

**297-6201-501**

DMS-10 and DMS-100 Families

# **Billing Media Converter II**

Bisynchronous

1997 Quick Reference Guide

97Q3

02.01 Standard

July 1997

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**Your guide to:**

- **Maintenance commands**
- **Index Corruption Maintenance**
- **Replacement procedures**
- **PCA switch setting and jumper options**

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This Quick Reference Guide applies to all EMC chassis (metal front door panels) Bisynchronous (BISYNC) style Billing Media Converter II (BMC II) systems.

Other style BMC II systems cannot use this Quick Reference Guide.

BISYNC BMC II systems can be identified by the information on their rear panel labels.

Catalog Number or Model Number:

**NT8M0xxC** (EMC Chassis models)

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**NORTEL**

NORTHERN TELECOM



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DMS-10 and DMS-100 Families

# Billing Media Converter II

Bisynchronous

1997 Quick Reference Guide

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Information is subject to change without notice. Northern Telecom reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. The DMS-100 version of this equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules, and the radio interference regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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## Publication history

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**May 1996**

Standard 01.01

**July 1997**

Standard 02.01.

- Integrated the new Quick Reference Guide template into this document.
- Added DMS-10 and DMS-100 software and firmware files reference table to *BMC II BISYNC Figures*.
- Modified *Maintenance Commands* with commands left out of first issue:
  - BVAL
  - RMID.
- Added a disk drive size and related number of tracks table in *Maintenance Commands*.
- Added a CMD and STA code descriptions table to the *TEC/DSI Commands* subsection of *Maintenance Commands*.
- Removed the Bus Terminator PCA from the list of valid PCAs in the *Miscellaneous PCA Replacement Procedure*.
- Added notes regarding the location of the defect map and HEAD and CYLINDERS out of range to step 9 of the *Install replacement disk drive procedure* in the *Disk Drive Replacement Procedure*.
- Added note concerning the placement of the J5 jumper to step 8 of the *Disk Crossover PCA Replacement Procedure*.
- Added the following to the *PCA Switch and Strap Settings*:
  - CPU LED display codes table
  - Disk Interface PCA table.
- Modified statements in various sections concerning firmware to verify file name and release level prior to installation of replacement PCA.
- Modified PCA options statements in various sections to refer to the *PCA Switch and Strap Settings* to verify settings prior to installation.
- Corrected various minor format and content errors throughout the document.



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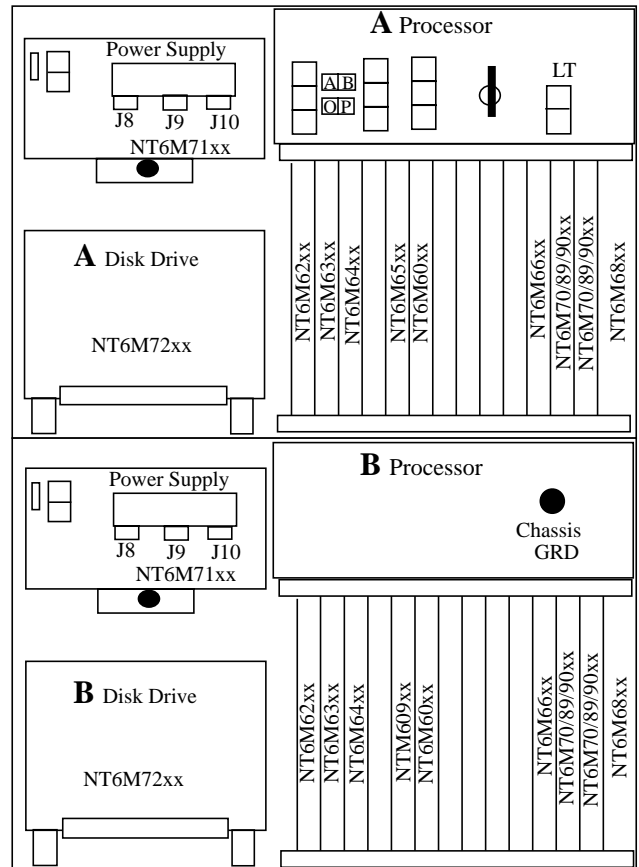
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## BMC II BISYNC Figures

**Figure 1**  
**BMC II BISYNC Front View**

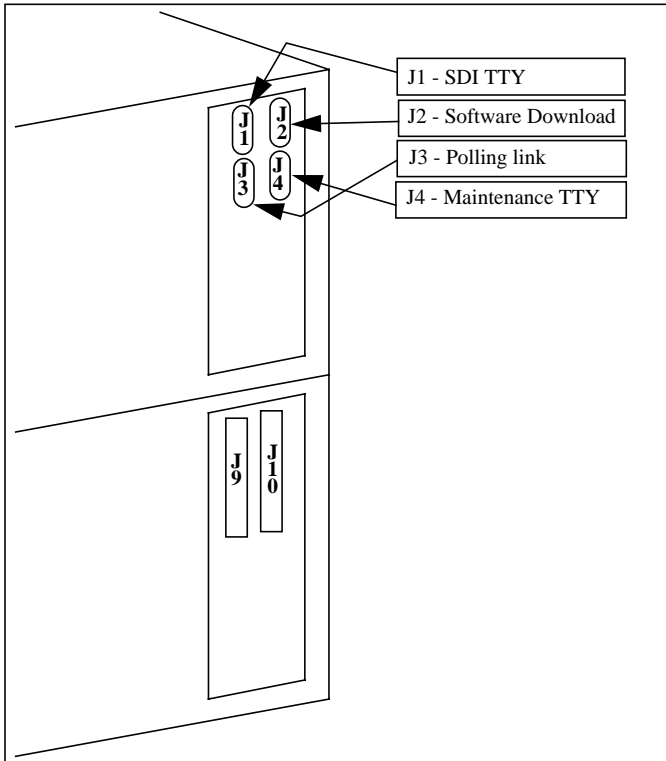


- NT6M62xx Central Processor Unit (CPU) with DMAPCA
- NT6M63xx EPROM PCA
- NT6M64xx DRAM with Extended Memory PCA
- NT6M65xx Error Control II PCA
- NTM609xx Error Control Jumper PCA
- NT6M60xx Quad Serial Input/Output (SIO) PCA
- NT6M66xx Disk Interface PCA
- NT6M70xx Data Stream Interface (DSI) PCA (DMS-100 systems only)
- NT6M89xx Tape Emulation Card (TEC) PCA (DMS-10 systems only)
- NT6M90xx TEC PCA (DCO\* systems only)
- NT6M68xx Bus Terminator PCA
- NT6M71xx Power Supply
- NT6M72xx Disk Drive: AA - 72MB; BA - 140MB; CA - 30MB;

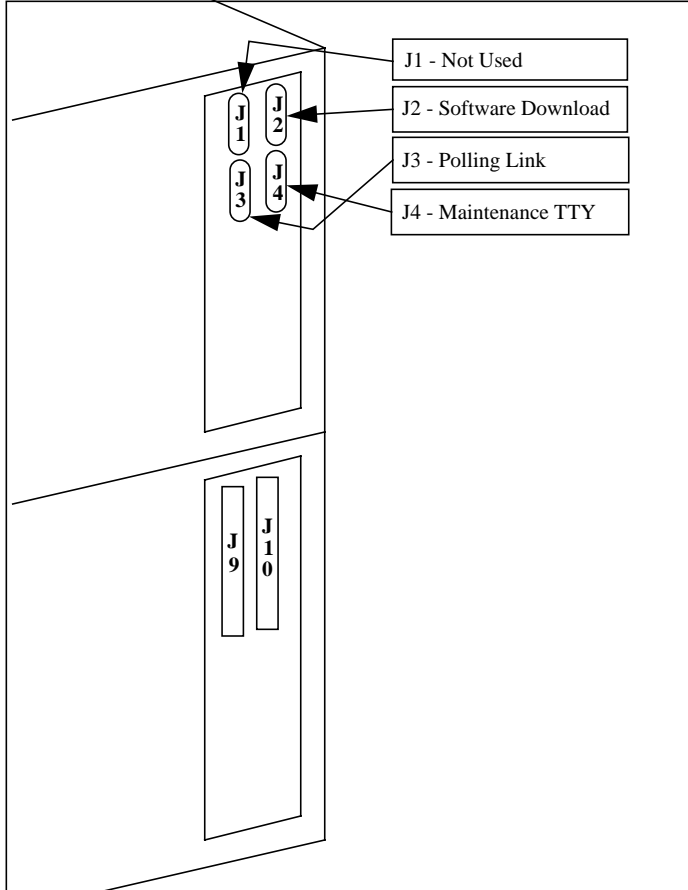
<ul style="list-style-type: none"> <li>NT6M72xx Disk Crossover PCA</li> <li>NT6M84xx Power/Alarm Communication PCA</li> <li>NT6M56xx Fan Filter PCA</li> </ul>	←	<p>These packs are located in the back of the BMC</p>
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\* DCO is a registered trademark of Siemens Stromberg-Carlson.

**Figure 2**  
**DMS-10 Side View**



**Figure 3**  
**DMS-100/DCO Side View**



**Table 1**  
**BMC II BISYNC software and firmware files**

Switch	S/W Load	Boot F/W VS	Disk F/W VS	TEC VS
DMS-10	023-LTCC18 05/26/95	001BT3-4	105D03	155TEC-1 7/24/87
DMS-100	020-DMLC21-00 04/10/92	001BT3-4	105D03	123TEC-1 10/02/92
DCO	022-LDCC04 11/20/91	001BT3-4	105D03	157TEC-0 05/04/88

**Note 1:** All BMC BISYNC system types use the same call record format, LSSGR and Pollstar for download format.

**Note 2:** This chart does not represent the baseline for system operation. The file names listed above are the most current release available at the time of publication for the various BMC BISYNC system types.



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## Maintenance Commands

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### Alarm Manipulation Commands

Command Name	Explanation
<b>RSERR</b>	Resets alarms on the active processor.
<b>MONS(cr)</b> <b>RSERR</b>	Resets alarms on the standby processor.

*Note:* After clearing the Standby alarm, type **(CTRL)Z** to get out of the **MON>** overlay.

---

### Boot Commands

Command Name	Explanation
<i>Note:</i> The following commands must be used while in the monitor overlay. This is done by typing <b>MON&gt;(cr)</b> .	
<b>LA xxxxxx vvv</b>	Appends a program name to boot list. <b>xxxxxx</b> - program name <b>vvv</b> - version number.
<b>LB</b>	Loads program files listed in the boot file to active processor.
<b>LD</b>	Deletes the last file name in boot file.
<b>LL</b>	Lists the contents of the boot file.

