297-1001-547

DMS-100 Family

Distributed Processing Peripheral (DPP)

Maintenance Procedures Guide

DPP001 and up Standard 01.02 September 2000

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Maintenance Procedures Guide

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Contents

List of figures

List of tables

List of procedures

About this document

When to use this document

This document contains the various maintenance procedures for the Distributed Processing Peripheral (DPP). This document replaces the maintenance procedures found in the *DPP Recovery and Routine Maintenance Guide* (297-1001-537) and the *DPP Alarm Clearing and Performance Monitoring Guide* (297-1001-543). Both of these documents have been cancelled.

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 feature release. For example, the first release of the document is 01.01. In the *next* feature 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* feature release cycle. For example, the second release of the document in the same feature release cycle is 01.02.

This document is written for all DMS-100 Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in *North American DMS-100 Northern Telecom Publications Cancellation Index*, 297-1001-001.

References in this document

The following documents are referred to in this document:

- *Bellcore Format Automatic Message Accounting (AMA) Reference Guide*, 297-1001-570.
- *Bellcore Format Automatic Message Accounting (AMA) Reference Guide*, 297-1001-830.
- *Distributed Processing Peripheral (DPP) Hardware Component Replacement Guide*, 297-1001-539.
- *Distributed Processing Peripheral (DPP) Commands and Messages Guide*, 297-1001-545.
- *DMS-100 Magnetic Tape Reference Manual*, 297-1001-118.
- *Lines, Trunks, and Peripheral Modules (LTP) Recovery Procedures Guide*, 297-1001-587.
- *Non-Menu Commands Reference Manual*, 297-1001-820.

What precautionary messages mean

The types of precautionary messages used in Northern Telecom (Nortel) documents include warning and caution messages. Warning and caution messages indicate possible risks.

Example of the precautionary messages follow.

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 remover 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.

General procedures

This section contains general maintenance procedures used for the DPP system.

Checking DPP disk usage

Check the percent usage of the DPP disk regularly to determine whether the data polling schedule for the office is sufficient for the traffic through the office. Disk usage can be checked as follows:

>MAPCI;MTC;IOD;DPP AMA (cr)
>DISK USAGE (cr)

Command sent to DPP
uuuuu/aaaaa TRACKS USED
xxx/yyy BAD TRACKS (A/B)

where:
uuuuu- number of tracks used.
aaaaa- total number of tracks available.
xxx- number of bad tracks mapped on A.
yyy- number of bad tracks mapped on B.

Note 1: Response to DISK USAGE input for Non-Turbo DPPs.

mmmmm/nnnnnn ALLOCATION UNITS USED

where:
mmmmm - number of allocation unit in use.
nnnnn - total number of allocation units available.

Note 2: Response to DISK USAGE input for Turbo DPPs.

Calculate the percentage of tracks used to total tracks available. If the percentage is consistently greater than 70 percent, consider increasing the frequency of DPP polling.

For DPP systems which do not have the enhanced disk storage capability, the DPP automatically generates alarms when disk usage reaches 70 percent and beyond. At 70 percent, a minor alarm is raised and the DISK USE > 70% message is output. At 90 percent, a major alarm is raised and the DISK USE

> 90% message is output. At 99 percent, a major alarm is raised, and the disk mode is made non-redundant. One disk is taken off-line, and the other disk is made ONLY. The DISK USE > 99% and OFFLINE DISK CONTAINS UNPOLLED DATA messages are output. When no more disk space is available, a critical alarm is raised and the BOTH DISKS FULL message is output. An End-of-Tape (EOT) status is returned from the Data Stream Interface (DSI) ports and the DPP stops recording at this point.

It is important to avoid this situation by ensuring that the normal disk usage is kept well below 70 percent.

For DPP systems with disk capacity enhancement, when the amount of data on the disks reaches 70 percent of total storage capacity, a minor alarm is raised. No secondary data is deleted from storage at this point. When occupancy reaches 90 percent of maximum disk capacity, the oldest secondary file is deleted so that occupancy is reduced to below the 90 percent threshold. As new primary files are added to the disk, the oldest secondary files continue to be deleted. When all secondary files have been removed, the message journal files are deleted. If primary data occupancy continues to exceed the 90 percent threshold, a major alarm is generated. When occupancy reaches 100 percent, the DPP disks mode drops to a nonredundant or ONLY mode. The active disk stops writing data and the standby disk is cleared to accept new primary Automatic Message Accounting (AMA) data. This cleared standby disk then becomes the active disk. Each hour, a major alarm and log message are generated to notify personnel that the DPP is in the ONLY mode.

In the extreme case that the second disk should be 100% full, and EOT status is generated by the DPP. This causes the DMS-100 to switch to the other DSI. The DPP responds with another EOT status, forcing the DMS-100 to continue writing to an optional parallel file. At this point, the DPP alarm is raised to critical status. In compliance with Bellcore requirements that primary data not be overwritten, no new data can be written to the DPP disk at this point.

Checking the daily DPP statistics

The DPP maintains statistics on AMA data, the DPP disks, and the DPP human-machine interface for the current day and the previous day. The statistics can be viewed using the REPORT command. The statistics can help detect the development of a problem before it reaches a critical level. Check the statistics regularly, particularly the AMA and DISK statistics, as follows:

>MAPCI;MTC;IOD;DPP AMA (cr)
>REPORT rep_type rep_period (cr)

Command sent to DPP
<statistics specified are displayed>

where:
rep_type- type of report (AMA, DISK or MMI)
rep_period- report period: TDAY for today's statistics or YDAY for yesterdays's statistics.

For the AMA statistics, note the number of AMA blocks and records lost and the number of invalid blocks received. A high number of lost AMA blocks and records indicates that the DPP may be receiving AMA data faster than it can process it or that a possible fault exists in the DPP. A high number of invalid blocks indicates a possible problem in the DMS-100. In either case, contact the maintenance support group to investigate the problem.

For the disk statistics, note the number of Small Computer System Interface (SCSI) bus errors and disk errors. High numbers indicate a possible problem in the DPP disk system. If a problem is apparent, contact the maintenance support group to investigate the problem.

For the MMI statistics, note the number of message retries, retry threshold exceeded, and audit failures. High numbers indicate a problem in the DMS-100/DPP MMI system, which includes the DPP Quad Serial Input/Output (SIO) Printed Circuit Assemblies (PCAs), the DPP Power and Alarm Communications PCA, the DMS-100 IOC PCAs, or the cabling between the DMS-100 and DPP. If a problem is apparent, have the maintenance support group investigate the problem.

DMS-100 to DPP Maintenance Procedures

The following procedures are related to the links between the DMS-100 and the DPP system.

Mounting a DPP DSI in DIRP

A DPP DSI is mounted in the DMS-100 Device Independent Recording Package (DIRP) system as follows:

1 To access the DIRP MAP menu and display, enter:

>MAPCI;MTC;IOD;DIRP (cr)

2 To clear the MTD port, enter

>ERASTAPE n (cr)(n - Magnetic Tape Device [MTD] number assigned to the DPP DSI)

```
** WARNING, THIS TAPE WILL BE ERASED.***
Please confirm (”YES” or ”NO”)
```

>YES

```
Tape has been successfully formatted.
```

3 To mount the DPP DSI, enter:

>**MNT n FORMAT DPP AMA (cr)**

```
Volume = 'BLANK'
Formatting tape as 'DPPAMA'
OK
```

UPDATING VOLUME INFORMATION FOR Tn
Please confirm ("YES" or "NO"):

>**YES (cr)**

VOLUME Tn ALLOCATED

Demounting a DPP DSI from DIRP

A DPP DSI is demounted in the DMS-100 DIRP system as follows:

4 To access the DIRP MAP menu and display, enter:

>**MAPCI;MTC;IOD;DIRP (cr)**

5 Check the DIRP active and standby volumes as follows:

>**QUERY AMA FILES (cr)**

```
SSNAME     SSNO   SEQNO    ROTATES   POOLNO      EMERGENCY
AMA        0       1       2         0           ***YES***

FILE(S)    STATE  VOLUME   RECOUNT   BLOCK   E   V   V_B VLID  FNUM  FRN#
ACTIVE     AVAIL   Tn      75        3       0   1   NO  A006  0015  2058
STANDBY1   AVAIL   Tn      75        2       E   2   NO  A004  0011  2034

PARALLEL   AVAIL   Tn      N/A       0       0   S   NO  2400  0015  2060
```

Note: Determine whether the DPP DSI to be demounted is the active or standby processor.

6 If the DPP DSI to be demounted is the active volume, rotate the AMA volumes as follows:

>**ROTATE AMA (cr)**

SENDING REQUEST TO SUBSYSTEM
Please confirm ("YES" or "NO"):

>**YES (cr)**

REQUEST SENT TO SUBSYSTEM, CHECK DIRP LOG FOR DETAILS

7 Close the standby DPP DSI volume as follows:

>CLOSE AMA STDBY n (n - MTD number assigned to the DPP DSI)

SENDING REQUEST TO SUBSYSTEM
Please confirm (“YES” or “NO”):

>YES (cr)

REQUEST SENT TO SUBSYSTEM, CHECK DIRP LOG FOR DETAILS

8 Demount the standby DPP DSI volume as follows:

>DMNT AMA n

UPDATING VOLUME INFORMATION FOR Tn
Please confirm (“YES” or “NO”):

>YES (cr)

VOLUME Tn WILL BE TAKEN OUT OF DIRP AS SOON AS POSSIBLE

Replacing the DPP with tape volumes

If the DPP must be removed from service, or if a DPP emergency has suspended AMA recording (DMS-100 NO AMA alarm), mount at least two volumes to replace the DPP DSIs while the DPP is out of service. Mount the tape volumes as provided in the following procedure.

9 Obtain two tapes suitable for AMA recording.

10 Locate two idle MTDs.

11 Load a tape on one of the idle MTDs.

12 At the DMS-100 MAP, format the tape by entering:

>MOUNT n FORMAT VOLUME volume_name (cr) (n - MTD number)
>DEMOUNT Tn (cr)

13 Mount the MTD in the DIRP system by entering:

>MNT AMA n (cr)

FORMATTING TAPE AS ‘volume_name’
FIRST FILE = first_file_name, CREATED date, EXPIRES date
ENTER FIRST FILE TO CONTINUE

>first_file_name (cr)

VOLUME Tn ALLOCATED

Replacing tape volumes with the DPP

If the DPP was replaced with MTDs for any reason, when the DPP is ready to be placed back in service, replace the MTDs with DPP DSIs according to the following procedure:

14 Mount the DPP DSI as described in the *Mounting a DPP DSI in the DMS-100 DIRP System* subsection.

15 Determine the numbers of the MTDs in the active and standby volume positions. Note the MTD numbers, indicated by "n" in Tn, of the active and standby volumes.

>QUERY AMA FILES (cr)

```
SSNAME      SSNO    SEQNO     ROTATES    POOLNO       EMERGENCY
AMA         0        1        2          0            ***YES***

FILE(S)     STATE   VOLUME    RECOUNT    BLOCK    E   V    V_B  VLID   FNUM   FRN#
ACTIVE      AVAIL    Tn       75         3        0   1    NO   A006   0015   2058
STANDBY1    AVAIL    Tn       75         2        E   2    NO   A004   0011   2034

PARALLEL    AVAIL    Tn       N/A        0        0   S    NO   2400   0015   2060
```

16 Close and demount the MTDs by entering:

>CLOSE AMA STDBY 1 (cr)

SENDING REQUEST TO SUBSYSTEM
Please confirm ("YES" or "NO"):

>YES (cr)

REQUEST SENT TO SUBSYSTEM, CHECK DIRP LOG FOR DETAILS

>DMNT AMA n (cr) (n - MTD number of previously STDBY vol.)

UPDATING VOLUME INFORMATION FOR Tn
Please confirm ("YES" or "NO"):

>YES (cr)

VOLUME Tn WILL BE TAKEN OUT OF DIRP AS SOON AS POSSIBLE

>CLOSE AMA ACTIVE (cr)

WARNING - A ROTATE WILL BE DONE (IF NECESSARY) BEFORE
CLOSING THE ACTIVE FILE.
SENDING REQUEST TO SUBSYSTEM
Please confirm ("YES" or "NO"):

>YES (cr)

REQUEST SENT TO SUBSYSTEM, CHECK DIRP LOG FOR DETAILS

>DMNT AMA n (cr)

UPDATING VOLUME INFORMATION FOR Tn
Please confirm (“YES” or “NO”):

>YES (cr)

VOLUME Tn WILL BE TAKEN OUT OF DIRP AS SOON AS POSSIBLE

The DPP DSIs should now be mounted as the active and standby volumes. If there are any difficulties at any point, call for technical assistance immediately.

Testing DMS-100 PCA and port hosting DPP DSI

If the DMS-100 Input/Output Controller (IOC) PCA and port hosting a DPP DSI is suspected of being faulty, the IOC PCA must be tested. However, before the IOC PCA can be tested, the DPP DSI must be demounted from the DIRP system. The procedure for testing a IOC PCA is provided in the *LTP Recovery Procedures Guide*.

Test an IOC PCA hosting a DPP DSI as follows:

17 **Demount the affected DPP DSI as described in the *Demounting a DPP DSI from DIRP* subsection.**

18 **Refer to *LTP Recovery Procedures Guide* for the procedure to test the IOC PCA and to clear any faults found.**

19 **After the IOC PCA has been replaced, remount the DPP DSI as described in the *Mounting a DPP DSI in the DMS-100 DIRP System* subsection.**

Testing an IOC PCA hosting a DPP MMI link

If the DMS-100 IOC PCA hosting a DPP MMI link is suspected of being faulty, the IOC PCA must be tested. The procedure for the testing an IOC PCA is provided in the *LTP Recovery Procedures Guide*. No special preparation of the DPP is required for this procedure.

Fan Maintenance Procedures

There are three ventilation fans in the DPP. Two are on the rear of the A and B chassis. The third fan is inside the DPP in the B chassis behind the Rover Interface Panel.

Cleaning the fan foam filter

The two fans on the rear have a foam filter under the metallic screen. Clean this foam filter at least monthly, or as conditions warrant, using Procedure 1-1. The fan blades must still rotate during cleaning.

Procedure 1-1
Cleaning the Fan Foam Filter

Step	Description
20	On the outside of the rear panel, insert a small, flat blade screwdriver between the lip of the filter and the rear panel sheet metal; pry up. There are four slots on the screen framework. See Figure 1-1.
21	Remove the foam filter and gently wash in warm water. Let the filter dry.
22	Brush off any dust from the fan enclosure area.
23	Clean the fan filter screen with compressed air.
24	Make sure the foam filter is completely dry before reinstalling. Go to step 4.
25	Place the foam filter and screen assembly over the fan opening. Press into place.
26	Repeat steps 1-6 for the other filter.

CAUTION
The fan must operate during filter cleaning or replacement. Do not touch the rotating fan blades with the filter or your fingers.

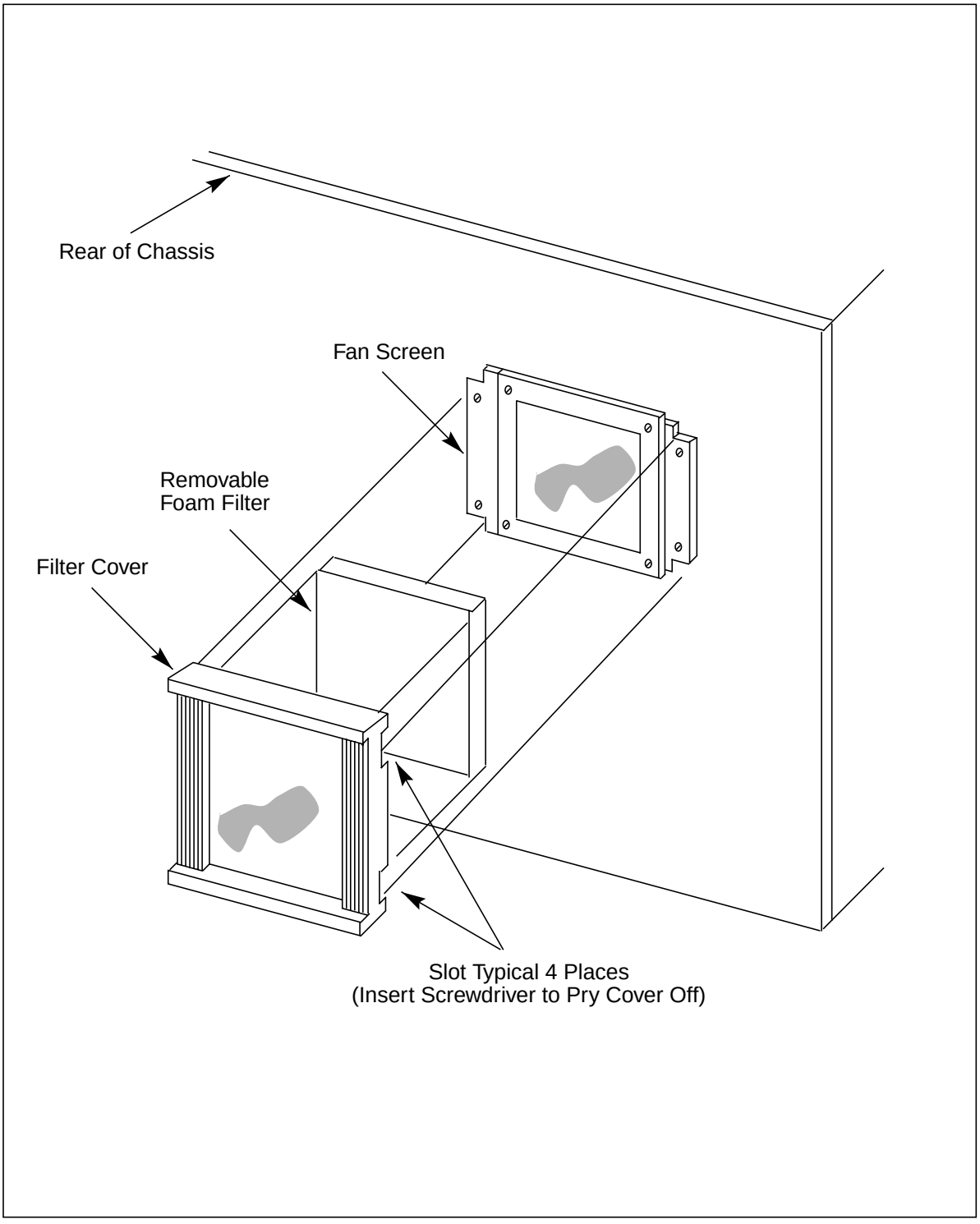
Lubricating the fans

Since the fans have permanently lubricated bearings, they never need lubricating or oil servicing.

Replacing the fans

Use Procedure 1-2 when replacing the cooling fans at the rear of the DPP chassis.

Figure 3-1
Removing the Fan filter



Before replacing the fans

Before replacement, make sure the following conditions are met:

- The processor with the operational fan is in the ONLY mode of operation.
- A polling session has been completed; if possible, wait for a slow traffic period before fan replacement.

Note: Fuse operation (a blown fuse) usually indicates a failure. Check the fan and associated cabling for shorts before replacing the fuse.

Procedure 1-2
Cooling fan replacement

Step	Description
	**CAUTION** Since all PCAs, disk drives, and other hardware in the DPP are static sensitive, be cautious. Wear a wrist grounding strap when working with the DPP. Jacks at the lower right of the Rover Interface panel (B chassis) and the lower right of the Switch and Status Panel (A chassis) are provided to accept the banana plug connection on the end of a grounding strap.
	**WARNING** Since the DPP is powered up during this procedure, observe all safety procedures for operations on live equipment
27	Request a polling session from Host Office Collector (HOC) personnel. Explain that maintenance activity is scheduled at the DPP and it should be polled as a precaution.
28	Remove the front panel on the A chassis. See Figure 1-2. Loosen the four captive screws on the left and right of the front panel and carefully remove it. Put it in a safe place to avoid damage.
29	At the Switch and Status Panel: **a. Press the A/B processor. Select Switch to show the same as the processor with the operational fan. Make the processor with the operational fan the ONLY processor if it isn't already.** **b. Make the P/O processor Mode Select Switch O.** **c. Turn the Mode Switch Key to the right and release.**

Sheet 1 of 2

Procedure 1-2
Cooling fan replacement

Step	Description
30	Remove the rear panel of the chassis to be worked on. Figure 1-3 shows the eight screws to remove. Save the screws.
31	Remove the two screws securing the fan mounting bracket in the chassis. These screws are on the outside of the chassis, in the upper left corner of the right hand panel, as seen from the rear. See Figure 1-3. Support the fan assembly with your hand while removing the two screws.
32	Remove the fan mounting bracket from the chassis. Slide the base of the bracket 1/2-inch to the left and then pull back 1-inch from the center of the chassis until the bracket is free of the chassis base.
33	Disconnect the connector from the fan filter PCA. Connector is on the fan filter PCA on the bottom rear of the bracket.
34	Remove the fan. With the bracket balanced on the lip of the DPP chassis, remove the four bolts in the corners of the bracket. Save the bolts.
35	Mount the replacement fan. With the bracket balanced on the lip of the chassis, reinstall the four bolts in the corners of the bracket. Use the same four bolts removed in step 8.
36	Connect power to the fan. Connect power cable to the Fan PCA on the bottom rear of the chassis.
37	Install the fan mounting bracket. Push in 1-inch and to the right 1/2-inch; register and lock the slots on the bracket with the pins on the chassis base.
38	Reinstall the two screws removed in step 5 to secure the bracket in the chassis.

Note: When replacing the bolts, carefully align them before tightening to avoid stripping. Tighten the bolts, alternating until all are equally tight. Do not “cinch down” any one bolt until all are properly aligned; no binding or force needed to turn.

