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DMS-100 Family

External Devices

Maintenance Guide

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northern telecom

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Maintenance Guide

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Contents

About this document vii
When to use this document vii
How External Devices documentation is organized vii
References in this document viii
What precautionary messages mean viii
How commands, parameters, and responses are represented ix
Input prompt (>) ix
Commands and fixed parameters ix
Variables ix
Responses x

Maintenance overview 1-1
Functional description 1-1
Office alarm system 1-2
Office Alarm System versions 1-2
Alarm detection and reporting 1-3
Alarm system hardware 1-3
Alarms 1-4
Alarm conditions 1-4
Power faults 1-5
System-detected alarm conditions 1-6
Miscellaneous alarm conditions 1-6
Emergency service alarms 1-6
Escalation to manual maintenance 1-7

Preventive maintenance strategies 2-1
Description of routine maintenance procedures 2-1
Routine maintenance schedules 2-1
Testing the dead system alarm 2-1

EXT related logs 3-1

EXT related operational measurements 4-1

EXT related data structures 5-1

EXT related user interface commands 6-1

EXT related card requirements **7-1**
Description of circuit card removal and replacement procedures 7-1
Description of other equipment removal and replacement procedures 7-4

Trouble isolation and correction **8-1**
Description of troubleshooting procedures 8-1
Trouble condition indicators 8-1
Locating and clearing faults 8-2
Choosing alarms to clear 8-2
Listing the alarms 8-3
Locating faulty equipment 8-3
No fault isolated 8-6
Fault isolation tests 8-6
Diagnostic tests 8-6
Dead system alarm 8-6
Testing the SC card 8-6
Testing the SD card 8-7
Product specific test tools 8-8

Troubleshooting chart **9-1**

Advanced troubleshooting procedures **10-1**
Task list 10-1
Advanced trouble locating procedures 10-1
Powering up the office alarm unit 10-1
Powering down office alarm unit 10-1
Common procedures 10-2

List of terms **11–1**

List of figures

Figure 1-1 Ext level MAP display 1-2
Figure 1-2 Alarm system hardware 1-4
Figure 7-1 NT0X10 scan detector card switches 7-2
Figure 7-2 NT2X57 signal distribution card switches 7-3
Figure 8-1 Mapping circuit numbers to slot numbers for an OAU or standby MTM 8-4
Figure 8-2 Mapping circuit numbers to slot numbers for an STM 8-5
Figure 8-3 Mapping circuit numbers to slot numbers for an RMM 8-5

List of tables

Table 3-1 EXT related logs 3-1
Table 6-1 EXT level commands 6-1
Table 7-1 Scan card (NT0X10) switch settings 7-1
Table 7-2 Signal distribution (NT2X57) switch settings 7-1
Table 8-1 Alarm description 8-2
Table 8-2 Visual SD point functions 8-8
Table 8-3 Audible SD point functions 8-8
Table 9-1 EXT alarm clearing 9-1

About this document

When to use this document

This guide contains advanced maintenance information for the DMS-100 switch interface to external devices. This guide includes an overview of the external devices subsystem, a description of related performance indicators, user interface commands, fault isolation strategies, and a troubleshooting chart. This guide is intended for use by maintenance engineering and field maintenance personnel.

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

For information on document numbering, refer to *North American DMS-100 Cancellation Cross-Reference Directory.*

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *Product Documentation Directory,* 297-8991-001.

How External Devices documentation is organized

This document is part of External Devices documentation that supports the Nortel line of External Devices products. External Devices documentation is a subset of the DMS-100 Family library.

External Devices documentation consists of the following documents:

- *External Devices Maintenance Guide,* 297-1001-593
- *Alarm and Performance Monitoring Procedures*

- *Card Replacement Procedures*
- *Log Report reference Manual*

References in this document

The following documents are referred to in this document:

- *Alarm and Performance Monitoring Procedures*
- *Alarm System Description*, 297-1001-122
- *Card Replacement Procedures*
- *Commands Reference Manual*, 297-1001-822
- *Log Report Reference Manual*
- *Peripheral Modules Maintenance Guide*
- *Translations Guide*

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING
Damage to the backplane connector pins
Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION
Possible loss of service
Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

```
>BSY
```

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

```
>BSY  CTRL
```

Variables

Variables are shown in lowercase letters:

```
>BSY  CTRL  ctrl_no
```

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Maintenance overview

Functional description

The external devices (EXT) subsystem performs the following basic functions:

- monitors DMS Office Alarm System (OAS) hardware
- detects and reports alarm conditions in the following:
  - — frame supervisory panels (FSP) or maintenance supervisory panels (MSP)
  - — power distribution centers (PDC)
  - — office alarm units (OAU)
  - — power plants
- generates visual and audible alarm indications

The EXT subsystem is one of the subsystems in the DMS-100 family maintenance system. Each of these subsystems controls its alarm status display in the system status area of the Ext MAP level display. Figure 1-1 shows the Ext level MAP display. The alarm system software checks for changes in the alarm status of the subsystems and updates the related audible and visual alarm indicators. These checks and updates occur about every five seconds. The EXT subsystem reports alarms that other maintenance subsystems do not report.

Figure 1-1
Ext level MAP display

```
 CM    MS    IOD    Net    PM    CCS    Lns    Trks    Ext    APPL
  .     .     .      .      .     .      .       .      .      .
          Ext Alarms      Crit    FSP    Major    Minor    NoAlm
Ext                          0      0        0        0        0
 0 Quit
 2
 3 Equip
 4
 5
 6
 7 List_
 8 TstDSAlm
 9 SetSD_
10 SetSC_
11 Disp_
12
13 _Crit
14 _FSP
15 _Maj
16 _Min
17 _NoAlm
18
```

The EXT subsystem does not participate in call processing. The EXT subsystem monitors the alarm status of other subsystems. This monitoring helps to ensure proper the operation of DMS-100 Family switches, so call processing can function properly.

Office alarm system

The Office Alarm System (OAS) consists of the following:

- alarm software
- maintenance trunk modules (MTM), service trunk modules (STM), or integrated service modules (ISM) that contain the primary and standby office alarm units (OAU)
- various other alarm system hardware such as alarm panels

The standby OAU is also called the standby MTM or standby ISM.

Office Alarm System versions

The following OAS versions exist:

- Version 1
- Version 2
- Version 2 Enhanced Alarm System (EAS)
- Low Power Alarm (LPA) system

For detailed information on alarm system versions, refer to *DMS-100 Family Alarm System Description*, 297-1001-122.

Alarm detection and reporting

The alarm system software monitors and controls alarm system hardware. When the alarm system software receives alarm or control inputs, it operates or releases signal distribution (SD) points in the alarm system hardware. The operation or release of SD points activates or deactivates audible or visual alarm or control functions.

Alarm and control inputs monitored by alarm system hardware connect to the alarm system software through scan (SC) points. SC points detect signals generated by the following:

- hard-wired alarm contacts in DMS hardware
- operation of manual-control switches
- alarm circuits in miscellaneous equipment in the DMS office

SC points have related SD points. The software that monitors the SC points is part of the EXT subsystem. The descriptions of data schema tables ALMSCGRP, ALMSC, ALMSDGRP, and ALMSD in *Translations Guide* describe SC and SD point assignments for the OAS.

Alarm system hardware

The following sections describe OAS hardware and the frame and cabinet shelves OAS hardware is provisioned on. For detailed information on alarm system hardware, see *DMS-100 Family Alarm System Description*, 297-1001-122.

Office alarm unit

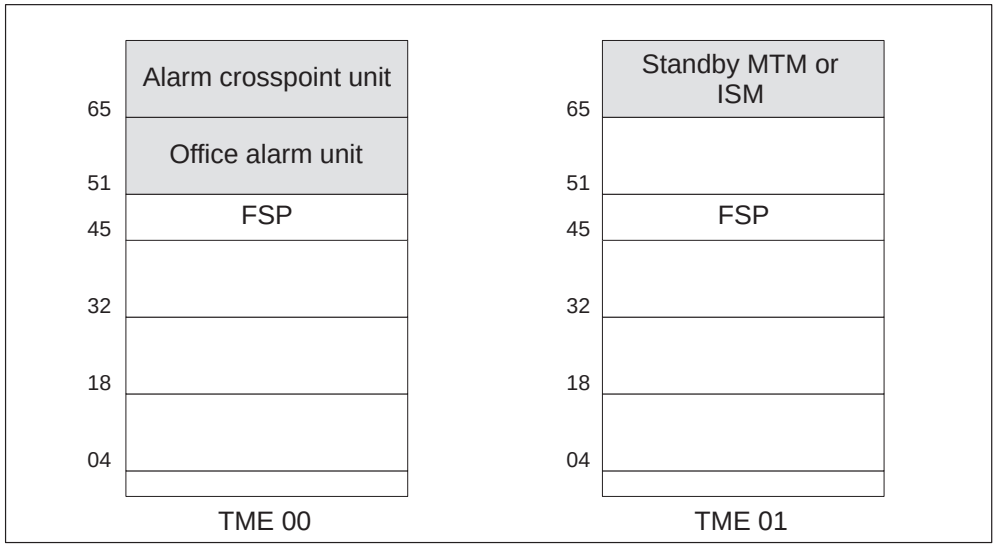
The OAU is an MTM, STM (compact MTM), or ISM shelf equipped with a transmission, a processor, a control, and a power converter card. The OAU also has slots for up to 12 office alarm circuit, signal distribution, and scan detector cards.