*Note:* After using any of the **BOOT** commands, type **(CTRL)Z** to get out of the **MON>** overlay

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<b>MONS(cr)</b>	Loads program files listed in the boot file to standby processor.
<b>MON(cr)</b> <b>LB</b>	

*Note:* After using any of the **BOOT** commands, type **(CTRL)Z** to get out of the **MON>** overlay.

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<b>MONS(cr)</b>	Allows communication with the standby processor. (Follow with commands valid for the standby processor.)
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### Disk Operations Commands

Command Name	Explanation
<i>Note:</i> The following commands must be used while in the disk overlay. This is done by typing <b>DSK&gt;(cr)</b> .	
<b>DEFMAP x</b>	Enters the defective tracks for 30-140 MB disk drives. Bad track information is provided with the disk drive. <b>x</b> - disk drive: <b>A</b> or <b>B</b> .
<b>FORMAT x</b>	Formats the specified disk drive. <b>x</b> - <b>A</b> or <b>B</b> .

---

**Command Name****Explanation****CAUTION**

The **FORMAT** command will erase all data from specified disk drive. Should not be done during high traffic.

**INIT 1x**

Performs a short initialization procedure on the specified disk.  
**x** - disk drive: **A** or **B**.

**MOD**

Displays the current disk mode.

**MOD xy**

Changes current disk mode. This operation takes several hours.  
**x** - Primary disk: **A** or **B**  
**y** - **O**: No standby disk on-line  
OR  
**y** - **P**: Standby disk on-line.

**CAUTION**

The **MOD** command can over write needed data.

**PARM**

Displays choice of disk types used for **NON-TURBO** BMC II's. Enter **1 - 9** depending on the disk type used.

**VS**

Displays the disk firmware version.

*Note:* After using any of the DISK commands, type **(CTRL)Z** to get out of the **DSK>** overlay.

**DUSE**

Displays the number of tracks used / total tracks available. Refer to Table 2 for more information.

**Table 2**  
**Disk drive size and related number of tracks**

Disk Size	Total Tracks	Disk Size	Total Tracks
30 MB	2961	72 MB	6909
140 MB	13,770		

**File Index Maintenance Commands****Command Name****Explanation****CHKIDXf**

Checks the index file.

**DELCRFF**

Deletes oldest secondary file from disk and updates the index.

**GETIDXv.f**

Creates a new index file with primary data only.

**\*GETIDXu:v.f**

Creates a new index file with a starting secondary version and a starting primary version.

Command Name	Explanation
<b>*GETIDXu:v s.f</b>	Creates a new index file with a starting secondary version and a starting primary sequence number.
* These commands are only valid for BMC II BISYNC software loads that were released after 1990.	
<b>NEWCRFf</b>	Closes open call record file and opens new file. <b>f</b> - filetype: <b>T</b> - toll <b>M</b> - message <b>O</b> - OMR1 <b>P</b> - OMR2 <b>v</b> - starting primary version #. <b>u</b> - starting secondary version #. <b>s</b> - first sequence # to be primary.

## File Manipulations Commands

Command Name	Explanation
<b>AFTii</b>	Lists the directory entry for the active file specified. <b>ii</b> - file id # from LSTACT.
<b>CLOSEii</b>	Closes open file. <b>ii</b> - file id # from FSYS.
<b>DELETE ffffff vvv</b>	Deletes a particular file version.
<b>DELETE ffffff mmm:nnn</b>	Deletes a range of versions of a particular file.
<b>Example:</b> <b>&gt;DELETE AMCRD 3:150</b>	Deletes filename AMACRD versions 3 to 150.
<b>DIR ffffff vvv</b>	Lists the directory entry of a specified file and version.
<b>DIR ffffff mmm:nnn</b>	Lists the directory entry of a specified file and range of versions.
<b>DMP ffffff vvv b cccc</b>	Outputs a specified number blocks from a specified file for examination. <b>ffffff</b> - filename. <b>vvv</b> - file version #. <b>0</b> is the latest version ( <b>0-255</b> ). <b>mmm</b> - starting versions: <b>1-255</b> <b>nnn</b> - ending versions: <b>1-255</b> must be larger than <b>m</b> . <b>b</b> - Specifies starting block range ( <b>0 - 999,999</b> ). <b>cccc</b> - Specific number of block to dump ( <b>0 - 9,999</b> ).
<b>DSPs.fl</b>	Displays a selected block from BMC II disk by sequence number.
<b>DSPr</b>	To continue to display a selected range of blocks from BMC II disk.

Command Name	Explanation
DSPZ	Closes file currently open for read.
FILEf,Z	Displays the first 26 closed versions indexed for the file on the disk.
FILEf,Z	Continues to display 26 more closed versions, if available.
FILEf.	Displays the open file being written to disk.
FILEf	Displays a summary of indexed files. f - filetype: <b>T</b> - toll <b>M</b> - message <b>O</b> - OMR 1 <b>P</b> - OMR 2 l - format: <b>A</b> - ASCII (message blocks) <b>N</b> - PACKED (Toll Blocks) s - selected sequence #: <b>0</b> to <b>999999</b> . r - # of blocks to view <b>A - Y</b> - 1- 25 blocks.
FSYS	Displays a list of currently open files.
XDIR	Lists all file in disk directory.

---

## Miscellaneous Commands

Command Name	Explanation
ACR	Restores AC clock after an AC power failure.
<i>Note:</i> Use only if the optional AC clock feature is used for BMC II.	
BYE	Logs off this terminal.
(CTRL) P	Stops printout of a requested display by clearing the print buffer.

---

## Polling Link Commands

Command Name	Explanation
LNKnD	Causes DTR to drop for 5 seconds and aborts a polling session in progress.
LNKnE	Examine the status of the port. n - link # of the incoming call.

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## Processor Activity Command

Command Name	Explanation
SWITCH	Changes currently active processor (A to B or B to A).

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## Program Version Commands

Command Name	Explanation
<b>ACTIVE PROCESSOR ONLY</b>	
<b>VS</b>	Displays the active processor software program version ID.
<b>MON(cr)</b> <b>VS</b>	Displays the active processor's firmware program version ID.
<i>Note:</i> After using this command, type <b>(CTRL)Z</b> to get out of the <b>MON&gt;</b> overlay.	
<b>DSK VS</b>	Displays the disk firmware version ID.
<b>TECxCV</b>	Displays the active processor firmware version ID for the selected TEC/DSI PCA. <b>x</b> - TEC/DSI Port ID: <b>1</b> or <b>2</b> . <b>1</b> - TEC/DSI in slot A13. <b>2</b> - TEC/DSI in slot A12.

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### STANDBY PROCESSOR ONLY

*Note:* The following commands must be used while in the standby (**MON>**) overlay. Enter the **MONS** command. Subsequent commands are sent to the Standby Processor. Commands are once again directed to the Active Processor when an illegal command or a **(CTRL)Z** is entered.

<b>MONS</b>	Enters the standby ( <b>MON&gt;</b> ) overlay.
<b>VS</b>	Displays the standby processor software program version ID.
<b>MON&gt;(cr)</b> <b>VS</b>	Displays the standby processor firmware version ID.
<b>TECxCV</b>	Displays the standby processor firmware version ID for the selected TEC/DSI PCA. <b>x</b> - TEC/DSI Port ID: <b>1</b> or <b>2</b> . <b>1</b> - TEC/DSI in slot A13. <b>2</b> - TEC/DSI in slot A12.

*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **MON>** overlay.

---

## Site Dependent Data Commands

Command Name	Explanation
<b>BUFSZE</b>	Displays transmit frame size to data center
<b>BUFSZxxx</b>	Sets transmit frame size to xxx (default 64 bytes/frame, 512 bytes max)*.
<b>BVALDTE</b>	Examines the setting for the number of days that a call record file is retained after it has been polled. Default value is <b>15</b> .

Command Name	Explanation
<b>BVALDTtt</b>	Changes the setting for the number of days that a call record file is retained after it has been polled. <b>tt</b> - time ( <b>00-99</b> ).*
<b>BVALDUE</b>	Examines the setting for the percent of total disk drive capacity above which polled files will automatically be deleted. Default value is <b>75</b> .
<b>BVALDUpp</b>	Changes the setting for the percent of total disk drive capacity above which polled files will automatically be deleted. <b>pp</b> - disk capacity percentage ( <b>00-99</b> ).*
<i>Note:</i> Nortel recommends that the disk capacity percentage not be set to a value greater than 85.	
<b>BVALIDE</b>	Examines the site identification and Switching System data.
<b>BVALIDAaabb</b>	Changes the site identification and Switching System data. <b>aa</b> - two-digit switch type <b>bb</b> - two-digit site identification.*
<b>BVALITE</b>	Examines the number of invalid blocks that can be accepted by the BMC. Default value is <b>0000</b> .
<b>BVALITbbbb</b>	Changes the number of invalid blocks that can be accepted by the BMC. <b>bbbb</b> - invalid blocks ( <b>1-65,536</b> ).*
<b>BVALPRE</b>	Examines the number of unpolled call record file versions stored on disk before a Poll Request message is issued. Default value is <b>25</b> .
<b>BVALPRff</b>	Changes the number of unpolled call record file versions stored on disk before a Poll Request message is issued. <b>ff</b> - file versions ( <b>1-50</b> ). One-digit values need a space after the number (i.e., 4_).*
<b>HRBLKE</b>	Displays hour boundaries currently assigned. Default value is <b>0024</b> .
<b>HRBLKssee</b>	Sets the time interval to verify that AMA records have been received from the switch.* <b>ss</b> - two digit start time: ( <b>00 - 23</b> ) <b>ee</b> - two digit end time: ( <b>00 - 23</b> ).

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*Note:* The following commands must be used while in the **KYWD>** overlay.

<b>KYWD</b>	Enters the KYWD> overlay.
<b>L</b>	Examines the HOST password.
<b>01Ciiaiii</b>	Changes the HOST password.* <b>iiiiii</b> - six character HOST password.

Command Name	Explanation
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*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **KYWD>** overlay.

*Note:* The following commands must be used while in the **LKEY>** overlay.

<b>LKEY</b>	Enters the LKEY> overlay.
<b>E</b>	Displays the Local password.
<b>Cxxxxxx</b>	Changes the Local password.* <b>xxxxxx</b> - six character password.

*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **LKEY>** overlay.

<b>LPAD E</b>	Examines the current one byte leading pad character used in the BISYNC protocol during call record polling.
<b>LPAD xx</b>	Changes the current one byte leading pad character used in the BISYNC protocol during call record polling. The leading pad character cannot start with an E. <b>xx</b> - two-digit pad character (HEX).

\*\*\*\*\*

DMS-10 ONLY

<b>PASS?L</b>	Displays DMS-10 password.
<b>PASS?xxxx</b>	Changes the DMS-10 password.* <b>xxxx</b> - 4 digit password.

