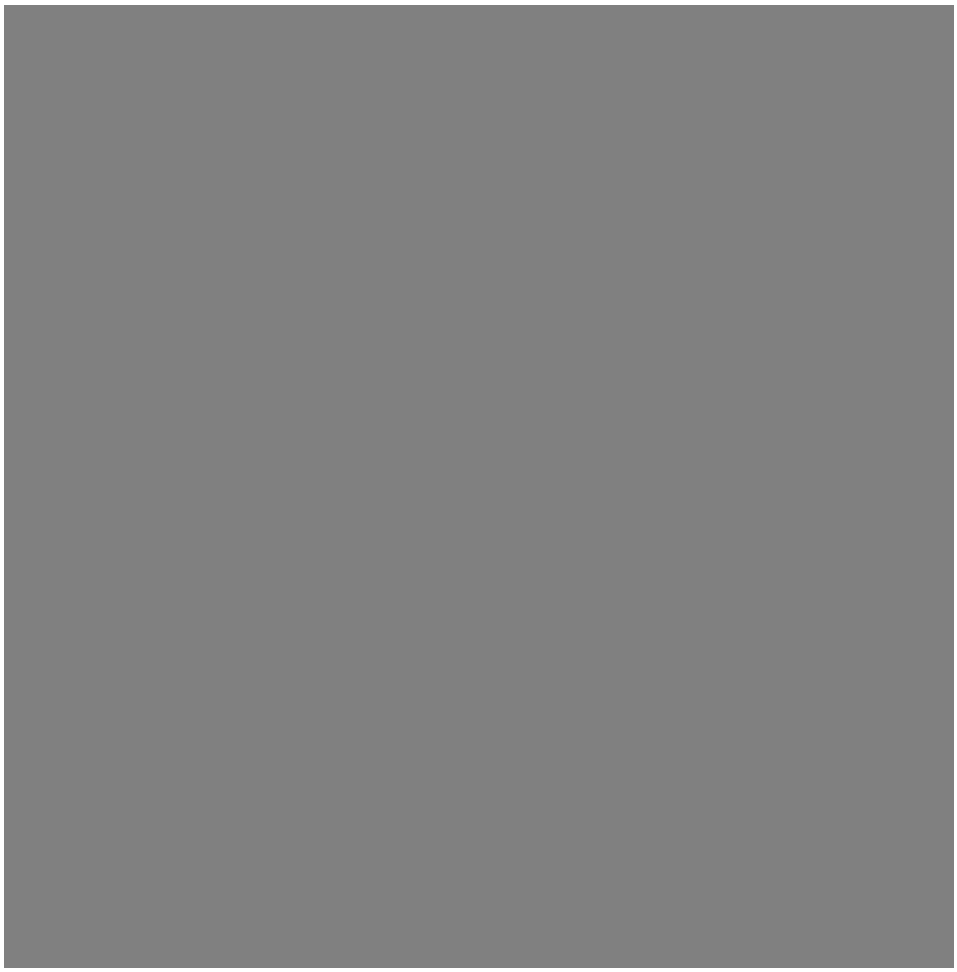
Network Operations Systems

Business Network Management

DNC-500 End-User and DNC-100: Station Administration Features Description

NSR28 and up March 1991 Standard



northern telecom

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DNC-500 End-User and DNC-100: Station Administration Features Description

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Introduction

This manual

Station Administration is part of the Business Network Management (BNM) application of Northern Telecom's Dynamic Network Control (DNC) system. It allows users of Meridian Digital Centrex telephone networks to request changes to their networks through BNM.

This Northern Telecom Practice (NTP) describes the Station Administration features that are available to a telephone company's business customers in release NSR28 of BNM. A separate document, Appendix 1 to 450-1021-101, describes the features from the telephone company's point of view.

Station Administration is an optional part of BNM. For descriptions of other features of BNM that end users can use, see the practice to which this practice is an appendix: NTP 450-1021-102. For an introduction to Dynamic Network Control systems, see NTP 450-1011-100.

Other related documentation includes Appendix 1 to NTP 450-1021-312, which explains how to operate Station Administration on a DNC-100 or as a DNC-500 end user. For a complete list of all NTPs in the BNM library, see NTP 450-1021-002 (for end users) or 450-1021-001 (for telephone companies).

Changes for NSR28

NSR28 adds support for:

- the voice and data features of integrated services digital network (ISDN) stations
- packet data terminals

Descriptions of these features have been added to this document where appropriate. In general, the changes are:

(a) ***Addition of LTIDs.*** Where non-ISDN stations are identified by line equipment numbers (LENs), ISDN stations are identified by logical terminal identifiers (LTIDs).

(b) ***Addition of New Line Class Codes.*** The codes ISDNKSET, B-Packet, and D-Packet have been added to the list of line class codes that Station Administration supports.

(c) ***Addition of New Reports.*** The Station Administration reporting feature has new reports on ISDN looplens, stations that are call forwarded, and service order history. These reports are shown in Part 4.

(d) ***Change of Report Formats.*** All reports are now printed in an 80-column format instead of the previous 132-column format. The new formats are shown in Part 4.

(e) ***Report Printing.*** All reports can be printed on either the operating company's printers, or the customer's printers. Where reports are printed is determined by the operating company. Reports can also be displayed on terminal screens.

(f) ***Addition of New Directory Number Features.*** Station Administration now supports the directory number features Bearer Capability (BC), Station Message Detail Recording (SMDR), and Directed Call Pickup Bargain Exempt (DCBX). The SMDR and DCBX features can be used on any station, but BC is available only on ISDNKSET stations. These new features are shown on the station reports in part 4 of this document.

An overview of station administration

Changes to telephone sets

A Meridian Digital Centrex (MDC) network may include services and features from several DMS switches (nodes). In the past, customers who wanted to add, modify, or delete directory numbers or features to telephone sets in their networks, had to request the changes from their telephone operating companies. In turn, a telephone company had to change settings on several DMS nodes in order to satisfy the requests of a single customer.

With Station Administration, customers who are authorized to do so can create certain types of service orders themselves, and BNM automatically transfers the service orders to the appropriate DMS nodes and receives and processes confirmation of each change. The telephone company performs certain administrative tasks to manage this system:

- the telephone company specifies which Meridian Digital Centrex features each customer is allowed to administer, and sets limits on how many times a customer can use each feature
- for a new customer, the telco performs a "Database Upload" procedure to transfer data about the customer's Meridian Digital Centrex network from the appropriate DMS nodes

Using Station Administration features, a customer or the telephone company can:

- maintain an inventory of the options and services currently assigned to the stations (physical phone connections) on the customer's Meridian Digital Centrex network
- assign and reassign stations to internal subscribers
- assign and reassign a station's features and services
- move telephone directory numbers between stations at different locations
- schedule the service orders to take effect on the required date
- produce reports on Station Administration activity

Changes to packet data terminals

Station Administration can also be used to make changes to packet data stations that are normally controlled by a Network Administration System (NAS) database. BNM sends requests for changes to the NAS database and keeps a record of the changes.

Station administration features

Accessing station administration

Station Administration consists of five items on the BNM main menu:

Service Orders Allows customers to create service orders, which are requests for changes to services, features, and packet data terminals, in their Meridian Digital Centrex networks.

Feature Subscription Limits Allows customers to see which features they are allowed to administer and how many times they may use each feature in their networks. These limits are set by the telephone company.

Network Class of Service Allows customers to display the network class of service (NCOS) codes that the telephone operating company has made available to them. Customers can use Service Orders to assign available NCOS codes to stations in their networks.

