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DMS-100 Family

Maintenance and Administration Tools

Description

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NORTEL

NORTHERN TELECOM

DMS-100 Family

Maintenance and Administration Tools
Description

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Preliminary 01.01. First release of this document.

Contents

About this document

When to use this document

This publication lists and describes the administrative and maintenance facilities available and provides a reference to supporting documentation.

How to check the version and issue of this document

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.

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.

References in this document

The following documents are referred to in this document:

- *Product Documentation Directory*, 297-8991-001
- *POP User Guide*, 297-1001-040
- *Basic Translations Tools Guide*, 297-1001-360
- *Order Procedures POP*, NTP 297-1001-300
- *Operational Measurements Reference Manual*, 297-XXXX-814
- Network Management Description, 297-2201-452
- *Service Analysis Description*, 297-2201-490
- *Commands Reference Manual*, 297-1001-822

- *DMS 100 Family Maintenance System Description*, 297-1001-106
- *Manual Trunk Testing Description*, 297-1001-116
- *DMS-100 Family Automatic Trunk Testing Description*, 297-1001–121
- *Log Reports Reference Manual*, 297-XXXX-840
- *DMS-100 Family Lines Maintenance Guide*, 297-1001–594

Note: XXXX refers to the specific product computing load (PCL).

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.
```

Introduction

The DMS 100 Family of Digital Switching Systems provide a number of administrative and maintenance facilities with which Telco personnel can maintain the hardware, software and external facilities of the DMS office, measure system performance, and manage the network with the objective of optimizing its efficiency.

This publication lists and describes the administrative and maintenance facilities available and provides a reference to supporting documentation.

Description of administration and maintenance facilities

DMS administration and maintenance facilities are realized through a combination of software, hardware, and documentation.

For descriptive purposes they are classified into four functional groups as follows:

1 **Administrative:** These facilities provide for the interrogation, collection and modification of data and for establishing schedules and thresholds.

2 **Internal Maintenance:** These include all DMS hardware (to the MDF) and software.

3 **External Maintenance:** These include circuits on the transmission facility.

4 **Reporting:** These include I/O facilities and the alarm system.

Administrative facilities

Data Modificaton Order

A Data Modification Order (DMO) is a request to Telco personnel to change system information. DM0's are divided into two order classes, namely:

1 Customer Data Modification (CDM) - used to modify such items as directory number, hardware terminal identification, class of service and other features associated with a customer line.

2 Office Data Modification (ODM) - used to modify such items as trunk group number, trunk type, service circuit type, digit and route translators, message routes, thresholds, test tables and Network Management control variables.

Changes are initiated by a need to add new lines, change or delete existing lines and line features, adjust routing patterns and trunk translations due to changing traffic patterns, and to adjust Network Management controls.

The user view of customer and office data in DMS takes the form of flat tables organized into rows and columns. Tables make the user aware of the relationships existing between the items comprising the data without having to know anything about the way the data are stored. DMO's are carried out at the table level by the use of a Table Editor. By using the Table Editor, Telco personnel can access customer or office data tables and then proceed to interrogate, update, or alter them. Once entered into the system a DMO can be activated immediately or it can be entered into a Pending Order file for activation at a later date.

The Table Editor can be accessed from a VDU or a teleprinter. DMO's are entered one by one from a designated MAP or dedicated DMO I/O terminal. Bulk or multiple changes are entered via magnetic tape.

For a description of the DMO system, refer to *Basic Translations Tools Guide* 297-1001-360. The Table Editor is described in *Basic Translations Tools Guide* 297-1001-360 DMS Table Editor Description. Individual orders are covered in the *Order Procedures POP,* 297-1001-300.

Data interrogation

A comprehensive database interrogation facility is provided which spans a broad range of requests for information contained in data store. Accessible data includes:

- Translation tables, eg. lines, line features, trunks, trunk groups, etc.
- Equipment status lists, eg. busy/idle, line plug-up, etc.
- Call status and connection information
- Traffic and plant measurements, eg. peg count, usage, overflow.
- Assignment tables, eg. CMC Port assignment.

The mechanisms by which these data are accessed include:

