NETWORK OPERATIONS SYSTEM

STATION DETAIL SERVER

DNC*-50: BNM-RELATED DATAFILL FOR DMS*-100

Contents continued ------------------

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1. INTRODUCTION

1.01 The Station Detail Server is one of the Business Network Management (BNM) family of products. These products enable business customers to keep track of, and make changes to, the Meridian Digital Centrex (MDC) telephone networks they lease from their local telephone operating companies.

1.02 BNM products are software applications that run on Dynamic Network Control (DNC) systems. A DNC-50 system operates the Station Detail Server application to collect SMDR data from DMS-100 digital switches that are part of one or more MDC networks.

Required DMS Node Datafill

1.03 When a data link is set up between a DNC-50 and a DMS node, certain changes must be made to the data content (datafill) of the DMS node's tables. These changes ensure that the DMS node generates the data that is required by the DNC-50 for its operations, in a consistent and accessible form. This practice gives an overview of the required DMS node datafill:

(1) Part 2 summarizes the datafill that is needed to generate the Station Message Detail Record (SMDR) data.

(2) Part 3 summarizes the datafill needed to set up the data link to the DNC-50.

(3) Part 4 explains how to use maintenance commands to start and monitor data transfer to the DNC-50.

1.04 This practice is not a complete guide to datafilling DMS-100 tables; the DMS document library is to be used for this purpose. If a particular value is required, or if a special consideration applies, the tables or commands, or both, are given in this document. In all other cases, the user is referred to the appropriate DMS-100 practice, and subsection if it is applicable. Chart 1-1 lists the DMS practices that are referenced in this practice.

Chart 1-1
REFERENCES

This chart lists the DMS node NTPs which are referenced in this practice. The user should be reasonably familiar with the DMS node data-entry process and have these references close at hand when entering data in a DMS node for a Station Detail Server system. Before referencing one of these NTPs, verify that the correct issue is available for the system software that is being used.

SUBJECT	NTP NUMBER	NTP SECTION
Maintenance and Administration Position (MAP)	297-1001-110	
Table Editor Reference Manual	297-1001-310	
Device Independent Recording Package (DIRP) User Guide	297-1001-312	
Customer Data Schema:	297-1001-451	
Table STREAM	297-1001-451	005
Table DDU	297-1001-451	008
Table OFCOPT	297-1001-451	016
Table OFCENG	297-1001-451	030
Table DIRPPOOL	297-1001-451	054
Table DIRPSSYS	297-1001-451	054
Table DIRPHOLD	297-1001-451	054
Table CRSFMT	297-1001-451	056
Table CRSMAP	297-1001-451	056
Table MPC	297-1001-451	078
Table X25LINK (formerly BX25LINK)	297-1001-451	078
Table NOPADDR	297-1001-451	090
Table GDLADEV	297-1001-451	096
Office Parameters Reference Manual:	297-1001-455	
Parameters for Table OFCOPT	297-1001-455	016
Parameters for Table OFCENG	297-1001-455	030

Chart Continued -------------------------------

Chart 1-1 Continued
REFERENCES

SUBJECT	NTP NUMBER	NTP SECTION
Routine Procedures Performance Oriented Practice:	297-1001-553	
Logging in at a terminal	297-1001-500	DP6112
Command Reference Manual	297-1001-509	
Maintenance System Man-Machine Interface Description	297-1001-520	
Data Packet Controller Reference Manual	297-1001-525	

2. DATAFILL FOR SMDR DATA GENERATION

2.01 Part 2 explains how to datafill certain DMS node tables so that the DMS node will generate and store the appropriate Station Message Detail Record (SMDR) data for a Station Detail Server system. See Chart 1-1 in Part 1 for the names and numbers of practices that give details about the information that is summarized in this Part.

USING THE MAP TERMINAL

2.02 Data in a DMS node is stored in the form of tables. Each table is identified by a name. Each table consists of a list of tuples. A tuple is a logical row of associated fields in the table, although physically, they may extend to another row on the terminal screen. The contents of a table can be changed by using table editor commands at a Maintenance and Administration Position (MAP).

Logging In

2.03 To log in to a MAP terminal, perform the following steps:

(1) Press BREAK.
==> If a question mark (?) appears, the terminal is available.

(2) Type "LOGIN <username> <password>" and press RETURN**.**
==> The message "Username logged in on <date> at <time>" appears.

Accessing A Table

2.04 To access a table after logging in, type "TABLE <table_name>" and press RETURN.

Editing A Table

2.05 The following commands are available, after a table is accessed, for editing data in a table:

COUNT	counts the number of tuples in the table
LIST ALL	lists the all the data in the table
POSITION value_field_1	positions and displays the specified tuple
CHANGE n	initiates a change to the nth tuple
new_value_field_1	enters the new value at the nth tuple
Y or N	confirms (Y) or cancels (N) the change
QUIT	exits from the table to the CI: level, and saves the confirmed change

DEFINING SMDR DATA   **2.06** The following datafill sequence is used to generate SMDR data:

(1) Define an SMDR data stream in Table CRSFMT, ensuring that:

- DATADUMP is set to "Y"

- the recording is being done in SMDR format (See Table CRSFMT).

(2) Complete Table CRSMAP to ensure that the appropriate SMDR data stream is being sent to SMDR files. (See Table CRSMAP).

