

TM 11-5895-217-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL
MAINTENANCE MANUAL

TRANSPONDER SET AN/APX-44

This copy is a reprint which includes current
pages from Changes 3 and 4.

HEADQUARTERS, DEPARTMENT OF THE ARMY

7 MAY 1963

Change }
No. 4 }

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington, D. C., 31 August 1973

**Operator and Organizational Maintenance Manual
Including Repair Parts List
TRANSPONDER SETS AN/APX-44 AND
AN/APX-44B**

TM 11-5895-217-12, 7 May 1963, is changed as follows:

Page 3, paragraph 2. Delete paragraph 2 and substitute:

2. 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.

Paragraph 3. Delete paragraph 3 and substitute:

3. 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 pre-

scribed 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).

After paragraph 3 add:

3.1. Reporting of Errors

Report 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-C, Fort Monmouth, NJ 07703.

Page 4, paragraph 6.

Change title to: Components and Dimensions of Transponder Set AN/APX-44

After paragraph 6 add:

6.1. Items Comprising an Operable Equipment

FSN	Qty	Nomenclature, part No., and mfr code	Usable on code
5895-686-7772		Transponder Set AN/APX-44	
5895-926-2509		Transponder Set AN/APX-44B	

NOTE

The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in

6.1. Items Comprising an Operable Equipment-Continued

<i>FSN</i>	<i>Qty</i>	<i>Nomenclature, part No., and mfr code</i>	<i>Usable on code</i>
		SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc. NOTE In usable on code column, number 1 refers to AN/APX-44; number 2 refers to AN/APX-44B (Serial Nos 1 thru 500 on Contract DA 28-043-AMC-01947 (E)); number 3 refers to AN/APX-44B (Serial Nos 501 and subsequent on Contract DA 28-043-AMC-01947 (E)).	
5895-686-7626	1	Antenna AT-884/APX-44	1,2,3
5895-681-9868	1	Control, Transponder Set C-2714/APX-44	1,2,3
5895-677-1982	1	Mounting MT-2100/APX-44 (used on Fixed Wing Aircraft only, no longer to be procured)	1
5895-944-9271	1	Mounting MT-2100B/APX-44; (Shall be used on either Fixed or Rotary Wing Aircraft)	1,2,3
5895-701-2198	1	Receiver-Transmitter Radar RT-494/APX-44: 97449-100; 65597	1
5895-701-2198	1	Receiver-Transmitter Radar RT-494B/APX-44: 97449-301 ; 65597	2,3

Page 30, appendix III. Delete appendix III in its entirety.

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Distribution:

To be distributed in accordance with DA Form 12-36, (qty rqr block No. 70) Organizational maintenance requirements for AN/APX-44.

Changes in force: C 3

TM 11-5895-217-12
*C 3

CHANGE }
No. 3 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 26 September 1967

**Operator and Organizational Maintenance Manual
Including Repair Parts List
TRANSPONDER SETS AN/APX-44 AND AN/APX-44B**

TM 11-5895-217-12, 7 May 1963, is changed as indicated so that the manual also applies to the following equipment:

<i>Nomenclature</i>	<i>Order No.</i>	<i>Serial No.</i>
Transponder Set AN/APX-44B	FR 28-043-P6-22095(E)	1 through 999

The title of the manual is changed as shown above.

Page 3. Make the following changes: Chapter 1, below the title. Add (as added C1, 7 Sep 66):

Note. Transponder Set AN/APX-44B is similar to Transponder Set AN/APX-44 except for rf interference filter 14S399 (FSN 5915-858-8373) and low pass filter 66D13764 (FSN 5915-947-3159). The filters are supplied only with Transponder Set AN/APX-44B on Order No. FR28-043-P6-22095(E). Information in this manual applies to both sets unless otherwise specified.

*This change supersedes C1, 7 September 1966, and C2, 7 October 1966.

Paragraph 2. Delete and substitute:

2. 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 the equipment.

Paragraph 3. Make the following changes:

Subparagraph *b*, line 5. Change "NAVSANDA" to NAVSUP.

Subparagraph *c*. Delete and substitute:

c. Reporting of Equipment Manual Improvements. Report 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 DA Publications) and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AD, Fort Monmouth, N.J. 07703.

Page 4, paragraph 6c, chart. Add at the end of the chart (as added by C1, 7 Sep 66).

Components	Dimensions (in.)			Unit Weight
	Height	Depth	Width	
Rf interference filter				
14S399 (AN/APX-44B only)	1-1/8	1-7/32	2-1/32
Low pass filter 66D13764				
(AN/APX-44B only)	7-7/32

Page 5, paragraph 8a, line 5 (as changed by C1, 7 Sep 66). After "AT-884/APX-44" add: (Rf interference filter 14S399 and low pass filter 66D13764 are supplied as minor components of Transponder Set AN/APX-44B).

Page 6. Add paragraph 12.1 after paragraph 12 (as added by C1, 7 Sep 66).

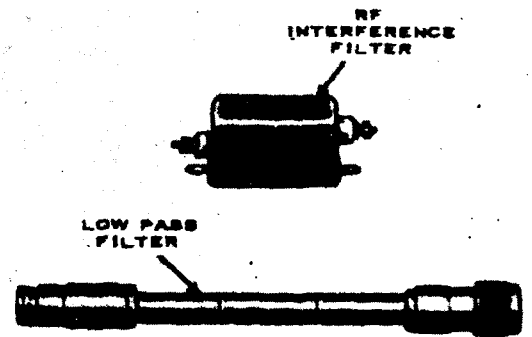
12.1. Description of Minor Components, Transponder Set AN/APX-44B. (fig. 5.1)

The minor components of Transponder Set AN/APX-44B are described below.

a. Low pass filter 66D13764 is a coaxial type filter installed in the coaxial cable run between the ANTENNA receptacle on the receiver-transmitter and the receptacle on the antenna to reduce harmonic radiation.

b. Rf interference filter 14S399 is installed in the primary dc input line to the receiver-transmitter to reduce the rf output to the dc power source.

Page 7. Add figure 5.1 after figure 5 (as added by C1, 7 Sep 66).



TM 808-217-13-C1

Figure 5.1.

Minor components, Transponder Set AN/APX-44B.

Page 7, paragraph 15a. After the second sentence add (as added by C2, 7 Oct 66): (For transponder sets modified by modification work order MWO 11-5895-217-30/3 and transponder sets procured on Order FR 28-043-P6-22095 (E) bearing serial numbers 1 through 1,042, and Order FR 28-043-P6-22859 (E) bearing serial numbers 1 through 500, the receiver-transmitter contains a three-pulse sidelobe suppression circuit which adds a third pulse between the two identical pulses as a sidelobe suppression control pulse. The three-pulse system transponder sets will function with either the two-pulse or three-pulse interrogation systems).

Page 8. Add paragraph 16.1 after paragraph 16 (as added by C1, 7 Sep 66 and C2, 7 Oct 66):

16.1. Differences in Models

Transponder Set AN/APX-44B differs from the AN/APX-44 as follows:

a. Receiver-Transmitter, Radar RT-494B/APX-44B contains a transient suppressor circuit. Interchangeability of the RT-494B/APX-44 and RT-494B/APX-44B is not affected.

b. Mounting MT-2100B/APX-44B uses resilient mounts which permit installation in fixed or rotor-wing aircraft. The resilient mounts used on the MT-2100/APX-44 permit installation in fixed-wing aircraft only; otherwise the mountings are interchangeable.

c. Control, Transponder Set C-2714/APX-44 internal wiring has been changed so that an independent external dc is applied to push-to-test pilot lamp DS905.

d. Low pass filter 66D13764 is installed in the coaxial cable run between the ANTENNA receptacle on the receiver-transmitter and the receptacle on the antenna to reduce harmonic radiation.

e. Rf interference filter 14S399 is installed in the primary dc input line to the receiver-transmitter to reduce rf output to the dc power source.

f. For transponder sets modified by modification work order MWO 11-5895-217-30/3 and transponder sets procured on Order FR 28-043-P6-22095(E) bearing serial number 501 through 999, Order FR 28-P6-22795(E) bearing serial numbers 1 through 1,042, and Order FR 28-043-P6-22895(E) bearing serial numbers 1 through 500, the receiver-transmitter contains a three-pulse sidelobe suppression circuit. The three-pulse system transponder sets will function with either the two-pulse or three-pulse interrogation systems.

Page 24, appendix I. Make the following changes: Change the title of DA Pam 310-4 to Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.

Add:

SB 11-573 Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.

TB SIG 364 Field Instructions for Painting and Preserving Electronics Command Equipment.

TM 9-213 Painting Instructions for Field Use.

Change the title of TM 38-750 to Army Equipment Record Procedures.

Page 30. Delete appendix III and substitute:

APPENDIX III
BASIC ISSUE ITEMS

Section I. INTRODUCTION

1. General

This appendix lists items for Transponder Sets AN/APX-44 and AN/APX-44B, the component items comprising it, and the items which accompany it, or are required for installation, operation, or operator's maintenance.

2. Explanation of Columns

An explanation of the columns in section II is given below.

a. Source, Maintenance, and Recoverability Codes, Column 1. Not used.

Note. When no code is indicated in the recoverability column the part will be considered expendable.

b. Federal Stock Number, Column 2. The Federal stock number for the item is indicated in this column.

c. Description, Column 3. The Federal item name, a five-digit manufacturer's code, part number, and the model designator (*), which indicates different models of the end equipment, are included in this column.

d. Unit of Issue, Column 4. The unit used as a basis of issue (e.g. ea, pr, ft, yd, etc) is noted in this column.

e. Quantity Incorporated in Unit Pack, Column 5. Not used.

f. Quantity Incorporated in Unit, Column 6. The total quantity of the item used in the equipment is given in this column.

g. Quantity Authorized, Column 7. The total quantity of an item required to be on hand and necessary for the operation and maintenance of the equipment is given in this column.

h. Illustration, Column 8.

(1) *Figure number, column 8a.* The number of the illustration in which the item is shown in this manual is indicated in this column.

(2) *Item or symbol number, column 8b.* Not used.