- Table Editor commands
- Translate and status request commands implemented in the various maintenance subsystems.
- Operational Measurements dumps

Data interrogations are done on a manual request basis by Telco personnel via the Visual Display Unit (VDU) contained in the Maintenance and Administration Position (MAP) or by teleprinter, or on a periodic basis by the system. Outputs are directed to the designated VDU (MAP), teleprinter, magnetic tape unit, or a data link.

Operational Measurements

The Operational Measurement (OM) system collects information relating to the call handling capability of the network node at which it is located, i.e. switcher plus incoming and outgoing trunks. Equipment usage, network occupancy, dial tone delay, quantity of calls handled and other useful measurements are made available to maintenance personnel and traffic and engineering departments. The measurements are used as the basis for:

1 plant maintenance action

2 automatic and manual network management controls

3 trend analysis on marginal conditions and equipment components

4 division of revenue

5 equipment traffic spread

6 provisioning equipment and trunk quantities

7 service indicators

8 traffic capacity determination.

The types of measurements made include peg count, overflow counts and usage. They are scheduled on a half-hourly, hourly, daily, or monthly basis depending on the item and according to a collection schedule. Collection schedules can be modified by Telco personnel via the Table Editor.

The collected data is output to a designated MAP, teleprinter, data link, or to a magnetic tape unit, at the end of the collection period or when an associated threshold level is exceeded. An unscheduled printout can be requested by Telco personnel via the MAP or teleprinter. For more details refer to *Operational Measurements Reference Manual*, 297-XXXX-814 and *Basic Translations Tools Guide*, 297-1001-360.

Network Management

Network Management is a set of facilities designed to control network operation with the objective of making optimum use of available facilities in overload conditions or facility failure. These controls fall into two categories: expansive and protective.

Expansive controls allow the manipulation of routing to direct traffic from it's normal route to other facilities that have spare capacity.

Protective controls restrict or block certain categories of traffic to prevent regenerative delays and degradation of network carried load.

The two categories of controls are applied to outgoing trunk groups, incoming trunk groups, code points and the routing tables. Activation of the controls is by:

1 traffic exceeding a threshold value

2 ODM

3 manual control by Telco personnel via a designated MAP or other I/O device.

Output messages include peg count reports, overflow reports, and exception reports, and are made according to a timetable modifiable by DMO.

The I/O interface for Network Management is based on the MAP. A dedicated Network Management Position (NMP) may be provided if requested by the Telco. Output is also available via a dedicated teleprinter or via a remote monitoring printer through a data link. All displays and printouts feature a "plain language" format. For more information refer to *Network Management Description*, 297-2201-452.

Service analysis

Service analysis is a facility which can be used by Telco personnel to measure the overall quality of service taking into consideration the various factors that contribute to the performance of completing a call.

Subjective and non-subjective observations on calls may be made on both transmission and signalling paths. Subjective data includes all the observations made by personnel such as line noises and signal distortions. Non-subjective data includes connect time, transmission voice levels, and signalling accuracy.

A full range of service analysis features is provided in DMS. For more information refer to *Service Analysis Description*, 297-2201-490.

Internal maintenance facilities

Maintenance and Administrative Position (MAP)

The Maintenance and Administrative Position (MAP) is the primary interface between the Telco personnel and the DMS system. System tests, data interrogation and modification, and trouble analysis functions are provided. The MAP is designed to operate as a single entity for small office applications as well as a large system interface where several units can operate concurrently. It can be used in any of the maintenance and administrative environments in DMS. These include:

- General maintenance;
- Network Management;
- Operational Measurements;
- Service Analysis;
- Trunk Test;
- Data Modification;
- Line Test.

The MAP has three basic components, namely: the visual display unit (VDU), the communications module, and the position furniture.

The VDU is composed of a cathode ray tube display device and a typewriter-type keyboard for information entry. Using the VDU, and a telescoping process, Telco personnel can examine the system on several levels of detail. At each level of detail a menu of commands is displayed from which action requests can be selected. The result of a request is then displayed on the VDU. A printer associated with the VDU can be operated in parallel with it to provide a permanent copy of the display. Other printers or teletypes (TTY) can also be used for data entry and retrieval.