The primary and standby OAUs connect to each other through the following:

- alarm crosspoint field shelf (OAS Version 1)
- alarm cross-connect unit (AXU) panel (OAS Version 2 and later alarm systems)
- main distribution frame (MDF).

The alarm crosspoint field shelf and AXU also connect the primary and standby OAUs to other components of the OAS. Figure 1-2 shows the major hardware components of the OAS and their shelf locations (in inches from the floor).

Figure 1-2
Alarm system hardware



Maintenance trunk module

The maintenance trunk module is a peripheral module (PM) that can contain an OAU or a standby MTM. For detailed information on the MTM, see *Peripheral Modules Maintenance Guide*, 297-1001-592.

Service trunk module

The service trunk module is a PM that consists of two compact MTM. The STM can contain an OAU or a standby MTM. For detailed information on the STM, see *Peripheral Modules Maintenance Guide*, 297-1001-592.

Integrated services module

The integrated services module is a single shelf that replaces the trunk module (TM) or the maintenance trunk module (MTM) shelf. The ISM shelf mounts on the cabinetized ISM (CISM) or the frame ISM (ISME). For detailed information on the ISM, see *Peripheral Modules Maintenance Guide*, 297-1001-592.

Alarms

For detailed information on alarms and alarm circuits, see *DMS-100 Family Alarm System Description*, 297-1001-122.

Alarm conditions

The EXT subsystem detects the following types of alarm conditions:

- power faults
- system-detected alarm conditions
- faults defined by operating company personnel

- emergency calls

Power faults

Power faults are the most severe alarm conditions detected by the EXT subsystem. A power interruption can affect the operation of individual frames or an entire switch. The power faults indicated at the Ext level of the MAP display are as follows::

- critical (CRPWR)
- FSP
- major (MJPWR)
- minor (MNPWR)

FSP faults

One or more of the following alarm conditions generates an FSP alarm:

- shelf power converter failure at any frame in an aisle
- blown fuse in the office battery or alarm battery supply at any frame in an aisle
- cooling fan failure at any frame in an aisle
- PDCFAIL alarm at the PDC that serves an aisle
- ABSFAIL alarm at the PDC that serves an aisle

The PDCFAIL and ABSFAIL alarms also generate an FSP alarm. The FSP alarm SC point identifies the aisle where the failure occurred and the PDCFAIL or ABSFAIL SC point indicates the nature (for example, a blown fuse) and location (for example, the PDC) of the alarm condition.

A blown fuse or power converter failure on a frame that contains a subsystem (for example, a TM) also generates an alarm for the affected subsystem. The EXT subsystem generates another alarm: the FSP alarm. If an FSP alarm occurs at the same time as an alarm in another subsystem, the probable cause is a local power failure.

The no alarm (NoAlm) condition in the Ext MAP level alarm display indicates an SC point change that does not require an alarm. The system-level MAP display does not identify NoAlm conditions.

The NoAlm SC points are part of the operational hardware of the alarm system. These SC points, with the exception of TSTSCAN, monitor manual control switches in the alarm system hardware. When one of these SC points changes state, the alarm system software performs the required control function (for example, activates remote alarm transfer). The external alarms status displays these SC points generate can provide information on the status of the alarm system manual controls at remote locations. You can use these reports to check the operation of the alarm system manual controls.

System-detected alarm conditions

Alarm system hardware or software problems can cause system-detected alarm conditions. When a system-detected alarm condition occurs, the switch remains operational, but the OAS may not report alarms properly. The most severe system-detected alarm condition in the EXT subsystem is an automated message accounting (AMA) failure.

Alarm battery failures can cause major system-detected alarm condtions. Examples of this type of fault are the following:

- ABOAUFL (OAU alarm battery failure)
- ABMTMFL (MTM alarm battery failure)

Miscellaneous alarm conditions

Operating company personnel can program the alarm system to monitor conditions such as office temperature and humidity. Though these conditions rarely affect switch functions, you can assign any level of alarm severity from critical to no alarm. Conditions such as high temperature and humidity are called miscellaneous alarm conditions.

The operating company assigns SC points to miscellaneous alarms. Table ALMSC contains datafill for the function and alarm severity of each miscellaneous alarm SC point. For a list of suggested functions for miscellaneous alarm SC points and a description of the assignment of SC points to office alarm circuits, refer to the description of table ALMSC in *Translations Guide*.

The number of SC points available for assignment to miscellaneous alarms is site dependent.

Emergency service alarms

The emergency service alarms are as follows:

- ESR
- ESR_TIME

When you make an emergency call to the Fire and Police (FPT) trunk, the system generates the ESR minor alarm. The system also generates an ESR100 log.

When the system routes an emergency call to the FPT trunk, but the attendant does not answer within 30 s, the alarm system generates the ESR_TIME minor alarm.

The operating company can control whether or not an emergencey service alarm condition generates an alarm at the MAP terminal. To deactivate the generation an alarm, perform the following procedure.

At the MAP terminal

1 To access table SFWALARM, type

>TABLE SFWALARM
and press the Enter key.

2 To position on the alarm tuple, type

>POS ESR_ALARM
and press the Enter key.

3 Type

>CHA
and press the Enter key.

4 To change the tuple, type

>Y
and press the Enter key.

5 To enter no alarm, type

>N
and press the Enter key.

6 To end the field, type

>$
and press the Enter key.

To activate the generation of an alarm, enter Y at step 5 of the above procedure.

Escalation to manual maintenance

The EXT subsystem collects alarms from a variety of external devices and other subsystems that make up the DMS-100 Family switch. When the EXT subsystem reports software alarms at the MAP terminal, the system has failed to correct the problems indicated by these alarms. In this case, operating company personnel must manually intervene to return faulty hardware to normal operation.

Although the DMS-100 Family switches are designed to operate with minimum manual intervention, some manual maintenance is required. MAP responses and log reports indicate the type of manual maintenance required. Chapter 8 describes fault isolation and correction techniques for EXT-related faults.

Preventive maintenance strategies

Description of routine maintenance procedures

The procedure for testing the dead system alarm is used to ensure this alarm is operational.

Routine maintenance schedules

Perform this procedure once a month.

