TM 11-5895-207-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

INTERROGATOR SET AN/TPX-26

AND

RADAR SET CONTROL GROUP AN/FPA-14

HEADQUATERS DEPARTMENT OF THE ARMY

APRIL 1962

WARNING

DANGEROUS VOLATAGES EXIST IN THIS EQUIPMENT

Be careful when working on the 115-volt ac circuits and the 300-volt dc circuits

DON’T TAKE CHANCES

EXTREMELY DANGEROUS VOLTAGES EXIST IN RADIO

RECEIVER-TRANSMITTER RT-211A/TPX

Voltages as high as 3,500 volts dc are present in this unit.

AGO 10081A

CHANGE
No. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *26 December 1973*

Operator's Manual
INTERROGATOR SET AN/TPX-26 AND RADAR
SET CONTROL GROUP AN/FPA-14

TM 11-5895-207-10, 17 April 1962, is changed as follows:

Page 3, paragraph 1. Delete the fifth and sixth sentences of paragraph 1 and substitute: A basic issue items list for Interrogator Set AN/TPX-26 and Radar Set Control Group AN/FPA-14 is contained in appendix II.

Delete paragraph 1.1 and substitute:

1.1. Indexes of Publications

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

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

Delete paragraph 2 and substitute:

2. Forms and Records

a. Reports of Maintenance and Unsatisfactory *Equipment.* Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army) /NAVSUP PUB 378 (Navy)/AFR 71-4 (Air Force) /and MCO P4030.29 (Marine Corps).

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army)/NAVSUP PUB 459 (Navy) /AFM 75-34 (Air Force) /and MCO P4610.19 (Marine Corps).

2.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-S, Fort Monmouth, NJ 07703.

Page 5. After paragraph 4, add:

4. Items Comprising an Operable Interrogator Set AN/TPX-26

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Fig. No.*
5895-643-1565	1	Interrogator Set AN/TPX-26 consisting of:	1
		NOTE **The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.**	
5935-201-2411	1	Adapter, Cable to Connector: MIL type UG-274 A/U	
5935-201-3090	2	Adapter, Connector: SC-D-72309; 80063	
5995-173-8847	1	Cable Assembly, Special Purpose, Electrical: CX-2887/U: 155 ft 6 in. lg o/a	
5996-173-8845	1	Cable Assembly, Special Purpose, Electrical: CX-2288/U: 25 ft 3 in. lg o/a	

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Fig. No.*
5995-577-3410	1	Cable Assembly, Special Purpose, Electrical CX-4442/U: 4 ft 8 in. lg o/a	
5996-577-3413	1	Cable Assembly, Power Electrical CX-4443/U: (17 ft 6 in. lg o/a)	
5995-557-3411	1	Cable Assembly, Power Electrical CX-443/U: (155 ft 6 in. lg o/a)	
5995-577-3412	1	Cable Assembly, Power Electrical CX-444/U: (155 ft 6 in. lg o/a)	
5995-577-3414	1	Cable Assembly, Power Electrical CX-444/U: (18 ft 6 in. lg o/a)	
5895-543-1584	1	Cable Assembly, Power Electrical and Interconnecting Box J-981/U	
5996-219-6749	1	Cable Assembly, Special Purpose Electrical: Junction box w/3 cables 12 ft 5 in. lg o/a; D461-117; 77638	
5995-538-9027	2	Cable Assembly, Special Purpose, Electrical CX-1601/TPX: test cable; 10 ft 2 in. lg o/a	
5895-629-9483	1	Coder-Control, Interrogator Set KY-97B/TPX	5
5935-201-8151	2	Connector, Adapter UG-212C/U: RE49D349; 13090 (1 of 2 included as spare)	
5895-631-5705	1	Control, Remote Switching C-1179A/TPX-19 which includes:	7
6210-299-3893	1	Lens, Indicator Light: green; 83B-11-2; 72619	
6210-299-3892	1	Lens, Indicator Light: amber; 83B-11-3; 72619	
5120-516-4242	1	Wrench, Socket Headscrew: 6 spline drive; short arm; 71159	
5995-636-0124	1	Cord CG-278/U 17 ft 3 in. Lg o/a	
5995-284-7490	1	Cord CG-409B/U (4 ft 6 in. Lg o/a)	
5995-648-8175	1	Cord CG-409E/U (8 in. Lg o/a)	
5995-644-0393	2	Cord CG-409E/U (10 ft 2 in. Lg o/a) (1 of 2 included as spare)	
5995-577-3407	1	Cord CG-426D/U (13 ft lg o/a)	
5995-577-3409	1	Cord CG-426D/U (10 ft lg o/a)	
5995-577-3408	1	Cord CG-426D/U (4 ft:8 in. Lg o/a)	
5895-626-1911	1	Decoder Group AN/TPA-3 consisting of:	
5896-626-3449	1	Control, Remote Switching C-1903/TPA-3	4
5895-626-1912	1	Decoder Video MX-1996/TPA-3	3
5960-264-3004	7	Shield, Electron Tube: JAN type TS108002	
5960-272-9094	2	Shield, Electron Tube: JAN type TS102002	
5896-543-1567	1	Receiver-Transmitter, Radio RT-211A/TPX consisting of:	2
5895-543-1566	1	Amplifier, Intermediate Frequency AM-761A, B/TPX	
5895-546-3814	1	Case, Receiver-Transmitter: Inner case assy; SM-D-78382; 80063	
5895-309-3292	1	Directional Coupler CU-340/UPX-6	
5895-355-8516	1	Frequency Converter-Transmitter Sub-Assembly MX-1376A/UPX-6	
5905-322-4715	1	Power Attenuator and Dummy Load: Resistive type; 990-1130 mHz freq response; 10 w input; 50 ohm input and output; SM-D-78434; 80063	
8130-246-6190	1	Reel, Cable: C-461-401; 77638	
5895-629-9484		Simulator, Recognition Signal SM-140/TPX; SM-140/TPX; SM-140A/TPX	8

Page 31, paragraph 33.1. Delete "App. II" from line 1 of the references column of paragraph 33.1
Page 38. After paragraph 46, add:

46.1. Items Comprising an Operable Radar Set Control Group AN/FPA-14

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Fig. No.*
5840-892-3226	---	Radar Set Control Group AN/FPA-14 consisting of:	24
		NOTE **The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 70842 and used to identify manufacturer, distributor, or Government agency, etc.**	
5995-823-2637	1	Cable Assembly, Power, Electrical CX-7541/U (Not installed)	25
5995-823-2636	1	Cable Assembly, Power Electrical CS-7542/U (Not installed)	25

FSN	Qty	Nomenclature, part No., and mfr code	Fig. No.
6995-889-0682	1	Cable Assembly, Radio Frequency: 100836-18; 80249 (Not installed)	26
5995-889-0678	1	Cable Assembly, Radio Frequency: 100836-19; 80249 (Not installed)	25
5895-854-7889	1	Control, Interrogator Set C3936/FPA-14 (Installed in equipment)	24
5945-885-8508	1	Relay, Video Switching RE-500/GP	24

Page 51. Delete appendix II and substitute:

APPENDIX II
BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

Section I. INTRODUCTION

1. Scope

This appendix lists only basic issue items required by the crew/operator for operation and maintenance of Interrogator Set AN/TPX-26 and Radar Set Control Group AN/FPA-14.

2. General

This Basic Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List-Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

b. Items Troop Installed or Authorized List-Section III. Not applicable.

3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Illustration. This column is divided as follows:

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

(2) *Item number.* Not applicable.

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

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

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished With Equipment (Basic Issue Items Only). Indicates the quantity of the basic issue item furnished with the equipment.

SECTION II. BASIC ISSUE ITEMS LIST

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)
(A) Fig. no.	(B) Item no.	Federal stock number	Part number	FSCM	Description Usable on code	Unit of meas	Qty furn with equip
9	.....	5895-515-0338	B-4101-1-1	77638	BAG, COTTON DUCK CW-308/U	EA	1
		5920-241-5150	9435-1/2	10133	CAP, ELECTRICAL	EA	2
9		5820-692-6637	.....	.....	CASE, RECEIVER-TRANSMITTER CY-944A/TPX	EA	1
9	.....	5895-351-8205	.....	.....	CASE, STANDARDIZED COMPONENTS CY-961/TPX	EA	1

By Order of the Secretary of the Army:

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Distribution:
To be distributed in accordance with DA Form 12-32 (qty rqr block No. 597) organizational maintenance requirements for NIKE HERCULES Improved System.

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GPO 939 539

Changes in force: C 3, C 4, and C 5

TM 11-5895-207-10 *C5

CHANGE }
No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C. *27 September 1966*

Operator's Manual

INTERROGATOR SET AN/TPX-26 AND RADAR SET CONTROL AN/FPA-14

TM 11-5895-207-10, 17 April 1962, is changed as follows:

Note. **The parenthetical reference to previous Changes (example "page 3 of C 3") indicates that pertinent material was published in that Change.**

Page 2, figure 1. After "SIMULATOR, RECOGNITION SIGNAL SM-140/TPX" add: OR SM-140A TPX.

Page 3, paragraph 2 (page 1 of C4). Delete subparagraph c and substitute:

c. Reporting of Equipment Manual Improvements. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvement recommendations. This form will be completed using pencil, pen, or typewriter and forwarded direct to Commanding General U. S. Army Electronics Command, ATTN: AMSEL-MR-NMP-AD, Fort Monmouth, N. J. 07703.

Page 4, paragraph 4f, line 15. Delete "Trigger delay ----- 10 to 100 microseconds" and substitute:

Trigger delay (SM-140/TPX only) ----- 10 to 100 microseconds (variable).

Trigger delay (SM-140A/TPX only) ----- At least 85 microseconds (fixed).

Page 5, paragraph 5, chart, "Component" column, line 7. After "SM-140, /TPX", add: or SM-140A/TPX.

Paragraph 6, chart, "Nomenclature" column. After "Simulator, Recognition Signal SM-140/rTPX" add: and SM-140A/TPX.

Page 12, add figure 8.1 after figure 8:

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* This change, together with C 3, 14 June 1963, supersedes C 2, 21 February 1963.

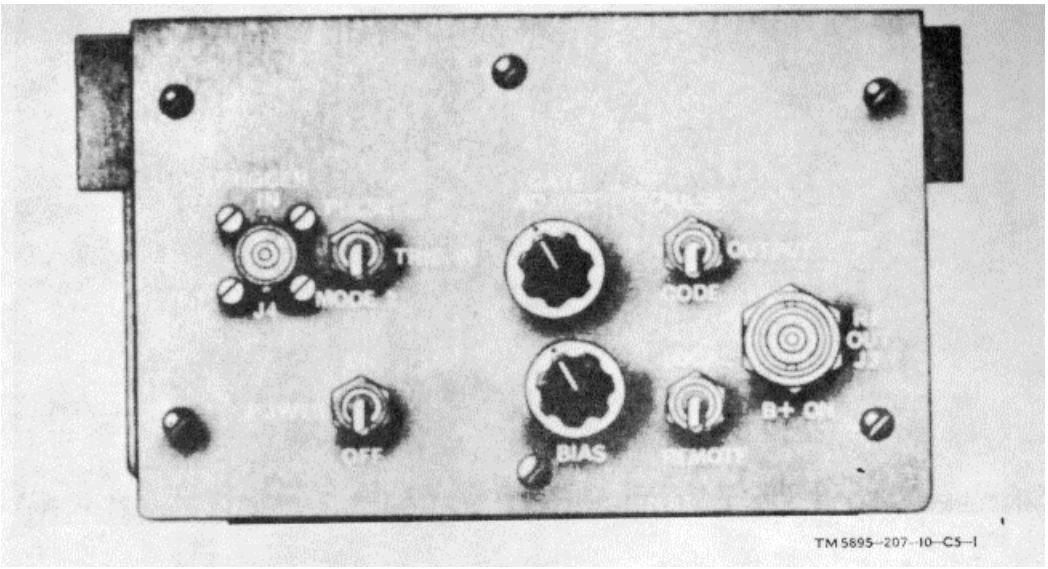

Figure 3.1. Simulator, Recognition Signal SM-140A/, TPX.

Page 14. Add paragraph 15.1 after paragraph 15:

15.1 Differences in Models

a. Simulator, Recognition Signal SM-140, / TPX has two variable controls (OUTPUT LEVEL and DELAY) on the front panel (fig. 16) which are used to adjust the simulated reply signal seen on the radar PPI scope. The OUTPUT control varies the intensity of the simulated reply signal. The DELAY control varies the position of the simulated reply with respect to the center of the PPI. In the SM-140A TPX, the output and delay are fixed.

b. Simulator, Recognition Signal SM-140A/TPX has two variable controls (BIAS and GATE ADJUST) on the front panel (fig. 16.1) for regulating the simulated reply signal seen on the radar PPI scope. The BIAS control is used to eliminate random pulses so the presentation consists of 6 to 14 evenly spaced pulses (CODE position of OUTPUT switch). The GATE ADJUST control is then adjusted to give eight pulses.

Page 19, paragraph 23, chart. Make the following changes:

Heading. Change "(fig. 16)" to: (fig. 16 and 16.1).

"Control" column, after "OUTPUT LEVEL control" add (SM-140 TPX only).

"Control" column, after "DELAY" control" add: (SM-140/TPX only).

Add the following items after the last item.

Control	Function
BIAS control (SM-140A/TPX only).	Use to eliminate random pulses in the simulated reply seen on the radar PPI scope. When the OUTPUT switch is in the CODE position, the BIAS control is adjusted for 6 to 14 evenly spaced pulses.
GATE ADJUST control (SM-140A/TPX only).	Used to adjust the PPI scope presentation to eight evenly spaced pulses. *Note.* Always adjust the BIAS control before adjusting the GATE ADJUST control.

Page 20. Add figure 16.1 after figure 16.

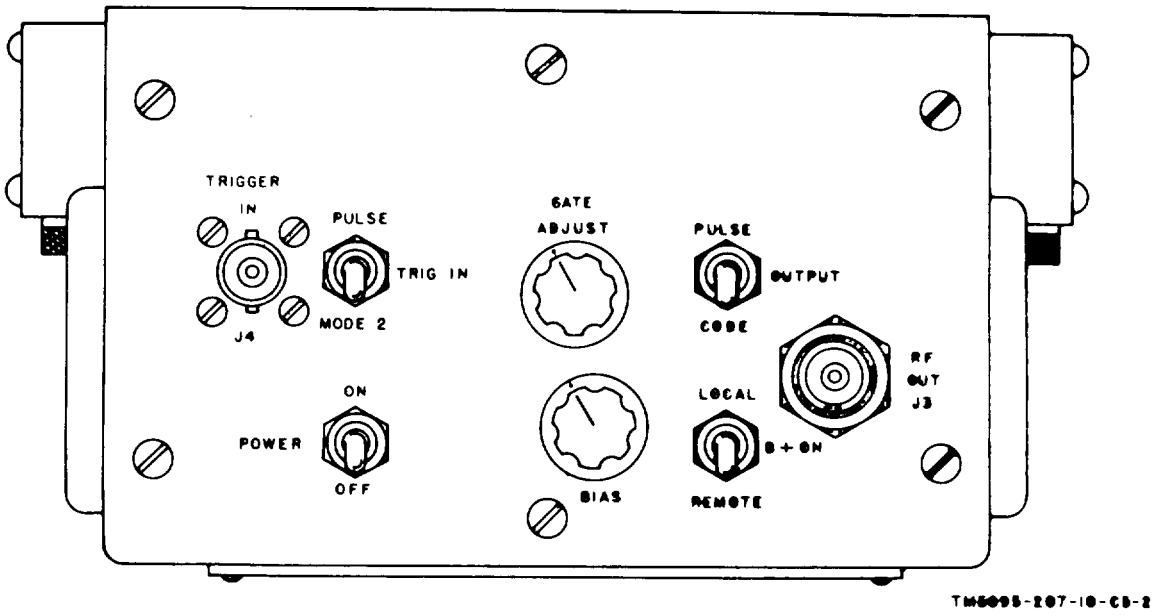

Figure 16.1. SM-140A/TPX simulator, operating controls.

Page 21, paragraph 26, chart, "Control" column. Make the following changes:

Line 16, after "OUTPUT LEVEL control" add: (SM-140 TPX only).

Line 17, after "DELAY control" add: (SM-140.'TPX only).

After line 17 add the following:

Unit	Control	Position
Simulator (fig. 16.1 .	BIAS control (SM-140A/TPX only).	To reference pencil mark, para 28b (2.1).
	GATE ADJUST control (SM-140A/TPX only).	To reference pencil mark, para 28b (2.2).

Page 22, paragraph 28. Make the following changes:

Subparagraph *b.* Delete the last 3 sentences and substitute:

The SM-140 TPX OUTPUT LEVEI, and DELAY control adjustments are given in (1) and (2) below. The SM-140A TPX BIAS and GATE ADJUST control adjustments are given in (2.1) and (2.2) below. The RECEIVER GAIN control adjustment is given in (3) below.

Page 23, paragraph 28*b*(2). Add (2.1) and (2.2) after (2):

(2.1) *Adjustment of SM-140A TPX BIAS* control. The BIAS control adjusts the stability of the simulated IFF reply as seen on the PPI. With the BIAS control improperly set, no simulated reply or a jittery simulated reply will be seen on the PPI. For the correct adjustment of the BIAS control, follow the procedure below:

(a) Set the BIAS control fully clockwise.

(b) Set the remote switching control TEST-OPERATE switch to TEST.

(c) Depress the remote control box PUSH TO CHALLENGE switch and observe the simulated IFF reply signal on the radar PPI. If no simulated reply or a reply that is followed by random signal pulses (any number) or a group of pulses is seen, rotate the BIAS control counterclockwise until a simulated reply is clearly seen on the PPI. The reply should consist of 6 to 14 evenly spaced pulses (B, fig. 18).

Note. **A white area is screened around the BIAS control. Mark the knob setting in pencil, on the screened area. The mark will serve as a quick reference to the oprator. If either the simulator or the receiver is realigned, the mark may be erased and a new reference level established.**

(2.2) Adjustment of GATE ADJUST control. After the BIAS control adjustment (2.1 above) has been made, the GATE ADJUST control adjustment can be made. Follow the procedure below:

(a) Depress the remote control box PUSH TO CHALLENGE switch; observe the simulated IFF reply signal on the radar PPI. The reply should consist of 6 to 14 evenly spaced pulses.

(b) Adjust the GATE ADJUST control until 8 pulses (B, fig. 18) are viewed on the radar PPI. Touch up the BIAS control, if necessary.

(c) Set the remote switching control OPERATE-TEST switch to OPERATE. A chopped simulated reply (A, fig. 18) should be present on the radar PPI.

Note. **A white area is screened around the GATE ADJUST control. Mark the knob setting in pencil, on the screened area. The mark will serve as a quick reference to the operator. If the simulator is realigned, the mark may be erased and a new reference level established.**

Page 24, figure 18. Make the following changes:

Delete "10 miles maximum."

"SIMULATOR" column, item 4. After "DELAY CONTROL MAXIMUM CLOCKWISE" add: (SM-140/TPX only).

"SIMULATOR" column. After "item 4, " add item 5:

5. BIAS AND GATE ADJUST CONTROLS (SM-140A/TPX ONLY) TO REFERENCE PENCIL MARKS.

Page 31, paragraph 35c, chart. Make the following changes: "Action or Condition" column, "line 5 from bottom, " change "(fig. 16)" to: (fig. 16 or 16.1).

Page 32, "Action or condition" column. Make the following changes:

Line 2. Add: (SM-140 TPX only).

Line 3. Add: (SM-140'TPX only).

After line 3 add:

BIAS control to reference pencil mark (SM-140A/TPX only).

GATE ADJUST control to reference pencil mark (SM-140A/TPX only).

Page 33, Make the following changes: In the "Action or condition" column, add as the first sentence of step 9:
Return the TEST-OPERATE switch to OPERATE (if required).

In "Corrective measures" column for step 8, subparagraph b, add:

If the simulated reply (AN/SM-140A/TPX only) does not appear or has random or unevenly pulses, adjust BIAS and GATE ADJUST controls (para 28b (2.1) and (2.2)).

Page 55, section III (page 3 of C 3). Delete section III and substitute:

SECTION III. FUNCTIONAL PARTS LIST

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
		SIMULATOR, RECOGNITION, SIGNAL SM-140/TPX; SM-10/TPX					
5895-629-94843		SIMULATOR, RECOGNITION, SIGNAL SM-140/TPX; SM-1410A/TPX		NX			
		ITEMS COMPRISING AGN OPERABLE EQUIPMNT					
ORD THRU AGC		TECHNICAL MANUAL TM 11-5895-207-10			2		
ORD THRU AGC		TECHNICAL MANUAL TM 11-5895-207-10			2		
		NOTE: For technical manuals the quantity indicates the maximm number of copies authorized for packing (or issue) with the equipment. Where a number of these equipments are concentr-ted in a small area, the qu:intity on hand may be reduced to prictical levels. Excess publications must be returned to publication supply centers through AG channels.					
		RUNNING SPARE ITEMS					
5960-261-8679		ELECTRON TUBE: MIL type 6021			1		
5960-262-0132		ELECTRON TUBE: MIL type 6111			1		
5920-284-9494		FUSE, CARTRIDGE: MIL type F02A250V1/4AS			5		

By Order of the Secretary of the Army:

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Chief of Staff.

Official:

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To be distributed in accordance with DA Form 12-32, Section II, requirements for organizational (unclassified) maintenance applicable to the Nike Hercules and Improved Nike Hercules systems.

U.S. GOVERNMENT PRINTING OFFICE: 1974-548860

CHANGE
No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 11 Februt6 1966

Operator's Manual

INTERROGATOR SET AN/TPX-26 AND RADAR SET CONTROL GROUP AN/FPA-14

INTERROGATOR SET AN/TPX-26 AND RADAR SET CONTROL GROUP AN/FPA-14

TM 11-5985-207-10, 17April 1962, is changed as follows:

Note. **The parenthetical reference to a previous change (example "page I of C 3") indicates that pertinent material was published in that change.**

Page 3, paragraph 2 (page 1 of C 3). Delete subparagraph c and substitute:

c. Reporting of Equipment Manual Improvements. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed using pencil, pen or typewriter and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL MR-(NMP)-MA, Fort Monmouth, N.J., 07703.

Page 51, appendix II. M4ke the following changes:

Heading. Delete "Interrogator Set AN/TPX-26".

Paragraph 1, line 3. Delete the word "accessories' .

After the last sentence add: These equipments are combat essential.

Paragraph 2*c*. Delete "not used" and substitute: The dagger (†) indicates the model in which the part is used.

Page 58, section V. Delete section V and substitute:

Section V. FUNCTIONAL PARTS LIST (MX-1376A/UPX-6)

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION FIGURE NO.	ILLUSTRATION ITEM NO.
		FREQUENCY CONVERTER TRANSMITTER SUBASSEMBLY MX-1376A/UPX-6					
5985-305-8516		FREQUENCY CONVERTER-TRANSMITTER SUBASSEMBLY MX-1376A/UPX		67		116	
		ITEMS COMPRISING AN OPERATOR'S EQUIPMENT					
ORD THRU AGC		TECHNICAL MANUAL TM11-1193			2		
ORD THRU AGC		TECHNICAL MANUAL TM11-5895-207-10			2		
ORD THRU AGC		TECHNICAL MANUAL TM11-5895208-11			2		
		RUNNING SPARE TIMES					
5960-542-7068		ELECTRON TUBE: MIL type 2C41			1	110	V205 V206 V207
5960-262-0167		ELECTRON TUBE: MIL type 12AT7WA			1	123	V201 V208
5960-262-1357		ELECTRON TUBE: MIL type 5654/6AK5W			1	123	V202 V209
5960-193-5131		ELECTRON TUBE: MIL type 5656			1	123	V203 V204

Page 68, appendix III. Delete page 63 in its entirety.

Page 64, appendix III (page 3 of C 3), incorrectly identified as appendix II. Change "section II. FUNCTIONAL PARTS LIST" to: Section VI. FUNCTIONAL PARTS LIST (AN/FPA-14). Add section VII after section VI.

Section VII. FUNCIONAL PARTS LIST (RT-211/TPX, RT-211A/TPX)

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL						DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
											FIGURE NO.	ITEM NO.
							RECEIVER-TRANSMITTER-RADIO RT-211/TPX; RT-211A/TPX					
5895-351-3297							RECEIVER-TRANSMITTER, RADIO RT-211/TPX		NX			
5895-543-1567							RECEIVER-TRANSMITTER, RADIO RT-211A/TPX		NX			
							NOTE: Model Column 1 refers to RT-211/tpx; Column 2 refers to RT-211A/TPX					
							ITEMS COMPRISING AN OPERABLE EQUIPMENT					
ORD thru AGC							TECHNICAL MANUAL TM 11-5895-207-10			2		
ORD thru AGC							TECHNICAL MANUAL TM 11-5895-208-10			2		
5895-524-5522	†						AMPLIFIER, INTERMEDIATE FREQUENCY AM-761/TPX		NX	1		
5895-543-1566		†					AMPLIFIER, INTERMEDIATE FREQUENCY AM-761A, B/TPX		NX	1		
5820-692-6637	†						CASE, RECEIVER-TRANSMITTER CY-944/TPX		NX	1		
5895-543-1569		†					CASE, RECEIVER-TRANSMITTER CY-94545A/TPX		NX	1		
5895-546-3814	†	†					CASE, RECEIVER-TRANSMITTER: Inner case assy; Sig dwg #SM-D-78382		NX	1		
5895-309-3292	†	†					DIRECTIONAL COUPLER CU-340/UPX-6		NX	1		
5895-355-8516	†	†					FREQUENCY CONVERTER-TRANSMITTER SUB-ASSEMBLY MX-1376A/UPX-6		NX	1		
5905-322-4715	†	†					POWER ATTENUATOR AND DUMMY LOAD: Resistive type; 990-1130 mc freq response; 10 w input; 50 ohm input and output; Sig dwg #SM-D-78434		NX	1		
							RUNNING SPARE ITEMS					
							RECEIVER-TRANSMITTER, RADIO RT-211/TPX; RT-211A/TPX					
5960-114-4849							ELECTRON TUBE: MIL type 2X2A			1		
5960-114-3834							ELECTRON TUUBE: MIL type 3E29			1		
5960-543-0219							ELECTRON TUBE: MIL type 6AN5/NA			1		
5960-108-0263							ELECTRON TUBE: MIL type 6D4			1		

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
		RT-211/TPX, RT-211A/TPX (continued)					
5960-188-0880		ELECTRON TUBE: MIL type 6X4W			2		
5960-262-0167		ELECTRON TUBE: MIL type 12AT7WA			1		
5960-166-7663		ELECTRON TUBE: MIL type 12AU7			1		
5960-262-0185		ELECTRON TUBE: MIL type 5726/6AL5W			1		
5960-284-9285		ELECTRON TUBE: MIL type 5727/2D21W			1		
5920-280-9328		FUSE, CARTRIDGE: MIL type FO2D1R50B			5		
5920-518-1790		FUSE, CARTRIDGE: MIL type FO2GR375A			5		
5920-010-6652		FUSE, CARTRIDGE: MIL type FO2GR00A			5		
5920-296-0679		FUSE, CARTRIDGE: MS90079-3			5		
6240-155-8706		LAMP LM-52			1		
5945-259-1198		RELAY, ARMATURE: Potter Blumfield part #1112-3			1		
5945-204-6587		RELAY, ARMATURE: Sig dwg #SW-B-78491			1		
5945-642-5318		RELAY, THERMAL: Amperite part #115N060			1		
		AMPLIFIER, INTERMEDIEATE FREQUENCY AM-761/TPX; AM-761A,B/TPX					
5960-262-1357		ELECTRON TUBE: MIL type 5654/6AKW			3		
5960-262-0185		ELECTRON TUBE: MIL type 5726/6AL5W			1		

By Order of the Secretary of the Army:

HAROLD K. JOIINSON,
General, United States Army,
Chief of Staff.

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:
To be distributed in accordance with DA Form 12-32, Sec II (Unclas) requirements for Organizational maintenance, applicable to Nike-Hercules and Improved Nike-Hercules missile systems.

*U. S. GOVERNMENT PRINTING OFFICE: 1974--548859

TECHNICAL MANUAL

Operator's Manual

INTERROGATOR SET AN-TPX-26 AND RADAR SET CONTROL GROUP AN/FPA-14

TM 11-5895-207-10
CHANGES NO. 3

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *14 June 1963*

TM 11-5895-207-10, 17 April 1962, is changed as follows:

Page 3. Make the following changes:
Paragraph 1. Delete the Note.
Add paragraph 1.1 after paragraph 1.

