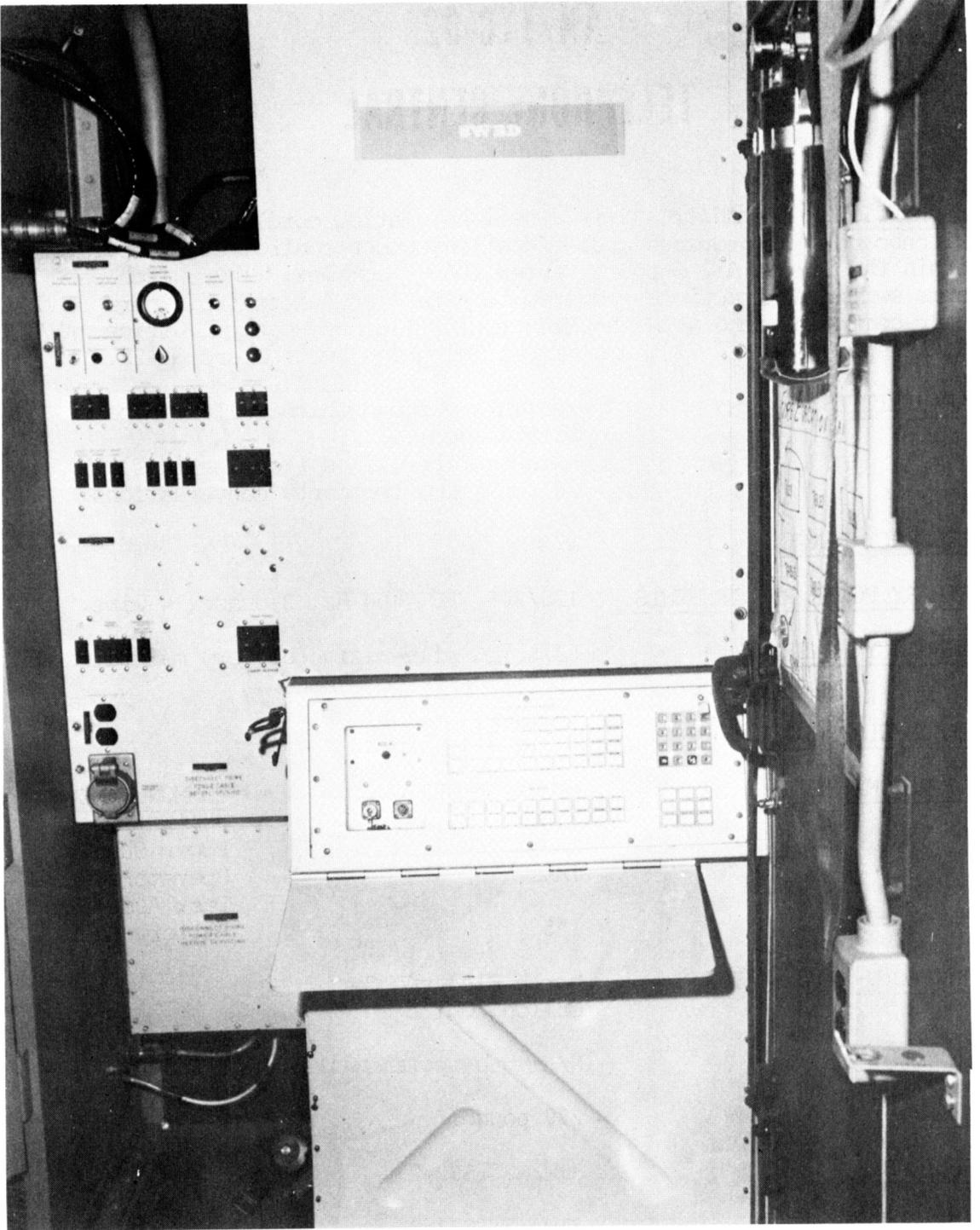
<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	1A3	Power Supply.
	1A4	Operators Panel and Desk Assembly.
	1A5	Battery Pack.

MANUFACTURER: North Electric Co.
Galion, Ohio

COST: N/A (Sub-system within DASC & SRP)

WEIGHT: 279 pounds

APPLICABLE T O s: 31W2-2TTC32-2
31W2-2TTC32-3
31W2-2TTC32-4
31W2-2TTC32-6WC-1



AN/TTC-32 Manual Telephone Central

TA-720

TELEPHONE SET

DESCRIPTION: The TA-720 employs dual tone multi-frequency (DTMF) signaling. This is controlled at the keyset on the Telephone Set Subassembly TA-720/TTC and the register unit. The Telephone Set Subassembly TA-720/TTC and Telephone Set Subassembly TA-811/TTC operate together to provide means for terminating four four-wire telephone circuits to the Electronic Switching Center AN/TTC-30 and one six-wire ground-to-air circuit. The basic functions performed are signaling, detection of signals, and detection and transmission of voice communications.