Testing the dead system alarm

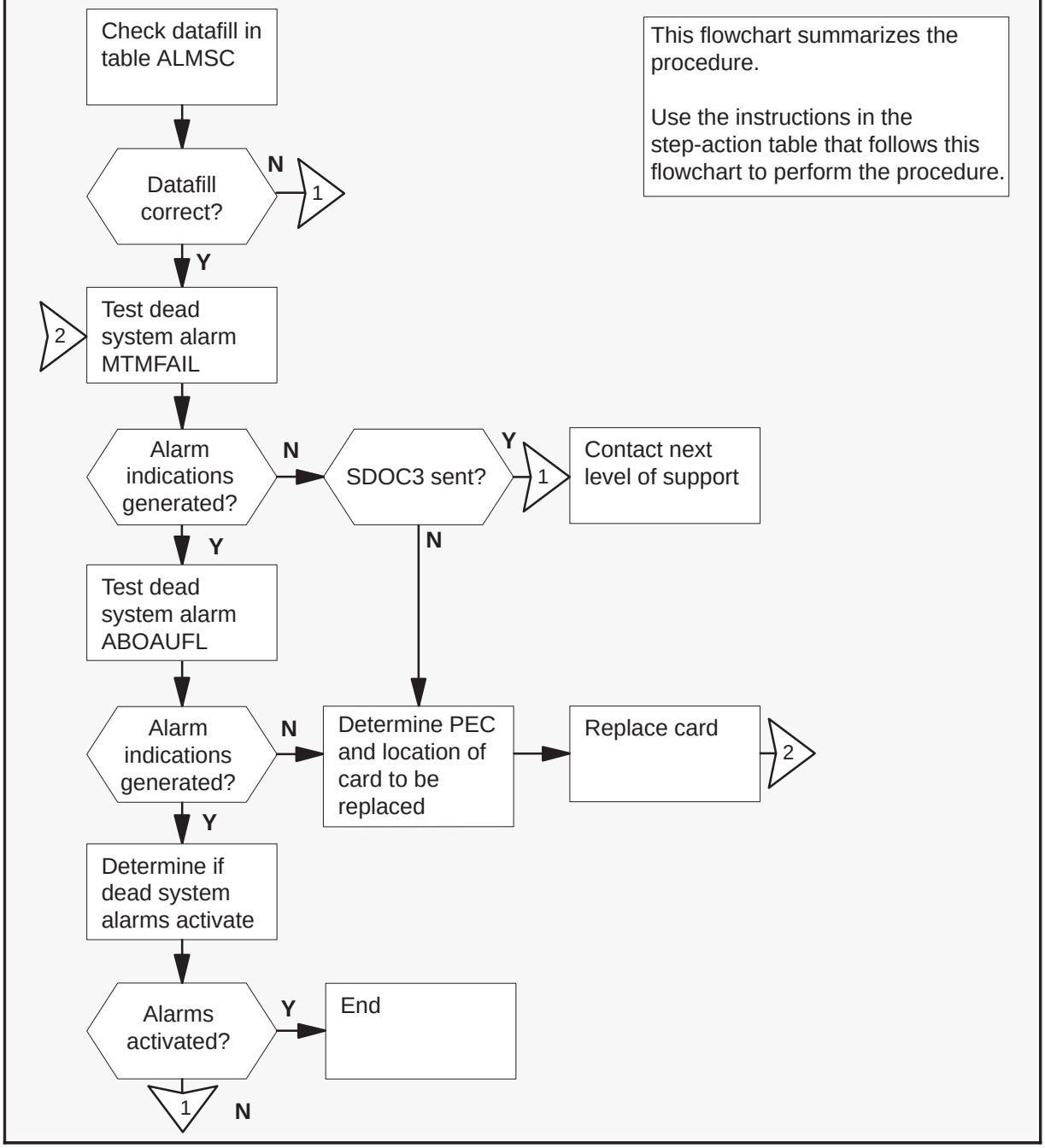
The TSTDSALM command is used to test the dead system alarm (DSA). This command simulates one of two alarm conditions, OAUFAIL and MTMFAIL, causing the activation of the DSA.

This procedure depends on the datafill in tables SCGRP and SDGRP to identify a faulty card. The datafill in tables SCGRP and SDGRP that is specific to a given office is described in *Translations Guide*.

This procedure will not function properly unless tuples ABMTMFL and ABOAUFL are correctly datafilled in table ALMSC.

The following flowchart is a summary of this procedure. Use the instructions in the step-action procedure that follows the flowchart to perform the procedure.

Summary of testing the dead system alarm



Testing the dead system alarm

Step	Action
At the MAP terminal	
1	Access system table ALMSC by typing **>TABLE ALMSC** and pressing the Enter key.
2	Position on tuple ABMTMFL by typing **>POSITION ABMTMFL** and pressing the Enter key.
3	Use the following information to determine where to go next in this procedure.

If tuple ABMTMFL is	Do
datafilled	step 5
not datafilled	step 4

Step	Action
4	Datafill tuple ABMTMFL and then proceed with the rest of this procedure.

5	Determine if the datafill for tuple ABMTMFL is correct.
	Note: The datafill for fields REPORT, ALM and LOGIC (subfields FIX_LOGIC, SDFUNCT, ALMGRP, and ALMXFR) must match the entries below:
	`(ABAUD N N)`
	`(ABOAU N N)`
	`(EXPILDMS N N)`
	`(OAUVISLOOP N N)`
	Other fields and subfields can be datafilled, but the datafill does not affect the functioning of the dead system alarms.

If ABMTMFL datafill is	Do
correct	step 7
not correct	step 6

Step	Action
6	Correct the datafill and then proceed with rest of this procedure.

—continued—

Testing the dead system alarm (continued)

Step	Action
7	Position on tuple ABOAUFL by typing **>POSITION ABOAUFL** and pressing the Enter key. **If tuple ABOAUFL is** — **Do** datafilled — step 9 not datafilled — step 8
8	Datafill tuple ABOAUFL and then proceed with the rest of this procedure.

9	Determine if the datafill for tuple ABOAUFL is correct.
	
	Note: The datafill for fields REPORT, ALM and LOGIC must be as follows:
	`Y MJ Y`
	
	Other fields can be datafilled, but the datafill does not affect the functioning of the dead system alarms.
	
	If ABMTMFL datafill is — **Do**
	correct — step 11
	not correct — step 10

10	Correct the datafill and then proceed with rest of this procedure.
11	Exit from table ALMSC by typing **>QUIT** and pressing the Enter key.
12	Access the EXT level of the MAP by typing **>MAPCI;MTC;EXT** and pressing the Enter key.
13	Test the dead system alarm by typing **>TSTDSALM MTMFAIL 12** and pressing the Enter key.

—continued—

Testing the dead system alarm (continued)

Step	Action
14	Wait at least 20 seconds, then get a list of alarms by typing **>LIST MAJ;LIST MIN** and pressing the Enter key.
15	Look at the MAP responses, listen for audible alarms, and examine the lights on the alarm and control display (ACD) panel. Determine if all of the following alarm indications occur: ▪ ABMTMFL alarm appears in the work area of the MAP display ▪ audible battery alarm sounds ▪ OAU light glows on the ACD panel

If all the alarm indications	Do
occur	step 16
do not occur	step 19
do not occur and `WARNING --SDOC3 SENT ON DEAD SYSTEM` is displayed at MAP terminal	step 34

16	Test the dead system alarm OAUFAIL by typing **>TSTDSALM OAUFAIL 12** and pressing the Enter key.
17	Wait approximately 20 s, then display the alarms present by typing **>LIST MAJ;LIST MIN** and pressing the Enter key.

—continued—

Testing the dead system alarm (continued)

Step	Action
18	Look at the MAP responses, listen for audible alarms, and examine the lights on the ACD. Determine if all of the following alarm indications occur: ▪ ABOAUFL alarm appears in the work area of the MAP display ▪ audible battery alarm sounds ▪ OAU light glows on the ACD panel

If all the alarm indications	Do
occur	step 31
do not occur	step 19

19	Find the physical location of the card in the system table ALMSD by typing **>TABLE ALMSD** and pressing the Enter key.
20	Position on the field bearing the name of the SD group by typing **>POS sd_group** and pressing the Enter key. *where* sd_group is MTMFAIL if alarm ABMTMFL was not displayed in step 15 is OAUFAIL if alarm ABOUFL was not displayed in step 18 is CRALMAUD if the audible battery alarm did not sound in step 15 or step 18 is OAUVISLOOP if the OAU light did not glow in step 15 or step 18
21	List the table contents by typing **>LIST** and pressing the Enter key.
22	Note the entry under SDGROUP.
23	Exit from the table by typing **>QUIT** and pressing the Enter key.

—continued—

Testing the dead system alarm (continued)

Step	Action
24	Access table ALMSDGRP by typing **>TABLE ALMSDGRP** and pressing the Enter key.
25	Position on the field noted in step 22 by typing **>POS sd_group** and pressing the Enter key. *where* sd_group is the SD group noted in step 22
26	List the table contents by typing **>LIST** and pressing the Enter key.
27	Note the entries under TMTYPE, TMNO, and CARDCODE. These entries indicate the product engineering code (PEC) and location of the card requiring replacement.
28	Exit the table by typing **>QUIT** and pressing the Enter key.
29	Go to the appropriate procedure in *Card Replacement Procedures* to replace the card you identified in step 27. When you have completed the procedure, return to this point.
30	Go to step 13.
31	Determine if the dead system alarms activate by typing **>TSTDSALM OAUFAIL 12;TSTDSALM OAUFAIL 12** and pressing the Enter key.

—continued—

Testing the dead system alarm (continued)

Step	Action
32	Wait 20 seconds for the alarm indicators to activate. The following alarm indications should occur: ▪ the critical bell sounds ▪ the critical alarm light glows on the ACD panel ▪ the OAU alarm light glows on the ACD panel

If	Do
all the alarm indications occur	step 33
any of the alarm indications do not occur	step 34

Step	Action
33	Wait 1 min, then note the changes at the MAP and on the ACD panel. The following alarm changes should occur: ▪ At the MAP, the alarm under the EXT header disappears. ▪ On the ACD panel, the critical alarm light turns off.

If	Do
all the alarm indications occur	step 35
any of the alarm indications do not occur	step 34

Step	Action
34	For further assistance, contact the personnel responsible for the next level of support.
35	The dead system alarm is operational. You have completed this procedure.