1.1 Index of Publications
Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to your equipment. DA Pam 310-4 is an index of current technical manuals, technical bulletins, supply bulletins, lubrication orders and modification work orders that are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes to and revisions of each equipment publication.
Paragraph 2. (As changed by C 1, 31 October 1962) Delete paragraph 2 and substitute:

2. Forms and Records
a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.
b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700(58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).
c. Comments on Manual. Forward all comments on this publication direct to: Commanding Officer, U.S. Army Electronics Materiel Support Agency, ATTN: SELMIS-MIP, Fort Monmouth, N.J. (DA Form 1598 (Record of Comments on Publication), DA Form 2496 (Disposition Form), or letter may be used.
Page 28. Delete paragraphs 31 through 33 and substitute:

31. Scope of Maintenance
The maintenance duties assigned to the operator of Interrogator Set AN/TPX-26 and Radar Set Control Group AN/FPA-14 are listed below together with a reference to the paragraphs covering the specific maintenance function: The duties assigned do not require tools or test equipment other than those issued with the set.
a. Daily preventive maintenance checks and services (par. 33.1).
b. Cleaning (par. 33.3).
c. Troubleshooting (par. 35).
d. Repairs and adjustments:
(1) Replacement of dial lamps (par. 36b).
(2) Replacement of fuses (par. 36a).

32. Preventive Maintenance
Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.
a. Systematic Care. The procedures given in paragraphs 33 through 33.3 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.
b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services

* These Change supersede C 1, 31 October 1962.

charts (pars. 33.1 and 33.2) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check, and what the normal conditions are; the Referents column lists the illustrations, paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, higher echelon maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

33. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the AN/TPX-26 and AN/EPA-14 are required on a daily and weekly basis.

a. Paragraph 33.1 specifies checks and services that must be accomplished daily and under the special conditions listed below.

(1) *Vehicular installations.*

(a) Before the vehicle starts on a mission.

(b) the equipment is initially installed.

(c) When the equipment is reinstalled after removal for any reason.

(d) At least once each week if the equipment is maintained in standby condition.

(2) *Transportable and mobile installation.*

(a) When the equipment is initially installed.

(b) When the equipment is reinstalled after removal for any reason.

(c) At least once each week if the equipment is maintained in standby condition.

b. Paragraph 33.2 specifies additional checks and services that must be performed once each week.

33.1 Daily Preventive Maintenance Checks and Services Chart

Seq No.	Item	Procedure	Reference
1	Completeness	See that the equipment is complete	App. II.
2	Exterior surfaces	a. Clean the coder-control unit, receiver-transmitter, video decoder, remote switching control, simulator, control box, video relay, and transit cases.	a. Par. 33.3.
		b. Inspect painted surfaces for bare spots, rust, and corrosion	b. None.
3	Knobs, dials, and switches.	While making the operating checks (sequence No. 7 and 8), observe that the mechanical action of each knob, dial, and switch is smooth and free of external or internal binding.	
4	External items	Check to see that all bolts, nuts, and washers are not missing and are properly tightened.	
5	Indicator window and indicators.	Check the indicator window glass and glass jewel indicators for cracks and breaks.	
6	Intercabling and connectors.	Check all interconnecting cables (fig. 23) and connectors for cracks and breaks. Replace cables that have cracks or broken connectors.	Par. 14.
7	Interrogator set operation.	Check the interrogator set in accordance with the operation procedures outlined in paragraph 35.	Par. 35.
8	Radar set control group operation.	Check the radar set control group in accordance with the operation procedures outlined in paragraph 55.	Par. 55.

33.2 Weekly Preventive Maintenance Checks and Services Chart

Seq No.	Item	Procedure	Reference
1	Air filter	Check the receiver-transmitter air filter for excessive dirt, clean or replace.	Par. 33.3b.

33.3 Cleaning

Inspect the exteriors of the coder-control unit, receiver-transmitter, video decoder, remote switching control, simulator, control box, video relay, and transit cases. The exterior surfaces should be clean and free of dust, dirt, grease, and fungus.

a. Exterior Surfaces.

(1) Remove dust and loose dirt with clean soft cloth.

Warning: **Cleaning compound (Federal stock No. 7930-395-9542) is flammable and its fumes are toxic. Provide adequate ventilation. Do not use near a flame.**

(2) Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened (not wet) with cleaning compound.

(3) Remove dust or dirt from plugs and jacks with a brush.

(4) Clean the front panels, indicators, and control knobs; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more effective cleaning.

b. Air Filter.

(1) Remove the louver, with air filter attached, from the right-hand side of the receiver-transmitter front panel by removing the four screws.

(2) Detach the air filter from the louver by removing the four screws.

(3) Clean the air filter by moving it back and forth in a solution of dishwashing compound and water.

(4) Allow the air filter to dry.

(5) Saturate the air filter with Oil, Lubricating, Aircraft and Instruments (OAI). Permit the excess oil to drain off before installing the air filter in the louver.

(6) Position the air filter in the louver so that the direction of airflow, as indicated by arrows on the edge of the air filter, is correct; secure the air filter to the louver with four screws.

(7) Position the louver, with air filter attached; on the front panel of the receiver-transmitter and secure with four screws.

Caution: **If the air filter element is the fiberglass type, rap the air filter element against a hard flat surface to remove the dust. Use a vacuum cleaner if one is available. If necessary, replace the fiberglass air filter.**

Page 29. Delete figure 21.

Page 30. Delete figure 22.

Page 50, appendix I. Add the following references:

TM 38-750. The Army Equipment Record System and Procedures.

Page 53. Under Items Comprising an Operable Equipment for Interrogator Set AN/TPX26, add the following items (as changed by C1, 31 October 1962):

Column 2. 5895-355-8516.
Column 4. FREQUENCY CONVERTER-TRANSMITTER SUB-ASSEMBLY MX-1376A/UPX-6.
Column 6. NX.
Column 7.1.

Page 54. (As changed by C 1, 31 October 1962).

Column 8. Reference Federal stock number 6240-155-8706.
Column 6. Delete 1.
Column 7. Add 1.

Page 55. (As changed by C 1, 31 October 1962).

Column 2. Change Federal stock number 5895629-9184 to 5895-629-9484.

Page 64, appendix II. Delete section II and substitute:

SECTION II. FUNCTIONAL PARTS LIST

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
5840-892-3226		RADAR SET CONTROL GROUP AN/FPA-14		NX			
		ITEMS COMPRISING AN OPERABLE EQUIPMENT					
5095-823-2637		CABLE ASSEMBLY, POWER, ELECTRICAL CX-7541/U (Not installed)			1		W742
5995-823-2636		CABLE ASSEMBLY, POWER ELECTRICAL CS-7542/U (Not installed)			1		W741
5995-889-0682		CABLE ASSEMBLY, RADIO FREQUENCY: Hazeltine Corp No. 100836-18 (Not installed)			1		W744
5995-889-0678		CABLE ASSEMBLY, RADIO FREQUENCY: Hazeltine Corp No.100836-19 (Not installed)			1		W743
5805-854-7889		CONTROL, INTERROGATOR SET C-3936/FPA-14 (Installed in equipment)			1		
5945-885-8508		RELAY, VIDEO SWITCHING RE-500/GP 1					
		RUNNING SPARE ITEMS					
		CONTROL, INTERROGATOR SET C-3Q36/FPA-14					
6240-155-7857		LAMP, INCANDESCENT: MIL type MS 25237-328			1		
6240-155-7836		LAMP, INCANDESCENT: MIL type MS 25237-327			1		

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:
To be distributed in accordance with DA Form 12-32, Section II (Unclas) requirements for Nike-Ajax, Nike-Hercules, Improved Nike-Hercules and Target Missile-TM-IFF.

* U.S. GOVERNMENT PRINTING OFFICE: 1974--548858

TACO 9707-A

TECHNICAL MANUAL }
No. 11-5895-207-10

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *17 April 1962*

INTERROGATOR SET AN/TPX-26 AND RADAR SET CONTROL GROUP AN/FPA-14

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* This manual supersedes TM 11-5895-207-10P, 22 December 1958, including C 2, 15 June 1960, and so much of TB 11-1190-1, 29 August 1958, including C 1, 27 July 1959, and TM 11-1190, 2 June 1954, including C 1, 29 April 1955, C 2, 29 February 1956, and C 3, 5 September 1956, as pertains to operation and operator's maintenance of Interrogator Sets AN/TPX-19 and AN/TPX-26. This manual also supersedes so much of TB 11-5895-207-10/1, 9 March 1962, as pertains to operation of Radar Set Control Group AN/FPA-14.

TAGO 10081A-Apr

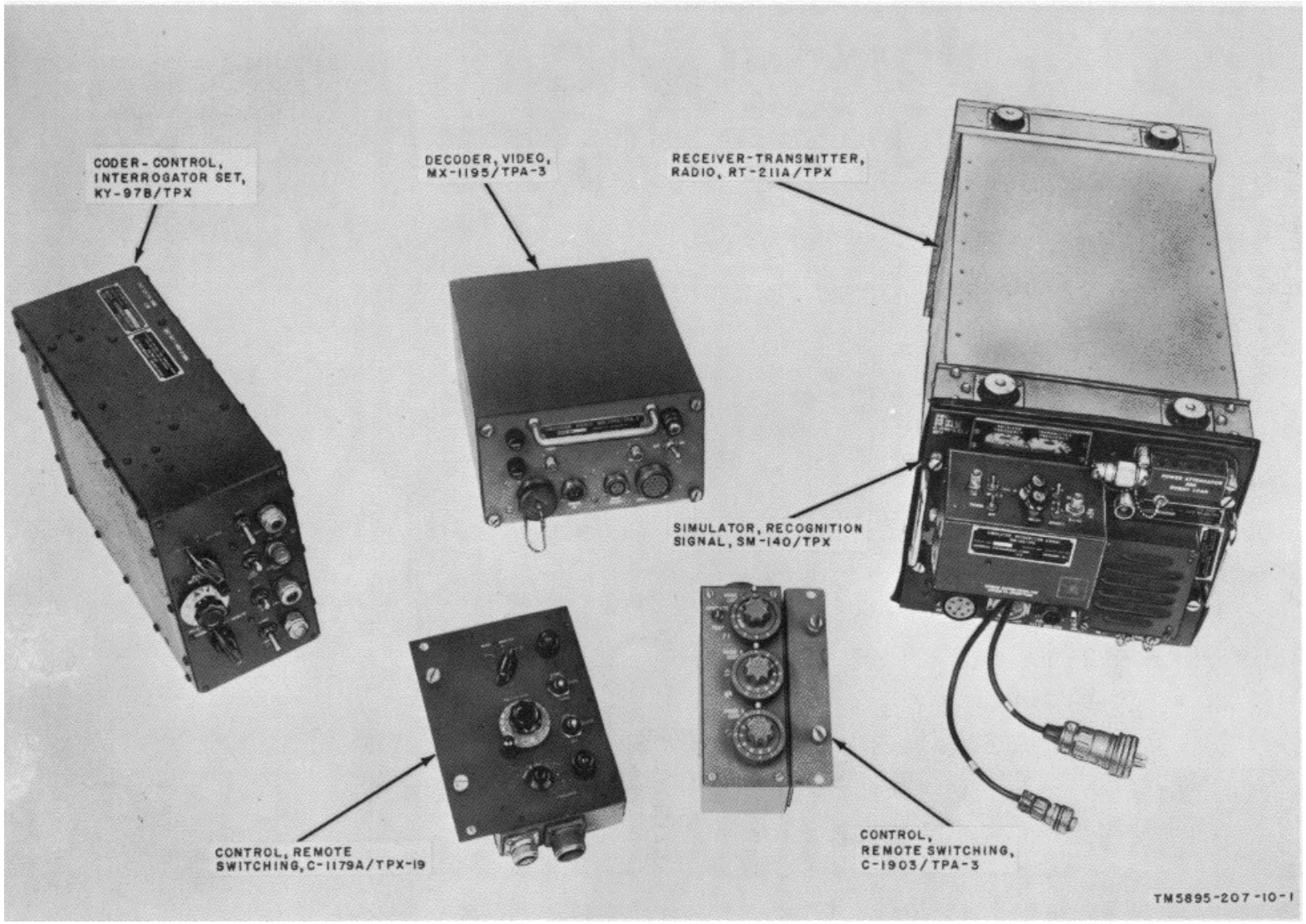

Figure 1. Interrogator Set AN/TPX-26, major components.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

This manual describes Interrogator Set AN/ TPX-26 and Radar Set Control Group AN/ FPA-14 and covers operation and operator's maintenance of these equipments. It includes operation under usual conditions, cleaning and inspection of the equipment, and replacement of parts available for first echelon maintenance. Interrogator Set AN/TPX-26 is covered in chapters 1 through 3; Radar Set Control Group AN/FPA-14 is covered in paragraphs 44 through 55 (auxiliary equipment). Demolition of materiel to prevent enemy use is covered in chapter 5. A basic issue items list for Interrogator Set AN/TPX-26 is contained in appendix II. A basic issue items list for Radar Set Control Group AN/FPA-14 is contained in appendix III. Installation of the equipment is covered in a higher echelon maintenance manual.

Note. Refer to DA Pam 310-4 to determine what changes to or revisions of this publication are current.

2. Forms and Records

a. Unsatisfactory Equipment Reports. Fill out and forward DA Form 468 (Unsatisfactory Equipment Report) as prescribed in AR 700-38.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army).

c. Preventive Maintenance Forms. Prepare DA Form 11-238 (figs. 21 and 22) (Maintenance Check list for Signal Equipment (Sound Equipment; Radio, Direction Finding, Radar, Carrier, Radiosonde and Television)), in accordance with instructions on the form.

d. Parts List Form. Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8, or 9) direct to the Commanding Officer, U.S. Army Signal Materiel Support Agency, ATTN: SIGMS-ML, Fort Monmouth, N.J., to recommend changes in, or comment on, basic issue items lists or repair parts and special tools lists.

e. Comments on Manual. Forward all other comments on this publication direct to the Commanding Officer, U.S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2d,, Fort Monmouth, N.J.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

Interrogator Set AN/TPX-26 (fig. 1) is a lightweight interrogator set designed for operation in conjunction with associated radar equipment (Radio Set AN/TPS-1D, Radio Set AN/TPS-1G, Radar Set AN/FPS-36, Radar Set AN/FPS-56, and Radar Surveillance Central AN/GSS-1) to aid in identification of friendly aircraft. Interrogator Set AN/TPX26 may also be used with Radar Set AN/FPS71 and with Radar Set AN/FPS-75. The interrogator set, when properly installed and operating, performs the ground station functions of an identification friend or foe (IFF) system. When an aircraft is detected by the associated radar set, the interrogator set may be operated simultaneously to transmit IFF challenge signals to the aircraft, and receive predesignated IFF reply codes from the airborne transponder of a friendly aircraft. Received reply signals from airborne transponders are amplified, detected, decoded, and applied to the plan position indicator (PPI) of the radar set. If no reply is seen from a properly challenged aircraft, the aircraft is reported as unidentified in accordance with local SOP.

4. Technical Characteristics

a. General.

Range ..... Line of sight (approx 190 miles (306 kilometers)).
Challenge modes ..... 3.
Power requirements:
- Current ..... 3.25 amperes.
- Voltage ..... 115±10%.
- Line frequency ..... 400 cps, single-phase.

b. Transmitting System.

Frequency range:
- Capability ..... 990 to 1,040 mc.
- Pretuned ..... 1,010 to 1,030 mc.

Oscillator ..... Crystal-controlled.
Type of modulation ..... Pulse.
Output pulse:
- Duration ..... 0.7 to 1.2 microseconds.
- Risetime ..... 0.2 microsecond ±.05 to 0.1.
- Decay time ..... 0.4 microsecond ±.05 to 0.2.

RF power output ..... 1.5 kv.
Output impedance ..... 52 ohms

c. Receiving System.

Frequency range:
- Capability ..... 1,080 to 1,130 mc.
- Pretuned ..... 1,090 to 1,110 mc.

Oscillator ..... Crystal-controlled.
Receiver type ..... Superheterodyne.
Sensitivity ..... 76 db below 1 volt.
Bandwidth:
- Broad ..... 5 mc.
- Narrow ..... 5mc.

Intermediate frequency ..... 60 mc.
RF input impedance ..... 52 ohms
Video output impedance ..... 75 ohms.
Video output power ..... 0.2 watt (approx).

d. Coding System.

Input impedance ..... 75 to 510 ohms.
Input pulse width ..... 0.3 to 15 microseconds.
Input pulse amplitude ..... +5 to +50 volts (measured across 75 ohms).
Output trigger voltage ..... +55 volts (measured across 75 ohms).
Pulse risetime ..... 0.1 to 0.5 microsecond.
Self-trigger PRF ..... 200 pulse-pairs per second.
Trigger delay:
- Out ..... 9.5 microseconds.
- In 12.6 ±0.5 to 35 microseconds ±2.

Modes of interrogation ..... 3.
- Mode 1:
  - Number of pulses ..... 2.
  - Pulse width ..... 0.3 microsecond (nominal).
  - Pulse spacing ..... 3 microseconds ±0.2.
- Mode 2:
  - Number of pulses ..... 2.
  - Pulse width ..... 0.3 microsecond (nominal).
  - Pulse spacing ..... 5 microseconds ±0.2.
- Mode 3:
  - Number of pulses ..... 2.
  - Pulse width ..... 0.3 microsecond (nominal).
  - Pulse spacing ..... 8 microseconds 0.2.

e. Decoding System.

Video input:
- Pulse type ..... Coded pulse trains
- Pulse polarity ..... Positive.
- Individual pulse amplitude. 5 volts maximum; 2 volts minimum.
- Noise ..... 0 to 1 volts rms.
- Sensitivity ..... 2 volts amplitude (nominal).
- Overall duration of pulse train. 20.3 microseconds ±0.1.
- Individual pulse width ..... 0.45 microsecond 0.1.
- Pulse rise time ..... Less than 0.2 microsecond.
- Pulse decay time ..... Less than 0.4 microsecond.
- Pulse spacing in single train. 2.9 microseconds ±0.05.
- Interleaved pulse trains .... 4 maximum.
- Pulse spacing in interleaved pulse trains. 0.05 microsecond minimum (from trailing edge of one pulse to leading edge of following pulse).
- Input impedance ..... 75 ohms.

Video output:
- Pulse type: One positive pulse for each correctly coded pulse-train input.
- Pulse amplitude ..... Adjustable from 2 to 5 volts.
- Pulse width ..... 0.45 microsecond 0.1.
- Pulse rise time ..... Less than 0.2 microsecond.
- Pulse decay time ..... Less than 0.4 microsecond.
- Output impedance ..... 75 ohms.
- Modes of decoding ..... 3.
- Operable altitude ..... Up to 10,000 feet (3,048 meters) above sea level.
- Operable temperature range. +150' to —40° F.

f. Simulating System.

Types of input:
- System test:
  - Pulse type ..... Pulse-pairs.
  - Interpulse spacing ..... 5 microseconds ±0.2.
  - Pulse width ..... 0.5 to 1 microsecond.
  - Pulse risetime ..... 0.3 microsecond (nominal).
- Receiver test:
  - Pulse type ..... Single pulse.
  - Pulse width ..... 0.5 to 1 microsecond.
  - Pulse risetime ..... 0.3 microsecond (nominal).
- Input pulse voltage ..... 10 volts minimum.
- Input repetition frequency. 100 to 3,000 pps.
- Input impedance ..... 1,500 ohms.
- Trigger delay ..... 10 to 100 microseconds.

Types of output:
- System test ..... Code 77 RF pulse train.
- Receiver test ..... Single RF pulse.

Oscillator..... Crystal-controlled.
Output frequency range..... 1,080 to 1,130 mc.
Pretuned frequency ..... 090 mc
Output pulse:
Duration ..... .0.8 microsecond.
Spacing ..... 2.9 microseconds (leading edge to leading edge).
Output impedance ..... 50 ohms

5. Table of Components

(figs. 1 and 9)

a. Equipment Components. The components of Interrogator Set AN/TPX-26 are listed in appendix II. The chart below lists the weights and dimensions of major components.

Component	Quantity	Height (in)	Depth (in.)	Width (in.)	Unit weight (lb.)
Receiver-Transmitter, Radio RT-211A/TPX.	1	9 7/8	23 1/16	11 1/8	53
Decoder Group AN/TPA-3 consisting of:.....					
Decoder, Video MX-1995/TPA-3.....	1	5	12	8 7/8	14
Control, Remote Switching C-1903/TPA-3.....	1	3 3/4	8 1/4	4 1/2	2
Coder-Control, Interrogator Set KY-97B/TPX	1	9 1/8	14 7/8	5 1/4	16
Control, Remote Switching C-1179A/TPX-19	1	8 1/4	2 1/8	5 3/4	2
Simulator, Recognition Signal SM-140/TPX.....	1	3 5/8	3 3/8	6 1/2	3 1/4
Case, Standardized Components CY-951/TP.....	1	12 1/8	16 1/4	15 1/8	23
Case, Receiver-Transmitter CY-944A/TPX.....	1	12 1/2	24 9/16	14	16
Junction box assembly	1	1 13/16	4 1/8	2 3/8	8
Interconnecting Box J-981/U	1	1 13/16	4 1/8	2 3/8	8
Cable reel	1	10 5/8		24	55
Bag, Cotton Duck CW-308/U	1		15	19	

b. Running Spares. The running spares are listed in appendix II.

6. Common Names

A list of nomenclature and common name assignments for the components of Interrogator Set AN/TPX-26 is given below. A common name is given for each component.

Nomenclature	Common name
Case, Standardized Components CY-951/TPX	Coder-control unit transit case
Coder-Control, Interrogator Set KY-97B/TPX	Coder-control unit
Decoder Group AN/TPA-3.....	Decoder group
Amplifier, Intermediate Frequency AM-761/TPX.....	IF amplifier subassembly
Receiver-Transmitter, Radio RT-211A/TPX.....	Receiver-transmitter
Case, Receiver-Transmitter CY-944A/TPX.....	Receiver-transmitter transit case
Subassembly, Frequency Converter-Transmitter MX-1376A/UPX-6.....	RF subassembly
Control, Remote Switching C-1179A/TPX-19	Remote control box
Control, Remote Switching C-1903/TPA-3.....	Remote switching control
Simulator, Recognition Signal SM-140/TPX.....	Simulator
Decoder, Video MX-1995/TPA	Video decoder

7. Major Components

(fig. 1)

Interrogater Set AN/TPX-26 consists of five major operating assemblies and a test equipment unit. The interrogator set performs the ground station functions of an IFF system in conjunction with associated radar equipment. The five operating assemblies are the receiver-transmitter, video decoder, remote switching control, remote control box, and coder-control unit. The simulator used for receiving and system testing is mounted on the front panel of the receiver-transmitter.

8. Description of Receiver-Transmitter

(fig. 2)

a. The receiver-transmitter consists of a lightweight panel-chassis unit which slides into a rigid, sheet-metal,

protective dust cover. The panel-chassis unit is secured to the dust cover by four captive screws on the front panel. An interlock switch, mounted on the rear of the receiver-transmitter chassis, cuts off power to the unit when the chassis is removed from its dust cover. Dual-purpose shock mounts installed on the dust cover are provided to mount the receiver-transmitter. The front panel of the receiver-transmitter is sealed with a gasket and the air intake is louvered.

b. Mounted on the front panel are the termination of all external connections, controls and indicators, fuses, and a power attenuator and dummy load unit. Also, a simulator is mounted on the front panel and covers the receiver-transmitter front panel frequency adjustments shafts and crystal cover plate.

9. Description of Video Decoder

(fig. 3)

The video decoder consists of a panel-chassis assembly contained within a metal case. Six cable connectors, one operating and one spare fuse, a power indicator jewel, and a power switch are mounted on the front panel. Four captive thumbscrews secure the panel chassis to the metal case. Rack-mounted slide rails

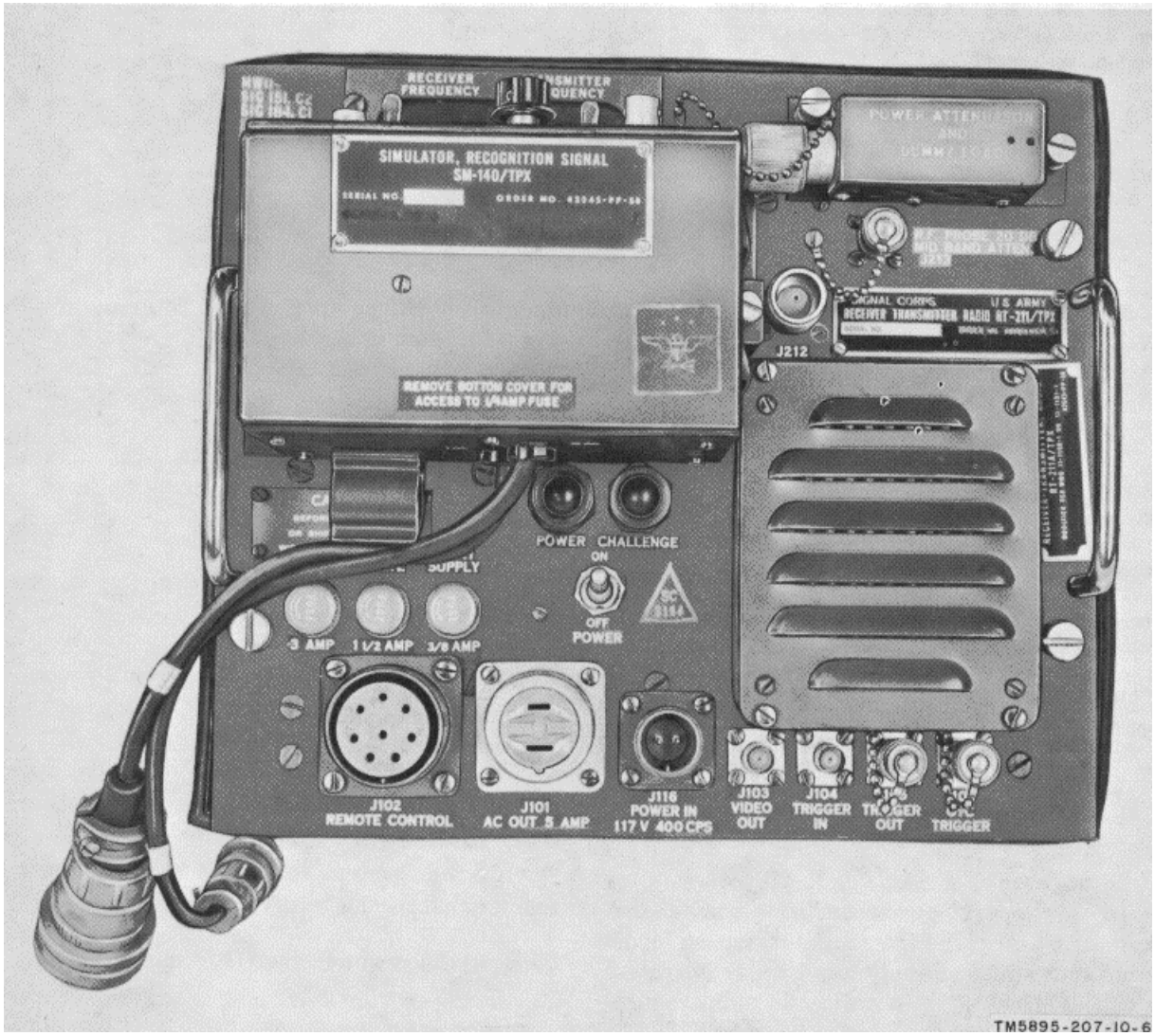

Figure 2. Receiver-Transmitter Radio RT-211A/TPX with Simulator, Recognition Signal SM-140/TPX installed.