Table CRSFMT   **2.07** Table CRSFMT (Call Record Stream Format) determines the number and format of call record output data streams to be produced by a DMS node. The DMS node requires two streams, NIL and AMA, for its internal Automatic Message Recording features. To produce SMDR reports, an attached Station Detail Server system needs to receive its own stream of SMDR data from the DMS node. Table CRSFMT must contain data to define this stream (see Chart 2-1).

Chart 2-1
TABLE CRSFMT

Reference: 297-1001-451, Section 056

FIELD	ENTRY	DESCRIPTION
KEY	SMDR	This is the name of the new data stream. It should be SMDR, but can be different if the operating company has defined other SMDR data streams for its own purposes.
FORMAT	SMDRFMT	To be used by the DNC, the SMDR data stream must be in the standard SMDR format (similar to NTFMT).
DATADUMP	Y	The SMDR data must be dumped to certain files in certain disk locations (specified in the DIRP tables) in order to be accessible to the DNC system.
CDRSRCH	NIL_FM	The DNC system does not use this Call Detail Recording Search option.
ALARMS	N	The DNC has no connection with the DMS node audible alarm system.
DEFERRED	N	The DNC system does not require deferred BOC AMA formatting.

Table CRSMAP

2.08 Table CRSMAP (Call Record Stream Mapping) assigns the call record data stream defined in Table CRSFMT to the appropriate type of call record stream within the DMS node. This table completes the definition of a new SMDR data stream within the switch for the use of the attached DNC system (see Chart 2-2).

Chart 2-2
TABLE CRSMAP

Reference: 297-1001-451, Section 056

FIELD	ENTRY	DESCRIPTION
KEY	SMDR	This is the name of the new data stream. It should be SMDR, but can be different if the operating company has defined other SMDR data streams for its own purposes. It must be the same as the KEY used for the appropriate SMDR stream in Table CRSFMT.
STREAM	SMDR	This is the type of data stream being defined. The DNC system requires an SMDR data stream in order to collect SMDR records from this DMS node.

**DEFINING DISK
SPACE FOR DATA**

2.09 The Device Independent Recording Package (DIRP) manages the recording of certain types of data within a DMS node. Data collected by DIRP can be stored in separate files on tape or disk.

2.10 A DNC-50 connected to a DMS node makes use of SMDR data generated by that node. The tables that define DIRP are:

- **Table DIRPSSYS.** Defines the recording device to be used to store the data created.

- **Table DIRPPOOL.** Lists the data files currently on the holding disk.

2.11 The following steps are taken to define the disk space on which the data is stored:

(1) Datafill Table DIRPPOOL to define disk volumes on the DMS node for holding the data streams that are required by the DNC system (see Table DIRPPOOL later in this Part).

Note: This step may or may not require the added step of re-allocating existing DMS node disk volumes.

(2) Datafill Table DIRPSSYS to ensure that appropriate subsystems (files) are defined for the various data streams and that these subsystems are recorded on disk (see Table DIRPSSYS later in this Part).

(3) Datafill Table STREAM to define the protocol IDs of the types of data that is to be transferred.

(4) Define the SMDR data stream with the appropriate protocol IDs in the XFER MAP level. The steps required are:

   (1) Access the XFER MAP level from CI by entering:

   MAPCI; MTC; IOD; XFER

   (2) Enter the command:

   DEFINE SMDR 1 F

   where F stands for fixed blocking. (See practice 297-1001-509 for more information.)

(5) Datafill Table DDU to define any new disk drives that will be used to store the feature data (see Table DDU later in this Part).

(6) Enter the appropriate parameters in Tables OFCENG and OFCOPT to ensure that the data stream is properly configured and in the correct format (see Tables OFCENG and OFCOPT later in this Part).

Table DIRPPOOL

2.12 Table DIRPPOOL (Device Independent Recording Package Pool), defines the segments (or volumes) of the DMS node's recording devices that are to hold the SMDR data files generated by that node. When a DNC system is connected, this table must be used to assign the data required by the DNC system to disk volumes on the node. (See Chart 2-3.)

Chart 2-3
TABLE DIRPPOOL

Reference: 297-1001-451, Section 054

FIELD	ENTRY	DESCRIPTION
POOLNO	0-15	Pool number.
POOLNAME	SMDRDISK	The names identifying the groups of files that contain the required data. An attached DNC-50 system requires SMDR data from the node. Enter each POOLNAME with its own POOLNO and set of completed fields. This is also the connecting field with Table DIRPSSYS.
DEVTYPE	DISK	Device Type of each pool. All files to be accessed by a DNC system must be on disk.
VOLUME0-VOLUME7	$	A "$" entry allows the DMS node to create its own disk volumes as required.

Table DIRPSSYS   **2.13** Table DIRPSSYS (Device Independent Recording Package System), control assigns each stream of data generated within a DMS node to its own set (subsystem) of files. A DNC-50 system requires that the SMDR data it retrieves from a DMS node be accessible within its own subsystem of disk files. (See Chart 2-4.)

