

**WIDEBAND STATION USING DATA SET 303-TYPE
ECHO-FOX UHF RADIO SYSTEM
MAINTENANCE**

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1. GENERAL

1.01 This section covers the maintenance policy and procedures for the wideband data station portion of the Echo-Fox UHF Radio System.

1.02 Since the components of the data station use inherently high-reliability solid-state circuitry, no routine maintenance is required. Maintenance is performed only when trouble is encountered. Tests to isolate trouble to the wideband data station are covered in other Bell System Practices.

1.03 When troubleshooting and maintenance are required, they are performed to the circuit pack level. Replacement spares and their locations are listed in Part 2.

1.04 For isolation of the defective circuit pack, refer to the practice entitled Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Test Procedures (593-800-502).

1.05 For removal and replacement of major components (DS or DAS), refer to the practice entitled Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Installation and Connections (593-800-202). For removal and replacement of circuit packs from the data set or data auxiliary sets, refer to the BSPs listed in Part 5.

2. MAINTENANCE SPARES

2.01 Two locations have been selected for the storage of emergency maintenance spares for restoration of service in the Wideband Data Station portion of the Echo-Fox system. These locations are as follows:

1. Arlington 2, Virginia

Address:

American Telephone and Telegraph Co.
900 South Walter Reed Drive
Arlington, Virginia 22204
Telephone: (703) 521-9440

2. Prospect Valley, Colorado

Address:

American Telephone and Telegraph Co.
Rural Route 1, Box 82A
Roggen, Colorado 80652
Telephone: (303) 266-7537

2.02 A list of the maintenance spares kept at each of the above locations is given in Table

A. To obtain required spare(s), contact either the Arlington or Prospect Valley location (by telephone, TWX, or letter) for release and shipment of the spare unit. The storage location receiving the request will prepare a *memo* "Material Transfer Report", Form U231, in duplicate (see Attachment 1). The original is filed for reference and the duplicate is used as a packing slip, and sent to the requesting location. (No other copies are used, since the transaction constitutes a "loan", rather than a "transfer.")

TABLE A

ECHO-FOX WIDEBAND DATA STATION REPLACEMENT SPARES

SPARE COMPONENT OR CIRCUIT PACK	QUANTITY OF UNITS STOCKED AT	
	ARLINGTON 2, VIRGINIA	PROSPECT VALLEY, COLORADO
KS-20018-L3 Cabinet e/w	1	0
Data Set 303H7	1	0
Data Auxiliary Set 806B7	1	0
Data Auxiliary Set 809B1	1	0
Data Auxiliary Set 824B1	1	0
Data Auxiliary Set 824B2	1	0
<i>CPs for Data Set 303H7</i>		
AR130 Restored Polar Receiver	2	2
AR131 Line Interface — Transmitter	2	2
AR133 Signal Control	2	2
AR134 Scrambler-Descrambler	2	2
AR136 Balanced Customer Interface	2	2
AR157 Rolloff Filter (50%)	2	2
AR413 Rolloff Filter (100%)	0	0
AR241 Sync Recovery & Regen (18.75 kb/s)	2	2
AR307 AGC	2	2
<i>CPs for Data Auxiliary Set 806B7</i>		
AR119 Line Circuit	2	2
AR122 2.8 kHz Remote Test Detector	2	2
CR1 Sequential Relay Circuit	2	2
CS3 Coordination Channel Adapter Unit	2	2
<i>CPs for Data Auxiliary Set 809B1</i>		
AR111 Phase Locked Loop	2	2
AR112 VSB Receiver	2	2
AR113 VSB Transmitter	2	2
CK1 Relay Board	2	2
<i>CPs for Data Auxiliary Set 824B1 or 824B2</i>		
AR275 18.75 kb/s Data Recognizer	2	2
AR276 18.75 kb/s Data Rate Detector	2	2

2.03 The location requesting the spare will prepare a Service-and-Return requisition in quadruplicate, in accordance with local instructions. The original is used as a packing slip when returning the defective unit to the Western Electric Company distributing house for service, the second copy is retained in file, and the third copy is sent with the unit to be returned as a shipping receipt. The fourth copy is sent to the storage location supplying the replacement spare. (No other copies are used, since the transaction constitutes a "loan" rather than a "transfer.")



To expedite repair and return of the defective unit to the emergency stock location, add the note to the service requisition, "Please expedite repair; this unit is required for Echo-Fox service."

2.04 The location having the defective unit is responsible for having the defective unit repaired or replaced and returned to the storage location from whence the replacement spare was obtained. Local conditions permitting, the defective unit should be returned directly from the WECO distributing house, after repair, to the storage location. If this is not feasible, the location receiving the repaired unit from the WECO distributing house should forward the unit to the storage location supplying the spare.

2.05 If the WECO distributing house determines that the defective unit is *not repairable* and must be scrapped, the distributing house will notify the location initially having the defective unit; the location initially having the defective unit should requisition a new replacement unit from WECO. Send a copy of this requisition to the storage location for their information. The new unit should be shipped directly to, or trans-shipped to, the storage location supplying the spare. These activities are summarized in Fig. 1.