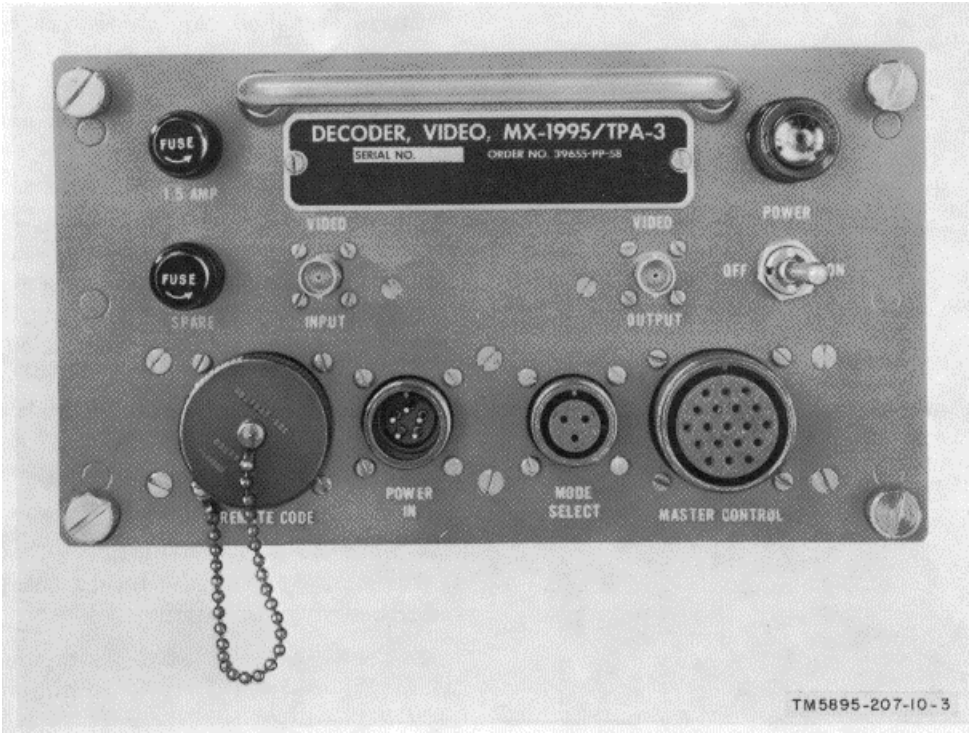

Figure 3. Decoder, Video MX-1995/TPA-3

attached to the sides of the panel-chassis permit the panel-chassis to be withdrawn from the metal case. A handle on the panel is for ease in carrying and working with the unit. Screened cutouts in the sides of the metal case are for ventilation.

10. Description of Remote Switching Control

(fig. 4)

The remote switching control consists of a switch panel assembly within a metal case. A mounting bracket is attached to one side of the metal case. An OPERATE-TEST switch and three dual rotary switches are mounted on the panel. The dual rotary switches, MODE 1 CODE, MODE 2 CODE, and MODE 3 CODE, are preset to decode the transponder's reply in the respective mode of operation. Enough wire is provided within the metal case between the electrical receptacle at one end of the metal case and the connections to the panel to enable the panel to be removed from the metal case, rotated 180°, and replaced. This allows for either a left or right side mounting of the remote switching control.

11. Description of Coder-Control Unit

(figs. 5 and 6)

The coder-control unit is a lightweight box structure with removable side panels. All operating controls and indicators are mounted on the front panel. Cable connectors are mounted on the rear panel. For special installation of the coder-control unit, the rear panel may be removed from its case, rotated 180°, and replaced. The coder-control unit is secured to a suitable mounting bracket by four captive screws that extend through the left side panel. The screws are mounted on the inner chassis of the coder-control unit and are accessible when the right side panel of the unit is removed. Settings on some MODE SELECTOR switches are marked IFF, PI, and FLI instead of 1, 2, and 3 respectively.

12. Description of Remote Control Box

(fig. 7)

The remote control box is a panel-chassis assembly mounted on a metal case. Cable connectors are mounted on the bottom of the metal case. Controls and

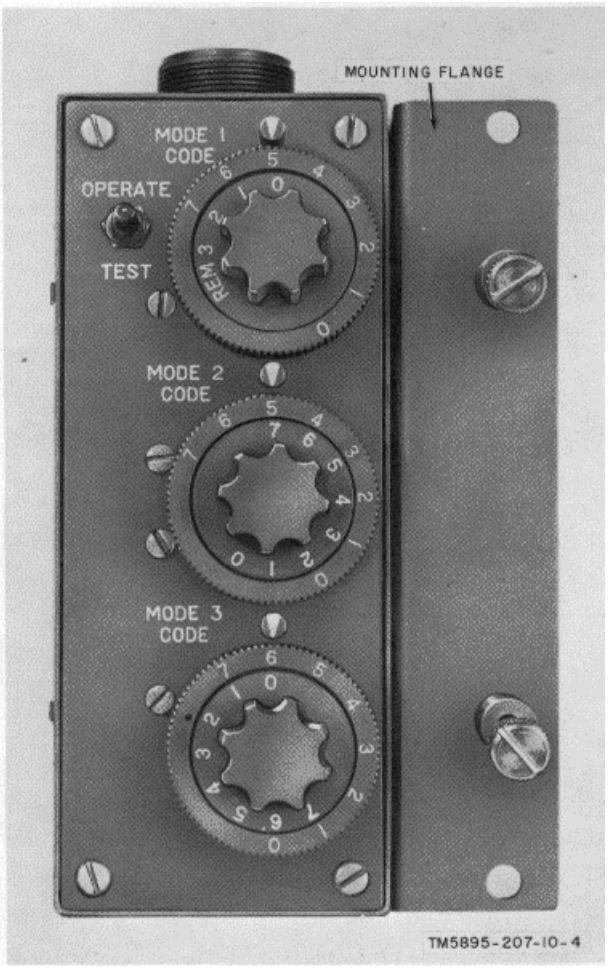

Figure 4. Control, Remote Switching C-190S/TPA-3.

indicators are mounted on the front panel. Two captive thumbscrews on the front panel secure the remote control box to a suitable mounting. The remote control box enables remote operation of the control functions of the interrogator set from a maximum distance of 155 feet.

13. Description of Simulator

(fig. 8)

The simulator is a miniaturized test set that consists of a single assembly installed on the front panel of Receiver-Transmitter, Radio RT-211A/TPX. Because of its small size and light weight, it may remain permanently installed and connected for routine testing without interferring with normal operation of the interrogator set. The front and two side panels of the simulator consist of a one-piece U-shaped wraparound shell, to which are mounted the top, bottom, and rear panels. On the rear and about halfway up the sides of the U-shaped wraparound shell are two metal ears that contain captive thumbscrews. The two captive thumbscrews are used to mount the simulator to its mounting adapter plate. The top panel contains all operating control and two cable connectors. Two fixed cable assemblies extend from the bottom panel. The panels on either side of the U-shaped outer shell are louvered for ventilation during operation. The simulator is held in place by two captive thumbscrews.

14. Description of Minor Components

The minor components of Interrogator Set AN/TPX-26 are shown in figure 9. Special features of some of the minor components are described in a through v below.

a. Case, Standardized Components, Electrical CY-951/TPX is a combination metal-plywood, watertight, transit case with a removable top cover secured by eight latches. Compartments are provided for storing Coder-Control, Interrogator Set KY-97B/TPX and running spares.

b. Case, Receiver-Transmitter CY-944A/ TPX is a combination metal-plywood transit case for housing the receiver-transmitter with the simulator installed. The front and rear covers of the case are removable.

c. The junction box assembly has three two conductor special purpose cables (12 feet 5 inches) and is used to distribute alternating current (ac) power from the associated radar power supply to Interconnecting Box J-981/U and the receiver-transmitter. The associated radar supplies the 117-volt, 400-cycle per second (cps), single-phase, ac voltage. A straight female connector (AN3106A-20-6S) is provided for the 10-foot cable branch, and two straight female connectors (AN3106A-14S9S) are provided for the 2-foot cable branches of the junction box assembly.

d. Interconnecting Box J-981/U has two, two-conductor cables (CO-02HOF). Ac power from the junction box assembly is applied to the coder-control unit and the video decoder. The two cable branches terminate in straight female connectors

Figure 5. Coder-Control, Interrogator Set KY-97B/TPX, front panel.

female connectors (AN3106A-14S-9S). A male receptacle (AN3102A-14S-9P) is located on the interconnecting box.

e. Adapter UG-274A/U is a T-connector which is inserted in the TRIGGER OUT jack of the coder-control unit (fig. 6). Separate trigger output cables are connected from the two receptacles of the T-connector to the TRIGGER IN jacks on the simulator (fig. 8) and

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the receiver-transmitter (fig. 2).

f. Adapter UG-212C/U is a right-angle connector that joins the antenna cable to the receiver-transmitter.

g. Adapter UG-201A/U is a coaxial extension connector. Two of these connectors are provided with the interrogator set. One connector adapts Cable

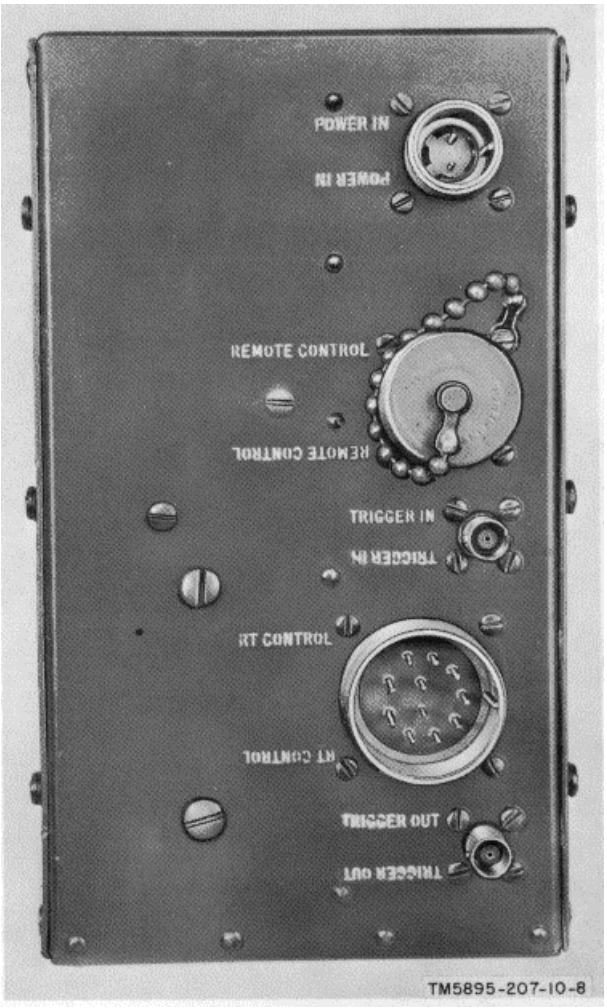

Figure 6. Coder-Control, Interrogator Set, KY-97B/TPX, rear panel.

Assembly, Radio Frequency CG-426D/U (13 ft) to a T-connector which is supplied with the associated radar remote ppi and which is connected to the IFF VID PPI jack on the associated radar power supply. The other connector adapts Cord CG-409E/U (10 ft 2 in.) to the IFF PRE-TRIGGER jack on the associated radar modulator in some installations. Only one Adapter UG-201A/U is shown on figure 9.

h. Bag, Cotton Duck CW-308/U is used to store certain cables when they are not required for normal operation of the equipment.

i. Cable Assembly, Special Purpose, Electrical CX-2287/U (155 ft 6 in.) is not shown on figure 9. It is a cold-weather cable (type VII) with a male connector (AN3106A-18-1P) on one end and a right-angle female connector (AN3108A-18-1S) on the other end. This cable connects the remote control box to the coder-control unit when the interrogator set is operated by remote control at distances up to 155 feet.

j. Cable Assembly, Special Purpose, Electrical CX-2288/U (25 ft 3 in.) is a 10conductor cable (type VII) with a straight male connector (AN3107-18-1P) on one end and a straight female connector (AN3106A18-1S) on the other end. The cable connects the remote control box to the coder-control unit when the interrogator set is operated by remote control over short distances up to 25 feet.

k. Cable Assembly, Power, Electrical CX4442/U is a nine-conductor cold-weather cable (CO-09HOF(9l8s) 0660) with a straight female connector (AN3106A-24-20S) on one end and a right-angle male connector (AN3108-24-6P) on the other end. Mounted to the body of the right-angle connector, just before the male end, is a female connector. The main cable provides the control connections between the coder-control unit and the receiver-transmitter. The small female receptacle on the connector at the receiver-transmitter end is provided for remote operation of the simulator.

l. Cable Assembly, Power, Electrical CX4443/U (155 ft 6 in.) is a three-conductor, cold-weather cable (CO-03HOF) with a right-angle male connector (AN3108B-14S-7P) on one end and a straight female connector (AN3106A-14S-7S) on the other. The cable connects the remote control box to the video decoder for automatic mode selection when operating at long distances up to 155 feet.

m. Cable Assembly, Power, Electrical CX4443/U (17 ft 6 in.) is a three-conductor, cold-weather cable (CO-03HOF) with a right-angle male connector (AN3108B-14S-7P) on one end and a straight female connector (AN3106A14S-7S) on the other end. The cable connects the remote control box to the video decoder for automatic mode selection when operating over short distances up to 25 feet.

n. Cable Assembly, Power, Electrical CX1601/U (10 ft 2 in.) is a assembly of two 10foot cables. These cables are not shown on figure 9. The cable assembly is provided for test purposes to supply alternating current

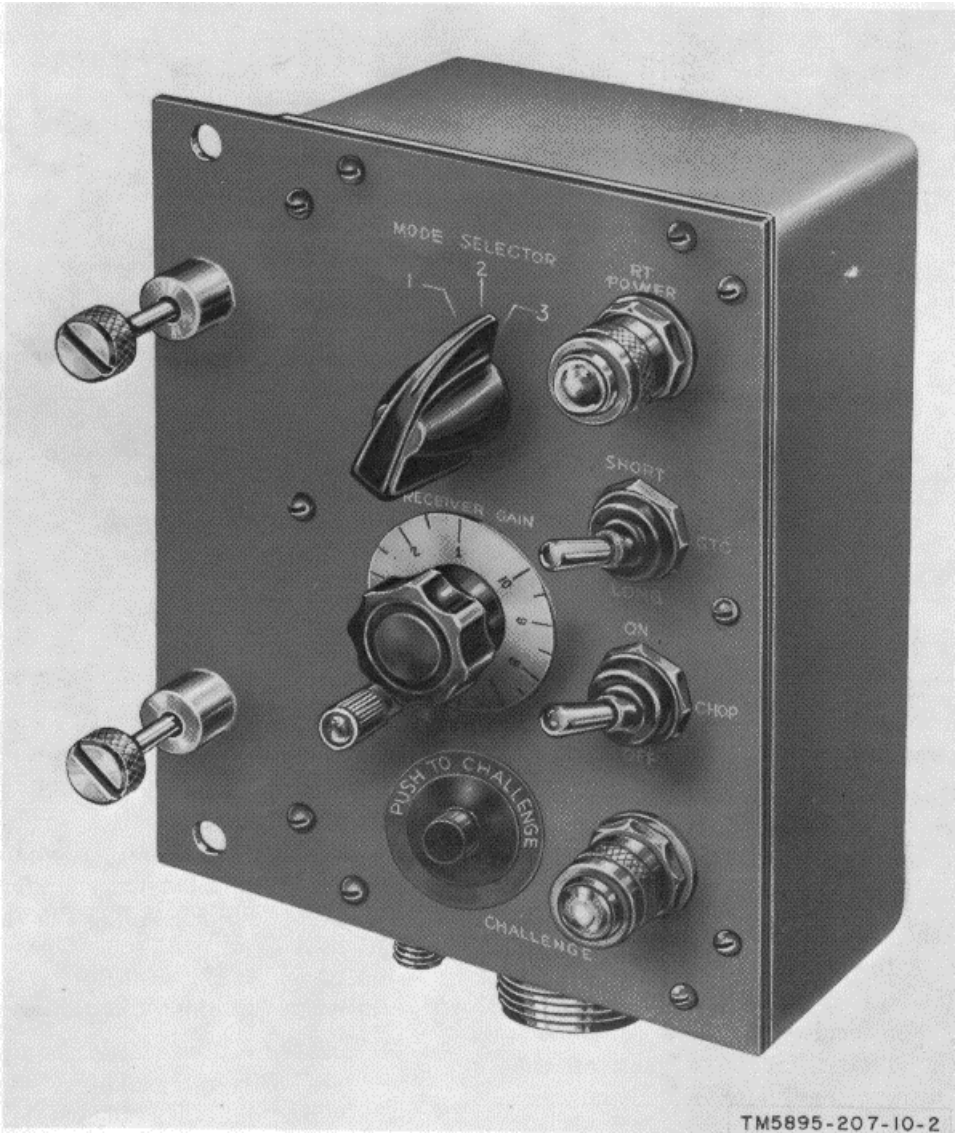

Figure 7. Control, Remote Switching C-1179A/TPX-19

to the receiver-transmitter and coder-control unit.

o. Cable Assembly, Power, Electrical CX-4444/U (155 ft 6 in.) is a 14-conductor, cold-weather cable (CO-14HOF) with a right-angle male connector (AN3108B-22-14P) on one end and a straight female connector (AN3106A-22-14S) on the other. The cable connects the video decoder to its remote switching control when the two units are operated a long distance apart.

p. Cable Assembly, Power, Electrical CX-4444/U (18 ft 6 in.) is a 14-conductor, cold-weather cable (CO-HOF 14/18) SJ 0810) with a right-angle male connector (AN3108B-22-14P) on one end and a straight female connector (AN3106A-22-14S) on the other. The cable connects the video decoder to its remote switching control when the two units are operated a short distance apart.

q. Cord CG-409E/U (8 in.) is a vinyl-covered, coaxial-type cable (RG-58C/U) with a male connector (UG-88C/U) on each end. The cable connects from the simulator RF OUT jack to the RF PROBE 20 DB MID BAND

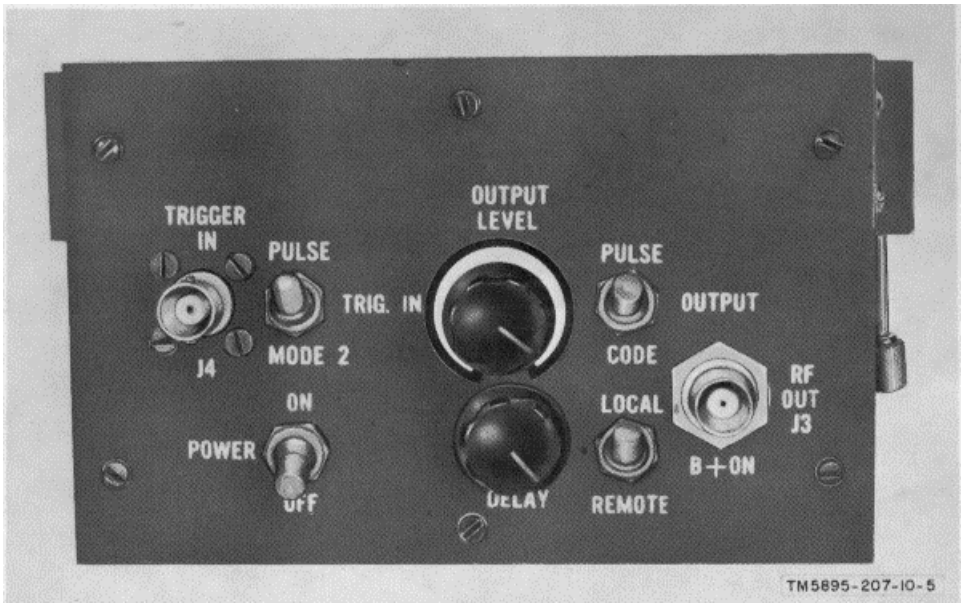

Figure 8. Simulator, Recognition Signal SM-140/TPX.

ATTEN connector on the front panel of the receiver-transmitter.

r. Cord CG-409E/U (10 ft. 2 in.) is a vinyl covered, coaxial-type cable (RG-58C/U) with a male connector (UG-88C/U) on each end. The cable is used for test purposes.

s. Cable Assembly, Radio Frequency CG426D/U (4 ft 8 in.) is vinyl-covered, coaxial type cable (RG-59A/U) with a male connector (UG-260B/U) on each end. The cable connects from the TRIGGER OUT jack of the coder-control unit to the TRIGGER IN connection on the simulator.

t. Cable Assembly, Radio Frequency CG426D/U (10 ft) is a vinyl-covered, coaxial-type cable (RG-59A/U) with a male connector (UG-260B/U) on each end. The cable connects the receiver-transmitter video output to the video decoder input.

u. Cable Assembly, Radio Frequency CG426/U (13 ft) is a vinyl-covered, coaxial-type cable (RG-59A/U) with a male connector (UG-260B/U) on each end. The cable connects the video decoder output to the associated radar set.

v. Cord CG-278B/U (17 ft. 3 in.) is a vinyl covered, coaxial-type cable (RG-9B/U) with a male connector (UG-59A/U) on each end. It connects the receiver-transmitter to associated Radar Antenna AS-548/TPS-1D. Cable W90 (supplied with the associated radar) is used instead of Cord CG-278B/U when the interrogator set is installed with Radar Sets AN/FPS-36, AN/FPS-56, AN/FPS-75, and AN/FPS-71.

15. Additional Equipment Required

a. Associated Radar. Radar equipments that may be used with Interrogator Set AN/TPX-26 include Radio Sets AN/TPS-1D, and AN/TPS-1G, Radar Sets AN/FPS-36, AN/FPS-56, AN/FPS-71, and AN/FPS-75, and Radar Surveillance Central AN/GSS-1. The following circuits ((1)-(4) below) in each of these radar sets make possible their use with the interrogator set.

(1) IFF antenna and radio-frequency (RF) transmission lines.
(2) IFF power circuit.
(3) IFF trigger (synchronizing) circuit.
(4) IFF video and display circuit.

b. IFF Equipment Mounting Facilities. IFF equipment mounting brackets are provided with Radar Surveillance Central AN/GSS-1. If equipment mounting

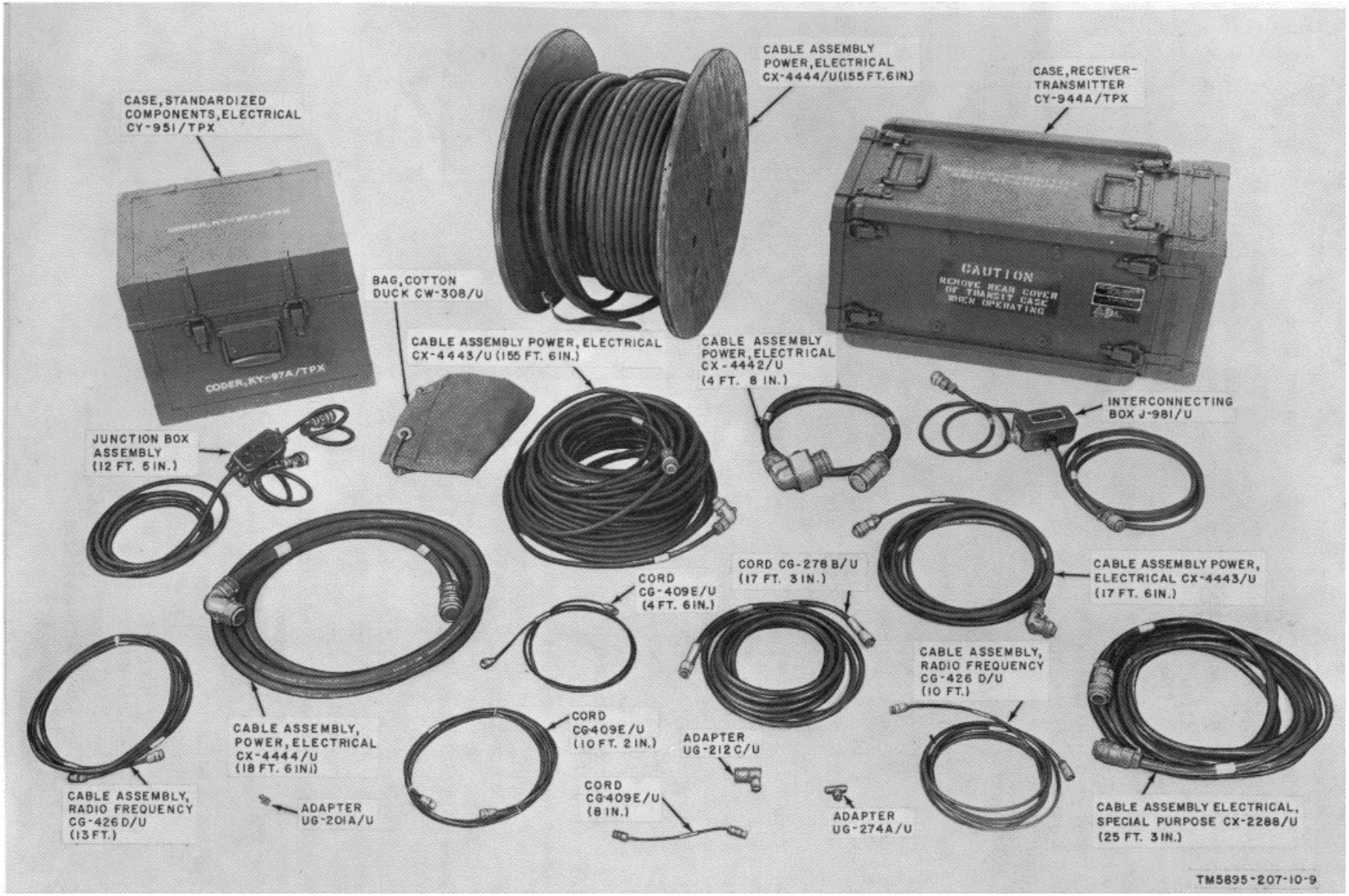

Figure 9. Minor components.

brackets are not provided with other associated radar sets listed in a above, local fabrication of mounting facilities may be necessary.

16. Equipment Application

a. Aircraft detected by an associated radar set may be identified as friendly or unidentified by Interrogator Set AN/TPX-26. The interrogator set performs the ground station function of an IFF system. It is used in conjunction with its associated surface radar set and compatible airborne transponder units in a friendly aircraft.

b. The interrogator set can transmit a challenge signal to any aircraft detected by the radar set, and can receive reply signals from suitable friendly airborne transponders.

c. IFF pulse pairs for a specific challenge mode are directed by the transmitter IFF antenna to the airborne transponder. The transponder, if set to reply to the given challenge mode, responds with a series of RF pulse of a preselected frequency and pulse-train formation. These pulses are detected and amplified by the receiver unit of the receiver-transmitter and then fed as video signals to the decoder group. The decoder group analyzes the series of video pulse to determine whether their pulse-train formation corresponds to the preselected code. If the code is correct, the decoder group feeds an output pulse to the radar set for presentation on the radar ppi (fig. 10) along with the track signal. If the code is not correct, no decoder group output is generated. Scope presentation is discussed in detail in paragraph 29b.

d. Successful interrogation of aircraft using Interrogator Set AN/TPX-26 requires that the interrogator set transmitter and the transponder receiver operate on the same frequency and that the interrogator set receiver and the transponder transmitter operate on the same frequency. Three challenge modes are available to the operator of the interrogator set. Many variations of replies can be received from the transponder. Three challenge modes that may be transmitted by the interrogator set consist of pulse-pair signals that differ from each other in interpulse spacing. The airborne transponder is adjusted to reply to one, two, or all three of the challenge modes with the appropriate coded signal. The three challenge modes and many coded replies are used to promote detailed accurate recognition.

e. The transmitter of Interrogator Set AN/ TPX-26 transmits pulse-pairs. These pulse-pairs consist of radio-frequency pulses spaced 3 microseconds apart for mode 1 transmitter operation, 5 microseconds apart for mode 2, and 8 microseconds apart for mode 3. These are the challenge modes of the interrogator set.

f. Transponder replies are encoded. The coding used in the replies varies when the challenge mode of the interrogator set is changed (transmitter mode of operation changed).

g. Whenever the challenge mode of the interrogator set is changed, the video decorder circuits must be set to decode a different reply code. For example, MODE 1 CODE switch of the remote switching control (which controls video decorder decoding circuits) must be used to decode mode 1 replies from the transponder, MODE 2 CODE switch of the remote switching control must be used to decode mode 2 replies from the transponder, and MODE 3 CODE switch, for decoding mode 3 replies. The mode of operation of the video decoder must coincide with the challenge mode.

