DR 6/11-135A and 135EC 1×N Frequency Diversity Operation and Maintenance Introduction

Contents Page

Figures

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1 Contents of Manual

The group of tabs and practices listed below make up the TERMINAL and REGENERATOR manual (AT&T 421-500-100).

Material under each tab has been assigned a 9-digit number so the information can be reissued easily.

This document does not contain safety labels.

2 General

This manual is used to operate and maintain the DR 6/11-135A and 135EC, 1xN Frequency Diversity equipment at a terminal or regenerator station. Test procedures in this manual require the use of the Digital Radio Test System (DRTS).

NOTE:
This manual does not support Hot Stand-By (HS) systems.

Operational functions consist of channel switching, lockout, and restoral that may be performed at the station or remotely by the Transport Servicing Center (TSC). Operations also include the use of the order-wire system.

Refer to the **OPERATIONS** tab for specific instructions on switching or order-wire operations.

Maintenance is performed on DR 6/11 equipment for only two reasons:

- Annual Tests

  Annual Tests include required tests that ensure compliance with FCC regulations and several additional performance evaluation tests which are recommended to reduce the potential for unscheduled maintenance.

- Trouble Isolation.

  Trouble Isolation is further defined by the type of trouble.

  — Equipment alarm

  — Degraded performance.

  Different methods must be used to isolate and clear each type of trouble.

Maintenance on the DR 6/11 radio system is subdivided into three major equipment groups indicated by the following tabs:

- RADIO TRANSMITTER
- RADIO RECEIVER
- TERMINAL/REGENERATOR.

Each of these equipment groups is sub-grouped into the following three tabs:

- TROUBLE ISOLATION
- TEST PROCEDURES
- REPLACEMENT PROCEDURES.

The tab color for the sub-groups matches the color of the associated equipment group.

All DR 6/11 maintenance activity should begin with the **START HERE** tab and end at the **END HERE** tab.

2.1 Issue Information

This manual was written to correct, rewrite, and consolidate information that is contained in the following eight manuals (terminal station and regenerator station) into one. Test procedures in this manual were written for use with the DRTS.

- AT&T 421-102-090 and 421-103-090, EC with Traveling Wave Tube (TWT)
- AT&T 421-102-100 and 421-103-100, EC with Solid State (SS)
- AT&T 421-102-001 and 421-103-001, non-EC with Traveling Wave Tube (TWT)
- AT&T 421-102-080 and 421-103-080, non-EC with Solid State (SS).

This manual is intended only for AT&T internal use.

The material under each tab has been assigned a 9-digit number so the information can be reissued easily.

2.2 Reasons for Reissue

When this document is reissued, the reasons for reissue will be given here.

3 Associated Customer Information Products (CIPs)

This series of DR 6/11-135 CIPs consists of the following:

1. **AT&T 421-500-100**
   1xN Frequency Diversity—Terminal and Regenerator: One volume that provides the necessary operation, trouble isolation, test, adjustment, and replacement information for a terminal or regenerator station.
2. **AT&T 421-101-060**, for systems with Error Correction (EC)
   AT&T 421-101-001, for systems without EC
   1xN Frequency Diversity—Maintenance Support: One volume (EC or non-EC) that provides support information for the terminal station, regenerator station, and system, such as:
   a. Physical and functional descriptions of the radio system and the radio, regenerator, and line terminal bays with all associated units.
   b. Faceplate information for all plug-in units. Controls, indicators, and jacks are called out.
   c. System performance diagnostics.
   d. System tests.
   e. Specialized tests to support system performance diagnostics.
   f. Frame and unit checks to support system performance diagnostics.
   g. Support services.

3. **AT&T 421-100-001**
   Maintenance Center Operations (Alarm Center): One volume that provides the alarm center operator with the necessary information to analyze alarms, initiate dispatch of technicians, and verify repair and restoral of service. Scan and control point explanations, remote system operations, and typical system arrangements are also provided.