SECTION II. BASIC ISSUE ITEMS LIST

SOURCE CD (A)	MAINT. CD (B)	REC. CODE (C)	BASIC ISSUE ITEMS LIST						UNIT OF ISSUE	QTY INC IN UNIT PACK	QTY INC IN UNIT	QTY AUTH	ILLUSTRATIONS			
			(2) FEDERAL STOCK NUMBER	(3) MODEL									(4) DESCRIPTION	(A) FIGURE NUMBER	(B) ITEM OR SYMBOL NUMBER	
				1	2	3	4	5								6
			5895-686-7772						TRANSPONDER SET AN/APX-44: (This item is nonexpendable)	ea			1			
			5895-926-2509						TRANSPONDER SET AN/APX-44B: (This item is nonexpendable)	ea			1			
									NOTE: Model column 1 refers to AN/APX-44; Model column 2 refers to AN/APX-44B (Serial Nos. 1 thru 500 on Contract DA 28-043-AMC-01947(E)); Model column 3 refers to AN/APX-44B (Serial Nos. 501 and subsequent on Contract DA 28-043-AMC-01947(E)).							
									TECHNICAL MANUAL TM 11-5895-217-12	ee			1			
									Requisition through pinpoint account number if assigned; otherwise through nearest Adjutant General facilities.							
									NOTE: For technical manuals the quantity indicates the maximum number of copies authorized for packing (or issue) with the equipment. Where a number of these equipments are concentrated in a small area, the quantity on hand may be reduced to practical levels.							
			5895-701-2198	*					RECEIVER-TRANSMITTER RADAR RT-494/APX-44: 65597; 97449-100	ea	1		1			
			5895-701-2198	*	*				RECEIVER-TRANSMITTER RADAR RT-494B/APX-44: 65597; 97449-301	ea	1					
			5895-686-7626	*	*	*			ANTENNA AT-884/APX-44	ea	1		1			
			5895-681-9868	*	*	*			CONTROL, TRANSPONDER SET C-2714/APX-44	ea	1		1			
			5895-677-1982	*					MOUNTING MT-2100/APX-44: (NOTE: Used on Fixed Wing Aircraft only, no longer to be procured)	ea	1		1			

(1)			BASIC ISSUE ITEMS LIST						(4)	(5)	(6)	(7)	(8)		
SOURCE CD (A)	MAINT. CD (B)	REC. CODE (C)	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION						UNIT OF ISSUE	QTY INC IN UNIT PACK	QTY INC IN UNIT	QTY AUTH	ILLUSTRATIONS	
				MODEL										(A) FIGURE NUMBER	(B) ITEM OR SYMBOL NUMBER
				1	2	3	4	5	6						
			5895-944-9271	*	*	*				AN/APX-44, -44B (continued)	ea		1		
										MOUNTING MT-2100B/APX-44: (Shall be used on either Fixed or Rotary Wing Aircraft).					
										NO ACCESSORIES, TOOLS OR TEST EQUIPMENT ARE TO BE ISSUED WITH THIS EQUIPMENT					
										NO BASIC ISSUE ITEMS ARE MOUNTED IN OR ON THIS EQUIPMENT					

APPENDIX IV

ORGANIZATIONAL REPAIR PARTS

Section 1. INTRODUCTION

1. General

This appendix contains a list of repair parts required for the performance of organizational maintenance for Transponder Sets AN/APX-44 and AN/APX-44B.

Note. No special tools, test and support equipment are required.

2. Explanation of Sections

This repair parts list is divided into sections.

a. Prescribed Load Allowance List (PLA), Section II. The PLA is a consolidated listing of repair parts allocated for initial stockage at organizational maintenance category. This is a mandatory minimum stockage allowance.

b. Repair Parts for Organizational Maintenance Section III. Repair parts authorized for organizational maintenance is included in this section.

3. Explanation of Columns

An explanation of the columns in sections II and III is given below.

a. Source, Maintenance, and Recoverability Codes. Column 1, Section III.

- (1) *Source code, column 1a.* The selection status and source for the listed item is noted here. Source codes and their explanations are as follows:

<i>Code</i>	<i>Explanation</i>
AF	Parts which require manufacture or assembly at a category higher than that authorized for installation.
P	Applies to repair parts that are stocked in or

supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.

- G** Applies to major assemblies that are procured with PEMA funds for initial issue only to be used as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DSU and GSU level or returned to depot supply level.

- (2) *Maintenance code, column 1b.* The lowest category of maintenance authorized to install the listed item is noted here.

Code *Explanation*

O.....Organizational Maintenance
F.....Direct Support Maintenance

- (3) *Recoverability code, column 1c.* The information in this column indicates whether unserviceable items should be returned for recovery or salvage. Recoverability codes and their explanations are as follows:

Note. When no code is indicated in the recoverability column, the part will be considered expendable.

Code *Explanation*

R Applies to repair parts and assemblies which are eco-

nomically repairable at DSU and GSU activities and normally are furnished by supply on an exchange basis.

b. Federal Stock Number, Column 1, Section II; Column 2, Section III. The Federal stock number for the item is indicated in this column.

c. Description, Column 2, Section II; Column 3, Section III. The model designator, Federal item name, a five-digit manufacturer's code and a part number are included in this column. The designator (*) indicates the different models of the end equipment.

d. Unit of Issue, Column 4, Section III. The unit used as a basis of issue (e.g., ea, pr, ft, yd, etc) is indicated in this column.

e. Quantity Incorporated in Unit Pack, Column 4, Section II; Column 5, Section III. The actual quantity contained in the unit pack is noted in this column.

f. Quantity Incorporated in Unit, Column 6, Section III. The quantity of repair parts in an equipment is given in this column.

g. Maintenance Allowances, Column 3, Section II; Column 7, Section III.

- (1) The allowance columns are divided into sub columns.

Indicated in each subcolumn opposite each item is the total quantity of items authorized for the number of equipments supported. Items authorized for the use as required but not for initial stockage are identified with an asterisk (*) in the allowance column.

- (2) The quantitative allowances for organizational category of maintenance represents one initial prescribed load for a 15-day period for the number of equipments supported. Units and organizations authorized additional prescribed loads will multiply the number of prescribed loads au-

thorized by the quantity of repair parts reflected in the appropriate density column to obtain the total quantity of repair parts authorized.

- (3) Subsequent changes to organizational allowances will be limited as follows: No change in the range of items is authorized. If additional items are considered necessary, recommendation should be forwarded to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AN, Fort Monmouth, N.J., 07703, for exception or revision to the allowance list. Revisions to the range of items authorized will be made by the USA ECOM National Maintenance Point based upon engineering experience, demand data, or TAERS information.

h. Illustration, Column 8, Section III.
Not used.

4. Location of Repair Parts

a. When the Federal stock number is unknown, follow the procedures given in 1 and 2 below.

- (1) Locate the applicable appendix of the repair part list.
- (2) If the item, symbol, and figure number are not known, check the description column (col 3) in the repair parts list to locate the part.

b. When the Federal stock number is known, use the repair parts listing to find the repair part.

5. Federal Supply Codes

This paragraph lists the Federal supply code and the associated manufacturer's name.

<i>Code number</i>	<i>Manufacturer's name</i>
65597	Wilcox Electric Co., Inc.

SECTION II. PRESCRIBED LOAD ALLOWANCE

PRESCRIBED LOAD ALLOWANCE						
(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION	(3) 15-DAY ORG. MAINT. ALLOWANCE				(4) QTY INC IN UN PK
		(A)	(B)	(C)	(D)	
		1-5	6-20	21-50	51-100	
5355-656-1626	XNOB: 65597; 77560-1	*	*	*	2	1
5355-682-6828	XNOB: 65597; 77566-1	*	*	*	2	1

SECTION III. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

SOURCE CD (1)	(1)		REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE						(4)	(5)	(6)	(7)				(8)					
	MAINT. CD (2)	REC. CODE (3)	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION								UNIT OF ISSUE	QTY INC IN UN PK	QTY INC IN UNIT	15 DAY ORG. MAINT. ALW.				(A) FIGURE NUMBER	(B) ITEM OR SYMBOL NUMBER	
				MODEL											(A)	(B)	(C)	(D)			
				1	2	3	4	5													6
AF	F	R	5895-686-7772							A001	TRANSPONDER SET AN/APX-44: 65597; 97485-100 (This item is nonexpendable)	ea									
AF	F	R	5895-926-2509							A001A1	TRANSPONDER SET AN/APX-44B: 65597; 97485-301 (This item is nonexpendable)	ea									
				NOTE: Model column 1 refers to AN/APX-44; Model column 2 refers to AN/APX-44B (Serial Nos. 1 thru 500 on Contract DA 28-043-AMC-01947); Model column 3 refers to AN/APX-44B (Serial Nos. 501 and subsequent on Contract DA 28-043-AMC-01947).																	
G	O	R	5895-677-1982	*	*					A002	MOUNTING MT-2100/APX-44: 65597; 88358-100 (NOTE: Used on Fixed Wing Aircraft no longer procured)	ea	1	1							
G	O	R	5895-944-9271	*	*					A002A	MOUNTING MT-2100B/APX-44: 65597; 88358-300 (NOTE: Shall be used on either Fixed or rotary wing Aircraft)	ea	1	1							
P	O		5355-656-1627	*	*					A028	KNOB: 65597; 60602	ea	1	1	*	*	*	*			
G	O	R	5895-686-7626	*	*					A050A	ANTENNA AT-884/APX-44: 65597; 97482-300	ea	1	1							
G	O	R	5895-681-9868	*	*	*				A065A	CONTROL, TRANSPONDER C-2714/APX-44: 65597; 97468-300	ea	1	1							
P	O		5355-656-1626	*	*	*				A094	KNOB: 65597; 77560-1	ea	1	2	*	*	*	*	2		
P	O		5355-682-6828	*	*					A096	KNOB: 65597; 77566-1	ea	1	2	*	*	*	*	2		

By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,
*Major General, United States Army,
The Adjutant General.*

HAROLD K. JOHNSON,
*General, United States Army,
Chief of Staff.*

Distribution:

To be distributed in accordance with DA Form 12-36 (Unclas) requirements for Organizational maintenance, All Fixed and Rotor Wing aircraft.

Technical Manual }
No. 11-5895-217-12 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 7 May 1963

TRANSPONDER SET AN / APX-44

	Paragraph	Page
C H A P T E R 1 .	INTRODUCTION	
Section I.	General	1-3 3
II.	Description and data	4-13 3-6
III.	System application	14-16 7,8
C H A P T E R 2 .	OPERATING INSTRUCTIONS.	17-28 9-13
C H A P T E R 3 .	PREFLIGHT (DAILY) INSPECTION	29-31 14
C H A P T E R 4 .	ORGANIZATIONAL MAINTENANCE AND PREFLIGHT ADJUSTMENTS	
Section I.	Organizational maintenance	32 -41 15-17
II.	Troubleshooting	42-46 20,21
III.	Preflight adjustments	47,48 21,22
C H A P T E R 5 .	DEMOLITION TO PREVENT ENEMY USE	49,50 23
A P P E N D I X I .	REFERENCES	24
II.	MAINTENANCE ALLOCATION.	25
III.	BASIC ISSUE ITEMS LIST.	30
I N D E X		32

This manual supercedes TM 11-5895-217-12, 3 August 1959, includes C2, 11 September 1961, C3, 22 May 1962, and C4, 11 December 1962, and TM 11-5895-217-12P, 11 February 1960 as pertains to first echelon items and maintenance allocation chart.

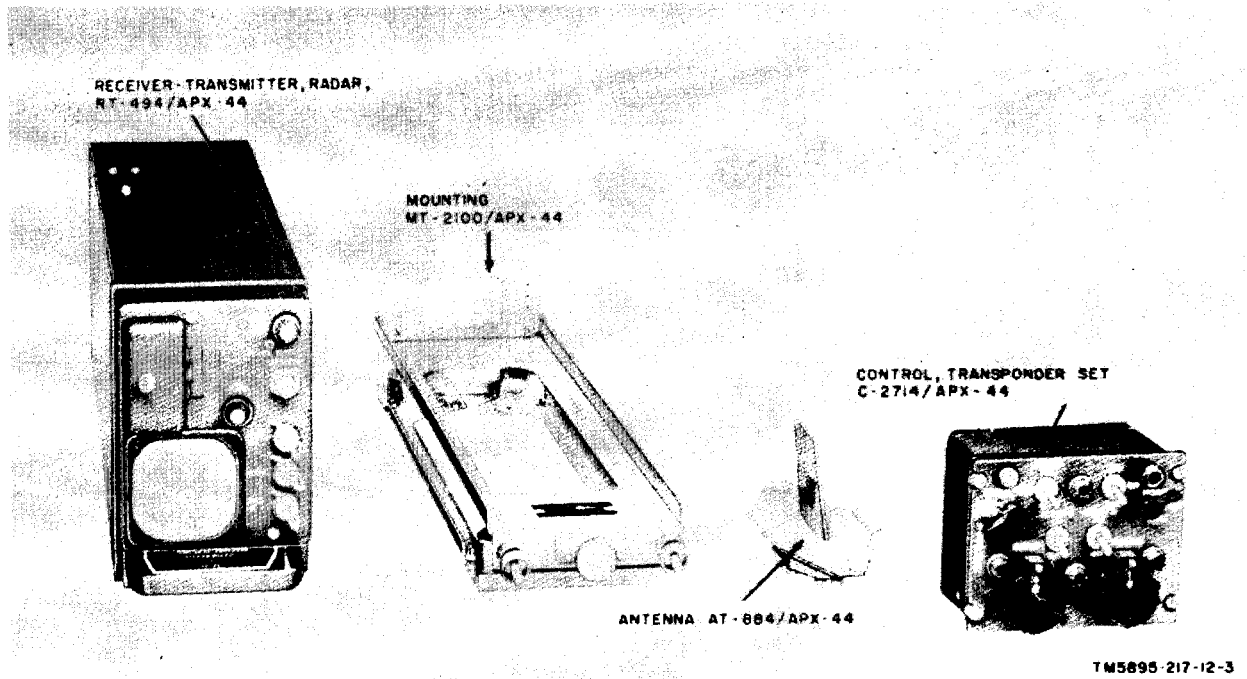


Figure 1. Transponder Set AN/APX-44

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

This manual describes Transponder Set AN/APX-44 and covers the operating instructions to be used by the aircraft pilot, pilot's preflight inspections, and organizational maintenance. It includes cleaning and inspection instructions and removal and replacement of parts available to second echelon personnel.