End

EXT related logs

The logs listed in table 3-1 are related to the EXT subsystem. For more detailed information on these logs and log report examples, refer to *Log Report Reference Manual*.

Table 3-1
EXT related logs

Log name	Causes	Response
EXT100	A no-alarm scan point changes state	Because these scan points are assigned by operating company personnel, the action to be taken depends on the scan point.
EXT101	A minor alarm scan point changes state	Because these scan points are assigned by operating company personnel, the action to be taken depends on the scan point.
EXT102	A major alarm scan point changes state	Because these scan points are assigned by operating company personnel, the action to be taken depends on the scan point.
EXT103	A critical alarm scan point changes state	Because these scan points are assigned by operating company personnel, the action to be taken depends on the scan point.
EXT104	An expected change of state on a scan point does not occur	Test the OAU, MTM, or RMM or replace the scan point card for the failed scan point.

—continued—

Table 3-1
EXT related logs (continued)

Log name	Causes	Response
EXT105	An alarm on the service control point (SCP) OAM location on the data voice system (DVS) is translated into no alarm on the DMS switch.	No action is required.
	A software alarm is either turned on or off in the DMS switch.	Go to the subsystem of the MAP display identified by the log (for example, the PM subsystem), post the faulty equipment, and enter the QUERYPM FLT command. The cause for the faulty equipment is identified on the MAP display.
	A software alarm defined in table SFWALARM is activated and field REPORT of the tuple associated with the software alarm is set to Y (yes).	Examine logs PARS100 and PARS101 to determine which failed MPC data links need to be returned to service.
EXT106	An alarm is turned on or off by a command from the DVS.	If the alarm has been turned on, monitor the DVS by the SAS administration logs service to determine the cause of the alarm. Take appropriate corrective action. If the alarm has been turned off, no action is required.
	A maintenance notice message sent by the voice service node (VSN) is received by the DMS switch.	No action is required at the DMS switch; maintenance occurs at the VSN.
	A software alarm defined in table SFWALARM is activated and field REPORT of the tuple associated with the software alarm is set to yes (Y).	Examine logs PARS100 and PARS101 to determine which failed MPC data links need to be returned to service.
EXT107	An alarm exists on the DVS, dynamic network controller (DNC100), or SCP OAM.	If the alarm has been turned on, monitor the DVS by the SAS administration logs service to determine the cause of the alarm. Take corrective action. If the alarm has been turned off, no action is required.
	A maintenance notice message sent by the VSN is received by the DMS switch.	No action is required at the DMS switch. Maintenance occurs at the VSN.

—continued—

Table 3-1
EXT related logs (continued)

Log name	Causes	Response
EXT107 continued	A software alarm defined in table SFWALARM is activated and field REPORT of the tuple associated with the software alarm is set to yes (Y).	Examine logs PARS100 and PARS101 to determine which failed MPC data links need to be returned to service.
	The TQMS_MIS_MINOR alarm goes up or down.	Check table TQMSOPT for on/off state and consult the next level of maintenance.
	The TQMS_MIS_MAJOR alarm goes up or down.	Check table TQMSOPT for on/off state and consult the next level of maintenance.
EXT108	An operational measurements critical alarm (OMCRITICAL) index reaches its threshold within the scan period.	Retain the previous five minutes of log reports and contact the next level of maintenance.
	Critical alarm is raised against directory assistance system (DAS) data links.	Retain the previous five minutes of log reports and contact the next level of maintenance.
	A maintenance notice message sent by the VSN is received by the DMS switch.	No action is required at the DMS switch. Maintenance occurs at the VSN.
	A software alarm defined in table SFWALARM is activated and field REPORT of the tuple associated with the software alarm is set to yes (Y).	Examine logs PARS100 and PARS101 to determine which failed MPC data links need to be returned to service.
	The TQMS_MIS_CRITICAL alarm goes up or down.	Check table TQMSOPT for on/off state and consult the next level of maintenance.
	The TQMS_MIS_PROCESS critical alarm goes up or down.	After this alarm is turned off, bring the process back up by using the REVIVE command at the MPC level of the MAP terminal.
	The TQMS_MIS_BUFFS critical alarm goes up or down.	Increase the number of buffers, TQMS_MIS_MPC_BUFFS, available in table OFCENG.

—continued—

Table 3-1
EXT related logs (continued)

Log name	Causes	Response
EXT109	An alarm scan point detects switch battery voltage crossing a preset theshold voltage.	If a low-voltage log is generated, check the battery to determine the reason for the voltage drop. Contact the next level of maintenance. If the *contxt* field of the log contains the text `was low`, no action is required. This log indicates voltage has returned to normal.
EXT110	A DMS system audit finds the alarm count for a particular alarm type (critical, major, minor, no alarm) does not match the actual number of alarms of that type in the DMS. This log is usually generated when operators are setting or resetting scan or signal distribution points at the EXT level of the MAP display during testing.	No action is required.
ESR100	This log is generated when the originator makes an emergency call to the Fire/Police trunks. The log contains calling party information.	The operating company retains the log report in the event that the attendant requires this information in order to locate the originator.
Note: Scan point functions in table ALMSC can be set up to generate logutil reports. Set field REPORT to Y to generate a log report. The log report is generated whenever the scan point is operated.		
End		

EXT related operational measurements

No operational measurements are related to the EXT subsystem.

EXT related data structures

No data structures are associated with the EXT subsystem.

EXT related user interface commands

Table 6-1 contains a list of the commands available to operating company personnel at the EXT level of the MAP terminal. For complete details on command syntax, parameters, and system responses, refer to *DMS-100 Family Commands Reference Manual*, 297-1001-822.

Table 6-1
EXT level commands

Command	Description
Quit	Exits the EXT level of the MAP terminal.
Equip	Accesses the external equipment level of the MAP terminal where external devices can be accessed for maintenance purposes
List_	Displays a list of all detected alarm conditions of a specified type. This command requires a parameter to be enteredas indicated by the underscore. The parameters allowed are ▪ Crit ▪ FSP ▪ Maj ▪ Min ▪ NoAlm
TstDSAlm	Tests the dead system alarm (DSA). The command requires you to specify one of two alarm conditions to simulate and the duration of the simulation. The two alarm conditions are OAUFAIL and MTMFAIL. The duration is the number of five-second units the simulation will last. For example, a 20-second simulation requires an entry of 4.
SetSD_	Places a signal distribution (SD) point in a specified state, either OP (operated) or REL (released). The SD point is identified by its assigned function.
SetSC_	Places a scan (SC) point in a specified state, either OP or REL. The SC point must be identified by its assigned function.

—continued—

Table 6-1
EXT level commands (continued)

Command	Description
Disp_	Displays SC and SD points by index number (0–1023), group, or function. Use this command with parameter SCALARM to display scan points in an alarm state. Use parameter SDALARM to display SD points in an alarm state. Parameter WHATACT displays the scan points that activate a specified SD function. Parameter COUNTS displays the numbers of Crit, frame supervisory panel (FSP), Major, Minor, or NoAlm alarms.
_Crit	Used with the LIST command to display critical alarms
_FSP	Used with the LIST command to display FSP-related alarms
_Maj	Used with the LIST command to display major alarms
_Min	Used with the LIST command to display minor alarms
_NoAlm	Used with the LIST command to display monitored conditions that have changed state but are not designated to generate an alarm.

End

EXT related card requirements

Description of circuit card removal and replacement procedures

Card replacement procedures for cards in the OAU or standby maintenance trunk module (MTM) are easy to follow. Most of these cards can be replaced without having to manually busy or reload the equipment. Refer to *Card Replacement Procedures* for details.

Switch settings on cards in the OAU, standby MTM, and the RMM can be configured to detect changes of state on circuits being monitored by the office alarm system. When replacing these cards, match the switch settings on the replacement card with those on the card being removed. Tables 7-1 and 7-2 describe switch setting parameters for scan (SC) detector cards (NT0X10) and signal distribution (SD) cards (NT2X57). Figures 7-1 and 7-2 illustrate switch locations and labels on these cards.

Table 7-1
Scan card (NT0X10) switch settings

Switch position	Circuit use
1 and 4 both on	Loop detector
1 on, 4 off	Ground detector
1 off, 4 on	Battery detector
Note: Switch positions 2 and 3 are not used.	

Table 7-2
Signal distribution (NT2X57) switch settings

S1	S2 Position 1	S2 Position 4	Relay operated	Relay released	Output lead type
A	Off	On	Ground, closed	Ground, open	Single
B	Off	On	Ground, open	Ground, closed	Single
A	On	Off	Loop, closed	Loop, open	Double
B	On	Off	Loop, open	Loop, closed	Double
Note: Switch positions 2 and 3 of switch S2 are not used.					