The communications module is based on a LOGIC 10 (Local use) or LOGIC 20 (Toll use) key telephone set. It provides the maintenance personnel with telephone links both within and out of the office and access to the office talk line. An automatic dialer, a hands-free unit and a headset may also be provided. A jack field on the position furniture is part of the trunk test

facility. One jack can be used for Telco determined purposes such as connecting to a VF patch bay. The others connect to jack ended trunks through which access can be gained to any line or trunk in the office. Portable test equipment can be plugged into the jacks to perform various tests such as Echo Return Loss or Singing Point measurements.

The position furniture consists of table and shelf units which can be assembled in various configurations to provide work space and document storage for administrative or maintenance functions, and to mount the VDU and communications module components.

For more information on the MAP and it's use, refer to *Commands Reference Manual*, 297-1001-822. The format, content, and classification of output messages available to the MAP user are described in *DMS100 Family Output Commands Description*, 297-1001-510. Input commands are dependant on the Maintenance Subsystem entered. They are described in the series of NTPs 297-1001-511 to 297-1001-518 inclusive, entitled (Maintenance Subsystem Name) Man Machine Interface Description.

Performance Oriented Practice (POP)

The Performance Oriented Practice (POP) is a system of documentation designed to support the Telco in the operation and maintenance of the DMS 100 Family. The information it contains is of sufficient depth to support the inexperienced user but structured to permit the experienced user to bypass detailed instructions if the task can be performed from memory.

POP is task oriented rather than hardware or software oriented. It is accessed when a stimulus such as an alarm or trouble report is received. The instructions in POP then guide the user in performing the activities required to achieve the objective, i.e. retiring the alarm or clearing the trouble. Crossing hardware or software boundaries within or between subsystems does not generate a new task as long as the stimulus and objective remain the same.

The POP is packaged as an NTP. The Order procedures are separate from the Maintenance procedures. The maintenance POP is packaged as *Product Documentation Directory,* 297-8991-001. For a detailed description of POP and it's use, refer to *POP User Guide*, 297-1001-040.

Fault isolation and recovery

Fault isolation and recovery functions are performed by the maintenance system. Faults are detected by hardware such as parity check circuitry or by software checks such as checksums on messages. Isolation and recovery software locates the source of the fault, alerts office personnel and configures suspected equipment out of service to reduce the chance of affecting call processing. Diagnostics determine the cause of the fault.

The maintenance system is divided into ten subsystems. Each subsystem can diagnose faults only within it's range of responsibility. A diagnostic within a subsystem can be initiated by the same or another subsystem, the alarm system, or by maintenance personnel on a scheduled, system demand, or manual request basis.

In response to a diagnostic action the maintenance system sends a report to the maintenance terminal. There are four types of report, namely: error, diagnostic result, action taken, and status.

With the MAP facilities office personnel can use telescoping techniques to obtain ever-increasing detail about system operation until a fault is isolated to one or more replacable components. Defective components are identified in a list, and in order of most probably defective component, displayed on the VDU or teleprinter.

Details of the DMS Maintenance System can be found in *DMS 100 Family Maintenance System Description*, 297-1001-106.

Software maintenance

The correct operation of the DMS 100 family switching systems is dependent upon the integrity of the software system. To ensure this integrity, hardware and software mechanisms are provided to continually verify its sanity. They include data table indexing range checks, audits of software structures, and a sanity timer which guards against software or micro-program loop errors not otherwise detectable.

Bootstrapping loader

Bootstrapping is the process of a Central Control autonomously loading it's Program Store (PS) and Data Store (DS) from a bootstrap input device, eg. a Magnetic Tape Unit (MTU). The bootstrap loader is implemented in microcode (firmware) permanently located in the Read Only Memory (ROM) card of the CPU. Bootstrapping a DMS office can occur in one of three modes as follows:

1 Dead Office mode

2 Active Controlled mode

3 Autoload mode

All 3 modes share the same set of firmware.