2. 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 the equipment. Department of the Army Pamphlet No. 310-4 is a **c u r r e n t** index of 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 and revisions of each equipment publication.

3. 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: SELMS-MP, Fort Monmouth, N. J, (DA Form 1598 (Record of Comments on Publications), DA Form 2496 (Disposition Form), or letter maybe used.)

Section II. DESCRIPTION AND DATA

4. Purpose and Use

a. Purpose. Transponder Set AN/APX-44 provides transponder functions to receive, decode, and respond to the characteristic interrogations of the Mark X identification friend or foe (IFF) system, the Mark X IFF system supplemented by the selective identification feature (sif), and to the interrogations of civil secondary ground radar systems.

b. Use. The AN/APX-44 is used to transmit a specially coded reply to a ground-based IFF radar interrogator system. The form of the coded reply permits positive identification of the aircraft and, if desired, its position.

5. Technical Characteristics

a. Receiver-Transmitter, Radar RT-494/APX-44.

Range Line of sight.

Interrogation rates 15 to 500 per seconds (normal).

Voltage and current requirements.. 7.2 amperes at 27.5 volts dc.

Voltage source 27.5-volt dc aircraft electrical system.

Warmup time 5 minutes maximum.

Receiver:
 Frequency range . . . 1,010 to 1,030 mc (one preset frequency).
 Type of signal received . . Pulsated radiofrequency.
 Intermediate frequency. . . 60 mc \pm 1.0 (midfrequency between points 3.0 db down from maximum response).
 Bandwidth 6.0 mc minimum at 3.0-db points.
 Frequency stability. . . \pm 1 1.0 mc maximum over a 24-hour period after a 3-minute warmup.
 Transmitter:
 Frequency range . . . 1,090 to 1,110 mc (one preset frequency).
 Type of signal transmitted . . Pulsated radiofrequency.
 Frequency stability 3.0 mc maximum drift.
 Power output . . . Minimum 24 db or maximum 30 db above 1 watt, averaged over 1-radiofrequency pulse.

Transponder delay 3.0 microseconds \pm 0.3 maximum when received pulses have an amplitude varying from 6.0 to 50 db above triggering level.
b. Control, Transponder Set C-2714/APX-44.
 Input voltage and current requirements. . 27.5 volts dc, at 0.2 ampere.
c. Antenna A T-884 /APX-44.
 Polarization . . Vertical.
 Pattern Omnidirectional.
 Frequency:
 Reception. . 1,010 to 1,030 mc.
 Transmission 1,090 to 1,110 mc.

6. Components of Transponder Set AN/APX-44

a. Components. The components of Transponder Set AN/APX-44 are listed in the basic issue items list (appx III). The major components are illustrated in figure 1.
b. Running Spare. A 10-ampere fuse is the only running spare. It is stored in the fuseholder labeled SPARE 10A 27-1/2V, located on the front panel of Receiver-Transmitter, Radar RT-494/APX-44.
c. Component Dimensions.

Component	(Dimensions (in.))			
	Height	Depth	Width	Unit weight
Receiver-Transmitter, Radar RT-494/APX-44 -----	7-3/4	22-1/2	5	22.8
Control, Transponder Set C-2714/APX-44-----	4-1/2	4-7/8	5-3/4	2.2
Antenna AT-884/APX-44 -----	3-15/16	7-1/4	3-3/16	.5
Mounting MT-2100/APX-44 -----	4	23-1/2	5-1/8	1.8

7. Nomenclature and Common Names

A list of the nomenclature assignments

is given below. A common name is indicated after each item.

Nomenclature	Common name
Transponder Set AN/APX-44 -----	Transponder set,
Receiver-Transmitter, Radar RT-494/APX-44-----	Receiver-transmitter.
Control, Transponder Set C-2714/APX-44-----	Control unit.
Antenna AT-884/APX-44 -----	Antenna.
Mounting MT-2100/APX-44 -----	Mounting.

8. Description of Transponder

Set AN/APX-44

(fig1).

a. The transponder set consists of Receiver-Transmitter, Radar RT-494/APX-44, Mounting MT-2100/APX-44, Control, Transponder Set C-2714/APX-44, and Antenna AT-884/APX-44. The interconnecting cables, through which all the components are interconnected, are supplied as part of the aircraft in which the transponder set is installed.

b. The receiver-transmitter is secured to the mounting which is bolted to a mounting surface within the aircraft. When a multipin connector (not shown) is attached to the cutout on the mounting, connections are made to the aircraft battery and the control unit. The antenna is connected to a coaxial cable connector on the front panel of the receiver-transmitter. The control unit is mounted on the aircraft instrument panel, and the antenna is mounted on the outside of the aircraft. For location of equipment within an aircraft, refer to the aircraft's electronics

equipment configuration technical manual.

9. Description of Receiver-Transmitter, Radar RT-494/APX-44

(fig. 2)

a. The receiver-transmitter is a separately housed unit containing the receiver and transmitter circuits of the transponder set. A handle is attached to the unit for convenient handling. On the top of the case is a hinged door through which the plug-in delay line (not shown) is installed or removed. On the front of the receiver-transmitter is a hinged door which is held secure with a door fastener. The front panel also has an air intake, two fuseholders, and four coaxial connector jacks.

b. Two holddown hooks, located at the bottom lip of the front panel mate with the holddown clamps on the mounting (fig. 5). Holes are provided on the rear panel that mate with the index pins of the mounting. Detachable side plates, attached with quick disconnect side mate fasteners, are located on each side of the receiver-transmitter case (fig. 2).

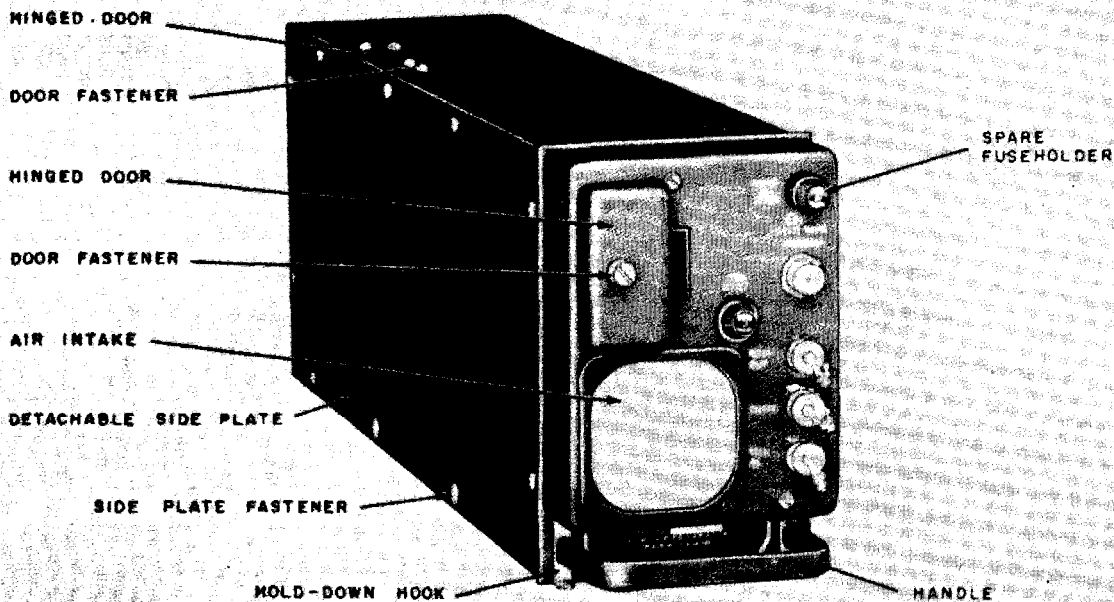


Figure 2. Receiver-Transmitter, Radar RT-494/Apx-44.

10. Description of Control, Transponder Set C-2714/APX-44 (fig. 3)

a. The control unit is a separately housed unit consisting of an illuminated panel on which are mounted the transponder set operating controls. The panel is illuminated by the panel lights. A U-shaped cover, attached with machine screws, protects the component parts within the assembly.

b. Power and control cabling is connected to the control unit through a multi-pin connector on the rear of the chassis. The control unit mounts in a rack or in a cutout in the instrument panel of the aircraft. Four quick disconnect fasteners secure the front panel to the case.

11. Description of Antenna AT-884/APX-44 (fig. 4)

The antenna is a lightweight blade-type antenna assembly that is mounted in a cutout in the skin of the aircraft frame. The antenna is secured to the airframe with six machine screws. A coaxial cable connector on the base of the antenna is used to connect the antenna to the receiver-transmitter.

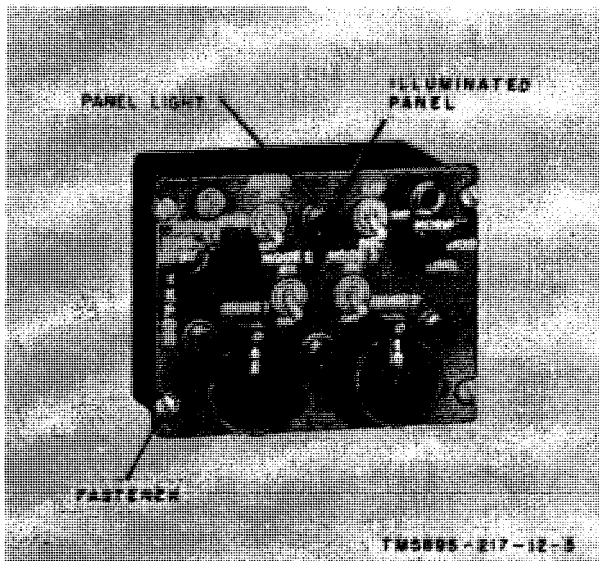


Figure 3. Control, Transponder Set C-2714/APX-44.

12. Description of Mounting MT-2100/APX-44 (fig. 5)

The mounting is installed on a flat surface within the aircraft. The mounting consists of a flanged bed, a mountingbase, four resilient mounts, two front holddown clamps, and an injector-ejector mechanism. Bonding between the flanged bed and mounting base is accomplished with four flexible ground straps. A bracket, with a connector cutout, index pins, and holddown pins are located on the rear of mounting.