4. **AT&T 940-300-140**
   DR6/11-135 Digital Radio System
   System Description and Application Engineering: One volume that provides additional descriptive information on the following:

   - Digital Radio Fundamentals
   - System Description
   - System Features and Specifications
   - Maintenance Philosophy and Provisions
   - Route Engineering
   - Frequency and Channel Growth Plans
   - System Application and Ordering
   - Recommended Test Equipment and Sparing
   - Related Documentation and Reference Material.

Following is a list of drawings associated with the DR 6/11-135 radio systems:

Schematic Drawings	Description
SD-7C415-01	DR 6-30/DR 11-40-135 System Application
SD-7C416-01	135A Line Terminal
SD-7C423-01	135EC Line Terminal
SD-7C417-01	135A Digital Regenerator
SD-7C424-01	135EC Digital Regenerator
SD-7C418-01	DR 6-30-135 Indoor Waveguide
SD-7C419-01	DR 11-40-135 Indoor Waveguide
SD-7C422-01	Fan Shelf
SD-7C428-01	DR 6-30-135 Transmitter-Receiver
SD-7C429-01	DR 6-30-135 Radio Frame
SD-7C430-01	DR 11-40-135 Radio Frame
SD-7C431-01	DR 11-40-135 Transmitter-Receiver
Equipment Drawings	
J98758A	135A Frequency Diversity (FD) Line Terminal Bay
J98758B	135A FD Line Terminal Growth Bay
J98759A	135A FD Digital Regenerator Bay
J98759B	135A FD Digital Regenerator Growth Bay
J98767A	135EC FD Line Terminal Bay
J98767B	135EC FD Line Terminal Growth Bay
J98768A	135EC FD Digital Regenerator Bay
J98768B	135EC FD Digital Regenerator Growth Bay
J98760A	DR 6-30-135 Transmitter-Receiver Bay
J98760B	DR 11-40-135 Transmitter-Receiver Bay
Miscellaneous Maintenance— Related Drawings	
ED-8C530-10	DR 6-30/DR 11-40-135 Test Equipment and Tools Ordering Information
ED-8C531-10	DR 6-30/DR 11-40-135 Spare Parts
ED-1P128-12	DR 6-30/DR 11-40-135 Assignment of alarms, status indications, and remote switches to E2A-type alarm processing remote bay

4 Support Customer Information Products

Procedures that support the operation and maintenance of a terminal or regenerator station are provided in the associated Maintenance Support manual. The System Description and Application Engineering manual contains additional information that can be useful.

5 How to use This Manual

The TERMINAL and REGENERATOR manual is designed for use with a remote alarm center. Maintenance is on a demand basis directed by the alarm center [referred to as the Transport Servicing Center (TSC)]. When an alarm or degraded performance indication is received at the TSC, it is analyzed and a decision is reached to dispatch a technician to the appropriate station. The TSC will issue a ticket for the trouble condition. The technician then uses this TERMINAL and REGENERATOR manual to clear the problem. For scheduled annual tests a ticket is also issued; the technician will be referred to the 9-digit practice under the **ANNUAL TESTS** tab for the necessary tests.

All DR 6/11 maintenance activity should begin with the **START HERE** tab and end at the **END HERE** tab.

Tab flow from the **START HERE** tab is illustrated in the following paragraphs (5.1, 5.2, and 5.3).

5.1 START HERE Tab

All DR 6/11 maintenance activity should begin with the **START HERE** tab. Figure 1 shows the tab flow outputs from the **START HERE** tab.