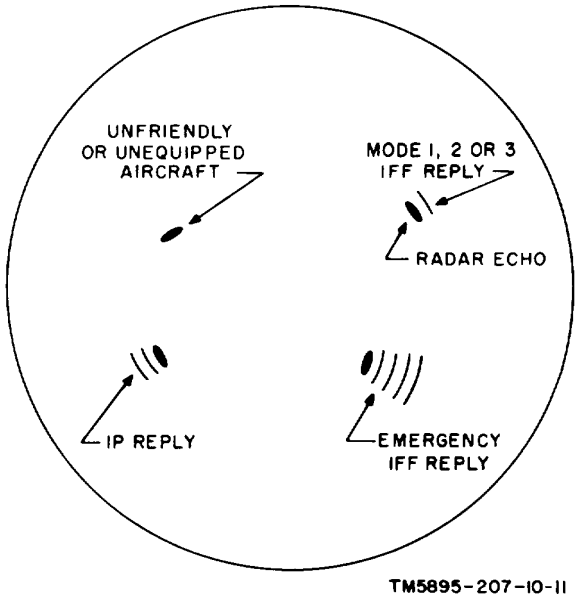

Figure 10. Typical surface radar ppi display showing presentation from decoder group.

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CHAPTER 2
OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND INDICATORS

Note. This section covers only items used by the operator; items used by maintenance personnel are covered in instructions for the appropriate maintenance echelon.

17. General

Haphazard operation or improper settings of the controls and misinterpretation of the indicator functions on the equipment can impair effective operation. To interrogate properly and to analyze the video pulse-train formations that the equipment is capable of decoding, the equipment must be set up correctly. It is important to know the function of each control and instrument (pars. 18-24).

18. Receiver-Transmitter, Controls and Indicators (fig. 11)

Control or indicator	Function
POWER switch	Connects the receiver-transmitter to the ac power supply when set to ON.
POWER indicator lamp (red)	Lights (after 60-second time delay) when ac power is applied to the receiver-transmitter.
CHALLENGE indicator lamp (green).	Lights when the transmitter is operating at normal output level. Light turns off when output level falls below normal.
RECEIVER FREQUENCY and TRANSMITTER FREQUENCY dials.	Direct reading dials that indicate the operating frequency of the receiver-transmitter.

19. Coder-Control Unit, Controls and Indicators (fig. 12)

Control or indicator	Function
POWER switch	Connects or disconnects ac power to the coder-control unit.
CHALLENGE switch	When pressed to ON, IFF challenge signals are transmitted to aircraft.
CHOP switch[a]	*Sw pos* — *Action* ON — IFF reply signal appears on the associated radar set ppi as a clearly defined series of dashes forming an arc (A, fig. 17). Applies B+ power to the simulator if the simulator POWER switch is set to ON and the B+ ON switch is set to REMOTE. OFF — IFF reply signal appears on associated radar set ppi as an unbroken arc (B, fig. 17).
GTC switch	SHORT — Provides relatively high receiver gain for nearby targets. LONG — Provides relatively low receiver gain for nearby targets.
LOCAL-REMOTE switch	LOCAL — Permits operation of the interrogator set from the front panel of the coder-control unit. REMOTE — Permits operation of the interrogator set from the remote control box.

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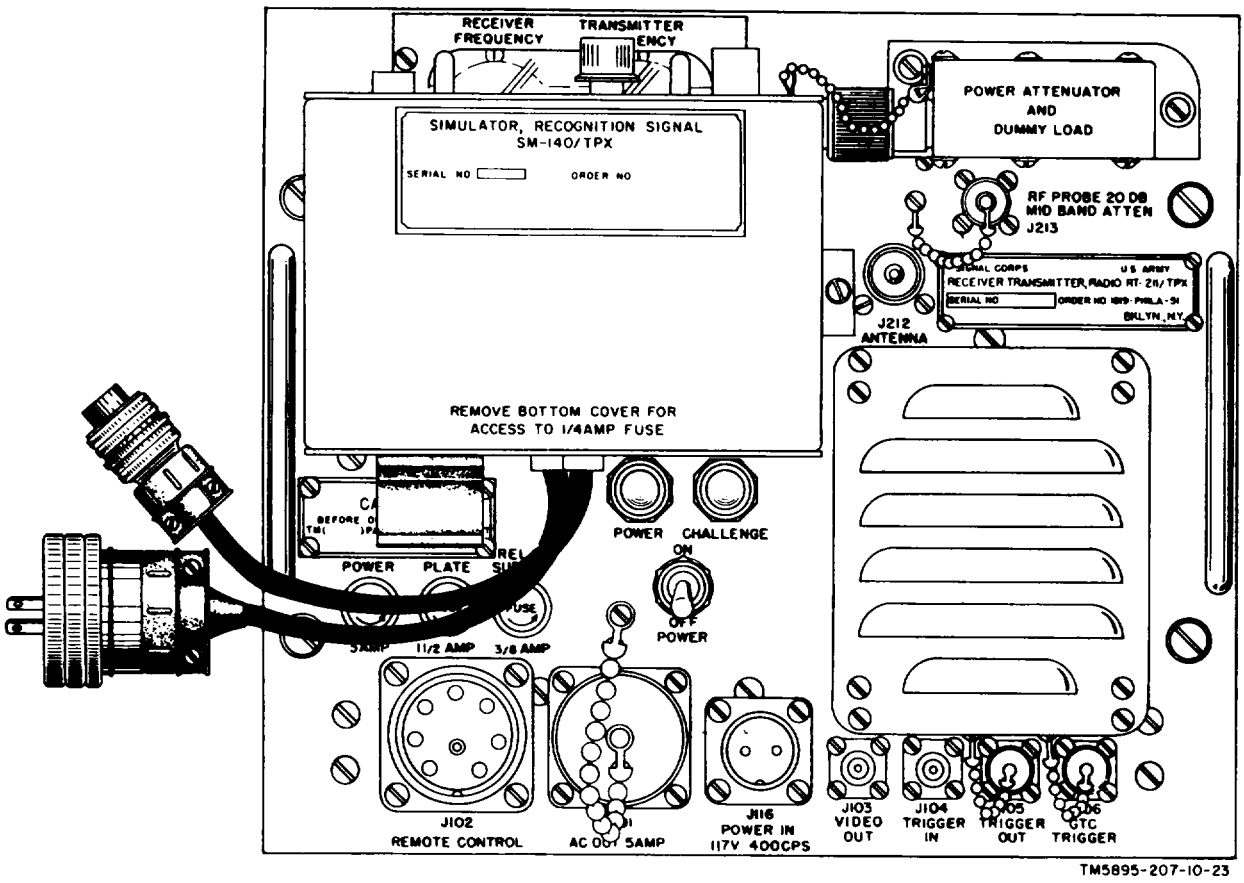


Figure 11. Receiver-transmitter, operating controls and indicators.

Control or indicator	Function
MODE SELECTOR switch	Three-position switch for selection of mode 1, 2, or 3 operation of the transmitting system.
RECEIVER GAIN controls.....	Control the gain of the receiving system in the receiver-transmitter.
POWER indicator lamp (red).....	Lights when ac power is applied to the coder-control unit.
RT POWER indicator lamp (amber).....	Lights (after a 60-second time delay) when ac power is applied to the receiver-transmitter.
CHALLENGE indicator lamp (green)a.	Lights when the transmitter output is at normal level. Light goes out when output falls below normal.

[a] Control or indicator is functional only when the coder-control LOCAL REMOTE switch is set to LOCAL

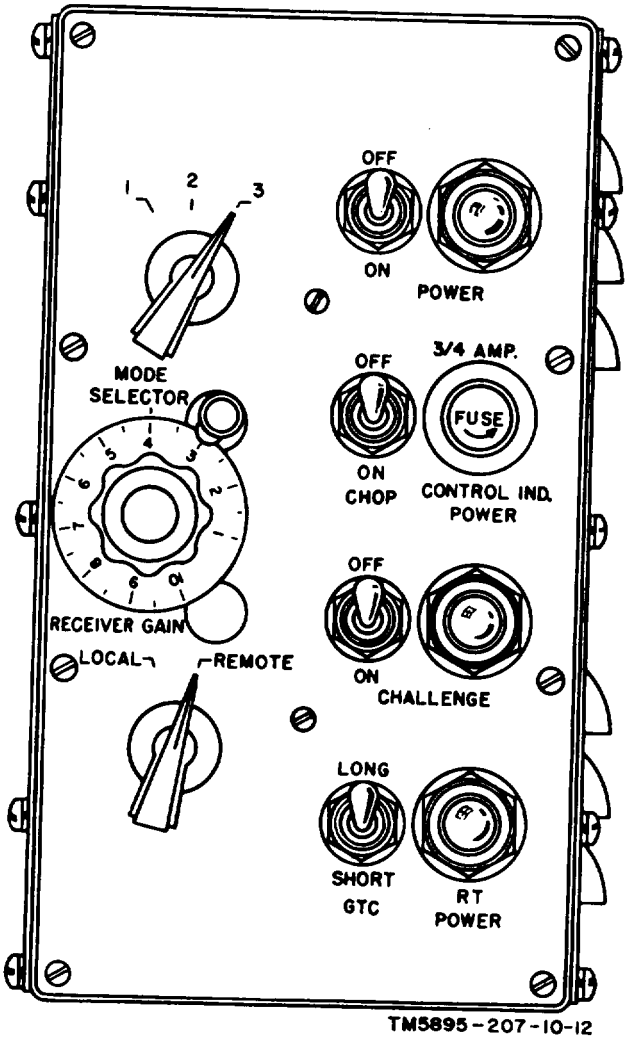


Figure 12. Coder-control unit, controls and indicators.

20. Video Decoder, Control and Indicator (fig. 13)

Control or indicators	Function
POWER switch----------	Connects or disconnects single-phase ac power to the video decoder.
POWER indicator lamp (red) and lamp dimmer control	Lamp lights when POWER switch is set to ON. A mechanical rotating control around the lamp adjusts to expose the desired amount of light from the lamp.

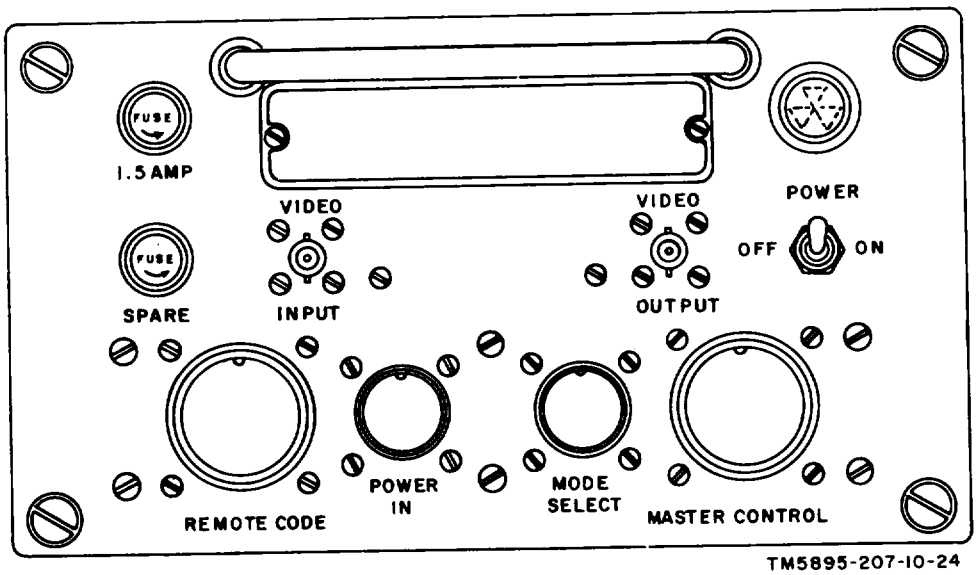


Figure 13. Video decoder, control and indicator.

21. Remote Switching Control, Operating Controls (fig. 14)

Control or indicators	Function
OPERATE-TEST switch ----------	In TEST position, routes video pulse trains from the receiver-transmitter directly from VIDEO INPUT to VIDEO OUTPUT receptacles on the video decoder, bypassing decoding circuits in the video decoder. In OPERATE position, delivers coded pulse trains to the decoding circuits.
	Sw pos — *Action*
MODE 1 CODE dual rotary switch---	0, 1, 2, 3, 4, 5, 6, 7 (outer knobs) 0, 1, 2, 3 (inner knobs) — Selects the code setting for mode 1 operation.
	REM (inner knob) — Transfers code setting control of video decoder to auxiliary remote switching control. Transfer of control of the code setting function of the video decoder from the remote switching control to the auxiliary remote switching control can only be accomplished by the remote switching control connected to the MASTER CONTROL receptacle on the video decoder.
MODE 2 CODE dual rotary switch----	0, 1, 2, 3, 4, 5, 6, 7 (inner and outer knobs) — Selects code setting for mode 2 operation.
MODE 3 CODE dual rotary switch----	0, 1, 2, 3, 4, 5, 6, 7 (inner and outer knobs) — Selects code setting for mode 3 operation.

22. Remote Control Box, Controls and Indicators

All the controls and indicators on the front panel of the remote control box (fig. 15), except the MODE SELECTOR switch, have the same function as the respective controls and indicators on the coder-control unit. For these controls and indicators, refer to paragraph 19 for functional explanation. The MODE SELECTOR switch on the remote control box selects the mode of operation of the transmitter and MODE CODE switch on the remote switching control. The MODE SELECTOR switch on the coder-control unit can select only the mode of operation of the transmitter.

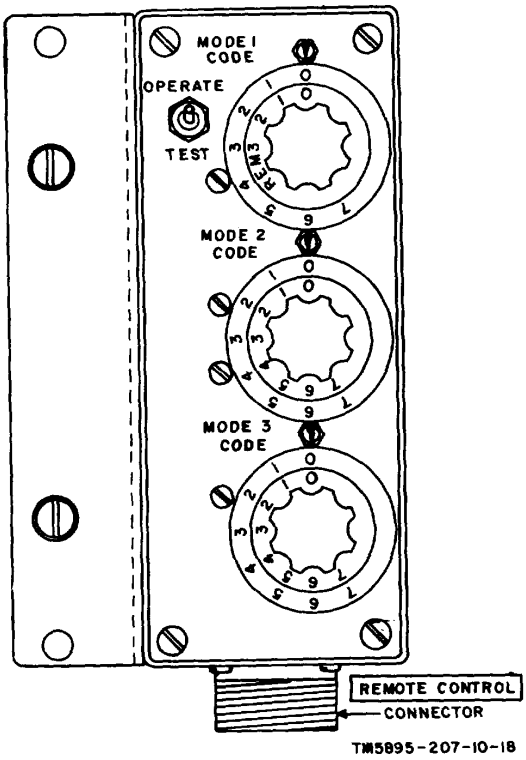


Figure 14. Remote switching control, operating controls.

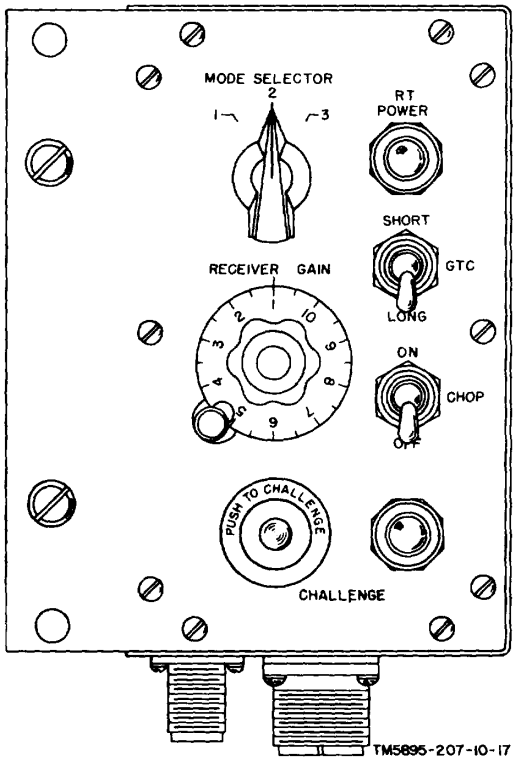


Figure 15. Remote control box, operating controls indicators.

23. Simulator Controls
(fig. 16)

Control or indicators	Function
POWER switch	Connects the simulator to ac power when set to ON.
TRIG IN switch	Selects one of two types of input. In the MODE 2 position, the simulator can only be triggered by the mode 2 output (pulse pair) from the coder-control unit. In the PULSE position, the simulator can be triggered by any suitable singular trigger pulse delivered to TRIGGER IN jack J4 on the simulator.
OUTPUT switch	Selects one of two types of output. In the CODE position, it sets the simulator to deliver a code 77 RF reply signal which goes through the entire receiving and decoding system for system testing. In the PULSE position, it sets the simulator to deliver a single RF pulse output suitable for receiver testing.
B+ ON switch	Provides two methods of controlling application of B+ power to the simulator circuits. In the LOCAL position, B+ power is applied directly to the simulator. In REMOTE position, B+ power is applied to the simulator when the CHOP switch on the coder-control unit or the remote control box is set to ON.
OUTPUT LEVEL control	Adjusts the RF output signal strength to a level suitable for the receiver.
DELAY control	Adjusts the delay of the simulator output signal from 10 to 100 microseconds (roughly, the equivalent of 8/10 to 8 miles (1 to 13 kilometers) on the range scale of the radar PPI) with reference to the input triggers.

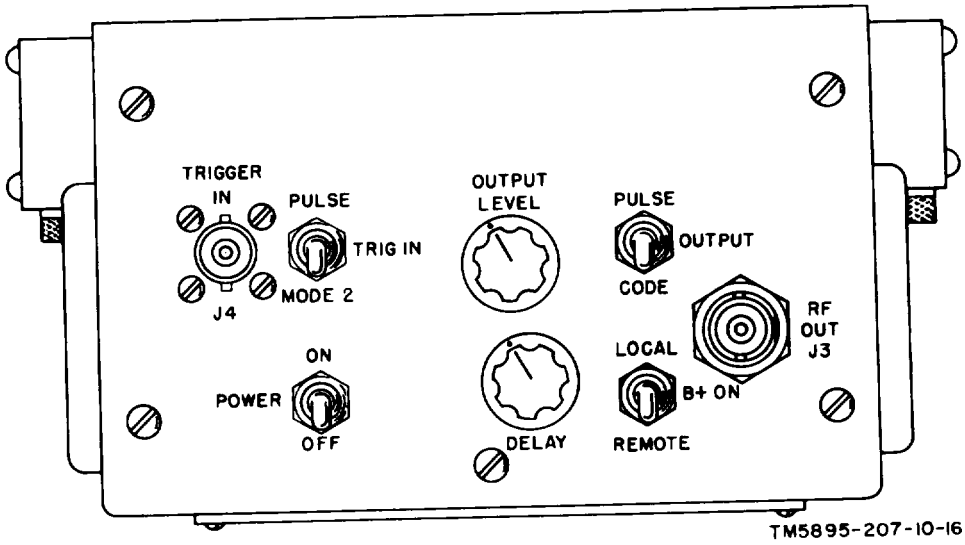


Figure 16. Simulator, operating controls.

24. Associated Radar-IFF Controls

Radar Unit	Control	Function
Modulator (front panel) ---------	PRE TRIGGER SWITCH [a]	Determines the delay (37 or 12.4 microseconds) of radar transmitter pulse with respect to IFF sync trigger obtained at the IFF PRE-TRIGGER jack on the front panel of modulator.
Local indicator (behind CALIBRATION CONTROLS cover on front panel).	IFF VIDEO control ----------	Adjusts the brightness of IFF signals displayed on ppi. -
Remote PPI (front panel) ------	IFF VIDEO GAIN control ----------	Adjusts the brightness of IFF signals displayed on scope.

[a] The PRE TRIGGER SWITCH is not part of the radar modulators used with Radar Set AN/FPS-71 and Radar set AN/FPS-76.

Section II. OPERATION

25. General Operating Information

Assuming that POWER switches on all units have been set to provide ac power to the units, and that the instructions in paragraphs 26, 27, and 28 have been carried out, physical operation of the interrogator set requires only that the remote control box PUSH TO CHALLENGE switch be depressed. With the PUSH TO CHALLENGE switch depressed, normal operation of the interrogator set will be indicated when the CHALLENGE indicators on the receiver-transmitter and remote control box light and when an IFF reply signal appears on the PPI of the associated radar set. The challenge order may also originate from the coder-control unit. This is accomplished by setting the coder-control unit CHALLENGE switch to ON. The CHALLENGE switch on the coder-control unit will activate the IFF transmitter continuously if left in the ON position. The IFF reply from a friendly aircraft should appear at the same bearing as the radar track, and slightly greater in range than the mark or pip for the radar target (fig. 17). If aircraft are not responding to challenges, or not within the operating range of the identification system, no IFF replies will be seen. Before operating the interrogator set, the operator should set the operating controls as outlined in paragraph 26, perform the preoperational checks outlined in paragraph 28, and be familiar with the material covered in paragraphs 27 and 29.

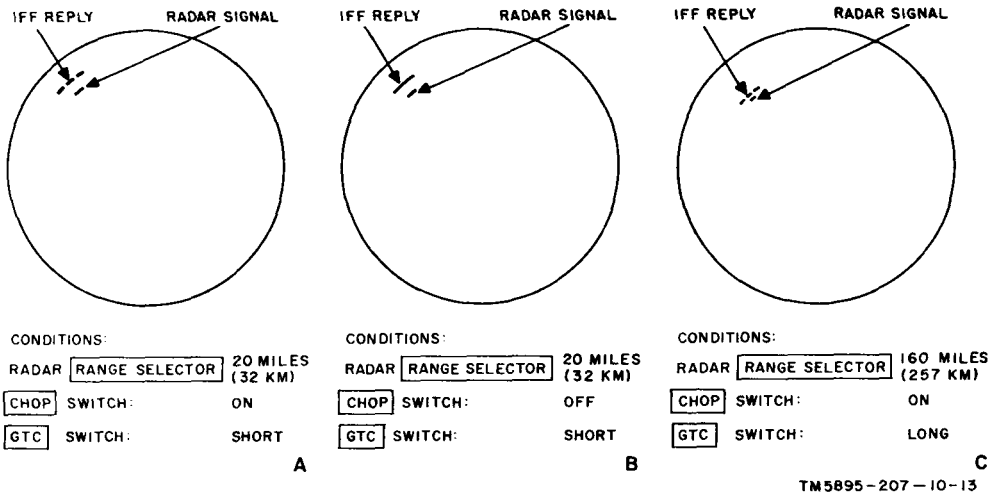


Figure 17. Typical IFF presentation.

26. Preliminary Control Settings

Before starting the interrogator set, set the controls as follows:

Unit	Control	Position
Receiver-transmitter (fig. 11)	POWER switch	OFF
Coder-control unit (fig. 12)	POWER switch	OFF
Coder-control unit	CHALLENGE switch	OFF
Coder-control unit	LOCAL-REMOTE switch	REMOTE
Remote control box (fig. 15)	MODE SELECTOR switch	2
Remote control box	GTC switch	SHORT
Remote control box	CHOP switch	OFF
Remote control box	RECEIVER GAIN control	5
Video decoder (fig. 13)	POWER switch	OFF
Remote switching control (fig. 14)	OPERATE-TEST switch	OPERATE
Remote switching control	MODE 2 CODE control	Code 77
Simulator (fig. 16)	POWER switch	OFF
Simulator	B+ ON switch	REMOTE
Simulator	TRIG IN switch	MODE 2
Simulator	OUTPUT switch	CODE
Simulator	OUTPUT LEVEL control	Maximum cw
Simulator	DELAY control	Maximum cw
Associated radar set modulator	PRE TRIGGER SWITCH	37
Associated radar set local indicator	IFF VIDEO control	Maximum cw
Associated radar set remote PPI	IFF VIDEO GAIN control	Maximum cw

The setting indicated is used only for the preoperational checks (par. 28). Reset in accordance with local tactical operating instructions.

27. Starting Procedure

Note. **If an abnormal result is obtained during the starting procedure, refer to the operational checklist (par. 35). Refer to the preliminary control settings (par. 26) before using the starting procedures given in a through f below.**

a. Place the associated radar set in operation.

b. Set the receiver-transmitter POWER switch to ON. The POWER indicator on the receiver-transmitter and the RT POWER indicator on the remote control box should light after a short time delay. The blower in The receiver-transmitter should operate.

Note. Two thermostats are provided to regulate the inside temperature of the receiver-transmitter. One thermostat causes the blower to stop operating if the

temperature falls to about - 15°F. (-26°C.). The other thermostat will open and power will be cut off to all circuits in the unit except the blower system and the AC OUT connector if the temperature rises to 157°F. (80°C.).

c. Set the simulator POWER switch to ON.

d. Set the coder-control unit POWER switch to ON. The POWER indicator on the coder-control unit should light.

e. Set the video decoder POWER switch to ON. The POWER indicator on the video decoder should light.

f. Perform the preoperational checks outlined in paragraph 28.

28. Preoperational Checks

The simulator, part of Interrogator Set AN/ TPX-26, provides a means of testing the interrogator set to determine its operational status. The procedure for making preoperational checks is given in a below. Adjustments that may be necessary to provide a simulator reply that is readily recognized by the operator are given in b below.

a. Procedure. With the interrogator set in a standby condition (par. 27*a-f*) the simulator is used to determine it's operational status. Proceed as follows:

(1) Set the CHOP switch on the remote control box to ON (fig. 15).

(2) Depr6s the PUSH to CHALLENGE switch on the remote control box. The receiver - transmitter CHALLENGE indicator and the remote control box CHALLENGE indicator should light, indicating normal transmitting operation. A simulated reply should be seen on the radar PPI (fig. 18), indicating normal coding, receiving, decoding, and simulating systems operation. If no simulated replay is seen, refer to the operational checklist (par. 35).

b. Simulator Adjustments. The simulator is shipped with all adjustments preset for proper operation. The operating RF output is preset to 1,090 megacycles (mc) and is determined by the crystal frequency of the crystal-controlled oscillator. If the operating frequency of the receiving system is other than 1,090 mc, the frequency of the simulator must be adjusted accordingly. If the operating frequency of the simulator must be changed to correspond to the IFF receiver frequency, the crystals must be changed and the tuned circuits readjusted. This change must be performed by higher echelon personnel. The OUTPUT LEVEL control adjustment is given in (1) below. The DELAY control adjustment is given in (2) below. The RECEIVER GAIN control adjustment is given in (3) below.

(1) *Adjustment of OUTPUT LEVEL control*. The simulator OUTPUT LEVEL control adjusts the simulator output strength to a level suitable for detection by the receiving system. At the extreme counterclockwise position, the signal strength may be too low for proper reception and the simulated reply signal will not be seen on the PPI. Follow the procedure below:

(a) Set the simulator OUTPUT LEVEL control fully clockwise.

(b) Depress the remote control box PUSH TO CHALLENGE switch and observe the simulated IFF reply signal on the radar PPI.

(c) Gradually turn the simulator OUTPUT LEVEL control counterclockwise to the point at which the simulated reply signal does not appear on the radar PPI.

(d) Turn the simulator OUTPUT LEVEL control clockwise to the threshold at which the reply signal reappears. Note this position.

(e) Reset the OUTPUT LEVEL control to a point midway between the position noted in (d) above and the extreme clockwise position.

(f) Keep the control in this position for normal operation. If any further adjustment (clockwise) is required to obtain the simulated reply, a decrease in sensitivity of the receiver, or a decreased output from the simulator is indicated. Notify a higher echelon repairman.

***Note*. A white area is screened around the OUTPUT LEVEL control. Mark the knob setting, in pencil, on the screened area. The mark will serve as a quick**

reference to the operator for resetting simulator controls and an indication of receiver performance. If either the simulator or receiver is realined, the mark may be erased and a new reference level established.

(2) *Adjustment of DELAY control.* The simulator DELAY control adjusts the position of the simulated IFF reply signal from 1 to approximately 10 miles (2 to 16 kilometers). The control should be adjusted to place the simulated reply on the associated radar set PPI where it will be readily recognized by the operator. Proceed as follows:

(a) Depress the remote control box PUSH TO CHALLENGE switch and observe the simulated IFF reply signal on the radar PPI.

(b) Vary the simulator DELAY control and observe the extreme positions of the reply signal on the radar PPI with respect to the control setting (A, fig. 18).

(c) Set the .remote switching control OPERATE-TEST switch to TEST. The simulated reply should appear on the PPI as a train of eight pulses (B, fig. 18).

(d) Adjust the simulator DELAY control so that the outer (or final) pulse is within the range of the PPI.

(e) Set the remote switching control OPERATE-TEST switch to OPERATE. Observe the single pulse signal on the PPI.

(f) Continue to adjust the simulator DELAY control until the simulated reply is readily observed on the PPI for both positions of the remote switching control OPERATE-TEST switch.