39	Reinstall the rear panel of the chassis just worked on. Use the screws saved in step 4.
40	Clean the foam filter using the *Cleaning the Fan Foam Filter* procedure.
41	Reinstall the front panel on the A chassis. Snap the cover in place.

Sheet 2 of 2

Figure 3-1
Removing DPP system front panel

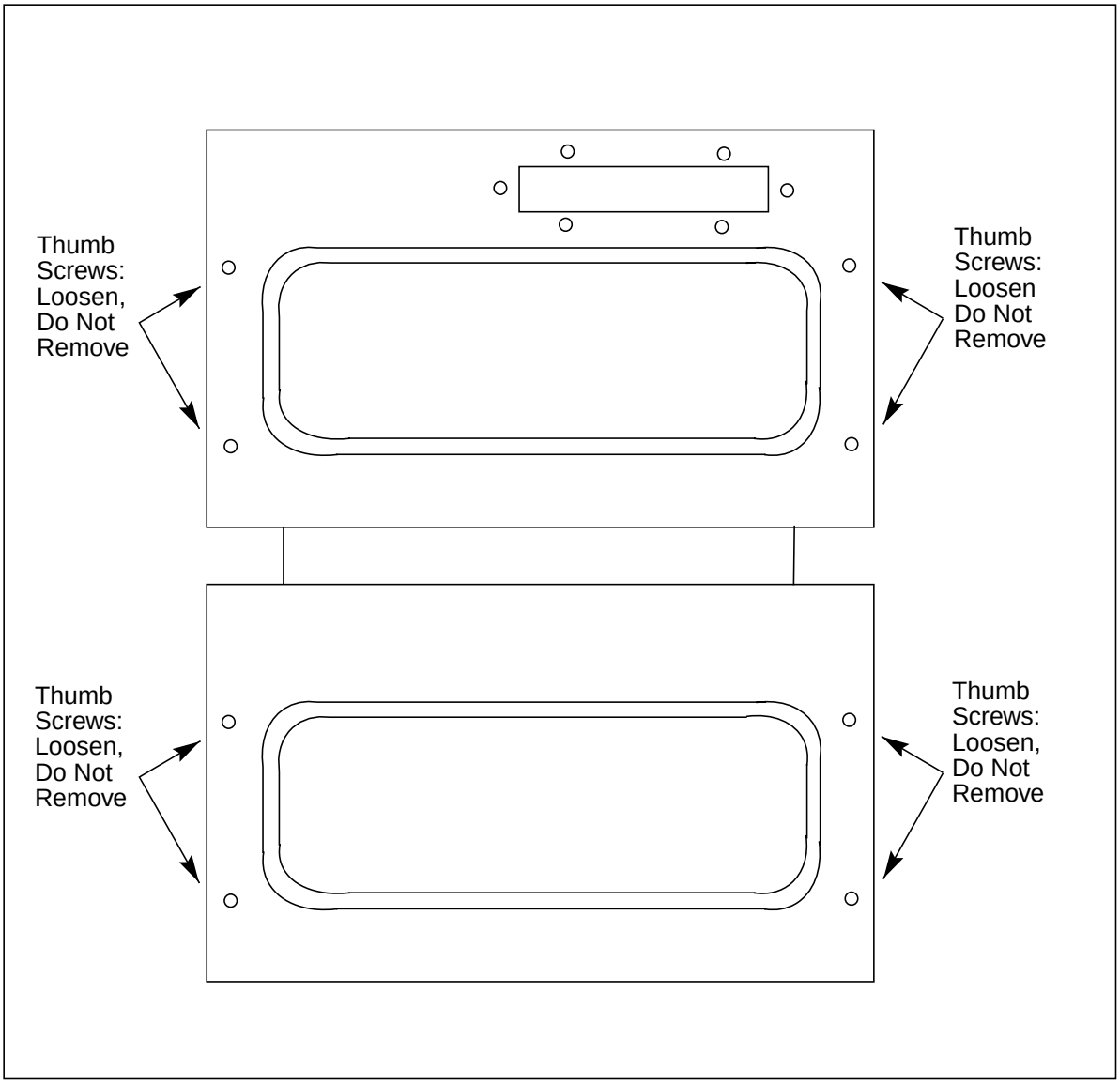
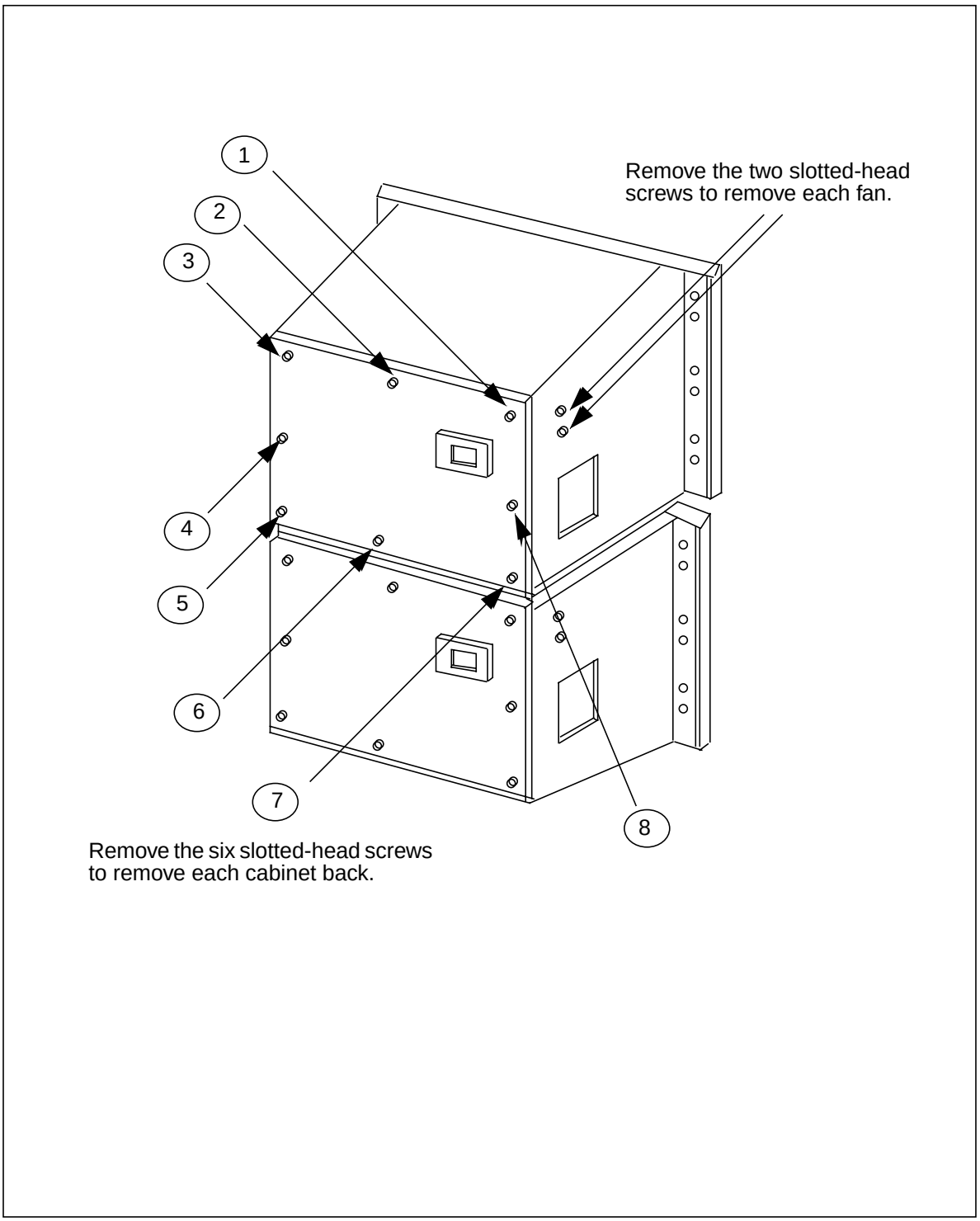


Figure 3-1
Removing DPP system rear panel and fan mounting screws



Replacing the Fan behind the Rover Interface Panel

Use Procedure 1-3 to replace the fan behind the Rover Interface panel on the front of the lower processor chassis.

Procedure 1-3
Rover Interface panel fan replacement

Step	Description
	**CAUTION** Since all PCAs, disk drives, and other hardware in the DPP are static sensitive, be cautious. Wear a wrist grounding strap when working with the DPP. Jacks at the lower right of the Rover Interface panel (B chassis) and the lower right of the Switch and Status Panel (A chassis) are provided to accept the banana plug connection on the end of a grounding strap.
	**WARNING** Since the DPP is powered up during this procedure, observe all safety procedures for operations on live equipment
42	Request a polling session from HOC personnel. Explain that maintenance activity is scheduled at the DPP and it should be polled as a precaution.
43	Remove the front panel on the A chassis. See Figure 1-2. Loosen the four captive screws on the left and right of the front panel and carefully remove it. Put it in a safe place to avoid damage.
44	At the Switch and Status Panel: **a. Determine whether the unit is in A processor mode. Proceed to step 4 if the unit is already in A ONLY mode. Otherwise, set the A/B processor switch to A.** **b. Make the P/O processor Mode Select Switch O. Make the A processor the ONLY processor.** **c. Turn the Mode Switch Key to the right and release.**

Sheet 1 of 2

Procedure 1-3
Rover Interface panel fan replacement

Step	Description
45	Remove the Rover Interface panel from the B chassis. The Rover Interface panel is in the same position as the Switch and Status panel on the A chassis. Remove the two slotted screws from the panel to take it out of position. Hold this panel tightly since it comes loose. The ground jack and Rover terminal wire connections are mounted on the back of the panel. Save the screws for later use.
46	Remove the Fan Assembly. Look inside the space vacated by the Rover Interface panel and locate the two screws securing the Fan Assembly.
47	Remove the two fan mounting screws that hold the Fan Assembly in place. Save the screws for later use.
48	Slide the Fan Assembly forward out of the chassis and disconnect the power cable.
49	Remove the fan from the mounting bracket. Lay the mounting bracket in a safe place.
50	Remove the protective wire mesh screen from the fan. Clean the screen, if necessary.
51	Mount the screen on the replacement fan.
52	Install the replacement fan in the empty mounting bracket. Use the screws removed in step 8.
53	Position the mounting bracket in front of the chassis; reconnect the power cable.
54	Slide the fan mounting bracket in until it is fully seated. Make sure there are no obstructions.
55	Secure the Fan Assembly using the screws removed in step 6. ***Note:*** When replacing the bolts, carefully align them before tightening to avoid stripping. Tighten the bolts, alternating until all are equally tight. Do not “cinch down” any one bolt until all are properly aligned; no binding or force needed to turn.
56	Mount the Rover Interface panel in the chassis using the screws saved from step 4.
57	Reinstall the front panel on the A chassis.

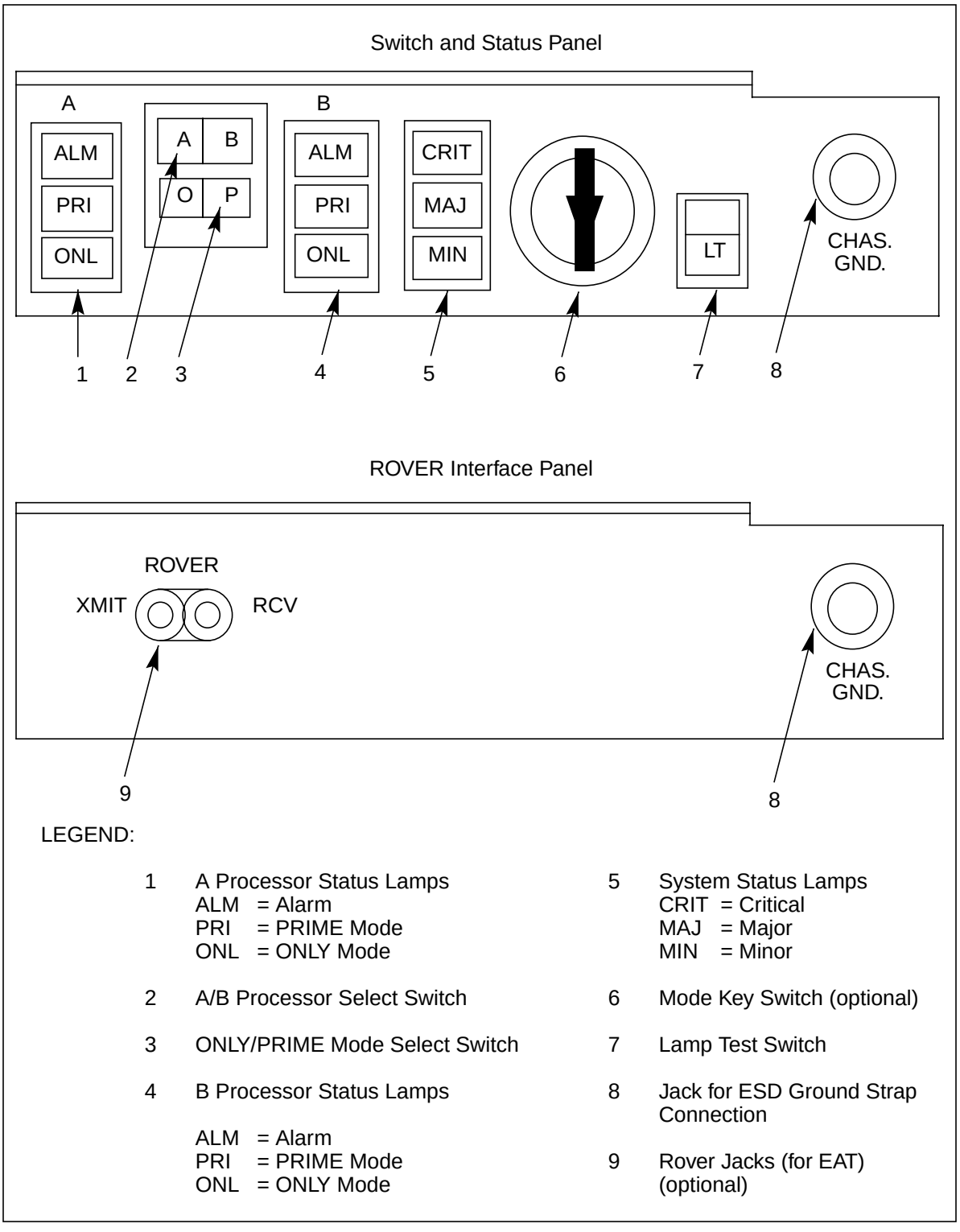
Sheet 2 of 2

Lamp maintenance procedure

The Status and Alarm Lamps, located on the Switch and Status Panel, are tested periodically, using the Lamp Test (LT) rocker switch located on the front of the panel. Refer to Figure 1-4.

The lamps used for the status and alarm indicators are special light bar devices, composed of four Light Emitting Diodes (LEDs) in each lamp. The LEDs in the lamp are individually powered; if one quadrant fails, the remaining quadrants continue to operate, keeping the indicator lit.

Figure 3-1
DPP switch and status panel



LEGEND:

1 A Processor Status Lamps
ALM = Alarm
PRI = PRIME Mode
ONL = ONLY Mode

2 A/B Processor Select Switch

3 ONLY/PRIME Mode Select Switch

4 B Processor Status Lamps

ALM = Alarm
PRI = PRIME Mode
ONL = ONLY Mode

5 System Status Lamps
CRIT = Critical
MAJ = Major
MIN = Minor

6 Mode Key Switch (optional)

7 Lamp Test Switch

8 Jack for ESD Ground Strap Connection

9 Rover Jacks (for EAT) (optional)

Status and alarm lamp replacement

Order replacement status and alarm lamps from Nortel. Refer to Table 1-1 for more information on these lamps. Refer to Procedure 1-4 for lamp replacement procedures.

Table 1-1
Status and alarm lamp replacement information

Lamp	Color	Part number
ALM	Red	A0337368
PRI	Green	A0337369
ONL	Yellow	A0337370
MAJ	Red	A0337371
MIN	Yellow	A0337372
CRIT	Red	A0337373

Procedure 1-4
Status and Alarm Panel lamp test and replacement

Step	Description
	CAUTION It is recommended that Status and Alarm lamp replacement be performed by qualified maintenance personnel.
58	Remove the front panel of the DPP, A chassis. Refer to Figure 1-2.
59	Note which lamps are already lit. The lamps reflect current DPP operating mode.

Procedure 1-4
Status and Alarm Panel lamp test and replacement

Step	Description
60	Press the spring-loaded switch to the LT position. If a lamp fails to light, proceed to step 3, else procedure complete; go to step 7. All lamps light; the lamp(s) indicating the current status of the DPP stay lit when the switch is released. Loosen the four captive screws located on the left and right hand sides of the front panel; **carefully** remove the front panel. Once removed, put the front panel in a safe place to avoid damage; bending and scratching.
61	Remove the defective lamp by wedging a screwdriver blade between the lamp body and the edge of the panel cut out. Use a back and forth motion until it releases from the socket. Place a finger on the side of the lamp opposite the blade and rock the lamp gently.
62	Insert the new lamp. Make sure that the leads of the new lamp do not bend during insertion.
63	Press the LT rocker switch. Verify operation of the replacement lamp.
64	Put the front panel back on the A chassis.

Other indicator lamps

The LED on the disk drives is not field replaceable. The LEDs on the Error Control II PCA (slot A5) Error Control II Jumper PCA (slot B5), and the LED display on the Central Processing Unit (CPU) with Direct Memory Access (DMA) PCA (slots A1 and B1) are components of those PCAs and are not field replaceable.

Silencing audible alarms

Alarms from the DPP can, if configured by the Operating Company, activate the DMS-100 audible alarm unit. If a DPP alarm triggers a DMS-100 audible alarm, the audible alarm can be silenced by entering the following command at the DMS-100 MAP terminal:

>SIL (cr)

Switch and status panel operation

The following procedure is to be used whenever it becomes necessary to alter the operational configuration of the DPP processors using the Switch and Status Panel. Table 1-2 provides the necessary actions for changing processor modes in the DPP. The changes listed in the table occur when the A/B mode and Only/Prime mode switches are set and the Mode Key Switch is turned to

the right and released. Refer to Figure 1-2 for the layout of the Switch and Status Panel.

Note: Automatic mode changes such as AP to BP or BP to AP occur only if the alarm level in the standby processor (the one being switched to) is of a lower severity level than the active processor (the one being switched from).

Table 1-2
DPP switch and status panel operation

Initial processor mode	A/B mode select switch	Only/Prime mode select switch	Final processor mode
A PRIME	A	O	A ONLY
A PRIME	B	P	B PRIME
A PRIME	B	O	B ONLY
A ONLY	A	P	A PRIME
A ONLY	B	P	B PRIME
A ONLY	B	O	B ONLY (see note)
B PRIME	B	O	B ONLY
B PRIME	A	P	A PRIME
B PRIME	A	O	A ONLY
B ONLY	B	P	B PRIME
B ONLY	A	O	A ONLY (see note)
B ONLY	A	P	A PRIME

Note: These changes are to be used as emergency measures ONLY. The status of the processor being changed to may be questionable.

The Switch and Status Panel controls the status of the A and B processors, not the disk drives. Disk drive operating mode changes are discussed in the *Disk Drive Recovery Procedure* subsection.

Processor mode changes at the terminal keyboard

Provision is made to change the operating status of the processors at the terminal. To initiate a processor switch, enter the following command:

>SWACT (cr)

CAUTION
Use of this command during a high traffic period may result in the loss of some data during the processor switch.

To clear the active event/device alarms for the currently standby processor, followed by a processor activity switch, enter the following command:

>SWACT FORCE (cr)

The execution of either command produces the following sequence of expected messages:

ALL ALARMS CLEARED (only for SWACT FORCE command)
MP SWITCH
DISK MODE: xx (xx - current disk system operating mode)
SITDAT FILE DISK JOB COMPLETE
TDYSTS FILE DISK JOB COMPLETE

The following messages may be printed:

GOOD LOGIDX FILE
GOOD EXCIDX FILE
GOOD AMAIDX FILE

Switch and status panel indicators

The system provides lamps on the Switch and Status Panel for quickly ascertaining the overall system operational condition.

Table 1-3 provides a brief description of the status and alarm lamps.

Table 1-3
Alarm Lamp color scheme and identifiers

Lamp	Color	Function	Description
ALM	Red	Alarm	shows that an alarm is in active status. Used with other indicator lamps (CRIT, MAJ, MIN) to determine particular operational status.
PRI	Green	PRIME	indicates which processor unit is in control of the system. In the primary state, the active unit is in operational control of the system and the other unit is in a standby, or ready state. The standby unit is capable of performing the same functions as the primary unit, is error free, and is available to take control of the system in the event of malfunction in the primary unit.
ONL	Yellow	ONLY	indicates which processing unit has sole, non-transferable operational control of the system. The other unit is not available for system functions in the event of a malfunction in the ONLY unit. Non-availability of a unit could be due to a fault in a unit or normal maintenance activity on a unit. In this operating condition, both the PRI and ONL status lamps are lit for the active processor. (The ONLY condition must be manually initiated at the mode insert switch and rocker switch.)
CRIT	Red	Critical	indicates that the system is no longer capable of performing its design function of data collection, retrieval, and forwarding. The situation requires immediate corrective action so that the performance of the system may return to its design function. CRITICAL alarms are normally configured such that the probability of data loss is very high.
MAJ	Red	Major	indicates that the system is in danger of loss of operational capability. A fault, or faults, condition exists, which, if not corrected, may result in loss of functional capability. Major alarms are normally configured such that if corrective action is not taken immediately, there is a high probability of subsequent faults resulting in loss of data.
MIN	Yellow	Minor	indicates that one processor unit (A or B) has developed a fault condition, but there has been no degradation of system performance as relates to overall design capability. This situation does not require immediate attention, though delay could lead to a worsening of the situation.