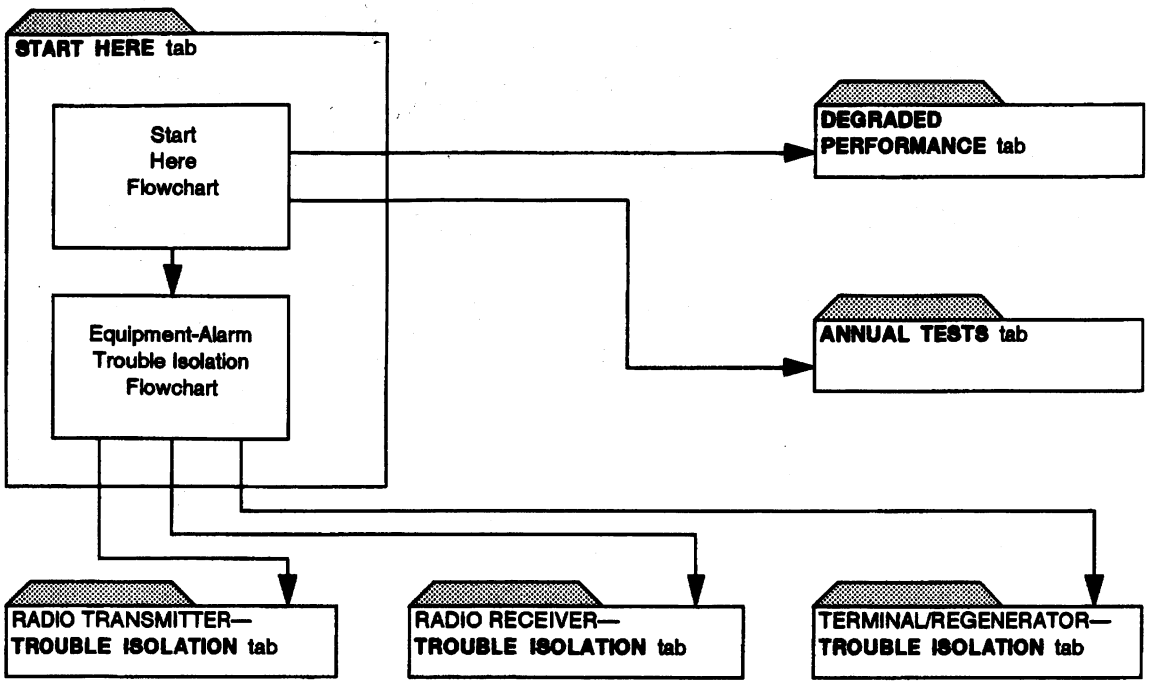

Figure 1. Outputs From START HERE Tab

5.2 Equipment-Alarm Trouble Isolation

Figure 2 shows the tab flow for an equipment-alarm trouble. From the **START HERE** tab, the flow will go to only 1 of the 3 **TROUBLE ISOLATION** tabs. After trouble isolation and repair are complete, the technician ends in the **END HERE** tab.