Reporting Allows customers to print reports, on the data in their Station Administration databases, to local printers, terminal slave printers, or to terminal displays. The types of reports are:

- a summary or detailed report on stations, sorted by directory number (DN), or by line equipment number (LEN - for non-ISDN stations) or logical terminal identifier (LTID - for ISDN stations)
- a summary report on stations that belong to call pickup groups
- a summary report on stations that belong to speed call groups
- a report on the stations that are attached to ISDN looplens
- a report on service order batches
- a report on hunt groups
- a report on group intercom (GIC) groups
- a report on stations that have been call forwarded to a specified directory number
- a report on service orders that have been completed successfully

Service orders

A service order is a request to change some aspect of a Meridian Digital Centrex telephone network. For a packet data station, a service order is performed as soon as the changes are committed. For voice stations however, service orders are not carried out immediately, but instead are grouped into a batch of related service orders, which is then scheduled to be executed at a particular time. At the appointed time, all the service orders in the batch are sent to the appropriate DMS nodes for processing.

The Service Orders feature of Station Administration includes facilities to

- create new service orders to request service and feature changes to a network
- schedule the date and time that the changes in a batch of related service orders are to take effect
- change existing service orders in batches that the system has not yet relayed to the appropriate DMS nodes, or add new service orders to those batches

Operation

After you select Service Orders from the BNM main menu, the system presents the options of examining an existing batch of service orders or creating a new one. A Service Order Batch is a group of service orders that are scheduled to be carried out at the same time. Each batch includes:

(1) a user-assigned identification and a system-assigned time and date of creation

(2) a date and time that the service orders in the batch are to take effect

(3) the name of an administrator responsible for the batch

(4) the status of the batch, which may be:

Current	now being created or updated (in this state the data cannot be reaccessed)
Pending	waiting to be processed and sent to the appropriate DMS nodes (in this state the data can be changed)
Active	now being processed and sent to the nodes (cannot be changed)
Partial	has already been sent to the nodes, but some of the service orders were not processed for at least one node (in this state the data cannot be changed)
Spent	has already been sent to the nodes but was not processed successfully (in this state the data can only be deleted)

Within a new or existing batch of service orders, you can create new service orders. Each station has a line equipment number (LEN) or logical terminal identifier (LTID) that identifies it to the node, and a primary directory number (DN) that identifies it to you. You can select a station by its LEN, LTID, or DN and

- assign or remove Meridian Digital Centrex options such as call forwarding for directory numbers at that station
- specify parameters, such as key codes, required for feature options
- add or delete directory numbers at the station
- change parameters for a packet data station
- add or delete addons
- change station related information

All changes to a station become a new service order and is added to the current batch. If a service order already exists for the station in the current batch, then the changes are added to the existing one (no new service order is created).

At each step of a Station Administration operation such as creating a service order, you have the option of saving or discarding the new information or changes entered during that step. If you elect to discard the changes, you are required to confirm your choice.

When a batch of service orders becomes active, Station Administration processes the changes into instructions for nodes. These instructions are then sent to the nodes. If all service orders in a batch are processed successfully by the nodes, Station Administration clears the batch and updates your database. If some service orders are not processed successfully, the batch becomes "spent" and the system produces an error report that indicates which service orders could not be processed.

Service order parameters

The kinds of telephone data that you can modify using Service Orders include:

- **Directory Numbers:** one or more directory numbers can be added to, modified, or deleted from a station (telephone) in your network
- **Features:** one or more features, such as call forwarding or call pickup, can be added to, modified, or deleted from a directory number or a station
- **Stations:** features and directory numbers that are assigned to one station in the network can be exchanged with those of another station (called swaps)
- **Packet data terminal:** some of the packet data terminal options can be modified (for instance changes to closed user groups (CUGs) and permanent virtual circuits (PVCs))
- **Station parameters:** modifications to its parameters such as network class of service (NCOS) and subgroups

Stations. A station is the basic telephone outlet in your network. Information such as line equipment number (LEN - for non-ISDN stations) or logical terminal identifier (LTID - for ISDN stations), primary directory number (DN), and line class code (LCC) identifies the station to the node. Depending on its LCC and network class of service (NCOS) code, each station may support other directory numbers and a variety of Meridian Digital Centrex features such as call forwarding and speed calling. The LCCs supported for Station Administration are:

- IBN (also called MDC)
- PSET (also called EBS)
- M5000-series (M5009, M5112, M5209, M5312)
- ISDNKSET
- B-Packet and D-Packet

Directory Numbers. A DN is the number required to contact a particular station. Each station has a primary DN that identifies the station. Other DNs may be associated with this primary DN. Station Administration allows the assignment of DNs to stations and the assignment of features to DNs.

Service order processing

Service orders are processed by BNM's Scheduling Services feature. Scheduling Services enables users of BNM to schedule a variety of jobs on a DNC, including Service Order Processing (SOP) jobs for Station Administration.

When a SOP job is activated at the scheduled time, the DNC logs on to the node and begins transferring data. The node completes the changes on its database. The DNC updates its own database and keeps track of the status of the SOP job.

Feature subscription limits

The Feature Subscription Limits feature gives the telephone company control over how you can use service orders to manage features on your Meridian Digital Centrex network. It enables the telephone company to

- grant or deny you permission to manage (add, delete, and change parameters for) each feature on each node in your network
- set the maximum number of times you can use each feature

By default, permission is denied for all features on all nodes. Before you can create a service order to add, delete, or change a feature for a station or directory number on a particular node, the telephone company must specifically grant you permission to manage that feature on that node. The system will not allow you to assign the feature more than the allotted number of times.

Feature limits are defined in two categories: station limits and directory number limits.

- **Station Limits** shows the limits of features that apply to stations. Examples of such features include Speed Call User and Call Pickup.
- **DN Limits** shows the limits of features that apply to DNs. Examples of such features include Call Hold and Cutoff on Disconnect.

Network class of service

A network class of service (NCOS) number is a code used by DMS nodes that identifies the services that are available to a station or other facility. The telephone company defines NCOS codes on the DMS nodes and decides which ones are available to your network.

You can use Service Orders to change the NCOS code for a station. You must choose the new code from a set of codes that the telephone company has made available to you. The Network Class of Service option lets you display these codes.

Reports

A customer or the telephone operating company can request printed reports that show the data in the customer's Station Administration database. Reports are available on the following database entities:

Stations

There are four different types of station reports:

- detailed reports sorted by primary directory number (DN)
- detailed reports sorted by line equipment number (LEN - for non-ISDN stations) or logical terminal identifier (LTID - for ISDN stations)
- summary reports sorted by (DN)
- summary reports sorted by LEN or LTID

The detailed reports show complete information about stations and their associated directory numbers. The summary reports show one line of station data for each station.

Stations by Call Pickup Groups

A report on call pickup groups is similar to a summary station report, except that it lists only stations that belong to call pickup groups. The stations are sorted and identified by call pickup group.

Stations by Speed Call Groups

A report on speed call groups is similar to a summary station report, except that it lists only stations that belong to speed call groups. The stations are sorted and identified by speed call group.

Stations by ISDN Looplens

A report on ISDN looplens lists the ISDN stations that are connected to each looplen. The report is sorted by looplen and then by logical terminal identifier (LTID).

Service Order Batches

A report on service order batches shows information about pending, active, and partially processed batches. Spent batches are not shown.

Hunt Groups

A report on hunt groups has two parts: a summary list of the hunt groups, and detailed information about the members of those hunt groups.

Group Intercom (GIC) Groups	A report on group intercom groups shows information about the group's LENs, member IDs, customer groups, and GIC group IDs.
Stations Forwarded to a Target DN	There are two types of reports on stations that have been forwarded to a specified directory number. One type lists stations that have the Call Forward Busy (CFB) option; the other lists stations that have the Call Forward No Answer (CFD) option.
Service Order History	A report on service orders lists service orders that have been completed successfully.