Chart 2-4
TABLE DIRPSSYS

Reference: 297-1001-451, Section 054

FIELD	ENTRY	DESCRIPTION
SSYSNAM	SMDR	Subsystem name. This is an allowable entry for files to be accessed by a DNC system.
READRITE	Y	All files to be accessed by a DNC system should be written to a disk in a Read after Write format to ensure the accuracy of the data.
NUMFILES	2-4	Number of files to open at a time. At least one standby file should be open for emergencies in addition to the one active file for each data stream.
MINFILES	1-3	Minimum number of files open at all times. When MINFILES is set to 1 or more (it must at least one less than NUMFILES), DIRP will not permit dismounting of the active file.
POOLNAME	SMDRDISK	This is the allowable Pool Name entry for files to be accessed by a DNC system. This field provides the connection to Table DIRPPOOL.
FILENAME	$	A "$" entry allows the system to generate its own file names as required.
ALARM0-ALARM3	CR, MJ, MN, or NA	Alarms for the active and standby files.
RETPD	0-499	Retention period. This is the minimum number of days that the original files, which were created by the data streams, are retained. This should be some reasonable value to assure the security of the data.
CONTMARK	+	Continuation mark. Enter +, to indicate that additional information for this tuple is contained in the next record.
CRETPD	0-499	Copy retention period. This is the minimum number of days to retain the copies on disk of the original files. The default value is the same as that entered for RETPD.
PARDTYPE	DISK	Parallel Device Type. All data to be accessed by a DNC system must be recorded to a disk file.

Chart Continued   -------------------------------

Chart 2-4 Continued
TABLE DIRPSSYS

Reference: 297-1001-451, Section 054

FIELD	ENTRY	DESCRIPTION
PARVOL	$	Parallel Volume. A "$" entry allows the DMS system to create its own disk volumes for data files as required.
FILEDATE	FIRSTACT	The DMS node should record on all files to be accessed by a DNC system the date that the file first became active.
SHEDDAYS	(seven entries of Y or N)	Scheduled Rotation Days. This determines the days of the week (in the set Monday through Sunday: indicated by a "Y") that the DMS node is to rotate the files.
SHEDBASE	0-23	Scheduled Rotation Base. This is the hour of day at which the first file rotation occurs. Files to be accessed by a DNC system should be rotated at midnight, if possible.
SHEDINCR	X24	Scheduled Rotation Increments. X24 specifies that the files concerned are to be rotated once every 24 hours. Files to be accessed by a DNC system must not be rotated more than once a day.
ROTACLOS	BOTH	Rotate Close. Files to be accessed by a DNC system should be closed after both manual and scheduled rotations.
AUTOXFER	PARTIAL	Automatic Transfer. Setting this field to PARTIAL prevents a connected DNC system from rotating files at its DMS nodes (since these rotations should be controlled by the DMS node involved).

Table STREAM   **2.14** Table STREAM (Chart 2-5) defines the protocol IDs of the types of data that are to be transferred to the attached DNC-50. The definition that is entered in this table must match the information that is in Table Feature Data at the BNM DNC-50 system. This information enables the DMS node to create the appropriate data transfer streams for the BNM system.

2.15 Refer to the descriptions of the datafill for Tables DIRPPOOL, DIRPSSYS, and DIRPHOLD. These tables concern the creation and management of the appropriate data files on the DMS to serve the various data streams.

Chart 2-5
TABLE STREAM

Reference: 297-1001-451, Section 005
            450-1021-311 Feature Data Table

FIELD	ENTRY	DESCRIPTION
INDEX	1; 2; 3; 4	Enter the index numbers (protocol ID) of the various data streams that are required for the attached BNM system. In each case the index number that is entered must match the number (usually between 1 and 4) of the appropriate entry in Table Feature Data of the attached DNC-50 system.
STRING	SMDR; KT; OM; TTRF	Enter the type of data that is being defined for each stream. TTRF type data on a DMS system is equivalent to ATT type data on a BNM system.

Table DDU   **2.16** Disk Drive Units (DDUs) are used by the DIRP subsystem to record data for the different data types. Disks are divided into many circular tracks, which are further divided into sectors. Each sector of each track represents 1K (1024 bytes) of data storage. Two 1K blocks of disk space are about equivalent to one DIRP block. DDUs are formatted into volumes, which can be used and manipulated by the DIRP subsystem.

2.17 Table DDU registers all the disk drives that are used by the DMS node. A working DMS node will already have a completed Table DDU. When connecting a DNC system, Table DDU is altered only if a new disk drive is installed to hold the data files required by the DNC system. (See Chart 2-6.)

Chart 2-6
TABLE DDU

Reference: 297-1001-451, Section 008

FIELD	ENTRY	DESCRIPTION
DDUNO	0-9	Disk Drive Unit Number.
IOCNO	0-12	Input/Output Controller Number. This is the number of the I/O controller that the DMS node is to use for this disk drive.
IOCCKTNO	0, 4, 8, 12, 16, 20, 24, 28, or 32	Input Output Controller Circuit Number. This is the number of the circuit on which the IOC is installed.
EGPEC	1X55xx	Disk drive controller interface card code, where xx is the vintage number of the card.

Table OFCENG   **2.18** Table OFCENG (Office Engineering) defines various parameters for a DMS node. The operating company owner of a DMS node can change parameters in this table using the table editing facility.

2.19 The table consists of two fields: PARMNAME and PARMVAL; into which the various parameters and their respective values are entered. An attached DNC system running the Station Detail Server application may require certain special parameter settings. See Chart 2-7 and Chart 2-8 for parameter names and values.