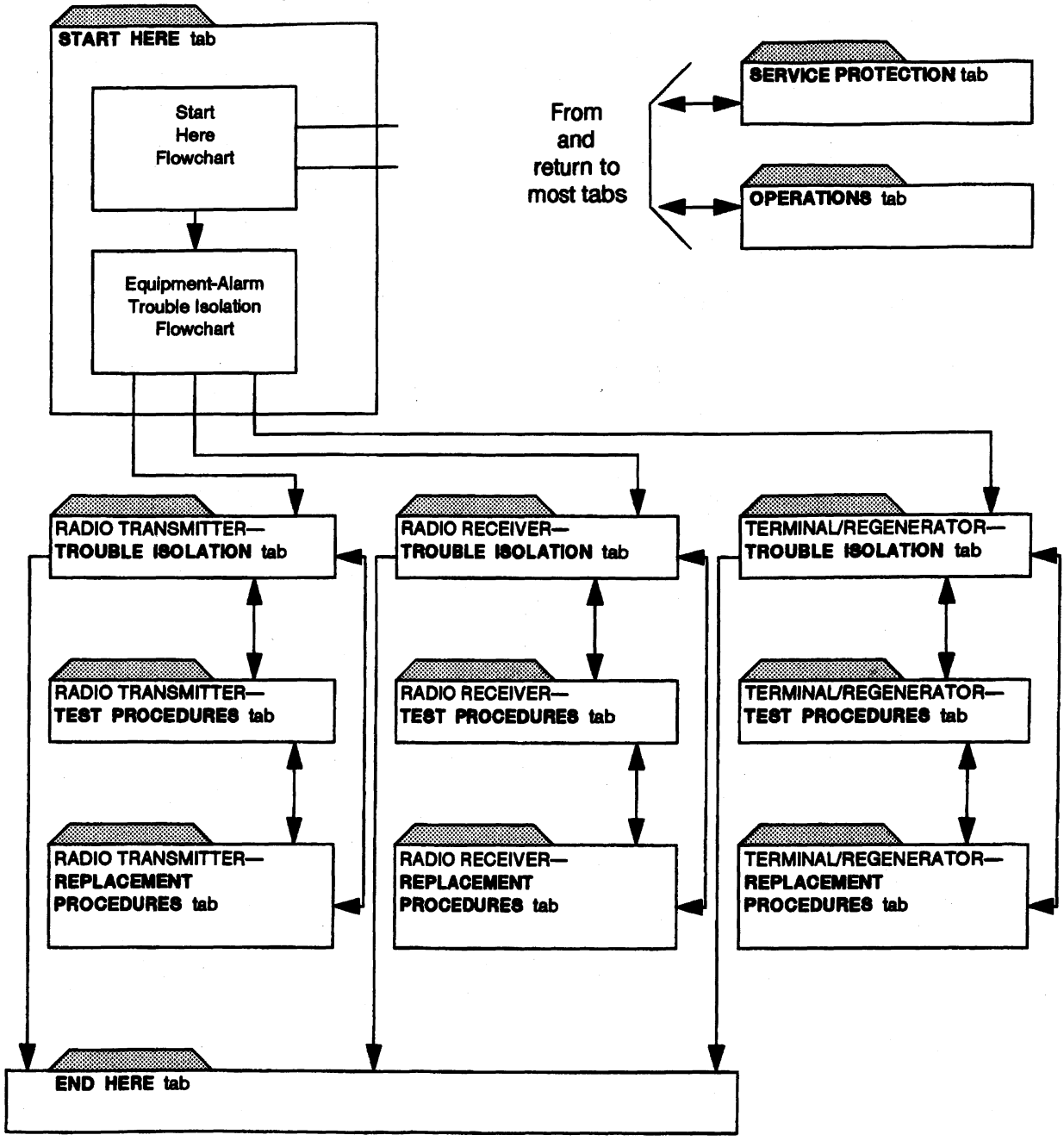

Figure 2. Tab Flow—Equipment-Alarm Trouble Isolation

5.3 Degraded Performance Trouble Isolation

Figure 3 shows the tab flow for a degraded performance trouble. From the **START HERE** tab, the flow will go to the **DEGRADED PERFORMANCE** tab. After trouble isolation and repair are complete, the technician ends in the **END HERE** tab.