\*\*\*\*\*

*Note:* The following commands must be used while in the **PSWD>** overlay.

<b>PSWD(cr)</b>	Enters the PSWD> overlay.
<b>A nnnnnn p</b>	Adds a new password to the system.
<b>uC n p</b>	Changes a currently assigned password or priority level.*
<b>uD</b>	Deletes the selected user number password (#=0-9) <b>u</b> - user number <b>nnnnnn</b> - 6 char alphanumeric password <b>p</b> - priority 1-3 ( <b>1</b> - lowest, <b>3</b> - highest).
<b>L</b>	Displays the user passwords and the associated priority level.

*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **PSWD>** overlay.

<b>RMIDL</b>	Lists the assigned remote station identification.
<b>RMIDnC xxx</b>	Changes the remote station identification.* <b>n</b> - remote station number <b>xxx</b> - three character ID for remote station.

Command Name	Explanation
<b>SITER</b>	Reads (restores) the site data parameters from the BMC disk and over writes the main memory (RAM).
<b>SITEW</b>	Updates (Saves) the site data parameters from memory to disk.
***** DMS-10 ONLY	
<b>TERM1aa</b>	Enables the BMC's SDI Port terminal assignment while disabling the Local TTY Port. <b>aa</b> - DMS-10 SDI terminal number ( <b>0-99</b> )
<b>TERM2</b>	Enables the BMC's Local TTY Port while disabling the DMS-10 SDI Port.*

\*\*\*\*\*

\* Remember to save any changes using the **SITEW** command.

---

## Statistics Commands

Command Name	Explanation
<b>REPTtp</b>	Displays a compiled list out of a selected statistical file available on the BMC II disk. <b>t</b> - type: ( <b>1-3</b> ) <b>1</b> - TOLL <b>2</b> - DISK ERRORS <b>3</b> - POLLING <b>p</b> - period: ( <b>T</b> - today or <b>Y</b> - yesterday).
<b>STATC</b>	Clears today's statistics file reports.

---

## System Clock Commands

Command Name	Explanation
<b>STIMymmddhhmmssd</b>	Changes the time on the BMC II clock. <b>yy</b> - year: ( <b>00-99</b> ) <b>mm</b> - month: ( <b>01-12</b> ) <b>dd</b> - day: ( <b>01-31</b> ) <b>hh</b> - hour: ( <b>00-23</b> ) <b>mm</b> - minutes: ( <b>00-59</b> ) <b>ss</b> - seconds: ( <b>00-59</b> ) <b>d</b> - day: ( <b>1-7 1</b> - MON, <b>7</b> - SUN)
<b>TIM</b>	Display time of active processor.
<b>MONS</b> (cr) <b>TIM</b>	Display time of standby processor.

*Note:* After displaying the clock on the standby, type **(CTRL)Z** to get out of the MON> overlay

---

## TEC/DSI Functions Commands

*Note:* The response to the following commands begins with either a B0 or B2. B0 refers to the TEC/DSI PCA in slot 13. B2 refers to the TEC/DSI PCA in slot 12.

Command Name	Explanation
<b>TECxa</b>	Displays the argument of the selected TEC/DSI port on the active processor.
<b>MONS(cr) TECxa</b>	<p>Displays the argument of the selected TEC/DSI port on the standby processor.</p> <p>x - TEC/DSI Port ID: <b>1</b> or <b>2</b>.  <b>1</b> = TEC/DSI in slot A13.  <b>2</b> = TEC/DSI in slot A12.</p> <p>a - argument: <b>E</b>, <b>U</b>, or <b>CV</b>.  <b>E</b>: Displays the error count since the last rewind. CRC - Cyclic Redundancy Check, PAR - Parity, COMM - TEC/DSI communication failures.  <b>U</b>: Displays the last command, status, and number of blocks received.  <b>CV</b>: Displays the firmware version ID.</p>

*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **TEC>** overlay.

**Table 3**  
Valid status values for **CMD** and **STA** bytes

<b>CMD</b>	<b>Description</b>	<b>STA</b>	<b>Description</b>
01	Write	01	Busy
02	Read	02	Ready
03	Erase	04	Write enabled
04	Back space	08	At load point
05	File mark	10	End of tape
06	Rewind	20	Rewind
+08	Tape operation in process	40	Alarm
+10	DMA timeout	80	On-line
+20	DMA or CMD error		
+40	DMA in process		
<i>Note:</i> The other codes are combinations of the above listed codes.			

## Testing Commands

Command Name	Explanation
<b>DISKTEST</b>	Performs a built-in disk test on the Active Processor.
<b>DPRTST</b>	Performs a Dual-Ported Random Access Memory test valid only on the Standby Processor.

---

## User Security Commands

Command Name	Explanation
<b>MPRI C cccccc x</b>	Changes user priority of a selected command.
<b>MPRI E cccccc</b>	Displays the user priority of the selected command. <b>ccccc</b> - command to be changed. <b>x</b> - priority level: <b>1-3</b> .

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*Note:* The following commands must be used while in the **PSWD>** overlay.

<b>PSWD(cr)</b>	Enters the <b>PSWD&gt;</b> overlay.
<b>A nnnnnn p</b>	Adds a new password to the system.
<b>uC nnnnnn p</b>	Change a currently assigned password or priority level.*
<b>uD</b>	Delete the selected user number password (#=0-9) <b>u</b> - user number. <b>nnnnnn</b> - 6 char alphanumeric password. <b>p</b> - priority <b>1-3</b> ( <b>1</b> - lowest, <b>3</b> - highest).
<b>L</b>	Displays the user passwords and the associated priority level.

*Note:* After using any of these commands, type **(CTRL)Z** to get out of the **PSWD>** overlay.

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## Guide to Index Corruption Recovery

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This procedure describes a methodology for recognizing and recovering from index file corruption which may be experienced with the BMC II BISYNC 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.

This procedure enumerates the following topics:

- Types of index file corruption addressed in this document.
- How to recognize index file corruption.
- How to recover from index file corruption.

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 BISYNC BMC are given.

This document will address the following types of index file corruption:

- Version number missing from index, but is on disk.
- Sequence numbers not incrementing properly.
- TOLIDX 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 TOLCRD file is actually on disk, then corruption has occurred.*

#### Recognition

TOLCRD files missing from the index can be observed by displaying and comparing listings of the TOLCRD files in the index to those in the directory.

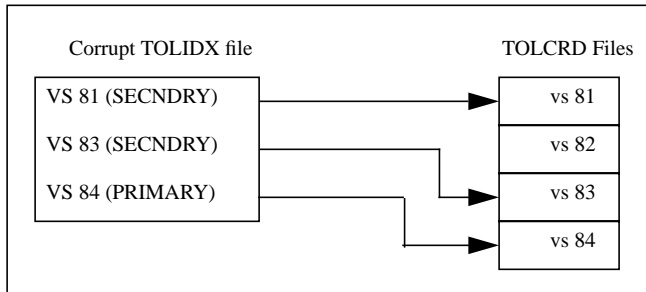
1. Display the summary of TOLCRD files in the index.
2. Display the closed TOLCRD files in the index.
3. Display the open TOLCRD file in the index.
4. Display the TOLCRD files in the directory.

Additionally check for error messages, such as BAD TOLIDX FILE, and/or the presence of alarms.

#### Example

Version 82 is missing from the index but the TOLCRD file version 82 is in fact on the disk. Therefore the index is corrupt and must be fixed, as shown in the following figure.

**Figure 4**  
Version number missing



1. To display the summary of the TOLCRD files in the index, enter the following command at the maintenance terminal:

**>FILET (cr)**

System response:

```
TOL FILE: 03 VSNS, 003487 BLKS, 000042 TO POLL
SEQ# 000000 FIRST, 003445 PRIM, 003487 NEXT IN
VS 81: 3451 BLKS, 6 TO POLL, TOL SEQ :000000
```

Save this information. It will be used in a subsequent step.

2. To display the closed TOLCRD files in the index, enter the following command at the maintenance terminal:

**>FILET.Z (cr)**

System response:

```
VS 81: 3451 BLKS, 6 TO POLL, TOL SEQ :000000
VS 83: 36 BLKS, 36 TO POLL, TOL SEQ :003487
END OF TOLIDX FILE
```

3. To display the open TOLCRD file in the index, enter the following command at the maintenance terminal:

**>FILET. (cr)**

System response:

```
VS 84: 0 BLKS, 0 TO POLL, TOL SEQ :003523
```

The discrepancy (a skipped version number) is evident in the listing of the closed TOLCRD files in the index.

4. To display the TOLCRD files in the directory, enter the following command at the maintenance terminal:

**>DIR TOLDCRD 1:255 (cr)**

System response:

```
00 TOLCRD 60 81 95 263 0 1531
01521201 00 0EE508 000000 003451

00 TOLCRD 60 82 95 349 0 1531
01006C00 00 0EE507 003451 000036

00 TOLCRD 60 83 95 349 0 1531
01000000 00 0EE509 003487 000036

00 TOLCRD 60 84 95 349 0 1531
01000000 00 0EE509 003523 000000
```



In the example above, 81 is the TOLCRD file version number, 000000 is the beginning block number of the version, and 003451 is the number of blocks in the version. Adding 000000 and 003451 should give you the beginning block number of the next version (003451).

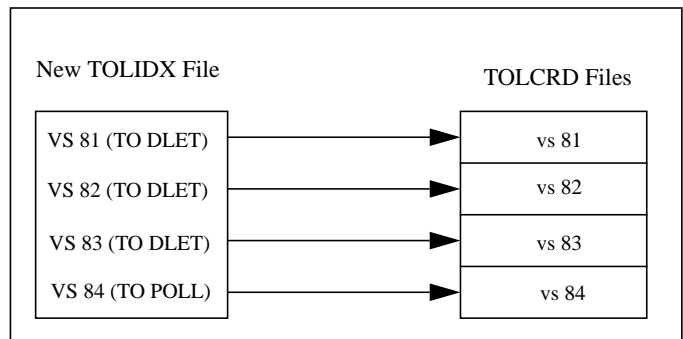
## Recovery

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

1. Identify the next sequence number of TO POLL in the index.
2. Delete the old TOL index file.
3. Create a new index file starting with the first block of TO POLL just located.
4. Display the summary of TOLCRD files in the new index.
5. Display the closed TOLCRD versions in the new index.