System low voltage alarm

The DPP issues a system low voltage alarm when the voltage drops below the thresholds. The alarm is indicated by a frame fail lamp.

Turbo DPP systems equipped with 1- and 2-Gigabytes disk drives can be equipped with enhanced alarm cables. These cables allow the thermal and low voltage alarms to be associated with an error message, a frame fail lamp, and an audible alarm. The text for the error message is determined by the Operating Company. This text is usually datafilled during initial system installation. Refer to the associated Installation Manual for more information. Use the following procedure to resolve a system low voltage alarm.

Procedure 1-5
System low voltage alarm

Step	Description
	**CAUTION** Since all circuit assemblies in the DPP system are static sensitive, be careful handling them. Wear a wrist grounding strap when working with the DPP. There are jacks at the lower right of the Rover Interface panel (B chassis) and the lower right of the Switch and Status panel (A chassis) to accept the banana plug connection on the end of a grounding strap.
	**WARNING** Since the DPP is powered up during this procedure, observe all safety procedures for operations on live equipment.
65	Remove the rear panel of the A chassis by taking out the eight screws that secure the panel to the chassis. Once removed, put the rear panel in a safe place to avoid damage; bending and scratching.
66	On the Power and Alarm Communications PCA, locate position J11. Do not remove this connector.

Sheet 1 of 3

Procedure 1-5
System low voltage alarm

Step	Description
67	Using a voltmeter, test for the voltages associated with the pins listed below (use pin 7 or the screw on the heat sink for the PCA as a ground): Pin 1 = +12v (orange - A chassis) Pin 2 = -12v (yellow - A chassis) Pin 3 = +8v (green - A chassis) Pin 4 = +5v (white/red - A chassis) Pin 5 = +12v (violet - B chassis) Pin 6 = -12v (slate - B chassis) Pin 7 = ground (white) Pin 8 = +8v (brown - B chassis) Pin 9 = +5v (yellow/red - B chassis) Voltages on the pins should be above the following threshold values: +5V pins - +2.10V +8.5V pins - +6.00V +12V pins - +8.10V -12V pins - -8.60V
68	If any of the voltages are below the thresholds for the tested pins, proceed to step 9. If none of the voltages are below the thresholds for the tested pins, proceed to step 5.
69	Remove the enhanced alarm cable from the DPP at connector J16 of the A chassis.
70	Verify on pins 9 and 13 of J16 that a low voltage alarm signal is being generated using an ohmmeter. If an alarm signal is being generated, a short will be present.
71	If there is a low voltage alarm signal, restore the alarm cable to its original position and proceed to step 8. If there is no low voltage alarm signal, proceed to Procedure 1-6 to troubleshoot the alarm cable. If multiple alarms are reported and the physical conditions that would produce these alarms do not exist, it is possible that the enhanced alarm cable is causing the error indications to occur.
72	Verify the condition of the fuse in the power supply for the affected chassis. If the fuse is okay, proceed to step 9. If the fuse is blown, proceed to step 10.
73	Replace the Power and Alarm Communications PCA using the procedure in the *DPP Hardware Component Replacement Guide*. When finished, proceed to step 12.

Sheet 2 of 3

Procedure 1-5
System low voltage alarm

Step	Description
74	Replace the fuse. If the fuse holds, proceed to step 12. If the fuse fails, proceed to step 11.
75	Replace the Power Supply assembly in the appropriate chassis using the procedure in the *DPP Hardware Component Replacement Guide*.
76	Verify that the low voltage alarm is no longer active at the MAP terminal.

Sheet 3 of 3

Procedure 1-6
Enhanced alarm cable troubleshooting

Step	Description
77	Wait for the error indications to clear on the MAP terminal and the frame fail lamp.
78	Reproduce a thermal alarm by shorting pins 7 and 8 together on the cable connector that was connected at J16 of the A and B chassis, one at a time.
79	If multiple error indications are triggered, proceed to step 6. If multiple error indications are not triggered, proceed to step 4.
80	Reproduce a low voltage alarm by shorting pins 9 and 13 together on the cable connector that was connected at J16 of the A chassis.
81	If multiple error indications are triggered, proceed to step 6. If multiple error indications are not triggered, return to the calling procedure and continue.
82	Remove the defective enhanced alarm cable from the DMS-100 side.
83	Follow the procedure in the associated Installation Manual for installing an enhanced alarm cable to replace the defective model.

System temperature sensor(s)

The System Temperature Sensors are located inside the Power Supplies. These sensors provide an “early warning” alarm to indicate that the DPP is operating above its recommended operating temperature limits.

Turbo DPP systems equipped with 1- and 2-Gigabyte disk drives can be equipped with enhanced alarm cables. These cables allow the thermal and low voltage alarms to be associated with an error message, a frame fail lamp, and an audible alarm. The text for the error message is determined by the Operating Company. This text is usually datafilled during initial system installation. Refer to the associated Installation Manual for more information. Use the following procedure to resolve a system temperature alarm.

Procedure 1-7
System low voltage alarm

Step	Description
	**CAUTION** Continuous operation of the DPP under extreme heat conditions will degrade system operation.
84	Determine the ambient temperature of the affected chassis. The ambient temperature is measured at the fan filter inputs on the rear of the DPP chassis inside the equipment bay.
85	If the ambient temperature exceeds 100^{O}F, proceed to step 7. If the ambient temperature does not exceed 100^{O}F, proceed to step 3.
86	Remove the enhanced alarm cable from the DPP at connector J16 of the A and B chassis.
87	Using an ohmmeter, verify on pins 7 and 8 of J16 that a thermal alarm signal is being generated.
88	If there is a thermal alarm signal, restore the alarm cable to its original position and proceed to step 6. If there is no thermal alarm signal, proceed to Procedure 1-6 to troubleshoot the alarm cable. If multiple alarms are reported and the physical conditions that would produce these alarms do not exist, it is possible that the enhanced alarm cable is causing the error indications to occur.
89	Replace the Power and Alarm Communications PCA using the procedure found in the *DPP Hardware Component Replacement Guide*.
90	Determine whether the fan for the affected chassis is working properly.

Sheet 1 of 2

Procedure 1-7
System low voltage alarm

Step	Description
91	If the fan is working properly, proceed to step 9. If the fan is not working properly, follow the recommend procedure for replacing the fan assembly found in the *Fan Maintenance Procedures* subsection.
92	Inspect the fan filter.
93	If the fan filter is dirty, follow the recommend procedure for cleaning the fan filter found in the *Fan Maintenance Procedures* subsection.
94	Allow the DPP to cool to 80oF and the thermostat should reset itself. The alarm indications at the MAP terminal and the frame fail lamp should reset themselves.

Sheet 2 of 2

Verifying polling of data

Verify that the DPP is being polled at the scheduled intervals. Scan the DPP100 logs for a SES CON message followed by a SES DIS message, as outlined in the *DPP Commands and Messages Guide*. Note the times each message occurred. If the times do not correspond to the scheduled times, contact HOC personnel to determine the cause.

Verifying scheduled disk mode switch

The DPP automatically switches disk modes at 2:00 a.m. each morning, to exercise each disk drive. Verify that the disk drive switch activity is occurring as expected by examining the DPP100 log reports for a DISK MODE: message occurring at about 2:00 a.m, as outlined in the *DPP Commands and Messages Guide*. If the switch did not occur, look for a message indicating the reason. Refer the problem to the maintenance support group.

Note: Scheduled disk mode switches only occur when the disk drive is in PRIME mode. Disk drives operating in ONLY mode do not perform the automatic disk mode switch at 2:00 am.

Verifying scheduled processor switch

The DPP automatically switches processors at 3:00 a.m. each morning, to exercise each processor. Verify that the processor switch activity is occurring as expected by examining the DPP100 log reports for an MP-SWITCH message occurring at about 3:00 a.m, as outlined in the *DPP Commands and Messages Guide*. If the switch did not occur, look for a message indicating the reason. Refer the problem to the maintenance support group.

Diagnostic procedures

This section contains procedures to diagnose and/or resolve errors in the DPP.

56K Interface PCA (NT6M94xx) Diagnostic Procedure

The following procedure is used to diagnose problems with the 56K Interface PCA. This card is only present in Turbo DPP systems.

Procedure 2-1
56K Interface PCA (NT6M94xx) Diagnostic

Step	Description
	Note: There are numerous log messages that may be displayed regarding the 56K Interface PCA. Those messages will translate into either a CP NOT AVAIL or CP FAULT message in the ERRMAP display.
12	Enter the following commands at the maintenance terminal to list the DPP alarms and identify the active processor. **>ERRMAP ALARMS (cr)** System responds with a list of alarms on the active and standby processors. Communication Processor (CP) alarms indicate a problem in the 56K Interface PCA. **>CLK ACT (cr)** System responds with the time stamp and identity of the active processor. ***Note:*** The A processor is the top shelf and the B processor is the bottom shelf. The active processor can also be identified by the location of the lighted green lamp on the status panel.

Procedure 2-1
56K Interface PCA (NT6M94xx) Diagnostic

Step	Description
13	Enter the following command at the terminal to attempt to communicate with the processor where the alarm occurred. **>CP VS ACT (cr)** or **>CP VS STDBY (cr)** System responds with three lines of information, with the second line containing the software version loaded on the selected 56K Interface PCA. If there is no response or the response indicates the CP is not available, go to step 3. If the 56K Interface PCA responds with the software version number, go to step 5.
14	Enter the following commands to verify that the BOOTCP file contains the software load and version number of the program file on the disk. **>CP BOOT LIST (cr)** System response: `filename vers` where: filename- name of the CP boot file. vers- version number **>LSTDIR FILE BOOTCP 1 255 (cr)** System response: `xx BOOTCP xx vers xx xx xx xx xx xx xx xx xx` The value of xx is not important to this procedure. There will be one response line for each file found on the disk. It is normal for only one version of the BOOTCP file to be on the disk. Compare the list of files output from the LSTDIR command to verify that a file matching the result of the CP BOOT LIST is on the disk. If the BOOTCP file was found on the disk, go to step 4. If the BOOTCP file was not found, contact your next level of support.

Sheet 2 of 4

Procedure 2-1
56K Interface PCA (NT6M94xx) Diagnostic

Step	Description
15	Enter the following command to attempt to reboot the suspect 56K Interface PCA: **>CP BOOT ACT (cr)** or **>CP BOOT STDBY (cr)** A CP ACTIVE message is displayed once the program successfully loads. The DPP attempts to load the software program into the 56K Interface PCA up to three times. If booting the 56K Interface PCA fails, replace the 56K Interface PCA using the procedure in the *DPP Hardware Component Replacement Guide*. When the PCA replacement is completed, repeat this procedure from the beginning. If the 56K Interface PCA has already been replaced and the CP boot still fails, contact your next level of support. If the CP program loads, continue with step 5.
16	If an error was observed on the ERRMAP, reset the alarm using the following command: **>RSERR ACT 00 (cr)** or **>RSERR STDBY 00 (cr)** ALL ALARMS CLEARED message is issued and the status panel alarm lamp goes out. If the alarm returns, replace the 56K Interface PCA using the procedure in the *DPP Hardware Component Replacement Guide*. When the PCA replacement is completed, repeat this procedure from the beginning. If the 56K Interface PCA has already been replaced and the alarm returns, contact your next level of support. If the alarm clears OK or there was no alarm, continue with step 6.

Sheet 3 of 4

Procedure 2-1
56K Interface PCA (NT6M94xx) Diagnostic

Step	Description
17	Enter the following command to test the software on the 56K Interface PCA being tested: **>CP TEST ACT (cr)** or **>CP TEST STDBY (cr)** System responds with a list of tests and the pass/fail results. If any of the CP tests fail, replace the 56K Interface PCA using the procedure in the *DPP Hardware Component Replacement Guide* subsection. When the replacement is completed, repeat this procedure from the beginning. If the 56K Interface PCA has already been replaced and any of the CP tests fail, contact your next level of support. If 56K Interface PCA being tested is on the standby side and the CP tests pass, go to step 7. If 56K Interface PCA being tested is on the active side and the CP test pass, go to step 8.
18	Place the processor with the 56K Interface PCA being tested in the prime mode. At the Switch and Status panel of the DPP: • **Press the A/B Select Switch to match desired processor.** • **Press the O/P Mode Select Switch to P.** • **Turn the Mode Switch to the right and release.** • **DPP outputs several messages indicating the processor switch activity.**  **CAUTION** Loss of AMA can occur when the processors are switched during high traffic.
19	Have the HOC perform a polling session to complete the verification of the 56K Interface PCA functionality. If the polling session terminates normally, this procedure is complete. If the polling session fails, contact your next level of support.

Sheet 4 of 4

Block Display Procedure

The following procedure is used to verify block integrity. To verify block integrity when the sequence number is known, begin with step 7. To verify block integrity when sequence number is not known, begin with step 2.

Procedure 2-2
Block Display

Step	Description
20	If the user wishes to look at current incoming AMA data. Enter the following command to verify the incoming block at the DSI PCA: **>DSIMAINT SHOW side STATUS (cr)** where: side - DSI port ID: 1 (DSI PCA in slot 13) or 2 (DSI PCA in slot 12). Note which port has block count increasing, this is the currently active AMA port. When block count has increased or block error message is observed, go to step 3.
21	Determine the date and time needed to display by looking at the logs surrounding the error message.
22	Enter the following command to query the currently open AMA file. Note the starting sequence number for this version. **>IDXMAINT DIR OPEN AMA (cr)** If looking for AMA currently being written, go to step 6.
23	Enter the following command to display the last block in the previous version: **>IDXMAINT EXAMINE AMA PACKED seq_num (cr)** where: seq_num - starting sequence number of version that was open minus 1. Refer to the header and data definitions tables (Tables 2-1 and 2-2) at the end of this procedure to determine date and time block was received.

Sheet 1 of 2

Procedure 2-2
Block Display

Step	Description
24	Does date and time of block header correspond to the date and time when error occurred? Reference step 2. If date and time correspond, refer to Tables 2-1 and 2-2 to analyze what might be wrong with the block completing this procedure. If date and time do not correspond, determine whether the date and time of the error occurs prior to or after the block that was displayed. If date and time of the error occurs prior to the displayed block, decrease sequence number and proceed with step 6 until date and time range is reached. If date and time of the error occurs after the displayed block, proceed to step 6.
25	Enter the following command to close the open file: **>IDXMAINT CREATE FILE AMA (cr)** System response: `AMA WRITE FILE CLOSED`
26	Enter the following command to display the sequence number: **>IDXMAINT EXAMINE AMA PACKED seq_num (cr)** If the DPP responds with a DATA NOT AVAILABLE message, proceed to step 2. Refer to Tables 2-1 and 2-2 at the rear of this procedure for definition. At this point user should be able to find block(s) in question and look at call records within the block. If analysis of the header and data do not show a problem, call your next level of support. This procedure is complete.

Sheet 2 of 2

Example of Displayed Block

```
 96-05-21 13:04:08 TUE  PROC-B
OOOXXX AMA SEQ #61524

00  00  FO  54  F5  05  1A  00  05  20  11 42  00 00
  00330000AA00020COOIC70120CO0000CO000000COCOCOCOOOC503C6641210CIC
00503C7724380C1140598CO00000119COCO11C00300000AAOOOOICO06C70120C
.                .              .
```

. . .
.....0002266COCO11CBBBBBBBBBBBBBBBBBB

Table 2-1
Header Definitions

Data	Byte	Definition
00 00 FO 54	1-4	Block Sequence Number (hex)
F5 05	5-6	Block size in bytes (hex)
1A	7	Number of AMA calls in the block (hex)
00	8	Flag byte
05	9	Month block was received by DPP
20	10	Day block was received by DPP
11	11	Hour block was received by DPP
42	12	Minute block was received by DPP
00 00	13-14	Unused bytes

Table 2-2
Data Definitions

Position	Definition
00330000AA	4 bytes before AA are Record Descriptor Word (RDW) for following call record
AA	Start of new call record
5 characters after AA	Structure code for call, refer to the *DPP Commands and Messages Guide* for breakdown of fields and definitions
C	Field separator within call record

Table 2-2
Data Definitions

Position	Definition
011CBBBBBB	Last two bytes of block (includes C) is Cyclic Redundancy Check (CRC) for parity
BBBBBB	As at end of block are fill characters from DMS-100

Boot Recovery Procedure

This procedure assumes the user has been referred here by a failure message. There are a number of different alarms that could refer the user to this procedure. This procedure should only be started when user has verified the alarm is on the standby processor using the ERRMAP ALARMS command.

If alarm appears on the standby processor, begin with step 2. If alarm is on the active processor, begin with step 1. If both processors respond with an ILLEGAL COMMAND message, begin with step 10.

Procedure 2-3
Boot Recovery

Step	Description
27	Enter the following command to switch processors: **>SWACT (cr)** If processor switch does not occur, depress the A/B rocker switch to match the standby processor. Depress the O/P rocker switch to **O**. Turn the keyswitch to the right and release.
28	Enter the following commands to determine whether the software file name is correctly entered in the bootfile. **>BOOT LIST (cr)**Displays current boot file. ***Note:*** If response is BOOT FILE EMPTY, enter the BOOT ADD and BOOT LIST commands as shown in step 3.

Procedure 2-3
Boot Recovery

Step	Description
	System responds with the bootfile name and version number. **>LSTDIR ALL(cr)**If not running software, go to step 10. System responds with a listing of the files on the disk along with their version numbers. Program file name should appear in LSTDIR. Verify program file name and version number listed in BOOT LIST matches one of the files found in LSTDIR. If program file name and version numbers match, proceed to step 4. If program file name and version number do not appear in LSTDIR listing or if the program file name is not known, contact your next level of support.
29	If program file name and version number from BOOT LIST command does not match the file name listed from LSTDIR ALL command, enter the following commands to recreate the boot file. **>BOOT DELETE (cr)**Must be entered for each file listed with BOOT LIST; there is no response to this command. **>BOOT LIST (cr)**Should respond BOOT FILE EMPTY, if not repeat BOOT DELETE until boot file is empty. **>BOOT ADD (cr)**Add program file name and version number to boot file.
Note: Respond to the FILE> prompt with the program file name and respond to the VER> with the version number.	
	System responds with the new boot file name and version number. **>BOOT LIST (cr)**Verify correct entry of file name and version number.
30	Power down the standby processor by depressing the rocker switch on the power supply.
31	After 15 seconds, activate the power supply rocker switch by pressing it toward **I**.
32	User should observe the LED display on the CPU PCA is a lower case 'r.'. When this display changes to any other character, there should be some steady activity on the disk drive LED followed by a terminal message STBY BOOT IN PROC.

Procedure 2-3
Boot Recovery

Step	Description
	Note: DPP will automatically attempt to load the program file three times. If the DPP loads successfully, proceed to step 7. Otherwise, perform the following steps. If the processor does **NOT** boot the program file, replace the EPROM PCA (NT6M63xx) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM PCA does **NOT** allow the processor to boot the program file, replace the CPU PCA (NT6M62BA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM and CPU PCAs does **NOT** allow the processor to boot the program file, replace the Dynamic Random Access Memory (DRAM) PCA (NT6M64AA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing all of the above PCAs does **NOT** allow the processor to boot the program file, call your next level of support.
33	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the program file name. If there are any other failure messages, troubleshoot using the appropriate procedure(s) recommended in the *DPP Commands and Messages Guide*.
34	Verify processors are prime by observing the status panel at the top of the DPP. If the ONL lamp is lit, depress the A/B rocker switch toward A or B, whichever has the green PRI lamp lit. Depress the O/P rocker switch to **P** and turn the key switch to the right and release. The ONL lamp should extinguish.
35	Enter the following command to check processor integrity: **>ERRMAP ALARMS (cr)**

Procedure 2-3
Boot Recovery

Step	Description
	Enter the following command to test the newly loaded processor: **>TEST STDBY (cr)** After the PGM TEST PASSED message is observed all tests are complete. Follow step 16 and return to this point. If there are no alarms, this procedure is complete. If there are any alarms, troubleshoot using the appropriate procedure(s).
	Note 3: The following step is to be used only when both processors respond to the ERRMAP ALARMS command with an ILLEGAL COMMAND message.
36	Enter the following commands to verify whether there is a boot file and program file on disk at this time. **>XDIR (cr)**Responds with disk directory. **>BOOT LIST (cr)**Displays current boot file.
	Note 4: If response is BOOT FILE EMPTY, enter the BOOT ADD and BOOT LIST commands (step 3), then return to step 11. Program file name should appear in XDIR. Verify program file name and version number listed in BOOT LIST matches the information found in XDIR. If program file name and version numbers match, proceed to step 11. If program file name and version number do not appear in XDIR listing or if the program file name is not known, contact your next level of support and request a program download. If program file name and version number from XDIR does not match the file name listed from BOOT LIST, recreate the boot file by following step 3 and then return to step 11.
37	Power down the standby processor by depressing the rocker switch on the power supply.
38	After 15 seconds, activate the power supply rocker switch by pressing it toward **I**.
39	User should observe the LED display on the CPU PCA is a lower case 'r.'. When this display changes to any other character, there should be some steady activity on the disk drive LED followed by a terminal message STBY BOOT IN PROC. ***Note:*** DPP will automatically attempt to load the program file three times. If the DPP loads successfully, proceed to step 14. Otherwise, perform the following steps.