Dead Office mode is used to load a nonfunctioning office. Telco personnel activate the loader by means of manual control switches located on the CPU, eg. the thumbwheel, DACT, and RESET. Progress reports identifying stages of initialization, error codes, load completion, etc. are made via the 2-digit display also located on the CPU.

The Active Controlled mode is used in a normally functioning office. The Active Central Control (CC) can process calls and, at the same time, control the bootstrap loader in the offline CC. The controlling and reporting procedures are implemented in the DMS high level language PROTEL, and are resident in PS. Manual controls by Telco personnel and loader activity reports are via the normal office I/O facilities, eg. a designated MAP or teleprinter. One use of this mode is to load a new generic program into the offline CC while the Active CC continues to run the office with the old generic.

The Autoload mode is similar to the Dead Office mode except that it is activated automatically when the system determines that the number of office re-initializations in a specified period of time have exceeded a threshold. When activated, the Autoloader proceeds to load the contents of an office image tape into PS and DS without manual intervention. This mode is particularly useful when an office is unattended. For detailed bootstrapping procedures, refer to *Product Documentation Directory,* 297-8991-001.

Call tracing

The call tracing facility can determine the characteristics of any connection set up through the office. It indicates where the specified circuit is connected in the office if a connection exists. If possible the path through the office will also be indicated. If no connection exists, the state of the circuit is determined.

Call trace requests are originated manually by Telco personnel or automatically by the system. Manual requests are initiated in the course of various maintenance procedures such as line or trunk testing. Automatic traces are initiated as a result of system detected troubles in the call connection or Telco initiated camp-on trace requests.

In both Local and Toll environments, trunks and service circuits can be traced. Local offices also provide Line Trace and Calling Line Identification facilities. These allow Telco personnel to camp-on a specified customer line by requesting an automatic trace of all calls originating on or terminating to that line every time it is involved in a call. This provides a powerful nuisance-call tracing function.

Manual requests and system outputs are made via a designated MAP or other I/O device. More details on call tracing can be found in *Manual Trunk Testing Description*, 297-1001-116, and *DMS-100 Family Lines Maintenance Guide*, 297-1001-594. Call tracing procedures are detailed in *Product Documentation Directory,* 297-8991-001.

Equipment manual make busy

Equipment which is being routined or which has a service affecting fault can be made unavailable to call processing by the Manual-Make Busy facility (MMB). Using MMB, office personnel can isolate faults, perform routine maintenance on equipment, or extend an existing office without disrupting the system. All major equipment elements such as CMC, IOC, NM and PM as well as smaller equipment divisions such as communications busses (i.e. the data port), network ports or channels, line circuits, and trunk circuits can be MMB.

Requests to make equipment MMB and system reports as to equipment status are made via the designated MAP or other I/O device. A request to make equipment MMB when it is already system made busy results in the system made busy status being overridden by the MMB request and a report issued to reflect the new busy status. If the equipment is traffic busy, the MMB request will 'camp-on' and become effective only when the equipment is idled. When the equipment does become MMB, a report is issued to that effect.

Detailed procedures for busying out equipment in a DMS office are found in the *Product Documentation Directory,* 297-8991-001.

External maintenance facilities

Manual trunk maintenance

Manual trunk maintenance is performed in the trunk maintenance center in the DMS office or at any external location with access to the DMS machine. Tests can be performed on terminal circuits and on their associated transmission and signalling facilities to a distant office. Terminal circuits include the following:

1 incoming and outgoing trunks

2 2-way trunks

3 digit receivers

4 test equipment

5 special circuits (conference, recorded announcement, etc.)

Trunk maintenance functions that can be performed include:

1 terminal status monitoring

2 call tracing

3 terminal status modification

4 manually controlled tests applied on a step by step basis with result checking at each step.

5 Automatic diagnostic tests.

The interface between Telco personnel and the trunk maintenance system is the MAP. A MAP dedicated to trunk testing is called the Trunk Test Position (TTP). The full range of trunk tests, including those requiring external test equipment, can be performed at the TTP, or at a general maintenance MAP having access to test trunks. Trunk maintenance not requiring external test equipment can be performed from any general maintenance terminal from which trunk testing is allowed.