Chart 2-7
TABLE OFCENG

Reference: 297-1001-451, Section 030

FIELD	ENTRY	DESCRIPTION
PARMNAME		The entries in this field are the parameters listed in chart 2-8.
PARMVAL		The entries in this field are the values associated with the parameters in the PARMNAME field.

Chart 2-8
PARAMETERS FOR OFCENG

Reference : NTP 297-1001-455, Section 030

PARAMETER	VALUE	DESCRIPTION
NOS_ QUANTITY_ OF_ SVCS	5-15	The number of switched virtual circuits (SVCs) that a connected DNC system requires. The initial set-up for file transfer to a DNC-50 system requires a session for SMDR data plus one for transactions.
AMA_EBCDIC_ CONVERT	N	Automatic Message Accounting (AMA) Extended Binary Coded Decimal Interchange Code (EBCDIC) Convert. Entering this parameter with a "Y" causes all AMA (including SMDR) data to be generated in EBCDIC format. A connected DNC system must receive SMDR data in Binary Coded Decimal (BCD) format, the default. Therefore, the value of this parameter must be "N".

Note: Before changing an existing setting of "Y" for this parameter to "N", check with Northern Telecom personnel to ensure that this will not have any adverse effect on other AMA-related data that is generated by the DMS node.

Chart Continued   -------------------------------

Chart 2-8 Continued
PARAMETERS FOR OFCENG

Reference : NTP 297-1001-455, Section 030

PARAMETER	VALUE	DESCRIPTION
MPC_ON	Y	Applies to the DMS node Multi-Protocol Controller (MPC) only. It specifies that the DMS node is to use NT1X89 MPC circuits to handle all communications with the DNC-50.

Table OFCOPT
2.20 Table OFCOPT (Office Options) defines the various DMS node office option parameters. Although Table OFCOPT is usually reserved for use by Northern Telecom personnel, the operating company owner of a DMS node can change parameters in this table using the table editing facility. Table OFCOPT has the same basic format as Table OFCENG (see Chart 2-9 and Chart 2-10).

Chart 2-9
TABLE OFCOPT

Reference: 297-1001-451, Section 030

FIELD	ENTRY	DESCRIPTION
PARMNAME		The entries in this field are the parameters listed in chart 2-10.
PARMVAL		The entries in this field are the values associated with the parameters in the PARMNAME field.

Chart 2-10
PARAMETERS FOR TABLE OFCOPT

Reference: 297-1001-455, Section 030

PARAMETER	VALUE	DESCRIPTION
AMA_ EBCDIC_ CONVERT_ ENABLE	Y or N	This parameter determines whether the AMA_EBCDIC_CONVERT parameter is to appear in Table OFCENG. If this parameter is set to "N", the default setting (also "N") applies for AMA_EBCDIC_CONVERT. If this parameter is set to "Y", refer to Table OFCENG.

ACTIVATING THE
NEW DEFINITIONS

2.21 Do a warm restart of the DMS node to ensure that all changes and additions to the various tables are in effect (see practice 297-1001-520 for more information about warm restarts).

2.22 At this point, check for active files:

(1) Logon to the DMS node at the DMS MAP terminal.

(2) Access the DIRP MAP level from CI by entering:

MAPCI; MTC; IOD; DIRP;

(3) Examine the active files for SMDR by entering:

QUERY SMDR

(For more information about this command, see 297-1001-509.)

(4) Examine Table CRSMAP to ensure that the SMDR data stream is active (see 297-1001-451, Section 056).

(5) Examine Table DIRPHOLD to ensure that the DMS node is creating SMDR files (see Table DIRPHOLD).

Table DIRPHOLD   **2.23** Table DIRPHOLD (Device Independent Recording Package Hold) acts as a directory on a DMS node to all data files currently on the disk and ready for transmission. Under normal conditions, DIRP automatically fills DIRPHOLD with files that have just been closed. All unprocessed files (containing data that the DMS node has not transmitted) are prefixed by a "U", and all processed (transmitted) file names begin with a "P" (See Chart 2-11).

2.24 When requesting untransmitted data, a DNC system connected to a DMS node searches through only the "U" files in DIRPHOLD.

2.25 Files that are no longer on the DMS node disk must be manually added to Table DIRPHOLD in order to be transferred to another system (such as a DNC-50). The DMS node usually prefixes such files with an "R" (Recovery), and they must be changed to begin with a "U" when entered in Table DIRPHOLD for access by a DNC system.

Chart 2-11
TABLE DIRPHOLD

Reference: 297-1001-451, Section 054

FIELD	ENTRY	DESCRIPTION
HOLDNO	0-99	DIRPHOLD Index Number. Enter an index number to identify the file that is being added. The DMS node begins at 99 and continues downward when automatically adding files to the table. A user can enter a file at index 0 or any available slot.
SSYSNAME	SMDR	Subsystem Name. SMDR is the allowable entry for files that are to be accessed by a DNC-50 system. This field provides a connection with Table DIRPSSYS.
FILENAME	A-Z, 0-9	Enter up to 17 alphanumeric characters that identify a file to be added to DIRPHOLD. Files that a DNC system is to receive must begin with a "U".
VOLSER	A-Z, 0-9	Volume Serial Number. Enter 1-8 characters that identify the tape or disk volume of the required file.
COUNT	0-9	Enter the number of logical records that are contained in the file. This is used by the receiving system to check for missing records after the node has transmitted the file.