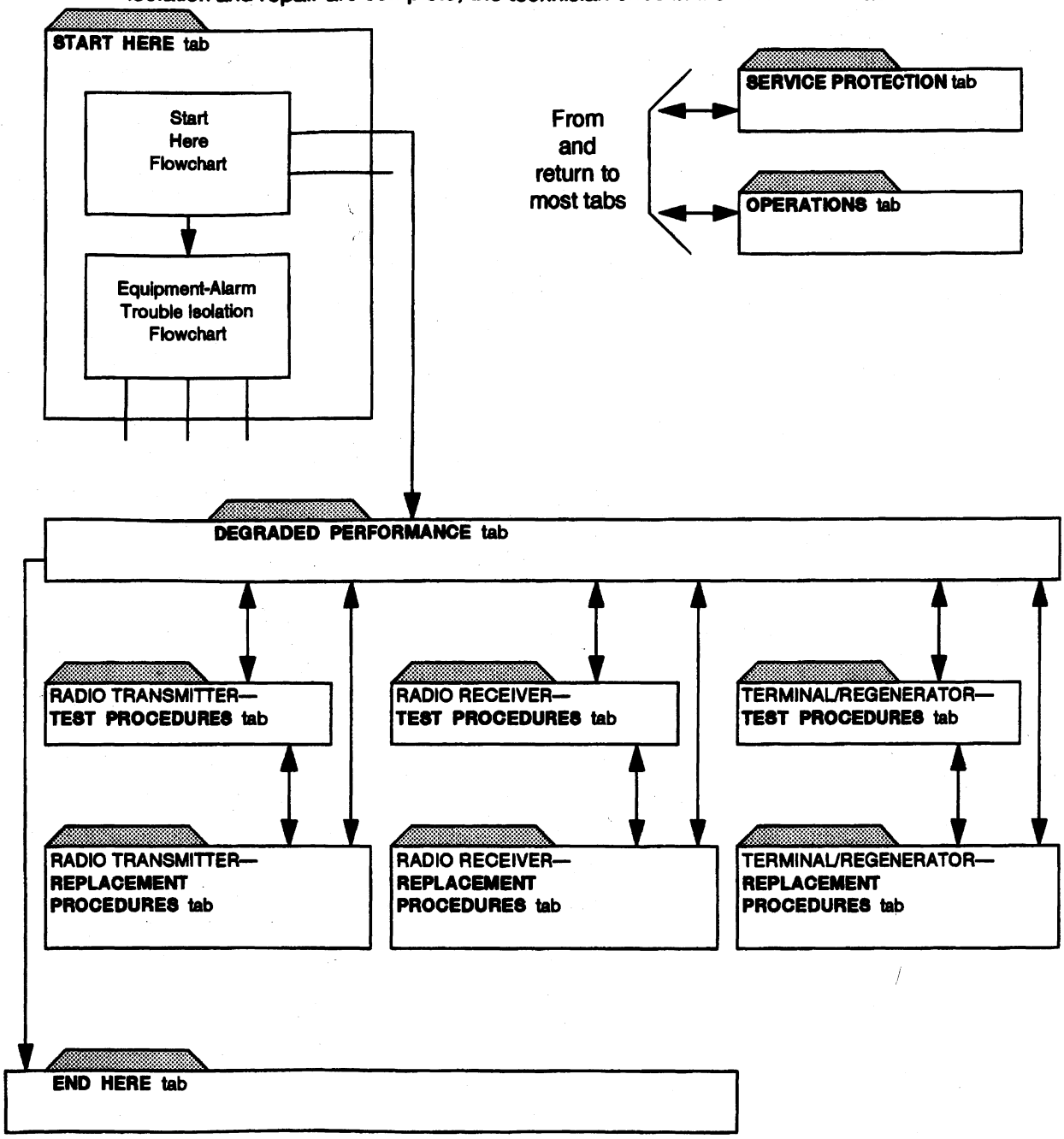

Figure 3. Tab Flow—Degraded Performance Trouble Isolation

5.4 Annual Tests

Figure 4 shows the tab flow for annual tests. From the **START HERE** tab, the flow will go to the **ANNUAL TESTS** tab. After testing and repair (if necessary) are complete, the technician ends in the **END HERE** tab.