Graphically, the solution can be represented as shown in the diagram below:

**Figure 5**  
**Version number recovered**



1. Identify the next sequence number of TO POLL in the index. Using the information from the previous FILET command, it can be seen in the system response listed below that the first block of TO POLL data is block number 3445 in TOLCRD version 81.

```
TOL FILE: 03 VSNS, 003487 BLKS, 000042 TO POLL
SEQ: 000000 FIRST, 003445 PRIM, 003487 NEXT IN
VS 81: 3451, 6 TO POLL, TOL SEQ :000000
```

2. To delete the old TOL index file, enter the following command:

```
>DELETE TOLIDX 1:255 (cr)
```

System response:

```
VERSION 03 DELETED
```

3. Create a new index file starting with the first block of TO POLL data just located. Create a new TOL index file, starting with TOLCRD file version 81, and starting at the first block of TO POLL data in version 81 (block 3445). Enter the command (at the terminal):

```
>GETIDX81:3445.T (cr)
```

System response:

```
TOL FILE ESTABLISHED
GOOD TOLIDX FILE
```

4. Display the summary of TOLCRD files in the new index. The presence of the message, GOOD TOLIDX FILE, is positive indication that the new TOL index file was correctly created. This can be verified by displaying the summary of TOLCRD files in the index. Enter the command (at the terminal):

**>FILET (cr)**

System response:

```
TOL FILE: 04 VSNS, 003487 BLKS, 000078 TO POLL
SEQ: 000000 FIRST, 003445 PRIM, 003523 NEXT IN
VS 81: 3451 BLKS, 6 TO POLL, TOL SEQ :000000
```

Note that the number of TO POLL 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 data TO POLL). *Since the BMC is actively collecting TOL data, the number of blocks in the index may increase by more than the indicated difference of 36 blocks.*

5. Display the closed TOLCRD versions in the new index. Verification that the TOLCRD versions are now in the proper order (sequential and contiguous) can be performed by displaying the closed TOLCRD files in the index. Enter the following command (at the terminal):

**>FILET.Z (cr)**

System response:

```
VS 81: 3451 BLKS, 6 TO POLL, TOL SEQ :000000
VS 82: 36 BLKS, 36 TO POLL, TOL SEQ :003451
VS 83: 36 BLKS, 36 TO POLL, TOL SEQ :003487
```

If the index listing exceeds 26 files, it will be necessary to issue the FILET.Z command to display the next group of 26 files, until the end of the index file is reached.

### 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 TOLCRD 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 TOLCRD file has a starting sequence number of 02747 and contains 2968 blocks, then version 107 should have a starting sequence number of 05715 (the sum of version 106's beginning sequence number, 02747, plus the 2968 blocks in version 106).

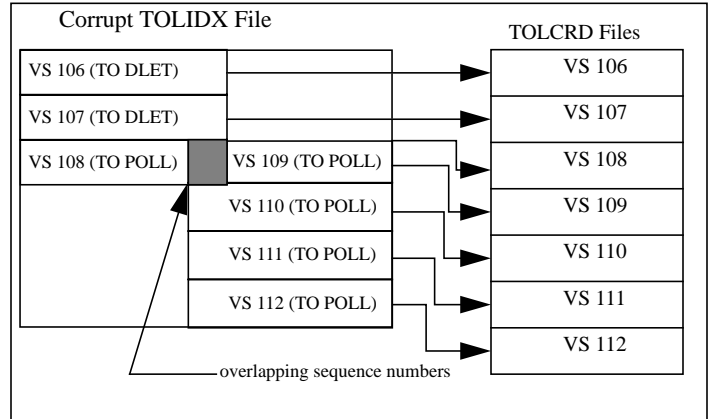
### Recognition

*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 TOLCRD files in the index. The system should also report BAD TOLIDX FILE.

1. Check the TOL Index File.
2. Display the summary of TOLCRD files in the index.
3. 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.

Graphically, the problem can be represented as show in the diagram below:

**Figure 6**  
**Sequence numbers not incrementing**



1. Check the TOL Index File. Have the BMC check the integrity of the TOL Index File. In this example, the execution of the following command will result with an error message which verifies that the TOL Index File is corrupt. Enter the command (at the terminal):

**>CHKIDXT (cr)**

System response:

```
BAD TOLIDX FILE
```

2. To display the summary of TOLCRD files in the index, enter the following command at the maintenance terminal:

**>FILET.Z (cr)**

System response:

```
VS 106: 2968 BLKS, 99 DA TO DLET, TOL SEQ :002747
VS 107: 1698 BLKS, 99 DA TO DLET, TOL SEQ :005715
VS 108: 1335 BLKS, 49 TO POLL, TOL SEQ :007413
VS 109: 1389 BLKS, 1389 TO POLL, TOL SEQ :008740
VS 110: 304 BLKS, 304 TO POLL, TOL SEQ :010129
VS 111: 632 BLKS, 632 TO POLL, TOL SEQ :010433
VS 112: 1085 BLKS, 1085 TO POLL, TOL SEQ :011065
END OF TOLIDX FILE
```

3. 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, 008740, has incorrectly been incremented by only 1327 blocks. It *should* have incremented by 1335 blocks (sequence number 07413 for version 108 plus 1335 blocks in version 108 equals sequence number 08748 for version 109). Eight blocks of data TO POLL appear to be missing in version 108.

The effect is that the polling center won't be able to retrieve data TO POLL starting at version 109, because there will be duplicate sequences in versions 108 and 109 (sequences 08740 through 08748). The actual TO POLL data in version 108, sequence numbers 08740 through 08748 will be different from the TO POLL data in version 109, sequence numbers 08740 through 08748, but the BMC will detect the duplicated sequence numbers and report, *BAD TOLIDX FILE*.

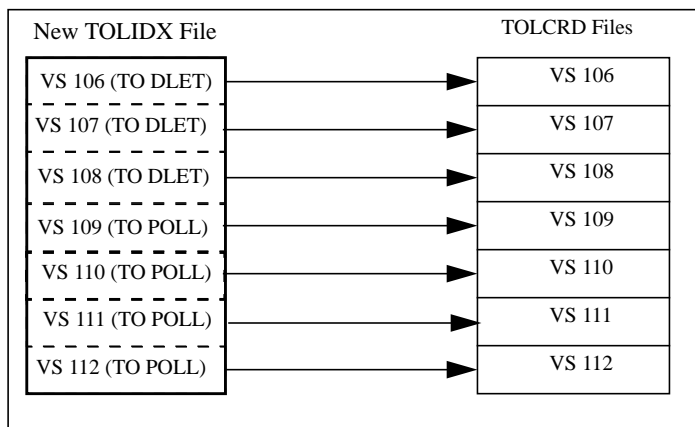
## Recovery

To recover from this error, version 108 must be changed from TO POLL data to TO DLET data 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).

1. Delete the corrupt TOL index file.
2. Create a temporary TOL index that includes the corrupt TOLCRD file. This forces the corrupt version into TO DLET status.
3. Display the closed TOLCRD files in the index.
4. Data center does a DEMAND POLL on the unpolled data in the corrupt version.
5. Delete the temporary TOL index file.
6. Create a new TOLIDX file starting with the first good sequence number containing data TO POLL.
7. Delete the TOLCRD files that were forced into TO DLET status.
8. Display the closed TOLCRD files in the new index.

Graphically, the solution can be represented as shown in the following diagram.

**Figure 7**  
**Sequence numbering corrected**



1. To delete the corrupt TOL index file, enter the following command at the maintenance terminal:

```
>DELETE TOLIDX 1:255 (cr)
```

System response:

```
VERSION 03 DELETED
```

2. Create a temporary TOL index that includes the corrupt TOLCRD file. This forces the corrupt version into TO DLET status. Create a temporary TOL index file, starting at version 106 (which is already marked as TO DLET) and ending at version 109 (version 109 will become the first version having TO POLL data.). The effect is that the TOL data in version 108 will be changed from data TO POLL to data TO DLET (versions 106 and 107 are already data TO DLET, so they won't be affected.). Enter the command (at the terminal):

```
>GETIDX106:109.T (cr)
```

System response:

```
TOL FILE ESTABLISHED
```

BAD TOLIDX FILE

3. Display the closed TOLCRD files in the index. Displaying the closed TOLCRD files in the index shows that version 108 has been changed from data TO POLL to data TO DLET. Enter the command (at the terminal):

**>FILET.Z (cr)**

System response:

```
VS 106: 2968 BLKS, 99 DA TO DLET, TOL SEQ :002747
VS 107: 1698 BLKS, 99 DA TO DLET, TOL SEQ :005715
VS 108: 1335 BLKS, 99 DA TO DLET, TOL SEQ :007413
VS 109: 1389 BLKS, 1389 TO POLL, TOL SEQ :008740
VS 110: 304 BLKS, 304 TO POLL, TOL SEQ :010129
VS 111: 632 BLKS, 632 TO POLL, TOL SEQ :010433
VS 112: 1085 BLKS, 1085 TO POLL, TOL SEQ :011065
END OF TOLIDX FILE
```

If the index listing exceeds 26 files, it will be necessary to issue the FILET.Z command to display the next group of 26 files, until the end of the index file is reached.

4. Data center does a DEMAND POLL on the unpollled data in the corrupt version. The data center should now be able to retrieve the previously unpollled data from version 108 by executing a DEMAND POLL, starting at sequence number 08699, for 49 blocks.

This starting sequence number for the demand polling is calculated by using the original sequence number of version 108 (07413) and adding the blocks in version 108 (1335) to arrive at the correct next sequence number, 08748. From this sequence number, the 49 blocks of unpollled data in version 108 are subtracted (08748 minus 49) to arrive at the actual starting sequence number, 08699. This is where the data center should start the demand poll.

5. Delete the temporary TOL index file. After the data center confirms that they have successfully retrieved the previously unpollled 49 blocks from the BMC, remove the temporary TOL index file. This doesn't remove the TOL data (the TOLCRD files), but it does remove the TOLIDX file. The following command will remove the TOLIDX file, but a new one will be built in a subsequent step (new TOLIDX file that will be built contains the correct version numbers). Enter the command (at the terminal):

**>DELETE TOLIDX 1:255 (cr)**

System response:

```
VERSION 02 DELETED
```

6. Create a new TOLIDX file starting with the first good sequence number containing data TO POLL. The following command creates a new TOL index, starting with version 109 as the first version having TO POLL data. All subsequent versions numbers in the index (110, 111 and 112 in the example above) will still be data TO POLL, and will be included in the new TOL index. The system should report, GOOD TOLIDX FILE, indicating that the new index was properly created. Create a new TOLIDX file starting with version 109 containing all TO POLL data. Enter the command (at the terminal):

**>GETIDX109.T (cr)**

System response:

```
TOL FILE ESTABLISHED
GOOD TOLIDX FILE
```

7. Delete the TOLCRD files that were forced into TO DLET status. To delete the TOLCRD files in versions 106 through 108, enter the following command at the maintenance terminal:

```
>DELETE TOLCRD 106:108 (cr)
```

8. To display the closed TOLCRD files in the new index, enter the following command at the maintenance terminal:

```
>FILET.Z (cr)
```

System response:

```
VS 109:  1389 BLKS,   1389 TO POLL, TOL SEQ :008740
VS 110:   304 BLKS,    304 TO POLL, TOL SEQ :010129
VS 111:   632 BLKS,    632 TO POLL, TOL SEQ :010433
VS 112:  1085 BLKS,  1085 TO POLL, TOL SEQ :011065
END OF TOLIDX FILE
```

If the index listing exceeds 26 files, it will be necessary to issue the FILET.Z command to display the next group of 26 files, until the end of the index file is reached.