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3. DATAFILL FOR CONNECTION TO A DNC-50

3.01 Part 3 describes the DMS node data entry required to set up and activate communication links with a DNC-50. These links enable a DMS node to transfer the SMDR feature data to the Station Detail Server system. See Chart 1-1 in Part 1 for the names and numbers of practices that contain details about the information summarized in this Part.

DMS Node Data Tables

3.02 The following tables should be datafilled using table editor commands at a MAP terminal (see *Using the MAP Terminal* in Part 2 for more information about table editor commands):

(1) Datafill Table MPC to identify to the DMS node the NT1X89 Multi-Protocol Controller board that is to handle communications with the DNC-50. The MPC board is part of the DMS node Input/Output Controller. (See *Table MPC* later in this Part.)

(2) Datafill Table GDLADEV to define the device to be used for each data transfer application.

(3) Datafill Table NOPADDR, to register the address of the DNC-50 system that is to communicate with this DMS node.

(4) Datafill Table X25LINK to register, for the DMS node Central Controller, the characteristics of the DMS node-to-DNC communications link that the specified MPC is to handle. (See *Table X25LINK* later in this Part.)

(5) Use Tables OFCENG and OFCOPT to define the number of circuits required for communication with the DNC system, and to specify certain format parameters for SMDR data. (See *Table OFCENG* and *Table OFCOPT* later in this Part.)

Activating the MPC Board

3.03 When the necessary data has been entered, the MPC board must be put into service. To do this, at the MAP terminal, QUIT the table editor and return to the CI: level of the MAP. Then enter the following command string sequences:

```
-MAPCI; MTC; IOD; IOC n1; CARD n2
-BSY
-RTS
```

where n1 stands for the IOC number and n2 is the number of the MPC board used (that is, the circuit number).

3.04 The state of the MPC circuit is now READY. Error conditions at this point may include:

- **Back test failed -** possibly a cabling problem

- **Profile test failed -** the card may have been incorrectly assigned

- **Not ready -** possibly a transmission problem

- **MPC is MANREQ, RTS fails -** the IOC is not on line and must be restored

Table MPC

3.05 Chart 3-1 lists the fields in Table MPC of the DMS-100 Data Schema. The Multi-Protocol Controller Table MPC registers the configuration of each 1X89 MPC board that is used by the DMS node.

3.06 The 1X89 board is located on the Input/Output Controller of the DMS node. It is connected to a DNC system by way of the data communications facilities that are currently being used.

3.07 The MPC handles the lower levels of the communications protocol between a DNC system and a DMS node. Its main function is to maintain synchronization with the DNC-50 and to handle the DNC system's logon requests to the DMS node.

Chart 3-1
TABLE MPC

Reference: 297-1001-451, Section 078

FIELD	ENTRY	DESCRIPTION
INDEX	0-255	The number of the MPC board that may be used by the DMS node to handle communications with the DNC-50 system.
IOC	0-12	The number of the shelf on the Input/Output Controller (IOC) of the DMS node in which this MPC board may be installed.
CARD	0, 4, 8, 12, 16, 20, 24, 28, or 32	The number of the slot to which this MPC board may be assigned on the IOC shelf.
EQPEC	1X89nn	The Product Engineering Code of the specified MPC board, where nn is the vintage number of that board.
PROTOCOL	X25LINK	Specifies that X.25 protocol, as configured in Table X25LINK, is to be used for all data that is handled by this MPC.
DLDFILE	(eight alphanumeric characters)	The name of the download file that is to be used for this MPC.

Table GDLADEV   **3.08** Table GDLADEV (Generic Data Link Application Device) defines the device that is used for each data transfer application (see Chart 3-2). Each application must be associated with only one device.

Chart 3-2
TABLE GDLADEV

Reference: 297-1001-451, Section 096

FIELD	ENTRY	DESCRIPTION
APPLN	NOP	Enter NOP to identify the application to which data is to be transferred.
DEVICE	MPC	Enter MPC to identify the device that is to be used for data transfer.

Table NOPADDR   **3.09** Table NOPADDR   (Network Operating Protocol   Address)
registers the address of a connecting DNC system (see Chart 3-3). This
address is used by the DMS node to validate incoming calls from the
DNC-50.

Chart 3-3
TABLE NOPADDR

Reference: 297-1001-451, Section 090

FIELD	ENTRY	DESCRIPTION
INDEX	0-15	Virtual channel index.
DEVICE	0-255	MPC board device number. This number should be the same as that in the INDEX field of Table MPC. If there is more than one 1X89 MPC device defined in Table MPC, ensure that this field refers to the correct device.
LINKNO	2 or 3	The number of the communications link that this MPC handles.
ADDRESS	up to 8 digits	The address of a connected DNC system. A DNC-50 sends its own address to a DMS node as part of each logon attempt. If the address that is sent by the DNC-50 does not correspond to this entry, the DMS node refuses the DNC-50's logon attempt and clears the call from the line.
PROTOCOL_ID	n n n n	Four digits, each between 0 and 9, that identifies the exact protocol that the DNC system uses when transmitting its address.

