OPERATION AND MAINTENANCE
TERMINAL STATION
1 X N FREQUENCY DIVERSITY
DR 6/11-135EC
DOCUMENT INTRODUCTION

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This manual contains the sections required to operate and maintain the DR 6/11-135EC equipment at a terminal station. The manual is divided into Introduction, Operations, Maintenance, Replacement, and Tests and Adjustments sections by major tabs. Each section is separated by subtabs for locating the information quickly. A 9-digit number is assigned to the material under each tab so that the information can be reissued easily. The group of practices in this binder make up the Operation and Maintenance—Terminal Station, 1 X N Frequency Diversity manual.

This practice is reissued to revise the information on how to use the documents in this binder. The practice is used in binders 421-102-003AC, 421-102-004AC, 421-102-090, and 421-102-100.

All terminal station alarm-clearing begins with the "Terminal Station Trouble Isolation Flowchart" that is in the "Station Alarm Trouble Isolation" tab in the "Maintenance" section. The technician should become familiar with the general information in the "Station Alarm Trouble Isolation" tab before proceeding to the flowchart.

As shown in Fig. 1, the technician starts trouble isolation at Level 1. Level 1 directs the technician to the proper bay trouble isolation procedure in Level 2.

The Level 2 procedure directs the technician to the proper alarm-clearing procedure in Level 3. The radio alarm-clearing procedures are divided into MRs (main routines), MSRs (main subroutines), and SRs (subroutines).

When alarm-clearing procedures in Level 3 call for unit replacement, operations, or tests and adjustments, the technician is referred to Level 4. When requirements are not met in a Level 4 test procedure, the technician is referred to the replacement procedure. No reference is made from replacement procedures to tests and adjustments procedures. These procedures stand alone.