Report printing

Reports may be printed on either the operating company's printers, or the customer's printers. Where reports are printed is determined by the operating company.

Selection criteria

You can use selection criteria to restrict the reports to aspects of interest. Different selection criteria apply to different types of reports.

In general, selection criteria consist of either an exact value or lower and upper limits. For example, you can restrict a station report to a particular station by specifying a primary directory number such as 555-1212 (an exact value), or you can ask for a range of stations such as those with directory numbers between 555-0000 and 555-2000 (lower and upper limits). If no selection criteria are specified, the system reports on all the stations in the database.

Lower and upper limits can apply to alphanumeric criteria as well as numeric. Alphanumeric criteria are ordered according to the numeric codes of the ASCII character set, which is the equivalent of alphabetical ordering.

Station reports

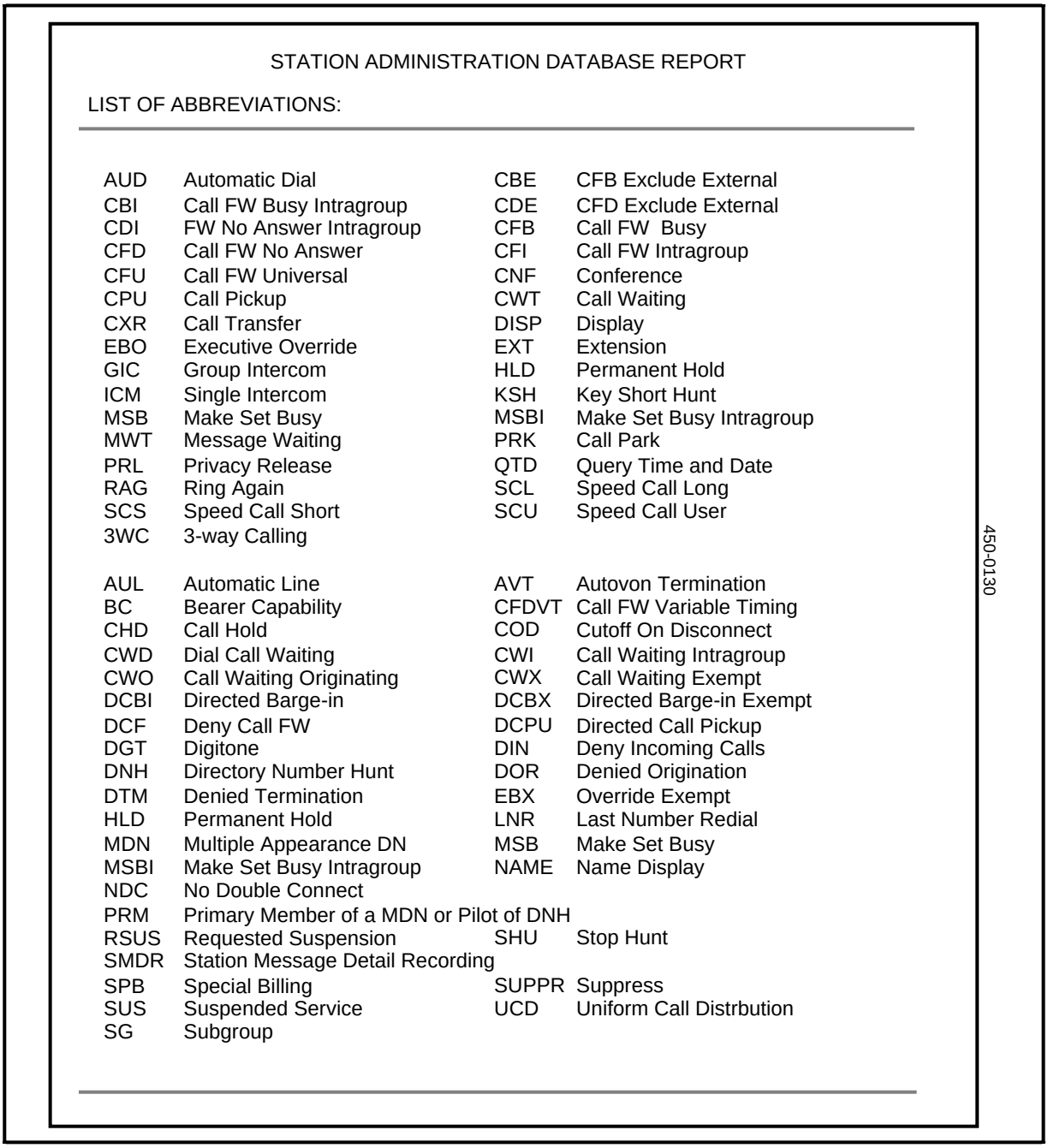
The selection criteria for a station report are

- node ID
- line equipment number (LEN - for non-ISDN stations) or logical terminal identifier (LTID - for ISDN stations). If no LEN or LTID values are specified the system reports on all stations.
- station location
- numbering plan area (NPA, also called area code). The system always validates any NPA input, but the entered NPA will not be used as selection criteria in a summary report.
- primary directory number (DN)
- line class code (LCC)
- customer group

You can also choose a sorting sequence for a station report. The choices are:

- by directory number (NPA + primary DN)
- by LEN/LTID (node ID + (LEN or LTID))

Figure 4-1
The cover page of a station detail report



STATION ADMINISTRATION DATABASE REPORT

LIST OF ABBREVIATIONS:

AUD	Automatic Dial	CBE	CFB Exclude External
CBI	Call FW Busy Intragroup	CDE	CFD Exclude External
CDI	FW No Answer Intragroup	CFB	Call FW Busy
CFD	Call FW No Answer	CFI	Call FW Intragroup
CFU	Call FW Universal	CNF	Conference
CPU	Call Pickup	CWT	Call Waiting
CXR	Call Transfer	DISP	Display
EBO	Executive Override	EXT	Extension
GIC	Group Intercom	HLD	Permanent Hold
ICM	Single Intercom	KSH	Key Short Hunt
MSB	Make Set Busy	MSBI	Make Set Busy Intragroup
MWT	Message Waiting	PRK	Call Park
PRL	Privacy Release	QTD	Query Time and Date
RAG	Ring Again	SCL	Speed Call Long
SCS	Speed Call Short	SCU	Speed Call User
3WC	3-way Calling		

AUL	Automatic Line	AVT	Autovon Termination
BC	Bearer Capability	CFDVT	Call FW Variable Timing
CHD	Call Hold	COD	Cutoff On Disconnect
CWD	Dial Call Waiting	CWI	Call Waiting Intragroup
CWO	Call Waiting Originating	CWX	Call Waiting Exempt
DCBI	Directed Barge-in	DCBX	Directed Barge-in Exempt
DCF	Deny Call FW	DCPU	Directed Call Pickup
DGT	Digitone	DIN	Deny Incoming Calls
DNH	Directory Number Hunt	DOR	Denied Origination
DTM	Denied Termination	EBX	Override Exempt
HLD	Permanent Hold	LNR	Last Number Redial
MDN	Multiple Appearance DN	MSB	Make Set Busy
MSBI	Make Set Busy Intragroup	NAME	Name Display
NDC	No Double Connect		
PRM	Primary Member of a MDN or Pilot of DNH		
RSUS	Requested Suspension	SHU	Stop Hunt
SMDR	Station Message Detail Recording		
SPB	Special Billing	SUPPR	Suppress
SUS	Suspended Service	UCD	Uniform Call Distrbution
SG	Subgroup		

450-0130

Detailed Reports. A detailed report has two parts. Figure 4-1 shows the first page, which lists the meanings of the mnemonics that are used in the report. Figure 4-2 shows the format of the main body of a detailed report. The report may be sorted either by area code and primary DN (the first two columns), or by LEN or LTID (the fourth column).

