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BACKGROUND:

1. The development of the pre-wired rack-mounted radioteletype field station, PRS-4, is a follow-on effort to the PRS-1, 1A, and 2 systems.

2. As with the PRS-1, the pre-wired, rack-mounted equipment concept is maintained. With each successive model (1, 1A and 2), equipment improvements or changes have been incorporated for improving the quality of communications and for meeting security and operational requirements.

3. With the development of the PRS-4, several major improvements have been achieved: a) reduction of the number of equipment racks to three; b) elimination of the off-line teletype equipment; c) provision for narrow band single band reception; d) improved system frequency stability and system sensitivity by the utilization of the 651-S1 Collins Receiver and e) conversion to MIL-STD-188C low level keying are the most significant of these improvements. As with the previous PRS systems, capability for two channel duplex radioteletype communications is provided in the PRS-4.

DESCRIPTION:

1. The PRS-4 Radioteletypewriter Field Station consists of radio and teletype interface equipment housed in three standard 19-inch relay racks. The station has the capability of two duplex radio circuits using standard 850 Hz wideband channel FSK for transmitting and two channels for receiving. Four narrow band FSK receiving channels could provide diversity reception. Narrow band FSK transmission, as an option, can be provided with the replacement of the 850 Hz FSK keyers with the narrow band keyers.

2. The power distribution unit in Rack 1 consists of a 15 Ampere circuit breaker for each rack, the auxiliary

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power connector, and a 30-Ampere circuit breaker for each transmitter power supply. Boost transformers step-up the 208 VAC line-to-line voltage to 230 VAC for each transmitter. The 115 VAC line-to-neutral voltage supplies the power to the plug mold receptacles and duplex outlet in each rack. A 33-foot power input cable (4 conductor, number 4 AWG) is provided to mate with the main power connector on the rear of the power distribution unit.

3. Each of the three equipment racks are supplied with a copper ground bus, an 11-receptacle plug mold strip, front duplex outlet, and cable ducts. Racks two and three have a blower unit for equipment cooling and a 220 VAC twist-loc receptacle for the transmitter power supplies. An operator's table is provided for installation across the front of racks number one and two.

4. Quick connect signal and power wiring harnesses provide the capability of rapid installation and disassembly of the system. The power and signal cables which interconnect the three racks are terminated in multipin connectors which mate with the panel connectors on the power distribution unit and the audio patch panel assembly. The cable connectors and mating receptacles are coded with matching colors; similar size and type connectors are keyed to preclude mating wrong connections.

5. The PRS-4 Field Station utilizes ±6VDC low level keying for transmission of all teletype signals in accordance with the requirements of MIL-STD-188C. Therefore, all teletype equipment and other equipment that interfaces with the DC teletype signals must be modified for 188C. The equipment requiring this type of modification is listed below:

1203 Demodulator	MWO 175-1
1306 Message Generator	MWO-191-1
CSR-5A Character Sequence Recognizer	MWO-177-1 & 2
Type 211 Model 1 Northern Keyer (FSK)	MWO-190-1

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6. [redacted] A special three pair cable will be provided to interconnect this teletype equipment to the PRS-4. Cannon connectors are used to facilitate this interface. To accommodate this interconnection, the teletypewriter will require a TLC-1 device (Terminal Line Controller). This device converts 60 milliampere operation to MIL-STD-188C. Proper cannon connectors are available for either the crypto equipment or the PRS-4. The three pair cable handles the send and receive lines plus the clutch line for CSR-5A protection.

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STATEMENTS:

1. Improvements in performance and flexibility are offered by use of the 651-S1 receiver. This receiver, with its improved sensitivity and stability, will not only provide more reliable HF transmission, but will also handle higher baud rates.

2. Security control for off-line operation is maintained through the use of the CSR-5A.

3. Costs incurred for the PRS-4 ($5,600) are comparable to the PRS-2. This cost reflects only that equipment/material which is part of the pre-wired package, and not additional equipment needed for a fully operational system.

4. The MIL-STD-188C feature should improve and reduce the station's electrical noise environment and enhance the COMSEC posture of the station.

CONCLUSIONS:

The PRS-4 system is a fully functional radio communications system which can replace the PRS-1, 1A and 2. Its reduced size (three racks) enhances its use as a back-up facility for those stations receiving SKYLINK equipment. This system, when compared to other PRS systems, has an advantage because it uses less floor space, power and air conditioning; maintenance also is reduced with the elimination of the off-line teletype rack. It is recommended that the PRS-4 be placed on the Equipment Standard List.