13. Additional Equipment Required

The following equipment is not supplied as part of the transponder set but is needed for use with the set:

a. *Power Source.* A 27.5-volt, direct-current (dc) power source is required to supply power to the transponder set.

b. *Microphone.* The microphone is part of the aircraft installation. It is used for modulating radiotelephone equipment and to control the position identification function of the transponder set.

c. *Headset.* The headset is part of the aircraft installation. It is used for monitoring the reply pulses transmitted by the receiver-transmitter.

d. *Cables.* Two cables are required for connecting the components of the transponder set:

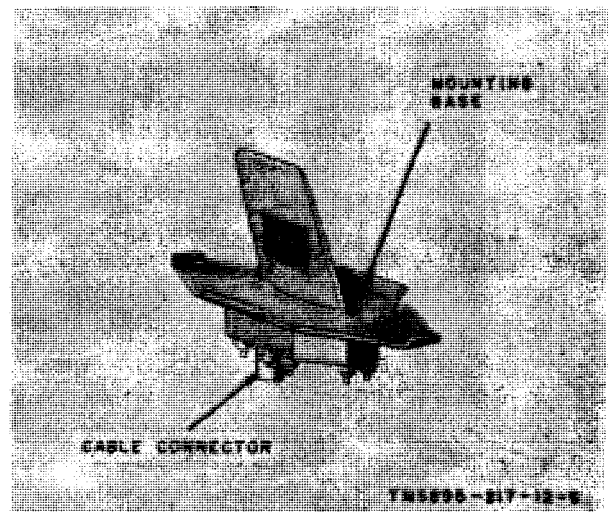


Figure 4. Antenna AT-884/APX-44.

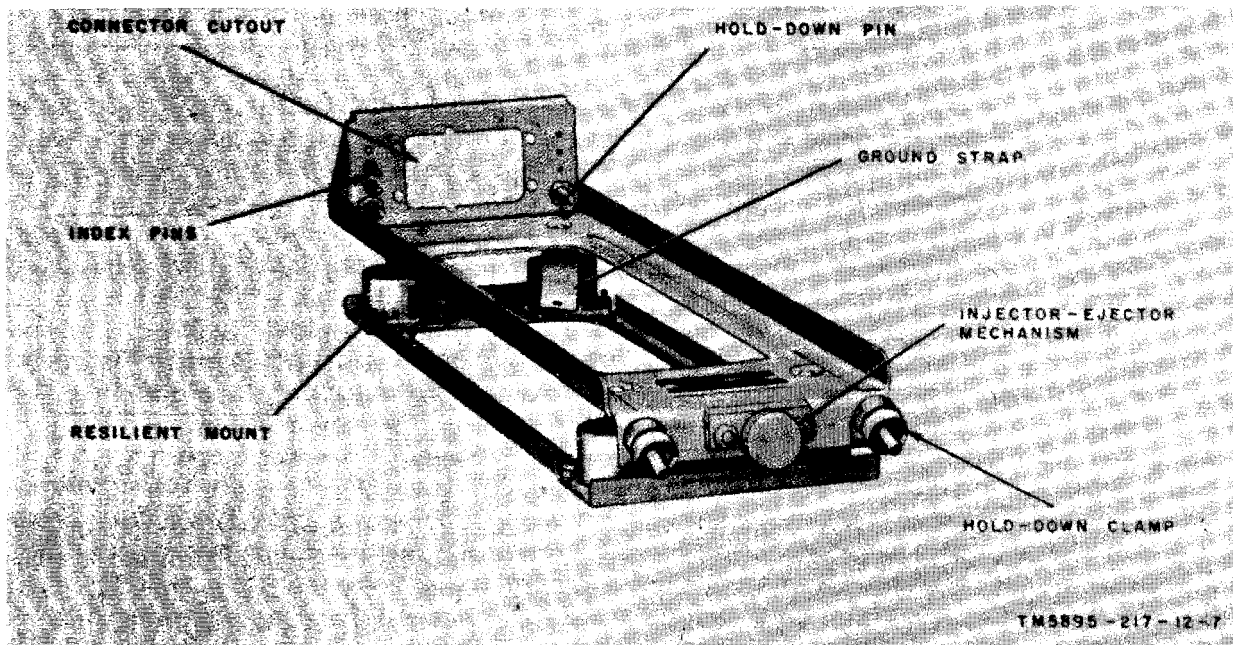


Figure 5. Mounting MT-2100/APX-44.

(1) An interconnecting cable for connecting the receiver-transmitter to the control unit, the power source, and the aircraft's electronic system. This cable consists of 28 shielded wires within multi-

pin connectors for the control unit and the receiver-transmitter.

(2) A 52-ohm coaxial cable, terminated at both ends with Plug, Connector UG-573A/U, for connecting the receiver-transmitter to the antenna.

Section III. SYSTEM APPLICATION

14. General

a. Interrogator signals, consisting of pairs of pulses with their spacing governed by the interrogation mode (para 15 a) are transmitted to the transponder set in the aircraft by the challenging ground-based IFF radar interrogator station. The transponder set decodes the interrogation signal pulses and transmits a coded reply to the ground-based IFF radar interrogator station. Replies from the transponder set permit positive identification of the aircraft and its position.

b. Coded transponder replies are formed in five operational categories (para 16) or types as follows:

- (1) Normal.
- (2) Modified (also referred to as sif).
- (3) civil.

(4) Identification of position.

(5) Emergency.

15. Interrogations and Replies

a. *Interrogations.* Three independent interrogation modes are presently in use by military operations: mode 1, mode 2, and mode .3. All three modes consist of two identical pulses. The difference between each of these modes is established by pulse separation. The interrogation pulses have specific characteristics which permit the transponder set to distinguish between interrogations and other pulse groups that may be received from radars or jamming devices. Transmitted interrogation pulses consist of bursts of a radiofrequency (rf) carrier similar to continuous-wave (cw) code transmissions

used in communication systems. The modes are identified as follows:

- (1) Mode 1, IFF.
- (2) Mode 2, personal identification.
- (3) Mode 3, flight leader identification.

b. Replies. Transmitted replies consist of bursts of rf pulses which have been arranged with specific characteristics in time and position. The type of reply is determined by the interrogation mode and the operator code control selection. Specialized replies are available to the operator for identification of position (i/p) and emergency operations as required by tactical situations. Mode 1 provides 32 code combinations; mode 2 provides 4,096 code combinations; and mode 3 provides 64 code combinations. The combination and separation of pulses form predetermined coded reply trains which are received by the ground-based IFF radar interrogator station. The ground equipment uses a *go-no-go* decoder system to make sure the received coded reply train is according to tactical orders.

16. Reply Coding by Category

a. Normal Operation. In a conventional Mark X IFF system, the transponder set is challenged by pulse pairs that represent modes 1, 2, and 3. The transponder set, operating in the normal category replies with a code of one (modes 1 and 3), two (mode 2), or four (emergency) pulses.

b. Modified (Sif) Reply Codes. As in the

case of normal operation (*a* above), the MARK X IFF challenges to sif equipped transponder sets consist of pulse pairs that represent modes 1, 2, and 3, respectively. The transponder set reply is a coded pulse train with a number of selectable codes for each reply mode.

c. Civil Reply Codes. Civil interrogations, which also consist of pulse pairs that represent modes 1, 2, and 3, provide the necessary overlap between civil and IFF systems for compatibility. Replies in civil function setting are identical with those in modified function setting (*b* above), except for the civil i/p reply (*d* below).

d. Identification of Position Reply Code. I/p replies can be made to any of the above reply codes (modes 1, 2, and 3). These codes consist of repeated type replies. The civil i/p reply train is not repeated but will be present for each interrogation received. All i/p functions are sustained for 30 seconds +20 -15.

e. Emergency Reply Code. With the emergency function and normal function selection, the reply consists of our pulses. In the modified or civil function, the emergency reply to mode 1 and mode 3 interrogations will be the selected reply code displayed four times at the ground-based IFF radar interrogation station for each interrogation. The mode 2 reply in the modified or civil function will be the normal mode 2 reply.

CHAPTER 2

OPERATING INSTRUCTIONS

17. Control and Indicators (fig. 6)

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

The control unit provides for remote control of the transponder set. The following chart lists the controls and indicators on the control unit and their functions:

Control or indicator	Function
Master control -----	Turns transponder set off or on, selects receiver sensitivity, and provides for emergency operation.
	<i>Sw pos</i> <i>Action</i>
OFF -----	Turns transponder set off.
STAY -----	Places transponder set in warmup (standby) condition.
LOW -----	Applies complete power to transponder set but with <i>reduced receiver sensitivity</i> in accordance with military characteristics to meet certain operational requirements for tactical conditions.
NORM -----	Applies complete power to transponder set with maximum receiver sensitivity.
EMER -----	Permits automatic transmission of emergency signals.
Function control -----	Selects operational mode.
	<i>Sw pos</i> <i>Action</i>
NORMAL -----	Permits transponder set to reply with normal pulse codes, representing modes 1, 2, and 3.
MOD -----	Permits transponder set to reply with <i>sif</i> pulse codes, representing modes 1, 2, and 3.
CIVIL -----	Permits transponder set to reply with civil pulse codes, representing modes 1, 2, and 3.
I/P switch -----	Enables i/p reply operation.
	<i>Sw pos</i> <i>Action</i>
MIC -----	Connects i/p energizing circuits to aircraft microphone key circuits and permits aural i/p for 30 seconds when speaking into microphone.
OFF -----	Disconnects microphone keying and i/p initiating circuits.
I/P -----	When momentarily actuated (spring-loaded), initiates i/p operation for 30 seconds.
AUDIO switch -----	Permits monitoring transmitted reply pulses, when set to ON position.
MODE 2 switch -----	Permits transponder set to provide mode 2 replies for mode 2 interrogations.
MODE 3 switch -----	Permits transponder set to provide mode 3 replies for mode 3 interrogations.
MODE 1 code control -----	Selects and indicates the two-digit, mode 1 code number.
	First digit selector selects first digit of mode 1 code number.
	Second digit selector selects second digit of mode 1 code number.
MODE 3 code control -----	Selects and indicates the two-digit, mode 3 code number.
	First digit selector selects first digit of mode 3 code number.
	Second digit selector selects second digit of mode 3 code number.
Emergency barrier -----	Prevents accidental placement of the master control to the EMER position.
Pilot light -----	Lights when power is applied to transponder.
Lens shutter -----	Controls brilliance of pilot light.
Test button -----	Permits test of pilot light.

18. Power Switches and Controls

The following controls are not a part of the transponder set but are directly re-

lated to the operation of the equipment. These controls are supplied as part of the aircraft in which the set is installed.

Control	Function
Master power on-off switch	When actuated, makes power available to the aircraft circuit breakers.
AN/APX-44 circuit breaker	When actuated, primary power is made available to the transponder set.

Control	Function
Microphone switch -----	Normally, a two-position switch. In one position, energizes the transmission circuits; in the other, deenergizes the transmission circuits.
Light control -----	Varies the brilliance of the panel lamps on the control unit.

19. Types of Operation

a. The transponder set is operated remotely from the aircraft cockpit through the use of the control unit. Depending on the settings of the various controls, the transponder set can be operated to reply to interrogation signals with normal, sif, or civil pulse codes; to provide identification-position reply codes; to transmit automatically, emergency reply codes; and to provide personal identification (MODE 2) or flight leader identification (MODE 3).

b. To operate the equipment for any particular type of operation, perform the following procedures:

- (1) Starting procedure (para 20).
- (2) Procedure for desired type of operation (para 22 through 27).
- (3) Stopping procedure (para 28).