Figure 7-1
NT0X10 scan detector card switches

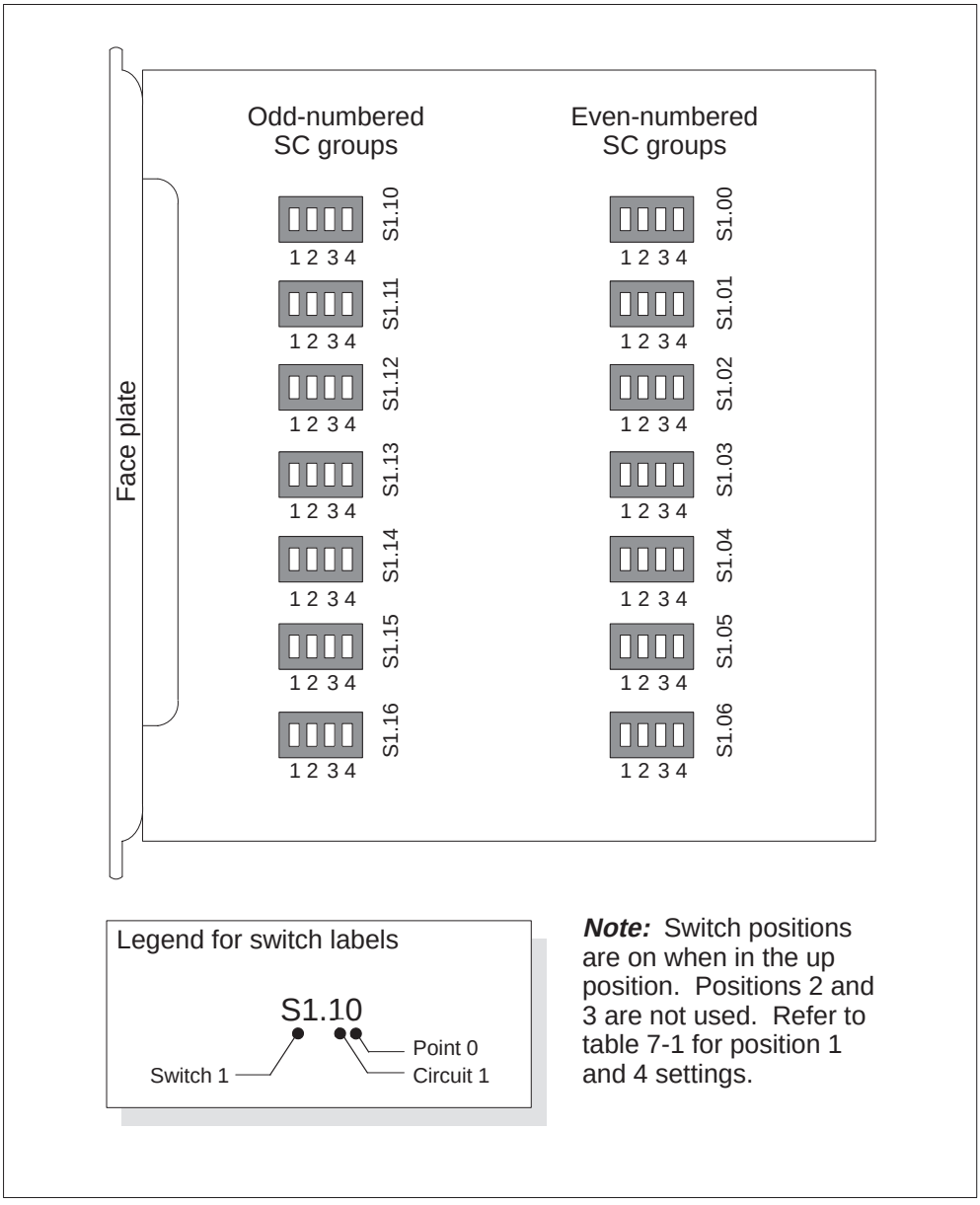
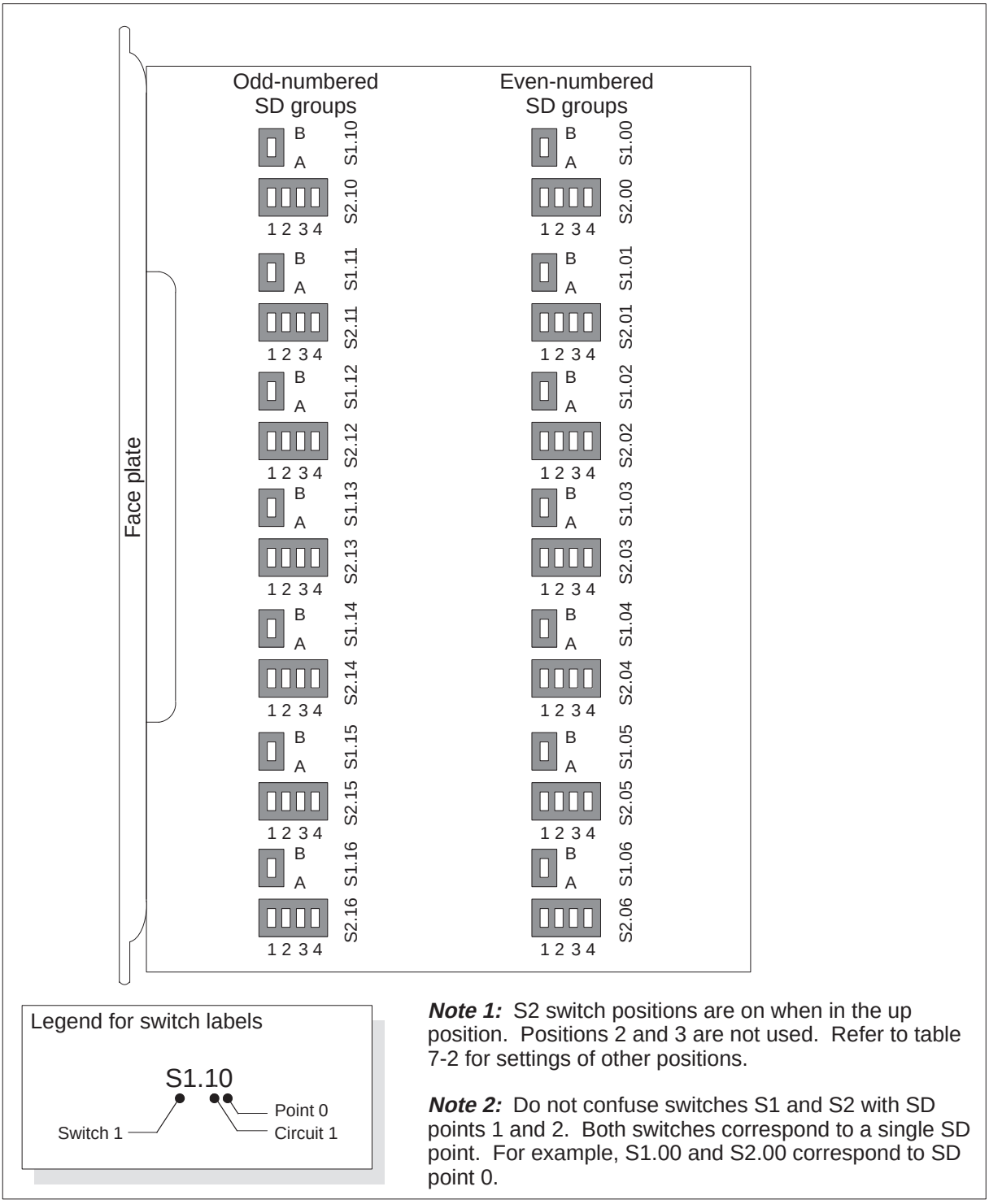


Figure 7-2
NT2X57 signal distribution card switches



Note 1: S2 switch positions are on when in the up position. Positions 2 and 3 are not used. Refer to table 7-2 for settings of other positions.

Note 2: Do not confuse switches S1 and S2 with SD points 1 and 2. Both switches correspond to a single SD point. For example, S1.00 and S2.00 correspond to SD point 0.

Description of other equipment removal and replacement procedures

No removal and replacement procedures for the EXT subsystem exist for equipment other than circuit cards.

Trouble isolation and correction

Description of troubleshooting procedures

Alarm and Performance Monitoring Procedures contains the procedures for clearing EXT alarms. Included are procedures for clearing critical, major, minor, and frame supervisory panel (FSP) alarms appearing at the EXT level of the MAP terminal.

Trouble condition indicators

The existence of trouble conditions may be indicated in many ways. These include log reports and alarms.