Figure 4-2
The format of a detailed station report

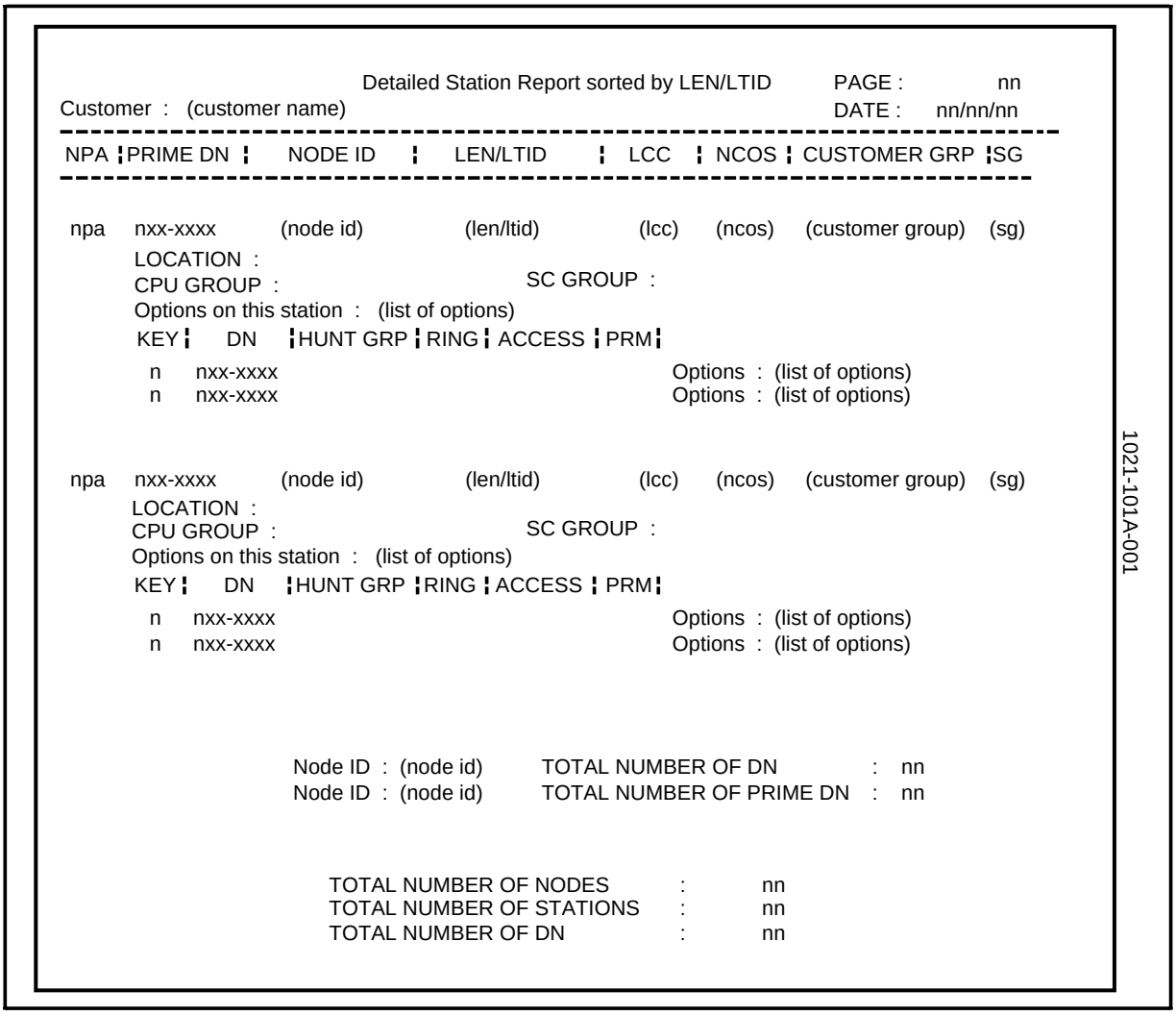
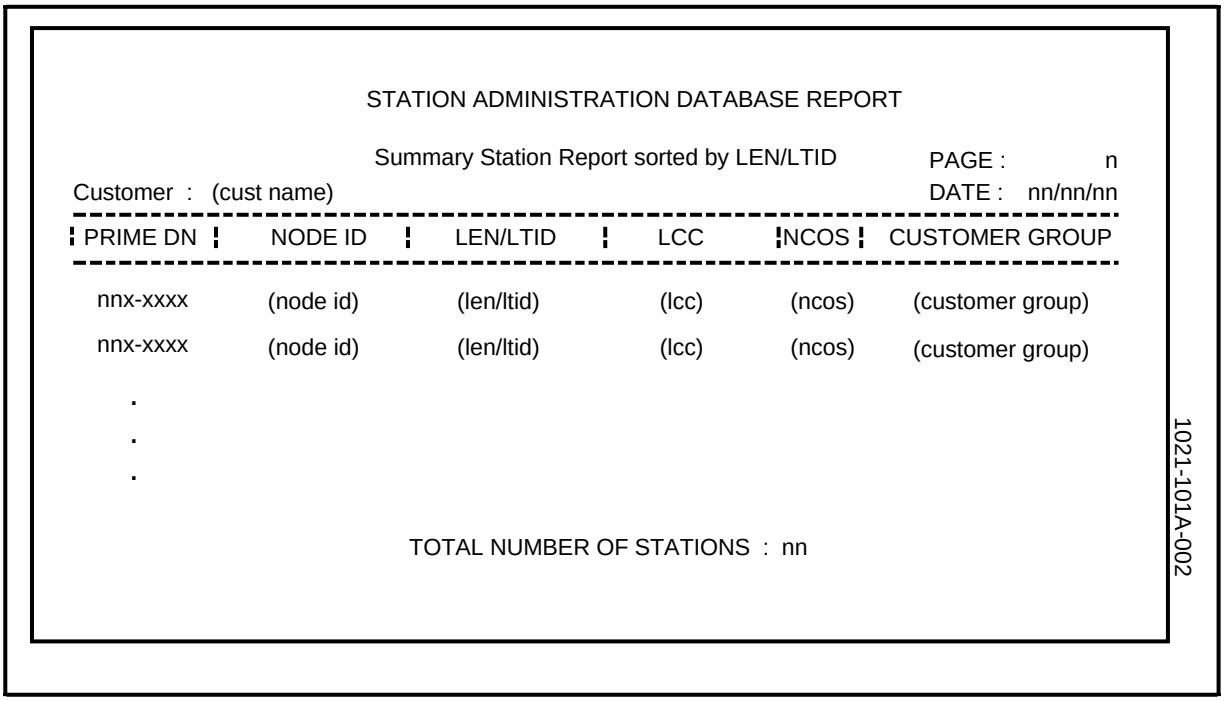


Figure 4-3
The format of a summary station report



Summary Reports. Figure 4-3 shows the format of a summary report. The report may be sorted either by primary DN (the first column) or by LEN or LTID (the third column).