A detailed description of trunk maintenance is given in *DMS 100 Family Manual Trunk Testing Description*, 297-1001-116. Detailed trunk test procedures are contained in the *Product Documentation Directory,* 297-8991-001.

Test Trunks

Incoming test trunks are provided for the use of a distant office in testing it's outgoing facilities into the DMS office. The common toll network test trunks provided are: 100 - balanced termination; 101 - communications; 102 - milliwatt; 103 - supervisory; 104 - transmission and noise; 958 - communicating. The 103 - supervisory test trunk function is software simulated; therefore, no trunk need be provided.

Automatic Trunk Testing

The Automatic Trunk Test (ATT) system performs automatic maintenance tests on outgoing trunks, the outgoing portion of 2-way trunks, and on trunk signalling and transmission facilities from the DMS office to a distant office. The setting up and taking down of connections, the control of the ATT system and the actual testing is performed by software. The tests are performed automatically and the test results are output on the specified device or logged by the Routing and Reporting system. The tests performed are the standard test line sequences.

Requests for ATT tests are initiated by sources external to the ATT system, or by the ATT system itself. These sources include:

1 Telco personnel

2 remote test centres

3 Call processing

4 system analysis programs

5 trunk group test timetable (Telco modifiable)

Depending on the type of request, the following request categories are provided:

1 Manual

— performs automatic tests on trunks requested by Telco personnel. The request can include the test type, the trunks to be tested, and how the test should be run.

2 Remote

— Performs tests on request from external sources such as automatic test systems or remote maintenance centers.

3 System

— Performs test on outgoing trunks randomly selected by the system.

4 Periodic

— Performs tests on outgoing trunk groups as specified by their test frequency period.

Tests in each of these categories are performed independently of each other and all categories can operate simultaneously.

The tests performed by the ATT system are as follows:

1 Operational

— These are test line tests to the distant office operational test line. These tests give reasonable assurance that the trunk signalling circuitry functions properly on a normal call.

2 Transmission

— a test line test to the distant office transmission test line. It ensures the trunk and it's associated facility meets Telco transmission requirements and the signalling is in good operating condition.

3 Call-Through

— "A test line test to any distant office termination specified by the called number.

4 Miscellaneous

— Tests on trunks within the same office on which an automatic test can be performed. The trunks tested include: announcement trunks, miscellaneous circuits, test lines, and test equipment.

Tests can be requested on an individual trunk or trunk group, on several selected trunks or trunk groups, or on all trunks located on a specified Trunk Module (TM). Trunks that fail tests are made system Busy (SB). Telco personnel can request a list of SB trunks. Generally, no more than one quarter of the trunks in a trunk group can be made SB as a result of failures. Trunks in service can be camped-on for a Telco specifiable length of time before a test request is abandoned. If the trunk becomes idle before the timeout occurs, the ATT system will seize it and perform the requested tests on it.

For more details on ATT, refer to *DMS 100 Family Automatic Trunk Testing Description*, 297-1001-121. ATT operating procedures are in the *Product Documentation Directory,* 297-8991-001.

Reporting facilities

Routing and Reporting system

The Routing and Reporting system (RR) is responsible for controlling message flow to Telco personnel. Messages are routed through the RR system which provides an interface between the maintenance system, the alarm system, the logging system, and I/O devices such as the MAP, printers and magnetic tape drives. The RR system assigns priorities to messages, formats them, checks for thresholds, determines output routes, and activates appropriate alarms. A message with a threshold value will not be output until the threshold has been exceeded, in which case it is proceeded by a warning message. An inhibited message will not be output at all.

Input and output messages are assigned one of 32 input or output message classes. The message classes are fixed-assigned to any combination of the 32 I/O channels by the Telco, in the office specification. A threshold can be assigned to any message to limit the number of times it is issued. When the threshold value is exceeded, a ”threshold exceeded” message is output, followed by the message itself. Output messages can be temporarily rerouted or inhibited by Telco personnel via the MAP or other I/O device. The message class to I/O channel assignment can be changed via DMO procedures using the Table Editor.