(g) Note the setting of the simulator DELAY control and keep the control at this position for normal operation.

(3) *Adjustment of RECEIVER GAIN control.* The RECEIVER GAIN control on the remote control box adjusts the output level of the output signal from the receiving system. The output signal is applied to the decoding system. Once the signal level (output of receiving system) is above the threshold input of the decoding system, the RECEIVER GAIN control no longer affects the intensity of the IFF signal seen on the radar PPI. Too much receiver gain will increase the noise level of the decoding system. Adjust the RECEIVER GAIN control as follows:

(a) Rotate the dial lock counterclockwise until the RECEIVER GAIN control can be rotated freely.

(b) Depress the PUSH TO CHALLENGE switch and observe the radar PPI.

(c) Adjust the RECEIVER GAIN control for minimum noise and still retain a recognizable simulated response on the radar PPI.

(d) Refer to paragraph 29c for final setting of the RECEIVER GAIN control.

29. Equipment Operation

Interrogation of aircraft located by the associated radar is discussed in a below. Additional operating information is contained in b through g below.

a. Interrogation.

(1) Prior to interrogation, make certain the proper code combinations have been set on the remote switching control MODE CODE dual rotary switches in accordance with local command. Each MODE CODE dual rotary switch has two knurled concentric knobs engraved with numerals. Above each switch is a pedestal with an arrow. The code combination is properly selected when the appropriate numerals on the designated code switch are alined with the pedestal arrow. In all cases, use the outer knob to select the first number of the code and the inner knob to select the second number of the code. For code 52, the outer knob should be

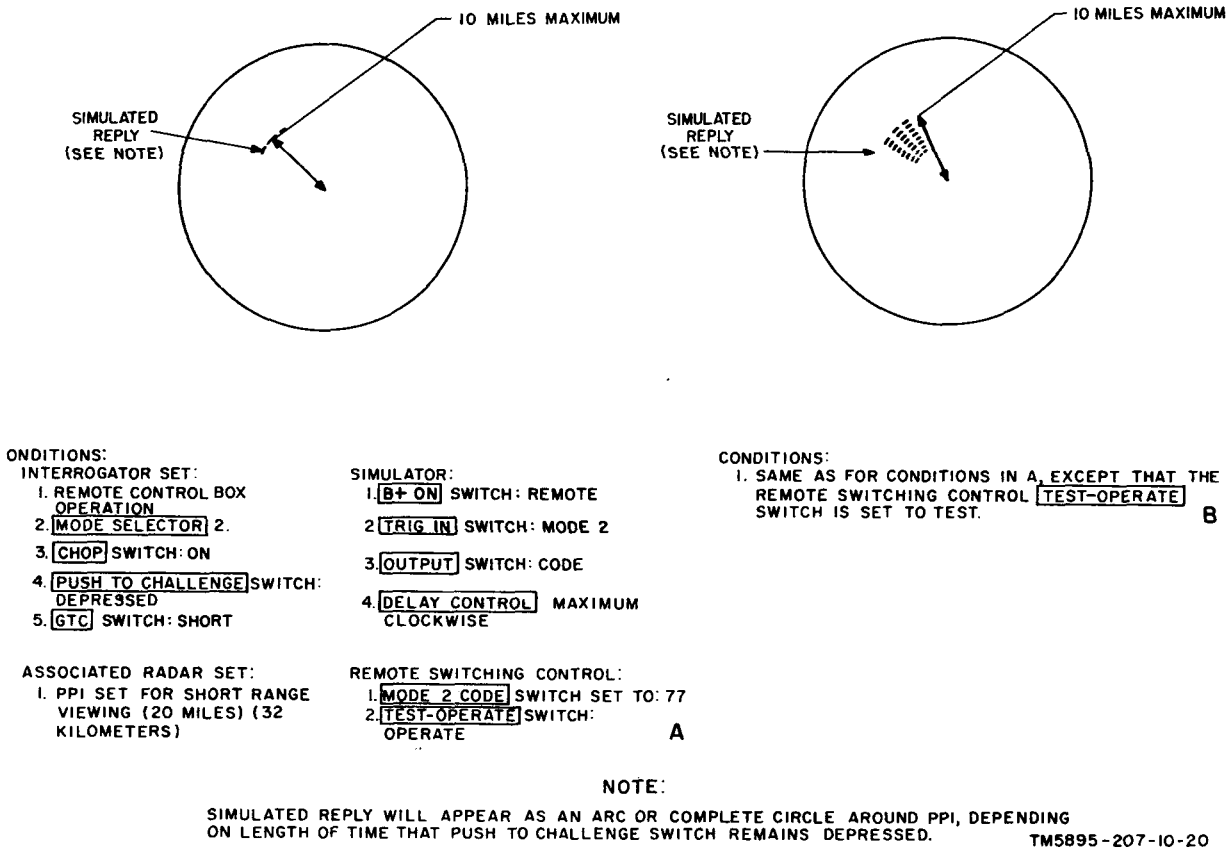


Figure 18. Simulated IFF reply signal, typical PPI presentations.

set for 5 and the inner knob should be set for 2.

(2) Normal interrogation of aircraft is accomplished by operation at the remote control box and remote switching control. The interrogator set will transmit interrogation signals in the same direction as the associated radar signal whenever the remote control box PUSH TO CHALLENGE switch is depressed, or the CHALLENGE switch on the coder-control unit is set to ON. The CHALLENGE switch on the coder-control unit will activate the IFF transmitter continuously if left in the ON position. Coding of the transmitted signal is actuated by the MODE SELECTOR switch on the remote control box. The MODE SELECTOR switch on the coder-control unit is used only during testing and troubleshooting. Decoding of the IFF reply signal is actuated by the applicable MODE CODE switch on the remote switching control. The MODE SELECTOR switch on the remote control box is interconnected with three MODE CODE switches on the remote switching control (mode interlock) and determines which one of the MODE CODE switches will establish the operating code of the decoder group.

(3) Operation from the coder-control unit (for testing and troubleshooting purposes) is possible if the coder-control unit LOCAL-REMOTE switch is set to LOCAL. The coder-control unit MODE SELECTOR switch is not interconnected with the remote switching control MODE CODE switches; therefore interrogation, when the coder-control unit LOCAL-REMOTE switch is set to LOCAL, is

possible if the MODE SELECTOR switch on the remote control box has the same setting as the MODE SELECTOR switch on the coder-control unit.

(4) The operator should use the CHALLENGE switch sparingly. One reason is to prevent overinterrogation of the transponder. The airborne transponder will decrease its reply rate when overinterrogated. This means that some interrogator sets will not receive IFF replies from the transponder. Another reason is to decrease the possibility of the enemy picking up and analyzing the RF signals from the airborne tranponders and interrogator sets. When an unknown target or echo appears on the associated radar PPI, the CHALLENGE switch should not be pressed until the radar beam approaches the target. The switch should be released when the radar beam has passed over the area of the target. If the target return is from a friendly aircraft, an IFF response should be seen above the target as seen on the radar PPI, (fig. 19). If no IFF reply is seen, the target should be challenged in the other two modes before it is considered to be unidentified or hostile.

b. Scope Presentation (fig. 19). The decoder group will generate a single video output pulse for each correctly coded video pulse train supplied to its input. Figure 19 illustrates how the output pulses from the decoder group are utilized. To enable specific targets located by radar to be distinguished as friend or unidentified and to permit more detailed information on the aircraft, the transponder may be set to reply to any of the three interrogator challenge modes. The transponder normally replies with a single coded pulse train to interrogation in any of the three modes. When the transponder is switched to reply in the IP (identification of .position) mode; it replies with two consecutive coded pulse trains for each MODE 1 or MODE 3 interrogation. In emergency operation, the transponder replies with four consecutive coded pulse trains. The resulting displays are shown in figure 19. Performance of the decoding equipment is so sensitive that up to four interleaved coded pulse trains will be accepted and still provide normal operation. Interleaved coded pulse trains are those in which the pulses of one coded pulse train are received in the intervals between the pulses of another coded pulse train. Interleaving of coded pulse trains is caused by replies from aircraft transponders displaced in range along the same azimuth. A single video output pulse will be generated for each of these interleaved trains as long as spacing from the trailing edge of one pulse to the leading edge of the following pulse is not less than 0.05 microsecond.

c. Receiver Gain. In the preoperational check, the RECEIVER GAIN control was adjusted to permit a simulated reply to be seen on the associated PPI. In actual interrogation, a slight readjustment may be necessary to obtain maximum performance of the receiving system. While observing the reply of a friendly aircraft, readjust the RECEIVER GAIN control for maximum signal intensity with minimum background noise. Relock the RECEIVER GAIN control and note the setting as this information can be used by the repairman when troubleshooting.

d. Associated Radar IFF Controls.

(1) *PRE TRIGGER switch.* A two-position switch on the front panel of the associated radar modulater unit selects the delay time in firing the radar set with respect to firing the interrogator set. In one position, the delay time is 37 microseconds; in the other, the delay time is 12.4 microseconds. This switch separates the IFF reply from the radar target echo as seen on the radar PPI. The correct setting of this switch is that which identifies the IFF reply from a specific target.

(2) *IFF Video Gain controls.* Two video gain controls are on the associated radar set. One control is on the local indicator (behind the CALIBRATION CONTROLS cover) marked IFF VIDEO. The other control is on the front panel of the remote PPI and marked IFF VIDEO GAIN. These controls regulate the intensity of the

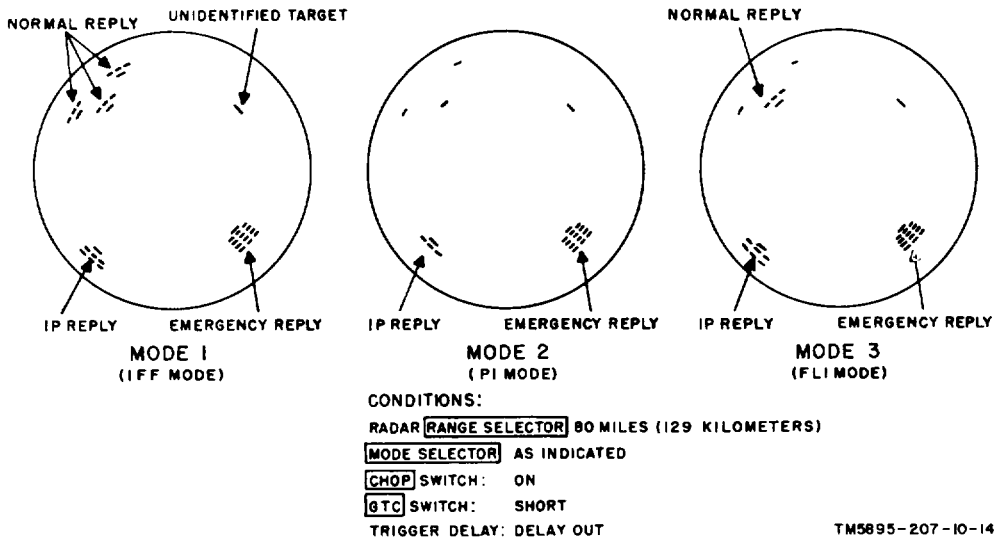


Figure 19. Scope presentation, effect of transponder replies upon PPI display.

IFF signals on their respective scopes. During operation, adjust these controls for the desired intensity or brightness of the IFF signals.

e. Chopping. If the remote control box CHOP switch is set to ON (coder control unit LOCAL-REMOTE switch set to REMOTE), a chopping circuit in the coder control unit is activated, and periodically interrupts the train of trigger pulses delivered to the transmitting system. This action will interrupt the transmitted challenge signals which in turn will interrupt the reply signals from the transponder. The IFF reply on the PPI will appear as a clearly defined series of dashes (forming an are) that appear slightly later in range than the associated radar signal (A, fig. 17). If the CHOP switch is set to OFF, the IFF reply will have the same brilliance, focus, and relative position, but will appear as a solid unbroken arc (B, fig. 17). The chopped IFF reply is easier to distinguish from radar echoes than the solid unbroken IFF replies.

f. GTC Selection. If the GTC switch on the remote control box (fig. 15) is set to SHORT, the receiver will have relatively high gain for IFF replies from transponders of nearby friendly aircraft. If the GTC switch is set to LONG, the receiver will have low gain for nearby aircraft. For normal operation, set the GTC switch to SHORT. The LONG position of the GTC switch eliminates false responses from nearby aircraft due to antenna side and back lobes. The effects of side and back lobe responses are shown in figure 20. The upper right-hand sector of the scope shows a normal response (track) from the main lobe; that is, the antenna is facing the aircraft. The short solid line shows the radar response; the chopped line indicates the IFF reply. When the antenna rotates through 90°, the side lobe is directed at the aircraft and a reply is received. However, the responses on the PPI indicate the track at 90° from its previous position. When the antenna rotates through 180° from its initial position, the back lobe will be directed at the target; when the antenna rotates through 2700, the other side lobe will be directed at the aircraft. The corresponding responses for the 180° and 270° positions of the antenna are shown at 180° and 270° from the original response on the PPI. The signals from the side and back lobes usually are weaker than the signals from the main lobe. To reduce the effect of side or back lobe responses on the associated radar set PPI, set the GTC switch to LONG.

g. Power Attenuator Application. In certain installations, spurious responses resulting from the IFF antenna side lobes will not be eliminated completely by

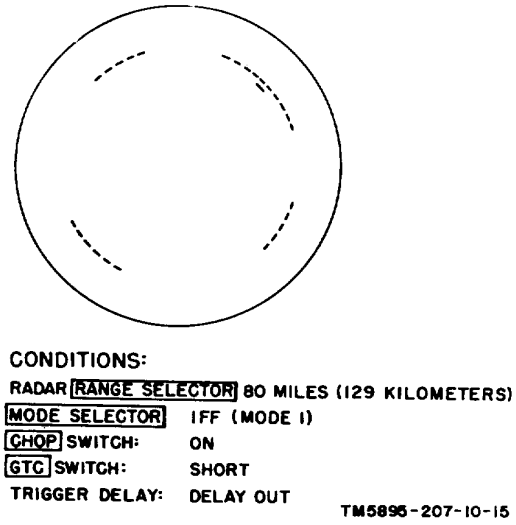


Figure 20. IFF reply, back lobing and side lobing effects.

operation of the GTC switch. When this condition exists, it may be necessary to use the power attenuator on the front panel of the receiver-transmitter (fig. 11). Proceed as follows:

(1) Set the receiver-transmitter POWER switch to OFF.
(2) Release the two captive screws that hold the power attenuator to the front panel of the receiver-transmitter and remove the power attenuator.
(3) Unscrew the dummy load from the power attenuator.
(4) Remove the antenna cable from the right-angle connector at J212 ANTENNA jack of the receiver-transmitter.
(5) Connect the power attenuator rear connector to the right-angle connector at J212 ANTENNA jack of the receiver-transmitter.
(6) Connect the antenna cable to the power attenuator left-hand side receptacle.
(7) Set the receiver-transmitter POWER switch to ON.

30. Stopping Procedure

Under normal conditions, the interrogator set will turn off whenever the associated radar set is turned off. To turn off the interrogator set with the associated radar set on, do so as follows:

a. Set the coder-control unit POWER switch to OFF (fig. 12).

b. Set the receiver-transmitter POWER switch (fig. 11) to OFF.

c. Set the simulator POWER switch (fig. 16) to OFF.

d. Set the video decoder POWER switch (fig. 13) to OFF.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. MAINTENANCE PROCEDURES

31. Scope of Operator's Maintenance

a. The following is a list of maintenance duties normally performed by the operator of Interrogator Set An/TPX-26. These procedures do not require special tools or test equipment.

b. Operator's maintenance for Interrogator Set AN/TPX-26 consists of the following:

(1) Preventive maintenance (par. 32).

(2) Cleaning air-conditioning filter (par. 33)

(3) Operational check (par. 35).

(4) Replacement of defective fuses (par. 36)

(5) Replacement of defective pilot lamps (par. 36).

(6) Checking cable connections.

(7) Checking interrogator set performance (pars. 38-41).

32. Preventive Maintenance

a. DA Form 11-238. Da Form 11-238. (figs. 21 and 22) is a preventive maintenance checklist to be used by the operator. Items not applicable to the interrogator set are lined out in the figures. References in the ITEM block in the figures are to paragraph that contain additional maintenance information pertinent to that particular item. Instructions for use of the form appear on the form.

b. Supplementary Maintenance Information. The information contained in this subparagraph is supplementary to DA Form 11-238. The item numbers refer to the ITEM numbers on the form.

Items	Maintenance procedure
2	Use a clean cloth ,to remove dust, dirt, moisture, and grease from all front panel controls. When possible, shut down the equipment so that loosened dirt will not be sucked into the filter by the blower (receiver-transmitter).
4	Follow the operational checklist (par. 35) to check for normal operation. Check the interrogator set performance (pars. 38-41).
11	Clean the air-conditioning filter, par. 33).

33. Cleaning Air-Conditioning Filter, Receiver-Transmitter

An air-conditioning filter is located behind the louver on the right side of the front panel of the receiver-transmitter. Usually, this air filter requires cleaning only once a month, but, under dusty conditions, it may require cleaning weekly. Clean the air filter, as directed in *a* through *g* below.

a. Remove the louver, with air filter attached, on the front panel of the receiver-transmitter by removing the four screws that secure it to the front panel.

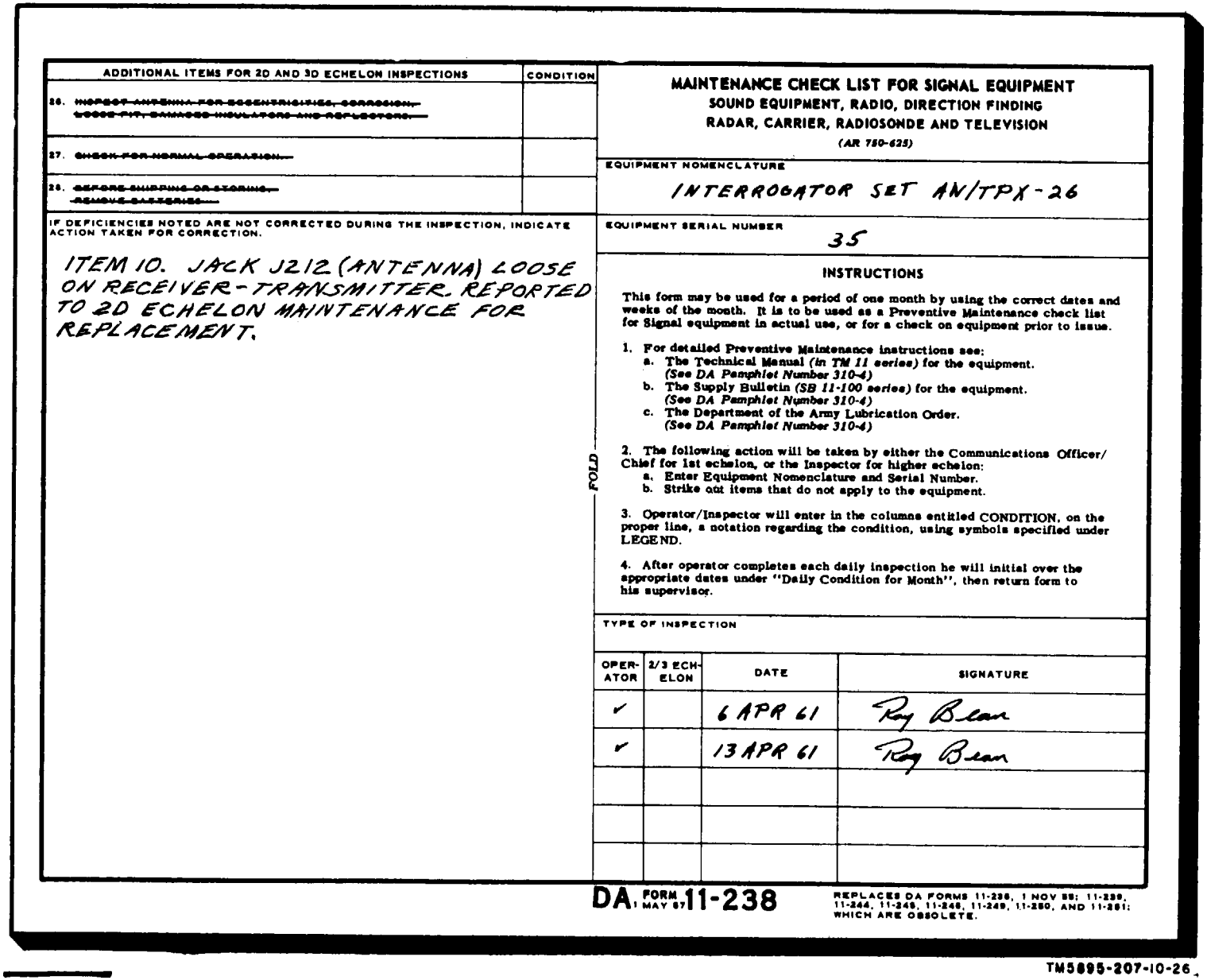
b. Detach the air filter from the louver by removing the four screws that hold it in place.

c. Clean the air filter by moving it back and forth in a solution of dishwashing compound and water.

d. Let the air filter dry.

e. Saturate the air filter with Oil, Lubricating, Aircraft Instruments (OAI). Let the excess oil drain off.

f. Attach the air filter to the louver with the four screws that were removed as instructed in b above. Be sure it is positioned so the direction or airflow, as



ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
26. ~~INSPECT ANTENNA FOR BROKEN INSULATORS, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.~~	
27. ~~CHECK FOR NORMAL OPERATION.~~	
28. ~~BEFORE SHIPPING OR STORING, REMOVE BATTERIES.~~	

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

ITEM 10. JACK J212 (ANTENNA) LOOSE ON RECEIVER-TRANSMITTER. REPORTED TO 2D ECHELON MAINTENANCE FOR REPLACEMENT.

MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT
SOUND EQUIPMENT, RADIO, DIRECTION FINDING
RADAR, CARRIER, RADIOSONDE AND TELEVISION
(AR 750-625)

EQUIPMENT NOMENCLATURE: INTERROGATOR SET AN/TPX-26

EQUIPMENT SERIAL NUMBER: 35

FOLD

INSTRUCTIONS

This form may be used for a period of one month by using the correct dates and weeks of the month. It is to be used as a Preventive Maintenance check list for Signal equipment in actual use, or for a check on equipment prior to issue.

1. For detailed Preventive Maintenance instructions see:
   a. The Technical Manual *(in TM 11 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   b. The Supply Bulletin *(SB 11-100 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   c. The Department of the Army Lubrication Order. *(See DA Pamphlet Number 310-4)*

2. The following action will be taken by either the Communications Officer/ Chief for 1st echelon, or the Inspector for higher echelon:
   a. Enter Equipment Nomenclature and Serial Number.
   b. Strike out items that do not apply to the equipment.

3. Operator/Inspector will enter in the columns entitled CONDITION, on the proper line, a notation regarding the condition, using symbols specified under LEGEND.

4. After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor.

TYPE OF INSPECTION

OPERATOR	2/3 ECHELON	DATE	SIGNATURE
✓		6 APR 61	Roy Bean
✓		13 APR 61	Roy Bean

DA FORM 1 MAY 57 11-238

REPLACES DA FORMS 11-238, 1 NOV 55; 11-239, 11-244, 11-245, 11-246, 11-249, 11-250, AND 11-251; WHICH ARE OBSOLETE.

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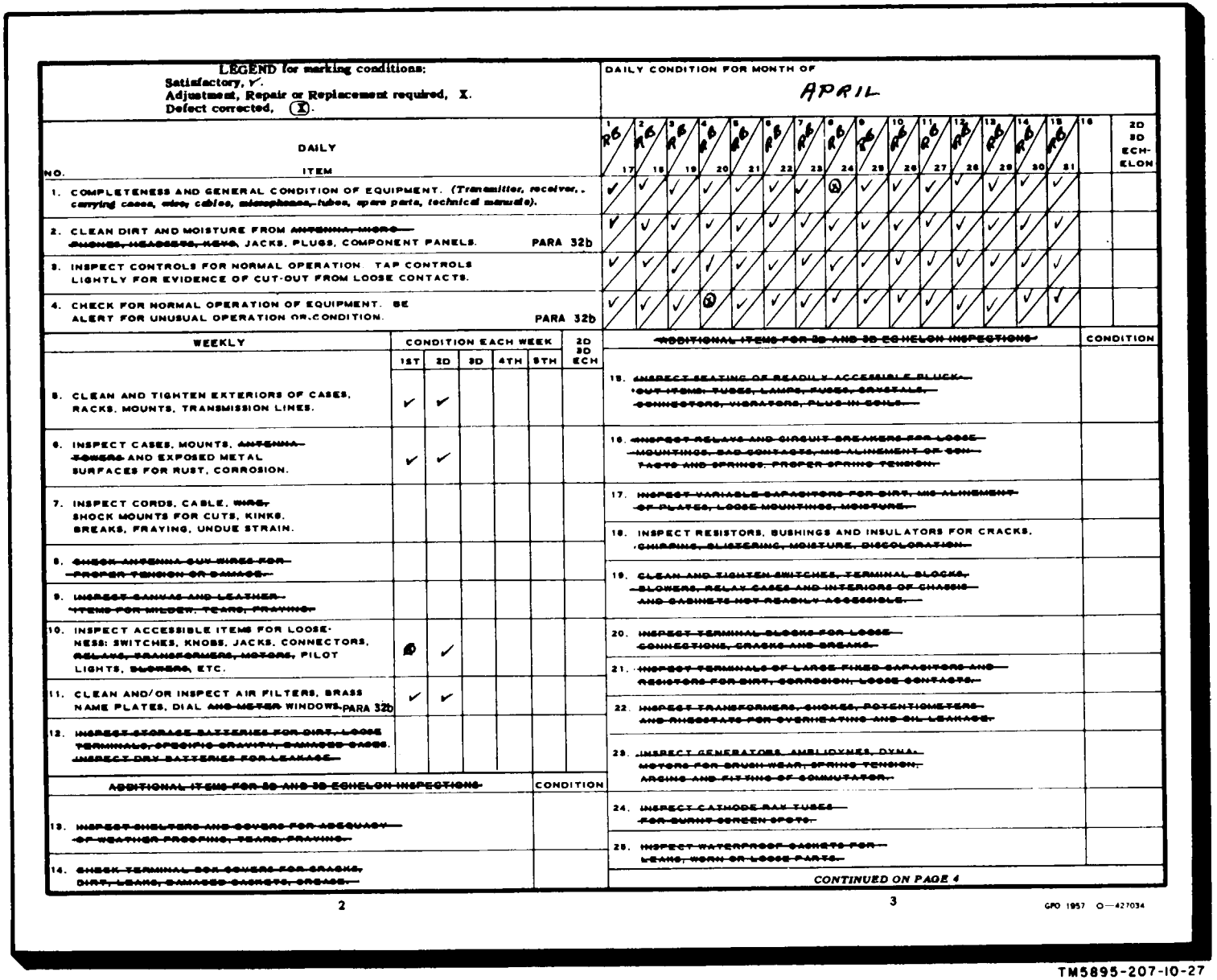
Figure 21. DA Form 11-238, pages 1 and 4.



LEGEND for marking conditions:
Satisfactory, ✓.
Adjustment, Repair or Replacement required, X.
Defect corrected, (X).