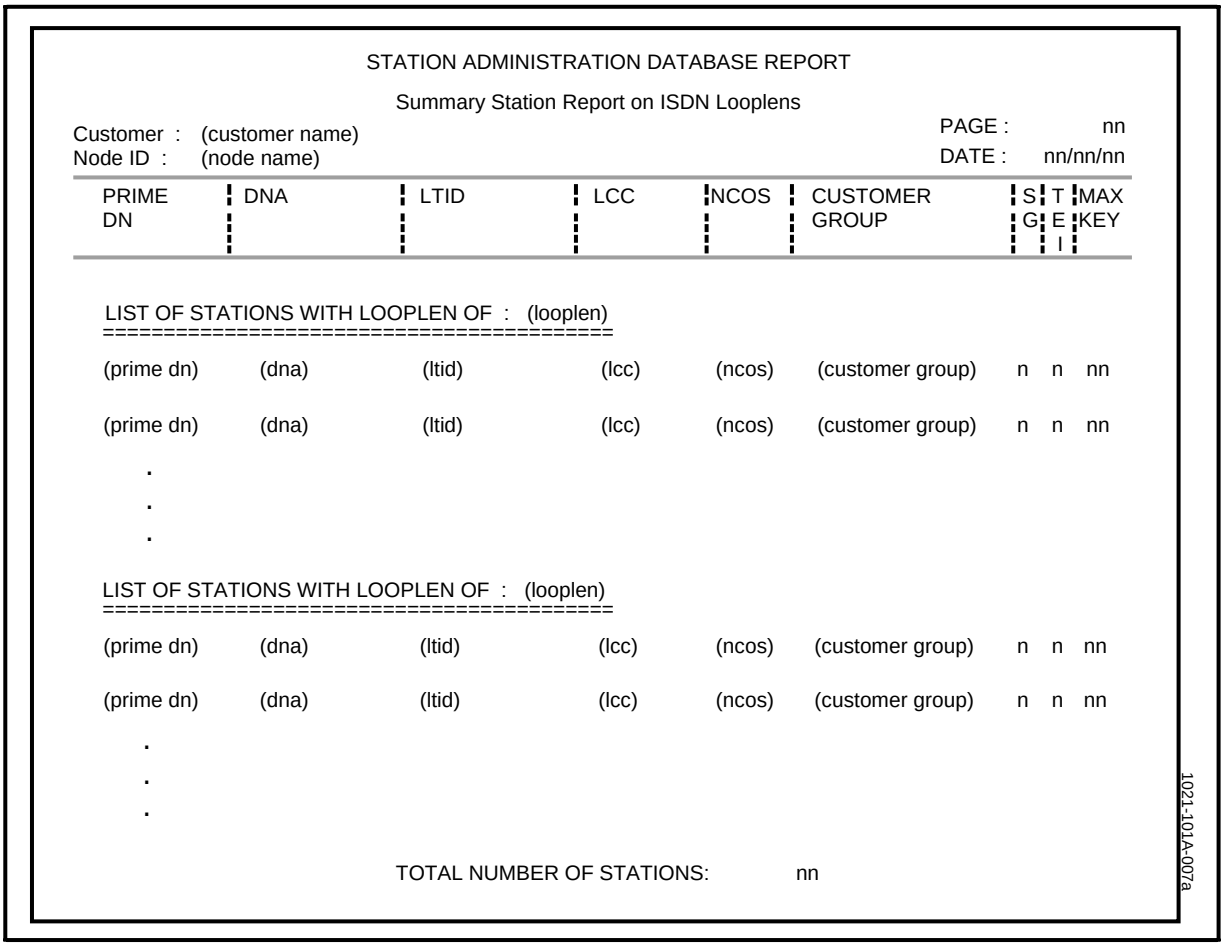
Call pickup group reports

A report on call pickup groups is similar in format to a summary station report (Figure 4-3), except that stations are sorted and identified by call pickup group. You can restrict the report to particular pickup groups by specifying their pilot stations' LENs or LTIDs.

Speed call group reports

A report on speed call groups is similar in format to a summary station report (Figure 4-3), except that stations are sorted and identified by speed call group. You can restrict the report to particular speed call groups by specifying their pilot stations' LENs.

Figure 4-4
The format of a report on ISDN looplens



STATION ADMINISTRATION DATABASE REPORT

Summary Station Report on ISDN Looplens

Customer : (customer name) PAGE : nn
Node ID : (node name) DATE : nn/nn/nn

PRIME DN	DNA	LTID	LCC	NCOS	CUSTOMER GROUP	S G	T E I	MAX KEY
LIST OF STATIONS WITH LOOPLEN OF : (looplen)								
(prime dn)	(dna)	(ltid)	(lcc)	(ncos)	(customer group)	n	n	nn
(prime dn)	(dna)	(ltid)	(lcc)	(ncos)	(customer group)	n	n	nn
.								
.								
.								
LIST OF STATIONS WITH LOOPLEN OF : (looplen)								
(prime dn)	(dna)	(ltid)	(lcc)	(ncos)	(customer group)	n	n	nn
(prime dn)	(dna)	(ltid)	(lcc)	(ncos)	(customer group)	n	n	nn
.								
.								
.								

TOTAL NUMBER OF STATIONS: nn

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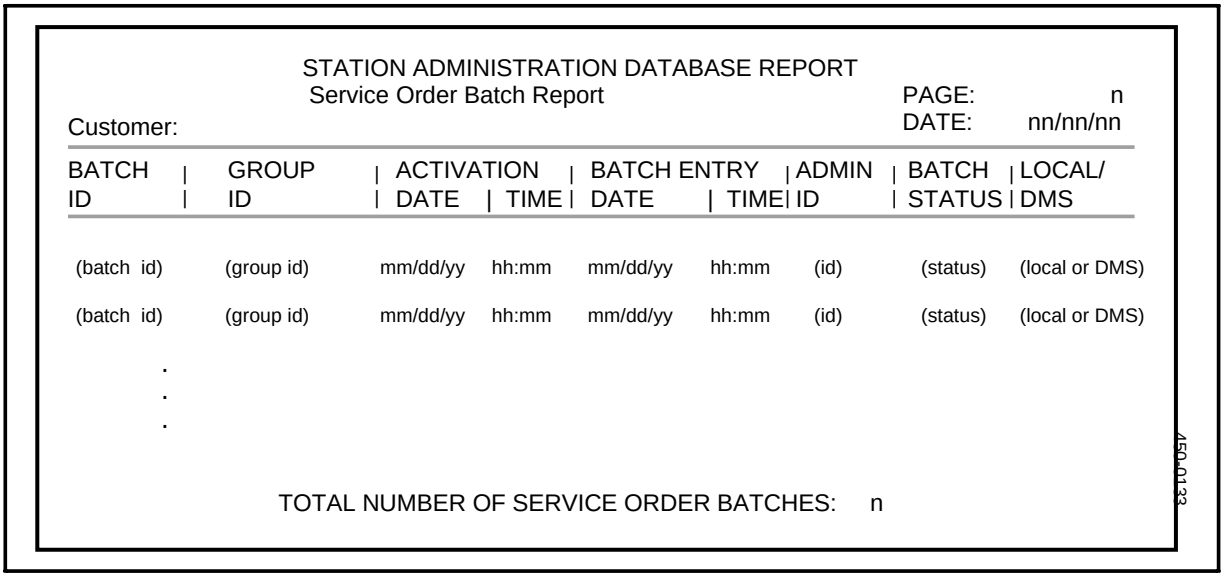
ISDN looplen reports

A report on ISDN looplens lists all the ISDN stations that are attached to the specified looplens (Figure 4-4). The stations are sorted by looplen and then by LTID.