Procedure 2-3
Boot Recovery

Step	Description
	If the processor does **NOT** boot the program file, replace the EPROM PCA (NT6M63xx) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM PCA does **NOT** allow the processor to boot the program file, replace the CPU PCA (NT6M62BA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM and CPU PCAs does **NOT** allow the processor to boot the program file, replace the DRAM PCA (NT6M64AA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing all of the above PCAs does **NOT** allow the processor to boot the program file, call your next level of support.
40	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the software file name. If there are any other failure messages, troubleshoot using the appropriate procedure(s).
41	Enter the following command to check processor integrity: **>ERRMAP ALARMS (cr)** If there are no alarms, enter the following command to test the newly loaded processor: **>TEST STDBY (cr)** After the PGM TEST PASSED message is observed all tests are complete.
42	Switch to the newly loaded processor by depressing the O/P rocker switch to **P**. Then, depress the A/B rocker switch to match the newly loaded processor and turn the key switch to the right and release. DPP should respond with appropriate processor switch messages.
43	Power down the new standby processor by depressing the rocker switch on the power supply.
44	After 15 seconds, activate the power supply rocker switch by pressing it toward **I**.

Procedure 2-3
Boot Recovery

Step	Description
45	User should observe the LED display on the CPU PCA is a lower case 'r.'. When this display changes to any other character, there should be some steady activity on the disk drive LED followed by a terminal message STBY BOOT IN PROC. ***Note:*** DPP automatically attempts to load the program file three times. If the DPP loads successfully, proceed to step 20. Otherwise, perform the following steps.
	If the processor does **NOT** boot the program file, replace the EPROM PCA (NT6M63xx) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM PCA does **NOT** allow the processor to boot the program file, replace the CPU PCA (NT6M62BA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM and CPU PCAs does **NOT** allow the processor to boot the program file, replace the DRAM PCA (NT6M64AA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing all of the above PCAs does **NOT** allow the processor to boot the program file, call your next level of support.
46	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the software file name. If there are any other failure messages, troubleshoot using the appropriate procedure(s).
47	Proceed to step 9 to verify alarm status.

Sheet 6 of 6

Copying tape from parallel disk

If there is a DPP failure, you must copy a tape from a parallel disk. The procedures here show where to begin and end copying to avoid duplicating AMA records sent to the processing center.

There are two basic types of failures to consider to resolve the situation:

- A DPP fault that causes both tape ports to fail. All data already sent to the DPP is still recoverable.
- A DPP disk system fault that has made the stored data unrecoverable from the DPP. Also, whenever the active and standby tape ports fail, the parallel

device should be demounted, and a new parallel device mounted. This ensures that parallel data is retained.

In the first example, a DPP fault has caused both tape ports to go down. When a tape port fails and is rotated out of DIRP, a DIRP101 log is output stating what the last parallel block sequence number was and what the next parallel block number will be. Also, when the tape ports are remounted, parallel block numbers are output. If these sequence numbers are used with the DIRPCOPY utility, all the data can be recovered without any duplicates or gaps. For more DIRPCOPY information, refer to the *Non-Menu Commands Reference Manual*.

In the second example, a DPP disk system fault has made data previously collected and stored by the DPP inaccessible. In this case, recovering data without incurring duplicate data blocks is slightly more difficult, but can be accomplished. To recover AMA data from DIRP, when the DIRP block number is not known, use the following procedure.

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
48	Contact the data center and determine the time frame of the missing AMA, the sequence number of the last DPP block the data center received before the DPP outage, and the first sequence number received following the DPP outage. The sequence numbers referred to here are DPP reference numbers, not DMS or Data Center assigned numbers. At the MAP enter the following commands to see if the DPP sequence numbers are available to display from the DPP disk: **>MAPCI NODISP;MTC;IOD;DPP AMA (cr)** **>RECORD START ONTO printer (cr)** **>IDXMAINT EXAMINE AMA PACKED first_seq_number (cr)** **>IDXMAINT EXAMINE AMA PACKED last_seq_number (cr)** The first sequence number may not be available depending on the specific DPP fault. If the above commands are successful, the DPP outputs the requested AMA data blocks. If BOTH blocks, first and last, were printed out, continue to step 3. Any blocks not output by the IDXMAINT command must be provided by the data center before continuing.
49	From each of the blocks of AMA data, one record is required. In one block, locate an “AA.” Immediately following the “AA” is a Structure Code. Use the *Bellcore Format AMA Reference Guide* to break the record down into the individual fields that make up a record. An example is below.

Sheet 1 of 6

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
	07BA 0000 0040 0000 AA00 700C 043C 036C 0602 091C 036C 0602 091C 0021 3C00 000C 0200 000C 1C0C 1C00 0C60 2C82 0780 1C1C 0060 2C83 8579 2C00 0015 2C00 0000 000C 1010 301C 0000 0023 0C00 0838 8C where: Structure Code- 00700C Call Code- 043C ORIG NPA- 043C ORIG Number- 820780C TERM NPA- 00802C (note the zeros) TERM Number- 8385792C Connect Time- 0000152C C- end of field Break down a record from the other data block in the same manner.
50	Locate the Parallel Volume that was recording for the time frame to be recovered. If it is known which Parallel Volume was active, skip this step. At the MAP, enter: **>MAPCI;MTC;IOD;LISTDEV DDU (cr)** Note the IOC and card number for each DDU. For each DDU, enter the following: **>IOC#;CARD#;ALLOC (cr)** (# - IOC and card numbers) Note the parallel volume names. For example: D000AMAP. At the MAP, enter: **>DSKUT (cr)** **>LISTVOL parallel_volume_name ALL (cr)** **>SHOWFL file_name_from_listvol (cr)** If it is determined that the Parallel Volume that is needed to recover data from is the current active device, the volume must be CLOSED and removed from Table DIRPPOOL field PARVOL. Reference the *Bellcore Format AMA Maintenance Guide* for this procedure. Do the above for each Parallel Volume and notice the “LAST MODIFIED” date and time of each file. Using these dates and times, locate the Parallel Volume collecting AMA during the time frame the data center is requesting.

Sheet 2 of 6

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
51	Locate the block number the data center last received. We require the record broken down in step 2 of the last block received by the data center. At the MAP, enter: **>DSKUT (cr)** **>LISTVOL volume_name ALL (cr)** **>AMADUMP BC file_name (cr)** If the filename includes a special character (a period or space), enclose the whole filename in single quotes. **>FILTER ADD 'structure_code_from_step_2' (cr)** (enclose code in single quotes) The Filter function prompts you for numerous fields. Inputting the Call Code, Originating Number, and Connect Time should be sufficient to locate the data block. If you don't want to define all the other parameters prompted by the function, hit enter and the DMS continues to the next field, or hit a $to end the prompts. If a field contains zeros in any field, you must define that field with all the zeros included. Enter: **>FILTER DISPLAY 'structure_code_from_add' (cr)** (enclose code in single quotes) This outputs a record with all the fields you just defined. Make sure the filter is defined the same as the record. Note that an * is a wildcard, and matches any variable. Following the above record: • **If the ORIG NPA was 602C, you must define the filter as ORIG NPA: 602* or 602C. If the ORIG NUMBER was 9422640C, then the ORIG NUMBER is: 9422640* or 9422640C. If the TERM NPA was 00602C: then the TERM NPA is: 00602* or 00602C. If the TERM NUMBER was 8385792C then the TERM NUMBER is: 8385792* or 8385792C.** • **Make sure the connect time is the same, if the connect time of the record is 000015cC the filter CONNECT TIME is: 0000152* or 0000152C.** • **Make sure all other defined fields are the same as the record. Remember, * is a wildcard.**

Sheet 3 of 6

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
	Enter: **>FILTER ENABLE (cr)** **>DUMP CALL DETAILS (cr)** This filters through the entire Parallel File looking for the record defined. One record should match the data input into the FILTER. When the utility locates the record, the block number and the record is output, as shown below: >>>BLOCK NO: 15 *HEX ID: AA STRUCTURE CODE: 007000C CALL CODE:..... This is the last block received at the data center. To verify the entire block against the one the data center provided enter: **>DUMP CALL DETAILS block_number (cr)** Add 1 to the block number and that is the first block of AMA data that the data center has not received. Refer to the *Bellcore Format AMA Reference Guide*.
52	Locate the last block the data center requires. We require that the record broken down in step 2 that was the first block of data received after the DPP was recovered. **>FILTER DISABLE (cr)** **>FILTER DELETE first_structure_code (cr)** **>FILTER ADD 'structure_code_from_step_2' (cr)** (enclose code in single quotes) The Filter function prompts you for numerous fields. Inputting the Originating Number, and Connect Time should be sufficient to locate the data block. If you don't want to define all the other parameters prompted by the function, hit enter and the DMS continues to the next field.

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
	Enter: **>FILTER DISPLAY 'structure_code_from_add' (cr)** (enclose code in single quotes) This outputs a record with all the fields just defined. Make sure the filter is defined the same as the record. Note that an * is a wildcard, and matches any variable. Following the above record: • **If the ORIG NPA was 602C, you must define the filter as ORIG NPA: 602* or 602C. If the ORIG NUMBER was 9422640C, then the ORIG NUMBER is: 9422640* or 9422640C. If the TERM NPA was 00602C: then the TERM NPA is: 00602* or 00602C. If the TERM NUMBER was 8385792C then the TERM NUMBER is: 8385792* or 8385792C.** • **Make sure the connect time is the same, if the connect time of the record is 000015cC the filter CONNECT TIME is: 0000152* or 0000152C.** • **Make sure all other defined fields are the same as the record. Remember, * is a wildcard.** Enter: **>FILTER ENABLE (cr)** **>DUMP CALL DETAILS (cr)** This filters through the entire Parallel File looking for the record defined. One record should match the data input into the FILTER. When the utility locates the record, the block number and the record is output, as shown below: >>>BLOCK NO: 15 *HEX ID: AA STRUCTURE CODE: 007000C CALL CODE:..... This is the first block received at the data center following DPP recovery. To verify the entire block against the one the data center provided enter: **>DUMP CALL DETAILS block_number (cr)** Subtract 1 from the block number and that is the last block of AMA data that the data center has not received.
53	Mount a tape on an MTD. Refer to the *DMS-100 Magnetic Tape Reference Manual*.

Sheet 5 of 6

Procedure 2-4
Recover AMA data from DIRP - DIRP block number not known

Step	Description
54	Copy the Parallel AMA file to the tape. **>DIRPCOPY AMA filename Tx start length (cr)** where: filename- parallel file name Tx- MTD start- number from step length- number from step minus the start number. Depending on the length of the parallel file and the number of blocks to be copied, this activity can last a significant length of time. If a file has 10,000 blocks, it may take two hours to complete execution of the DIRPCOPY command.

Sheet 6 of 6

Disk Drive Capacity Error Procedure

This procedure is used when error messages indicate that a currently equipped disk drive has insufficient disk capacity to support the DPP system software.

Note: The following procedure is valid only for DPP systems with 3 1/2” disk drives (1- and 2-gigabytes).

Procedure 2-5
Disk Drive Capacity Error

Step	Description
55	Enter the following command to determine the number of Allocation Units (AUs) on the disk drive in error. **>DISK USAGE (cr)**
56	If the disk drive in error is supplied by Nortel, proceed to step 3. Otherwise proceed to step 4.

Sheet 1 of 2

Procedure 2-5
Disk Drive Capacity Error

Step	Description
57	Verify that the Product Equipment Code (PEC) of the disk drive in error matches one of the following: **PEC** **Capacity** **AUs** **NT6M72GA** 1-gigabyte 15, 258-30, 516 **NT6M72HA** 2-gigabytes 30, 517 and up If the disk drive in error does not match one of these PECs, the disk drive must be replaced with the appropriate type. Proceed to step 4. If the disk drive in error does match one of these PECs, contact the next level of support.
58	If the response indicates that the number of AUs on the disk drive in error is below 15, 258, the disk drive has less than 1-gigabyte in capacity. It must be replaced. Proceed to step 5. If the response indicates that the number of AUs on the disk drive is between 15, 258 and 30, 516, the disk drive has 1-gigabyte of capacity. Proceed to step 5. If the response indicates that the number of AUs on the disk drive is above 30, 517, contact the next level of support.
59	Replace the disk drive in error with another disk drive with the same capacity as the operating drive using the disk replacement procedure defined in the *DPP Hardware Component Replacement Guide*.

Sheet 2 of 2

Disk Drive Diagnostic Procedure

The following procedure is used to diagnose disk drive errors in the DPP.

Note 5: This procedure assumes that the disk subsystem worked at one time and no PCAs or disks have been replaced by previous troubleshooting activity.

Note 6: Disk subsystem alarms often appear in groups and troubleshooting activity requires using all the presented information to correctly diagnose the problem.

Procedure 2-6
Disk Drive Diagnostic

Step	Description
60	Enter the following commands to list the DPP alarms and identify the disk mode. **>ERRMAP ALARMS (cr)**List the current DPP alarms. System responds with a list of alarms on the active and standby processors. CP prefixed ERRMAP alarms indicate a problem in the 56K Interface PCA (Turbo DPPs only). **>DISK MODE (cr)**Determine the current DPP disk mode. System response: `DISK MODE xx` where: xx - current disk mode (AO, BO, AP, BP, or NONE) **>REPORT DISK x (cr)**List the disk statistics report for today (x = TDAY) and yesterday (x = YDAY). System responds with a report listing details of both the disk drives. Take note of the presence of SCSI BUS ERRORS and/or DISK ERRORS for each of the disk drives. ***Note:*** The A disk is in the top shelf and the B disk is in the bottom shelf.
61	If the messages DISK USE > 70%, DISK USE > 90%, DSK STORE LIMIT, or DIRECTORY FULL occur, there may be problems related to polling. Perform polling diagnostic procedure to clear the problem. If there is no polling problem, proceed to step 10. ***Note:*** High usage alarms are usually related to polling problems. Contact the HOC to confirm polling is working correctly.
62	If the DISK MODE ALARM is observed with the OFFLIN DSK FULL there may be AMA on the off-line disk that has not yet been polled. Refer to the *Disk Full Procedure* subsection for the procedure to recover from full disks before proceeding with this procedure

Procedure 2-6
Disk Drive Diagnostic

Step	Description
63	The DSK CARD HW ERR points towards a problem with a SCSI Interface PCA. There may be a DISK MODE ALARM or DISK ER MESSAGE also listed. Replace the SCSI Interface PCA (NT6M66xx) using the procedure in the *DPP Hardware Component Replacement Guide* subsection. If the disk mode is AO or BO, make the disk redundant and go to step 7. **CAUTION** If disk usage alarms were observed (as seen in step 2), do not make the disk redundant, since this will result in lost AMA. Proceed to step 2.
64	A DISK MODE ALARM and DISK ER MESSAGE on the error map display where the current disk mode is AO or BO and there is no DSK CARD H/W ERROR. ***Note:*** BUS ERRORS and DISK ERRORS are part of a multiline message. There will also be an indication of SIDE x (where x = A or B). The SIDE x identifies the disk where the problem originated. If the disk report has SCSI BUS ERRORS and/or DISK ERRORS present on the off-line disk, Verify the DPP logs or the DPP output when the errors occurred then, perform the Disk Drive (NT6M72xx) replacement procedure in the *DPP Hardware Component Replacement Guide,* then return to step 1. If disk report has SCSI BUS ERRORS and/or DISK ERRORS present on both disk drives, contact your next level of support.
65	Put the **other** processor in the PRIME mode. The **other** processor is defined as that processor that does not have the suspected faulty pack. At the Switch and Status panel of the DPP: • **Press the A/B Select Switch to match the other processor.** • **Press the O/P Mode Select Switch to P.** • **Turn the Mode Switch to the right and release.** • **DPP outputs message responses that indicate processor switch activity.**

Procedure 2-6
Disk Drive Diagnostic

Step	Description
	 **CAUTION** Loss of AMA can occur when the processors are switched during high traffic.
66	Enter the following command to attempt to change to prime disk mode. **>DISK MODE xP (cr)** where: x - A or B. System responds with a DISK MODE AP/BP message, or a failure indication where the disk mode did not change. ***Note:*** Disk mode changes can take several hours on disks with a large amount of data present. If the mode change is in progress and the command above is entered again, the response is DISK MODE CHANGE IN PROGRESS. Wait for the mode change before any additional maintenance activity. If the disk mode changes to AP or BP, continue with step 9. If the first disk mode change fails, perform step 6, then repeat step 7. If the disk mode changes to AP or BP only after performing step 6, continue with step 8. If the mode change fails a second time, perform the Disk Drive (NT6M72xx) replacement procedure in the *DPP Hardware Component Replacement Guide*, then go to step 9.
67	Enter the following command to test the standby SCSI Interface PCA. **>DPRTST (cr)** System responds with the results of the test. If the test fails, replace the SCSI Interface PCA (NT6M66xx) from the affected chassis using the procedure in the *DPP Hardware Component Replacement Guide*. If the test passes, continue with step 9.

Procedure 2-6
Disk Drive Diagnostic

Step	Description
68	Enter the following commands to reset any alarms, change processor mode and confirm the disk mode remains in the prime mode. **>RSERR ACT 00 (cr)** or **>RSERR STDBY 00 (cr)** All alarms cleared and the alarm light on the status panel will go out if the alarm is cleared. At the Switch and Status panel of the DPP: • **Press the A/B Select Switch to match the other processor.** • **Press the O/P Mode Select Switch to P.** • **Turn the Mode Switch to the right and release.** • **DPP outputs message responses that indicate processor switch activity.**

CAUTION
Loss of AMA can occur when the processors are switched during high traffic.

Enter the following command to determine the current DPP disk mode.

>DISK MODE (cr)

System response: `DISK MODE xx`

If the disk mode remains AP or BP, the procedure is complete. If the disk mode returns to AO or BO, replace the SCSI Interface PCA (NT6M66xx) in the affected chassis using the procedure in the *DPP Hardware Component Replacement Guide*. If all efforts to make the disk redundant fail, contact your next level of support.

Sheet 4 of 7

Procedure 2-6
Disk Drive Diagnostic

Step	Description
69	High disk usage when there is no polling problem indicates that files may exist outside the indices. Enter the following commands to determine the files contained in the AMAIDX, EXCIDX, and LOGIDX. **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). System responds with a list of AMACRD file versions contained in the index. **>LSTDIR FILE AMACRD 1 255 (cr)** System response: `xx AMACRD xx vv xx xx xx xx xx xx xx xx xx` where: vv - version number (value of xx is not important to this procedure). There will be one entry for each file listed. If no files are found, the message will indicate no files listed. **>IDXMAINT DIR CLOSED EXC ver (cr)** System responds with a list of EXCCRD file versions contained in the index.
	>LSTDIR FILE EXCCRD 1 255 (cr) System response: `xx EXCCRD xx vv xx xx xx xx xx xx xx xx xx` **>IDXMAINT DIR CLOSED LOG ver (cr)** System responds with a list of LOGCRD file versions contained in the index. **>LSTDIR FILE LOGCRD 1 255 (cr)** System response: `xx LOGCRD xx vv xx xx xx xx xx xx xx xx xx` If no files are found the message indicates no files listed. Compare the LSTDIR results and the IDXMAINT results to determine whether any of the version are outside the index. Record the file type and version numbers for any files found that are outside the indices. If AMACRD, EXCCRD, or LOGCRD files exist outside the indices, go to step 12. If files are not found outside the indices, go to step 11.

Procedure 2-6
Disk Drive Diagnostic

Step	Description
70	Enter the following command to check the DPP for additional duplicate files that can be deleted. **>LSTDIR ALL (cr)** System responds with a list of files and versions on the disk. The LSTDIR ALL result should be examined for files other than AMACRD, EXCCRD, and LOGCRD to determine whether there are additional files that can be deleted. If not sure about the files found, consult your next level of support before proceeding to step 12. If files are found that can be deleted continue with step 12. If no additional files are found, go to step 13.
71	AMACRD, EXCCRD, LOGCRD or other duplicate files found can be deleted. Repeat the following command for each file type that is to be deleted. If there is any question about the files found in either step 10 and 11, contact your next level of support before those files are deleted. **>DELFILE xxxxxx vv ee (cr)** where: xxxxxx- file name vv- starting version number ee- ending version number

WARNING
Make sure that no AMACRD file versions contained in the indices are deleted.

CAUTION
Other maintenance activity may have caused files to be placed outside the indices. Make sure that AMACRD files do not contain information that needs to preserved for other maintenance activity.

Procedure 2-6
Disk Drive Diagnostic

Step	Description
72	Enter the following command to check the disk usage to determine current amount of disk space being used. **>DISK USAGE (cr)** System response: `xxxx/yyyy` where: xxxx - amount of space used on the disk yyyy - amount of available space on the disk Divide xxxx by yyyy and multiply the result by 100 to get the percentage of the disk used. If the usage is less than 70% the procedure is complete. If the usage is still excessive contact your next level of support.

Sheet 7 of 7

Disk Drive Full Procedure

This procedure assumes the user has already determined that there is not a disk hardware failure using the procedure in the *Disk Diagnostic Procedure* subsection.

Note 7: Verify data center is able to poll before starting this procedure.

Note 8: Arrangements MUST be made with data center to poll while this procedure is in progress.

Note 9: Data center must determine sequence number of missing data for use in this procedure.

CAUTION
This procedure MUST be performed during low traffic, or while AMA is routed to another storage device.