DAILY CONDITION FOR MONTH OF APRIL

NO.	DAILY ITEM	1 RG 17	2 RG 18	3 RB 19	4 RB 20	5 RB 21	6 RB 22	7 RB 23	8 RB 24	9 RB 25	10 RB 26	11 RB 27	12 RB 28	13 RB 29	14 RB 30	15 RB 31	16	2D 3D ECH-ELON
1.	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT. *(Transmitter, receiver, carrying cases, misc cables, microphones, tubes, spare parts, technical manuals).*	✓	✓	✓	✓	✓	✓	✓	Ⓧ	✓	✓	✓	✓	✓	✓	✓		
2.	CLEAN DIRT AND MOISTURE FROM ~~ANTENNAS, MICRO-PHONES, HEADSETS, KEYS~~, JACKS, PLUGS, COMPONENT PANELS. PARA 32b	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3.	INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4.	CHECK FOR NORMAL OPERATION OF EQUIPMENT. BE ALERT FOR UNUSUAL OPERATION OR CONDITION. PARA 32b	✓	✓	✓	Ⓧ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

WEEKLY	CONDITION EACH WEEK 1ST	2D	3D	4TH	5TH	2D 3D ECH
5. CLEAN AND TIGHTEN EXTERIORS OF CASES, RACKS, MOUNTS, TRANSMISSION LINES.	✓	✓				
6. INSPECT CASES, MOUNTS, ~~ANTENNA TOWERS~~ AND EXPOSED METAL SURFACES FOR RUST, CORROSION.	✓	✓				
7. INSPECT CORDS, CABLE, ~~WIRE~~, SHOCK MOUNTS FOR CUTS, KINKS, BREAKS, FRAYING, UNDUE STRAIN.						
8. ~~CHECK ANTENNA GUY WIRES FOR PROPER TENSION OR DAMAGE.~~						
9. ~~INSPECT CANVAS AND LEATHER ITEMS FOR MILDEW, TEARS, FRAYING.~~						
10. INSPECT ACCESSIBLE ITEMS FOR LOOSENESS: SWITCHES, KNOBS, JACKS, CONNECTORS, ~~RELAYS, TRANSFORMERS, MOTORS~~, PILOT LIGHTS, ~~BLOWERS~~, ETC.	Ⓧ	✓				
11. CLEAN AND/OR INSPECT AIR FILTERS, BRASS NAME PLATES, DIAL ~~AND METER~~ WINDOWS. PARA 32b	✓	✓				
12. ~~INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, SPECIFIC GRAVITY, DAMAGED CASES. INSPECT DRY BATTERIES FOR LEAKAGE.~~						

~~ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS~~	CONDITION
13. ~~INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHER PROOFING, TEARS, FRAYING.~~	
14. ~~CHECK TERMINAL BOX COVERS FOR CRACKS, DIRT, LEAKS, DAMAGED GASKETS, BREAKS.~~	

~~ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS~~	CONDITION
15. ~~INSPECT SEATING OF READILY ACCESSIBLE PLUG-IN UNITS: TUBES, LAMPS, FUSES, CRYSTALS, CONNECTORS, VIBRATORS, PLUG-IN COILS.~~	
16. ~~INSPECT RELAYS AND CIRCUIT BREAKERS FOR LOOSE MOUNTINGS, BAD CONTACTS, MIS-ALINEMENT OF CONTACTS AND SPRINGS, PROPER SPRING TENSION.~~	
17. ~~INSPECT VARIABLE CAPACITORS FOR DIRT, MIS-ALINEMENT OF PLATES, LOOSE MOUNTINGS, MOISTURE.~~	
18. INSPECT RESISTORS, BUSHINGS AND INSULATORS FOR CRACKS, ~~CHIPPING, GLAZING~~, MOISTURE, DISCOLORATION.	
19. ~~CLEAN AND TIGHTEN SWITCHES, TERMINAL BLOCKS, BLOWERS, RELAY CASES AND INTERIORS OF CHASSIS AND CABINETS NOT READILY ACCESSIBLE.~~	
20. ~~INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS.~~	
21. ~~INSPECT TERMINALS OF LARGE FIXED CAPACITORS AND RESISTORS FOR DIRT, CORROSION, LOOSE CONTACTS.~~	
22. ~~INSPECT TRANSFORMERS, CHOKES, POTENTIOMETERS AND RHEOSTATS FOR OVERHEATING AND OIL LEAKAGE.~~	
23. ~~INSPECT GENERATORS, AMPLIDYNES, DYNA-MOTORS FOR BRUSH WEAR, SPRING TENSION, ARCING AND FITTING OF COMMUTATOR.~~	
24. ~~INSPECT CATHODE RAY TUBES FOR BURNT SCREEN SPOTS.~~	
25. ~~INSPECT WATERPROOF GASKETS FOR LEAKS, WORN OR LOOSE PARTS.~~	

CONTINUED ON PAGE 4

2 3

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Figure 22. DA Form 1-238, pages 2 and 3.

indicated by arrows on the edge of the air filter, is correct.

g. Attach the louver, with air filter attached, to the front panel of the receiver-transmitter with the four screws that were removed as instructed in a above.

***Note*. If the air filter is the fiberglass type and the dust cannot be removed by rapping the air filter against a hard, flat surface or using a vacuum cleaner, replace it with a new element.**

34. Visual Inspection

a. When the equipment fails to perform properly, turn off power and check all the items listed below. *Do not check any item with the power on.*

(1) Incorrect settings of switches and controls.
(2) Loose cable connections and improperly mated connectors.
(3) Loose fuseholder caps.
(4) Improper seating of front panel on receiver-transmitter.

b. If none of the above troubles are evident, proceed to the operational checklist (par. 35).

35. Operational Checklist

a. General. The operational checklist will help the operator locate the trouble in the interrogator set. Follow the corrective measures to correct the trouble. If the suggested corrective measure does not clear the trouble, notify the radar mechanic. Place a tag on the interrogator set describing the set performance prior to failure, and list the corrective measures taken.

b. Procedure. Follow the items on the operational checklist in order. Perform the actions or check the conditions listed and check for the normal indications given. If the indications are normal, proceed to the next step. If the indications are not normal, perform the corrective measures. If the applicable corrective measure fails to remove the trouble or if the list states *Higher echelon maintenance is required*, troubleshooting by the radar mechanic is necessary.

***Note*. This procedure is written assuming that the associated radar set is operating and providing ac power for the interrogator set.**

c. Checklist.

Action or condition	Normal indication	Corrective measures
1. Turn all lamp dimmer controls fully counterclockwise, and set other switches and controls as follows:		
Receiver - transmitter POWER switch to OFF (fig. 11).		
Coder-control unit (fig. 12):		
POWER switch to OFF.		
CHALLENGE switch to OFF.		
CHOP switch to OFF.		
GTC switch to SHORT.		
LOCAL-REMOTE switch to LOCAL.		
MODE SELECTOR switch to 2 (PI).		
RECEIVER GAIN control to 5.		
Remote control box (fig. 15):		
GTC switch to SHORT.		
CHOP switch to OFF.		
MODE SELECTOR switch to 2.		
RECEIVER GAIN control' to 5.		
Simulator (fig. 16):		
POWER switch to OFF.		
B+ ON switch to REMOTE.		
TRIG IN switch to MODE 2.		
OUTPUT switch to CODE.		

Action or condition	Normal indication	Corrective measures
OUTPUT LEVEL control fully clockwise. DELAY control fully clockwise. Video decoder POWER switch to OFF (fig. 13). Remote switching control (flig. 14): OPERATE-TEST switch to OPERATE. MODE 2 CODE dual rotary switch to code 77. Associated radar set: Modulator PRE TRIGGER switch to 37. Local indicator IFF VIDEO control fully clockwise. Remote PPI IFF VIDEO GAIN control fully clockwise.		
2. Set receiver-transmitter POWER switch to ON.	Receiver-transmitter POWER indicator (fig. 11) lights after a slight time delay.	Check POWER and RELAY SUPPLY fuses on front panel of receiver-transmitter. Check POWER indicator lamp on front panel of receiver-transmitter. Check cable W708 (fig. 23) for tight connections.
	Coder-control unit RT POWER indicator (fig. 12) lights.	Check RT POWER indicator lamp on front panel of coder-control unit. Check cable W730 (fig. 23) for tight connections.
	Receiver-transmitter power motor starts to operate.	Higher echelon maintenance is required.
3. Set coder-control unit POWER switch to ON.	Coder-control unit POWER indicator lamp (fig. 11) lights.	Check CONTROL IND. POWER fuse on front panel of coder-control unit. Check power cables W737 and W708 (fig. 23) for tight connections.
4. Set simulator POWER switch to ON.		
5. Set video decoder POWER switch to ON.	Video decoder POWER indicator (fig. 13) lights.	Check 1.5 AMP fuse on front panel of video decoder. Check POWER indicator lamp on front panel of video decoder. Check power cable W737 for tight connection (fig. 23).
6. Set coder-control unit LOCAL-REMOTE switch to REMOTE.	RT POWER indicator (fig. 12) on the coder-control unit goes out; RT POWER indicator (fig. 15) on the remote control box lights.	Check RT POWER indicator lamp on the remote control box. Check remote control cable W706A or W706B (fig. 23) for tight connections.
7. Set remote control box CHOP switch to ON.		
8. Depress remote control box PUSH TO CHALLENGE button. *Note.* For testing purposes the CHALENGE switch on the coder-control unit may be set to ON in place of depressing the PUSH TO CHALLENGE button on the remote control box.	Receiver-transmitter and remote control box CHALLENGE indicators (fig. 11) light. A simulated reply signal appears on the associated radar PPI scope (fig. 18).	If only the receiver-transmitter CHALLENGE indicator lamp is not lighted, check the receiver-transmitter CHALLENGE indicator lamp. If only the remote control box CHALLENGE indicator lamp is not lighted, check the remote control box CHALLENGE indicator lamp, and cables W706A or W706B and' W730 (fig. 23) for tight connections

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Action or condition	Normal indication	Corrective measures
		If both CHALLENGE indicator lamps do not light but a simulated reply signal appears on the associated radar PPI, check cable W704 and T-connector E403 (fig. 23) for tight connections. Also, check the PLATE fuse on the front panel of the receiver-transmitter. If both CHALLENGE indicator lamps light but no simulated reply is seen on the associated radar PPI, check cables W1, W2, W731, W732, W733A or W733B, W734, W735, W736A or W736B, and T-connector E403 (fig. 23) for tight connections. If the simulated reply signal still does not appear, set the remote switching control TEST-OPERATE switch to TEST. *a.* If a pulse train (B, fig. 18) now appears, check to see that the remote switching control has been properly set to decode a mode 2, code 77 reply. *b.* If a pulse train does not appear, higher echelon maintenance is required. If both CHALLENGE indicator lamps do not light and no simulated reply is seen on the associated radar PPI, check cable W703 for tight connections.
9. Set the simulator B+ ON switch to LOCAL, and depress the remote control box PUSH TO CHALLENGE button. After observing normal indication, remove B+ ON switch to REMOTE.	Same as step 8 ----------	Higher echelon maintenance is required.
10. Set the simulator TRIG IN switch to PULSE, and depress remote control box PUSH TO CHALLENGE button. After observing normal indication, return the TRIG IN PULSE switch to MODE 2.	Same as step 8----------	Higher echelon maintenance is required.
11. Set the simulator OUTPUT switch to PULSE and the remote switching control TEST-OPERATE switch to TEST, and then depress the remote control box PUSH TO CHALLENGE button. After observing normal indication, return the OUTPUT switch to CODE and TEST-OPERATE switch to OPERATE.	Same as step 8 ----------	Higher echelon maintenance is required.
12. Set the IFF VIDEO control and/or IFF VIDEO GAIN control at associated radar set to position at which the simulated IFF reply signal and the radar echo signals on	IFF VIDEO control and/or IFF VIDEO GAIN control adjust for desired intensity.	Higher echelon maintenance is required.

Action or condition	Normal indication	Corrective measures
the PPI are approximately equal in intensity while depressing the remote control box PUSH TO CHAL LENGE button.		
13. Set the coder-control unit LOCAL-REMOTE switch to LOCAL while depressing remote control box PUSH TO CHALLENGE button.	Coder-control unit CHALLENGE indicator (fig. 11) lights, and remote control box CHALLENGE indicator (fig. 14) goes out.	Check coder-control unit CHALLENGE indicator lamp.

36. Repairs and Adjustments

a. Replacement of Interrogator Set Front Panel Fuses.

Caution: Fuses used in this equipment are of various ratings. Make sure the proper rated fuse as shown in the chart in (1) below is used in replacement of a defective fuse. Equipment may be damaged if the set is overfused.

(1) Front panel fuses. Interrogator set front panel fuses are listed in the following chart.

Fuse		Rating		Location	Fig. No.
		Volts	Ampere		
PLATE	F101	125	1%	Receiver-transmitter	11
RELAY SUPPLY	F102	250	3/8	Receiver-transmitter	11
POWER	F103	250	3	Receiver-transmitter	11
CONTROL IND. POWER	F401	250	3/4	Coder-control unit	12
	F201	250	1 1/2	Video decoder	13

(2) Replacement of defective fuse.

(a) Push the fuseholder cover in and counterclockwise to unlock.

(b) Pull out cover; the fuse will come with it.

(c) Remove the fuse and replace with new fuse.

(d) Replace fuseholder cover with new fuse inserted.

***Caution*: If the new fuse burns out immediately, higher echelon maintenance is required.**

b. Replacement of Interrogator Set Pilot Lamps. Pilot lamps are on the front panels of the receiver-transmitter (fig. 11), coder-control unit (fig. 12), remote control box (fig. 15), and the video decoder (fig. 13). Replace one of these lamps as directed in (1) through (5) below.

(1) Unscrew the glass jewel to expose the defective lamp.

(2) Press in on the lamp and then turn it counterclockwise to unlock.

(3) Pull out the defective lamp and replace with a new one.

(4) Push the new lamp in and then twist it clockwise to lock.

(5) Screw the glass jewel back into place.

Note. Leave the jewel lamp cover adjusted fully counterclockwise to allow light to shine through the jewel when the lamp lights.

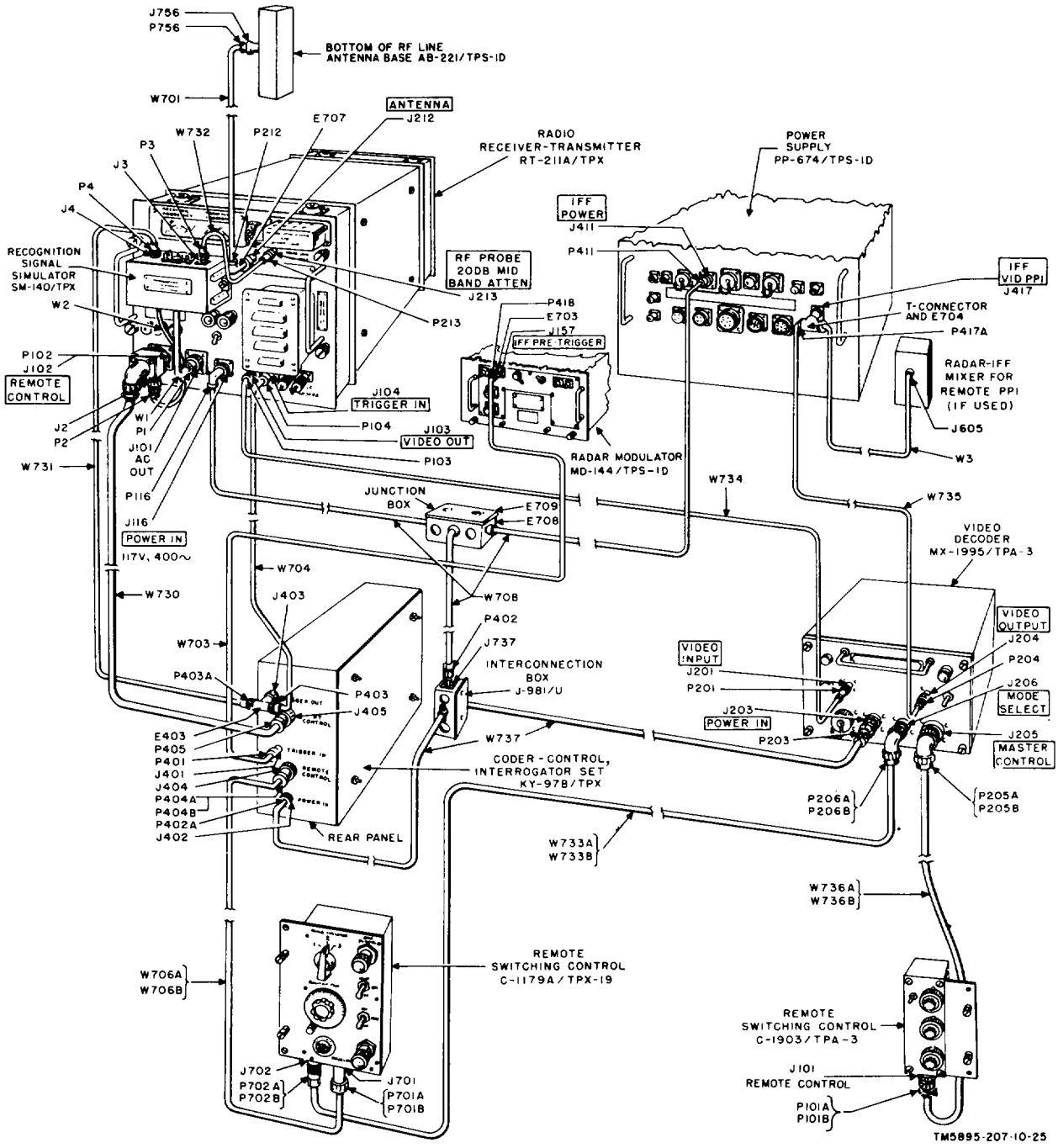

Figure 23. Interrogator set, simplified cabling diagram.

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Section II. PERFORMANCE TEST

37. General

The overall performance of the AN/TPX-26 can be checked by the use of the simulating system and CHALLENGE indicating lights. A simulated IFF signal reply seen on the associated radar PPI indicates that the simulating, coding, receiving, and decoding systems are operating. The CHALLENGE indicators will light to indicate that transmitter system is operating normally.

38. Transmitting System Performance Test

a. Set all controls and switches for operation (steps 1-7, par. 35c).

b. Depress the PUSH TO CHALLENGE button on the remote control box or set the CHALLENGE switch on the coder-decoder unit to ON. The CHALLENGE indicators on the receiver-transmitter unit and remote control box should light to indicate that the output power is normal.

Note. The CHALLENGE switch on the coder-control unit will activate the IFF transmitter continuously if left in the ON position. Therefore, set it to OFF whenever the test that requires the use of this switch is completed.

39. Receiving System Performance Test

a. Set all controls and switches for operation (steps 1-7, par. 35c).

b. Set the OPERATE-TEST switch on the remote switching control to TEST.

c. On the remote control box, rotate the RECEIVER GAIN control clockwise, then counterclockwise, while observing the radar PPI.
This action should cause a change in the intensity of the radar PPI sweep, indicating that the IFF receiving system is capable of amplifying IFF signals.

d. Reset the OPERATE-TEST switch to OPERATE and depress the PUSH TO CHALLENGE switch. Observe the radar ppi.

e. A chopped simulated IFF signal reply should be seen with the RECEIVER GAIN control set at midposition (A, fig. 18), if the outputs of the simulator and decoding system are normal. If the simulated IFF signal reply is seen only when the RECEIVER GAIN control is at or near maximum clockwise position, the gain of the receiver is below normal and higher echelon maintenance on the receiving system is required.

40. Decoding System Performance Test

a. Set all controls and switches for operation (steps 1-7, par. 35c).

b. Depress the PUSH TO CHALLENGE switch and observe the radar PPI. A chopped simulated IFF signal reply should be seen on the scope (A, fig. 18).

c. Reset the MODE 2 CODE switch on the remote switching control to any combination of inner and outer numbers, except 77. Again depress the PUSH TO CHALLENGE switch. No simulated reply should be seen on the scope. The simulated reply should reappear when the MODE 2 CODE switch is reset to code 77.

d. Set the MODE SELECTOR switch on the remote control box to 3, the TRIG IN switch on the simulator to pulse, and the MODE 3 CODE switch on the remote switching control to code 77. Depress the PUSH TO CHALLENGE switch.

e. A chopped simulated IFF reply should be seen on the radar PPI. Reset the MODE 3 CODE switch to any combinations of inner and outer dial settings, except 77, and again depress the PUSH TO CHALLENGE switch. No simulated reply should be seen.

f. The results obtained from the instructions in c, d and e above indicate that the decoding system is functioning and decoding code 77 (test code), the output of the simulating system when the OUTPUT switch on the simulator is set to code.

g. If no chopped simulated IFF signal is seen when the remote switching control MODE 2 CODE switch is set to 77, set the OPERATE TEST switch on the remote switching control to TEST. Depress the PUSH TO CHALLENGE switch and observe the radar PPI.

h. If a pulse train is seen (B, fig. 18), the decoding system is faulty and higher echelor maintenance is required.

41. Coding System Performance Test

a. Set all control and switches for operation (steps 1-7, par. 35a).

b. Depress the PUSH TO CHALLENGE switch and observe the radar PPI. A chopped simulated IFF signal should be seen and the CHALLENGE indicators should light.

c. If only the CHALLENGE indicators light, switch the TRIG IN switch on the simulator to PULSE and again depress the PUSH TO CHALLENGE switch. If both a simulated IFF signal reply is seen and the CHALLENGE indicators light, the fault is in the coding system and higher echelon maintenance is required.

d. If the CHALLENGE indicators light, but a simulated IFF reply signal is not seen on the PPI, the fault is in the simulator system. Higher echelon maintenance is required.

CHAPTER 4
AUXILIARY EQUIPMENT

Section I. CONTROL, REMOTE SWITCHING C-1903/TPA-3

42. General

An additional Control, Remote Switching C1903/TPA-3 (par. 21) may be used as an auxiliary remote switching control with Interrogator Set AN/TPX-26. When the interrogator set is operated with an auxiliary remote switching control, the remote switching control normally used with the interrogator set is referred to as the master remote switching control. All functions of the master remote switching control may be performed by the auxiliary remote switching control, except the remoting function (REM).

43. Purpose and Use of Auxiliary Remote Switching Control

The video decoder functions according to the code set into it by the remote switching control. The auxiliary remote switching control permits transferring control function from an operator at one position to an operator at another position. When MODE 1 CODE switch on the master remote switching control is set to REM, all functions of the master remote switching control, except the remoting function (REM), are transferred to the auxiliary remote switching control. An auxiliary remote switching control should be requisitioned if the possibility of a tactical or training need for this added facility exists.

Section II. RADAR SET CONTROL GROUP AN/FPA-14, INTRODUCTION

44. General

Description, operation, and operator's maintenance of Radar Set Control Group AN/FPA14 (figs. 24 and 25) are covered in paragraphs 44 through 55. Information contained in preceding chapters on Interrogator Set AN/ TPX-26 which is applicable to Radar Set Control Group AN/FPA-14 is referenced instead of being duplicated, except as necessary for clarification.

45. Purpose and Use

Radar Set Control Group AN/FPA-14 (figs. 24 and 25) provides remote-control facilities for Interrogator Set AN/TPX-26 when the interrogator set is used in conjunction with either Radar Set AN/FPS-71 or Radar Set AN/ FPS-75 and the radar set is integrated with the NIKE-HERCULES Weapons System. Radar Set Control Group An/FPA-14 performs the function of Control, Remote Switching C1179A/TPX-19 (which it replaces) in addition to switching the undecoded IFF video either to a remote Nike installation for decoding and display on the Nike indicator or to local associated Radar Set AN/FPS-71 or AN/ FPS-75 (hereafter referred to as the associated radar) for decoding and PPI display.

46. Technical Characteristics

Ac power requirements:	
Current----------	0.4 ampere.
Voltage ----------	6.3 volts.
Frequency ----------	400 cps, single-phase.
Dc power requirements:	
Current----------	3 ampere.
Voltage ----------	28 volts.

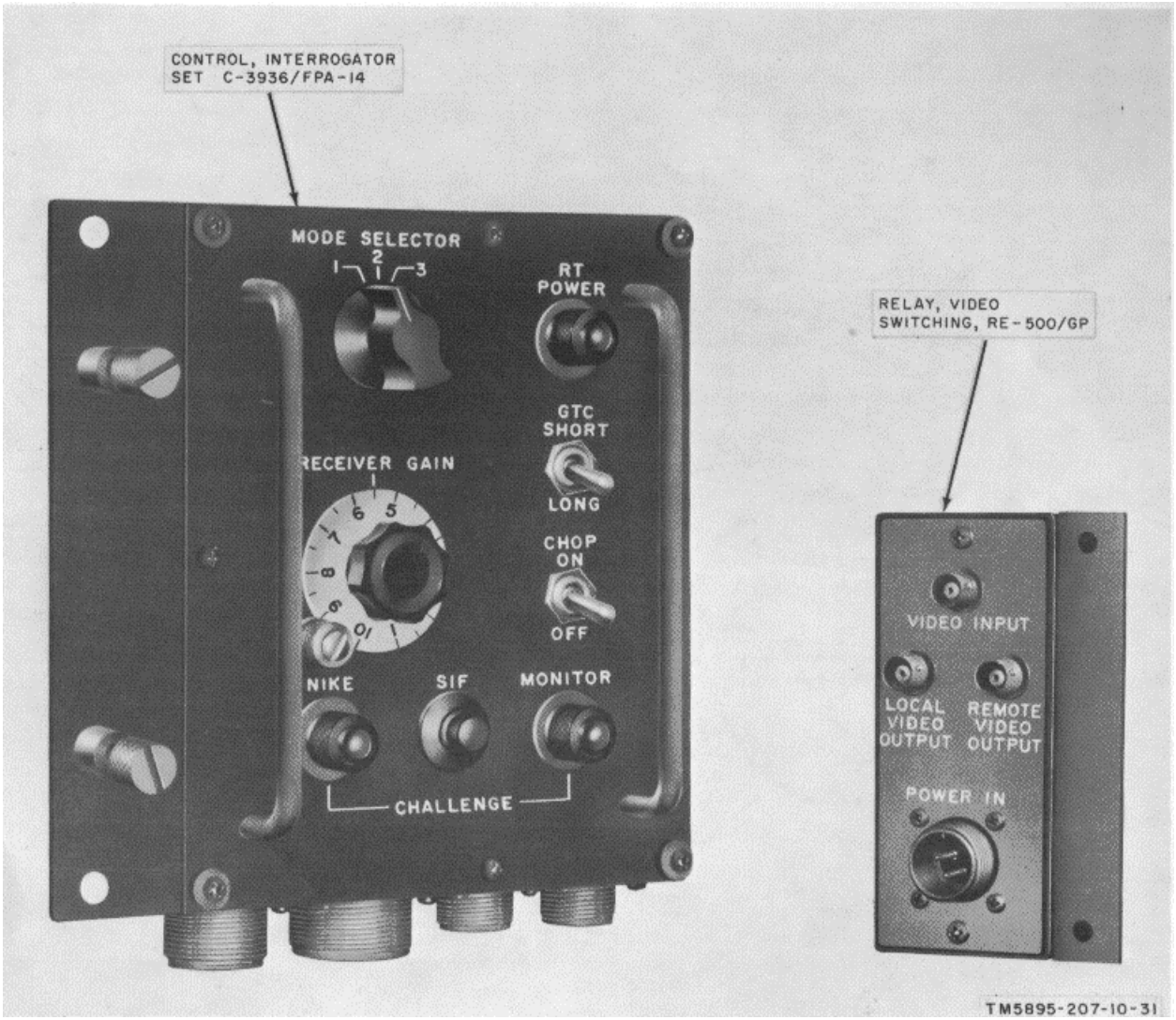

Figure 24. Radar Set Control Group AN/FPA-14, major components.

47. Table of Components
(figs. 24 and 25)

a. Equipment Components. The components of Radar Set Control Group AN/FPA-14, less running spares, are listed in the chart below. The chart also lists the weights and dimensions of the components.