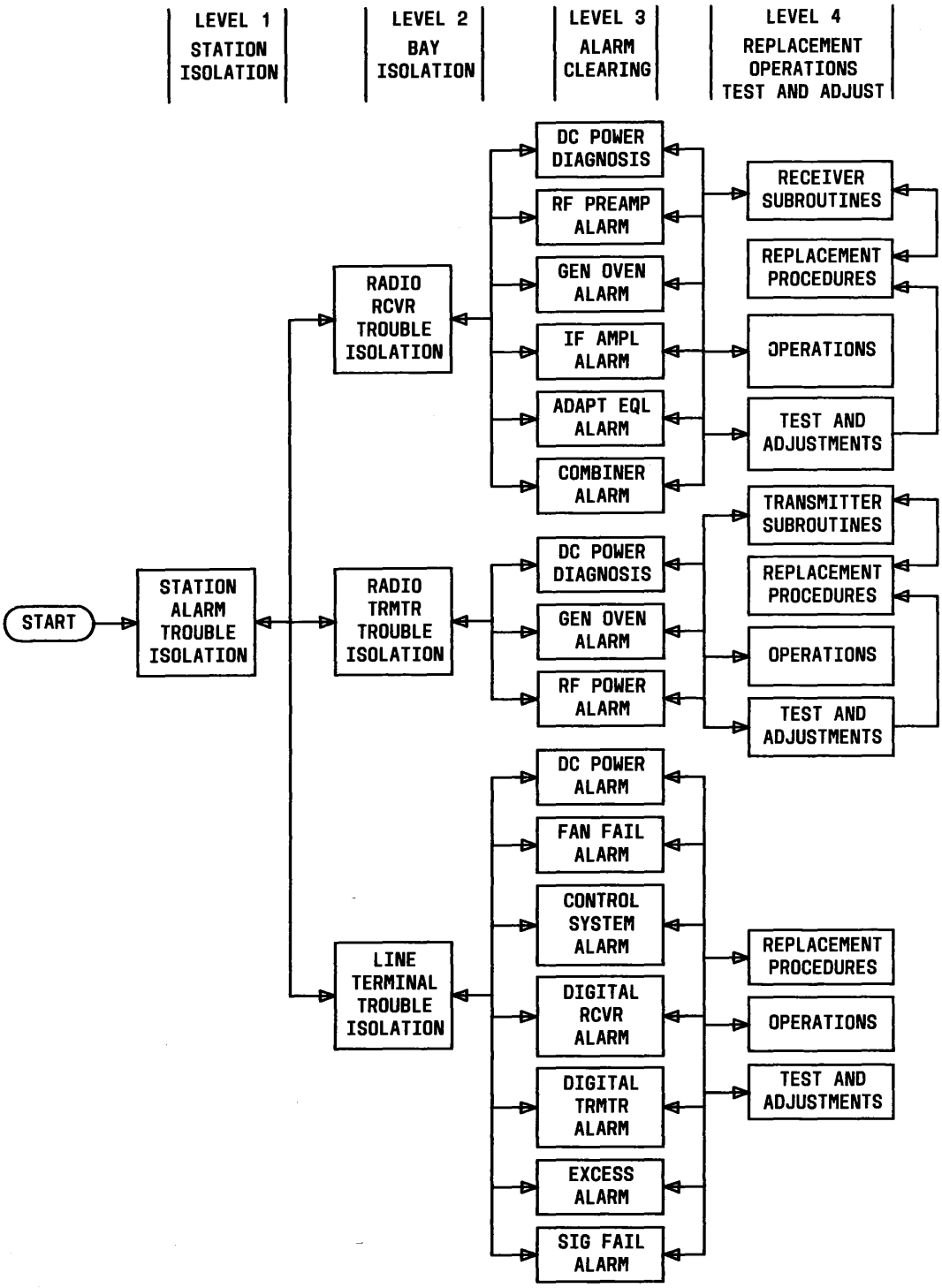


Fig. 1—Terminal Station Trouble-Clearing Hierarchy

ASSOCIATED DOCUMENTS

As shown in Fig. 2, the DR 6/11-135EC 1 X N Frequency Diversity documentation consists of the following:

1. ***Operation and Maintenance—Terminal Station:*** One volume that provides the necessary operation, alarm-clearing, test, adjustment, and replacement information for a terminal station.
2. ***Operation and Maintenance—Regenerator Station:*** One volume that provides the necessary operation, alarm-clearing, test, adjustment, and replacement information for a regenerator station.
3. ***Operation and Maintenance—Maintenance Support:*** One volume that provides support information for the terminal station, regenerator station, and system, such as:
   - Physical and functional descriptions of the radio system and the radio, regenerator, and line terminal bays with all associated units.
   - Faceplate information for all plug-in units. Controls, indicators, and jacks are called out.
   - System performance diagnostics.
   - System tests.
   - Specialized tests to support system performance diagnostics.
   - Frame and unit checks to support system performance diagnostics.
   - Support services.
4. ***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.

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

Schematic Drawings

SD-7C415-01	DR 6-30/DR 11-40-135 System Application
SD-7C423-01	135EC Line Terminal
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