A message holding area, referred to as the LOG, is provided for storing up to several hours of output messages. The quantity of messages stored is dependant on the number of messages generated by the system and on the amount of memory provided. In general, output messages requiring maintenance action are sent to the designated MAP or other I/O device and the remainder to the log, thus preventing Telco personnel from being inundated with irrelevant data on topics other than the problem at hand. Once the log is full, entry of a new message causes the oldest message to be pushed out of the log and become lost. Telco personnel can extract individual messages from the log on a message class or alarm class basis in chronological order starting with the most recent one, thus obtaining a history of maintenance action.

For more details on the RR system, refer to *DMS 100 Family Maintenance System*, 297-1001-106. The format, content, and classification of output messages is described in *Log Reports Reference Manual*, 297-XXXX-840.

Alarm system

The alarm system is responsible for providing audible and visible indications of various trouble conditions within the DMS switching office or external to it, and aiding maintenance personnel in the identification and location of the source.

Alarms are grouped into three categories as follows:

1 Locally Detected Alarms

— These are initiated by hardwired alarm contacts and tend to be power related, eg. fuse and power converter failures.

2 System Detected Alarms

— These are generated as a result of software detected system faults.

3 Externally Detected Alarms

— These are generated outside the switching office although they may be initated by related devices such as Carrier Group alarms. External alarms are interfaced to the DMS system by scanpoints, assignable by Telco personnel.

Alarms are reported at 3 levels of severity according to the urgency to restore the system to normal. In decreasing order of urgency they are:

1 Critical

2 Major

3 Minor

Alarm messages are sent to the MAP or, via a data link, to a remote terminal. Audible and visible indicators can be activated in the office, on another floor, or in a remote monitoring center. Aisle indicators assist Telco personnel in locating fuse and power failures.

Transferring or grouping of alarms is accomplished by the operation of a key on the Alarm Control and Display unit (ACD) located near the MAP. Cancellation of an audible alarm is accomplished by removal of the alarm condition or, if it is a system detected alarm, by the operation of a key at the MAP. Visual alarms are cancelled by means of a key on the ACD.

A dead system alarm is initiated when two relays, controlled by two Signal Distribution (SD) points, both operate. This indicates the loss of minimal call processing capability. A detailed description of the DMS alarm system will be found in NTP 297-YYYY-ZZZ. Detailed procedures for dealing

with each type of system alarm are found in the *Product Documentation Directory,* 297-8991–001.

Appendix A References

DMS-100 Family Automatic Trunk Testing Decription	NTP 297–1001–121
DMS-100 Family Data Modification System Description	NTP 297–1001–115
DMS-100 Family Maintenance and Administration Position	NTP 297–1001–110
DMS-100 Family Maintenance System Description	NTP 297–1001–106
DMS-100 Lines Maintenance Guide	NTP 297–1001–594
DMS-100 Family Manual Trunk Testing Description	NTP 297–1001–116
DMS-100 Family Network Management Description	NTP 297–2201–452
DMS-100 Family Operational Measurements Description	NTP 297–1001–114
DMS-100 Family Operation Measurements Guide	NTP 297–1001–117
DMS-100 Family Order Procedures	NTP 297–1001–300
DMS-100 Family Output Messages Description	NTP 297–1001–510
DMS-100 Family Performance Oriented Practices (POP)	NTP 297–1001–500
DMS-100 Family System Description	NTP 297–1001–100

DMS-100 Family Table Editor Description	NTP 297–1001–310
Central Control (CC) Man–Machine Interface Description	NTP 297–1001–511
Central Message Controller (CMC) Man–Machine Interface Description	NTP 297–1001–512
External (Ext) Man–Machine Interface	NTP 197–1001–517
Description Input/Output Device (IOD) Man–Machine Interface Description	NTP 297–1001–513
Network Module (Net) Man–Machine Interface Description	NTP 297–1001–514
Peripheral Modules (PM) Man–Machine Interface Description	NTP 297–1001–515
POP User Guide	NTP 297–1001–040
Service Analysis Description	NTP 297–2201–490
Traffic (Traf) Man–Machine Interface Description	NTP 297–1001–518
Trunks (Trks) Man–Machine Interface Description	NTP 297–1001–516

List of terms

ACD

Alarm Control and Display

ATT

Automatic Trunk Testing

CC

Central Control

CCC

Central Control Complex

CDM

Customer Data Modification

CMC

Central Message Controller

DMO

Data Modification Order

DMS

Digital Multiplex System

I/O

Input/Output

IOC

Input/Output Controller

MAP

Maintenance and Administration Position

MDF

Main Distribution Frame

MMB

Man Made Busy

MTU

Magnetic Tape Unit

NM

Network Module

NMP

Network Management Position

NTP

Northern Telecom Practice

ODM

Office Data Modification

OM

Operation Measurement

PM

Peripheral Module

POP

Performance Oriented Practice

RR

Routing and Reporting

SB

System Busy

TTP

Trunk Test Position

TTY

Teletype

VDU

Visual Display Unit

DMS-100 Family

Maintenance and Administration Tools

Description

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