Procedure 2-7
Disk Drive Full

Step	Description
73	Enter the following command to determine current disk mode: **>DISK MODE (cr)** ***Note:*** This procedure is written as if the disk mode at this point is AO. If disk mode is BO, reverse references to A and B throughout this procedure.
74	Have data center poll any unpolled data from disk that is currently on-line.  **CAUTION** Do not proceed until data center has completed polling.
75	Enter the following command to verify that all data is polled: **>IDXMAINT SUMMARY AMA (cr)** Response should indicate 00000000 PRIMARY on the first line. If response does not indicate 00000000 PRIMARY, have data center poll again. If AMA continues to be written while polling is taking place, reschedule activity for another time when traffic is slower or reroute traffic to another device.
76	Enter the following command to change disk mode to access AMA from disk B that needs to be polled by the HOC: **>DISK MODE BO (cr)** System response: `DISK MODE BO`

Procedure 2-7
Disk Drive Full

Step	Description
77	Enter the following commands to verify that AMAIDX is correct and that data needed by HOC is available. **>IDXMAINT CHECK AMA (cr)** System response: `GOOD AMAIDX FILE` **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). System responds with the versions contained in the AMAIDX and the starting sequence number of each version. If AMAIDX is not good, use the procedure in the *Index Corruption Recovery Procedure* subsection to create a new AMAIDX. If sequence numbers needed by data center are not within the boundaries of the starting sequence numbers listed above, proceed to step 10.
78	Have data center poll data. ***Note:*** Incoming AMA data will be written during the time data center is polling.  **CAUTION** Do not proceed until data center has completed polling.
79	Enter the following command to verify all data is polled: **>IDXMAINT SUMMARY AMA (cr)** If response indicates 00000000 PRIMARY on the first line, proceed to step 8. If response does not indicate 00000000 PRIMARY, have data center poll again.

Procedure 2-7
Disk Drive Full

Step	Description
80	Enter the following command to verify disk usage to determine whether it is at an acceptable level. **>DISK USAGE (cr)** Example response: `00108/30517 ALLOCATION UNITS USED`(3 1/2” disk drives) or `00108/30517 TRACKS USED`(5 1/4” disk drives) Divide the number in front of the slash by the number after the slash to derive usage percentage. If usage is still above 70%, proceed to step 10. If usage is within the 70% range, proceed to step 9.
81	When polling is complete, enter the following command to make the disk mode redundant again. **>DISK MODE xP (cr)** where: x - A or B (if disk mode was changed to BO in step 4, enter B for x). Length of time to perform this step varies depending on the disk usage. When DPP responds with DISK MODE:AP/BP, this procedure is complete.

82	Enter the following command to verify whether any AMACRD files are outside of the index.
	
	>LSTDIR FILE AMACRD 1 255 (cr)
	
	System responds with a directory listing of the AMACRD files on disk.
	
	Example:`XX AMACRD XX 02 96 151 X XXXX`
	`XXXXXXX XX XXXXXX 020304 007500`
	`1 FILES LISTED`
	
	where:
	02- version number
	96- year file was created
	151- julian date file was created
	020304- starting sequence number of this file
	007500- number of blocks in this file

Procedure 2-7
Disk Drive Full

Step	Description
	If data needed by data center is outside the index, look for version that contains the sequence number. Refer to the procedure in the *Index Corruption Recovery Procedure* subsection to create an index that contains the needed data. If disk usage is high and there are AMACRD files that did **not** appear in the IDXMAINT DIR CLOSED AMA listing from step 5, proceed to step 12.
83	Compare the printout in step 10 with a full directory listing to verify whether there are any files that need to be deleted. Enter the following (at the terminal): **>LSTDIR ALL(cr)** System responds with a directory listing of all files on this disk, by file name and version number. If there are AMACRD files that appear in this listing, but, did not appear in the IDXMAINT DIR CLOSED AMA listing from step 5, they should be deleted using step 12 below. If there are multiple listings of any other files, they should be deleted to bring the disk usage to a manageable limit. Proceed to step 12 for this procedure.
84	Enter the following command to delete unnecessary data using information provided by data center before procedure was started. If ALL data is needed, DO NOT DELETE ANY FILES. **>DELFILE xxxxxx vv ee (cr)** where: xxxxxx- file name vv- starting version number ee- ending version number.

Disk Drive Recovery Procedure

Procedure 2-8
Disk Drive Fault Determination

Step	Description
85	Determine the current disk operation mode. Enter: (at the terminal) >DISK MODE (cr) System response: `DISK MODE xx` where: xx - current disk mode (AO, BO, AP, BP, or NONE) If the disk system mode shows either disk in the PRIME mode, there is no fault, procedure complete. Monitor the terminal for any disk error message repeats. If disk system status is in No Mode or the ONLY mode, go to step 2.
86	Enter the following command to attempt to make the disk system redundant. **>DISK MODE xP (cr)** where: x = A or B

Note: Wait for the appearance of the MODE xx response to this message; the length of time for the mode change procedure varies, depending upon disk size and input traffic load. If the disk system status has not changed to redundant, (disk selected in the key sequence above is still ONLY mode), proceed to step 3.

WARNING
Changing to PRIME mode may cause the AMA ports to be dropped.

CAUTION
If disk usage alarms are observed, do not change the disk mode to prime. Refer to the *Disk Full Procedure* subsection.

Sheet 1 of 2

Procedure 2-8
Disk Drive Fault Determination

Step	Description
87	If the faulty system is a Non-Turbo DPP, perform the *Recommended Initialization* procedure. Use the initialization activity followed by the DISK DEFMAP procedure in most cases. When the initialization activity (and DISK DEFMAP procedure) are complete, go to step 4.
	Note: The DISK DEFMAP activity is not allowed for DPP systems equipped with 380-Mbyte disk drives. If the faulty system is a Turbo DPP, format the off-line disk. Perform the *Format disk drive* procedure. Return to this point when complete.
88	Attempt to make the disk mode redundant using the *Make disk prime* procedure. Refer to Table 2-3 for a list of allowed disk drive mode changes. If this is unsuccessful, see the procedure for that message and perform the activity listed. If it is successful, watch for disk errors. If no disk errors occur, record the failure and return the defective disk.

Sheet 2 of 2

Procedure 2-9
Format disk drive

Step	Description
	**WARNING** This command to be used **ONLY** on TURBO DPPs. These DPP systems have an NT6M94AA or NT6M94BA mounted in slots A7 or B7.
	**CAUTION 1** Use the FORMAT command ONLY when in direct contact with Nortel field support personnel. This command may cause a loss of data. Perform the DISK FORMAT procedure during a period of low data gathering activity (low traffic) to avoid data losses.
	**CAUTION 2** Subsequent procedures call for the use of disk commands that may cause a loss of data if improperly executed. Ensure that the operational disk drive is in DISK ONLY mode prior to entering commands.
89	Enter the following command to format the disk drive >DISK FORMAT x (cr) where: x - off-line drive (A or B) System response: `DISK FORMAT STARTED` After completion of the FORMAT operation, the FORMAT DONE message is output. For any other response, refer to the procedure for that message and perform the activities listed.
90	Once this activity is complete, return to the message procedure you left and continue the activities.

Procedure 2-10
Make disk system ONLY mode

Step	Description
	**CAUTION** This action may cause a loss of data. Verify your action with technical assistance personnel.
Note:	Refer to Table 2-3 for the allowed disk drive mode changes.
91	Enter: (at the terminal) **>DISK MODE xO (cr)** where: x - disk drive (A or B) System response: `DISK MODE: AO or DISK MODE: BO`
92	Once this activity is completed, return to the message procedure you left and continue the activities.
	—end—

Procedure 2-11
Make disk system PRIME mode

Step	Description
	**CAUTION** This disk command may cause a loss of data if the wrong disk is selected to be made PRIME. Make certain that the disk that is in the ONLY mode is the one selected to be made PRIME mode. Verify your action with technical assistance personnel.
Note:	Refer to Table 2-3 for the allowed disk drive mode changes.
	—end—

Procedure 2-11
Make disk system PRIME mode

Step	Description
93	Enter: (at the terminal) **>DISK MODE xP (cr)** where: x - disk drive (A or B) System response: `DISK MODE: AP or DISK MODE: BP` This procedure can take up to three hours. When both disk drive lights are flashing, the procedure is being performed.
94	Once this activity is completed, return to the message procedure you left and continue the activities.

—end—

Procedure 2-12
Recommended initialization

Step	Description

CAUTION
These disk commands may cause a loss of data. Make sure the operational disk drive is in DISK ONLY mode before entering commands.

Note: Proceed only if the DPP is a Non-Turbo system.

Sheet 1 of 3

Procedure 2-12
Recommended initialization

Step	Description
95	The terminal must be in Direct mode. If the terminal is not in Direct mode, enter: **>SMODE (cr)** When the terminal is in Direct mode, enter the following command to initialize a specific disk drive using the short initialization procedure: **>DISK INIT 1x (cr)** where: x - off-line drive (A or B) System response: `0 BAD TRACKS` `INIT COMPLETE` For any other response, see the procedure for that message and perform the activities listed.

96	Obtain the disk manufacturer's bad track map. Enter: (at the terminal)
	
	>DISK DEFMAP x (cr) This operation is for 72- and 140-Mbyte system ONLY.
	
	where: x - drive that was replaced (A or B).
	
	System response is a prompt:
	
	`ENTER HEAD AND CYLINDER #`
	`FROM DEFECT MAP`
	`ENTER "Q" TO EXIT`
	
	>HEAD>xx (cr)
	>CYLINDER>xx (cr)

Sheet 2 of 3

Procedure 2-12
Recommended initialization

Step	Description
	Enter the HEAD No. “xx”, 1 or 2 digits, from the disk manufacturer’s bad track map (space before “xx” digits prevents MENU items from being activated). Enter the CYLINDER No. “xx”, 1 to 3 digits, from the disk manufacturer’s bad track map (space before “xx” digits will prevent MENU items from being activated). Continue entering HEAD and CYLINDER numbers until the end of the disk manufacturer’s bad track map. System response: y BAD TRACKS Value of “y” should increment unless a cylinder appears more than once for byte defects. Go on to the next track if the response is HEAD OUT OF RANGE or CYLINDER OUT OF RANGE. For any other responses, see the procedure for that message and perform the activities listed. When all tracks have been entered, the system response should be DEFECT MAPPING DONE. To exit the defect mapping overlay, type “Q”. Return the terminal to the MAP mode. Enter (at the terminal): **>SMODE (cr)** After initialization and defect mapping activities are complete, go to step 3.
97	Once this procedure is complete, return to the message procedure you left and continue the activities.

Sheet 3 of 3

Procedure 2-13
Alternate initialization

Step	Description
	CAUTION These disk commands may cause a loss of data. Make sure the operational disk drive is in DISK ONLY mode before entering commands.

Note 10: Proceed only if the DPP is a Non-Turbo system equipped with 72-, 140-Mbyte disk drives.

Sheet 1 of 3

Procedure 2-13
Alternate initialization

Step	Description
	Note 11: This procedure may take up to four hours, during which time the disk system is in a non-redundant mode. This procedure should only be used when the manufacturer's bad track map is not available on site.

98	The terminal must be in Direct mode. If the terminal is not in Direct mode, enter:
	
	>SMODE (cr)
	
	When the terminal is in Direct mode, enter the following command to initialize a specific disk drive using the long initialization procedure:
	
	>DISK INIT 0x (cr)
	
	where: x - off-line drive (A or B)
	
	System response:
	
	`0 BAD TRACKS`
	`INIT COMPLETE`
	
	For any other response, see the procedure for that message and perform the activities listed.

99	Obtain the disk manufacturer's bad track map. Enter: (at the terminal)
	
	>DISK DEFMAP x (cr) This operation is for 72- and 140-Mbyte system ONLY.
	
	where: x - drive that was replaced (A or B).
	
	System response is a prompt:
	
	`ENTER HEAD AND CYLINDER #`
	`FROM DEFECT MAP`
	`ENTER "Q" TO EXIT`
	
	>HEAD>xx (cr)
	>CYLINDER>xx (cr)

Procedure 2-13
Alternate initialization

Step	Description
	Enter the HEAD No. “xx”, 1 or 2 digits, from the disk manufacturer’s bad track map (space before “xx” digits prevents MENU items from being activated). Enter the CYLINDER No. “xx”, 1 to 3 digits, from the disk manufacturer’s bad track map (space before “xx” digits will prevent MENU items from being activated). Continue entering HEAD and CYLINDER numbers until the end of the disk manufacturer’s bad track map. System response: y BAD TRACKS Value of “y” should increment unless a cylinder appears more than once for byte defects. Go on to the next track if the response is HEAD OUT OF RANGE or CYLINDER OUT OF RANGE. For any other responses, see the procedure for that message and perform the activities listed. When all tracks have been entered, the system response should be DEFECT MAPPING DONE. To exit the defect mapping overlay, type “Q”. Return the terminal to the MAP mode. Enter (at the terminal): **>SMODE (cr)** After initialization and defect mapping activities are complete, go to step 3.
100	Once this procedure is complete, return to the message procedure you left and continue the activities.

Sheet 3 of 3

Procedure 2-14
Set disk drive parameters

Step	Description

CAUTION
These disk commands may cause a loss of data. Make sure the operational disk drive is in DISK ONLY mode before entering commands.

Note: This procedure is only for Non-Turbo DPP systems. For a 380-Mbyte disk drive system, the parameter information is already loaded on disk. If this procedure is used, assign a disk type of 8. In the event that the system prompts for parameter data for a 380-Mbyte disk, use the same values as for a 140-Mbyte disk.

101 Consult with technical assistance personnel before entering this command to be certain that the values are correct for this application. Enter (at the terminal):

>DISK PARAM disktype (cr)

where:
disktype -disk drive type. Range: 5-9
5 - VERTEX V170 as a 72-Mbyte (6909 tracks)
6 - MAXTOR XT1085 as a 72-Mbyte (6909 tracks)
7 - MAXTOR XT1140 as a 140-Mbyte (13770 tracks)
8 - 380 MB as a 380-Mbyte
9 - Other (see step 2)

Note: VERTEX and MAXTOR are equivalent names to PRIAM and SEQUEL, respectively.

Sheet 1 of 2

Procedure 2-14
Set disk drive parameters

Step	Description
102	If disktype is 9, use the modified command entry as shown: **>DISK PARAM 9 Pulse Period Mode Head Cylinder RWCCyl Interleave Sector (cr)** where: Pulse - Step pulse width in microseconds. Period - Step period times in microseconds. Mode - Step mode. Range: 0-2. Head - Number of heads. Range: 0-8. Cylinder - Number of cylinders. Range: 1-65,535. RWCCyl - Number of RWC Cylinders. Range: 1-65,535. Interleave - Interleave factor. Range: 1-16. Sector - Hard or Soft sector disk. Valid values: HARD or SOFT. For example: **>DISK PARAM 9 100 20 1 7 36000 25000 2 HARD (cr)** The values for this command input are in the site configuration specifications for the particular office. Consult with technical assistance personnel before entering this command to make sure the values are correct.

	DISK TYPE			
DISK PARAMETER COMMAND PROMPT (Size; in Megabytes)	**V170 (72M)**	**XT1085 (72M)**	**XT1140 (140M)**	**XT4380/XT8380 (380M)**
SPW (Pulse)	3	1	1	0
SPR (Period)	1	0	0	0
SPM (Mode)	0	0	0	0
HED (Head)	7	7	15	0
CYL (Cylinder)	987	987	918	0
RWC (RWC Cylinder)	0	0	0	0
ILV (Interleave)	4	4	1	0
H/S (Sector)	S	S	S	S

V = VERTEX, XT = MAXTOR

103	Once this procedure is complete, return to the message procedure you left and continue the activities.

Table 2-3
Allowed disk drive unit mode changes

Initial Mode	Final Mode	Allowed yes/no	Remarks/conditions
A PRIME	A ONLY	Y	
A PRIME	B PRIME	Y	
A PRIME	B ONLY	Y	
A ONLY	A PRIME	Y	Allowed if the B disk is initialized.
A ONLY	B PRIME	N	
A ONLY[1]	B ONLY[1]	Y	
B PRIME	B ONLY	Y	
B PRIME	A PRIME	Y	
B PRIME	A ONLY	Y	
B ONLY	B PRIME	Y	Allowed if the A disk is initialized.
B ONLY[1]	A ONLY[1]	Y	
B ONLY	A PRIME	N	
DWN	A ONLY	Y	Allowed if the A disk is properly initialized or formatted.
DWN	B ONLY	Y	Allowed if the B disk is properly initialized or formatted.
A ONLY	DWN	Y	Changes A disk to uninitialized. Not recommended.
B ONLY	DWN	Y	Changes B disk to uninitialized. Not recommended.

Note 12: This change is to be used for specific DISK FULL recovery procedures only. Contact Nortel if it becomes necessary to use this mode change.

DRAM PCA (NT6M64AA) Diagnostic Procedure

This procedure is used to diagnose problems on the DRAM PCA. This procedure assumes that the PCA worked at one time and has not been replaced or settings altered by previous troubleshooting activity.

Note: The D-RAM ERROR error map alarm causes a computer switch when it occurs.

Procedure 2-15
DRAM PCA (NT6M64AA) Diagnostic

Step	Description
104	Enter the following commands to determine which shelf in the DPP has the alarm. **>ERRMAP ALARMS (cr)** System responds with a list of alarms on active and standby processors. **>CLK ACT (cr)** System responds with a time stamp and the identity of the active processor.
105	Enter the following command to reset the DRAM Alarm. **>RSERR ACT 00 (cr)** or **>RSERR STDBY 00 (cr)** Status panel display alarm light will go out if the alarms clear. Enter the following command to attempt to load the program on the standby shelf. **>BOOT STDBY (cr)** System responds with a software loaded message once the program successfully loads. The DPP will automatically attempt to load the software program up to three times. Observe the prime disk drive LED for several seconds of activity. If the alarm returns, replace the DRAM PCA (NT6M64AA) in the affected chassis using the procedure in the *DPP Hardware Component Replacement Guide*, then proceed to step 3. If the alarm stays clear, continue with step 3.

Sheet 1 of 2

Procedure 2-15
DRAM PCA (NT6M64AA) Diagnostic

Step	Description
106	The following command will perform a series of tests on the standby processor. **>TEST STDBY (cr)** System responds with a series of tests with results indicated as pass or fail. If the tests pass and the alarms stays clear, continue with step 4. If the DRAM PCA has been replaced and the DRAM test fails or a STANDBY PROCESSOR NOT AVAILABLE message occurs, contact your next level of support. If the DRAM PCA has not been replaced and the DRAM test fails or a STANDBY PROCESSOR NOT AVAILABLE message occurs, replace the DRAM PCA (NT6M64AA) in the chassis that failed using the procedure in the *DPP Hardware Component Replacement Guide*. Then, repeat this procedure from the beginning.
107	Enter the following command to switch processor modes to the standby side. **>SWACT (cr)** System responds with a series of messages indicating the processor switch activity. **>CLK ACT (cr)** System responds with a time stamp and identity of active processor. **>IDXMAINT DIR OPEN AMA (cr)** System responds with the detail of the current open AMA file where the switch is sending AMA. Repeat this command after enough time has passed and note that the number of block in the file are getting larger. If the alarms stay clear, the procedure is complete. If the alarm returns, contact your next level of support.

Sheet 2 of 2

DSI PCA (NT6M70xx) Diagnostic Procedure

This procedure should only be started when you have verified the alarm using the ERRMAP ALARMS command. If alarm appears on the standby processor, begin with step 2. If alarm is on the active processor, begin with step 1.

Procedure 2-16
DSI PCA (NT6M70xx) Diagnostic

Step	Description
108	Enter the following command to switch processors: **>SWACT (cr)** DPP will respond with appropriate switch related messages. If the processors do not switch, depress the A/B rocker switch to match the standby processor. Depress the O/P rocker switch to **O**. Turn the key switch to the right and release.
109	The following commands must be entered in Direct mode. To enter the Direct mode, enter the following command at the MAP terminal: **>SMODE (cr)** Verify the status of the DSI PCAs by entering the following commands. **>DOS S DSIMAINT SHOW 1 STATUS (cr)** Example response: `MTU B0: CMD-01 STA-82 BLK-3589` **>DOS S DSIMAINT SHOW 2 STATUS (cr)** Example response: `MTU B2: CMD-01 STA-82 BLK-5` If there is no response to either of the above commands, there is a command problem and you should proceed to step 4. For AMA/Magnetic Tape Unit (MTU) related problems, where there are no MTU messages seen at the terminal, you should look toward the controller in the switching system. For any other AMA/MTU related problems, when MTU messages have been seen at the terminal, verify the definition of the CMD (command) and STA (status) fields using Table 2-4 at the end of this procedure and return to step 12.
110	If the INVALID BLOCK CHECKSUM ERROR or INVALID BLOCK DETECTED messages were displayed, rotate the AMA ports in the DMS-100. If the errors continue, the data from the DMS-100 is suspect. Contact the next level of support to investigate the data being sent from the DMS-100 to the DPP. If the errors stop, continue with this procedure.
111	Power down the standby processor by depressing the rocker switch on the power supply to **0**.

Sheet 1 of 4

Procedure 2-16
DSI PCA (NT6M70xx) Diagnostic

Step	Description
112	Reseat the DSI PCA associated with the MTU port that is experiencing trouble, or that failed to communicate.
113	After 15 seconds, activate the power supply rocker switch by pressing it toward **I**.
114	You should observe that the LED display on the CPU PCA is a lower case 'r.'. When this display changes to any other character, there should be some steady activity on the disk drive LED followed by a terminal message, STBY BOOT IN PROC. ***Note:*** DPP will automatically attempt to load the program file three times.
115	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the program file name. If there are any other failure messages, troubleshoot using the appropriate procedure(s).
116	Verify the status of the DSI PCAs by entering the following commands. **>DOS S DSIMAINT SHOW 1 STATUS (cr)** **>DOS S DSIMAINT SHOW 2 STATUS (cr)** If command has returned, proceed to step 10. If problem remains, proceed to step 15.
117	Enter the following commands to clear any remaining alarms: **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System response: `ALL ALARMS CLEARED`
118	Depress the O/P rocker switch to **P**. Turn the keyswitch to the right and release. Observe the ONL lamp is no longer lit.
119	Depress the A/B rocker switch to match the standby processor. Depress the O/P rocker switch to **O**. Turn the keyswitch to the right and release.