Table X25LINK

3.10 Table X.25 Link configures the X.25 layered protocol links that are handled by each Multi-Protocol Controller (MPC) of the DMS node. The table also has a set of link parameters, the default values of which can be specified for the links with a DNC system. Chart 3-4 describes the fields in Table X25LINK.

Note: At the end of the entries for the following set of fields, the DMS node prompts for PARAMETERS. Enter the symbol $ to activate the default values for all X25LINK parameters. These default values are suitable for X.25 communication links with a DNC-50 system.

Chart 3-4
TABLE X25LINK

Reference: 297-1001-451, Section 078

FIELD	ENTRY		DESCRIPTION
INDEX	0-15		The number of the X.25 link ("virtual channel").
MPCNO	0-255		MPC board Number. This should be the same as in the DEVICE field of Table NOSMPC. If there is more than one 1X89 defined in Table NOSMPC, ensure that this field refers to the correct device.
LINKNO	2 or 3		The number of the communications link that this MPC handles.
LINKNABL	0 to 32765 (in 5 minute intervals; 0 indicates indefinite period)		Link Enable. The number of minutes allowed for the DNC-50 to establish (enable) a communications link after contact by the DMS node. After this period the DMS node will give a busy signal.
CONVNABL	0 to 32765 (in 5 minute intervals; 0 indicates indefinite period)		Conversation Enable. The number of minutes that conversations are allowed on the line, while a communications link between the DNC-50 and the DMS node is established. After this period the DMS node gives a busy signal.
PARMS			The settings for parameters on this X.25 link. Each setting must be entered on a separate line.
	L3DATA	P256	Limited to a maximum of 256 bytes by the MPC. The value entered is 256.
	TINACTIVE	1 to 255	Used to time the periodic transmission of a frame to check remote responsiveness when there is no higher level activity on the link. The value entered must be less than, or equal to, the TIDLE value, and be greater than the T1 value.

Chart Continued --------------------------------

Chart 3-4 Continued
TABLE X25LINK

FIELD	ENTRY	DESCRIPTION
	TIDLE	1 to 255	Used to determine when the link should be considered logically disconnected after the idle channel state is detected.
	L2WINDOW	1 to 7	Specifies the maximum quantity of unacknowledged frames that are allowed to be outstanding at Level 2. The value entered at the DTE end of the link should be consistent with the value entered at the DCE end of the link.
	L3WINDOW	2	Specifies the maximum quantity of unacknowledged frames that are allowed to be outstanding at Level 3. The value entered at the DTE end of the link should be consistent with the value entered at the DCE end of the link.
	N2	10	The counter that tells Level 2 how many times to retransmit a frame for which no acknowledgement is received within the time set by parameter T1.
	T1	1 to 255	The timer at Level 2 to determine if the remote is responding correctly. If T1 responds the number of times set in N2 without proper acknowledgement from the remote of a frame that was sent, the link changes state and reinitializes.
	BAUDRATE	B9600	The baudrate at which communications occur on the link. The parameter CLKSRCE must be datafilled INTERNAL before BAUDRATE can be datafilled.
	T20	5	The parametre that is used by protocol software for sending requests to restart Level 3.
	STANDARD	1	Specifies which protocol standards are followed for communications on the link. SVC users should specify CCITT80 or DDNBASIC. PVC users need not datafill this parameter.
	NUMPVCS	0 to 255	Specifies the quantity of PVCs that are to be configured on the link. Default is 0 if NUMSVCS is 1 or more. Default is 3 if there is no datafill in NUMPVCS or in NUMSVCS.
	NUMSVCS	0 to 255	Specifies the quantity of SVCs that are to be configured on the link. The total of NUMPVCS and NUMSVCS cannot exceed 255. Default is 0.

Chart Continued -------------------------------

Chart 3-4 Continued
TABLE X25LINK

FIELD	ENTRY		DESCRIPTION
	$		The symbol $ at the end of the list of parameters prompts the DMS node to activate the default values for all remaining X25LINK parameters.
EXTRAINF	SVCDNA	0 to 9	The Switched Virtual Circuit Data Network Address. A value is required in this field if a value has not been datafilled in field NUMSVCS.
	SVCTYPE	DATAPAC	The Switched Virtual Circuit Type. Datapac* virtual circuits must be used to link a DNC-50 with a DMS node.

*Datapac is a trademark of Bell Canada.

Table OFCENG

3.11 Table OFCENG (Office Engineering) defines various parameters for a DMS node. The operating company owner of a DMS node can change parameters in this table using the table editing facility.

3.12 The table consists of two fields: PARMNAME and PARMVAL; into which the various parameters and their respective values are entered. An attached DNC system running the Station Detail Server application may require certain special parameter settings. See Chart 3-5 and Chart 3-6.

Chart 3-5
TABLE OFCENG

Reference: 297-1001-451, Section 030

FIELD	ENTRY	DESCRIPTION
PARMNAME		The entries in this field are the parameters listed in chart 3-6.
PARMVAL		The entries in this field are the values associated with the parameters in the PARMNAME field.

Chart 3-6
PARAMETERS FOR TABLE OFCENG

Reference: 297-1001-455, Section 030

PARAMETER	VALUE	DESCRIPTION
NOS_ QUANTITY_ OF_ SVCS	5-15	The quantity of switched virtual circuits (SVCs) that a connected DNC system requires. The initial set-up for file transfer to a DNC-50 system requires a session for SMDR data plus one for transactions.