Figure 4-5
The Format of a Report on Service Order Batches



STATION ADMINISTRATION DATABASE REPORT
Service Order Batch Report
PAGE: n
Customer:
DATE: nn/nn/nn

BATCH ID	GROUP ID	ACTIVATION DATE	ACTIVATION TIME	BATCH ENTRY DATE	BATCH ENTRY TIME	ADMIN ID	BATCH STATUS	LOCAL/ DMS
(batch id)	(group id)	mm/dd/yy	hh:mm	mm/dd/yy	hh:mm	(id)	(status)	(local or DMS)
(batch id)	(group id)	mm/dd/yy	hh:mm	mm/dd/yy	hh:mm	(id)	(status)	(local or DMS)

.
.
.

TOTAL NUMBER OF SERVICE ORDER BATCHES: n

450-0133

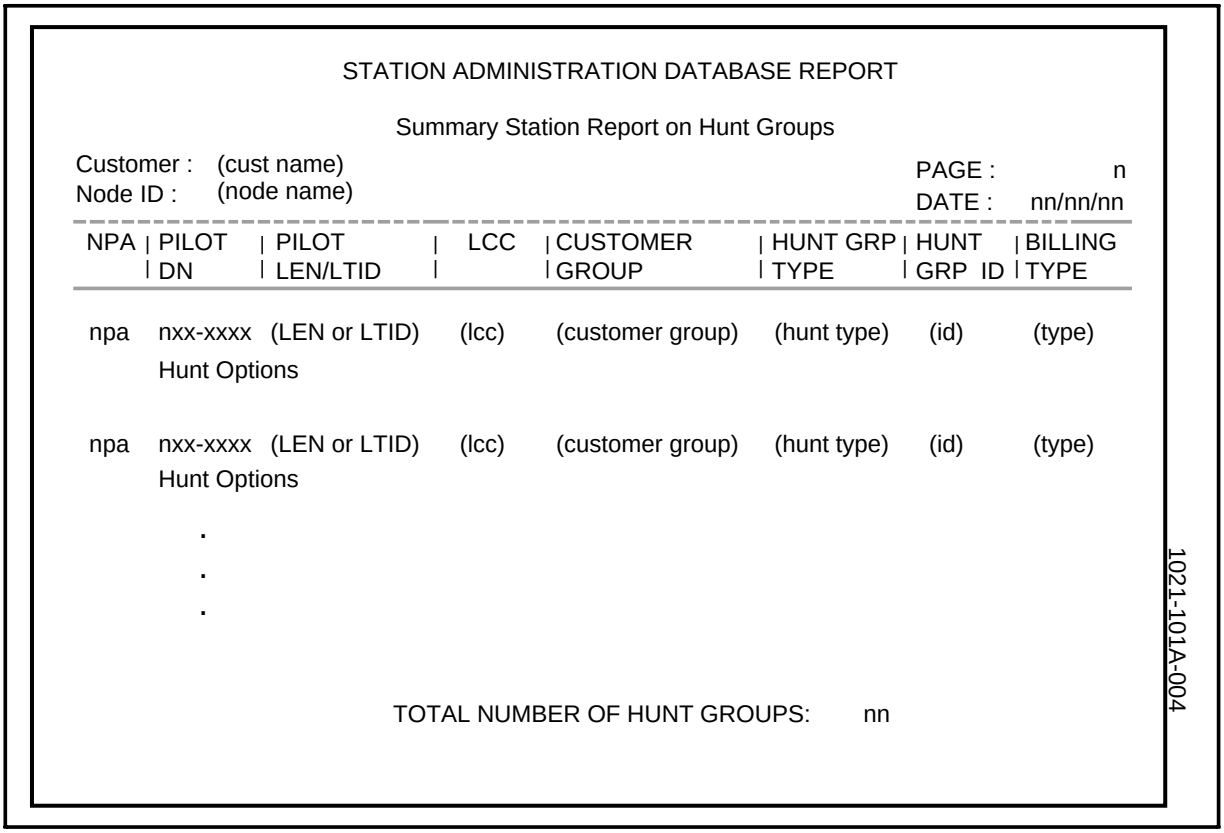
Service order batch reports

The selection criteria for a report on service order batches are:

- batch ID
- group ID
- activation date

Figure 4-5 shows the format of a report on service order batches.

Figure 4-6
The format of a report on hunt groups



STATION ADMINISTRATION DATABASE REPORT

Summary Station Report on Hunt Groups

Customer : (cust name) PAGE : n
Node ID : (node name) DATE : nn/nn/nn

NPA	PILOT DN	PILOT LEN/LTID	LCC	CUSTOMER GROUP	HUNT GRP TYPE	HUNT GRP ID	BILLING TYPE
npa	nxx-xxxx	(LEN or LTID)	(lcc)	(customer group)	(hunt type)	(id)	(type)
	Hunt Options						
npa	nxx-xxxx	(LEN or LTID)	(lcc)	(customer group)	(hunt type)	(id)	(type)
	Hunt Options						

.
.
.

TOTAL NUMBER OF HUNT GROUPS: nn

1021-101A-004

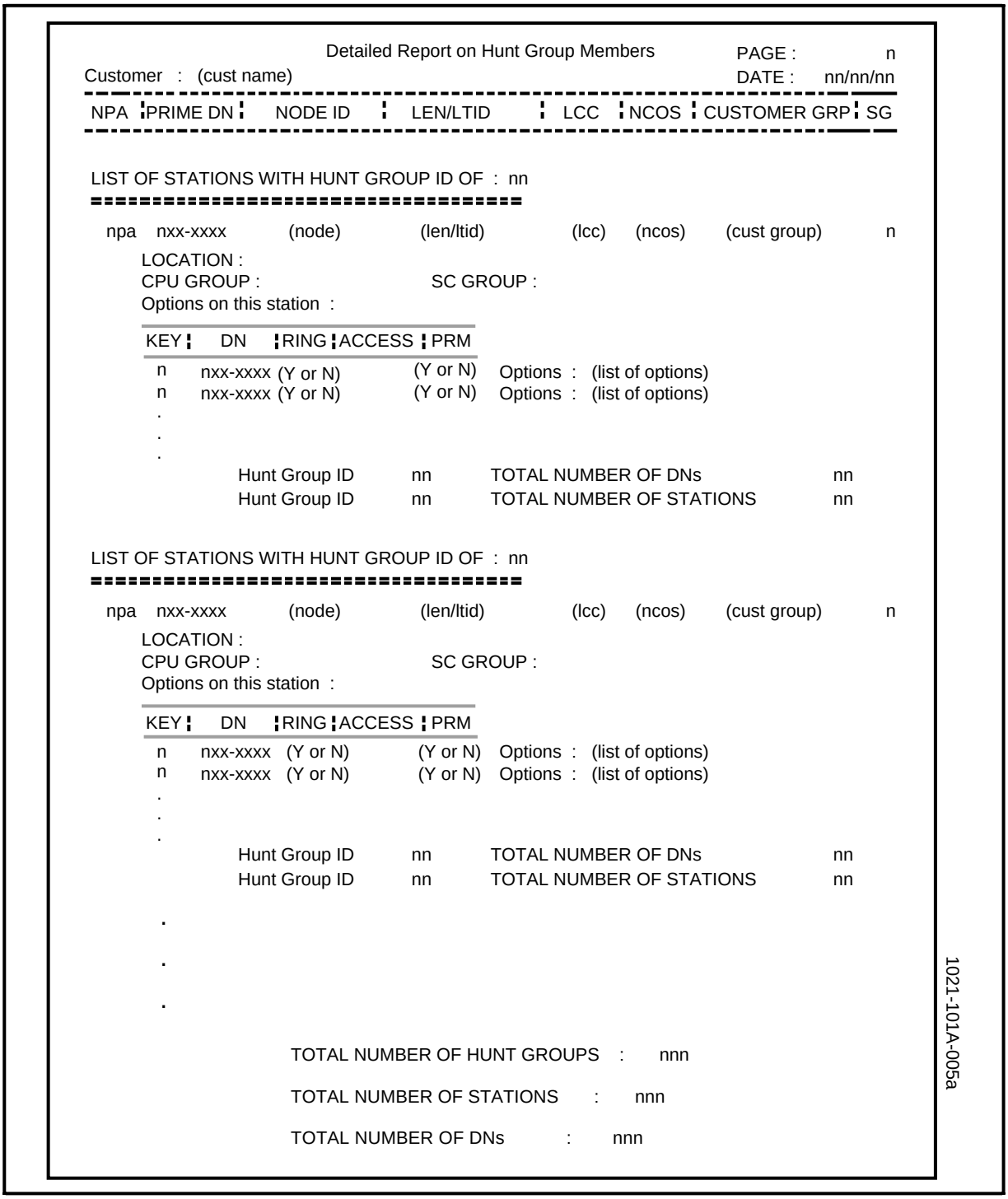
Hunt groups reports

A report on hunt groups contains two parts:

- Station Database Report on Hunt Groups (Figure 4-6), which is a general report on the hunt groups requested.
- Detailed Report of Hunt Group Members (Figure 4-7) that contains information on the members of the hunt groups identified in the general report.

You can restrict a report to particular hunt groups by specifying their hunt group IDs.

Figure 4-7
The format of a detailed report of hunt group members



Detailed Report on Hunt Group Members PAGE : n
Customer : (cust name) DATE : nn/nn/nn

NPA	PRIME DN	NODE ID	LEN/LTID	LCC	NCOS	CUSTOMER GRP	SG

LIST OF STATIONS WITH HUNT GROUP ID OF : nn

npa nxx-xxxx (node) (len/ltid) (lcc) (ncos) (cust group) n
LOCATION :
CPU GROUP : SC GROUP :
Options on this station :

KEY	DN	RING	ACCESS	PRM	
n	nxx-xxxx	(Y or N)	(Y or N)	Options :	(list of options)
n	nxx-xxxx	(Y or N)	(Y or N)	Options :	(list of options)

. . .

Hunt Group ID nn TOTAL NUMBER OF DNs nn
Hunt Group ID nn TOTAL NUMBER OF STATIONS nn

LIST OF STATIONS WITH HUNT GROUP ID OF : nn

npa nxx-xxxx (node) (len/ltid) (lcc) (ncos) (cust group) n
LOCATION :
CPU GROUP : SC GROUP :
Options on this station :

KEY	DN	RING	ACCESS	PRM	
n	nxx-xxxx	(Y or N)	(Y or N)	Options :	(list of options)
n	nxx-xxxx	(Y or N)	(Y or N)	Options :	(list of options)

. . .

Hunt Group ID nn TOTAL NUMBER OF DNs nn
Hunt Group ID nn TOTAL NUMBER OF STATIONS nn

. . .

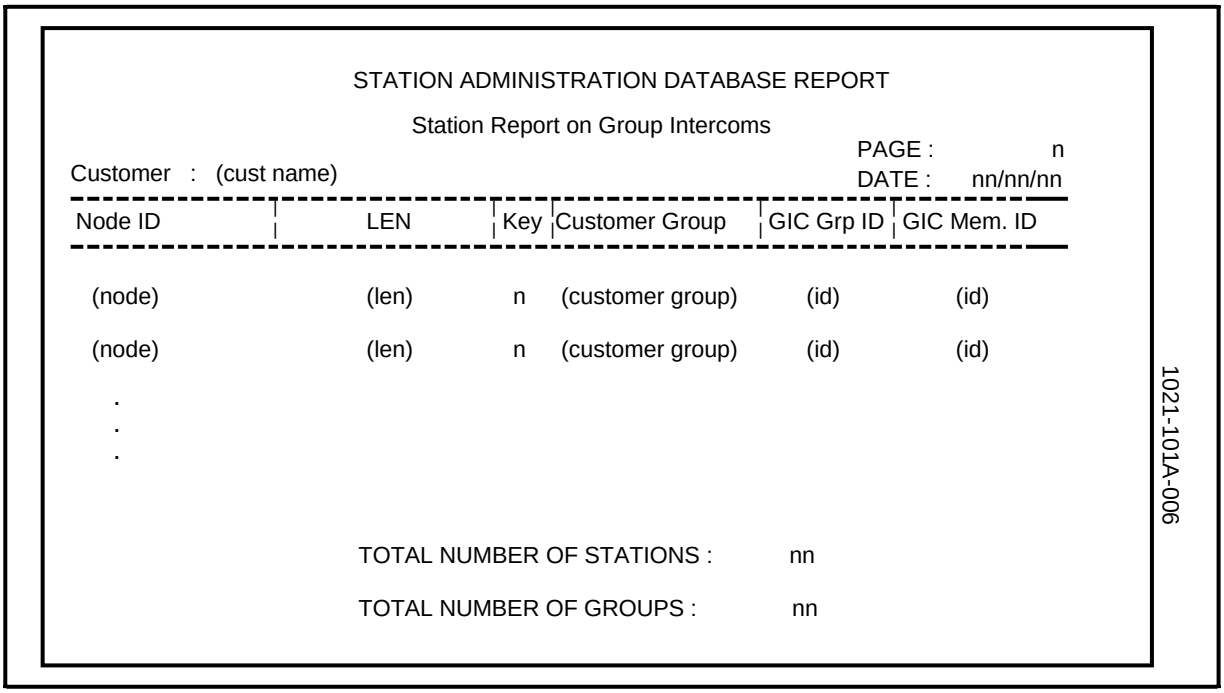
TOTAL NUMBER OF HUNT GROUPS : nnn

TOTAL NUMBER OF STATIONS : nnn

TOTAL NUMBER OF DNs : nnn

1021-101A-005a

Figure 4-8
The format of a report on group intercom groups



STATION ADMINISTRATION DATABASE REPORT

Station Report on Group Intercoms

PAGE : n
DATE : nn/nn/nn

Customer : (cust name)

Node ID	LEN	Key	Customer Group	GIC Grp ID	GIC Mem. ID
(node)	(len)	n	(customer group)	(id)	(id)
(node)	(len)	n	(customer group)	(id)	(id)
.					
.					
.					