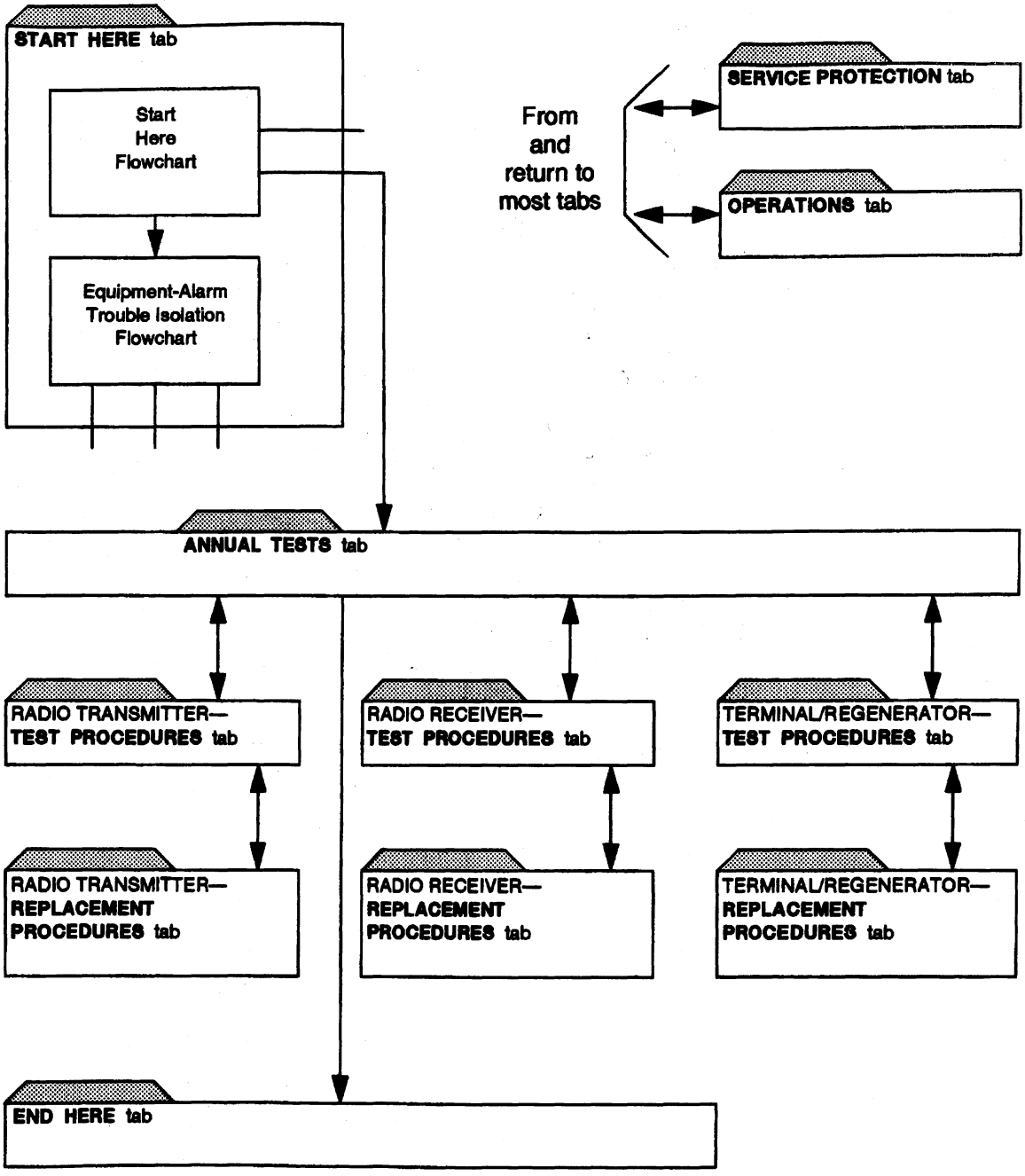

Figure 4. Tab Flow—Annual Tests

6 How to Order This Manual

The ordering number for the entire manual (binder, contents, and tabs) is AT&T 421-500-100. The practices can also be ordered individually.

Additional manuals are available from:

Customer Information Center (CIC)

P.O. Box 19901

Indianapolis, IN 46219

Phone: 1-800-432-6600 or 317-352-0011

7 Customer Feedback

If you have any comments, please fill out the customer comment sheet at the back of this section. Your comments will help us improve the quality and usefulness of our CIPs. This comment sheet does not require postage and is the preferred method of communicating with AT&T about this manual.

If the comment sheet is missing or your comments are too detailed to fit on the sheet, you may write us at the following address:

Lucent Technologies
ATTN: Radio Department
2400 Reynolda Road
Winston-Salem, NC 27106-4606

Comments will be acknowledged within 30 days. Thank you in advance for your comments.