### TOLIDX OPEN ERROR:03

1. Examine available TOLCRD files in the directory using the following command:

```
>DIR TOLCRD 1:255 (cr)
```

2. Note sequence number in the versions that are displayed in the system response.

```
00 TOLCRD 60 78 95 349 0 1531 01006C00 00 0EE509
063402 000076
00 TOLCRD 60 79 95 349 0 1531 01000000 00 0EE509
063478 000076
00 TOLCRD 60 80 95 349 0 1531 01000000 00 0EE509
063554 001980
00 TOLCRD 60 81 95 263 0 1531 01521201 00 0EE508
000000 003451
00 TOLCRD 60 82 95 349 0 1531 01006C00 00 0EE507
003451 000036
00 TOLCRD 60 83 95 349 0 1531 01000000 00 0EE509
003487 000036
00 TOLCRD 60 84 95 349 0 1531 01000000 00 0EE509
003523 001389
07 FILES LISTED
```

In the example above, the two-digit boldface number is the TOLCRD file version number. The six-digit boldface number is the starting sequence number of the version.

3. Contact data center. Verify what sequence numbers have been completely processed and will not need to be repolled, as well as at what sequence number the data center needs to start normal polling.
4. Determine which versions contain the sequence numbers obtained from the data center in step 3.
5. Create an TOLIDX containing the TOLCRD versions the data center needs to poll. The following command should be used for most BISYNC protocol BMC systems. BISYNC BMC systems equipped

with LTCC16 software or higher should use the command in the NOTE below. Enter the command (at the terminal):

**>GETIDXvvv.T (cr)**

where: vvv - starting version number

**Note:** LTCC16 allows the creation of an index with both secondary and primary data. The following command creates an index with data marked TO DLET (secondary) as well as versions marked TO POLL (primary). Normal polling will start at version 83, sequence number 3487. Enter the command (at the terminal):

**>GETIDX81:83.T**

6. To display contents of new index, enter the command (at the terminal):

**>FILET.Z (cr)**

System response:

```
VS 81: .3451 BLKS, 30 DA TO DLET, TOL SEQ :000000
VS 82: ....36 BLKS, 30 DA TO DLET, TOL SEQ :003451
VS 83: ....36 BLKS, ....36 TO POLL, TOL SEQ :003487
VS 84: ..1389 BLKS, ..1389 TO POLL, TOL SEQ :003523
END OF TOLIDX FILE
```

7. 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.
8. Any versions displayed in step 1 that were not included in the new TOLIDX, **MUST** be deleted using the following command:

**>DELETE TOLCRD 78:80 (cr)**

9. Verify there is only one index in the directory using the following command:

**>DIR TOLIDX 1:255 (cr)**

In the event there is more than one index, verify which index is active using the following command:

**>DIR TOLIDX 0 (cr)**

System response:

```
00 TOLIDX 60 81 95 263 0 1531 01521201 00 0EE508
000000 000001
```

Note the version number (81 in this example) and delete any indices that are NOT needed.

10. Check validity of index using the following command:

**>CHKIDXT (cr)**

System response:

```
GOOD TOLIDX FILE
```







## Miscellaneous PCA Replacement Procedure


The following PCAs can be replaced using this procedure:

- CPU with DMA (NT6M62xx)
- EPROM (NT6M63xx)
- DRAM with Extended Memory (NT6M64xx)
- Quad SIO (NT6M60xx)
- Disk Interface (NT6M66xx)
- DSI (NT6M70xx)
- TEC (NT6M89xx - DMS-10 only or NT6M90xx - DCO only).


### Procedure 1 Miscellaneous PCA replacement

Step	Description
	<b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.
	<b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.
<b>1</b>	To remove the front panel of the BMC II, loosen the four screws located on the left and right hand sides. Once removed, put the front panel in a safe place to avoid damage, bending and scratching.
<b>2</b>	Get the replacement PCA from the spares kit.
<b>3</b>	Remove the protective electrostatic bag and place it on a suitable, grounded surface.
<b>4</b>	Make sure the replacement PCA matches the faulty PCA's part number and has the correct revision level. Also, make sure the suspected faulty PCA is in the standby processor. Verify that any applicable firmware for the PCA is the same or with a higher release number. If not, contact the next level of support.
<b>5</b>	Place the processor unit with the suspected faulty pack in the standby mode, by putting the <b>other</b> processor in the ONLY mode. The <b>other</b> processor is defined as that processor that does not have the suspected faulty pack.  At the Switch and Status Panel of the BMC:  a. Press the A/B Select Switch to match the <b>other</b> processor. b. Press the O/P Mode Select Switch to <b>O</b> . c. Turn the Mode Switch to the right and release.
	<b>Note:</b> This will create an alarm.

## Procedure 1 Miscellaneous PCA replacement

Step	Description
6	<p>Enter the following commands to write the value 00 in the DRAM memory address 2204 for the off-line DSI/TEC PCAs:</p> <pre>&gt;MONS (cr) &gt;TEC1CA2204W00 (cr) &gt;(ESC) &gt;TEC2CA2204W00 (cr)</pre>
7	<p>Remove power from the standby BMC chassis by operation of the +8 V dc red rocker switch on the power supply.</p> <p>(A or B, the one with the suspected fault.)</p>
8	Remove the suspected faulty PCA.
9	<p>The replacement PCA option settings must be set to match the settings for that PCA listed in the <i>PCA Switch and Strap Settings</i> section before installation.</p> <p><b>CAUTION</b> Failure to set-up options correctly may cause an AMA loss.</p> 
10	Insert the spare PCA in the vacated card slot, making sure it is fully seated.
11	Put faulty PCA in the empty electrostatic bag.
12	<p>Apply power to the BMC chassis by resetting the rocker switch in step 7 above.</p> <p>Wait for start-up activity to end and the message, <b>Software Loaded</b> or <b>S/W Loaded</b> to print.</p>
13	<p>To clear any alarms on the standby processor. At the maintenance terminal, enter:</p> <pre>&gt;MONS (cr) &gt;RSERR 00 (cr) &gt;(CNTL) Z (cr)</pre> <p>Alarms will clear on the standby processor if there are no faults.</p>
14	<p>Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:</p> <ol style="list-style-type: none"> <li>Press the A/B Select Switch to match the active processor.</li> <li>Press the O/P Mode Select Switch to <b>P</b>.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
15	<p>To clear all alarms on the active processor. At the maintenance terminal, enter:</p> <pre>&gt;RSERR (cr)</pre> <p>Alarms will clear if there are no faults.</p>

**Procedure 1**  
**Miscellaneous PCA replacement**



Step	Description
16	<p>Switch Processors to make the standby active. At the maintenance terminal, enter:</p> <p><b>&gt;SWITCH (cr)</b></p> <p>The old standby is now the active processor.</p> <p> <b>WARNING</b> This should not be done at a high traffic period, it may cause a loss of AMA.</p>
17	Verify replacement PCA has corrected original error.
18	<p>When all maintenance activities are complete, be sure to replace the front panel of the BMC. Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>The procedure is complete.</p>




# Disk Replacement Procedure

## Removing the Faulty Disk Drive

### Procedure 2 Remove faulty disk drive

Step	Description
	<p><i>Note 1:</i> The following procedure is for replacing the A disk drive; use the same procedure for replacing the B disk drive by transposing references to A and B disks.</p> <p><i>Note 2:</i> The DSK command syntax shown is required when not already in the DSK overlay. If the printer is at the DSK&gt; prompt, the DSK part of the command can be omitted. The DSK overlay can be exited by entering (CNTRL) Z (cr) or any entry that results in an ILLEGAL COMMAND response.</p>
	<p><b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.</p>
	<p><b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.</p>
<p><b>1</b></p>	<p>To remove the front panel of the BMC (BISYNC), loosen the four screws located on the left and right hand sides. Once removed, put the front panel in a safe place to avoid damage, bending and scratching.</p>
<p><b>2</b></p>	<p>For the side that is operating in an ONLY disk mode, make sure that the other processor is active. The <b>other</b> processor is defined as that processor that does NOT have the failing disk drive in its chassis. Depress the rocker switches on the status panel to ONL and A or B, matching the <b>other</b> processor defined above. Turn the key switch and observe that the ONL and PRI lamps are lit for the processor that does NOT have the failing disk. Determine the current disk mode:</p> <p><b>&gt;DSK MOD (cr)</b></p> <pre>DISK MODE: AO A ONLY DISK MODE DISK MODE: BO B ONLY DISK MODE DISK MODE: AP A PRIME DISK MODE DISK MODE: BP B PRIME DISK MODE</pre> <p>i.e., If the disk mode is AP or BP, and the disk in the A chassis is the suspected bad drive, change the disk mode to B ONLY:</p> <p>Enter (at the terminal):</p> <p><b>&gt;DSK MOD BO (cr)</b></p>

**Procedure 2****Remove faulty disk drive**


Step	Description
3	Disconnect disk A power by removing the connector plug P8 from the power supply on the A chassis. Pinch the release clips on P8 and pull it down gently.
	<b>CAUTION</b> Wait at least 30 seconds before proceeding.
4	Remove the two screws from the disk drive handle mount.
5	Grasp the disk drive in the front at the bottom, by the handle, slightly lift and pull straight forward until the J1 ribbon cable connector can be viewed. Keep one hand under the disk drive to maintain support.  <i>Note:</i> For 30 to 140 MB disk drives, the J1 connector is on the top of the disk drive assembly.
6	Disconnect the ribbon cable from J1; use the cables pull tab. Note the direction of the brown stripe on the cable (PIN 1).
7	Remove the disk from the chassis. Place the disk on an anti-static surface. Fill out the disk drive fault analysis form and attach it to the disk drive along with the Defective Track Map.

**Installing the Replacement Disk Drive****IMPORTANT NOTES:**

For 30 to 140 MB disk drives, the P1 ribbon cables Brown stripe (PIN 1) must be toward the RIGHT, as viewed from the front.


For 30 to 140 MB disk drives, locate the manufacturer's Defective Track Map Listing and keep handy, for use later in this procedure. If this cannot be found, contact Technical Support before proceeding.