Sheet 2 of 4

Procedure 2-16
DSI PCA (NT6M70xx) Diagnostic

Step	Description
120	Verify AMA/MTU port function in the DMS-100. • **Are they both up?** • **Which port is active?** • **Can block count increase be seen at DSI PCA when DSIMAINT SHOW 1 or 2 STATUS is queried?** • **If both ports are up, rotate them and verify block collection for other MTU port.** If no problems are encountered, this procedure is complete. If there are errors seen, and DSI PCA has **NOT** been changed previously, proceed to step 14. If there are any errors seen, and DSI PCA has been changed previously, proceed to step 20. If there are any errors seen, and DSI and CPU PCAs have been changed, call your next level of support.
121	Enter the following command to switch away from the processor with suspect DSI PCAs: **>SWACT (cr)** DPP will respond with appropriate switch related messages. If there are no responses or processors do not switch, depress the A/B rocker switch to match the standby processor. Depress the O/P rocker switch to **O**. Turn the keyswitch to the right and release.
122	Power down standby processor by depressing the rocker switch on power supply to **0**.
123	Reverse the DSI PCAs using the following steps. ***Note:*** Incorrect switch settings can cause a loss of AMA. Refer to the DSI PCA switch setting table in the *DPP Hardware Component Replacement Guide*. • **Pull ribbon cables attached to slots 12 and 13.** • **Remove the DSI PCA from slot 13.** • **Set jumper and switch settings for the slot 12 position.** • **Remove the DSI PCA from slot 12.** • **Install newly optioned DSI PCA into slot 12.** • **Option DSI PCA removed from slot 12 for placement into slot 13.** • **Install newly optioned DSI PCA into slot 13.**

Sheet 3 of 4

Procedure 2-16
DSI PCA (NT6M70xx) Diagnostic

Step	Description
124	Activate power supply rocker switch by pressing it toward **I**.
125	You should observe the LED display on the CPU PCA is a lower case 'r.'. When this display changes to another character, there should be some steady activity on the disk drive LED followed by a terminal message STBY BOOT IN PROC. ***Note:*** DPP will automatically attempt to load the program file three times.
126	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the software file name. If there are any other failure messages, troubleshoot using the appropriate procedure(s).
127	Verify the status of the DSI PCAs by entering the following commands. **>DOS S DSIMAINT SHOW 1 STATUS (cr)** **>DOS S DSIMAINT SHOW 2 STATUS (cr)** If problem follows the DSI, replace the DSI PCA (NT6M70xx) using the procedure in the *DPP Hardware Component Replacement Guide*. If problem remains, proceed to step 21. If problem is clear, return to step 13.
128	Replace the CPU PCA (NT6M62BA) using the procedure in the *DPP Hardware Component Replacement Guide*, then return to step 20. If there are any errors seen, and DSI and CPU PCAs have been changed, call your next level of support.

Sheet 4 of 4

The following table lists the command and status definitions for the message sent in response to the DSIMAINT SHOW command. The message is as follows:

MTU Bx: CMD-yy STA-zz BLK-nnnn

where:
x- 0 or 2 (0 is for DSI PCA in slot 13, 2 is for DSI PCA in slot 12).
yy- last command seen from DMS-100 (in hex).
zz- current status (in hex).
nnnn- block count when status was reported/requested.

Table 2-4
MTU Command and Status Definitions

Command definitions for yy	Status definitions for zz
00 - Null (power-up)	00 - Null (power-up)
01 - Write	01 - Busy
02 - Read	02 - Ready
03 - Erase	04-07 - Write Enabled
04 - Backspace	08-0F - At load point
05 - Filemark	10-1F - At end of tape
06 - Rewind	20-3F - Rewind
08-0E - Tape Operation	40-7F - Alarm
10-1E - DMA Timeout	80-FC - On-line
20-2E - DMA or CMD Error	
40-4E - DMA in progress	

Note 2: All other values are combinations of the above listed codes (i.e., STA-82 is At load point, Ready).

Note 3: Commands and statuses can have code definitions that are not listed. Addition of the above codes will define the most commonly seen values for these fields. If a code appears that is not defined, follow the DSI PCA (NT6M70xx) Diagnostic Procedure. If there is still a problem with the AMA/MTU port, call your next level of support.

Index Corruption Recovery Procedure

This procedure describes a methodology for recognizing and recovering from index file corruption which may be experienced with the DPP system. Index file corruption can occur for a variety of reasons. This procedure neither catalogs nor explains all those reasons; rather, it offers practical advice for identifying and correcting certain types of index file corruption should it occur. For each type of index file corruption discussed, the procedure to recognize it is first given, followed by the appropriate recovery procedure. This follows the natural flow of troubleshooting. Commands and responses

for the DPP are given. This procedure address the following types of index file corruption:

- Version number missing from index, but is on disk.
- Sequence numbers not incrementing properly.
- AMAIDX OPEN ERROR:03.

Version number missing from index, but is on disk

Version numbers within the index are always supposed to be *sequential and contiguous*. That is, they should start from a low version number and increment by one, without skipping any numbers (i.e., 07, 08, 09, 10, etc.). *If a version number is missing from the index, but the AMACRD file is actually on disk, then corruption has occurred*.

Recognition

AMACRD files missing from the index can be observed by displaying and comparing listings of the AMACRD files in the index to those in the directory. Additionally, check for error messages, such as BAD AMAIDX FILE, and/or the presence of alarms.

For example: Version 82 is missing from the index but the AMACRD file version 82 is in fact on the disk. Therefore the index is corrupt and must be fixed.

Procedure 2-17
Version number Missing Recognition

Step	Description
22	Display the summary of the AMACRD files in the index. **>IDXMAINT SUMMARY AMA (cr)** Example response: AMA FILE: 03 VSNS, 0003487 BLKS, 00000042 PRIMARY SEQ# 00000000 FIRST, 00003445 PRIM, 00003487 NEXT IN VS 81: 3451 BLKS, 6 PRIMARY, AMA SEQ #00000000 Save this information. It will be used in a subsequent step.

Sheet 1 of 2

Procedure 2-17
Version number Missing Recognition

Step	Description
23	Display the closed AMACRD files in the index. **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). Example response: VS 81: 3451 BLKS, 6 PRIMARY, AMA SEQ #00000000 VS 83: 36 BLKS, 36 PRIMARY, AMA SEQ #00003487 END OF AMAIDX FILE
24	Display the open AMACRD file in the index. **>IDXMAINT DIR OPEN AMA (cr)** Example response: `VS 84: 0 BLKS, 0 PRIMARY, AMA SEQ #00003523` The discrepancy (a skipped version number) is evident in the listing of the closed AMACRD files in the index.
25	Display the AMACRD files in the directory. **>LSTDIR FILE AMACRD 1 255 (cr)** Example response: 00 AMACRD 60 **81** 95 263 0 1531 01521201 00 0EE508 **000000 003451** 81 is the AMACRD file version number. 000000 is the version's beginning block number. Adding 003451 (number of blocks in this version) should add up to the next beginning block number.

Sheet 2 of 2

Recovery

The AMA index must be rebuilt to "close the gap" caused by the missing index entry. Note that the AMACRD files versions are sequential and contiguous. They start at version 81, increment correctly to version 82 then to version 83. This indicates that the AMA index file corruption can be fixed.

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Procedure 2-18
Version number Missing Recovery

Step	Description
26	Identify the next sequence number of PRIMARY AMA in the index. For example: AMA FILE: 03 VSNS, 0003487 BLKS, 00000042 PRIMARY SEQ# 00000000 FIRST, **00003445** PRIM, 00003487 NEXT IN VS 81: 3451 BLKS, 6 PRIMARY, AMA SEQ #00000000 00003445 in the next sequence number of PRIMARY AMA. Using the information from the previous IDXMAINT SUMMARY AMA command, it can be seen that the first block of PRIMARY AMA is block number 3445 in AMACRD version 81.
27	Delete the old AMA index file: **>DELFILE AMAIDX 1 255 (cr)** Example response: `VERSION 03 DELETED`
28	Create a new index file starting with the first block of PRIMARY AMA just located. Create a new AMA index file, starting with AMACRD file version 81, and starting at the first block of PRIMARY AMA in version 81 (block 3445). **>IDXMAINT CREATE DIR AMA 81 3445 81 (cr)** Example response: AMA FILE ESTABLISHED GOOD AMAIDX FILE
29	Display the summary of AMACRD files in the new index. The presence of the message, GOOD AMAIDX FILE, is positive indication that the new AMA index file was correctly created. This can be verified by displaying the summary of AMACRD files in the index. **>IDXMAINT SUMMARY AMA (cr)** Example response: AMA FILE: 04 VSNS, 00003487 BLKS, 00000078 PRIMARY SEQ# 00000000 FIRST, 00003445 PRIM, 00003523 NEXT IN VS 81: 3451 BLKS, 6 PRIMARY, AMA SEQ #00000000

Sheet 1 of 2

Procedure 2-18
Version number Missing Recovery

Step	Description
	Note that the number of PRIMARY blocks in the new index has changed from 42 to 78. This is an increase of 36 blocks. This is correct because the index file now correctly includes version 82 (which contains 36 blocks of PRIMARY AMA). *Since the DPP is actively collecting AMA data, the number of blocks in the index may increase by more than the indicated difference of 36 blocks.*
30	Display the closed AMACRD versions in the new index. Verification that the AMACRD versions are now in the proper order (sequential and contiguous) can be performed by displaying the closed AMACRD files in the index. **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). Example response: VS **81**: 3451 BLKS, 6 PRIMARY, AMA SEQ #00000000 VS **82**: 36 BLKS, **36 PRIMARY**, AMA SEQ #00003451 VS **83**: 36 BLKS, 36 PRIMARY, AMA SEQ #00003487 This concludes the recovery procedure for version missing from index, but is on disk.

Sheet 2 of 2

Sequence numbers not incrementing properly

Sequence numbers should always be *sequential and continuous*. They should increment from a lower number toward a higher number and should *never* decrement. The beginning sequence number for an AMACRD file can be calculated by adding the **beginning block number** to the **number of blocks** from the previous sequence number.

If version 106 of an AMACRD file has a starting sequence number of 602747 and contains 2968 blocks, then version 107 should have a starting sequence number of 605715 (the sum of version 106's beginning sequence number, 602747, plus the 2968 blocks in version 106).

Recognition

If sequence numbers are decrementing instead of incrementing, or if the sequence number is not the sum of the beginning sequence number of the previous version and the number of blocks in the previous version, then corruption has occurred.

Incorrectly incrementing sequence numbers may be observed by displaying a listing of the closed AMACRD files in the index. The system should also report BAD AMAIDX FILE.

Procedure 2-19
Sequence Number Not Incrementing Recognition

Step	Description
31	Check the AMA Index File. Have the DPP check the integrity of the AMA Index File. In this example, the execution of the following command will result with an error message which verifies that the AMA Index File is corrupt. **>IDXMAINT CHECK AMA (cr)** System response: `BAD AMAIDX FILE`
32	Display the summary of AMACRD files in the index. **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). Example response: VS 106: 2968 BLKS, 99 DA SECNDRY, AMA SEQ #002747 VS 107: 1698 BLKS, 99 DA SECNDRY, AMA SEQ #005715 VS 108: 1335 BLKS, 49 PRIMARY, AMA SEQ #007413 **VS 109**: 1389 BLKS, 1389 PRIMARY, AMA SEQ **#008740** VS 110: 304 BLKS, 304 PRIMARY, AMA SEQ #010129 VS 111: 632 BLKS, 632 PRIMARY, AMA SEQ #010433 VS 112: 1085 BLKS, 1085 PRIMARY, AMA SEQ #011065 END OF AMAIDX FILE
33	Check that the sum of the beginning sequence number for a version and the blocks in that version correctly adds up to the next beginning sequence number.

In this example, the sequence number for version number 109 is incorrect. Prior to (and after) version 109, the sequence numbers are incrementing properly. The sequence number for version 109, #608740, has incorrectly been incremented by only 1327 blocks. It *should* have incremented by 1335 blocks (sequence number 607413 for version 108 plus 1335 blocks in version 108 equals sequence number 608748 for version 109). Eight blocks of PRIMARY AMA appear to be missing in version 108.

The effect is that the polling center won't be able to retrieve AMA starting at version 109, because there will be duplicate sequences in versions 108 and

109 (sequences 608740 through 608748). The actual AMA data in version 108, sequence numbers 608740 through 608748 will be different from the AMA data in version 109, sequence numbers 608740 through 608748, but the DPP will detect the duplicated sequence numbers and report, *BAD AMAIDX FILE*.

Recovery

To recover from this error, version 108 must be changed from PRIMARY to SECONDARY and the data retrieved from it in a DEMAND POLL. After the data center retrieves the data via demand poll, the old index (which contains the corrupt version 108) will be deleted, then a new index will be built starting with version 109 (which is not corrupt).

Procedure 2-20
Sequence Number Not Incrementing Recovery

Step	Description
34	Delete the corrupt AMA index file. **>DELFILE AMAIDX 1 255 (cr)** Example response: `VERSION  03 DELETED`
35	Create a temporary AMA index that includes the corrupt AMACRD file. This forces the corrupt version into SECNDRY status. For example, starting at version 106 (SECNDRY). Version 109 will become the first version having PRIMARY AMA data. **>IDXMAINT CREATE DIR AMA 106 008470 108 (cr)** Example response: AMA FILE ESTABLISHED BAD AMAIDX FILE

Sheet 1 of 4

Procedure 2-20
Sequence Number Not Incrementing Recovery

Step	Description
36	Display the closed AMACRD files in the index. Displaying the closed AMACRD files in the index shows that version 108 has been changed from PRIMARY to SECNDRY AMA. **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). Example response: VS 106: 2968 BLKS, 99 DA SECNDRY, AMA SEQ #002747 VS 107: 1698 BLKS, 99 DA SECNDRY, AMA SEQ #005715 VS 108: 1335 BLKS, **99 DA SECNDRY**, AMA SEQ #007413 VS 109: 1389 BLKS, 1389 PRIMARY, AMA SEQ #008740 VS 110: 304 BLKS, 304 PRIMARY, AMA SEQ #010129 VS 111: 632 BLKS, 632 PRIMARY, AMA SEQ #010433 VS 112: 1085 BLKS, 1085 PRIMARY, AMA SEQ #011065 END OF AMAIDX FILE
37	Data center does a DEMAND POLL on the unpolled data in the corrupt version. The data center should now be able to retrieve the previously unpolled data from version 108 by executing a DEMAND POLL, starting at sequence number 008699, for 49 blocks. This starting sequence number for the demand polling is calculated by using the original sequence number of version 108 (007413) and adding the blocks in version 108 (1335) to arrive at the correct next sequence number, 008748. From this sequence number, the 49 blocks of unpolled data in version 108 are subtracted (008748 minus 49) to arrive at the actual starting sequence number, 008699. This is where the data center should start the demand poll.
38	Delete the temporary AMA index file. After the data center confirms that they have successfully retrieved the previously unpolled 49 blocks from the DPP, remove the temporary AMA index file. This does not remove the AMA data (the AMACRD files), but it does remove the AMAIDX file. The following command will remove the AMAIDX file, but a new one will be built in a subsequent step. (The new AMAIDX file that will be built shall contain the correct version numbers.) **>DELFILE AMAIDX 1 255 (cr)** Example response: `VERSION 02 DELETED`

Procedure 2-20
Sequence Number Not Incrementing Recovery

Step	Description
39	Create a new AMAIDX file starting with the first good sequence number containing PRIMARY AMA. The following command creates a new AMA index, starting with version 109 as the first version having PRIMARY AMA data. All subsequent versions numbers in the index will still be PRIMARY AMA, and will be included in the new AMA index. **>IDXMAINT CREATE DIR AMA 109 (cr)** Example response: AMA FILE ESTABLISHED GOOD AMAIDX FILE
40	Confirm that there is only one AMAIDX file on the disk. The following command checks the disk to confirm that only one AMAIDX file exists. **>LSTDIR FILE AMAIDX 1 255 (cr)** Example response: 00 AMAIDX 60 29 95.349....0 .4096 01000000 00 0EE509 003523 000009 01 FILE LISTED

Procedure 2-20
Sequence Number Not Incrementing Recovery

Step	Description
41	Delete the AMACRD files that were forced into SECNDRY status (versions 106-108): **>DELFILE AMACRD 106 108 (cr)** After the data center has confirmed the integrity of the AMA data collected during the demand poll, the AMACRD files in versions 106, 107 and 108 must be deleted.
42	For confirmation, display the closed AMACRD files in the new index. **>IDXMAINT DIR CLOSED AMA ver (cr)** Example response: VS 109: 1389 BLKS, 1389 PRIMARY, AMA SEQ #008740 VS 110: 304 BLKS, 304 PRIMARY, AMA SEQ #010129 VS 111: 632 BLKS, 632 PRIMARY, AMA SEQ #010433 VS 112: 1085 BLKS, 1085 PRIMARY, AMA SEQ #011065 END OF AMAIDX FILE This concludes the recovery procedure for sequence numbers not incrementing properly.

Sheet 4 of 4

AMAIDX OPEN ERROR:03

The DPPAMAT uses the AMAIDX file to manage data AMACRD data files on the disk. The error message, AMAIDX OPEN ERROR:03, occurs when an AMAIDX file is missing from the disk.

Procedure 2-21
AMAIDX Missing Recovery

Step	Description
43	Examine available AMACRD files in the directory by typing: **>LSTDIR FILE AMACRD 1 255 (cr)**
44	Note sequence number in the versions that are displayed. For example: 00 AMACRD 60 **78** 95 349 0 1531 01006C00 00 0EE509 **063402** 000076 78 is the file's version number. 063402 is the version's beginning block number.
45	Contact data center. Verify what sequence numbers have been completely processed and will not need to be repolled, as well as what sequence number the data center needs to begin normal polling.
46	Determine which versions contain the sequence numbers obtained from the data center in step 3.
47	Create an AMAIDX containing the AMACRD versions the data center needs to poll. **>IDXMAINT CREATE DIR AMA ver seq_num ver2 (cr)** where: ver - starting version number seq_num - first primary block sequence number ver2 - version of primary sequence number The ver2 field applies only to DPP loads D1T008, D2T008, and DPT035.

Procedure 2-21
AMAIDX Missing Recovery

Step	Description
48	Display contents of new index using the command: **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). Example response: VS 81: .3451 BLKS, 30 DA TO DLET, AMA SEQ :000000 VS 82: ....36 BLKS, 30 DA TO DLET, AMA SEQ :003451 VS 83: ....36 BLKS, ...36 TO POLL, AMA SEQ :003487 VS 84: ..1389 BLKS, ..1389 TO POLL, AMA SEQ :003523 END OF AMAIDX FILE
49	If any versions were left outside the index, these versions should remain on disk until data center can confirm the data will not need to be repolled. These versions MUST be deleted using the command in step 8. Set up an appointment with customer to do this if necessary.
50	Any versions displayed in step 1 that were not included in the new AMAIDX, MUST be deleted using the following command: **>DELFILE AMACRD 78 80 (cr)**
51	Verify there is only one index in the directory by typing: **>LSTDIR FILE AMAIDX 1 255 (cr)** In the event there is more than one index, verify which index is active by typing: **>LSTDIR FILE AMAIDX 0 (cr)** Note the version number and delete any indices that are NOT needed.
52	Check validity of index using: **>IDXMAINT CHECK AMA (cr)** System response: `GOOD AMAIDX FILE` This concludes the recovery procedure for the AMAIDX OPEN ERROR:03 message.

Sheet 2 of 2

No Block Last Hour Diagnostic Procedure

Procedure 2-22
No Block Last Hour Diagnostic

Step	Description
53	Enter the following command to examine the alarms on the error map and the DPP current time. If there are any other alarms listed in the error map, troubleshoot those alarms prior to the NO BLOCK LAST HOUR alarm. **>ERRMAP ALARMS (cr)** System responds with a list of alarms on the active and standby processors. **>CLK ACT (cr)** System responds with the current time and date and the identity of the active processor. **>AMAHRS (cr)** System response: `BLOCK CHECK START ss ENDING ee INTERVAL ii` where: ss- start time ee- end time ii- interval. If the DPP time is not correct, go to step 2. If the DPP time is correct, go to step 3.

Sheet 1 of 4

Procedure 2-22
No Block Last Hour Diagnostic

Step	Description
54	Enter the following command to set the DPP clock to the correct time: **>SETCLK yy mm dd hh mm ss ddd (cr)** where: yy- Year mm- Month dd- Day hh- Hour mm- Minute ss- Second ddd- MON, TUE, WED, THU, FRI, SAT, or SUN. System responds with the time and date along with the active processor identity.
55	Note the time that the alarm occurred. This can be done by viewing the alarm in one of the following ways: View the printout on the central office printer, if available, go to step 5. View the time the alarm was reported to the switch or alarm collection device, go to step 5. Use step 4 if the DPP log files need to be examined.

Procedure 2-22
No Block Last Hour Diagnostic

Step	Description
56	Examine the DPP logs for the original NO BLOCK LAST HOUR alarm and it's time stamp with the following commands: Enter the following command to close the open LOG file to make recent messages available for viewing: **>IDXMAINT CREATE FILE LOG (cr)** System response: `WRITE FILE CLOSED` Enter the following command to display a list of the log files to select a sequence number to start viewing: **>IDXMAINT DIR CLOSED LOG ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). System responds with a list of LOG files in the LOG index. From the list of log files, select a sequence number (xxxxxx) to start viewing the logs. The time stamp on the log will help indicate if the correct log was requested. A different sequence number can be selected to reset the starting point to another time. **>IDXMAINT EXAMINE LOG ASCII xxxxx (cr)** System responds with the first message at the sequence number selected. Subsequent messages can be viewed by issuing the following command several times until all the desired information in printed: (xx = 1-99) **>IDXMAINT EXAMINE LOG NEXT xx (cr)** System responds with additional messages beginning where the previous issued command ended.
	Once the log messages have been viewed, the following command is issued to close the log file: **>IDXMAINT CLOSE (cr)** **Response:** `READ FILE CLOSED` ***Note:*** The time stamps in the logs reflect the DPP time. If the DPP time is wrong, the log times will also be wrong.