CAPABILITY: 4 4-wire telephone circuits.
1 6-wire ground-to-air circuit.

POWER REQUIREMENTS: 12 VDC, - 12 VDC and 28 VDC

FREQUENCY RANGE: Audio Frequencies (300-3500)

PERSONNEL REQUIRED: N/A

<u>MAJOR COMPONENTS:</u>	<u>NOMENCLATURE</u>	<u>COMMON NAME</u>
	TA-720/TTC	Telephone Subassembly
	TA-811/TTC	Support Package.

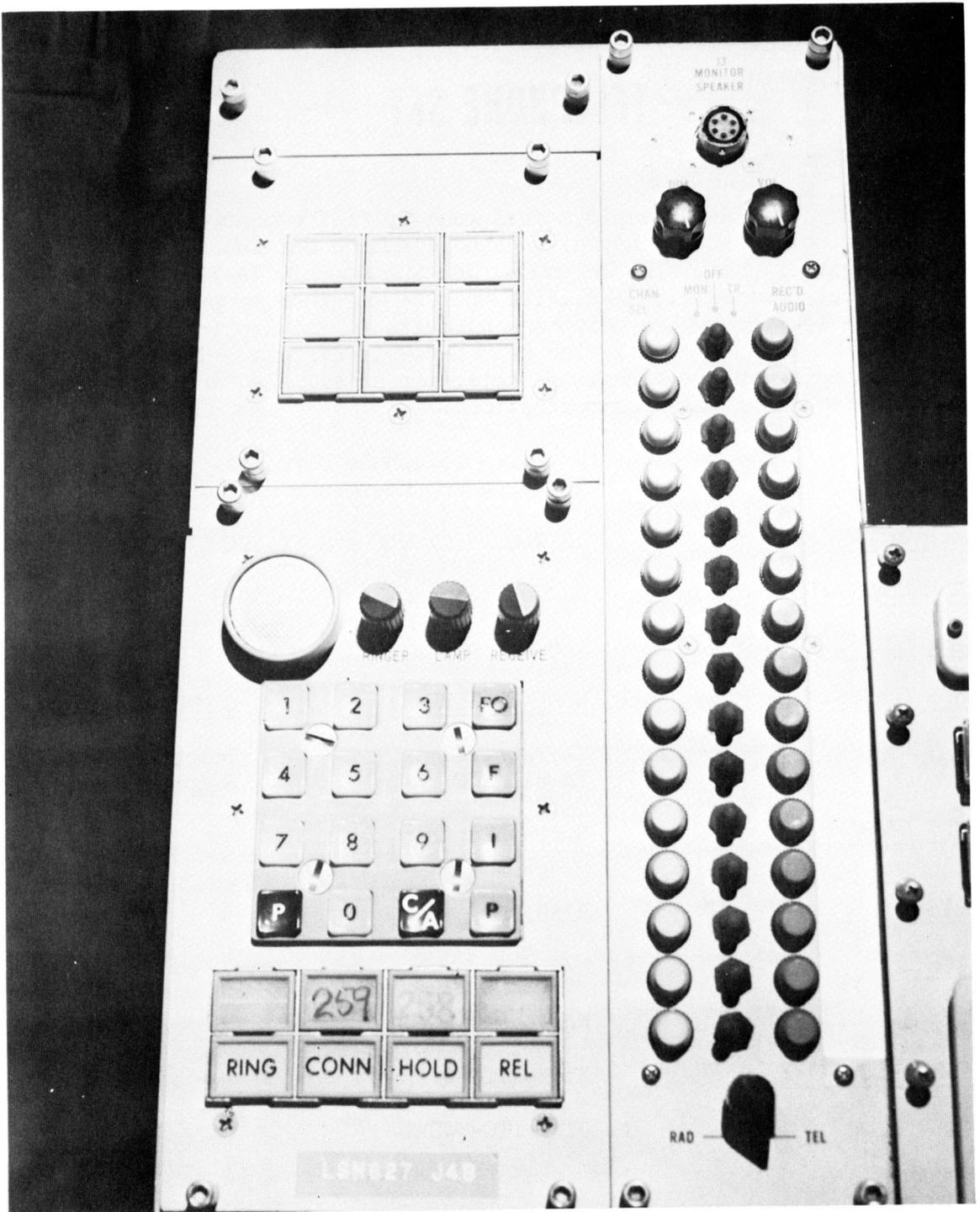
MANUFACTURER: North Electric Co.
Galion, Ohio

COST: \$250.00

WEIGHT: N/A

CUBE: N/A

APPLICABLE TOS: 31W2-2TTC-2
31W2-TTC-6WC-1



TA-720 Telephone Set