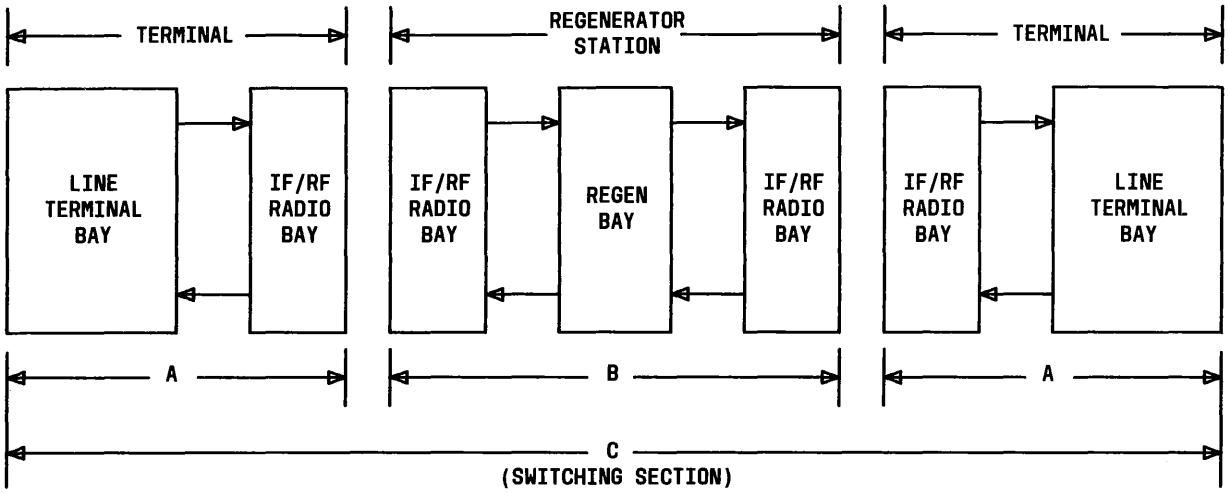
Equipment Drawings

J98767A	135EC Line Terminal Bay
J98767B	135EC Line Terminal Growth Bay

J98768A	135EC Digital Regenerator Bay
J98768B	135EC 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.



COVERAGE REFERENCE	DOCUMENT IDENTIFICATION
A	OPERATION AND MAINTENANCE - TERMINAL STATION 1 X N FREQUENCY DIVERSITY
B	OPERATION AND MAINTENANCE - REGENERATOR STATION 1 X N FREQUENCY DIVERSITY
C	MAINTENANCE SUPPORT 1 X N FREQUENCY DIVERSITY
C	MAINTENANCE CENTER OPERATION 1 X N FREQUENCY DIVERSITY

Fig. 2—DR 6/11-135 Documentation Plan

SUPPORT SERVICES

Procedures that support the operation and maintenance of a terminal station are provided in the Operation and Maintenance—Maintenance Support, 1 X N Frequency Diversity 6/11-135EC manual, AT&T 421-101-060.

HOW TO USE DOCUMENTS

As shown in Fig. 3, documentation for the DR 6/11-135 frequency diversity system consists of four manuals that are designed to interact when required. Since most systems use centralized alarm-reporting, the terminal and regenerator operation and maintenance manuals are designed for this arrangement. Maintenance is on a demand basis directed by the Maintenance Center Operations (Alarm Center) manual. When an alarm is received at the alarm center, it is analyzed and a decision is reached to dispatch a technician to the appropriate station. The technician then uses the terminal or regenerator station operation and maintenance manual with the trouble-clearing philosophy shown in Fig. 4. An example of an alarm-clearing procedure is shown in Fig. 5.

When the centralized alarm-reporting arrangement is not used, maintenance personnel simply respond to the local office alarms of their specific station. For multiple hop systems where initial analysis indicates that the trouble may not be at their station, communications with maintenance personnel at other sites is necessary to isolate the actual trouble location. Once the trouble is located, the technician uses the terminal or regenerator station operation and maintenance manual with the trouble-clearing philosophy shown in Fig. 4.

As shown in Fig. 4, the trouble is first isolated to the terminal or regenerator, radio transmitter, or radio receiver trouble isolation procedure. The trouble isolation procedure directs the technician to an alarm-clearing procedure.

The terminal or regenerator alarm-clearing procedure may direct the technician to the "Test and Adjustments" tab or the "Replacement Procedures" tab.

The radio transmitter and receiver alarm-clearing procedures are made up of MRs, MSRs, and SRs. The MRs and the MSRs direct the technician to the transmitter or receiver subroutines tab as required. When necessary, these routines refer the technician to the TASRs (Test and Adjustments Subroutines) or to the Replacement Procedures.