**Procedure 3****Install replacement disk drive**

Step	Description
1	Keeping the disk drive level, slide it into position far enough to reconnect the ribbon cable at connector J1. Connect the ribbon cable to J1.  
	<b>WARNING</b> The disk drive cannot operate if this cable is reversed. Reversal may also cause an AMA outage.
2	Continue sliding the disk drive into its mounting position, until it begins a downward motion. Allow the disk drive to lower itself into place and continue pushing inward until it is fully seated.
3	Replace the two screws for the disk drive handle mount.
4	Reconnect the disk power cable by inserting the plug P8 into connector J8.

### Procedure 3

#### Install replacement disk drive

Step	Description
5	Return the processor to PRIME mode. On the status panel push the P rocker switch down and turn the MODE SWITCH key. The ONL lamp should go out.
6	<p>Reinitialize the new disk.</p> <p> <b>CAUTION</b> These disk commands may cause a loss of data. Make sure the operational disk drive is in an ONLY mode before entering the following commands.</p> <p>Enter: (at the terminal)</p> <p><b>&gt;DSK INIT 1x (cr)</b></p> <p>where: <b>x - A</b> for newly installed disk A       <b>- B</b> for newly installed disk B.</p> <p>Proper response:</p> <pre>0 BAD TRACKS INIT COMPLETE</pre> <p>If the response is NO DISK PARAMETERS, go to step 9.</p>
7	<p>Enter in the defective track(s) from the disk manufacturer's defect (bad track) list. Enter: (at the terminal)</p> <p><b>&gt;DSK DEFMAP x (cr)</b></p> <p>where: <b>x - A</b> for newly installed disk A       <b>- B</b> for newly installed disk B.</p> <p>System response is a prompt:</p> <pre>ENTER HEAD AND CYLINDER # FROM DEFECT MAP. ENTER Q TO EXIT HEAD&gt;</pre> <p>Obtain the disk manufacturer's bad track map. Enter the HEAD No. xx (1 to 2 digits), from the disk manufacturer's bad track map.</p> <p><i>Note 1:</i> The defect map is located on a paper that accompanies each new disk. If this document is not with the disk, the information is printed on a label located under the PCA mounted on top of the disk drive. If the label contains no defect information, the disk has no defects to be mapped. After entering any available defect map data, the paper should be folded and kept with the newly installed disk drive.</p> <p>System response:</p> <pre>CYLINDER&gt;</pre> <p>Enter the CYLINDER No. xxx (1 to 3 digits), from the disk manufacturer's bad track map. System response:</p> <pre>xx BAD TRACKS HEAD&gt;</pre> <p>(xx - number of bad tracks masked out.)</p>



**Procedure 3****Install replacement disk drive**

Step	Description
	<p><i>Note 2:</i> If the response indicates either the HEAD or CYLINDER is out of range, the BAD TRACKS counter will not be incremented and the value entered is not needed for this application.</p> <p>Continue entering HEAD and CYLINDER numbers until the end of the disk manufacturer's bad track map is reached. When done entering the bad tracks, enter Q at the HEAD&gt; prompt, to exit the DEFMAP utility. System response:</p> <pre>DEFMAP DONE</pre>
8	<p>Restore BMC to redundant disk mode. Enter (at the terminal):</p> <p><b>&gt;DSK MODE (cr)</b></p> <p>Proper response:</p> <pre>DISK MODE xP</pre> <p>where: <b>x</b> - A or B.</p> <p>When all maintenance activities are complete, be sure to replace the front panel of the BMC (BISYNC). Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>Make sure the Disk Drive Fault Analysis Sheet is completed and attached to the disk drive for return to Nortel for repair.</p> <p>The procedure is complete.</p>
9	<p>DISK PARAMETERS FOR 30 to 140 MB DISK DRIVES.</p> <p>Enter: (at the terminal)</p> <p><b>&gt;DSK PARM (cr)</b></p> <p>Enter the number from the displayed list that describes the type of the replacement disk drive.</p> <p>Return to the beginning of step 6.</p>





## Disk Crossover PCA Replacement Procedure (NT6M72xx)

### Procedure 4 Disk Crossover PCA replacement (NT6M72xx)

Step	Description
	<p><b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.</p>
	<p><b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.</p>
1	<p>Make sure no polling is occurring. Wait for a low traffic period, if possible.</p>
2	<p>Locate the failing Disk Crossover PCA and change the disk mode to the <b>other</b> disk ONLY mode, if necessary. The <b>other</b> disk is the one not in the same chassis as the suspected Disk Crossover PCA. Enter (at the terminal):</p> <p><b>&gt;DSK MODE xx (cr)</b></p> <p>where: <b>xx</b> - disk mode: <b>AO</b> - A ONLY <b>BO</b> - B ONLY.</p> <p>Proper response:</p> <p>DISK MODE: AO (or) DISK MODE: BO</p>
3	<p>Place the BMC into an ONLY processor mode. The processor mode should be the same as the DISK mode. At the Switch and Status Panel of the BMC:</p> <ol style="list-style-type: none"> <li>Press the A/B Select Switch to match the active disk drive.</li> <li>Press the O/P Mode Select Switch to <b>O</b>.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
4	<p>Loosen the slotted screws which fasten the outer edges of the appropriate rear panel assembly to the cabinet.</p>
5	<p>Pull the rear panel away from the cabinet. Remove the front panel of the chassis to improve cooling, if necessary. Put the two panels in a safe place to prevent bending and scratching</p>
6	<p>Loosen the two screws at the top of the hinged card panel and the screw at the bottom of the hinged card panel. Let it swing slowly down from the top until it rests.</p>

#### Procedure 4 Disk Crossover PCA replacement (NT6M72xx)

Step	Description
	<p><i>Note:</i> If the PCA at A15 is being replaced, use a Styrofoam block or another insulating material, about 1" x 1" x 0.5", to insulate the pins of the 16-pin cable on the P/A Comm PCA to prevent accidental shorting against the chassis.</p>
7	<p>Remove power cable (J4), then any cables and screws connected to the suspected PCA.</p> <p><i>Note:</i> Observe the cable markings (identification) or attach labels to the cables for correct positioning for installation of replacement PCA.</p> <p>Gently pull the suspect PCA loose from its mounting position.</p>
8	<p>Verify (J5) jumper option is the same on the replacement PCA as the PCA that was removed.</p> <p><i>Note:</i> The J5 jumper on the A chassis Disk Crossover PCA must be placed on pin A and the center pin. The J5 jumper on the B chassis Disk Crossover PCA must be placed on pin B and the center pin.</p> <p><b>WARNING</b> Incorrect positioning of jumper may cause loss of AMA.</p> 
9	<p>Mount the replacement PCA in the vacated position.</p> <p><i>Note:</i> When replacing the screws, align carefully before tightening to avoid stripping. Tighten the screws, alternating until all are equally tight. Do not "cinch down" any one screw until all are properly aligned; no binding or force needed to turn.</p>
10	<p>Reattach any cables removed in step 6 in reverse order.</p> <p><i>Note:</i> Verify the cable markings (identification) or attach labels to the cables for correct positioning.</p> <p><b>WARNING</b> Incorrect positioning of cables may cause loss of AMA.</p> 
11	<p>Verify the repair by switching disk modes back to PRIME. Enter (at the terminal):</p> <p><b>&gt;DSK MODE xx (cr)</b></p> <p>where: <b>xx</b> - disk mode: <b>AP</b> - A PRIME (if mode is A only) <b>BP</b> - B PRIME (if mode is B only).</p> <p>The BMC will begin a disk copy this may take several hours, depending on how much data and how large the disks are. Proper response:</p> <p>DISK MODE: AP (from disk mode AO) or DISK MODE: BP (from disk mode BO)</p>
12	<p>Remove the insulating material, if used. Route all wires and cables to avoid pinching or crimping when the rear panel is reinstalled.</p>



**Procedure 4**  
**Disk Crossover PCA replacement (NT6M72xx)**

Step	Description
13	Lift the hinged circuit assembly gate back to its vertical position and tighten the two screws loosened in step 5.
14	<p>Replace the rear panel. Reinstall the slotted pan head screws previously removed in step 3.</p> <p><i>Note:</i> Align carefully before tightening to avoid stripping. Tighten the screws, alternating until all are equally tight. Do not “cinch down” any one screw until all are properly aligned; no binding or force needed to turn.</p>
15	<p>Clear any alarms on the BMC. At the maintenance terminal, enter:</p> <pre data-bbox="909 651 1071 787">&gt;(CNTRL) Z (cr) &gt;RSERR (cr) &gt;MONS (cr) &gt;RSERR (cr) &gt;(CNTRL) Z (cr)</pre> <p>Alarms will stay clear on the BMC if there are no faults.</p>
16	<p>Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:</p> <ol data-bbox="909 945 1510 1029" style="list-style-type: none"> <li>Press the A/B Select Switch to match the active processor.</li> <li>Press the O/P Mode Select Switch to P.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
17	<p>When all maintenance activities are complete, be sure to replace the front panel of the BMC if removed.</p> <p>Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>The procedure is complete.</p>



## Error Control II PCA Replacement Procedure (NT6M65xx)

### Procedure 5 Error Control II PCA (NT6M65xx) replacement



Step	Description
	<b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.
	<b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.
1	To remove the front panel of the BMC II, loosen the four screws located on the left and right hand sides. Once removed, put the front panel in a safe place to avoid damage; bending and scratching.
2	Get the replacement PCA from the spares kit.
3	Remove the protective electrostatic bag and place it on a suitable, grounded surface.
4	Make sure the replacement PCA matches the faulty PCA's part number and has the correct revision level. Also, make sure the suspected faulty PCA is in the standby processor.  Verify that any applicable firmware for the PCA is the same or with a higher release number. Otherwise, contact your next level of support.
5	Place the B processor unit an <b>ONLY</b> mode. At the Switch and Status Panel of the BMC: <ul style="list-style-type: none"> <li>a. Press the A/B Select Switch to <b>B</b>.</li> <li>b. Press the O/P Mode Select Switch <b>O</b>.</li> <li>c. Turn the Mode Switch to the right and release.</li> </ul> <p><i>Note:</i> This will create an alarm.</p>
6	Enter the following commands to write the value 00 in the DRAM memory address 2204 for the off-line DSI/TEC PCAs: <pre>&gt;MONS (cr) &gt;TEC1CA2204W00 (cr) &gt;(ESC) &gt;TEC2CA2204W00 (cr)</pre>
7	Remove power from the standby chassis (A processor) by operation of the +8 V dc red rocker switch on the power supply.