20. Starting Procedure

(fig. 6)

Caution: Be careful when rotating the second *digit* selectors on MODE 1 and MODE 3 controls to their extreme clockwise and counterclockwise positions. Use of excessive force can cause damage to the switching mechanism.

a. *Preliminary.* Set the various controls as follows:

Control	Position
Master control -----	OFF.
AUDIO switch -----	OFF.
I/P switch -----	OFF.
MODE 2 switch -----	OFF.
MODE 3 switch -----	OFF.
MODE 1 code control -----	To read 00.
MODE 3 code control -----	To read 00.
Function control -----	NORMAL.
Master power on-off switch --	Off.
AN/APX-44 circuit breaker--	Off.

b. *Starting.*

- (1) Place the master power on-off control to on and energize the AN/APX-44 circuit breaker.

- (2) Place the master control in the STBY position. The pilot light should light.

Note: If the pilot light does not light, press the test button. If the pilot light still fails to light, either the light is burned out or power is not reaching the transponder set.

- (3) Adjust the pilot light to the desired brilliance by opening or closing the lens shutter.
- (4) Allow the transponder set to warm up from 3 to 5 minutes.
- (5) Follow the procedures in paragraphs 22 through 27 for the desired type of operation.

Note: The control unit is provided with illumination from the rear of the front panel. This light and the pilot light, are not go-no-go indicators of the receiver-transmitter but only indicate that power is reaching the equipment.

21. Reply Coding By Assigned

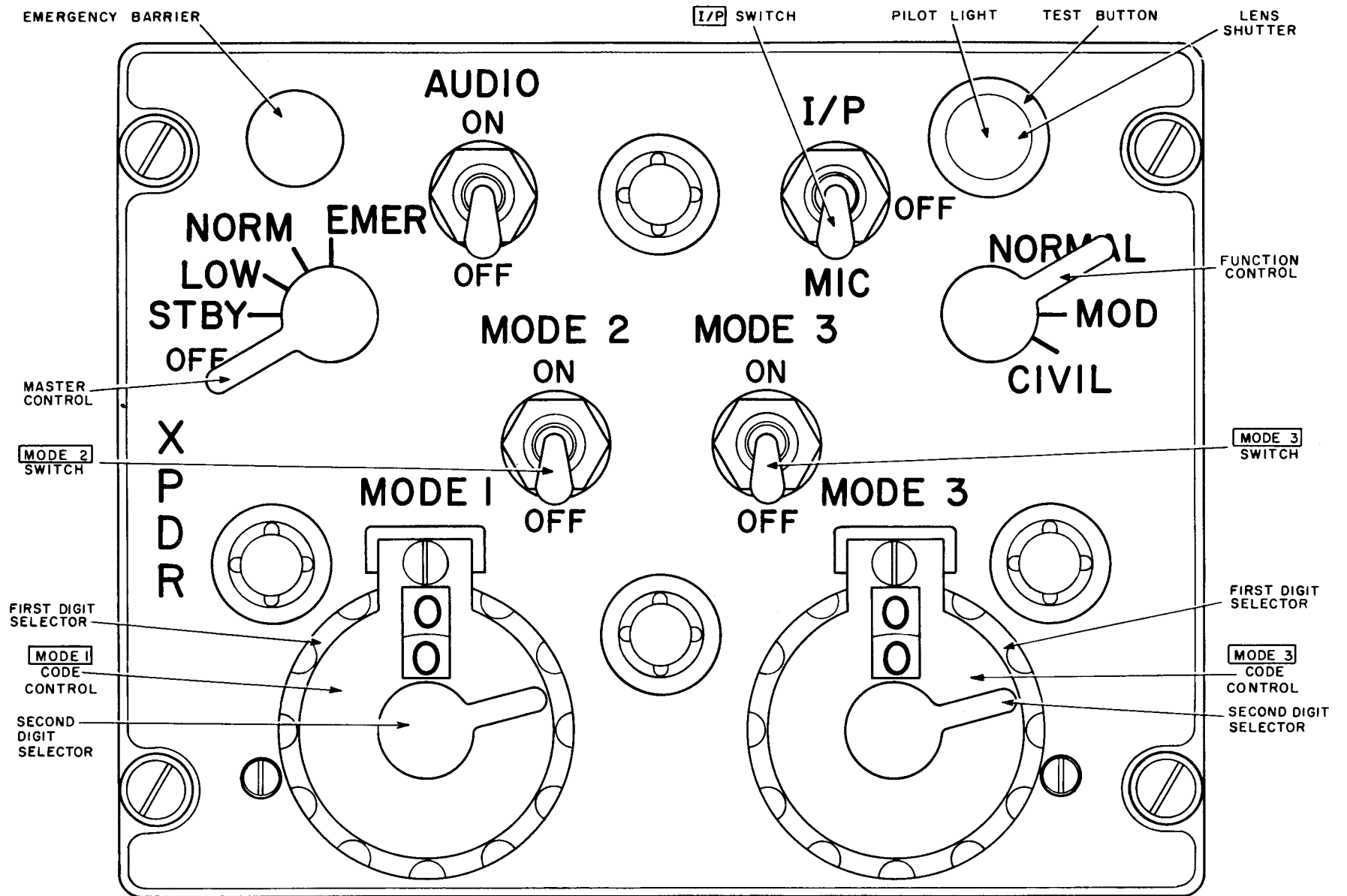
CodeNumber

For tactical purposes, IFF code assignments are continuously being changed. The codes consist of two- or four-digit numbers which indicate the correct settings of code controls or switches. The transponder set converts this code to a coded pulse train. For modes 1 and 3, the assigned code numbers are two-digit numbers which are *normally* set up by the pilot with visual control indicators. For mode 2, the assigned code number is a four-digit number which is preset *before flight*. This is *normally* done by the organizational repairman or crew chief.

22. Normal Operation

(fig. 6)

Note: When the function control is set in the NORMAL position, all *preset* code combinations will be disabled on all modes and a standardized reply will be automatically transmitted by the transponder set when interrogated.



TM5895-217-12-8

Figure 6. Control, Transponder Set C-2714/APX-44, front panel.

a. Mode 1. Set the controls as follows:

Control	Position
Function control ----- Master control -----	NORMAL. LOW or NORM as required.
MODE 2 switch ----- MODE 3 switch -----	OFF. OFF.
I/P Switch ----- AUDIO switch -----	Refer to paragraph 25. Refer to paragraph 27.

b. Combined Modes 1 and 2. Set the controls as follows:

Control	Position
Function control ----- Master control -----	NORMAL. Low or NORM as required.
MODE 2 switch ----- MODE 3 switch -----	ON. OFF.
I/P switch ----- AUDIO switch -----	Refer to paragraph 25. Refer to paragraph 27.

c. Combined Modes 1 and 3. Set the controls as follows:

Control	Position
Function control ----- Master control -----	NORMAL. LOW or NORM as required.
MODE 3 switch ----- MODE 2 switch -----	ON. OFF.
I/P switch ----- AUDIO switch -----	Refer to paragraph 25. Refer to paragraph 27.

d. Combined Modes 1, 2, and 3. Set the controls as follows:

Control	Position
Function control ----- MODE 2 switch ----- MODE 3 switch ----- Master control -----	NORMAL. ON. ON. LOW or NORM as required.
I/P switch ----- AUDIO switch -----	Refer to paragraph 25. Refer to paragraph 27.

23. Modified or Selective Identification Feature (fig. 6)

Note: When the function control is set to the MOD position, all *preset* code combinations in any mode will be *included* in the reply signals transmitted by the transponder set.

a. Mode 1. Set the controls as follows:

Control	Position
Function control ----- MODE 1 code control -----	MOD. Assigned two-digit code number.
Master Control ----- MODE 2 switch ----- MODE 3 switch -----	LOW or NORM as required. OFF. OFF.
I/P switch ----- AUDIO switch -----	Refer to paragraph 25. Refer to paragraph 27.

b. Combined Modes 1 and 2. Set the controls as follows:

Control	Position
Function control ----- MODE 1 code control -----	MOD. Assigned two-digit code number.
MODE 2 switch ----- Master control -----	ON. LOW or NORM as required.
MODE 3 switch ----- I/P switch ----- AUDIO switch -----	OFF. Refer to paragraph 25. Refer to paragraph 27.

c. Combined Modes 1 and 3. Set the controls as follows:

Control	Position
Function control ----- MODE 2 switch ----- MODE 3 switch ----- MODE 1 code control	MOD. OFF. ON. Assigned two-digit code number.
MODE 3 code control	Assigned two-digit code number.
Master control ----- I/P switch ----- AUDIO switch -----	LOW or NORM as required. Refer to paragraph 25. Refer to paragraph 27.

d. Combined Modes 1, 2, and 3. Set the controls as follows:

Control	Position
Function control ----- MODE 1 code control	MOD. Assigned two-digit code number.
MODE 2 switch ----- MODE 3 switch ----- MODE 3 code control	ON. ON. Assigned two-digit code number.
Master control ----- I/P switch ----- AUDIO switch -----	LOW or NORM as required. Refer to paragraph 25. Refer to paragraph 27.

24. Civil Operation (fig. 6)

When the function control is set to the

CIVIL position, *all other* operations remain the same as in the MOD position (para 23). Additional reply information necessary for compatibility with civil interrogations is automatically inserted by the transponder set.

25. I/P Operation, Military or Civil
(fig. 6)

The pilot may identify the position of his aircraft after being interrogated by a ground-based IFF system. This type operation is initiated by the pilot on receipt of a request through the aircraft's communications facility, or on arrival at pre-established checkpoints. The transponder set will transmit signals indicating to the ground-based IFF that a request is being made for the aircraft's position. The following operating procedures are used:

a. Procedure No. 1.

- (1) To transmit position identifying signals, momentarily hold the I/P switch in the I/P position.
- (2) On completion, release the I/P switch.

b. Procedure No. 2.

- (1) Place the I/P switch in the MIC position.
- (2) Press the switch button on the microphone; the transponder set is now transmitting position identifying signals.
- (3) On completion of identification of position, release the microphone switch button.
- (4) Place the I/P switch in the OFF position.

Note: The I/P switch may remain in the MIC position for the duration of a flight. This permits position identifying signals to be transmitted each time the aircraft's communication equipment is operated.

26. Emergency Operation
(fig. 6)

a. General. During an aircraft emergency or distress condition, the transponder set may be used to transmit specially coded emergency signals. These emergency signals are *automatically* setup and will be transmitted as long as the

master control of the transponder set remains in the EMER position *after the transponder set is interrogated by a ground-based IFF system.* These signals will be transmitted *automatically*, regardless of any mode and function combination previously setup and will provide indications to the ground-based IFF system that the aircraft is in an emergency or distress condition.

b. Master Switch Operation.

- (1) Depress and hold in the emergency barrier button.
- (2) Turn the master control to the EMER position.
- (3) Release the emergency barrier button.
- (4) Permit the master control to remain in the EMER position for the duration of the emergency.
- (5) When the emergency is over, return the master control switch to the NORM or LOW position as required.

27. Monitoring
(fig. 6)

Monitor the reply pukes, transmitted by the transponder set, as follows:

a. Place the AUDIO switch in the ON position. Transmitted reply pukes, following interrogation, will be audible in the pilot's headset.

b. Immediately following completion of the monitoring procedure, place the AUDIO switch in the OFF position.