Component	Quantity	Height (in.)	Depth (in.)	Width (in.)	Unit weight (lb)
Control, Interrogator Set C-3936/FPA-14	1	8 1/8	3	7 7/8	3
Relay, Video Switching RE-500/GP	1	4 15/16	2 9/16	2 15/16	1
Cable Assembly, Radio Frequency (W744)	1			250 ft	
Cable Assembly, Radio Frequency (W743)	1			15	
Cable Assembly, Power, Electrical CX-7541/U (W742).	1			250 ft	
Cable Assembly, Power, Electrical CX-7542/U (W741).	1			25 ft	

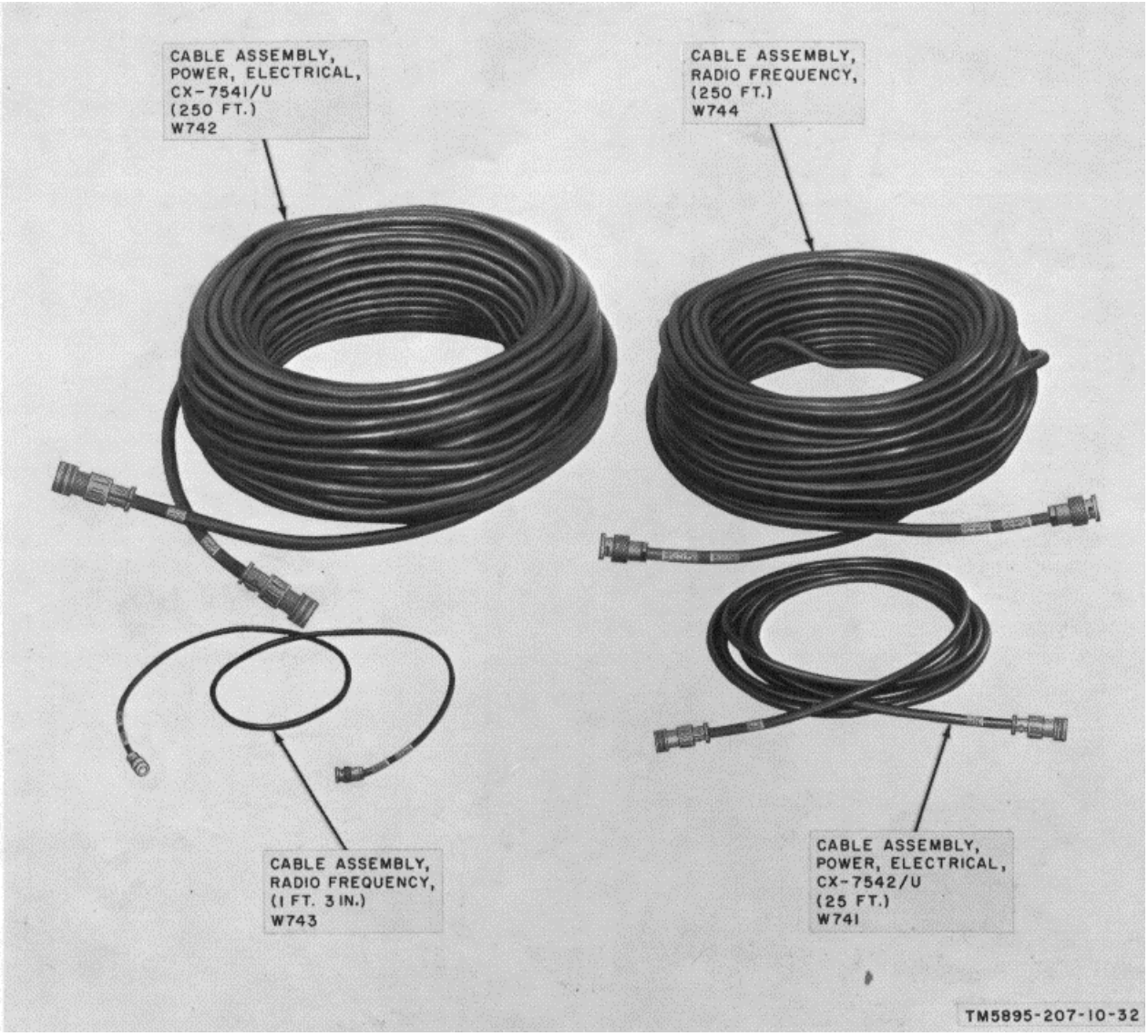

Figure 25. Radar Set Control Group AN/FPA-14, minor components.

b. Running Spares. The following is a list of running spares for Radar Set Control Group AN/FPA-14:

Federal Stock No.	Description	Unit of	Quantity
6240-15-7857	Lamp, Incandescent, MIL type MS-25237-328	Each	1
6240-15-7836	Lamp, Incandescent, MIL type MS-25237-327	Each	1

48. Common Names

A list of nomenclature and common name assignments for the components of the radar set control group is given below. A common name is given for each component.

Common name	Nomenclature
Control box	Control, Interrogator Set C-3936/ FPA-14.
Video relay	Relay, Video Switching RE-500/GP

49. Description of Major Components

Radar Set Control Group AN/FPA-14 consists of two major operating units: the control box and the video relay. Both units are described in a and b below.

a. Description of Control, Interrogator Set C-3936/FPA-14 (fig. 26).

The control box is a panel-chassis assembly mounted on a metal case. Controls and indicators are mounted on the front panel; all cable connectors are mounted on the bottom of the metal case. The control complement is as follows: a rotary MODE SELECTOR switch; two toggle switches, GTC SHORT-LONG and CHOP ON-OFF; a push-button SIF CHALLENGE switch; and a RECEIVER GAIN control. Two captive thumbscrews on the front panel secure the control box to a suitable mounting. The control box permits remote operation of the control functions of the interrogator set from a distance of 250 feet.

b. Description of Relay, Video Switching RE-500/GP (fig. 27).

The video relay consists of a connector panel chassis assembly mounted on a metal case. The four connectors on the panel are marked as follows: VIDEO INPUT (J801), LOCAL VIDEO OUTPUT (J802), REMOTE VIDEO OUTPUT (J803), and POWER IN tJ804). The front panel may be rotated 180° with respect to the metal case to allow either a left- or right-side mounting of the video relay.

50. Description of Minor Components (fig. 25)

The two RF cables and the two power cables constitute the minor components of Radar Set Control Group AN/FPA-14. The special features of each minor component are described in a-d below.

a. Cable Assembly, Radio Frequency (250 ft) (W744) is a coaxial cable with a male connector on each end. The cable connects from the REMOTE VIDEO OUTPUT jack on the video relay to Terminal Box J-170/FPS (alternate acquisition radar (AAR) terminal box) in the remote Nike control van for operation at distances up to 250 feet.

b. Cable Assembly, Radio Frequency (15 in.) (W743) is a coaxial cable with a male connector on each end. The cable connects from the LOCAL VIDEO OUTPUT jack on the video relay to the VIDEO INPUT jack on the video decoder of the associated interrogator set.

c. Cable Assembly, Power, Electrical CX7541/U (250 ft) (W742) is a 19-conductor cable with a straight male connector at one end and a straight female connector on the other end. The cable connects the control boi (J710) to the AAR terminal box in the remote Nike control van for operation at distances up to 250 feet.

d. Cable Assembly, Power, Electrical, CX7542/U (25 ft) (W741) is a three-conductor cable with a straight male connector at one end and a straight female connector at the other end. The cable connects from the control box (J709) to the video relay POWER IN jack.

51. Equipment Application

a. Radar Set Control Group AN/FPA-14 provides switching and remote control facilities for Interrogator Set AN/TPX-26 when the interrogator set is used in conjunction with the associated radar and a NIKE-HERCULES Weapons System. In these installations, Radar Set Control Group AN/FPA-14 (which replaces the remote control box in Interrogator -Set AN/-X-26) provides for the operation of Interrogator Set AN/TPX-26 from the associated radar or remotely from the NIKE-HERCULES Weapons System. The functions of the two major components of the control group are given in *b* and *c* below.

b. The video relay provides a means of switching undecoded IFF video from Interrogator Set AN/TPX-26 to either the NIKE

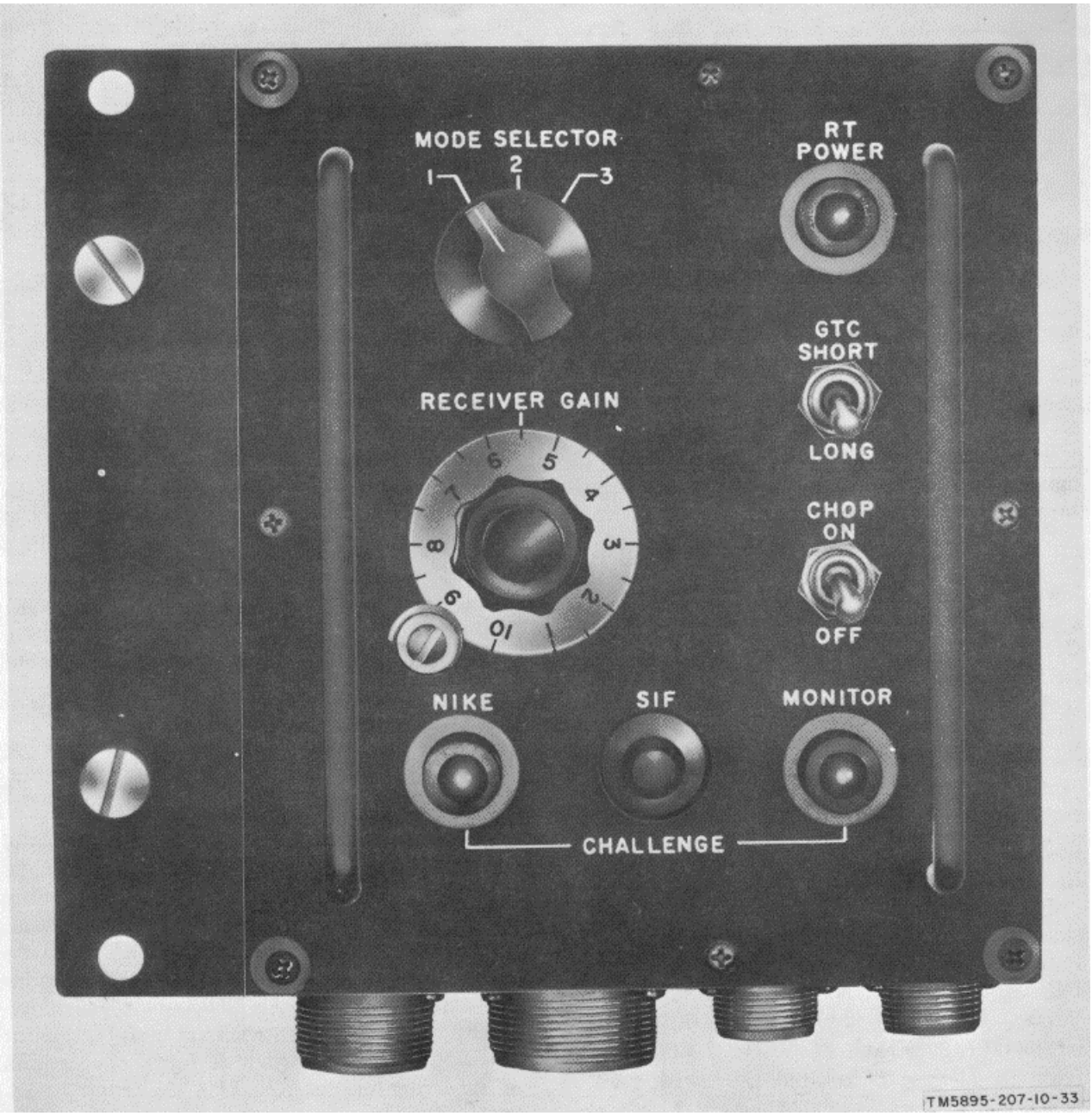

Figure 26. Control, Interrogator Set C-956/FPA-14.

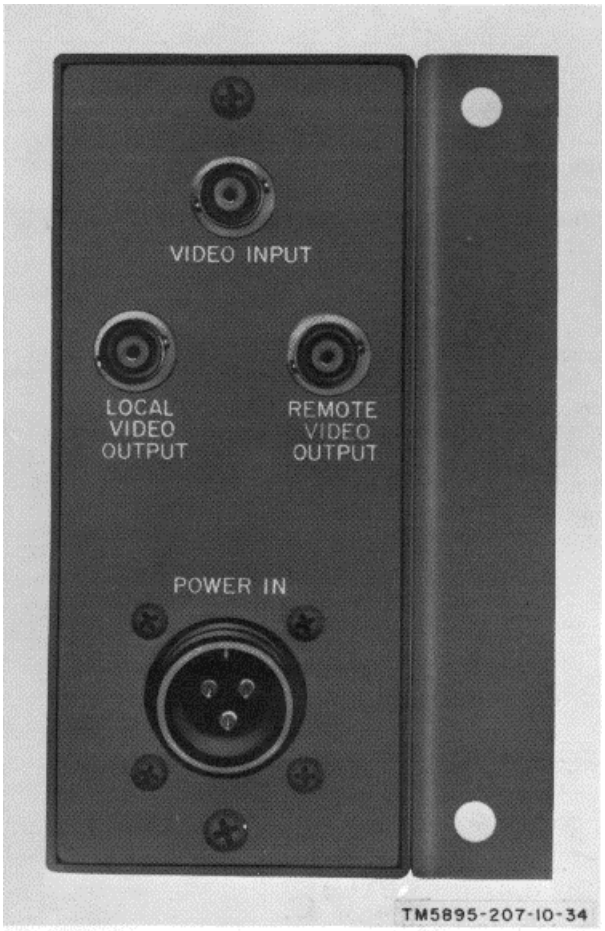

Figure 27. Relay, Video Switching RE-500/GP.

HERCULES Weapons System for decoding and display on the NIKE indicator, or to the Interrogator Set AN/TPX-26 video decoder located at the associated radar for decoding and indicator display. The video relay is operated from the NIKE-HERCULES Weapons System by the application of -28 volts dc at the AAR terminal box in the remote NIKE control van. This operating voltage is applied to the video relay via the AAR control box when the associated radar is selected and the CHALLENGE switch is pressed at the remote NIKE control van. Remote operation is thereby possible up to distances of 250 feet.

c. The control box provides the basic switches and controls for the operation of Interrogator Set AN/TPX-26 from the associated radar. The functions of the control box are similar to those formerly provided by Control, Remote Switching C-1179A/TPX-19. In addition, the control box contains relays, capable of being operated from the NIKE-HERCULES Weapons System, which disable the functions of each control, and transfer these functions from the associated radar to the remote NIKE installation. The control box NIKE CHALLENGE indicator, when illuminated, indicates that the challenge switch at the remote NIKE control van is being pressed and the control facilities have been transferred to the remote NIKE control van.

Section III. RADAR SET CONTROL GROUP AN/FPA-14, OPERATING INSTRUCTIONS

52. Operator's Controls and Indicators (fig. 28)

a. General. All controls and indicators on the control box front panel, except for the NIKE indicator, have the same function as the respective controls and indicators on the remote control box in Interrogator Set AN/ TPX-26. A functional explanation of the controls and indicators of the control box is given in b below. When illuminated, the NIKE CHALLENGE indicator on the control box indicates that the remote NIKE operator is pressing his CHALLENGE switch and has taken control of all functions associated with the control box. At this time, the controls on the control box are disabled.

b. Control Box, Controls and Indicators (fig. 28).

Control or indicator	Function
MODE SELECTOR switch[a]	Three-position rotary switch for selection of mode 1, 2, or 3 operation of the transmitting system.
RECEIVER GAIN control[a].....	Controls the gain of the receiving system in the receiver-transmitter.
SIF CHALLENGE switch	When pressed, SIF (selective identification feature) challenge signals are transmitted to aircraft.

Control or indicator	Function
	SW pos *Action*
GTC switch[a]	SHORT Provides relatively high receiver gain for nearby targets LONG Provides relatively low receiver gain for nearby targets.
CHOP switch[a]	ON SIF reply signal appears on the associated radar ppi as a clearly defined series of dashes forming an are (A, fig. 17). OFF SIF reply signal appears on associated radar ppi as an unbroken are (B, fig. 17).
RF POWER indicator lamp[a]	Lights (after a 60-second time delay) when ac power is applied to the receiver-transmitter. A mechanical rotating control around the lamp adjusts to provide the desired amount of light from the lamp.
MONITOR CHALLENGE indicator lamp[a]	Lights when the transmitter output is at normal level. Light goes out when output falls below normal. A mechanical rotating control around the lamp adjusts to provide the desired amount of light from the lamp.
NIKE CHALLENGE indicator lamp.	Lights when the remote Nike operator is pressing his challenge switch and has taken control of all functions of the control box. A mechanical rotating control around the lamp adjusts to provide the desired amount of light from the lamp.

[a]Control or indicator is functional only when the coder-control unit LOCAL-REMOTE switch is set to REMOTE at Interrogator Set AN/TPX-26.

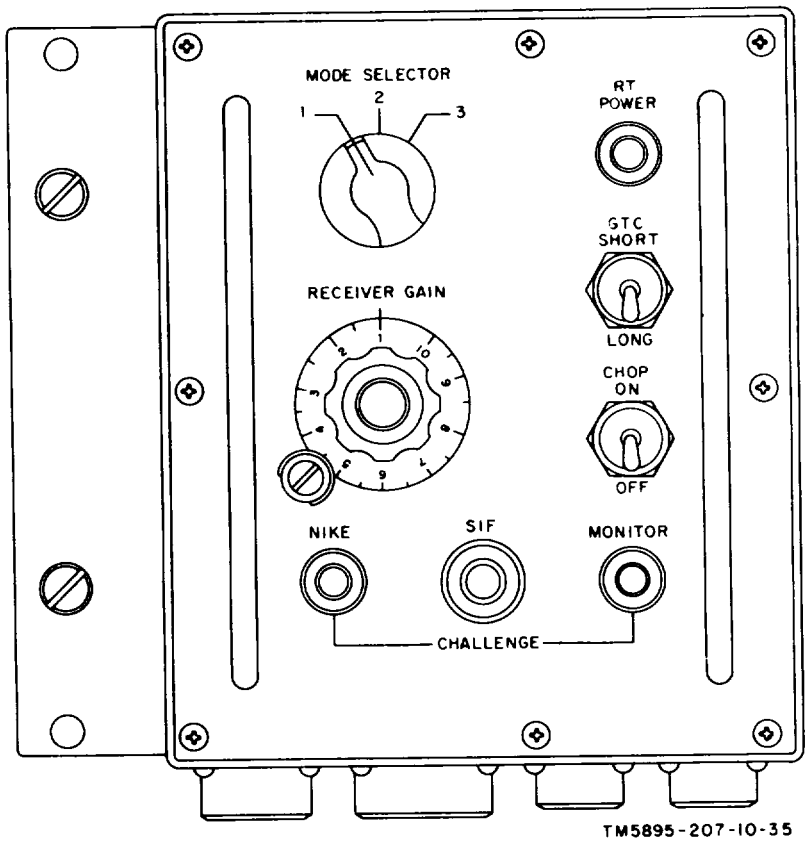

Figure 28. Control box, operating controls.

53. Operating Instructions

a. General. When used with Interrogator Set AN/TPX-26, Radar Set Control Group AN/FPA-14 provides the facilities for two modes of operation. In one mode of operation, the interrogator set is controlled from the control box, which is commonly mounted on the local indicator of the associated radar. In the second mode of operation, the interrogator set is integrated with a NIKE-HERCULES Weapons System, and is controlled from that system. In both modes, the interrogator set is operated as instructed in chapter 2 except as explained in b and c below.

b. Operation From Associated Radar. All control facilities of Radar Set Control Group AN/FPA-14 are utilized when the interrogator set is operated from the control box at the associated radar. Note that in this mode of operation the LOCAL-REMOTE switch on the interrogator set coder-control unit must be in the REMOTE position, and the NIKE-CHALLENGE indicator on the control box must not be illuminated. In this application, Control, Interrogator Set C-3936/FPA-14 (control box) performs the same functions as Control, Remote Switching C-1179A/TPX-19 (remote control box). Therefore, the operating instructions given in chapter 2 apply with the following exceptions:

(1) The remote control box CHALLENGE indicator and PUSH TO CHALLENGE switch are replaced by the control box MONITOR CHALLENGE indicator and SIF CHALLENGE switch respectively.

(2) References to the PRE TRIGGER SWITCH are not applicable. This switch has been removed from the front panel of the modulator that is used with Radar Sets AN/FPS-71 and AN/FPS-75.

c. Operation From NIKE-HERCULES Weapons System. When interrogator set control facilities are switched to the NIKE-HERCULES Weapons System, as indicated by the illumination of the NIKE CHALLENGE indicator on the control box, the controls on the control box are disabled. At this time, functions of the interrogator set which were controlled from the control box are controlled from similiar controls within the NIKE-HERCULES Weapons System control van. Note that in this mode of operation, the LOCAL-REMOTE switch on the coder control unit must be in the remote position, and the NAR-AAR switch in the NIKE-HERCULES Weapons System control van must be in the AAR position. The operating instructions given in chapter 2 apply to this mode of operation with the following exceptions:

(1) All references made to controls and indicators on the remote control box now apply to similar controls and indicators in the NIKE-HERCULES Weapons System control van.

(2) References to the PRE TRIGGER SWITCH are not applicable. This switch has been removed from the front panel of the modulator which is used with Radar Sets AN/FPS-71 and AN/FPS-75.

(3) In this mode of operation, undecoded IFF video is switched from the interrogator set to the NIKE-HERCULES Weapons System. Therefore, all references made to controls and indicators of the video decoder, remote switching control, or the associated radar plan position indicators now apply to similar controls and indicators within the NIKE-HERCULES Weapons System, which utilizes Interrogator Set AN/TPX-27.

Section IV. RADAR SET CONTROL GROUP AN/FPA-14, MAINTENANCE INSTRUCTIONS

54. General

Maintenance instructions for Interrogator Set AN/TPX-26 when Control, Remote Switching C-1179A/TPX-19 is replaced by Radar Set Control Group AN/FPA-14 are given in para

graph 55. In addition to covering maintenance of the interrogator set when it is integrated with and operated from either Radar Set AN/ FPS-71 or AN/FPS-75, paragraph 55 provides a performance check, including correction measures, of Radar Set Control Group AN/

FPS-14 when the interrogator set is operated from the NIKE-HERCULES Weapons System control van.

55. Maintenance Procedures

a. Radar Set Control AN/FPA-14 performs all the functions of Control, Remote Switching C-1179/TPX-19. Therefore, when the interrogator set is operated from the associated radar, the maintenance instructions given in chapter 3 apply with the following exceptions:

(1) The remote control box CHALLENGE indicator and PUSH TO CHALLENGE switch are replaced by the control box, MONITOR CHALLENGE indicator, and SIF CHALLENGE switch respectively.

(2) Substitute references to figure 28 and figure 29 for references to figure 15 and figure 23 respectively.

(3) Substitute the following for the fourth corrective measure in step 8 of the operational checklist (par. 35c): If both CHALLENGE indicator lamps light but no simulated reply is seen on the associated radar PPI, check cables W1, W2, W731, W732, W733B, and W734, W735, W736A or W736B, W743, and T-connector E403 (fig. 29), for tight connection., If the simulated replay signal still does not appear, set the remote switching control OPERATE-TEST switch to TEST.

b. The performance 'check presented below should be performed after step 13 of the operational checklist (par. 35c). These procedures will help the operator locate a trouble in the radar set control group, when the interrogator set is operated from the NIKE-HERCULES Weapons System control van.

Action or condition	Normal indication	Corrective measure
1. Set switches as follows: Coder-control unit (fig. 12): LOCAL-REMOTE switch to REMOTE NIKE-HERCULES Weapons System: NAR-AAR switch to AAR CHOP switch to ON GTC switch to SHORT MODE switch to 2 GAIN switch to midposition Decoder group set for mode 2, code 77 operation.	NIKE-HERCULES Weapons System receiver-transmitter power indicator lights.	Check indicator lamp. Check cable W742 (fig. 29) for tight connections.
Depress CHALLENGE switch at NIKE-HERCULES Weapons System.	Control box NIKE CHALLENGE indicator (fig. 28) lights.	Check NIKE-CHALLENGE indicator lamp (fig. 28). Check cable W742 (fig. 29) for tight connections.
	NIKE-HERCULES Weapons System CHALLENGE indicator lights.	Check indicator lamp. Check cable W742 (fig. 29) for tight connections.
	A simulated reply appears on the PPI indicator at the NIKE-HERCULES Weapons System.	Check cables W741, W742, and W744 (fig. 29) for tight connections.

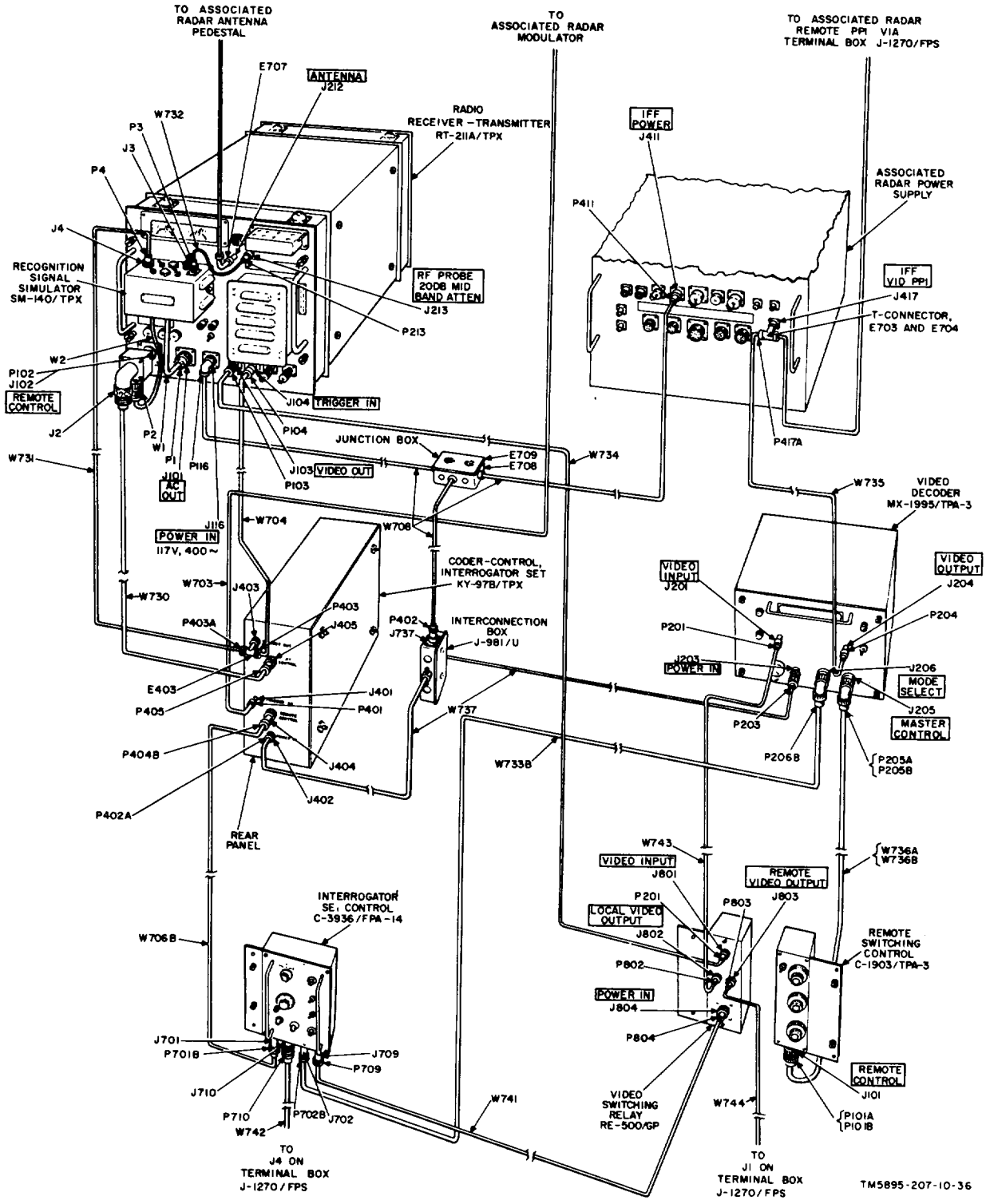

Figure 29. Radar Set Control Group AN/FPA-14, integrated with Interrogator Set AN/TPX-26, simplified cabling diagram.

CHAPTER 5
DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

56. Authority for Demolition

The demolition procedures given in paragraphs 57 through 59 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

57. Destruction Plan

If a destruction plan is not provided by higher authority, one should be prepared by the using organization. Personnel should be assigned to specific destruction tasks, so that minimum time will be required, if destruction of the interrogator set becomes necessary. All concerned personnel in the using organization should be familiar with all aspects of the complete destruction plan. The plan must be complete and adequate and easily carried out in the field and must provide for destruction as complete as available time, equipment, and personnel will permit under various circumstances. Because the time required for complete destruction may not always be available, the destruction plan must establish priorities, so that essential parts of the equipment will be destroyed in the order of their importance. Systematic destruction of the same important units of equipments of a given type will prevent the enemy from learning the important features of the equipment and also will insure against the assembly of a complete equipment by the enemy through cannibalization or combination of partially destroyed equipment. Adequate destruction of some units of the equipment should always be accomplished in preference to partial destruction of all the units. The methods of destruction (par. 59) will depend on the time allowed for the destruction to be carried out.

58. Destruction Priority

Destruction priority in the following order is suggested for the equipment.

a. Highest priority should be given to instruction literature, to operating units and spare parts that might disclose the operating frequency of the set, and to critical circuitry and spare parts of the receiver-transmitter and simulator.