2.06 *Since only a limited number of spares are available on a national basis, it is imperative that shipments and repairs be made promptly, so that spares will continue to be available to any location requiring a spare.*

3. MAINTENANCE AIDS

3.01 Documents required in the maintenance, testing, and troubleshooting of an Echo-Fox Wideband Data Station are listed in Part 5.

3.02 The following test equipment (or equivalent) is required for testing and trouble-shooting the data station:

- 912A Data Test Set e/w 912AA Interface Unit
- 3550A or B Hewlett Packard Transmission Measuring Set consisting of:
 - HP 204B Oscillator
 - HP 353A Patch Panel
 - HP 403B VTVM
- 5233L or 5532A Hewlett Packard Frequency Counter
- 10313 Daven Attenuator
- 561A Tektronix Oscilloscope e/w 3A1 Dual Trace Unit and 2B67 Time Base Unit, or 132A or 1200A/B Hewlett Packard Oscilloscope
- Selective Detector, such as 27B or 37B WE or D322-A102 Siemens-Halske Level Meter, or KS-15538 Sierra Carrier Frequency Voltmeter, or 3591 Hewlett Packard Selective Voltmeter
- Precision oscillator, such as 3W29S Siemens-Halske, or any short-term-stable oscillator monitored by frequency counter
- 310 Plug e/w 135-ohm termination (2)
- 310 Plug (unterminated)
- KS-14510 or KS-20538 Multimeter
- WE 748A Extractor Tool
- ED 73248-20 GR1 or GR2 Cord

4. MAINTENANCE PROCEDURES

4.01 After trouble has been isolated to the data station portion of the Echo-Fox system, remove covers and circuit pack retainers from the data set and data auxiliary sets, as required.

4.02 Test and troubleshoot the data station as outlined in the section entitled Wideband

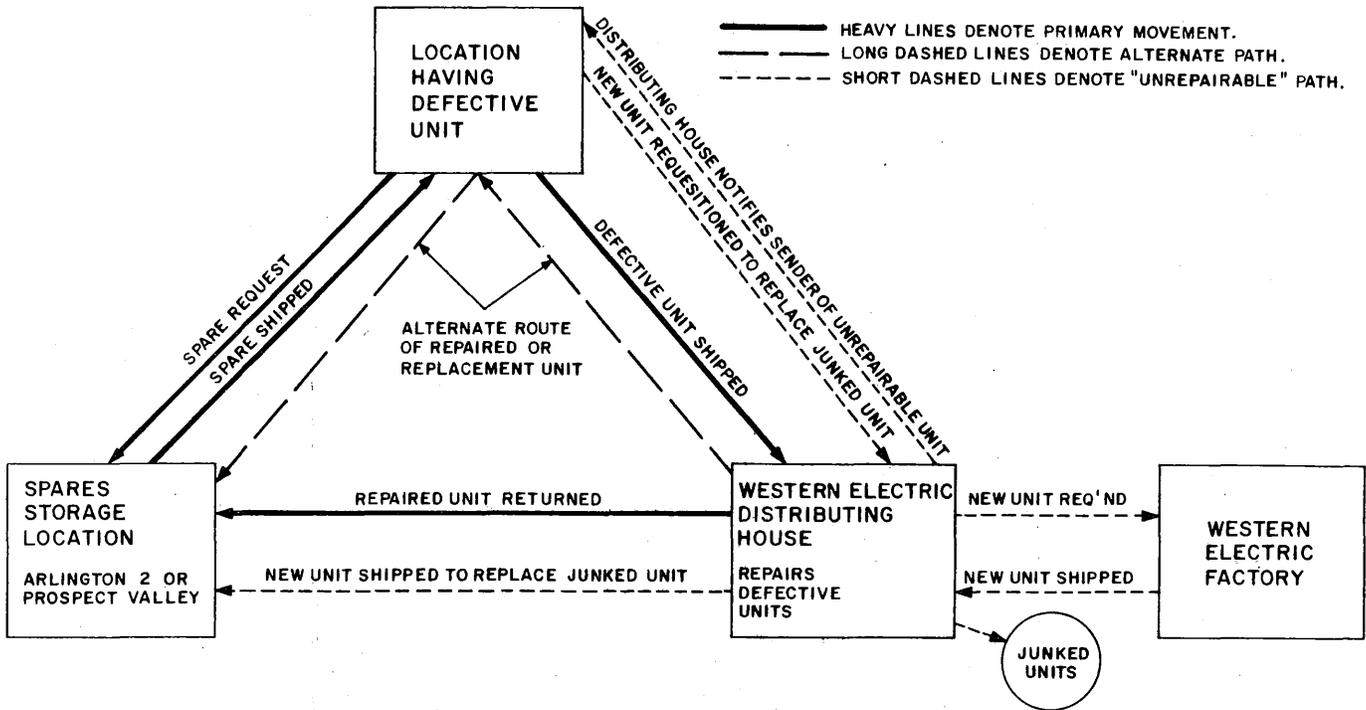


Fig. 1—Replacement Spares Flow Chart

Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Test Procedures (593-800-502).