28. Stopping Procedure
(fig. 6)

Set the front panel controls as follows :

Control	Position
Master Control -----	OFF.
AUDIO switch -----	OFF.
I/P switch -----	OFF.
MODE 2 switch -----	OFF.
MODE 3 switch -----	OFF.
MODE 1 code control -----	To read 00.
MODE 3 code control -----	To read 00.
Function control -----	NORMAL.
AN/APX-44 circuit breaker -----	OFF.

CHAPTER 3

PREFLIGHT (DAILY) INSPECTION

29. General

Note: The operator's inspections (para 30) are performed by the crewchief.

a. The operator's inspections listed in paragraphs 30 and 31 supplement the inspection procedures in the pilot's preflight checklist. The operator's inspections consist of checking the transponder set for flight preparedness by performing a visual inspection (para 30) to discover defects, and an operational check (para 31) to verify serviceability. The inspections listed should be accomplished before the first flight of the day, as called for by local standard operating procedures, or as indicated in the operator's aircraft technical manual covering the aircraft in which this equipment is installed.

b. The pilot or copilot should report any malfunction or failure noted in flight and any discrepancy noted in the preflight inspection on DA Form 2408-13.

30. Inspections for all Flights

a. *Exterior Inspection.* While making the exterior walkaround inspection of the aircraft, check the antenna for completeness, damage, loose mounting, and damaged insulation.

b. *Inferior Inspection.* The interior inspection indicated below is to be performed on a daily basis and in accordance with the daily checklist in the applicable aircraft operator's manual. This inspection ((1) through (4) below) is an extension of the tests given in that manual.

(1) Visually inspect the transponder

set for completeness, evidence of damage, security of mounting, and proper safety wiring.

- (2) Check the control unit for loose or binding knobs.
- (3) Check the mounting for cracks, corrosion, loose attaching bolts or rivets, deterioration of rubber, and loose or missing bonding.
- (4) Check the operational controls for loose or missing knobs and for proper operation. Insure that all controls and switches are in the positions indicated in paragraph 20 a.

31. Preflight Inspection, Power On

The following preflight tests should be made during engine warmup as an extension of the *ground tests* in the applicable aircraft operator's and crewmember's technical manual. The pilot or copilot should perform the tests below in the order given.

a. Place the aircraft master power on-off switch to its on position.

b. Actuate the AN/APX-44 circuit breaker (part of aircraft).

c. Place the master control to its STBY position. The pilot light should light. Allow for warmup (3 to 5 minutes).

d. Adjust the pilot light to the desired brilliance by opening or closing the lens shutter.

e. Set the master control to its OFF position.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE AND PREFLIGHT ADJUSTMENTS

Section I. ORGANIZATIONAL MAINTENANCE

32. Scope of Maintenance

Note: The pilot will not perform preventive or corrective maintenance.

The maintenance duties assigned to the organizational maintenance repairman (crewchief and electronic equipment repairman) are listed below together with a reference to the paragraphs covering the specific maintenance function. The duties include instructions for performing preventive maintenance and corrective maintenance and do not require tools or test equipment other than those allocated at second echelon (para 33).

- a. Daily maintenance service and inspection (para 35 and 36),
- b. Cleaning (para 37).
- c. Intermediate maintenance service and inspection (para 38 and 39).
- d. Periodic maintenance service and inspection (para 40 and 41).
- e. Troubleshooting (para 43).
- f. Removal and replacement (para 44, 45, and 46).
- g. Preflight adjustments (para 47 and 48).

33. Tools, Materials, and Test Equipment Required

The tools, materials, and test equipment required are listed below:

- a. Multimeter AN/URM-105 (multimeter).
- b. Test Set, Transponder Set AN/ARM-156 (transponder test set).
- c. Tool Kit, Radio Repair TK-115/G.
- d. Fine sandpaper, No. 000.
- e. A soft-bristle brush.
- f. A clean, lint-free cloth.
- g. Cleaning Compound, Federal stock No. 7930-395-9542.

34. 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. Preventive maintenance is the responsibility of all echelons concerned with the equipment and includes inspection, testing, and repair or replacement of components that inspections and tests indicate would probably fail before the next scheduled service period. Preventive maintenance service and inspections of Transponder Set AN/APX-44 at the organizational level are made at daily, intermediate, and periodic intervals, unless otherwise directed by the commanding officer. The maintenance services should be performed concurrently with the inspection schedule of the aircraft.

a. *Systematic Care.* The procedures given in paragraphs 35 through 41 cover systematic care essential to proper upkeep and operation of the transponder set. The cleaning operations (para 37a through d) should be performed once a day. If the equipment is not used daily, however, the cleaning operations must be performed before operation after any extended shutdown, or once a week while the equipment is kept in standby condition. The other items must be checked before the equipment is placed in operation after a shutdown, during operation, or after it is turned off, as specified in the applicable paragraph.

b. *Maintenance Service and Inspections.* The maintenance service and inspection charts (para- 36, 39 and 41) outline the inspections to be made at specific intervals.

These inspections are made to maintain combat serviceability; that is, to maintain the equipment in good general (physical) condition, and in good operating condition. To assist the organizational maintenance repairman in maintaining combat serviceability, the charts indicate what to inspect, how to inspect, and what the normal conditions are; the *References* column lists the applicable references that contain additional information. If the defect cannot be remedied by the organizational maintenance repairman, higher echelon maintenance or repair is required. Records and reports of these inspections must be made in accordance with TM 38-750.

c. Maintenance Forms and Records. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750. Paragraph 3 contains

additional information concerning submission of specific forms.

35. Daily Maintenance Service and Inspection

Maintenance service and inspections of Transponder Set AN/APX-44 are required on a daily basis in an aircraft installation. Paragraph 36 specifies services and inspections that must be accomplished daily and under special conditions listed below.

- a. Following the last flight of each day or preceding the next day's flight.
- b. When the equipment has been replaced after removal for any reason.
- c. At least once each week if the equipment is maintained in a *standby* condition.

36. Daily Maintenance Service and Inspection Chart

Item No.	Procedure		References
	Item	Normal condition or result	
1	SET: Inspect the equipment for completeness and general condition. Check for evidence of damage, proper mounting, and safety wiring.	Equipment must be complete, clean, and installed for operation.	Para 37a through d and applicable aircraft technical manual.
2	CONNECTIONS: Check cables, connectors, and receptacles for evidence of external damage.	Connectors and receptacle are clean, intact, and not loose fitting. Cables are clean and in good condition.	Applicable aircraft technical manual.

37. Cleaning

Inspect the exterior of the transponder set. The exterior surfaces should be clean, free of dirt, grease, and fungus.

a. Remove loose dirt with a clean soft cloth.

Warning: Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.

b. Remove grease, fungus, and ground-in dirt from the exterior surfaces of the receiver-transmitter, control unit, antenna, and mounting; use a cloth dampened (not wet) with cleaning compound. Wipe dry with a clean, dry, lint-free cloth.

c. Remove dirt from the connectors of the transponder set with a soft-bristle brush.

Note: Dry compressed air, not more than 15 pounds per-square-inch (psi) pressure, may be used to blow out dust from corners. Be careful to prevent mechanical damage from the airblast.

d. Clean the front panels, controls, and dials; use a soft clean cloth. If dirt is difficult to remove, clean with mild soap and water.

e. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-2851.

38. Intermediate Maintenance Service and Inspection

The intermediate inspection provides verification of satisfactory operation at

intervals between the daily and periodic inspections. The interval at which the intermediate inspection will be accomplished is every 25 flying hours. The intermediate inspection is performed concurrently with the intermediate maintenance performed on the aircraft in which the equipment is installed. Adjustments of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a *standby*

(ready for immediate operation) condition must have intermediate maintenance performed on it. Equipment in *limited storage* (requires service before operation) does not require intermediate inspection.

39. Intermediate Maintenance Service and Inspection Chart

Note: The complete intermediate inspection consists of the daily inspection (para 36) and the items listed below.

Item No.	Procedure		References
	Item	Normal condition or result	
1	MOUNTING: Inspect seating and stability of mountings. Check for loose or missing hardware.	All bolts, nuts, and washers are present and properly tightened. Mountings show no evidence of weakness or deformity.	Applicable aircraft technical manual.
2	KNOBS, DIALS, AND SWITCHES: Check for proper mechanical action by setting each control to each of its possible settings.	Action is positive without backlash, binding, or scraping.	Applicable aircraft technical manual. <i>Note:</i> Knobs that require frequent tightening should have setscrews replaced.

40. Periodic Maintenance Service and Inspection

Periodic maintenance on Transponder Set AN/APX-44 will be scheduled in accordance with the requirements of TM 38-750. The periodic maintenance inspection should be scheduled concurrently with the periodic maintenance service schedule of the aircraft in which the equipment is installed to reduce out-of-service time to a minimum. Refer to the applicable aircraft technical manual for the hours between service periods. All deficiencies or shortcomings will be immediately reported to a higher echelon using the forms

and procedures specified by TM 38-750. Equipment that has a deficiency that cannot be corrected by second echelon should be deadlined in accordance with TM 38-750. Perform all the services listed in the periodic maintenance service and inspection chart in the sequence listed. Whenever a *Normal condition or result* is not observed, take corrective action in accordance with the *References* column.

Note: The periodic maintenance and inspection procedure is performed by an Aviation Electronic Equipment Repairman, MOS 284.1.

41. Periodic Maintenance Service and Inspection Chart

Item No.	Procedure		References
	Item	Normal condition or result	
1	SET: Inspect the equipment for: <i>a. Completeness.</i> <i>b. Proper installation.</i> <i>c. Cleanliness.</i> <i>d. Preservation.</i>	<i>a. Equipment must be complete.</i> <i>b. Installation is in accordance with applicable aircraft technical manual. Equipment properly safety wired.</i> <i>c. Equipment must be clean and dry; free of grease, dirt, rust, corrosion, and fungus.</i> <i>d. Painted surfaces must be free of rust, bare spots, and corrosion.</i>	<i>a. Applicable aircraft technical manual.</i> <i>b. Applicable aircraft technical manual and TM 11-530.</i> <i>c. Para 37a through d.</i> <i>d. Para 37e</i>

Item No.	Procedure		References
	Item	Normal condition or result	
2	PUBLICATIONS: See that pertinent publications are available.	This technical manual must be complete and in usable condition without missing pages. b. All Changes pertinent to the equipment are on hand.	a. None. b. DA Pam 310-4 for requirements.
3	MODIFICATION WORK ORDERS: Check DA Pam 310-4 to determine if new applicable MWO's have been published.	ALL URGENT MWO's have been applied to the equipment. All ROUTINE MWO's have been scheduled.	DA Pam 310-4.
4	FUSES: Check for proper fuses.	The fuse in use and the spare should be of the indicated value. The fuses are located on the receiver-transmitter front panel.	Fig. 7. Replace defective fuses.
5	MOUNTING: Inspect seating and stability of mounting. Check for loose or missing hardware. Check for proper safety wiring.	All bolts, nuts, and washers are present and properly tightened. Mounting shows no evidence of weakness or deformity. All components safety wired in accordance with TM 11-530.	Applicable aircraft technical manual.
6	CONNECTIONS: Check the antenna cable, headset-microphone, and intercomponent cabling and wiring connections.	Plugs, sockets, connectors, and terminals are clean, intact, and not loose-fitting. Headset-microphone is properly connected to the aircraft audio circuits.	Applicable aircraft technical manual.
7	KNOBS, DIALS, AND SWITCHES: Check for proper mechanical action by setting each control to each of its possible settings.	Action is positive without backlash binding, or scraping.	Applicable aircraft technical manual. <i>Note: Knobs that require frequent tightening should have setscrews replaced.</i>
8	OPERATIONAL PRESET; AIR-CRAFT: Connect auxiliary power and set the controls on the pilot's instrument panel: Master power on-off switch: Off. AN/APX-44 circuit breaker: Off.	All controls must be set properly.	Para 20 and applicable aircraft technical manual.
9	OPERATIONAL PRESET; CONTROL UNIT: Set the controls on the control unit: Master control: OFF. AUDIO switch: OFF. I/P switch: OFF. MODE 2 switch: OFF. MODE 3 switch: OFF. MODE 1 code control: 00. To read. MODE 3 code control: 00. To read. Function control: NORMAL.	All controls must be set properly.	None.
10	OPERATIONAL PRESET; TRANSPONDER TEST SET: Prepare the transponder test set for operation as directed in TM 11-6625-509-12. The method of setup will depend on surrounding conditions.	None observable.	TM 11-6625-509-12.
11	STARTING; TRANSPONDER SET: Place the aircraft master power on-off control and the AN/APX-44 circuit breaker to their <i>on</i> positions. Place the control unit master control in the STBY position. Allow equipment to warm	Pilot light illuminated.	Para 43, item 11.