Log reports

Logs, used primarily as an analysis tool, provide detailed information on call errors, diagnostic results, and system status. They are also good indicators of trouble conditions, especially when any of the following conditions exist:

- sudden increase in volume of logs
- message not printed reports
- large number of similar logs

Alarms

Audible and visual alarms indicate that something requires corrective action. Proper performance of routine system maintenance and use of operational measurements (OM) and logs should minimize the occurrence of alarms.

Alarm severity and corresponding urgency for corrective action is indicated by the level of the alarm and is expressed as minor, major, or critical. Table 8-1 provides a description of alarm conditions.

Follow these guidelines when responding to alarms:

- When more than one alarm of the same severity is displayed on the screen of the MAP terminal, clear the alarms from the left of the screen to the right.
- If, while fixing an alarm, an alarm of greater severity occurs, respond to the new alarm. Do not continue attempts to clear the less severe alarm.

Table 8-1
Alarm description

Alarm	MAP display	Description
Minor	(blank)	Usually nonservice affecting
Major	(M)	Usually indicates a service-degrading threatening condition
Critical	(*C*)	Usually indicates a service outage or potential service outage

Locating and clearing faults

Listed below are the standard troubleshooting steps for locating and clearing faults:

1 Silence audible alarms caused by the system when alarm conditions are detected.

2 Isolate the fault by reading status displays and tracing fault codes to the menu level needed to clear the fault.

3 Offstream (busy) the hardware to remove system access to the faulty component. This allows maintenance activity to be performed without system interference.

4 Test the faulty component and identify the card to be replaced. Replace the faulty card and test it again.

5 Return the hardware to service.

These steps summarize the strategy to use when locating and clearing faults caused by faulty equipment in the DMS-100 switch. However, not all EXT faults are caused by malfunctioning circuit cards in the OAU, standby MTM, or the RMM.

Many times, for example, EXT faults are caused by blown fuses in other equipment. It is not necessary in these cases to busy hardware, replace circuit cards, test, or return hardware to service. Replacing blown fuses should clear the fault.

Choosing alarms to clear

At the EXT level of the MAP display, five alarm types are displayed near the top of the display area. These alarm types are displayed in order of severity from left to right as illustrated below:

```
Ext Alarms        Crit   FSP   Major   Minor   NoAlm
```

Clear the alarms in order of their severity. In other words, clear all Crit alarms before proceeding to FSP alarms.

Listing the alarms

The next step in isolating the fault is to list the alarms by type.

FSP alarms

To isolate FSP faults, list all FSP-related alarms by typing:

>LIST FSP

and pressing the Enter key

If FSP alarms exist, the EXT subsystem responds with a list of function names for specific scan points that have detected a fault condition. An example of this response is shown next.

```
FSPAISA
FSPAISC
FSPAISF
```

The function names shown in the example identify the aisles with FSP alarms, in this case, aisles A, C, and F. Check the lamps on the alarm and control display (ACD) panel. If the power distribution center (PDC) alarm battery supply (ABS) lamp is on, inspect the fuses at the PDC.

If the PDC ABS lamp is not on, inspect the frames in the indicated aisles. Look for frame fail lamps, power converter LEDs, or other lamps or LEDs on the aisle that could indicate a power problem. If no lamps or LEDs are on, check the fuses on all FSPs in the designated aisle, replacing blown fuses. The fault condition is removed when blown fuses are replaced.

Locating faulty equipment

Listing major alarms can uncover faulty cards in an OAU, standby MTM, or RMM. To locate the faulty cards, first access table ALMSD and position on the function name to determine which signal distribution (SD) group the function belongs to. For example, locate faulty cards causing an ABOAUFL alarm, by typing:

>TABLE ALMSD
>POS OAUFAIL

```
FUNCTION    SDGROUP    POINT    NORMALST    AUDIBLE    LAMPTEST
------------------------------------------------------------
 OAUFAIL          0        0           1          N           N
```

Access table ALMSDGRP and position on the SD group number to determine which MTM functions as the OAU and which card code provides the function. Continue the example, by typing:

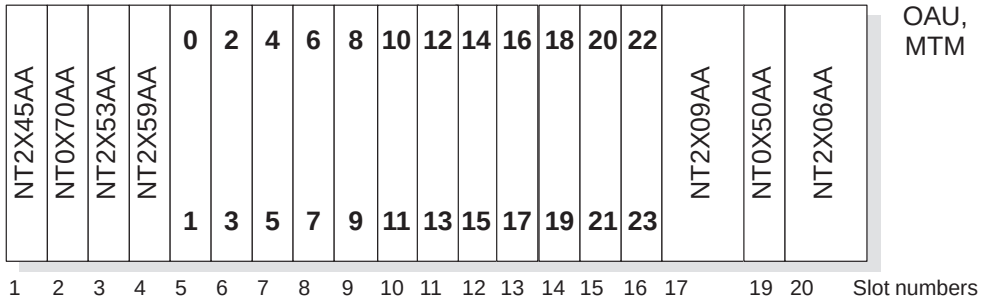
>TABLE ALMSDGRP
>POS 0

and pressing the Enter key

```
SDGROUP    TMTYPE    TMNO    TMCKTNO    CARDCODE
-----------------------------------------------
      0       MTM       5          0      3X82AA
```

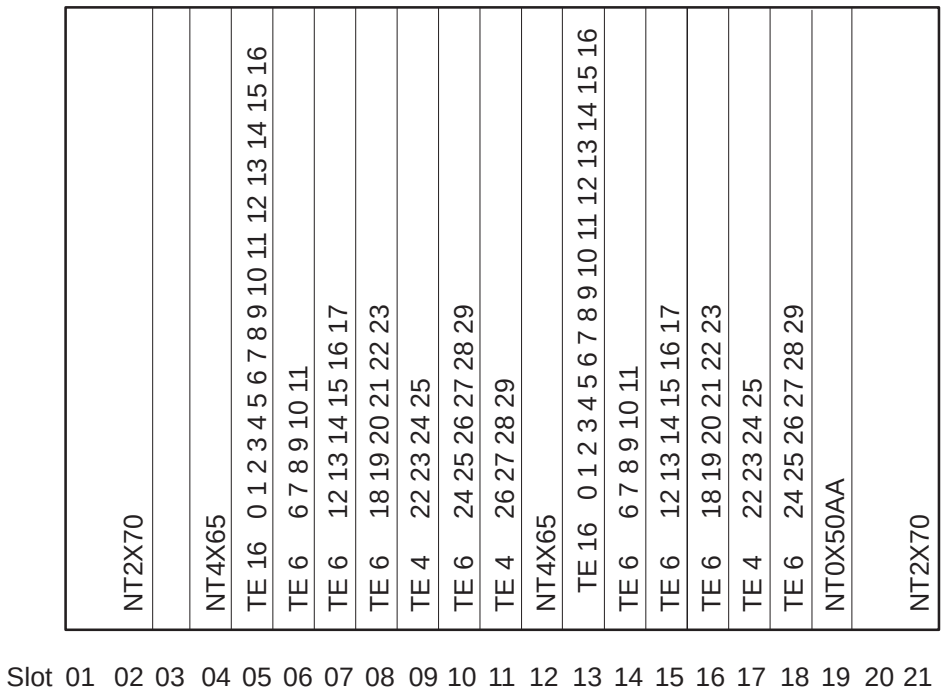
From the information given in the example, the faulty equipment is an NT3X82 located in MTM 5. The slot location of the faulty card code is determined from the information given in field TMCKTNO. As illustrated in Figures 8-1 and 8-2, each slot location in an OAU, standby MTM, or remote maintenance module (RMM) is associated with two circuits. For the OAU or standby MTM, a total of 24 circuits is provided beginning with slot 5. For an STM, a total of 60 circuits is provided beginning with slot 5. (See Figure 8-2) For remote applications, such as the Remote Switching Center (RSC), the RMM provides a total of 28 circuits beginning with slot 3. Based on the information in the example, the NT3X82 is located in slot 5 of the MTM.

Figure 8-1
Mapping circuit numbers to slot numbers for an OAU or standby MTM



Note: Circuit numbers (TMCKTNO) are shown in bold.