593-800-502

Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System— Test Procedures

4.03 After the defective component has been isolated, obtain and install a replacement unit, and return the defective component as outlined in Part 2. Repeat the test that isolated the trouble to ensure that the data station is operating properly, then replace the circuit pack retainers and covers on the data set and data auxiliary sets.

590-010-200

Data Sets—General Installation and Connection Information

5. REFERENCES

593-800-100

Wideband Data Station Using Data Set 303-Type—Description and Operation

5.01 The following Bell System Practices contain information which may be helpful in maintaining the Echo-Fox Wideband Data Station.

593-800-200

Wideband Data Station Using Data Set 303-Type—Installation and Connections

593-800-500

Wideband Data Station Using Data Set 303-Type—Test Procedures

SECTION

TITLE

593-800-102

Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Description

598-034-100

Data Auxiliary Set 809B1—Identification and Operation

593-800-202

Wideband Station Using Data Set 303-Type—Echo-Fox UHF Radio System—Installation and Connections

598-042-100

Data Set 806B-Type—Identification

598-060-101

Data Auxiliary Set 824B-Type—18.75 Kilobit Data Recognizer—Description

SECTION	TITLE	NUMBER	TITLE
598-060-201	Data Auxiliary Set 824B-Type—18.75 Kilobit Data Recognizer—Installation and Connections	CD- & SD-1D100-01	Data Set 303-Type
		CD- & SD-1D097-01	Data Auxiliary Set 806B-Type
593-012-100	Data Set 303-Type—Description	CD- & SD-1D067-01	Data Auxiliary Set 809B-Type
406-116-100	Air-Ground Radio Private Systems—Echo-Fox UHF Radio System—Overall System Description	CD- & SD-1D134-01	Data Auxiliary Set 824-Type
		SD-1D060-01	Printed Wiring Boards
107-400-100	912A Wideband Data Test Set—Description and Operation	SD-1D098-01	10A-Type Data Unit
		SD-1D099-01	Data Station Arrangements
406-116-500	Air Ground Radio Private Systems—Echo-Fox UHF Radio System—Overall System Tests	FA 25177-SD (LL)	Addition of Q Option to Data Auxiliary Set 824B-Type
		FA 25173-SD (LL)	Data Station For Wideband Service Using Data Set 303H7 For Echo Fox
		FA 40843-SD (LL)	Radio Systems—400 MHz FM Base Station (Supplementary Radio Bay)

5.02 The following circuit descriptions (CDs), schematic drawings (SDs), and other listed documents provide additional information on the data set and data auxiliary sets used in the Echo-Fox System.

MATERIAL TRANSFER REPORT

A. T. & T. CO.
LONG LINES DEPT.
DATE OF SHIPMENT _____ 19____

9-14
U-231-A-F
1-69
G.A.I. 12.3

NO: PREFIX YR. NUMBER

RETENTION CODE
A101R-03000

SHIPPED TO _____ SHIPPED FROM _____
NAME _____
TITLE _____

DESTINATION _____ VIA FREIGHT EXPRESS PARCEL POST TRUCK
STREET _____ TOWN _____ STATE _____
TOWN _____ STATE _____ PACKED IN _____ NO. OF BOXES, BARRELS, PIECES, ETC. _____
PREPAID
COLLECT

REC'D. BY _____ DATE REC'D. _____ SHIPPER _____ IF ASSOC. CO. ENTER NAME OF COMPANY _____ APPROVED _____
TO ESTIMATE JOB NO. _____ FROM ESTIMATE JOB NO. _____ TITLE _____

ACCOUNTING CLASSIFICATION

DEBIT ENTRIES							CREDIT ENTRIES						
ACCOUNT				AREA	ESTIMATE OR JOB	AMOUNT	ACCOUNT				AREA	ESTIMATE OR JOB	AMOUNT
MAIN	SUB	CODE	OD				MAIN	SUB	CODE	OD			
15-18	19-22	23	24	25-29	30-35	37-44	15-18	19-22	23	24	25-29	30-35	37-44
(A)													
(B)													
(C)													
(D)													

DESCRIPTION OF ITEM (WORDED AS LISTED IN CATALOG OF SUPPLIES)	EQPT CAT	PROPERTY RECORD NO.	YEAR PLACED	CON- DITION	UNIT PRICE	TOTAL QUANTITY	TOT AMT	(A)	(B)	(C)	(D)
							⊗				
							QTY				
							AMT				
							QTY				
							AMT				
							QTY				
							AMT				
							QTY				
							AMT				

NOTE: IN THE CASE OF GANG SHIPMENTS USE FOLLOWING SYMBOLS IN PLACE OF "G":
SV-SALVAGED (FIT FOR REUSE); SP-SURPLUS (UNUSED).