Item No.	Procedure		References
	Item	Normal condition or result	
	up for 5 minutes and set the MODE 1 code control to an operating frequency.		
12	STARTING; TRONSPONDER TEST SET: Set the CODE selector switches on the transponder test set to the same code setup being used on the transponder set.	None observable.	TM 11-6625-509-12.
13	OPERATION; TRANSPONDER TEST SET: Set the transponder test set automatically.	The CODE flag on the transponder test set appears each time the mode flag changes.	TM 11-6625-509-12.
14	NORMAL OPERATION; MODE 1: Set the transponder set control unit function control to NORMAL. Set the master control to NORM. Set the AUDIO, I/P, MODE 2, and MODE 3 switches to OFF.	The CODE and mode 1 flags should appear on the transponder test set.	Para 43, items 14 through 22.
15	NORMAL OPERATIONS; COMBINED MODES 1 AND 2: Set the MODE 2 switch on the transponder control unit to ON.	The CODE and modes 1 and 2 flags should appear on the transponder test set.	Para 43, items 14 through 22.
16	NORMAL OPERATIONS; COMBINED MODES 1 AND 3: Set the MODE 2 switch on the transponder set control unit to OFF and set the MODE 3 switch to ON.	The CODE and modes 1 and 3 flags should appear on the transponder test set. <i>Note: I/P and EMER flag may appear during this test.</i>	Para 43, items 14 through 22.
17	NORMAL OPERATION; COMBINED MODES 1, 2, AND 3: Set the MODE 2 switch on the transponder set control unit to ON.	The CODE and modes 1, 2, and 3 flags should appear on the transponder test set. <i>Note: I/P and EMER flag may appear during this test.</i>	Para 43, items 14 through 22.
18	NORMAL OPERATION; COMPLEMENTS OF MODES 1 AND 3: Switch the transponder set control unit MODE 1 and MODE 2 code controls to the complements of the modes 1 and 3 codes on the transponder test set.	The CODE flag appears when the mode 1 and mode 3 flag appear.	TM 11-6625-509-12.
19	MOD OPERATION: Repeat items 14 through 18, except set transponder set control unit function control to MOD and set MODE 1 and MODE 3 code controls to assigned two digit code numbers.	Same as items 14 through 18.	Para 43, items 14 through 22.
20	CIVIL OPERATION: Repeat items 14 through 18, except set transponder set control unit function control to CIVIL and set MODE 1 and MODE 3 code controls to assigned two digit code numbers.	Same as items 14 through 18.	Para 43, items 14 through 22.
21	I/P OPERATION: Repeat item 14, except place I/P switch to I/P position momentarily.	The I/P flag appears on the transponder test set when the mode 1 flag appears.	Para 43, items 14 through 22.
22	EMERGENCY OPERATION: Push transponder set control unit emergency barrier button in and simultaneously turn the master control switch to EMER. Release emergency barrier button.	The I/P and EMER flags appear on the transponder test set when mode 1 flag is in view.	Para 43, items 14 through 22.

Section II. TROUBLESHOOTING

42. General

Troubleshooting of this equipment is based on the operational check contained in the periodic maintenance and service inspection chart (para 41, item No. 8 through 22). To troubleshoot the equipment, perform all functions starting with item number 8 (para 41) and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed,

note the item number and turn to the corresponding item number in the troubleshooting chart (para 43). Perform the checks and corrective actions in the troubleshooting chart. If the corrective measures indicated do not result in correction of the trouble, higher echelon maintenance is required.

43. Troubleshooting Chart

Item No.	Trouble Symptom	Probable trouble	Checks and corrective measures
11	Pilot light is not illuminated.	<p><i>a.</i> Aircraft circuit breaker open; faulty intercomponent wiring.</p> <p><i>b.</i> Defective fuse.</p> <p><i>c.</i> Pilot light loose in socket or burned out.</p> <p><i>d.</i> Defective control unit master control switch.</p>	<p><i>a.</i> Check for 28 volts dc at circuit breaker. Check continuity of aircraft wiring (refer to applicable aircraft technical manual).</p> <p><i>b.</i> Check fuse, replace if defective.</p> <p><i>c.</i> Check pilot light for proper seating; replace if necessary.</p> <p><i>d.</i> Replace control unit (para 45).</p>
14 through 22	Appropriate flags do not appear on the transponder test set.	<p><i>a.</i> Defective control unit.</p> <p><i>b.</i> Defective receiver-transmitter.</p> <p><i>c.</i> Defective antenna or antenna cable.</p>	<p><i>a.</i> Replace control unit (para 45).</p> <p><i>b.</i> Replace receiver-transmitter (para 44).</p> <p><i>c.</i> Replace antenna (para 48). Check antenna cable continuity; replace if defective.</p>

44. Removal and Replacement of Receiver-Transmitter

a. Removal.

- (1) Remove the antenna cable from ANTENNA jack (fig. 7).
- (2) Cut and remove the safety wire and loosen the holddown clamps on the front of the mounting (fig. 5) and disengage the clamps from the holddown hooks on the receiver-transmitter (fig. 2).
- (3) Turn the knob of the injector-ejector mechanism (fig. 5) counter-clockwise until the receiver-transmitter has been moved far enough to disengage the holddown pins.
Lift the receiver-transmitter front end by the handle (fig. 2) to clear the front panel lip from the

injector-ejector groove; remove the receiver-transmitter from the mounting.

b. Replacement.

- (1) Position the receiver-transmitter on the mounting and slide it to the rear until the holddown pins (fig. 5) on the rear of the mounting engage the guide holes at the rear of the receiver-transmitter. Do not engage the mating connections.
- (2) Lift the front end of the receiver-transmitter by the handle (fig. 2) slightly and match the lip of the case with the groove of the injector-ejector mechanism (fig. 5).
- (3) Lower the receiver-transmitter, with the lip and groove engaged, and turn the injector-ejector

- mechanism knob clockwise until the receiver transmits fully seated on the mount and the mating connections are engaged.
- (4) Engage the holddown clamps (fig. 5) with the holddown hooks (fig. 2) on the receiver-transmitter and tighten the holddown clamps and safety wire. Refer to TM 11-530 for safety wiring procedures.
 - (5) Connect the antenna cable to the ANTENNA jack.

45. Removal and Replacement of Control Unit (fig. 3)

a. Removal.

- (1) Loosen the four fasteners and remove the control unit from the instrument panel.
- (2) Disconnect the cable plug from the rear of the control unit; remove the control unit.

b. Replacement.

- (1) Connect the cable plug to the receptacle on the rear of the control unit.
- (2) Position the control unit on the instrument panel and tighten the four fasteners.

46. Removal and Replacement of Antenna (fig. 4)

a. Removal.

- (1) Remove the screws that hold the mounting base to the fuselage.
- (2) Pull the antenna away from the fuselage and disconnect the antenna cable from the antenna connector; remove the antenna and gasket.

b. Replacement.

- (1) Connect the antenna cable to the antenna cable connector through the gasket.
- (2) Position the antenna on the aircraft skin and install the antenna with the screws.

Section III. PREFLIGHT ADJUSTMENTS

47. Mode 2 Assigned Code Number Setup

a. *Code Assignment.* Mode 2 code assignment is given by a four-digit number. The digits represent pulse group letters and the digit numeral represents the sum of the pulse position numbers (*b* and *c* below).

b. *Code Group Letter.* The pulse train for Mode 2 consists of 2 framing pulses and up to 12 information pulses for Mode 2. The 12 information pulses are divided into four groups of three pulses, and each group of three pulses is identified by a code group letter. The code group letters are A, B, C, and D. These code group letters always apply to the same three pulses, and, in combination with the pulse position number (*c* below), permanently identify each of the information pulses. The digits of the assigned code number (*a* above) indicate the code group to be used and the pulse coding within that group. In a four-digit number, the first digit (thousands) designates the A-group coding; the second digit (hundreds), the

B-group coding; the third digit (tens), the C-group coding; and the fourth digit (units), the D-group coding.

c. *Pulse Position Number.* Positive identification of pulses within a group is accomplished by assigning a number to each pulse in a group. The numbers used are 1, 2, and 4, and they are assigned to the pulses of each group in sequence; therefore, there is an A1, A2, and A4, a B1, B2, and B4, and so on.

- (1) These numbers are used because the various sums give the maximum number of combinations, without repetition, for three numbers. By using various combinations of these numbers, any digit from zero to seven can be obtained.
- (2) The code number for each group is a digit from zero to seven. This code number is set up in the code switching system to provide pulse position numbers with sums equal to the desired code number for that code group. The chart below is an

example of the mode 2 reply coding setup.

Code letter	Code number	Pulses in reply code
A	5	Pulses A1 and A4 (1 + 4 = 5)
B	6	Pulses B2 and B4 (2 + 4 = 6)
C	1	Pulses C1 = 1
D	0	No pulses = 0

Switch No.	Pulse group	Pulse position No.
1	A	1
2	A	2
3	A	4
4	B	1
5	B	2
6	B	4
7	C	1
8	C	2
9	C	4
10	D	1
11	D	2
12	D	4

48. Mode 2 Switch Arrangement
(fig. 7)

Switches for setting up the mode 2 reply code only are located on the receiver-transmitter front panel. They are enclosed by a small hinged door on the front cover, upper left side (fig. 7).

a. The 12 mode 2 code switches are arranged in four horizontal rows with three switches in each row. They are numbered from left to right and from top to bottom, with numerals 1 through 12.

b. The four rows correspond to the four pulse groups (A, B, C, and D), and the three switches in each row correspond to the pulse position numbers (1, 2, and 4) within the pulse group. This explanation is simplified in the following chart:

c. Mode 2 code assignment is given by a four-digit number. The digits represent pulse group letters and the digit numeral represents the sum of the pulse position numbers.

Example: Code number 5610 would require switches No. 1, 3, 5, 6, and 7 to be at ON, with all others at OFF. The left-hand digit of the code number being 5 calls for the A-group pulses in positions No. 1 and 4, because only these two position numbers have a sum total of 5. Switch No. 1 controls pulse A1; switch No. 3, pulse A4; switch No. 5, pulse B2; switch No. 6, pulse B4; and switch No. 7, pulse C1. No D-group pulses are required in code 5610.