Note: A warm restart is required to effect a change to this parameter in Table OFCENG.

PARAMETER	VALUE	DESCRIPTION
AMA_EBCDIC_ CONVERT	N	Automatic Message Accounting (AMA) Extended Binary Coded Decimal Interchange Code (EBCDIC) Convert. Entering this parameter with a "Y" causes all AMA (including SMDR) data to be generated in EBCDIC format. A connected DNC system must receive SMDR data in Binary Coded Decimal (BCD) format, the default. Therefore, the value of this parameter must be "N".

Note: Before changing an existing setting of "Y" for this parameter to "N", check with Northern Telecom personnel to ensure that this will not have any adverse affect on other AMA-related data generated by the DMS node.

Chart Continued -------------------------------

Chart 3-6 Continued
PARAMETERS FOR TABLE OFCENG

Reference: 297-1001-455, Section 030

PARAMETER	VALUE	DESCRIPTION
MPC_ON	Y	Applies to the DMS node Multi-Protocol Controller (MPC) only. It specifies that the DMS node is to use 1X89 MPC circuits to handle all communications with outside devices (such as a DNC-50).

Table OFCOPT   **3.13** Table OFCOPT (Office Options) defines the various DMS node option parameters. Although Table OFCOPT (see Charts 3-7 and 3-8) is usually reserved for use by Northern Telecom personnel, the operating company can change parameters in this table by using the table editing facility. Table OFCOPT has the same basic format as Table OFCENG (see Charts 3-5 and 3-6).

Chart 3-7
TABLE OFCOPT

Reference: 297-1001-451, Section 016

FIELD	ENTRY	DESCRIPTION
PARMNAME		The entries in this field are the parameters listed in Chart 3-5.
PARMVAL		The entries in this field are the values associated with the parameters in the PARMNAME field.

Chart 3-8
PARAMETERS FOR TABLE OFCOPT

Reference: 297-1001-455, Section 016

PARAMETER	VALUE	DESCRIPTION
AMA_ EBCDIC_ CONVERT_ ENABLE	Y or N	This parameter determines whether the AMA_EBCDIC_CONVERT parameter is to appear in Table OFCENG. If this parameter is set to "N", the default setting "N" applies for AMA_EBCDIC_CONVERT. If this parameter is set to "Y", refer to Table OFCENG.

End of Part 3

4. TRANSFERRING FILES FROM A DMS NODE TO A DNC-50

4.01 Part 4 summarizes the commands that are used to transfer files from a DMS node to a DNC-50. To do this the MAP level NOP of the DMS node is accessed.

References

4.02 The following practices give complete information for summaries in this Part:

- 297-1001-509 Command Reference Manual

- 297-1001-520 Maintenance System Man-Machine Interface Description

Table DIRPHOLD

4.03 Table DIRPHOLD (Device Independent Recording Package Hold) is a directory on a DMS node of all data files that are currently on the disk and are ready for transmission. Normally DIRP automatically fills DIRPHOLD with files that have just been closed. All unprocessed files (containing data that the DMS node has not transmitted) are prefixed by a "U", and all processed files (containing data that the DMS node has transmitted) begin with a "P". (See Chart 4-1).

4.04 When requesting untransmitted data, a DNC system that is connected to a DMS node searches through only the "U" files in DIRPHOLD.

4.05 Files that are no longer on the DMS node disk must be manually added to Table DIRPHOLD in order to be transferred to another system (such as a DNC-50). The DMS node usually prefixes such files with an "R" (Recovery), and they must be changed to begin with a "U" when they are entered in Table DIRPHOLD for access by a DNC system.

Chart 4-1
TABLE DIRPHOLD

Reference: 297-1001-451, Section 054

FIELD	ENTRY	DESCRIPTION
HOLDNO	0-99	DIRPHOLD Index Number. Enter an index number to identify the file being added. The DMS node begins at 99 and continues downward when automatically adding files to the table. A user can enter a file at index 0 or any available slot.
SSYSNAME	SMDR	Subsystem Name. SMDR is the allowable entry for files that are to be accessed by a DNC-50 system. This field provides a connection with Table DIRPSSYS.
FILENAME	A-Z, 0-9	Enter up to 17 alphanumeric characters that identify a file to be added to DIRPHOLD. Files that a DNC system is to receive must begin with a "U".
VOLSER	A-Z, 0-9	Volume Serial Number. Enter 1-8 characters that identify the tape or disk volume of the file desired.
COUNT	0-9	Enter the number of logical records that are contained in the file. This is used by the receiving system to check for missing records after the node has transmitted the file.

Accessing File Transfer

4.06 To access the monitoring and control commands of file transfer, perform the following steps (for more information, see 297-1001-520):

(1) Login at the MAP terminal.
==> CI:> appears.

(2) Enter the command string MAPCI;MTC;IOD;NOP, and then press **RETURN.** A list of commands that are available at this MAP level is displayed in a menu.

Status Displays

4.07 The status display shows the quantity of active switched virtual circuits (SVCs) and the status of each. The Sessions field shows all the SVCs in a line. Under this line, the State field shows the state of each SVC as follows:

- (a period) -indicates that the circuit is idle

- L -indicates that the circuit is logged in

- A -indicates that the circuit is active

Commands

4.08 Seven commands are available in the NOP MAP level. The command QUERY requires certain parameters to achieve specific results; the combinations of the command and each parameter are shown separately. The commands and parameters are summarized summarized as follows:

(a)   QUIT - recedes to the IOD level of MAP commands

Note: The command QUIT ALL recedes to the CI: level of commands.