Figure 8-2
Mapping circuit numbers to slot numbers for an STM



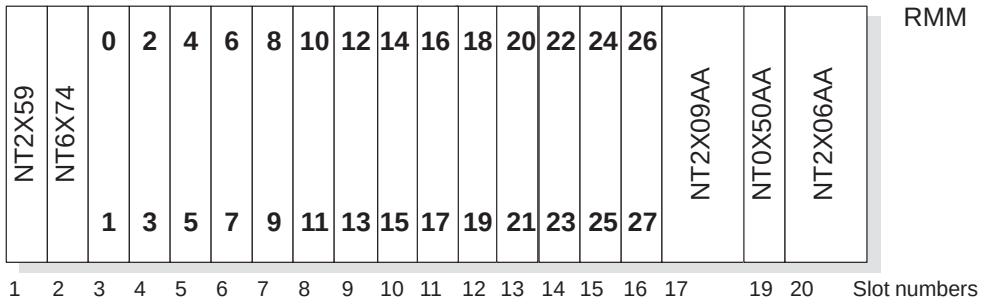
Legend:

TE Maximum trunk enables for each card slot

Note: Circuit numbers appear in slots 05 to 11 and 13 to 18.

Note: Circuit numbers (TMCKTNO) are shown in bold.

Figure 8-3
Mapping circuit numbers to slot numbers for an RMM



Note: Circuit numbers (TMCKTNO) are shown in bold.

Access the PM level of the MAP terminal, post the MTM functioning as the OAU, and query its condition. Perform a test. This action might produce a card list on the MAP display, confirming the location of the faulty card. Replace the faulty card, making sure to set switches on the replacement card to the same settings as the card removed. For more information on switch settings, refer to Chapter 7 of this document "EXT related card requirements".

No fault isolated

If an EXT alarm clearing procedure does not remove a fault appearing at the EXT level of the MAP terminal, the problem might be a fault in the scan (SC) or SD card that detects or reports the alarm. Test the SC or SD cards as described in the sections "Testing the SC card" or "Testing the SD card" in this chapter.

Fault isolation tests

There are no tests specific to fault isolation of EXT alarms.

Diagnostic tests

Diagnostic tests related to the EXT subsystem include testing the dead system alarm and verifying SC and SD cards are operational.

Dead system alarm

Diagnostics used to test the dead system alarm verify that the alarm is operational. These diagnostics simulate alarm conditions to ensure the alarm is working properly. The command TSTDSALM activates these diagnostics. A procedure for testing the dead system alarm is provided in chapter 2.

Testing the SC card

To verify the SC point on a scan card (NT0X10) is working properly, operate and release the SC point. Operating the SC point generates an alarm on the MAP display that should go away when the SC point is released.

To operate the SC point, type

>SETSC function OP

where

`function is the function name assigned to the SC point in table ALMSC.`

*function*The ALM field in table ALMSC classifies each function by the type of alarm it generates. ALM field values include CR (critical), MJ (major), MN (minor), and NA (no alarm). When the SC point is operated, the alarm count for the type of alarm corresponding to the function name is incremented by one.

For example, if the scan point function you are testing is datafilled to generate a minor alarm and the scan point is operated, the alarm count under the Minor heading on the MAP display is incremented. If you then list the minor alarms, the function name appears in the list.

To release the SC point, enter

>SETSC function REL
and pressing the Enter key

where
function is the function name assigned to the SC point in table ALMSC.

Releasing the SC point removes the alarm indication on the MAP display. If you list the alarms, the function name no longer appears in the list.

Testing the SD card

To verify the SD point on an SD card (NT2X57) is working properly, operate and release the SD point. Operating the SD point activates an audible or visual (lamp) alarm that should go away when the SD point is released. Fields AUDIBLE and LAMPTEST in table ALMSD identify the type of alarm you can expect when operating a given SD point.

To operate the SD point, type

>SETSD function OP
and pressing the Enter key

where
function is the function name assigned to the SD point in table ALMSD.

For example, operate the SD point for function ABPDC by typing:

>SETSD ABPDC OP
and pressing the Enter key

Operating this SD point causes the PDC ABS lamp to turn on. To turn the lamp off, release the SD point.

To release the SD point, type

>SETSD function REL
and pressing the Enter key

where
function is the function name assigned to the SD point in table ALMSD.

Key SD point functions and the visual alarms they activate are listed in table 8-2.

Table 8-2
Visual SD point functions

SD point function	Lamps
ABOAU	Office alarm unit
OAUFLVIS	Office alarm unit
CRPWRVIS	Critical power plant
MJPWRVIS	Major power plant
MNPWRVIS	Minor power plant
CRALMVIS	Critical system
MJALMVIS	Major system
MNALMVIS	Minor system
PDCVIS	Power distribution center

Key SD point functions that activate audible alarms are listed in table 8-3.

Table 8-3
Audible SD point functions

SD point function	Audible
CRALMAUD	Critical bell sounds on up to six panels
MJALMAUD1	Major tone bar sounds on first and third through sixth panels
MNALMAUD	Minor alarm bell
ABAUD	Alarm battery bell
MJALMAUD2	Major tone bar sounds only on second audible panel
COMAUD1	Sonalert on NT0X63AC panel
COMAUD2	Sonalert on NT0X63AC panel

Product specific test tools

Test tools used to clear EXT alarms consist of the commands available at the EXT level of the MAP terminal. There are no additional test tools specific to clearing EXT alarms.

Troubleshooting chart

Table 9-1 describes, at a high level, the steps to take to clear alarm conditions associated with the EXT subsystem. For detailed procedures, refer to *Alarm and Performance Monitoring Procedures*.

Table 9-1
EXT alarm clearing

Alarm condition	Possible cause	Action
Critical	Automatic message accounting (AMA) failure (AMAFAIL)	1 Look for an AMA-related failure at the IOD level of the MAP display. 2 Clear the alarm by using *Alarm and Performance Monitoring Procedures*. 3 Restart the AMA process.
	Fault in main or emergency power equipment (CRPWR, CRITEQUIP, NCPALARM, PFSUCFLR)	1 Use procedures supplied with your power equipment to isolate and clear the fault. 2 Return equipment to service.
	VSN-related faults (VR1_CRITICAL, VR2_CRITICAL, VSN_CRIT_ALM, VSN_NO_LINKS	1 Check EXT log reports to see if the alarm has been turned off. 2 If alarm is on, contact maintenance personnel at voice services node (VSN).
	Dead system alarm fault caused by multiple faults in DMS-100 messaging system hardware or loss of sanity in central control (CC) software (DEADSYSM)	1 Collect all log reports. 2 Clear faults appearing at the MAP terminal, replacing faulty cards as necessary. 3 If necessary, contact advanced maintenance support personnel.

—continued—

Table 9-1
EXT alarm clearing (continued)

Alarm condition	Possible cause	Action
FSP	Power or cooling unit fault at one or more FSPs in office frames	1 Identify the aisle locations of the faulty FSPs. 2 Replace blown fuses. 3 If problem remains, check power converters, replacing them if necessary. 4 If the frame is equipped with ringing generators and line cards, ensure these components are operational. If not, replace them. 5 Verify cooling units are operational. Repair them if necessary.
Major	Faulty dead system alarm card (ABMTMFL, ABOAUFL)	1 Post the faulty OAU, MTM, or RMM. 2 Test the posted equipment. 3 Replace faulty cards.
	Power fault in equipment supply power to the DMS-100 switch (MJPWR, MJPREFLR, MJSUCFLR) Faulty analog recorded announcement machine connected to DMS-100 switch (VCEALM)	1 Use procedures supplied with your power equipment to isolate and clear the fault. 2 Return equipment to service.
	Emergency 911 service trouble related to multiprotocol controller (MPC) link failure (E911_ALI_MAJOR or E911_RCER_MAJOR)	1 Use *Alarm and Performance Monitoring Procedures* to clear the E911 alarm. 2 Ensure the EXT alarms clear.
	Power fault in a PDC frame (PDCFAIL) Fault in alarm battery voltage supply of PDC frame (ABSFAIL)	1 Inspect the PDC frame. 2 Replace blown fuses.

—continued—

Table 9-1
EXT alarm clearing (continued)

Alarm condition	Possible cause	Action
Minor	Fraudulent attempt to make toll call with bluebox tone generator	1 Refer to TRK153 log report for call details. 2 Take appropriate action to report or handle the illegal toll call.
	Emergency 911 service trouble related to multiprotocol controller (MPC) link failure (E911_ALI_MINOR or E911_RCER_MINOR) Public safety answering point (PSAP) is off-hook and unable to answer incoming emergency calls (E911_PSAP_OFFHK) Memory fault with E911 selective routing data base (E911_SRDB_MEMORY)	1 Use *Alarm and Performance Monitoring Procedures* to clear the E911 alarm. 2 Ensure the EXT alarms clear.
	Fault in equipment supplying power to DMS-100 switch (MNPWR)	1 Use procedures supplied with your power equipment to isolate and clear the fault. 2 Return equipment to service.
	Incoming call on 101-type test line at transmission test center (TSTLN101)	1 Answer the call. 2 Take appropriate action outlined by your company for responding to 101-type calls.
	Faults on MPC links to personal audio response system (TOPS_PARS_LINK, TOPS_PARS_NODE)	1 Refer to *TOPS Maintenance Guide*, 297-xxxx-550, to clear TOPS alarms. 2 Ensure the EXT alarms clear.
	VSN-related faults (VR1_MINOR, VR2_MINOR, VSN_MIN_ALM, VSN_ONE_LINK	1 Check EXT log reports to see if the alarm has been turned off. 2 If alarm is on, contact maintenance personnel at VSN.
	Emergency alarms (ESR_ALARM, ESR_TIME_ALARM)	1 Check ESR log report for the calling party information.
End		

Advanced troubleshooting procedures

Task list

No maintenance tasks associated with advanced troubleshooting have been identified.