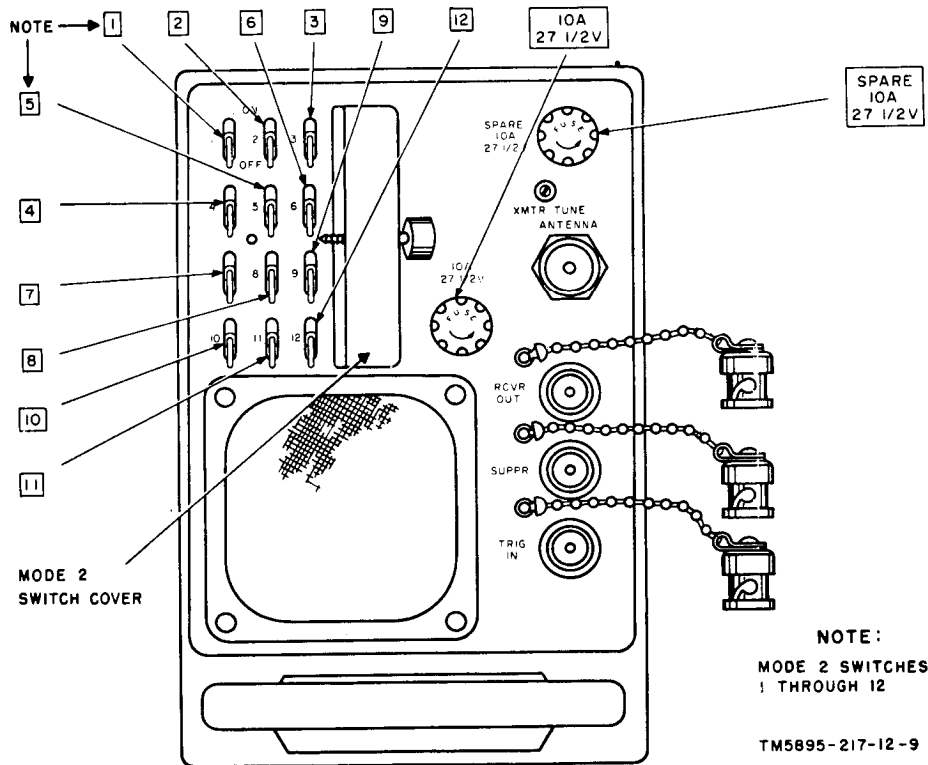


Figure 7. Receiver-transmitter, front panel.

CHAPTER 5

DEMOLITION TO PREVENT ENEMY USE

49. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 50 will be used to prevent further use of the equipment.

50. Methods of Destruction

Use any of the following methods to destroy the equipment:

a. Smash. Smash the controls, tubes, coils, switches, capacitors, and trans-

formers; use sledges, hammers or crow-bars.

b. Cut. Cut the antenna and power cables; use axes or handaxes.

c. Burn. Burn cables and technical manuals; use gasoline, kerosene, oil, flame-throwers, or incendiary grenades.

d. Bend. Bend panels and cabinets.

e. Explode. If explosives are necessary, use firearms, grenades, or TNT.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or throw them into streams.

APPENDIX I

REFERENCES

DA Pamphlet 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 9-2851	Painting Instructions for Field use.
TM 11-530	Installation Practices for Aircraft Electric and Electronic Wiring.
TM 11-6625-203-12	Operation and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6625-509-12	Operator and Organizational Maintenance Manual: Test Set, Transponder Set AN/APM-156.
TM 38-750	The Army Equipment Record System and Procedures.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(a) *Service.* To clean, to preserve, and to replenish lubricants.

(b) *Adjust.* To regulate periodically to prevent malfunction.

(c) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) *Replace.* To substitute serviceable components, assemblies, or subassemblies, for unservice-

able components, assemblies, or subassemblies.

(f) *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(g) *Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) *Overhaul.* To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts

or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelons.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes as signed to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (†) indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelons are authorized to the organization operating this equipment.

Section II. MAINTENANCE ALLOCATION CHART

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
PART OR COMPONENT	MAINTENANCE FUNCTION	1ST ECH	2ND ECH	3RD ECH	4TH ECH	5TH ECH	TOOLS REQUIRED	REMARKS	
TRANSPONDER SET AN/APX-44	service		X				18		
	adjust			X			17		
	inspect	X							
	test		X				5, 14, 15		
					X			1, 6, 7, 8, 12, 14, 15	
						X		1, 2, 4, 6, 7, 8, 9,	
							X	10, 12, 13, 14, 15, 16	
							X	1, 2, 3, 4, 6, 7, 8, 9,	
							X	10, 11, 12, 13, 14,	
							X	15, 16, 20	
replace				X			17		
repair					X		17, 19		
align					X		1, 4, 6, 7, 8, 9, 10		
calibrate					X		1, 4, 8, 9, 10, 13		
rebuild						X	17, 19	Shop facilities	
overhaul						X	17, 19	Shop facilities	
RADAR RECEIVER TRANSMITTER RT-494/APX-44	service		X				18		
	adjust			X			17		
	inspect	X							
	test		X				5		
					X			1, 6, 7, 8, 12	
						X		1, 2, 4, 6, 7, 8, 9,	
							X	10, 12, 13, 16	
							X	1, 2, 3, 4, 6, 7, 8, 9,	
							X	10, 11, 13, 16, 20	
							X	17	
replace				X			17, 19		
repair					X		17, 19		
align					X		1, 4, 6, 7, 8, 9, 10		
calibrate					X		1, 4, 8, 9, 10, 13		
rebuild						X	17, 19	Shop facilities	
overhaul						X	17, 19	Shop facilities	

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS	
AN/APX-44 (continued)									
ANTENNA AT-884/APX-44	service		X				18		
	inspect	X							
	replace			X			17		
	repair				X		17,19		
	rebuild					X	17,19	Shop facilities	
overhaul					X	17,19	Shop facilities		
TRANSPONDER SET CONTROL C-2714/APX-44	service		X				18		
	adjust			X			17		
	inspect	X							
	test		X				5		
					X			1,6,7	
						X		1,6,7	
					X		X	1,6,7	
	replace				X			17	
	repair					X		17,19	
	align					X		1,4,6,7,8,9,10	
	calibrate					X		1,4,8,9,10,13	
rebuild						X	17,19	Shop facilities	
overhaul						X	17,19	Shop facilities	
MOUNTING MT-2100/APX-44	service		X				18		
	inspect	X							
	replace			X			17		
	repair				X		17,19		
	rebuild					X	17,19	Shop facilities	
overhaul					X	17,19	Shop facilities		

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/APX-44 (continued)							
BENCH TEST FACILITY KIT TS-1314/U			+	+	+	1	
CRYSTAL RECTIFIER TEST SET TS-268/U				+	+	2	
GENERATOR, ELECTRONIC MASKER AN/USM-108					+	3	
GENERATOR, SIGNAL AN/URM-64				+	+	4	
MULTIMETER AN/URM-105		+				5	
MULTIMETER TS-352(*)/U			+	+	+	6	
MULTIMETER ME-26(*)/U			+	+	+	7	
OSCILLOSCOPE AN/USM-81			+	+	+	8	
PULSE GENERATOR SET AN/UPM-15				+	+	9	
SIGNAL GENERATOR TS-452/U				+	+	10	
TEST SET, ELECTRON TUBE TV-2(*)/U					+	11	
TEST SET, ELECTRON TUBE TV-7(*)/U			+	+		12	
TEST SET, RADAR AN/UPM-98				+	+	13	
TEST SET, RADAR AN/APM-123		+	+	+	+	14	
TEST SET, RADAR AN/APM-156		+	+	+	+	15	
TEST SET, TRANSISTOR TS-1100/U (Sierra Model 219)				+	+	16	
TOOL KIT, RADAR AND RADIO REPAIRMAN TK-87/U			+	+	+	17	
TOOL KIT, RADIO REPAIR TK-115/G		+				18	
TOOL KIT, SUPPLEMENTARY, RADAR AND RADIO REPAIR TK-88/U				+	+	19	
WAVEMETER FR-146/U (Frequency Meter FXR type N410A)					+	20	a. Interim item in lieu of AN/APM-123 b. Limited availability, under controlled distribution. c. To be standardized d. Use Tool Equipment TE-113 until available. e. Use Tool Equipment TE-41 until available.

APPENDIX III
BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation. The list includes tools, parts, and material issued as a 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

Columns are as follows:

- 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 each unless otherwise indicated and 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. Expendable items are not annotated.

g. *Quantity Authorized* *Under Items*

Comprising an Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment.

h. Illustrations. The "Figure No." column lists the figure and reference numbers used for identification of the items in the illustration.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS		(9)
							FIGURE NO	ITEM NO	
	5895-686-7772		TRANSPONDER SET AN/APX-44:		NX	1			
			ITEMS COMPRISING AN OPERABLE EQUIPMENT						
	Ord thru AGC		TECHNICAL MANUAL TM 11-5895-217-12			2			
	5895-701-2198		RECEIVER TRANSMITTER RADAR RT-494/APX-44		NX	1	1		
	5895-686-7626		ANTENNA AT-884/APX-44		NX	1			
	5895-681-9868		CONTROL, TRANSPONDER SET C-2714/APX-44		NX	1			
	5895-677-1982		MOUNTING MT-2100/APX-44		NX	1	1		
			RUNNING SPARE ITEMS						
			NO PARTS AUTHORIZED FOR STOCKAGE AT FIRST ECHELON						

31

INDEX

	Paragraph	Page		Paragraph	Page
Additional equipment required	13	6	Maintenance:		
Adjustments, preflight	47, 48	21, 22	Forms and records	34c	16
Antenna AT-884/APX-44:			Service and inspection:		
Description	11	6	Daily	35, 36	16
Removal and replacement	46	21	Intermediate	38, 39	16, 17
Authority for demolition	49	23	Periodic	40, 41	17
Charts:			Methods of destruction	50	23
Daily maintenance service and			Mode 2:		
inspection	35	16	Assigned code number setup	47	21
Intermediate maintenance serv-			Switch arrangement	48	22
ice and inspection	39	17	Modified selective identification		
Periodic maintenance service			feature	23	12
and inspection	41	17	Monitoring	27	13
Troubleshooting	43	20	Nomenclature and common names	7	4
Civil operation	24	12	Normal operation	22	10
Cleaning	37	16	Operation	17-28	9-13
Component dimensions	6c	4	Organizational maintenance	32-46	15-21
Components of Transponder Set			Power switches and controls	18	9
AN/APX-44	6	4	Preflight:		
Control, Transponder Set C-2714/			Adjustments	47, 48	21, 22
APX-44:			Daily inspection	29-31	14
Controls and indicators	17	9	Power	31	14
Description	10	6	Preliminary settings	20a	10
Removal and replacement	45	21	Preventive maintenance	34	15
Description:			Purpose and use	4	3
Antenna AT-884/APX-44	11	6	Removal and replacement:		
Control, Transponder Set			Antenna	46	21
C-2714/APX-44	10	6	Control unit	45	21
Mounting MT-2100/APX-44	12	6	Receiver-transmitter	44	20
Receiver-Transmitter, Radar			Reply coding by assigned code		
RT-494/APX-44	9	5	number	21	10
Transponder Set AN/APX-44	8	5	Reply coding by category	16	8
Emergency operation	26	13	Running spares	6b	4
Exterior inspection	30a	14	Scope	1	3
Forms and records	3	3	Starting procedures	20	10
Index of publications	2	3	Stopping procedure	28	13
Inspections for all flights	30	14	Systematic care	34a	15
Interior inspection	30b	14	Technical characteristics	5	3
Interrogations and pulses	15	7	Tools, materials, and test equip-		
I/P operation, military or civil	25	13	ment required	33	15
			Troubleshooting chart	43	20
			Types of operation	19	10

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