When referred from an MR, MSR, or SR to another routine, record where you left the first routine to ensure that you return to the proper place when directed.

After the trouble is cleared, station and switch section verification procedures are required.

When degraded performance is known to exist but does not generate a localizing alarm, the technician should go to the Maintenance Support manual for assistance in clearing the nonalarm condition. The Maintenance Support manual also contains equipment, functional, and circuit pack descriptions and information that supports the overall operation and maintenance functions.

ISSUING ORGANIZATION

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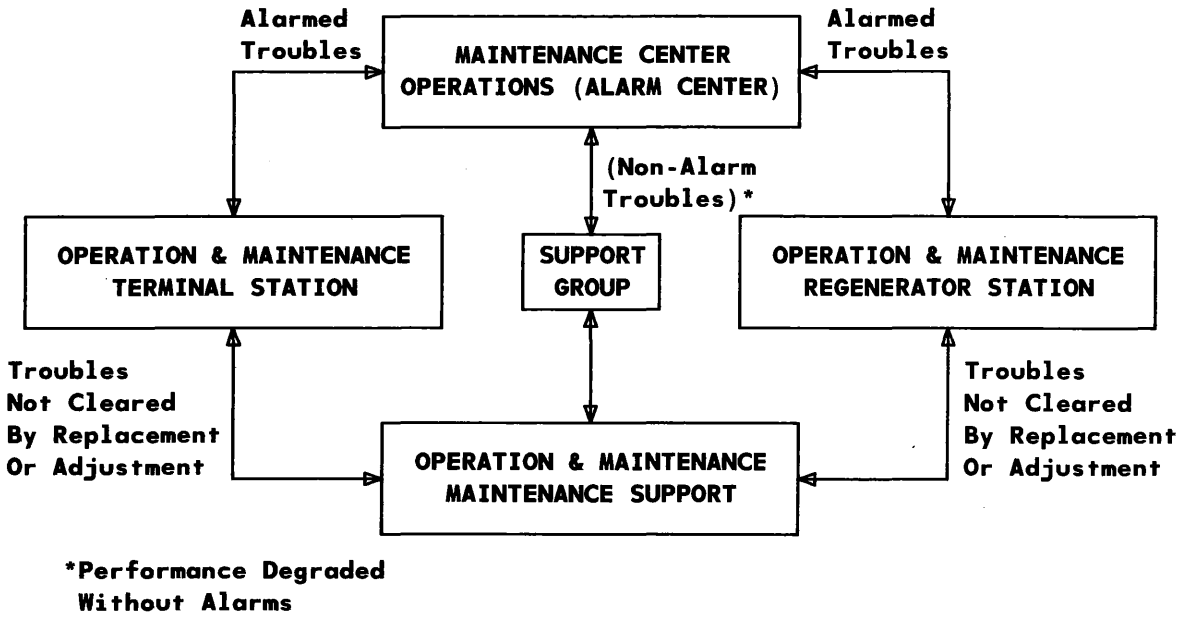