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REVISIONS				
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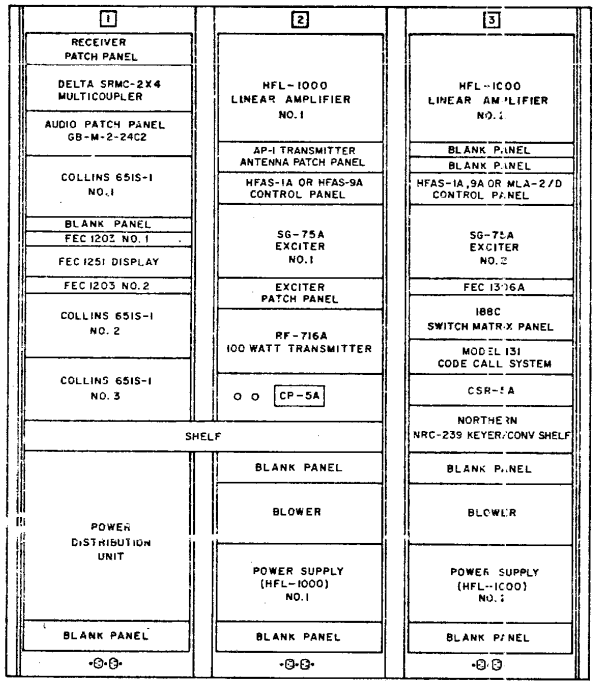

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SPRINGFIELD, VIRGINIA

PRS-4
RADIOTELETYPEWRITER
FIELD STATION
(FULL EQUIPMENT COMPLEMENT)

CODE IDENT NO	SIZE	DRAWING NO.	REV.
19482	C	3D12-8	
SCALE: NONE		SHEET 1 OF 16	

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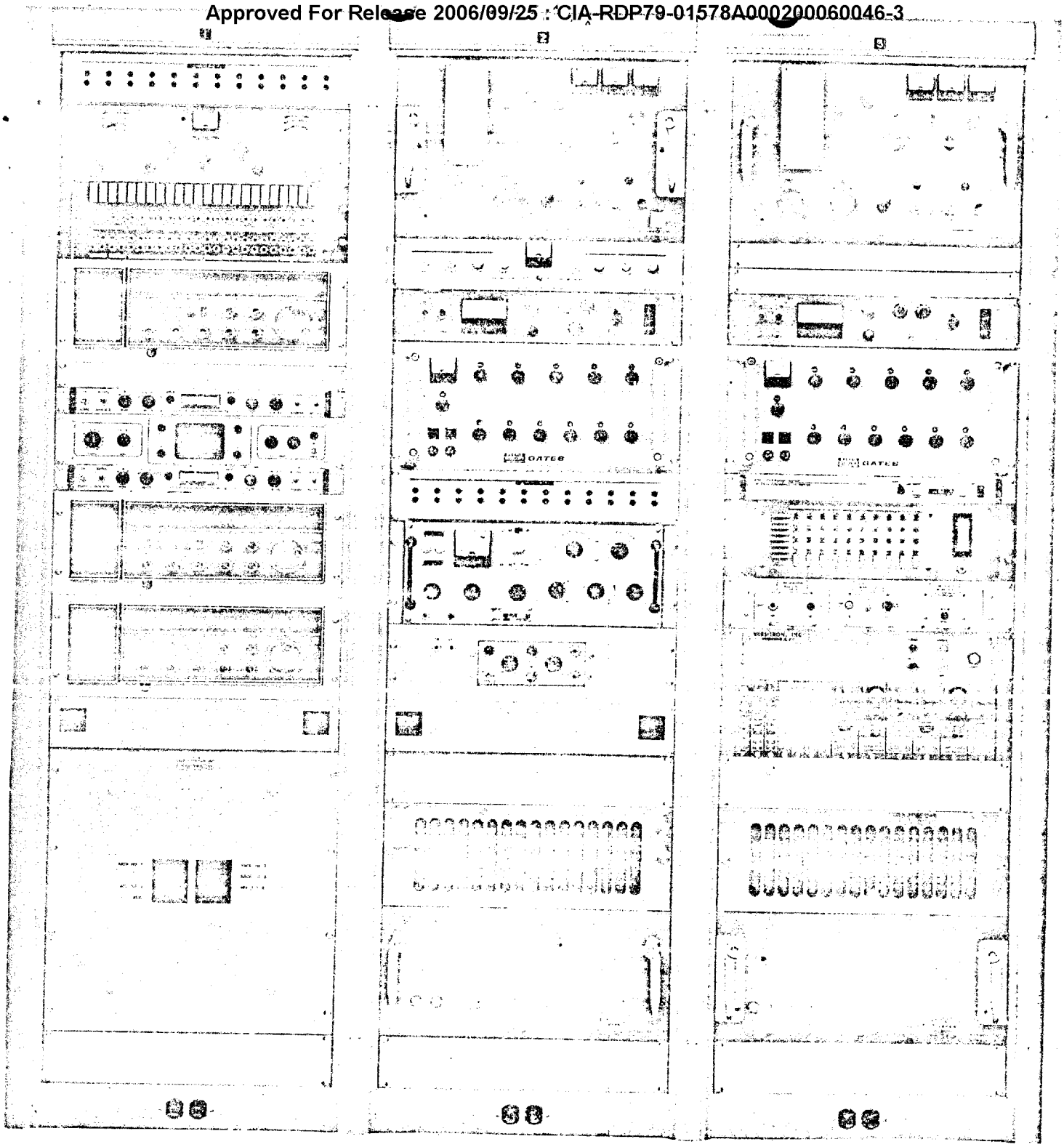

PRS-4 RADIOTELETYPEWRITER FIELD STATION

FRONT VIEW — ALL EQUIPMENT INSTALLED

FIGURE 1-1

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