Procedure 2-22
No Block Last Hour Diagnostic

Step	Description
57	Did the NO BLOCK LAST HOUR alarm occur during a period when no AMA might be expected to be written from the switch to the DPP? If adjusting the DPP clock corrected the problem, the procedure is now complete. If no AMA was expected at the time of the alarm, continue with step 6. If AMA should have been written, go to step 8.
58	Enter the following command to change the NO BLOCK LAST HOUR alarm range to more suitable times. **>AMAHRS ss ee (cr)** System response: `BLOCK CHECK START ss ENDING ee` The following command writes the new site data to disk: **>SITDAT WRITE (cr)** System response: `SIDAT DISK JOB COMPLETE`
59	Enter the following commands to clear any alarms in the DPP: **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System responds with an ALL ALARMS CLEARED message and the status panel alarm lamp will go out.
60	Verify that the alarm clears and switch is sending AMA to the DPP. If the alarm remains clear the procedure is complete. If the alarm returns complete this procedure from the beginning to reset the AMAHRS parameter or contact your next level of support.

Sheet 4 of 4

No log message available procedure

The situation may arise at unattended facilities (weekends, holidays, after midnight) that an alarm is generated and there is no way to locate the particular alarm (log) message that was output at the time of the occurrence. The procedures set forth here provide a method of locating those log messages and guidelines for how to proceed to rectify the situation.

Log call record file

The log call record file, which is listed as log in the directory listing, contains the various information and log messages that are generated by the DPP system. These versions are stored on the disk for several days; the oldest logs are automatically deleted by the system to make room for the newest logs.

Every time a log file is closed, the newly opened one is said to be another version of the log file. The log file versions are numbered sequentially from 01 through 255. The 255th+1 version starts the count over again at 01. There can be 56 versions (Non-Turbo DPPs) or 200 versions (Turbo DPPs) of the log file stored on disk at any one time. However, only one version of the log file can be active, or open, at any one time.

Log record recall procedure

The logs that are currently on disk are available for (manual) recall at the terminal, if required. The IDXMAINT commands are used to gain access to these records. Refer to the *DPP Commands and Messages Guide* for further details on the use of the IDXMAINT commands.

Procedure 2-23
Log message recall

Step	Description
61	Enter: (at the terminal) **>ERRMAP ALARMS (cr)** The system responds with an ERRMAP printout that contains only the active alarms for both the active and standby processors.
62	Make note of the log messages that correspond to the active ERRMAP entries. Refer to the *DPP Commands and Messages Guide* for a listing of the ERRMAP entries and their corresponding log messages.
63	Close the current LOGCRD file and open a new file. Enter (at the terminal): **>IDXMAINT CREATE FILE LOG (cr)** System response: `LOG WRITE FILE CLOSED`

Sheet 1 of 3

Procedure 2-23
Log message recall

Step	Description
64	Determine the starting AMA sequence number for the LOGCRD file that was just closed. Enter: (at the terminal) **>IDXMAINT DIR CLOSED LOG ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). The system responds with a list of the closed AMA files and the starting sequence number for each. The LOGCRD with the highest version number is the most recent file. Make note of the starting sequence number for that version.
65	Examine the log message for the starting sequence number. Enter (at the terminal): **>IDXMAINT EXAMINE LOG ASCII seq_num (cr)** where: seq_num - the starting sequence number identified in step 4. The system responds with the first log message in that version.
66	Compare the output messages obtained in step 5 with the corresponding ERRMAP messages identified in step 2. If there is a match, refer to the associated message table in the *DPP Commands and Messages Guide* and perform the craftsperson activities listed and proceed to step 7. If there is no match, proceed to step 9.
67	Examine the log messages for a range of blocks in the version. Enter (at the terminal): **>IDXMAINT EXAMINE LOG NEXT 99 (cr)** The system responds with the next 99 log messages in that version.

Procedure 2-23
Log message recall

Step	Description
68	Compare the output messages obtained in step 7 with the corresponding ERRMAP messages identified in step 2. If there is a match, refer to the associated message table in the *DPP Commands and Messages Guide* and perform the craftsperson activities listed. If there is no match and there are more log messages to examine in the version, repeat step 7. If there is no match and there are no more log messages to examine in the version, proceed to step 9.
69	Call the next level of support.

Sheet 3 of 3

Polling an improper AMA data block procedure

Due to current HOC implementations, the HOC does not advance when it encounters an improper AMA data block. Each polling session attempts to poll for the standard 100 data block file. When an improper AMA data block is detected, the HOC disconnects the polling session. The next polling session disconnects at the same improper data block, just the same as the previous session. This stopping, restarting, and stopping at the same point effectively establishes an infinite loop condition.

The result of this condition, if left uncorrected, is a gradual approach to a both disks full condition. It is imperative to alleviate this condition as quickly as possible to avoid more serious problems. An examination of the DPP system LOG messages shows that a polling session has started. The following messages appear:

SES CON
FIL-PRI POLL ACCEPTED
AMA SEQ #nnnnnn

There is also an indication that the session disconnected without the following message:

FIL-POLL COMPLETED

The next polling session starts at the same AMA sequence number as the previous session. This is a direct indication that polling is stuck on the last primary file version. In some HOC implementations, the HOC logs some form of ILLEGAL BLOCK SEQUENCE # error.

Another indication is to examine the list of closed AMA files to verify that no new primary files are being changed to secondary status during subsequent polling sessions. The following procedure provides a method to:

- identify the improper AMA block(s)
- re-create the AMA index file
- mark the improper AMA blocks as secondary so that:
  - — primary block polling can proceed normally
  - — poll the improper block(s) on a secondary demand poll basis.

Procedure 2-24
Polling an improper AMA data block

Step	Description
70	Find the improper AMA blocks that caused polling stoppage. Enter: (at the terminal) **>IDXMAINT DIR CLOSED AMA ver (cr)** where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs). The system responds with a list of the closed AMA files. For example: VS 14:17BLKS,29 DASECNDRY,AMA SEQ #013985 VS 15:251BLKS,60 PRIMARY,AMA SEQ #014002 VS 16:5BLKS,5 PRIMARY,AMA SEQ #014253 VS 17:326BLKS,326PRIMARY,AMA SEQ #014258 VS 18:222BLKS,222PRIMARY,AMA SEQ #014584 ***Note:*** The AMA data file with VS 15 is the file where polling has encountered an improper data block. It is the first primary file after a list of secondary files. Of the 251 blocks in this file, all but the last 60 have been correctly transferred to the HOC and marked as secondary. Since the HOC polls for 100 block increments, the range of the improper block starts with the 60 primary blocks in VS 15 and ends 100 blocks later. Proceed to step 2.
71	Enter the following command to determine the first Primary AMA Block Sequence Number: **>IDXMAINT SUMMARY AMA (cr)** Look in the second line of the system response for xxxxxx PRIM, which indicates the value of the first Primary AMA Block Sequence Number.

Procedure 2-24
Polling an improper AMA data block

Step	Description
72	Examine the AMA header data for the first Primary AMA Block Sequence Number. For example: **>IDXMAINT EXAMINE AMA PACKED 14193 (cr)** The system responds with a listing of the AMA data associated with the specified sequence number. For example: AMA SEQ #014193 00 00 37 71 05 D9 22 00 12 12 11 06 00 00 NN . ..... NN NN . ..... NN (to the end of the block)
	where: Bytes 1-4-00 00 37 71 = 3771(H) = 14193(D) = block sequence number. Bytes 5-6-0 D9 = 5D9(H) = 1497 (D) = Block size, in bytes, including the header. Byte 7 -22(H) = 34(D) = the number of AMA records in this block. Byte 8-Flag byte. Bytes 9-12-12 12 11 06 = Month, day, hour, and minute that the block was created. In this example: (12) (12) (11) (06) December 12 11: 06 a.m. Bytes 13-14 = currently unused. Pay attention to the block sequence number and creation date. The sequence number of each new block should be one greater than the previous value. The creation data field should logically be greater than the data field in the previous record. An out-of- sequence seq number is the primary reason for the rejection of a block by the HOC.

Note 4: Turbo DPP systems can use the following command to examine the AMA header data without opening the entire data block (this command must be entered in Direct or EAT mode):

>IDXMAINT EXAMINE AMA HDR 14193 (cr)

Note 5: When an out-of-sequence condition is detected, the block sequence number used in the command, not the improper sequence number displayed in the block header, should be noted. Continue to examine blocks (repeat step 3 above) until the block sequence number in the block header matches the sequence number asked for in the command. (Also note this sequence number.) This block marks the end of the range of bad blocks found. These two noted sequence numbers mark the beginning and end of the range of bad blocks. The second number noted is used to create an AMA index file with the first primary block equal to this sequence number.

Procedure 2-24
Polling an improper AMA data block

Step	Description
73	Delete the corrupt index file using the following command: **>DELFILE AMAIDX 1 255 (cr)**
74	Create a new index file starting with the oldest file version number in the existing AMA index file and marking the first primary block as the block after the bad blocks found. In the example, two bad blocks were found. File version 14 was the first version listed in the output of step 1. AMA block sequence number 14253 is the first good AMA block found after the two preceding bad ones (14193 + 2 = 14195). Enter: (at the terminal) **>IDXMAINT CREATE DIR AMA 14 14195 15 (cr)**
75	Examine the newly created file. Enter the following at the terminal: **>IDXMAINT DIR CLOSED AMA ver (cr)** The system responds with a list of the closed AMA files. For example:
	VS 14:17BLKS,30 DASECNDRY,AMA SEQ #013985 VS 15:251BLKS,58 PRIMARY,AMA SEQ #014002 VS 16:5BLKS,5 PRIMARY,AMA SEQ #014253 VS 17:326BLKS,326PRIMARY,AMA SEQ #014258 VS 18:222BLKS,222PRIMARY,AMA SEQ #014584
76	Request that the HOC operator initiate another series of polling sessions. Monitor the log files for polling messages and the AMA index file to make sure polling is proceeding normally.
	Sheet 3 of 3

Collector demand poll of secondary data

Since the last two blocks in VS 15 (in our example) could not be polled, the HOC must initiate a SECONDARY polling session of these 60 blocks minus the two bad blocks .

From step 1, the HOC starts polling at block sequence number 14193 for two blocks (60 minus the two bad blocks found). Notify the HOC operator that this SECONDARY data has never before been polled and should be treated as primary AMA data.

Polling Diagnostic Procedure

Procedure 2-25
Polling Diagnostic

Step	Description
77	The following commands are used to list the DPP alarms and identity the active processor. This initial information is used to identify the condition of the DPP when the polling problem occurred. **>ERRMAP ALARMS (cr)**List the current DPP alarms. System response includes a list of alarms on the active and standby processors. CP alarms indicate a problem in the 56K Interface PCA (Turbo DPPs only). **>CLK ACT (cr)**Determine the active processor. System responds with the current time and the identity of active processor.
78	Start a polling session and observe DPP polling modem and monitor the DPP output device for messages related to the polling activity. If the polling modem fails to answer, go to step 3. If the modem answers and there are no polling messages at the DPP, go to step 4. If there are polling messages at the DPP, go to step 9.
79	Confirm that the polling center is dialing the correct number and that the number assigned to the polling modem is functional. If the polling modem did not answer attempt to dial the modem from a local phone. If the modem still fails to answer, check the telephone line and the modem. If the phone line or modem is found defective, correct the problem and repeat this procedure from the beginning. If the modem and phone line are OK, stop this procedure and contact your next level of support.

Procedure 2-25
Polling Diagnostic

Step	Description
80	Switch processors and see if the problem remains the same. If there are no alarms on the DPP, enter the following command to switch the processor: **>SWACT (cr)** System responds with messages indicating the processor switch. If the data center can poll from the other shelf, perform the following activities: • **Turbo DPP systems - refer to the procedure in the *56K Interface PCA (NT6M94xx) Diagnostic Procedure* subsection to troubleshoot the shelf problem.** • **Non-Turbo DPP systems - refer to the procedure in the *Quad SIO PCA (NT6M60xx) Diagnostic Procedure* subsection to troubleshoot the shelf problem.** If polling still fails on both shelves with no messages, continue with step 5.
81	Enter the following command to verify that the modem baud rate in the DPP matches the modem baud rate: **>BAUD (cr)** If the baud rate is wrong, enter the following command with the correct value: **>BAUD x yyyy (cr)** where: x- 1 or 2 yyyy- 1200, 2400, 4800, 9600, or 56K (Turbo DPPs only) System response: `FOR LINK #x BAUD RATE = yyyy` For Turbo DPP systems, proceed to step 6. For Non-Turbo DPP systems, proceed to step 17 to check the switch settings that control the DPP clock and then proceed to step 7.

Procedure 2-25
Polling Diagnostic

Step	Description
82	Enter the following command to verify the CP interface setting (Turbo DPPs only): **>CP INTERFACE (cr)** The CP Interface can be set to either RS-232 (RS232), for modems that have a maximum baud rate of 9600 or V.35, for (V35), for modems that have a maximum baud rate of 56K. Enter the following command to modify the CP Interface setting (Turbo DPPs only): **>CP INTERFACE zzzzz (cr)** where: zzzzz - interface setting, RS232 or V35. System response: `LINK x, INTERFACE = zzzzz` Go to step 16 to check the DPP and the modem clocks setting then proceed to step 7.
83	Enter the following command to write this site dependent data to disk: **>SITDAT WRITE (cr)** System response: `SITDAT FILE DISK JOB COMPLETE`
84	When polling fails from both shelves with no messages output to the local printer check the list below for the possible actions. • **Check the cabling from the modem to the DPP. Correct any problem found and repeat the procedure.** • **Power cycle and/or change the modem.** • **For Turbo DPP systems, replace the 56K Crossover PCA (NT6M48AA) using the procedure in the *DPP Hardware Component Replacement Guide*. Repeat this procedure.** • **For Non-Turbo DPP systems, replace the Power and Alarm Communications PCA (NT6M84xx) using the procedure in the *DPP Hardware Component Replacement Guide*. Repeat this procedure.** • **Contact your next level of support.**
85	If the Error map alarms includes the message OFFLIN DSK FULL, refer to the procedure in the *Polling Disks From a Non-Redundant Mode Procedure* subsection to recover the data now in the off-line disk.

Procedure 2-25
Polling Diagnostic

Step	Description
	Note: The DPP disk system enters a non-redundant disk mode because of an inability to poll. The polling failure condition must be resolved before the recovery from the non-redundant disk mode can occur.  **CAUTION** Consult with your next level of support to plan activities required to recover from the non-redundant disk mode.
86	If the Error map alarms includes the message DSK STORE LIMIT, or DIRECTORY FULL, consult with your next level of support.
87	If the Error map alarms includes the message INCOMING CALL REJECTED xx, there is a password problem. Where xx = 01, the host password was rejected by the DPP. Check password used by the poller and the value in the DPP site data through the command below. **>COLLPSW (cr)** System responds with password in DPP site data that matches the password sent by the HOC. Where xx = 02, the DPP password was rejected by the HOC. Check password sent by the DPP to the host in the DPP site data through the command below. **>AMATPSW (cr)** System responds with password in DPP site data that is sent to the HOC by the DPP if required (Not all HOCs use the DPP password). If the DPP COLLPSW is wrong, go to step 12. If the DPP AMATPSW is wrong, go to step 13. If the COLLPSW and AMATPSW are OK, go to step 14.

Procedure 2-25
Polling Diagnostic

Step	Description
88	Enter the following commands to correct the COLLPSW password. **>COLLPSW # type id (cr)** where: #- collector password number (1 or 2). type- office type (4 character hex). id- office identification (6 character hex). **>COLLPSW (cr)** System responds with password entered in the command above. Proceed to step 14.
89	Enter the following commands to correct the COLLPSW password. **>AMATPSW type id (cr)** where: type- sensor type (4 character hex). id- sensor identification (6 character hex). **>AMATPSW (cr)** System responds with password entered in the command above. Proceed to step 14.
90	Once the passwords are exchanged, the messages INCOMING CALL FROM sss ACCEPTED ON LINK nn followed by AMA SEQUENCE #yyyyyy (where yyyyyy = next primary sequence number to be polled) are normally displayed. Additional messages may indicate that an AMA file has closed. Each time a AMACRD file has been completely polled, the message AMA SEQUENCE #yyyyyy is output. Once all available data has been polled, the polling session ends and the message CALL CLEARED ON LINK xx is output. If all available/requested data is sent, the polling session is completed and no further action is required. If the session failed to send any or all available data, continue to step 15.

Procedure 2-25
Polling Diagnostic

Step	Description
91	Other messages listed below are output as a result various failures. IMPROPER LINK DISCONNECT: RETRY LIMIT IMPROPER LINK DISCONNECT: TIMEOUT LINK TRANSMIT TIMEOUT LINK xx RETRY THRESH EXCEEDED< MSG: mm nn • **For Turbo DPP systems, check and/or change the timing between the DPP and the modem, go to step 16, then, repeat step 15 from the beginning.** • **For Non-Turbo DPP systems, check and/or change the timing between the DPP and the modem, go to step 17, then, repeat step 15 from the beginning.** • **Check modem transmit level (typically about -12db).** • **Power cycle and/or change the modem.** • **Try another telephone line.** • **Facility problem may adversely affect polling at certain times of the day and cause no polling problems at other times. This is beyond the scope of this procedure.** • **If none of the suggestions correct the problem, contact your next level of support.**
92	Check the modem and CP clock (Turbo DPP systems only). The modem clock should be set opposite the CP clock setting in the DPP. ***Note 6:*** The DPP factory default CP clock setting is INTERNAL. Setting the modem clock is beyond the scope of this document. ***Note 7:*** Some high speed (9600 baud) modems function better when their clock is set to internal. In those cases the CP clock setting should be changed to EXTERNAL.
	Enter the following command to check the DPP time parameter: **>CP CLOCK (cr)** System response indicates whether the CP clock signal is INTERNAL or EXTERNAL. If required, change the DPP timing with the following command: **>CP CLOCK x (cr)**

Procedure 2-25
Polling Diagnostic

Step	Description
	where: x - INTERNAL or EXTERNAL Enter the following command to write this site dependent data to disk: **>SITDAT WRITE (cr)** System response: `SIDAT DISK JOB COMPLETE`
93	Determine the current DPP clock settings by verifying the switch settings for S1 on the Power and Alarm Communications PCA and the jumper settings for J2 and J10 on the Quad SIO PCA (Non-Turbo DPP systems only). Use the replacement procedures for these PCAs in the *DPP Hardware Component Replacement Guide* as a guide for verifying the switch and jumper settings and changing the settings, if necessary.

Sheet 7 of 7

Polling disks from a non-redundant mode procedure

The DPP normally stores AMA data simultaneously on both disks. However, if the DPP cannot be polled, the disks fill up with AMA data. When both disks reach 95 percent full, the disk system goes to the nonredundant (ONLY) mode. The off-line disk is filled with AMA data that must be preserved and polled; the second disk writes over its data and continues to collect AMA data from the DMS-100.

This procedure provides for polling the AMA data from both disks when the disk mode is ONLY (A or B) or non-redundant. It is expected that the inability to poll the DPP disks has been corrected before this procedure is attempted. When this procedure is complete, the DPP system is in the normal, redundant, PRIME mode.

To shorten this procedure, coordinate this activity with the HOC site at a time of minimum call record (AMA) traffic from the DMS-100.

Use the following procedure to poll the primary AMA data from both disks while in nonredundant mode caused by disks filling up with AMA data.

Note: It is recommended that this procedure be performed during the lowest possible traffic period.

Procedure 2-26
Polling disks from a nonredundant mode

Step	Description
94	Turn on the display of block headers as they are written to disk. This provides a visual indication of current AMA traffic. Enter (at the terminal): **>VALPARM LOGHDR ON (cr)**
95	Determine the current disk mode. In order to poll the AMA data, a manual disk mode change back to the original disk must be performed. The original disk has the oldest AMA data. At this time, the disk mode is set for the second disk, which is collecting new primary AMA data. Enter (at the terminal): **>DISK MODE (cr)** System response: `DISK MODE AO` or `DISK MODE BO`
96	Write any remaining call records to the AMA data file. Enter (at the terminal): **>IDXMAINT CREATE FILE AMA (cr)**
97	Display the currently active files. The active files on the current disk must be closed before switching disk modes. Enter (at the terminal): **>LSTACT (cr)** System response: `FILE OPEN: ii ss tt bbb` (line repeats for each open file) where: ii- ID of open file ss- status of open file tt- file type bbbb- file block size
98	The files identified (ii) by the output of step 4 must be closed. Continue entering the following command for each of the files in the response. Enter (at the terminal): **>CLSACT ii (cr)**

Procedure 2-26
Polling disks from a nonredundant mode

Step	Description
99	Enter (at the terminal): **>LSTACT (cr)** Alternate between steps 5 and 6 until the following response to the LSTACT command is seen: 0 FILES LISTED
100	Change the disk mode. Enter (at the terminal): **>DISK MODE AO (cr)** If the current disk mode is B ONLY. or **>DISK MODE BO (cr)** If the current disk mode is A ONLY.  **CAUTION** Do not change the disk mode to PRIME; this would cause one of the disks to write all of its data onto the other disk. All of the data on the other disk would be lost.
101	Open a new AMA file. Enter (at the terminal): **>IDXMAINT CREATE FILE AMA (cr)**
102	Initiate a polling session Inform the HOC of your intentions. This session takes the oldest primary AMA data from the first disk. New AMA data, if received at this time, is saved on this disk. The polling session ends when all of the oldest primary AMA data has been read from this first disk.
103	(Optional step) Enter the following command if you wish to keep track of the AMA files to be polled: >IDXMAINT DIR CLOSED AMA ver (cr) where: ver -maximum file versions: 56 (Non-Turbo DPPs) or 200 (Turbo DPPs).