**Procedure 5**  
**Error Control II PCA (NT6M65xx) replacement**

Step	Description
8	<p>On the Error Control II Jumper PCA in the B chassis (Slot 5), pull the toggle switch outward and lift the switch to the up position.</p> <p><i>Note:</i> The CRIT will be the only lamp lit on the status panel.</p>
	<p>This switch serves a dual function. First, it removes the B chassis power-feed from the Error Control II PCA in the A chassis. Second, it locks the error control functions to the B chassis.</p>
9	<p>Remove the Error Control II PCA in the A chassis (slot 5).</p>
10	<p>Insert the spare Error Control II PCA in the A chassis (slot 5), making sure it is fully seated.</p>
11	<p>Put faulty PCA in the empty electrostatic bag.</p>
12	<p>Apply power to standby chassis (A processor) by operation of the +8 V dc red rocker switch on the power supply.</p> <p>Wait for start-up activity to end and the message, <b>Software Loaded</b> or <b>S/W Loaded</b> to print.</p>
13	<p>Return the toggle switch on the Error Control II Jumper PCA in B5 to the down (LED off) position.</p> <p>This unlocks the Error Control functions. The B processor may print out this message: EC-IC-ALM (this is normal)</p>
14	<p>To clear any alarms on the standby processor. At the maintenance terminal, enter:</p> <p><b>&gt;MONS (cr)</b>  <b>&gt;RSERR (cr)</b>  <b>&gt;(CNTL) Z (cr)</b></p> <p>Alarms will stay clear on the standby processor if there are no faults.</p>
15	<p>To clear any alarms on the active processor. At the maintenance terminal, enter:</p> <p><b>&gt;RSERR (cr)</b></p> <p>Alarms will clear if there are no faults.</p>
16	<p>Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:</p> <ol style="list-style-type: none"> <li>Press the A/B Select Switch to B.</li> <li>Make the O/P Mode Select Switch <b>P</b>.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
17	<p>When all maintenance activities are complete, be sure to replace the front panel of the BMC. Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>The procedure is complete.</p>

## Error Control II Jumper PCA Replacement Procedure (NTM609xx)

### Procedure 6 Error Control II Jumper PCA (NTM609xx) replacement

Step	Description
	<b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.
	<b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.
1	To remove the front panel of the BMC II, loosen the four screws located on the left and right hand sides. Once removed, put the front panel in a safe place to avoid damage; bending and scratching.
2	Get the replacement PCA from the spares kit.
3	Remove the protective electrostatic bag and place it on a suitable, grounded surface.
4	Make sure the replacement PCA matches the faulty PCA's part number and has the correct revision level. Also, make sure the suspected faulty PCA is in the standby processor.  Verify that any applicable firmware for the PCA is the same or with a higher release number. Otherwise, contact your next level of support.
5	Place the A processor unit in ONLY mode. At the Switch and Status Panel of the BMC:  a. Press the A/B Select Switch to <b>A</b> . b. Press the O/P Mode Select Switch <b>O</b> . c. Turn the Mode Switch to the right and release.  <i>Note:</i> This will create an alarm.
6	Enter the following commands to write the value 00 in the DRAM memory address 2204 for the off-line DSI/TEC PCAs:  >MONS (cr) >TEC1CA2204W00 (cr) >(ESC) >TEC2CA2204W00 (cr)
7	Remove power from the standby chassis (B processor) by operation of the +8 V dc red rocker switch on the power supply.



**Procedure 6****Error Control II Jumper PCA (NTM609xx) replacement**

Step	Description
8	Remove the Error Control II Jumper PCA in the B chassis (slot 5).
9	Insert the spare Error Control II Jumper PCA in the B chassis (slot 5), making sure it is fully seated.
10	Put faulty PCA in the empty electrostatic bag.
11	Apply power to standby chassis (B processor) by operation of the +8 V dc red rocker switch on the power supply.  Wait for start-up activity to end and the message, <b>Software Loaded</b> or <b>S/W Loaded</b> to print.
12	To clear any alarms on the standby processor. At the maintenance terminal, enter:  <b>&gt;MONS (cr)</b> <b>&gt;RSERR (cr)</b> <b>&gt;(CNTL) Z (cr)</b>  Alarms will stay clear on the standby processor if there are no faults.
13	Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:  a. Press the A/B Select Switch to <b>B</b> . b. Make the O/P Mode Select Switch <b>P</b> . c. Turn the Mode Switch to the right and release.
14	To clear any alarms on the active processor. At the maintenance terminal, enter:  <b>&gt;RSERR (cr)</b>  Alarms will clear if there are no faults.
15	When all maintenance activities are complete, be sure to replace the front panel of the BMC.  Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.  The procedure is complete.




## Power and Alarm Communications PCA Replacement Procedure (NT6M84xx)

### Procedure 7 Power and Alarm Communications PCA (NT6M84xx) replacement



Step	Description
	<p><b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.</p>
	<p><b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.</p>
1	Make sure no polling is occurring. Wait for a low traffic period, if possible.
2	Remove the slotted screws that fasten the outer edges of the rear panel assembly to the cabinet.
3	Remove the front panel of the A chassis. Put the two panels in a safe place to prevent bending and scratching.
4	<p>Remove the power from the PCA first by disconnecting (P11) located in the upper right quadrant. Remove the other cables.</p> <p><i>Note:</i> Verify the cable markings (identification) or attach labels to the cables when removing them to facilitate replacement in the correct positions.</p> <p>Alarms may also activate and the BMC status panel lights will all be off. This is normal. Silence the alarm at the switching system and go to step 5.</p>
5	Remove the screws that fasten the P/A Comm PCA. Gently remove the PCA from its mounting position.
6	<p>The replacement PCA option settings must be set to match the settings for that PCA listed in the <i>PCA Switch and Strap Settings</i> section before installation.</p> <p><i>Note:</i> Improper performance can be caused by incorrect settings, and produce fault-like symptoms in the BMC.</p>
7	<p>Mount the replacement PCA in the vacated position.</p> <p><i>Note:</i> When replacing the screws, align carefully before tightening to avoid stripping. Tighten the screws, alternating until all are equally tight. Do not “cinch down” any one screw until all are properly aligned; no binding or force needed to turn.</p>

**Procedure 7**  
**Power and Alarm Communications PCA (NT6M84xx)**  
**replacement**

Step	Description
8	<p>Reattach any cables removed in step 4 in reverse order.</p> <p><i>Note:</i> Verify the cable markings (identification) or attach labels to the cables for correct positioning.</p> <p> <b>WARNING</b>            Incorrect positioning of cables will cause alarms and communication problems.</p>
9	<p>Properly reroute all cables. Make sure all wires and cables are routed so they are not pinched or in contact with the arc of the fan blades.</p>
10	<p>To clear any alarms on the active processor. At the maintenance terminal, enter:</p> <p><b>&gt;RSERR (cr)</b></p> <p>Alarms will clear if there are no faults.</p>
11	<p>To clear any alarms on the standby processor. At the maintenance terminal, enter:</p> <p><b>&gt;MONS (cr)</b>  <b>&gt;RSERR (cr)</b>  <b>&gt;(CNTL) Z (cr)</b></p> <p>Alarms will stay clear on the standby processor if there are no faults.</p>
12	<p>If BMC status panel shows processor is in ONL mode go to step 13, otherwise go to step 14.</p>
13	<p>Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:</p> <ol style="list-style-type: none"> <li>Press the A/B Select Switch to match the active processor.</li> <li>Press the O/P Mode Select Switch to <b>P</b>.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
14	<p>Verify replacement PCA has corrected original error.</p>
15	<p>Test the polling function.</p>
16	<p>When all maintenance activities are complete, be sure to replace the rear panel in its fully seated position and reinstall the slotted pan head screws previously removed.</p> <p>Also replace the front panel of the BMC if removed. Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>The procedure is complete.</p>


## Power Supply Replacement Procedure (NT6M71xx)

### Procedure 8 Power Supply (NT6M71xx) replacement

Step	Description
	<p><b>CAUTION</b> Since all BMC PCAs are static sensitive, be careful when handling them. Wear a wrist grounding strap when working with the BMC.</p>
	<p><b>WARNING</b> Since the BMC is powered up during this procedure, observe all safety procedures for operations on live equipment.</p>
<p><b>1</b></p>	<p>Remove the front panel of the BMC.</p> <p>If you are changing the A power supply remove only the A panel.</p> <p>If changing the B power supply, remove both the A and B front panels, this allows access to the Switch and Status Panel.</p> <p>Loosen the four captive screws on the left and right sides of the front panel; carefully remove the front panel. Put it in a safe place to avoid damage.</p>
<p><b>2</b></p>	<p>Put the processors into an Only mode. At the Switch and Status Panel of the BMC:</p> <ol style="list-style-type: none"> <li>Press the A/B Select Switch to:           <ul style="list-style-type: none"> <li><b>A</b> - If you are changing out the B power supply</li> <li><b>or</b></li> <li><b>B</b> - If you are changing out the A power supply.</li> </ul> </li> <li>Press the O/P Mode Select Switch to <b>O</b>.</li> <li>Turn the Mode Switch to the right and release.</li> </ol>
<p><b>3</b></p>	<p>Put the disk into an Only mode. Enter (at the terminal):</p> <p><b>&gt;DSK MOD xx (cr)</b></p> <p>where: <b>xx</b> - disk mode: <b>AO</b> - A ONLY (if you are changing out the B power supply).</p> <p style="text-align: center;">OR</p> <p style="text-align: center;"><b>BO</b> - B ONLY (if you are changing out the A power supply).</p> <p>Proper response:</p> <p>DISK MODE: AO (or) DISK MODE: BO</p>

## Procedure 8

### Power Supply (NT6M71xx) replacement

Step	Description
4	<p>Enter the following commands to write the value 00 in the DRAM memory address 2204 for the off-line DSI/TEC cards:</p> <pre>&gt;MONS (cr) &gt;TEC1CA2204W00 (cr) &gt;(ESC) &gt;TEC2CA2204W00 (cr)</pre>
5	<p>Power down the faulty power supply.</p> <p>Remove power from the standby chassis by operation of the +8 V dc red rocker switch on the power supply.</p> <p>Remove the -48 V dc source for the standby processor chassis at the main fuse panel; disk drive in this chassis is now disabled.</p> <p> <b>WARNING</b> Removal of the incorrect -48 V dc source can cause loss of AMA.</p> <p><i>Note:</i> This step will cause an alarm.</p>
6	<p>Remove the three connector plugs from the front of the power supply. Squeeze the side release clips and pull down gently; fold the cables back out of the way.</p>
7	<p>Loosen the slotted-head captive screw at the bottom of the power supply. Gently pull the power supply out of the chassis.</p> <p>Make sure the three connectors (and cables) are out of the way during removal of the power supply unit.</p>
8	<p>Install the replacement power supply. Make sure all cables and connectors are out of the way of the insertion path. Make sure the proper fuses are installed in the replacement power supply.</p>
9	<p>Gently slide the power supply into position until it is fully seated. Tighten the slotted captive screw until snugly in place; do not bear down.</p> <p>If any resistance, remove the power supply and check for obstructions. Remove the obstructions and reinsert the power supply.</p>
10	<p>Reconnect the three connectors removed in step 5 during the removal phase. Connect as follows:</p> <p>Pwr Sup Conn.</p> <ol style="list-style-type: none"> <li>J8 to P8</li> <li>J9 to P9</li> <li>J10 to P10.</li> </ol>
11	<p>Restore the -48 V dc power source at the main fuse panel.</p>