(1) The frequency-sensitive parts of the interrogator set to be considered are: the IFF antenna, RF subassembly, IF subassembly, operating and spare frequency control crystals of the receiver-transmitter, and operating crystal in the simulator.

(2) The receiver-transmitter tuning dials on the RF subassembly are equal in destruction priority with the frequency-sensitive parts of the equipment. The same is true concerning the delay lines in the simulator.

b. The decoder group is next in order of priority. Destroy the decoder group in the following order.

(1) Instruction literature, which discloses code characteristics and details of equipment circuitry.

(2) The decoder.

(3) The remote switching control.

c. The coder-control unit is next in order of priority. It might disclose the mode spacing of interrogation pulses.

d. The portions of the receiver-transmitter and simulator not destroyed as instructed in a (1) above and interconnecting cables should be destroyed in this order after the coder-control unit.

59. Methods of Destruction

Any or all of the methods of destruction given below may be used in most instances when destruction of equipment is undertaken. The tactical situation also will determine how the destruction order will be carried out. However, in most cases, it is preferable to demolish completely some portions of the equipment rather than to destroy partially all the equipment units.

a. Smash. Smash all tubes, coils, panels, and mechanical linkage; use sledges, axes, pickaxes, hammers, crowbars, or other heavy tools.

b. Cut. Cut all cables, cords, and wiring (where possible); use axes, handaxes, or machetes.

Warnings:

1. The use of small arms fire to destroy the equipment should be avoided. Such fire exposes personnel to danger of ricochets.

2. Explosives should be used only on direct order of the officer in charge, under the supervision of personnel thoroughly trained to handle them.

c. Burn. Burn all technical manuals, cables, cords, and chassis; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

d. Bend. Bend indicator panels, subassembly chassis, and main chassis; use axes or heavy tools.

e. Explosives. If time is limited, place small charges of TNT in each component, spill gasoline or fuel oil under the unit, and ignite; use firearms, grenades, or TNT.

f. Disposal. Scatter or bury parts in foxholes, slit trenches, or other holes, or throw them into streams.

APPENDIX I

REFERENCES

Following is a list of applicable references available to the operator of Interrogator Set AN/TPX-26 and Radar Set Control Group AN/FPA-14:

DA Pamphlet 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 11-1162	Radar Surveillance Central AN/GSS-1
TM 11-1167-10	Operator's Manual, Radio Set AN/TPS-1D
TM 11-5840-201-10	Operator's Manual, Radar Sets AN/FPS-36 and AN/FPS-75
TM 11-5840-222-15	Operation and Maintenance, Radio Set AN/TPS-1G
TM 11-5840-238-10	Operator's Manual, Radar Set AN/FPS-56
TM 11-5840-252-10	Operator's Manual, Radar Set AN/FPS-71

APPENDIX II

BASIC ISSUE ITEMS LIST, INTERROGATOR SET AN/TPX-26

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

a. Source, Maintenance, and Recoverability Code. Not used.

b. Federal Stock Number. This column lists the 11-digit Federal stock number.

c. Designation by Model. Not used.

d. Description. Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

e. Unit of Issue. The unit of issue is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

f. Expendability. Nonexpendable items are indicated by NX.

g. Quantity Authorized. Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spares and Accessory Items," the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

h. Illustrations. The "Item No." column lists the reference symbols used for identification of the items in the illustration or text of the manual.

Section II. FUNCTIONAL PARTS LIST, AN/TPX-26

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
	5895-543-1665		INTERROGATOR SET AN/TPX-26		NX			
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TM 11-5895-207-10					
	5935-201-2411		ADAPTER, CABLE TO CONNECTOR: MIL type UG-274 A/U			1		E403
	5935-201-3090		ADAPTER, CONNECTOR: Sig dwg No. SC-D-12309			2		E703 E704
	5895-515-0338		BAG, COTTON DUCK CW-308/U: Rod Receptor part No. B-4101-1-1		NX	1		
	5995-173-8847		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: CX-2887/U 155 ft 6 in lg o/a			1		W706A
	5995-173-8845		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-2288/U: 25 ft 3 in lg o/a			1		W706B
	5995-577-3410		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4442/U: 4 ft 8-in lg o/e			1		W730
	5995-577-3413		CABLE ASSEMBLY, POWER ELECTRICAL CX-4443/U (17 ft 6 in lg o/a)			1		W733B
	5995-557-3411		CABLE ASSEBLY, POWER ELECTRICAL CX-443/U (155 ft 6 in lg o/a)			1		W733A
	5995-577-3412		CABLE ASSEMBLY, POW ER ELECTRICAL CX-444/U (155 ft 6 in lg o/a)			1		W736A
	5995-577-3414		CABLE ASSEMBLY, POWER ELECTRICAL CX-444/U (18 ft 6 in lg o/a)			1		W736B
	5895-543-1584		CABLE ASSEMBLY, POWER ELECTRICAL AND INTERCONNECTING BOX J-981/U			1		W7377
	5995-219-6749		CABLE ASSEBLY, SPECIAL PURPOSE ELECTRICAL: junction box w/3 cables 12 ft 5 in lg			1		W708
			o/a; Red Recepter part/dwg No. D461-117					
	5895-351-8205		CASE, STANDARDIZED COMPONENTS CY-951/TPX		NX	1		
	5895-629-9483		CODER-CONTROL, INTERROGATOR SET KY-97B/TPX		NX	1		
	5935-201-8151		CONNECTOR, ADAPTER UG-212C/U: Navy dwg No. RE49D349			1		E707
	5895-631-5705		CONTROL, REMOTE SWITCHING C-1179A/TPX-19		NX	1		
	5995-636-0124		CORD CG-278/U: 17 ft 3 in lg O/a			1		W701

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
			AN/TPX-26 (continued)					
	5995-284-7490		CORD CG-409B/U (4 ft 6 in lg o/a)			1		W704
	5995-548-8175		CORD CG-409E/U (8 in lg o/a)			1		W732
	5995-644-0393		CORD CG-409E/U (10 ft 2 in lg o/a)			1		W703
	5995-577-3407		CORD CG-426D/U (13 ft lg o/e)			1		W735
	5995-577-3409		CORD CG-426D/U (10 ft lg o/e)			1		W734
	5995-577-3408		CORD CG-426D/U (4 ft 8 in lg o/a)			1		W731
	5896-626-1911		DECODER GROUP AN/TPA-3		NX	1		
	5895-543-1567		RECEIVER-TRANSMITTER, RADIO RT-211A/TPX		NX	1		
	8130-246-6190		REEL, CABLE: Rad Receptor part No. C-461-401		NX	1		
	5895-629-9484		SIMULATOR, RECOGNITION SIGNAL SM-140/TPX		NX	1		
			CONTROL, REMOTE SWITCHING C-1179A/TPX-19					
	6240-155-8706		LAMP L-52: Mazda type No. 47			2		
	6210-299-3893		LENS, INDICATOR LIGHT: green; Dialco part No. 83B-11-2			1		0706
	6210-299-3892		LENS, INDICATOR LIGHT: amber; Dialco part No. 83B-11-3			1		0707
	5120-516-4242		WRENCH, SOCKET HEADSCREW: Bristol No. 6 spline drive; Bristol type No. 8, short arm		NX	1		
			RUNNING SPARES AND ACCESSORY ITEMS					
			INTERROGATOR SET AN/TPX-26					
	5995-538-9027		CABLE ASSEBLY, SPECIAL PURPOSE, ELECTRICAL CX-1601/TPX: test cable; 10 ft 2 in lg o/a			2		

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
			AN/TPX-26 (continued)					
	5935-201-8151		CONNECTOR, ADAPTER UG-212C/U: Navy dwg No. RE49D349			1		E707
	5995-644-0393		CORD CG-409E/U (10 ft 2 in)			1		W703
	5960-542-7068		ELECTRON TUBE: MIL type 2C41			3		
	5960-252-6274		ELECTRON TUBE: MIL type 2D21W			1		
	5960-114-4849		ELECTRON TUBE: MIL type 2X2A			1		
	5960-114-3834		ELECTRON TUBE: MIL type 3E29			1		
	5960-188-8557		ELECTRON TUBE: MIL type 6AN5			1		
	5960-114-3867		ELECTRON TUBE: JAN type 6AS6			2		
	5960-108-0263		ELECTRON TUBE: MIL type 6D4			2		
	5960-188-0880		ELECTRON TUBE: MIL type 6X4W			2		
	5960-166-7662		ELECTRON TUBE: JAN type 12AT7			2		
	5960-166-7663		ELECTRON TUBE: JAN type 12AU7			1		
	5960-166-7664		ELECTRON TUBE: MIL type :12AX7			1		
	5960-262-1357		ELECTRON TUBE: MIL type 5654/6AK5W			4		
	5960-193-5131		ELECTRON TUBE: MIL type 5656			1		
	5960-188-6593		ELECTRON TUBE: MIL type 5696			1		
	5960-262-0185		ELECTRON TUBE: MIL type 5726/6AL5W			1		
	5920-142-4826		FUSE, CARTRIDGE: MIL type F02GR375A			5		
	5920-284-9494		FUSE, CARTRIDGE: Littlefuse part No. 312.750			5		
	5920-280-9328		FUSE, CARTRIDGE: MIL type F02D1R50B			5		
	5920-010-6652		FUSE, CARTRIDGE: Littlefuse part No. 312003			5		
	5920-284-6787		FUSE, CARTRIDGE: MIL type F02G5ROOA			5		
	5970-047-4470		INSULATOR, BUSHING: Red Receptor part/dwg No. A460-1051			1		
	6240-155-8706		LAMP LM-52: GE part No. 47			1		
	5945-259-1198		RELAY, ARMATURE: single pole double throw; Potter Brum part No. 1112-3			1		
	5945-204-6587		RELAY, ARMATURE: double pole double throw; Sig dwg No. SM-B-78491			1		
	5945-642-5318		RELAY, THERMAL: single pole single throw Amperite part No. 115NO60T			1		
	5960-224-4868		SEMI-CONDUCTOR, DEVICE DIODE: MIL type 1N21B			1		
	5960-319-0674		SEMI-CONDUCTOR, DEVICE DIODE: germaniua type;Sig dwg No. SM-B-78931			1		

Section III. FUNCTIONAL PARTS LIST, SM-140/TPX

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
	5895-629-9184		SIMULATOR RECOGNITION SIGNAL SM-140/TPX					
			ITEMS COMPRISING 4N OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TM11-5895-207-10			2		
	Ord thru AGC		TECHNICAL MANUAL TM11-5895-208-10			2		
			SIMULATOR, RECOGNITION SIGNAL SM-140/TPX (BASIC COMPONENT)		NX	1		
			RUNNING SPARES AND ACCESSORY ITEMS					
	5960-261-8679		ELECTRON TUBE: MIL type 6021 (Replacement to be performed by 2nd echelon)			1		V1 thru V4
	5960-262-0132		ELECTRON TUBE: MIL type 6111 (Replacement to be performed. by 3rd echelon)			1		V5
	5920-227-9142		FUSE, CARTRIDGE: 1/4 amp; 250v; Buss type MDL-1/4			5		F1

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) (9) ILLUSTRATIONS FIGURE NO.	ITEM NO.
	5895-626-1911		DECODER GROUP AN/TPA-3: classified)		NX			
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TM11-5895-207-10			2		
	Ord thru AGC		TECHNICAL MANUAL TM11-5895-208-10			2		
	5895-626-3449		CONTROL, REMOTE SWITCHING C-1903/TPA-3		NX	1		
	5895-626-1912		DECODER, VIDEO MX-1995/TPA-3:		NX	1		
			CONTROL, REMOTE SWITCHING C-1903/TPA-3					
	5945-581-3949		RELAY, ARMATURE: Filters Inc. part No. 26SJ18-S			2		K101 K102
			DECODER, VIDEO MX-1995/TPA-3					
	5920-241-5150		CAP, ELECTRICAL: Buss type No. 9435-1/2			2		XF201A XF202A
	6910-195-8581		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CE53C200Q			2		C216 C238
	5960-188-3602		ELECTRON TUBE: MIL type 6BH6 Item Nos. V201, V202, V204 thru V207, V209			7		See desc column
	5960-537-3960		ELECTRON TUBE: MIL type 567WA			2		V203 V208
	5920-235-8375		FUSE, CARTRIDGE: MIL type FO1G1R50A			1		F201
	6240-155-8706		LAMP, INCANDESCENT: MIL type TS-47			1		DS201
	5945-577-2820		RELAY, ARMATURE: Packard-Bell part No. 103589			1		K201
	5945-577-2819		RELAY, ARMATURE: Packard-Bell part No. 103654			1		K202
	5960-264-3004		SHIELD, ELECTRON TUBE: JAN type TS103U02			7		
	5960-272-9094		SHIELD, ELECTRON TUBE: JAN type TS102U02			2		

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
			AN/TPA-3 (continued)					
			RUNNING SPARES AND ACCESSORY ITEMS					
			DECODER GROUP AN/TPA-3					
			DECODER, VIDEO MK-1995/TPA-3					
	5910-195-8581		CAPACITOR, FIXED, ELECTROLYTIC: MIL type CE53C200Q			1		
	5960-188-3602		ELECTRON TUBE: MIL type 6BH6 Item Nos. V201, V202, V204, thru V207, V209			2		See desc column
	5960-537-3960		ELECTRON TUBE: MIL type 5687WA			1		V203 V208
	5920-235-8375		FUSE, CARTRIDGE: MIL type FO1G1R50A			5		
	6240-155-8706		LAMP, INCANDESCENT: MIL type TS-47			1		
	5945-577-2820		RELAY, ARMATURE: Packard-Bell part No. 103589			1		
	5945-577-2819		RELAY, ARMATURE: Packard-Bell part No. 103654			1		

Section V. FUNCTIONAL PARTS LIST, MX-1376A/UPX-6

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) (9) ILLUSTRATIONS	
							FIGURE NO.	ITEM NO.
	5895-355-8516		FREQUENCY CONVERTER-TRANSMITTER SUB-ASSEMBLY MX-1376A/UPX					
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TM 11-5895-207-10			2		
			FREQUENCY CONVERTER-TRANSMITTER SUB-ASSEMBLY MX-1376A/UPX					
			(BASIC COMPONENT)		NX	1		
	5955-667-3072		CRYSTAL UNIT CR-23/U: with xtal holder HC-6/U: 37,77778 mc freq range			1		Y201B
	5955-667-3071		CRYSTAL UNIT QUARTZ: MIL type CR-23/U; 38.14815 mc			1		
	5955-667-3172		CRYSTAL UNIT CR-23/U: with xtal holder HC-6/U: 42,96296 mc freq range			1		Y202B
	5955-267-8630		CRYSTAL UNIT QUARTZ: MIL type CR-23/U; 42, 59259 mc			1		
	5960-542-7068		ELECTRON TUBE: MIL type 2C41 3					V205 thru V207
	5962-262-0167		ELECTRON TUBE: MIL type 12AT7WA					V201 V208
	5960-262-1357		ELECTRON TUBE: MIL type 5664/6AK5W			2		V202 V209
	5960-193-5131		ELECTRON TUBE: NIL type 5656			2		V203 V204
	5970-047-4470		INSULATOR, BUSHING: accom xtal CR202; Sig dwg SM-B-78776			1		
	5960-224-4868		SEMI-CONDUCTOR DEVICE, DIODE: MIL type 1N21B			1		CR202
	5960-262-0015		SHIELD, ELECTRON TUBE: MIL type TS102U01			2		E202 E209
	5960-264-3004		SHIELD, ELECTRON TUBE: MIL type TS103U02			4		E201 E203 E204 E208
			RUNNING SPARES AND ACCESSORY ITEMS					
			NO PARTS AUTHORIZED FOR STOCKAGE AT FIRST ECHELON					

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) (9) ILLUSTRATIONS	
							FIGURE NO.	ITEM NO.
	5895-537-3841		CODER-CONTROL, INTERROGATOR SET KY-97/TPX, KY-97A/TPX					
	5895-629-9483		CODER-CONTROL, INTERROGATOR SET KY-97B/TPX					
			COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TV 11-5895-207-10			2		
			CODER-CONTROL, INTERROGATOR SET KY-97/TPX; KY-97A/TPX (BASIC COMPONENT)		NX	1		
			CODER-CONTROL, INTERROGATOR SET KY-97B/TPX		NX	1		
	5960-111-3867		ELECTRON TUBE: MIL type 6AS7			1		V401
	5960-108-0263		ELECTRON TUBE: MIL type 6D4			2		V403 V407
	5960-188-0880		ELECTRON TUBE: MIL type 6X4W			1		V410
	5960-262-0167		ELECTRON TUBE: MIL type 12AT7WA			1		V402
	5960-166-7663		ELECTRON TUBE: MIL type 12AU7			1		V409
	5960-166-7664		ELECTRON TUBE: MIL type 12AX7			1		V408
	5960-188-6593		ELECTRON TUBE: MIL type 5696			2		V404 V405
	5960-262-0185		ELECTRON TUBE: MIL type 5726/6ALSW			1		V406
	5920-284-9494		FUSE, CARTRIDGE: Littlefuse part No. 312. 750			1		F401
	6240-155-8706		LAMP LM-52			3		E416 thru E418
	6210-643-0683		LENS, INDICATOR LIGHT: red; Dialco part No. 83B-11-			1		0402
	6210-299-3893		LENS, INDICATOR LIGHT: green, Dialco part No. 83B-11-2			1		0403
	5945-259-1198		RELAY, ARMATURE: Potter and Brumfield part No. SM112-3 with SM43 header			3		K401 thru K403
	6210-299-3892		LENS, INDICATOR LIGHT: amber; Dialco part No. 83B11-3			1		0404
	5960-262-0015		SHIELD. ELECTRON TUBE: MIL type TS102U01			4		E401 E404 E405 E406
	5960-272-9094		SHIELD. ELECTRON TUBE: MIL type TS102U02			5		E403 E407
								E411 E412 E413
	5960-295-7652		SHIELD, ELECTRON TUBE: MIL type TS102U03			1		E410
	5960-264-3004		SHIELD, ELECTRON TUBE: MIL type TS103U02			3		E402 E408 E409
			RUNNING SPARES AND ACCESSORY ITEMS					
			NO PARTS AUTHORIZED FOR STOCKAGE AT FIRST ECHELON.					

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL		(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
		1	2						
	5895-351-3297			RECEIVER-TRANSMITTER, RADIO RT-211/TPX		NX			
	5895-643-1567			RECEIVER-TRANSMITTER, RADIO RT-211A/TPX		NX			
				NOTE: Model Column 1 refers to RT-211/TPX; Column 2 refers to RT-211A/TPX					
				ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC			TECHNICAL MANUAL TM 11-5895-207-10			2		
	5895-524-5522	+		AMPLIFIER, INTERMEDIATE FREQUENCY A-761/TPX		NX	1		
	5895-543-1566		+	AMPLIFIER, INTERMEDIATE FREQUENCY AM-761A/TPX		NX	1		
	5920-244-5150	+	+	CAP, ELECTRICAL: cap for .fuseholder; S/8 in lg x 11/16 in die; Buss part			3		
				No. HKP-R cap for fuseholder					
	5820-692-6637	+		CASE, RECEIVER-TRANSMITTER CY-944/TPX: for RT-211/TPX, Sig dwg SM-D-78346		NX	1		
	5895-543-1569		+	CASE, RECEIVER-TRANSMITTER CY-944A/TPX: for RT-211A/TPX		NX	1		
	5895-546-3814	+	+	CASE, RECEIVER-TRANSMITTER: inner case easy for RT-211/TPX; Sig dwg					
				SM-D-78382 NX			1		
	5896-309-3292	+	+	DIRECTIONAL COUPLER CU-340/UPX-6		NX	1		
	5960-252-6274	+	+	ELECTRON TUBE: MIL type 2D21W			1		V112
	5960-114-4849	+	+	ELECTRON TUBE: MIL type 2X2A			1		V101
	5960-114-3834	+	+	ELECTRON TUBE: MIL type 3E29			3		V107
	5960-108-0263	+	+	ELECTRON TUBE: MIL type 6D4			3		V111 V114 V116
	5960-188-8559	+	+	ELECTRON TUBE: MIL type 6AN5			1		V108
	5960-188-0880	+	+	ELECTRON TUBE: MIL type 6X4W			5		V102 thru V106
	5960-262-0167	+	+	ELECTRON TUBE: MIL type 12AT7WA			3		V109 V113 V117
	5960-166-7663	+	+	ELECTRON TUBE': MIL type 12AU7			1		V115
	5960-262-0185	+	+	ELECTRON TUBE: MIL type 5726/6AL5W			1		V110

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL		(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) (9) ILLUSTRATIONS	
								FIGURE NO.	ITEM NO.
		1	2	RT-211/TPX; RT-211A/TPX (continued)					
	4130-174-0011	+	+	FILTER, AIR CONDITIONING: Sig dwg SR-B-78478			1		0112
	5895-355-8516	+	+	FREQUENCY CONVERTER-TRANSMITTER SUB-ASSEMBLY MX-1376A/UPX-6		NX	1		
	5920-142-4826	+	+	FUSE, CARTRIDGE: MIL type F02GR375A			1		F102
	5920-280-9328	+	+	FUSE, CARTRIDGE: MIL type F02D1R50B			1		F101
	5920-010-6652	+	+	FUSE, CARTRIDGE: MIL type F02G3ROOA			1		F103
	5920-284-6787	+	+	FUSE, CARTRIDGE: MIL type F02G5ROOA			2		F104 F105
	6240-155-8706	+	+	LAMP LM-52: Mazda No. 47			2		E120 E121
	6210-299-3893	+	+	LENS, INDICATOR LIGHT: Dialco part No. 83B-112			1		0110
	6210-643-0683	+	+	LENS, INDICATOR LIGHT: Dialco pert No. 20B-111			1		0111
	5905-322-4715	+	+	POWER ATTENUATOR AND DUMMY LOAD: resistive type; 990 to 1130 me freq response		NX	1		
				10 w input; 50 ohm input end output; Sig dwg SM-D-78434					
	5945-204-6587	+	+	RELAY, ARMATURE: Sig dwg SM-B-78491			1		K156
	5945-259-1198	+	+	RELAY, ARMATURE: Potter end Brum No. 1112-3			3		K151 K153 K154
	5945-642-5318	+	+	RELAY, THERMAL: Amperite No. 115N060T			1		K157
	5960-223-4598	+	+	RETAINER, ELECTRON TUBE: Timesfax type No. 3T hat			1		0101
	5960-378-3261	+	+	RETAINER, ELECTRON TUBE: ss; accom. tubes w/type No. T-16 envelopes; Timesfax type No. 5 hot			1		
	5960-262-0015	+	+	SHIELD, ELECTRON TUBE: JAN type TS102U1			2		E110 E161
	5960-272-9094	+	+	SHIELD, ELECTRON LUBE: JAN type TS102U02 Item Nos: E108 E111 E112 E114 E116 E151 E153 E584			8		See Dese Column
	5960-295-7652	+	+	SHIELD, ELECTRON TUBE: JAN type TS102U03			5		E102 thru E106
	5960-264-3004	+	+	SHIELD, ELECTRON TUBE: JAN type TS103U02			4		E109 E113 E115 E117

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL		(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
		1	2	RT-211/TPX; RT 211A/TPX (continued)					
	5960-265-0573	+	+	SHIELD, ELECTRON TUBE: JAN type TS103U03			1		E157
	5120-223-6995	+	+	WRENCH, SOCKET, HEAD SCREW: Bristolco type No. 8 short arm			1		
	5120-288-9084	+	+	WRENCH, SOCKET, HEAD SCREW: Bristolco type No. 4 short arm			1		
				AMPLIFIER, INTERMEDIATE FREQUENCY AM-761/TPX: AM-7614/TPX					
	5960-262-1357			ELECTRON TUBE: MIL type 5645/6AK5W			9 1		V301 thru V309
	5960-262-0185			ELECTRON TUBE: MIL type 5726/6AL5W			1		V310
	5999-644-5495			RETAINER, ELECTRICAL SHIELD: Cinch part No. 1093A-P3-2			10		A301
	5960-319-0674			SEMI-CONDUCTOR DEVICE, DIODE: Sig dug No. SM-B-78931			1		CR.303
	5960-262-0015			SHIELD, ELECTRON TUBE: JAN type TS102U01			10		E301 thru E310
				POWER ATTENUATOR AND DUMMYLOAD(FSN 5905-322-4715)					
	5840-264-7479			DUMMYLOAD, ELECTRICAL: Sig dwg SM-B-78574			1		Z502
				RUNNING, SPARES AND ACCESSORY ITEMS NO PARTS AUTHORIZED FOR STOCKAGE AT FIRST ECHELON LEVEL					

APPENDIX III

BASIC ISSUE ITEMS LIST, RADAR SET CONTROL GROUP AN/FPA-14

Section I. INTRODUCTION

Introductory information contained in section I, appendix II (Basic Issue Items List, Interrogator Set AN/TPX-26) is fully applicable to Radar Set Control Group AN/FPA-14.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINT AND RECOVER-ABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QTY AUTH-ORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ILLUSTRATIONS ITEM NO.
	5840-892-3226		RADAR SET CONTROL GROUP AN/FPA-14		NX			
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	5995-823-2637		CABLE ASSEMBLY, POWER, ELECTRICAL CX-7541/U (Not installed)			1		W742
	5995-823-2636		CABLE ASSEMBLY, POWER, ELECTRICAL CX-7542/U (Not installed)			1		W741
			CABLE ASSEMBLY, RADIO FREQUENCY: Hazeltine Corp No. 100836-18 ++L1Sd57-32 (Not installed)			1		W744
			CABLE ASSEMBLY, RADIO FREQUENCY: Hazeltine Corp No. 100836-19 ++L1Sd57-33 (Not installed)			1		W743
	5945-885-8508		CONTROL, INTERROGATOR SET C-3936/FPA-14 (Installed in equipment)			1		
			RUNNING SPARES AND ACCESSORY ITEMS					
			CONTROL, INTERROGATOR SET C-3936/FPA-14					
	6240-155-7857		LAMP, INCANDESCENT: MIL type MS25237-328			1		
	6240-155-7836		LAMP, INCANDESCENT: MIL type MS25237-327			1		

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:
- DASA (6)
- USASA (2)
- CNGB (1)
- Tech Stf, DA (1) except CSigO (14)
- Tech Stf Bd (1)
- USCONARC (5)
- USAARTYBD (1)
- USAARMBD (2)
- USAIB (1)
- USARADBD (2)
- USAAVNBD (1)
- USAABELCTBD (1)
- USAATBD (1)
- ARADCOM (2)
- ARADCOM Rgn (2)
- OS Maj Comd (3)
- OS Base Comd (2)
- LOGCOMD (2)
- MDW (1)
- Armies (2)
- Corps (2)
- Instl (2)
- Ft Monmouth (63)
- USATC AD (2)
- USATC Armor (2)
- USATC Engr (2)
- USATC Inf (2)
- USATC FA (2)
- USAOMC (3)
- Svc Colleges (2)
- Br Svc Sch (2)
- GENDEP (2) except Atlanta GENDEP (None)
- Sig Sec, GENDEP (5)
- Sig Dep (12)
- WRAMC (1)
- USA Trans Tml Comd (1)
- Army Tml (1)
- POE (1)
- OSA (1)
- USAEPG (2)
- AFIP (1)
- AMS (1)
- Army Pictorial Cen (2)
- EMC (1)

Yuma Test Sta (2)	11-557
USACA (3)	11-587
USASSA (20)	11-592
USASSAMWO (1)	11-597
USASEA (1)	44-2
USARCARIB Sig Agcy (1)	44-12
USA Sig Msl Spt Agcy (13)	44-15
Sig Fld Maint Shops (3)	44-16
USA Corps (3)	44-35
Def Log Svc Cen (1)	4436
JBUSMC (2)	4437
1st GM Bde (2)	44-86
Units org under fol TOE (2 copies each):	44-86
9-47	44-102
9-87	44-112
9-227	44-236
9-377	44-435
9-500 (AA-AC)	44-436
9-510 (FA)	44-437
11-5	44-445
11-7	44-446
11-16	44-447
11-57	44-448
11-96	44-535
11-97	44-536
11-98	44-537
11-117	44-544
11-155	44-645
11-157	44-546
11-500 (AA-AE, RM-RT)	44-547
11-556	44-548

NG: TOE 44-445 (4); 44-446, 44-447 (1); 44-545; (4); 44-546, 44-547 (1).
USAR: None.
For explanation of abbreviations used, see AR 320-50.

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