TOTAL NUMBER OF STATIONS : nn

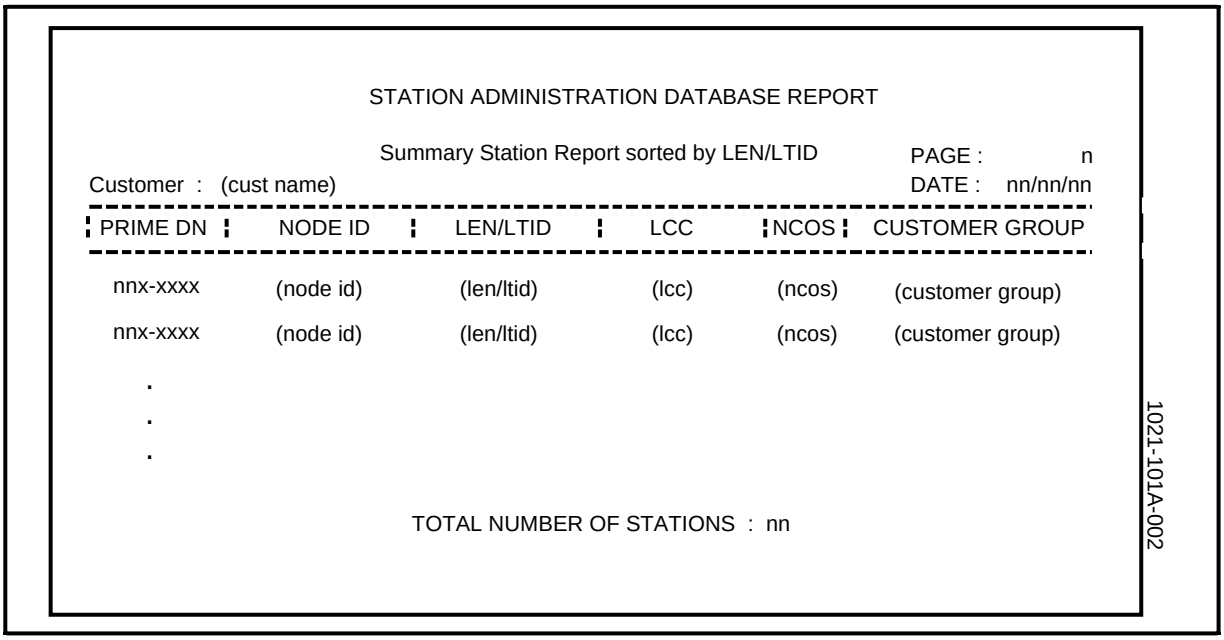
TOTAL NUMBER OF GROUPS : nn

1021-101A-006

Group intercom reports

The format of a report on group intercom (GIC) groups is shown in Figure 4-8. You can restrict the report to particular GIC groups by specifying their GIC group IDs.

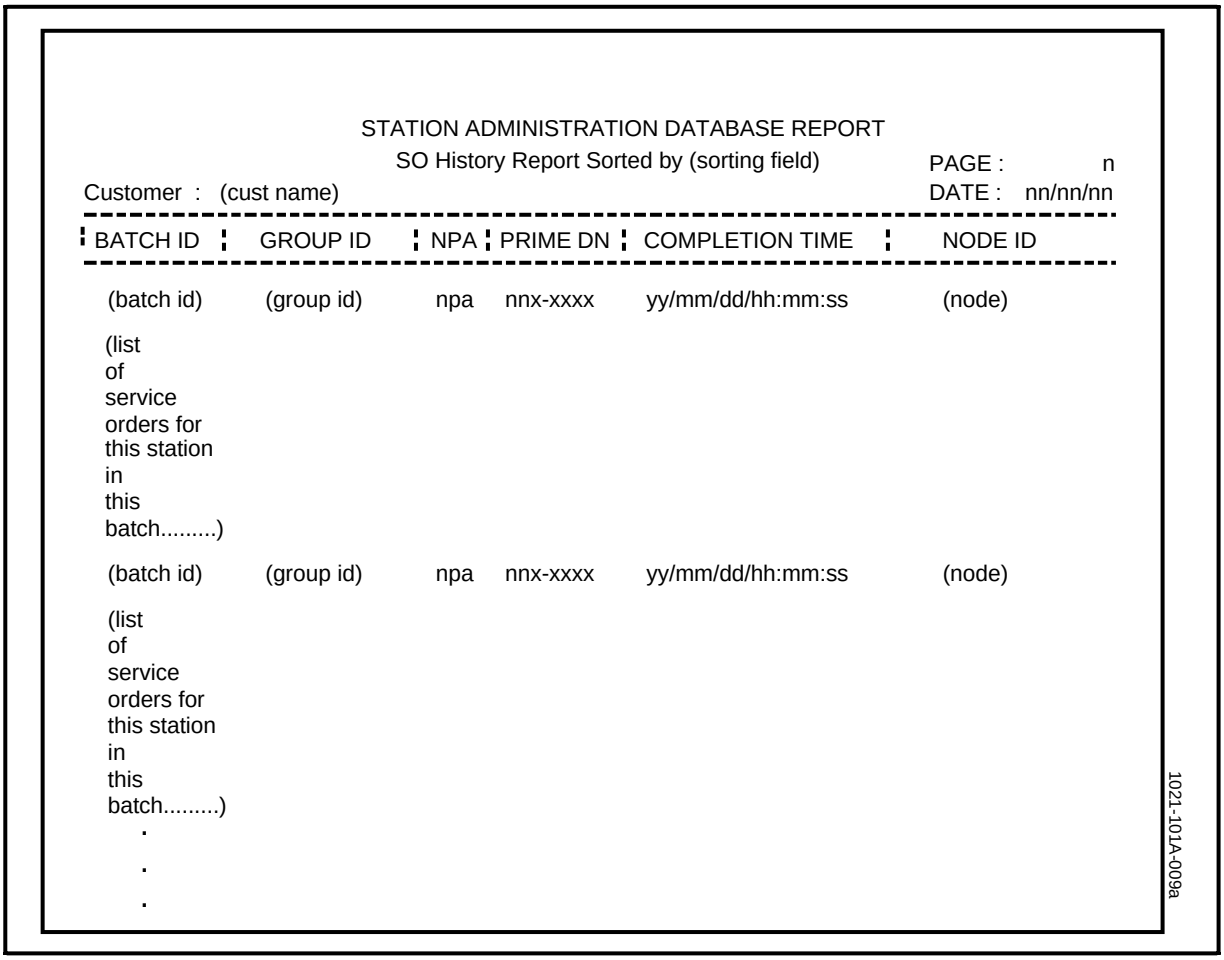
Figure 4-9
The format of a report on stations forwarded to a specified DN



Call forward reports

Figure 4-9 shows the format of a report on stations that have been call forwarded to a specified directory number. This report lists stations that have the Call Forward No Answer (CFD) option. A similar report can be produced for stations that have the Call Forward Busy (CFB) option.

Figure 4-10
The format of a service order history report



STATION ADMINISTRATION DATABASE REPORT
SO History Report Sorted by (sorting field)

PAGE : n
Customer : (cust name) DATE : nn/nn/nn

BATCH ID	GROUP ID	NPA	PRIME DN	COMPLETION TIME	NODE ID
(batch id)	(group id)	npa	nnx-xxxx	yy/mm/dd/hh:mm:ss	(node)
(list of service orders for this station in this batch.....)					
(batch id)	(group id)	npa	nnx-xxxx	yy/mm/dd/hh:mm:ss	(node)
(list of service orders for this station in this batch.....)					

. . .

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Service order history reports

A Service Order History report (Figure 4-10) lists service orders that have been completed successfully. The service orders may be sorted by batch id, by group id, or by completion date. The format follows these rules:

- Changes to unassigned stations are shown with a blank prime DN field.
- The deletion of a prime DN is recorded with the history of that DN.
- Changes to hunt group options, such as LOD, are recorded with the history of the prime DN of the station that contains the pilot of the hunt group.
- When two stations are swapped, the change is recorded with the histories of both of the prime DNs involved in the swap.
- The order in which changes are listed on the report is not fixed, but in general, station changes are listed before DN changes.
- Keylists are terminated with a dollar sign ($).
- The location field is enclosed in double quotation marks (").
- Code access features are shown as being assigned to key 1.
- When a station is added or deleted, the values of relevant fields such as NCOS are listed. Fields that do not have values are indicated by an asterisk (*).

Here are some examples of the text used to list service order history:

- add station HOST 00 0 00 01
- swap station HOST 00 0 00 01 (9390300) with HOST 00 0 00 02 (9390400)
- change NCOS from 2 to 3
- add 36-button addon
- delete addon #2
- delete 9390000 from key 1
- add RAG to key 2
- add AUL 9390500 to 9390001
- add CIR to hunt group 71 (pilot 9900180)

Network Operations Systems

Business Network Management

DNC-500 End-User and DNC-100: Station Administration Features Description

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Release NSR28 and up
Standard
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