(b)   POST_(session number) - for the SVC entered, shows:

- Application (for example, FT is File Transfer, TRAN is Transaction SVC)

- RO Type (for example, TS is Transfer Stream)

- The filename of the file that is being transferred

- The number of last block that was sent

- The quantity of blocks of active files that remain to be sent

- The status of the last block that was transmitted (for example, OK for no problems, SYS if a problem was encountered)

(c)   QUERY_(session number) - for the SVC entered (default is for all SVC), shows:

- State (Idle, Active, Logon)

- Application (for example, FT or MAP)

- File ID (SMDR)

- Node (network address)

(d)   QUERY ACTIVE, QUERY LOGON, QUERY IDLE - outputs the same QUERY information above for all SVCs in the state ACTIVE, LOGON, or IDLE.

(e) **QUERY SESSION n DETAIL** - gives detailed information for SVC "n". In addition to information output by POST and QUERY, gives the additional fields:

- Hold No. (the position of the file in Table DIRPHOLD)

- Volume

- Data ID (1 for SMDR)

(f) **QUERY HISTORY** - outputs the 16 most recent ROs. Gives time at which RO occurred, SVC used, RO type, Data ID, RO Result and fault number (if Not OK).

(g) **NXTPAGE -** goes to next screen if output does not fit on one screen.

(h) **PRVPAGE -** goes back to previous display after NXTPAGE.

(i) **RELEASE (session number)** - turns off a session. Useful if a problem was encountered.

(j) **CLEAR -** clears out the history buffer and alarm display.

Demand Transfer Requests for Files Stored on Disk

4.09 A request for a demand transfer from a DNC-50 is indicated by an XMITnn alarm, where nn is the number of the alarm.

4.10 For an Unprocessed (U) file, no manual intervention is required at the DMS node.

4.11 A Processed (P) file should be renamed to a "U" file and retrieved automatically, or renamed to an Exception "R" file and transferred manually.

4.12 For an (R) file, manual transfer is required, as follows:

(**1**) Login to a MAP terminal. (See 297-1001-520 for information about how to log in.)
==> CI:> appears.

(**2**) Enter MAPCI;MTC;IOD;XFER, and then press RETURN**.**
==> A list of the commands that are available at the MAP level XFER is displayed.

Note: At this point, enter HELP to get information about the commands that are displayed.

(**3**) Use the QUERY command to verify the XMITnn alarm, where nn is the number of the alarm.

(4) If it is necesssary to stop the file transfer process, invoke the command ABORTX.

(5) List the files that are on the disk by invoking the command PROGDIR DISKUT LISTVOL.

(6) Begin the file transfer by invoking the command XMIT.

(7) When the DNC-50 has received the file, a KEEP alarm is raised at the DMS node. Invoke the command QUERY to verify the alarm.

(8) Invoke the command KEPT to clear the alarm. This command will also remove the file from DIRPHOLD.

Demand Transfer Requests for Files Stored on Tape

4.13 A request for a demand transfer from a DNC-50 is indicated by an XMITnn alarm, where nn is the number of the alarm.

4.14 Files that are stored on tape are Exception ("R") files, and require manual intervention as follows to activate the file transfer:

(1) Login to a MAP terminal (see 297-1001-520 for more details).
==> CI:> appears.

(2) Enter the command string MAPCI;MTC;IODXFER, and then press RETURN**.**
==> A list of the commands that are available at the MAP level XFER is displayed.

Note: At this point, enter HELP to get information about the commands that are valid at this level.

(3) Invoke the command QUERY to verify the XMITnn alarm, where nn is the number of the alarm.

(4) Invoke the command ABORTX if it is necessary to stop the file transfer.

(5) Invoke the command MOUNT to mount the tape. See 297-1001-509 for more information.

(6) Invoke the command LIST to list the files that are on the tape. See 297-1001-509 for more information.

(7) Invoke the command XMIT to begin file transfer. When file transfer is finished, a DMNT alarm is raised.

(8) Invoke the command DMNT to dismount the tape and to clear the alarm.

(9) When the DNC-50 has received the file, a KEEP alarm is raised at the DMS node.

(10) Invoke the command QUERY to verify the alarm KEEP that is raised at the DMS node after the DNC-50 has received the file.

(11) Invoke the command KEPT to clear the alarm. This command will also remove the file from Table DIRPHOLD.

5. ABBREVIATIONS

AMA	Automatic Message Accounting
BCD	Binary Coded Decimal
BNM	Business Network Management
DDU	Disk Drive Unit
DIRP	Device Independent Recording Package
DMS	Digital Multiplex System
DNC	Dynamic Network Controller
EBCDIC	Extended BCD Interchange Code
IOC	Input-Output Controller
MAP	Maintenance and Administration Position
MDC	Meridian Digital Centrex
MPC	Multi-Protocol Controller
NOP	Network Operation Protocol
NT	Northern Telecom
NTP	Northern Telecom Practice
PVC	Permanent Virtual Circuit
SMDR	Station Message Detail Record
SVC	Switched Virtual Circuit