Fig. 3—Relationship Between O&M Manuals—Alarm Center Option

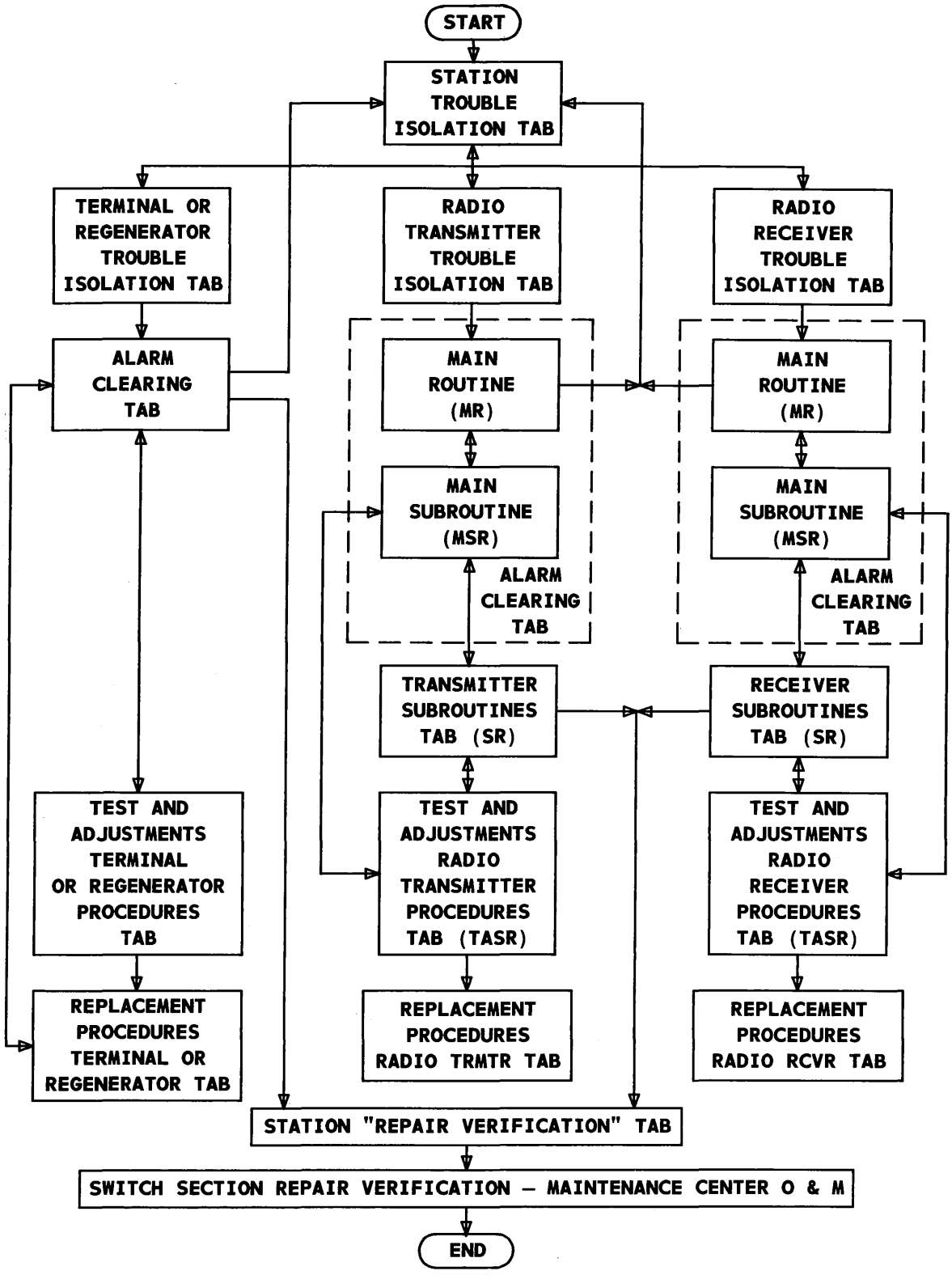

Fig. 4—Station Trouble-Clearing Process for Alarmed Conditions

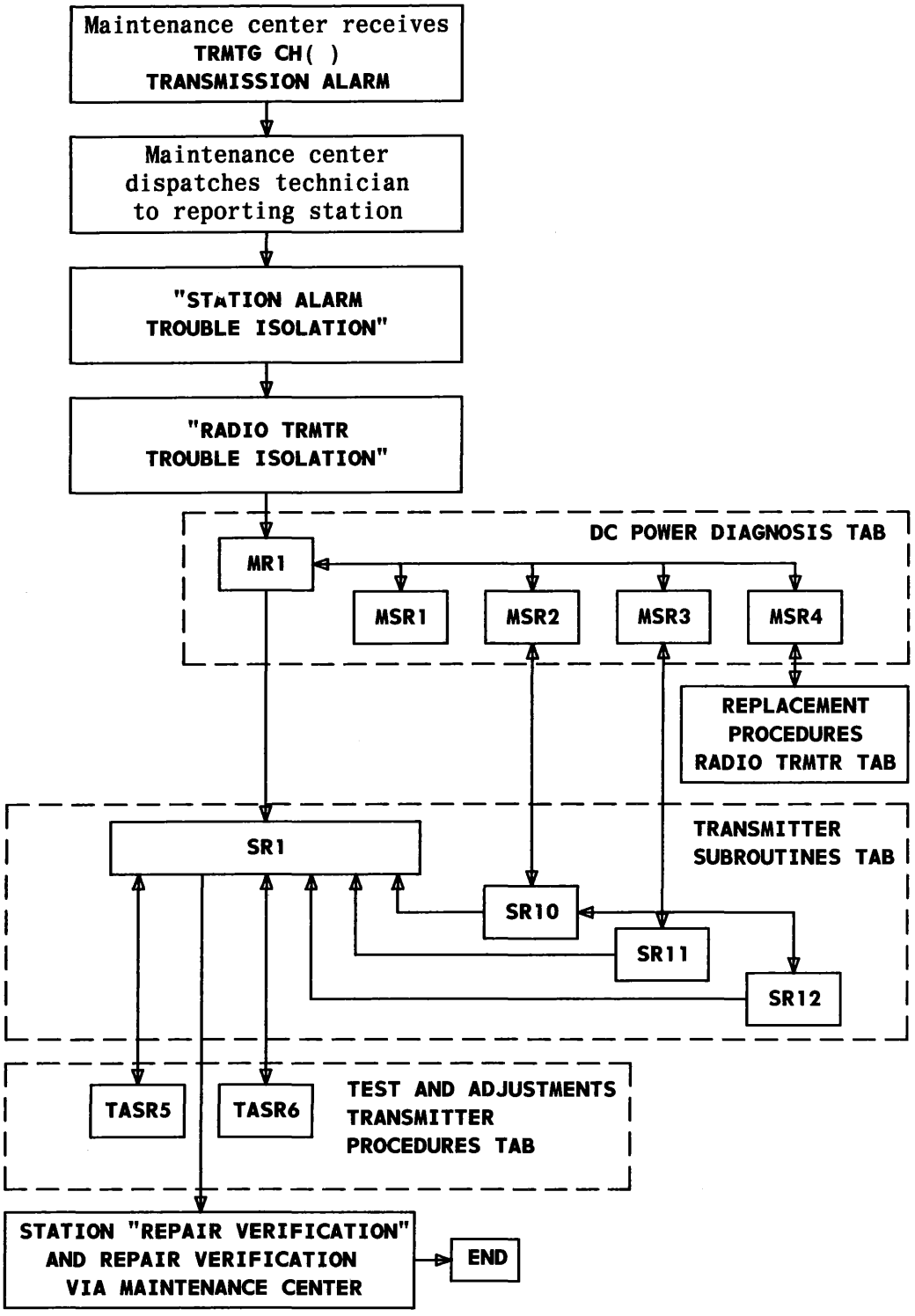

Fig. 5—Example of Alarm-Clearing Sequence for Radio Transmitter Power Unit Failure

COMMENT FORMS

Comments concerning any problems with the content, usability, and adequacy of the Maintenance Support manual would be appreciated. Please give specific part/section identification, paragraph reference, or problem area, as applicable, and the correction or suggested improvement.

Comments submitted by:_____ Date:_____

Location_____

Send to:

AT&T
2400 Reynolda Road
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TAB	SECTION NUMBER	PARAGRAPH REFERENCE OR PROBLEM AREA	CORRECTION OR SUGGESTED IMPROVEMENT
			Comment(s) continued on reverse side.

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