**Procedure 8**  
**Power Supply (NT6M71xx) replacement**

Step	Description
12	<p>Apply power to standby chassis by operation of the +8 V dc red rocker switch on the power supply.</p> <p>Wait for start-up activity to end and the message, <b>Software Loaded</b> or <b>S/W Loaded</b> to print.</p>
13	<p>Place the active processor unit in PRIME mode. At the Switch and Status Panel of the BMC:</p> <p>a. Depress the <b>P</b> side of the O/P Mode Select Switch.  b. Turn the Mode Switch to the right and release.</p>
14	<p>Make the disk system redundant. At the maintenance terminal, enter:</p> <p><b>&gt;DSK MOD xx (cr)</b></p> <p>where: <b>xx</b> - disk mode: <b>AP</b> - A PRIME (if mode is A only)  <b>BP</b> - B PRIME (if mode is B only).</p> <p>The BMC will begin a disk copy, this may take several hours, depending on how much data is stored and the size of the disks.</p> <p>Proper response:</p> <p>DISK MODE : AP (from disk mode AO)  or  DISK MODE : BP (from disk mode BO)</p>
15	<p>To clear any alarms on the standby processor. At the maintenance terminal, enter:</p> <p><b>&gt;MONS (cr)</b>  <b>&gt;RSERR (cr)</b>  <b>&gt;(CNTL) Z (cr)</b></p> <p>Alarms will clear on the standby processor if there are no faults.</p>
16	<p>To clear any alarms on the active processor. At the maintenance terminal, enter:</p> <p><b>&gt;RSERR (cr)</b></p> <p>Alarms will clear if there are no faults.</p>
17	<p>When all maintenance activities are complete, be sure to replace the front panel of the BMC, if removed. Carefully line up the four captive screws of the front panel with their mounting holes. Tighten the captive screws; but do not bear down.</p> <p>The procedure is complete.</p>



## PCA Switch and Strap Settings

**Note 1:** Pin 1 is designated on these PCAs by a white dot. These tables list the factory default settings for the PCA.

**Table 4**  
**NT6M62xx CPU PCA**

Switch #	Position
S2	1 OFF
	2 OFF
	3 ON
	4 OFF
Jumpers	Pin
J3	1-2

**Table 5**  
**CPU LED display codes**

LED	Alarm level	Notes
BLANK	N/A	Power failure
U.	N/A	Busak faulty
P.	N/A	Wait faulty
H.	N/A	Processor failed - halt
r.	N/A	Processor reset - initial start-up
L.	N/A	Clock faulty (also indicated by lack of decimal point)
E.	N/A	Invalid CPU response (also displayed whenever switch 3 on SW2 is in the OFF position)
d.	Critical Level 3	CPU Failure
c.	Critical Level 2	Spare
b.	Critical Level 1	TEC/DSI DMA Failure
A.	Critical Level 0	Disk Failure
9.	Major Level 3	Communication Loop Test
8.	Major Level 2	Alarm only, no processor switch
7.	Major Level 1	Communication In

**Table 5**  
**CPU LED display codes**

LED	Alarm level	Notes
6.	Major Level 0	Spare
5.	Minor Level 3	Communication Out Adv.
4.	Minor Level 2	Maintenance Printer
3.	Minor Level 1	Spare
2.	Minor Level 0	Alarm only, no processor switch
1.	N/A	Planned processor switch
≡	N/A	All systems operational

**Table 6**  
**NT6M63xx EPROM PCA (MEM1)**

Jumper	Pin		Jumper	Pin
P2	OUT		J14	2-3
P3	1-2		J15	1-2
P4	1-2		J16	2-3
P5	1-2		J17	1-2
P6	1-2		J18	2-3
J7	1-2		J19	1-2
J8	1-2		J20	2-3
J9	1-2		J21	OUT
J10	2-3		J22	IN
J11	1-2		J23	IN
J12	2-3		J24	1-2
J13	1-2			



**Table 7**  
**NT6M60BA Quad SIO (Slot 6), BMC set to INTERNAL timing**  
**and Polling Modem set to EXTERNAL timing**

Port Description	Jumper	Pin	Baud Selection
J1 = SDI Port (DMS-10) ASYNC	J2	1-2	Baud 1 (SW2)
	J3	1-2	
	J10	IN	
J2 = DOWNLOAD Link ASYNC	J4	1-2	Baud 2 (SW3)
	J5	2-3	
	J11	IN	
J3 = POLLING Link SYNC/BISYNC	J6	1-2	Baud 3 (SW4)
	J7	2-3	
	J12	IN	
J4 = Local TTY ASYNC	J8	1-2	Baud 4 (SW5)
	J9	1-2	
	J13	IN	

**Table 8**  
**NT6M60BA Quad SIO (Slot 6), BMC set to EXTERNAL timing**  
**and Polling modem set to INTERNAL timing**

Port Description	Jumper	Pin	Baud Selection
J1 = SDI Port (DMS-10) ASYNC	J2	1-2	Baud 1 (SW2)
	J3	1-2	
	J10	OUT	
J2 = DOWNLOAD Link ASYNC	J4	2-3	Baud 2 (SW3)
	J5	2-3	
	J11	OUT	
J3 = POLLING Link SYNC/BISYNC	J6	2-3	Baud 3 (SW4)
	J7	2-3	
	J12	OUT	
J4 = Local TTY ASYNC	J8	1-2	Baud 4 (SW5)
	J9	1-2	
	J13	IN	

**Note 2:** ADDRESS SELECTION SW1 = A is required for SIO inserted into slot 6.

**Note 3:** For baud selection, use **Table 9**.

**Table 9**  
**Baud Rate Reference**

<b>Rotary Switch Position</b>	<b>Asynchronous Rate</b>	<b>Synchronous Rate</b>
0	50	800
1	75	1200
2	110	1760
3	134.5	2152
4	150	2400
5	300	4800
6	600	9600
7	1200	N/A
8	1800	N/A
9	2000	N/A
A	2400	N/A
B	3600	N/A
C	4800	N/A
D	7200	N/A
E	9600	N/A
F	N/A	N/A

**Note 4:** The **Asynchronous rate** is used for the SDI port (J1), Local TTY port and the Software Download port (J2). The **Synchronous rate** is used for the Polling port (J3).

**Table 10**  
**NT6M84BA PWR/ALM Communications PCA, BMC set to INTERNAL timing and Polling modem set to EXTERNAL timing**

Switch	Jack, Position
S1	J1, 1 OFF 5 OFF
	J2, 2 OFF 6 OFF
	J3, 3 OFF 7 OFF
	J4, 4 OFF 8 OFF
S2	J5, 1 OFF 5 OFF
	J6, 2 OFF 6 OFF
	J7, 3 OFF 7 OFF
	J8, 4 OFF 8 OFF
Jumper	Pin
J14	OUT
J15	2-3
J16	2-3
J17	2-3

**Table 11**  
**NT6M84BA PWR/ALM Communications PCA, BMC set to EXTERNAL timing and Polling modem set to INTERNAL timing**

Switch	Jack, Position
S1	J1, 1 ON 5 ON
	J2, 2 OFF 6 OFF
	J3, 3 OFF 7 OFF
	J4, 4 OFF 8 OFF
S2	J5, 1 ON 5 ON
	J6, 2 ON 6 ON
	J7, 3 OFF 7 OFF
	J8, 4 OFF 8 OFF
Jumper	Pin
J14	OUT
J15	2-3
J16	2-3
J17	2-3

**Table 12**  
**NT6M66xx Disk Interface PCA**

Jumper	Pin
A	IN
R	IN

*Note 5:* Table 12 indicates the factory jumper settings and should not be changed on-site.

**Table 13**  
**NT6M70xx DMS-100 DSI PCA**

<b>SLOT 12</b>	
<b>Switch #</b>	<b>Position</b>
SW1	1 OFF
	2 ON
	3 ON
	4 OFF
	5 OFF
	6 OFF
	7 ON
	8 ON
	9 OFF
	10 OFF
SW2	1 ON
	2 OFF
	3 OFF
	4 ON
<b>SLOT 13</b>	
<b>Switch #</b>	<b>Position</b>
SW1	1 OFF
	2 OFF
	3 ON
	4 OFF
	5 OFF
	6 OFF
	7 ON
	8 ON
	9 OFF
	10 OFF
SW2	1 ON
	2 OFF
	3 OFF
	4 ON

**Table 14**  
**NT6M89xx DMS-10 TEC PCA**

<b>SLOT 12</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 ON
	2 OFF
	3 OFF
	4 ON
	5 OFF
	6 OFF
	7 OFF
	8 ON
	9 OFF
	10 OFF

<b>SLOT 13</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 OFF
	2 OFF
	3 OFF
	4 ON
	5 OFF
	6 OFF
	7 OFF
	8 ON
	9 OFF
	10 OFF

**Table 15**  
**NT6M90xx 800 bpi DCO TEC PCA**

<b>SLOT 12</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 OFF 2 ON 3 OFF 4 ON 5 ON 6 OFF 7 ON 8 OFF 9 OFF 10 OFF
S2	1 ON 2 ON 3 ON 4 OFF 5 ON 6 OFF 7 OFF 8 OFF 9 ON 10 ON
<b>SLOT 13</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 OFF 2 OFF 3 OFF 4 ON 5 ON 6 OFF 7 ON 8 OFF 9 OFF 10 OFF
S2	1 ON 2 ON 3 ON 4 OFF 5 ON 6 OFF 7 OFF 8 OFF 9 ON 10 ON

**Table 16**  
**NT6M90xx 1600 bpi DCO TEC PCA**

<b>SLOT 12</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 OFF 2 ON 3 OFF 4 ON 5 ON 6 OFF 7 ON 8 OFF 9 OFF 10 OFF
S2	1 OFF 2 OFF 3 ON 4 OFF 5 ON 6 OFF 7 OFF 8 OFF 9 ON 10 OFF
<b>SLOT 13</b>	
<b>Switch #</b>	<b>Position</b>
S1	1 OFF 2 OFF 3 OFF 4 ON 5 ON 6 OFF 7 ON 8 OFF 9 OFF 10 OFF
S2	1 OFF 2 OFF 3 ON 4 OFF 5 ON 6 OFF 7 OFF 8 OFF 9 ON 10 OFF









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**NOTES**

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DMS-10 and DMS-100 Families

## Billing Media Converter II

Bisynchronous

1997 Quick Reference Guide

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