Sheet 2 of 5

Procedure 2-26
Polling disks from a nonredundant mode

Step	Description
104	Write any remaining call records to the AMA data file. Enter (at the terminal): **>IDXMAINT CREATE FILE AMA (cr)** **>IDXMAINT SUMMARY AMA (cr)** Determine whether there are any more AMA blocks to be polled. This is new data. Repeat step 9. After three attempts, if new data keeps coming in and this is lowest traffic, a tape must be cut from DIRP and sent in for processing.
105	Display the currently active files. The active files on the current disk must be closed before switching disk modes. Enter (at the terminal): **>LSTACT (cr)** System response: `FILE OPEN: ii ss tt bbb` (line repeats for each open file)
106	The files identified (ii) by the output of step 12 must be closed. Continue entering the following command for each of the files in the response. Enter (at the terminal): **>CLSACT ii (cr)** When executing the CLSACT command, it is possible that a disk file error may occur. Refer to the *DPP Commands and Messages Guide* for any error messages that occur.
107	Enter (at the terminal): **>LSTACT (cr)** Alternate between steps 13 and 14 until the following response to the LSTACT command is seen: 0 FILES LISTED If a block header is received before moving onto step 15, repeat step 12-14 until all active files are closed.
108	Change the disk mode. Enter (at the terminal): **>DISK MODE AO (cr)** If the current disk mode is B ONLY. or **>DISK MODE BO (cr)** If the current disk mode is A ONLY.

Procedure 2-26
Polling disks from a nonredundant mode

Step	Description
	**CAUTION** Do not change the disk mode to PRIME; this would cause one of the disks to write all of its data onto the other disk. All of the data on the other disk would be lost.
109	Open a new AMA file. Enter (at the terminal): **>IDXMAINT CREATE FILE AMA (cr)**
110	Initiate a polling session Inform the HOC of your intentions. This session takes the oldest primary AMA data from the second disk. New AMA data, if received at this time, is saved on this disk. The polling session ends when all of the oldest primary AMA data has been read from this second disk.
111	(Optional step) Enter the following command if you wish to keep track of the AMA files to be polled: >IDXMAINT DIR CLOSED AMA ver (cr) If new AMA is written to both of these disks during these polling sessions, continue by repeating steps 9-18 to assure that all of the primary data on one of these disks has been polled. Several combinations of disk mode changes and polling sessions may be required to poll all of the primary data. To prevent billing data loss, continue this action until no AMA data is received during a polling session.

Sheet 4 of 5

Procedure 2-26
Polling disks from a nonredundant mode

Step	Description
112	Change from disk ONLY mode to disk PRIME mode. Perform this step before any new AMA data is received. The present disk has no new AMA data. The command sequence preserves any new AMA data that may remain on the other disk. If the current disk mode is AO, enter (at the terminal): **>DISK MODE BO (cr)** **>DISK MODE BP (cr)** If the current disk mode is BO, enter (at the terminal): **>DISK MODE AO (cr)** **>DISK MODE AP (cr)** The disk system is now back in the redundant mode.
113	Turn off the display of block headers. Enter (at terminal): **>VALPARM LOGHDR OFF (cr)**
114	Identify any current alarms due to the nonredundant disk condition. Enter (at the terminal): **>ERRMAP ACT (cr)**for the active processor **>ERRMAP STDBY (cr)**for the standby processor or **>ERRMAP ALARMS**for both processors
115	Clear any alarms associated with the nonredundant disk condition. For example, BOTH DISKS FULL, DISK MODE ALARM, RESERV DSK FULL, OFFLIN DSK FULL, DISK USE > 70%, or DISK USE > 90%. Enter (at the terminal): **>RSERR ACT xx (cr)**for the active processor **>RSERR STDBY xx (cr)**for the standby processor where: xx - device/event number of the alarm listed in the ERRMAP output.
116	For any other alarms, refer to the listings in the *DPP Commands and Messages Guide* for any craftspersion activities.

Sheet 5 of 5

Quad SIO PCA (NT6M60xx) DIagnostic Procedure

This procedure assumes that the Quad SIO PCA worked at one time and has not been replaced or settings altered by previous troubleshooting activity. Refer to the switch settings portion of this manual for switch and jumper options if it is suspected that they have been changed.

Procedure 2-27
Quad SIO PCA (NT6M60xx) Diagnostic

Step	Description
117	The following commands are used to list the alarms and identify the active processor. **>ERRMAP ALARMS (cr)** System responds with a list of alarms on the active and standby processors. **>CLK ACT (cr)** System responds with a time stamp and the identity of the active processor. ***Note:*** The A processor is in the top shelf and the B processor is in the bottom shelf. The active processor can also be identified by the location of the lighted green lamp on the status panel. If the SIO alarm is on the active processor and there is no communication between the user terminal and the DPP, go to step 2. If the user terminal can communicate to the DPP, go to step 3.
118	Place the processor with the suspected faulty pack in the standby mode and repeat step 1. Put the **other** processor in the PRIME mode. The **other** processor is defined as that processor that does not have the suspected faulty pack. At the Switch and Status panel of the DPP: • **Press the A/B Select Switch to match the other processor.** • **Press the O/P Mode Select Switch to P.** • **Turn the Mode Switch to the right and release.** • **DPP outputs message responses that indicate the processor switch activity. If there is no communication to either Quad SIO PCA, go to step 6.** • **If processor switch messages are observed, repeat step 1.**

Sheet 1 of 3

Procedure 2-27
Quad SIO PCA (NT6M60xx) Diagnostic

Step	Description
	 **CAUTION** Loss of AMA can occur when the processors are switched during high traffic.
119	Enter the following commands to test the affected processor: **>TEST ACT (cr)** or **>TEST STDBY (cr)** If the Quad SIO fails, replace the Quad SIO PCA (NT6M60xx) in the shelf that failed the test using the procedure in the *DPP Hardware Component Replacement Guide*. Then, proceed to step 5. If the TEST response indicates the SIO passed, go to step 4.
120	Enter the following commands to reset the SIO Alarm: **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System responds by clearing all alarms and the alarm light on the status panel goes out. If the alarm returns, replace the Quad SIO PCA (NT6M60xx) in the shelf that failed the test using the procedure in the *DPP Hardware Component Replacement Guide*. Then, proceed to step 5. If the alarm stays clear, go to step 5.
121	Switch back to the processor where the alarm occurred and determine that communication to that shelf is ok. **>CLK ACT (cr)** System responds with a time stamp and identity of the active processor. If response is normal, the procedure is complete. No further action required. If communication is still not working and the Quad SIO PCA has not been replaced, replace the Quad SIO PCA (NT6M60xx) in the affected chassis using the procedure in the *DPP Hardware Component Replacement Guide*. If the PCA has already been replaced and the communication is still not working on the faulty shelf, contact your next level of support.

Procedure 2-27
Quad SIO PCA (NT6M60xx) Diagnostic

Step	Description
122	To diagnose communication failures to both Quad SIO PCAs from the user's terminal, check the following items: • **Make sure the local terminal is logged into the DPP.** • **Check to determine whether the printer/Terminal used, is ok.** • **Check cabling from the printer to the DPP.** • **Replace the Power and Alarm Communications PCA (NT6M84xx) using the procedure in the *DPP Hardware Component Replacement Guide*. Return to step 1.** • **If none of the above items are the cause of the SIO communication problem, contact your next level of support.**

Sheet 3 of 3

Site File Error Procedure

A copy of the DPP site data should be available in the office records or can be obtained from the DPP using the chart of site data commands at the end of

this procedure. Obtain a printout of site data before performing this procedure.

Procedure 2-28
Site File Error

Step	Description
123	The SITE FILE ERROR error map message occurs as a result of a previous SITDAT READ or SITDAT WRITE issued by the system software or the user. The following commands are used to list the DPP alarms and identify the active processor. **>ERRMAP ALARMS (cr)** System responds with a list of alarms on the active and standby processors. **>CLK ACT (cr)** System responds with a time stamp and the identity of the active processor. ***Note:*** The A processor is in the top shelf and B processor is in the bottom shelf. The active processor is identified by the location of the lighted green PRI lamp on the DPP status panel. If there are any disk related alarms listed in the error map, troubleshoot those alarms prior to the SITE FILE ERROR alarm.
124	Enter the following commands to clear DPP error map alarms. **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System response indicates that the alarm has been cleared.
125	Enter the following command to verify the alarm by attempting to read the SITDAT file. **>SITDAT READ (cr)** System response: `SITDAT FILE DISK JOB COMPLETE` If the normal response above occurs, the SITDAT file is ok and the procedure is complete. If a SITDAT READ ERROR 03 message occurs, go to step 4. Other errors reading the SITDAT file indicate that the SITDAT file may be corrupted, go to step 5 to recreate the SITDAT file.

Procedure 2-28
Site File Error

Step	Description
126	The SITE FILE ERROR error map message can occur if the site file is missing or damaged when it is read from the disk. First determine whether there is a site data file on the disk. **>LSTDIR FILE SITDAT 1 255 (cr)** System response: `xx SITDAT xx yy xx xx xx xx xx xx xx xx xx` where: yy - file version number (value of xx is not important for this procedure). There will be one response line for each file found on the disk. It is normal for only one version of the SITDAT file to be on the disk. If more than one SITDAT file is on disk, go to step 5. If the response is NO FILE ON DISK, go to step 6. If one SITDAT file is on disk, go to step 7.
127	Delete all the site data files from the disk. **>DELFILE SITDAT 1 255 (cr)** System response: `x FILES DELETED` where: x - version number of file deleted.
128	With no site data file on the disk, a SITDAT file must be created. Enter the following command to create the SITDAT file: **>SITDAT WRITE (cr)** System response: `SITDAT FILE DISK JOB COMPLETE` If the response above occurs, go to step 7. If the results of a SITDAT WRITE produces the SITE FILE ERROR error map indication, go to step 8. If a processor restart procedure has been performed and results of a SITDAT WRITE still produces the SITE FILE ERROR error map indication, go to step 9.

Sheet 2 of 4

Procedure 2-28
Site File Error

Step	Description
129	Enter the following commands to clear any alarm and read the site data file: **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System responds with an indication that the alarm has been cleared. **>SITDAT READ (cr)** System response: `SITDAT FILE DISK JOB COMPLETE` If the response SITDAT FILE DISK JOB COMPLETE occurs, go to step 8. If the results of a SITDAT READ still produces the SITE FILE ERROR error map indication, go to step 9. If a processor restart procedure has been performed and results of a SITDAT READ still produces the SITE FILE ERROR error map indication, go to step 10.
130	Confirm that the site data agrees with the office record. Refer to Table 2-5 for the commands to extract the site data from the DPP. Once the site data is confirmed the procedure is complete. ***Note:*** Site specific data should be checked to determine that the correct datafill is present. Any time the site data is changed the SITDAT WRITE command must be used to save the changes.
131	The site data in memory may be corrupt. Obtain the DPP site data. Delete any site data files from the DPP disks with the following command: **>DELFILE SITDAT 1 255 (cr)** System response: `x FILE DELETED` where: x - version number of file deleted. Clear the DPP memory using the procedure in the *System Reboot Procedure* subsection. After completing that procedure, perform this procedure from the beginning to create a site data file.

Sheet 3 of 4

Procedure 2-28
Site File Error

Step	Description

Note 8: Site data in a DPP with suspected corrupt memory may not be reliable and should be confirmed with the office records.

Note 9: When the processors are restarted, the DPP site data will revert to the program defaults setting. The site specific data must then be reentered and saved to the disk.

If this procedure has not corrected the problem, contact your next level of support. Table 2-5 lists the commands used to display the site dependent data in the DPP. If site data changes are required, refer the *DPP Commands and Messages Guide* for the proper syntax to change values. The SITDAT WRITE command is required to save any site data changes to the disk.

Sheet 4 of 4

Table 2-5
Site Data Commands

Commands	Site Dependent Information
AMAHRS	
AMATPSW	
BAUD	
BX25PARM	
BX25PARM PRIHDR	
COLLPSW	
CP CLOCK	
CP INTERFACE	
ERRMAP	

Sheet 1 of 2

Table 2-5
Site Data Commands

Commands	Site Dependent Information
SITDAT READ	
SITDAT WRITE	
VALPARM BLOCKS	
VALPARM INVALID	

Sheet 2 of 2

Statistical File Error Procedure

Procedure 2-29
Statistical File Error

Step	Description
132	The STAT FILE ERROR error map message occurs as a result of a previous attempt to read or write data to the STAT file by the system software. Enter the following command to obtain a list of DPP alarms. **>ERRMAP ALARMS (cr)** System response includes a list of alarms on the active and standby processors. If there are any disk related alarms listed in the error map, Troubleshoot those alarms prior to the STAT FILE ERROR alarm.
133	Enter the following command to reset the errors in the DPP: **>RSERR ACT 00 (cr)** and/or **>RSERR STDBY 00 (cr)** System response indicates that the alarm has been cleared.

Sheet 1 of 3

Procedure 2-29
Statistical File Error

Step	Description
134	The STAT FILE ERROR error map alarm message can occur if the statistics files are damaged or multiple files are present on the disk. Enter the following commands to determine the number of each type of statistics files on the disk. **>LSTDIR FILE TDYSTS 1 255 (cr)** and **>LSTDIR FILE YDYSTS 1 255 (cr)** System response: `xx nnnnnn xx yy xx xx xx xx xx xx xx xx xx` where: nnnnnn- file name yy- file version number (value of xx is not important to this procedure). There will be one response line for each file found on the disk. Normally there is only one version of each TDYSTS and YDYSTS file on the disk. If more than one TDYSTS file is on disk go to step 4. If more than one YDYSTS file is on disk go to step 5. If one each of the TDYSTS and/or YDYSTS files are on disk go to step 6.
135	Determine which open file is the TDYSTS file then close the TDYSTS file. Enter the following command to list the active files: **>LSTACT (cr)** System responds with four open files listed with the format of FILE OPEN nn xx xx yyyy, where nn is the file identification number and yyyy is 256 (number of bytes representing the TDYSTS file). Value of xx is not important to this procedure. Enter the following command to verify that the file identification number matches the TDYSTS file: **>LSTDIR FILE nn (cr)** System response: `xx TDYSTS xx vv xx xx xx xx xx xx xx xx xx` where: vv - file version number (value of xx is not important to this procedure). Enter the following command to close the open TDYSTS file: **>CLSACT nn (cr)** System response: `FILE CLOSED`

Procedure 2-29
Statistical File Error

Step	Description
136	Enter the following commands to delete all the statistics files from the disk and create a new open TDYSTS file: **>DELFILE nnnnnn 1 255 (cr)** where: nnnnnn - TDYSTS and/or YDYSTS System response: x `FILES DELETED` where: x - number of files deleted. **>CLRSTATS (cr)** System response: `TDYSTS FILE DISK JOB COMPLETE`
137	Enter the following command to read the contents of statistics data file: **>REPORT xxxx yyyy (cr)** where: xxxx- AMA, DISK, or MMI yyyy- TDAY or YDAY. System responds with a printout of the requested information. If the reports above print out ok, procedure is complete. If the results still produces the STAT FILE ERROR error map indication and steps 4 and 5 have not been done, go to step 4. If steps 4-6 have been completed and the STAT FILE ERROR error map indication returns, continue to step 7.
138	If this procedure has not corrected the problem, contact your next level of support.

Sheet 3 of 3

System Reboot Procedure

Determine which processor generated the fault message(s) by looking at the printouts when the event took place. The processor ID will be part of the log message that is associated with the fault. If there is no log message directly associated with the fault, look at the messages before and after to determine which processor generated the message.

Procedure 2-30
System Reboot

Step	Description
139	Enter the following command to verify which processor is currently active. **>CLK ACT (cr)** System response: `yy-mm-dd hh:mm:ss DAY PROC-x` where: x - A or B indicating processor ID.
140	Make sure the processor that produced the error message is **standby**. If both processors are reporting the error, follow procedure as written and make sure both processors are rebooted. Depress the rocker switches to A or B (match the active processor determined in step 1) and **O**. Then turn the keyswitch to the right and release. Observe the ONL lamp lights under the PRI light associated with the active processor.
141	Depress the rocker switch on the power supply of the standby processor to **0**.
142	Wait 15 seconds and reactivate the rocker switch on the power supply to **I**.
143	User should observe the LED display on the CPU PCA is a lower case 'r.'. When this display changes to any other character, there should be some steady activity on the disk drive LED followed by a terminal message, STBY BOOT IN PROC.

Note: DPP will automatically attempt to load the program file three times.

Sheet 1 of 3

Procedure 2-30
System Reboot

Step	Description
	If the processor does NOT start to boot the program file, replace the EPROM PCA (NT6M63xx) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM PCA does NOT allow the processor to start to boot the program file, replace the CPU PCA (NT6M62BA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing the EPROM and CPU PCAs does NOT allow the processor to start to boot the program file, replace the DRAM PCA (NT6M64AA) using the procedure in the *DPP Hardware Component Replacement Guide* and return to this point. If replacing all of the above PCAs does NOT allow the processor to boot the program file, call your next level of support. If processor loads, continue with step 6.
144	After approximately one minute, a S/W LOADED message should be seen at the terminal, indicating the processor has loaded the program file name. ***Note:*** DPP will automatically attempt to load the program file three times. If there are any error messages generated, follow the troubleshooting guidelines for that message.
145	Observe DPP status panel for yellow ONL lamp lit associated with the green PRI lamp. If ONL is not lit, proceed to step 8. If ONL is lit, depress the O/P rocker switch toward **P** and turn the key switch. User should observe the ONL light has extinguished.
146	Enter the following command to check processor integrity: **>ERRMAP ALARMS (cr)** If there are no alarms on the standby processor, enter the following command to test the newly loaded processor: **>TEST STDBY (cr)** After PGM TEST PASSED message is observed all tests are complete.

Procedure 2-30
System Reboot

Step	Description
147	Switch to the newly loaded processor by depressing the A/B rocker switch toward A or B, to match the newly loaded processor and turn the key switch. If there are no processor switch messages, enter the following command to verify alarm condition and troubleshoot any alarms that are observed: **>ERRMAP ALARMS (cr)**
148	If EC-IC-ALM or EC-CF-ALM messages have been observed, both processors need to be rebooted and user should repeat steps 2-8. All other errors should be monitored for reoccurrence, watching for whether same processor is having trouble. Otherwise this procedure is complete.

Sheet 3 of 3

List of terms

AMA

Automatic Message Accounting

An automatic recording system that documents all of the necessary billing data of subscriber-dialed long distance.

AU

Allocation Unit

BELLCORE

Bell Communications Research

A group responsible for coordinating Bell Operating Company projects and setting standards for the industry.

CP

Communication Processor

CPU

Central Processing Unit

CRC

Cyclic Redundancy Check

DIRP

Device Independent Recording Package

DMA

Direct Memory Access

DPP

Distributed Processing Peripheral

A peripheral device of the DMS-100 that functions as an AMA data collector and an AMA transmitter in the AMATPS of the DMS-100. The DPP collects AMA data from the DIRP, formats the data (NA004 and higher), stores the data on its own internal disk and transmits the data to a data collection center when polled by the collection center. The DPP performs the AMA Transmitter (AMAT) functions independently of the DMS-100, thereby off-loading the AMAT functions from the DMS-100 Central Control Complex (CC)

DRAM

Dynamic Random Access Memory

A Random Access Memory system that employs transistor capacitor storage cells. The logic state is stored in the capacitor and buffered by the transistor. The capacitive charge is only held for a short duration and must be refreshed at a periodic rate to maintain it programmed state.

DSI

Data Stream Interface

A circuit of the DPP that accepts AMA data from the DMS-100 Magnetic Tape Drive (MTDs) ports. The DSI emulates an MTD on DMS-100 MTD ports, duplicating all of the communications signals normally exchanged between the DMS-100 and an MTD.

EAT

Emergency Administration Terminal

EOT

End-of-Tape

EPROM

Erasable Programmable Read Only Memory

A read-only memory in which stored can be erased by ultraviolet light and reprogrammed.

ESD

Electrostatic Discharge

HOC

Host Office Collector

An AMA data collection center that polls COs in its region on a prescheduled basis and complies the collected data onto a magnetic tape. The tape is used by the Revenue Account Office for computing customer billing.

IOC

Input/Output Controller

LED

Light Emitting Diode

LT

Lamp Test

LTP

Lines, Trunks, and Peripheral Modules

MAP

Maintenance and Administrative Position

A group of components that provide a human-machine interface between OTC personnel and the DMS-100 Family. A MAP consists of Visual Display Unit, voice communications module, testing facilities and MAP furniture.

MMI

Man-Machine Interface

MTD

Magnetic Tape Drive

MTU

Magnetic Tape Unit

NTP

Northern Telecom Practices

PCA

Printed Circuit Assembly

PEC

Product Equipment Code

RDW

Record Descriptor Word

SCSI

Small Computer System Interface

SIO

Serial Input/Output

Circuitry in the DPP that passes data from the DPP to external devices. The DPP employs four such circuits in its Quad SIO PCA that provides communications paths between the DPP and DMS-100/DPP maintenance interface, the DPP Emergency Administrative Terminal (EAT), and the remote polling center link (NA004 and higher).

DMS-100 Family

Distributed Processing Peripheral (DPP)

Maintenance Procedures Guide

Product Documentation-Dept. 3423
Nortel Networks
PO Box 13010
RTP, NC 27708-3010
Telephone: 1-877-662-5669
Electronic mail: cits@nortelnetworks.com

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