Advanced trouble locating procedures

No advanced troubleshooting procedures have been identified.

Powering up the office alarm unit

The following steps provide the information necessary to bring the office alarm unit (OAU) from an intentionally turned down state back up to operating condition in an orderly manner:

1 At the MAP terminal, post the OAU.

2 Power up the OAU by setting the switch on the power converter to the ON position.

3 While pressing the reset button on the power converter, flip the appropriate circuit breaker up but do not hold it up. If power is applied, the circuit breaker will stay in the ON position. If there is a problem with the power, it will trip back down to the OFF position.

4 At the MAP terminal, busy the OAU.

5 List the PM loads at the input/output device to be used to return to service the OAU.

6 Load the OAU.

7 Return the OAU to service.

8 At the TTP level, return all trunks to service.

Powering down office alarm unit

The following steps describe the sequence for powering down an office alarm unit (OAU):

1 At the MAP terminal, busy all trunks at the TTP level.

2 Post the OAU.

3 Busy the OAU.

4 Make the OAU offline.

5 Power down the OAU by setting the switch on the power converter to the OFF position.

Note: This power down procedure may become useful in a situation such as a natural disaster pending when powering down may help minimize damage to the equipment.

Common procedures

None

List of terms

ABS

alarm battery supply

ACD

alarm control and display

alarm battery supply (ABS)

A separate nominal –48V supply obtained from the central office battery power supply and distributed to the alarm circuits of the DMS-100 switch.

alarm control and display (ACD)

A panel connected to the office alarm unit that carries lamps and switches providing control and display of alarm facilities according to the type and class of alarm.

alarm crosspoint unit (AXU)

A shelf located above the office alarm unit (OAU) that provides interconnections to components of the Office Alarm System (OAS).

AMA

Automatic Message Accounting

Automatic Message Accounting (AMA)

A system that manages subscriber billing data.

AXU

alarm crosspoint unit

CC

central control

central control (CC)

A part of the NT40 processor that consists of the data processing functions with the associated data store (DS) and program store (PS).

DAS

Directory Assistance System

dead system alarm (DSA)

An alarm generated by the alarm system hardware to isolate a loss of call processing ability in a DMS office. A remote DSA facility can be provided to transfer the alarm from an unattended office to a remote monitoring location.

Directory Assistance System (DAS)

A system that provides directory assistance (DA) information and information for Intercept calls.

Distributed Processing Peripheral (DPP)

A peripheral module (PM) that accepts data from the DMS-100, formats the data if necessary, and stores it on disk. On request, the DPP retrieves and sends data to the host office collector.

DMS

Digital Multiplex System

DMS-100

A member of a family of digital multiplexed switching systems. The DMS-100 is a local switch. *See also* DMS-100 Family of switches.

DMS-100 Family switches

A family of digital multiplexed switching systems, which includes the following: DMS-100, DMS-100/200, DMS-100 switching cluster, DMS-100 switching network, DMS-200, DMS-250, and DMS-300.

DNC

Dynamic Network Control

DPP

Distributed Processing Peripheral

DSA

dead system alarm

Dynamic Network Control (DNC)

A family of applications that provide an enhanced level of network control. These applications communicate with network elements, such as the DMS switch, to control network functions dynamically and to provide secure customer access to associated operations data and new network services. Also, these applications allow operating companies to develop their service management and administration system independently of the evolution of their network equipment.

E911

Enhanced 911 Emergency Service

EAS

enhanced alarm system

Enhanced 911 Emergency Service (E911)

A set of features that adds selective routing and transfer to Basic 911 services.

enhanced alarm system (EAS)

A variation of the Version 2 Office Alarm System that provides low battery voltage detection, A and B feed loss detection, and remote alarm contacts.

frame supervisory panel (FSP)

A facility that accepts the frame battery feed and ground return from the power distribution center (PDC). The FSP distributes the battery feed, by means of subsidiary fuses and feeds, to the shelves of the frame or bay in which it is mounted. The FSP also contains alarm circuits.

main distribution frame (MDF)

A frame containing terminal blocks where cables from outside plant and office equipment are terminated. Outside plant equipment is terminated on vertical columns of blocks and office equipment on horizontal rows. Cross-connection flexibility and organization is provided by jumper pairs between horizontal and vertical terminal blocks.

maintenance trunk module (MTM)

In a trunk module equipment (TME) frame, a peripheral module (PM) that is equipped with test and service circuit cards and contains special buses to accommodate test cards for maintenance. The MTM provides an interface between the DMS-100 Family digital network and digital or analog test and service circuits.

MDF

main distribution frame

MPC

multiprotocol controller

MTM

maintenance trunk module

multiprotocol controller (MPC)

A general-purpose card that allows data communications between a DMS-100 Family switch and an external computer (for example, between a central office (CO) billing computer and a DMS-100 Family switch). The MPC card resides on the input/output controller (IOC) shelf. MPC card protocol software is downloaded from the DMS-100 CPU and then used to support software routines for Data Packet Network (DPN) communications.

OAS

Office Alarm System

OAU

office alarm unit

office alarm unit (OAU)

A peripheral module (PM) located in a trunk module equipment (TME) frame. The OAU is similar to the maintenance trunk module (MTM), but is equipped with circuit cards that provide an interface with various types of office alarm circuits instead of test circuits.

Office Alarm System (OAS)

A system that reports trouble conditions to office personnel who are located either on-site or at a remote site. The severity of each problem is indicated according to its level of urgency—critical, major, or minor.

OM

operational measurements

operational measurements (OM)

The hardware and software resources of the DMS-100 Family switches that control the collection and display of measurements taken on an operating system. The OM subsystem organizes the measurement data and manages its transfer to displays and records. The OM data is used for maintenance, traffic, accounting, and provisioning decisions.

PDC

power distribution center

peripheral module (PM)

A generic term referring to all hardware modules in the DMS-100 Family switches that provide interfaces with external line, trunk, or service facilities. A PM contains peripheral processors (PP), which perform local routines, thus relieving the load on the CPU.

PM

peripheral module

power distribution center (PDC)

The frame containing the components for distributing office battery feeds to equipment frames of the DMS-100 Family switches. The PDC accepts A and B cables from the office battery and provides protected subsidiary feeds to each frame or shelf. It also contains noise suppression and alarm circuits and provides a dedicated feed for the alarm battery supply.

PSAP

public safety answering point

public safety answering point (PSAP)

An agency or facility authorized to receive and respond to emergency calls requiring public services such as fire, police, and ambulance services.

remote maintenance module (RMM)

A peripheral module (PM) with a configuration similar to that of the maintenance trunk module (MTM). An RMM accommodates up to 12 service and test cards.

Remote Switching Center (RSC)

A remote common peripheral module (CPM) that provides an interface with a large number of analog lines, digital trunking, or both at a remote location. The RSC also handles remote-off-remote connections from other remote sites.

RMM

remote maintenance module

RSC

Remote Switching Center

SC

scan

scan (SC) points

Read-only bits in the trunk logic circuit that indicate the status of the hardware.

SD

signal distribution

service trunk module

A peripheral module (PM) in the DMS-100 Family switches that consists of two compact maintenance trunk modules (MTM).

signal distribution (SD) points

The writeable bits in the trunk logic circuit that usually correspond to relays in the hardware. Signal distribution points are used to control activities in the hardware.

STM

service trunk module.

TOPS

Traffic Operator Position System

Traffic Operator Position System (TOPS)

A call processing system made up of a number of operator positions. Each operator position consists of a visual display unit (VDU), a controller, a keyboard, and a headset.

trunk test center (TTC)

The location of the MAP terminal being used as a trunk test position (TTP).

TTC

trunk test center

voice service node (VSN)

A processor external to the DMS switch that communicates with the switch through an application protocol to provide the voice recognition and prompt generation components of Automated Alternate Billed Service (AABS).

VSN

voice service node

DMS-100 Family

External Devices

Maintenance Guide

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