Meridian 1

Meridian 1
Hardware replacement

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Standard, release 13.00. This document is reissued to include information on the NT5D10 Call Processor Card, the NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C), and the NT5D30 Dual Intergroup Switch (DIGS) card. Changes are noted by revision bars in the margins.

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Contents

List of figures

List of tables

About this document

This document tells you how to replace hardware in Meridian 1 systems. In this manual, "replacing hardware" means removing a faulty piece of equipment and installing identical operating equipment. The procedures in this document are based on the assumption that the system is properly installed (for example, all card locations, option switch settings, and cable connections are correct) and was fully operational before the hardware fault.

To use this document, you should have a basic knowledge of Meridian 1 maintenance procedures. Generally, only common tools (such as socket wrenches, screwdrivers, and pliers) are required to perform these procedures.

This document does not provide procedures for locating and clearing faults. See *Meridian 1 fault clearing* (553-3001-510) to locate and clear faults.

References

See the *Meridian 1 planning and engineering guide* for:

— *Meridian 1 system overview* (553-3001-100)

— *Spares planning* (553-3001-153)

— *Meridian 1 equipment identification* (553-3001-154)

See the *Meridian 1 installation and maintenance guide* for:

— *Meridian 1 system installation procedures* (553-3001-210)

— *Circuit card installation and testing* (553-3001-211)

— *Telephone and attendant console installation* (553-3001-215)

— *Meridian 1 general maintenance information* (553-3001-500)

— *Meridian 1 fault clearing* (553-3001-510)

See the *X11 software guide* for an overview of software architecture, procedures for software installation and management, and a detailed description of all X11 features and services. This information is contained in two documents:

— *X11 software management* (553-3001-300)

— *X11 features and services*

See the *X11 input/output guide* for a description of all administration programs and maintenance programs. Also, see the *X11 system messages guide* for interpreting system messages.

Accessing the system

When you replace equipment, you often send commands to the system software in order to disable faulty equipment and to enable and test newly installed equipment.

You send maintenance commands to the system through the system terminal or the maintenance telephone. This section gives the procedures for accessing the system through these devices.

Note: Before X11 release 19, only one device at a time can communicate with the system. Accessing a device while another is logged in will log out the device that was already connected. The Multi User Login feature, available with X11 release 19 and later, allows more than one device to interact with the Meridian 1. Refer to *X11 system management applications* (553-3001-301) for details on using this feature.

Access through the system terminal

You can send maintenance commands and receive system messages by accessing the CPU through an RS-232 device, such as a video display terminal (VDT) or teletypewriter (TTY).

When you access the system through a system terminal, a login procedure is required (see Procedure 1). All system passwords are initially set as 0000, but you can change passwords in the Configuration Record (LD 17).

Note: If a sysload occurs before you save a new password in a data dump, the last active password remains valid.

Each system has two levels of passwords: level 1 is for general use, level 2 is for administrative use. Either password is accepted in the login procedure.

Procedure 1
Access through the system terminal

1   Press the return key.

— If the response is a period (.), you are ready to log into the system.

— If the response is
OVL111 nn TTY x or **OVL111 nn SL1**
someone else is logged into the system. When they have logged
off, press return and go to Step 2.

— If the response is
OVL111 nn IDLE or **OVL111 nn BKGD**
you are ready to log into the system. Go to Step 2.

— If the response is
OVL000 >
you are already logged into the system. Go to Step 4.

Note: Responses vary with different Background Terminal packages.

2   Log into the system by entering
LOGI
then press the return key**.**

The normal response is
PASS?
If there is any other response, see the *X11 input/output guide*
(553-3001-400).

3   Enter either the level 1 or level 2 password and press the return key.
If the password is correct, the system responds with the prompt **>.**

4   Load a program by entering
LD xx   "xx" represents the number of the program

5   Perform tasks.

6   End the program by entering
END or ********

7   Always end the login session with
LOGO
Background routines are then loaded automatically.

Access through the maintenance telephone

A telephone functions as a maintenance telephone when you define the class-of-service as MTA (maintenance set allowed) in the Multi-line Telephone Administration program (LD 11). A maintenance telephone allows you to send commands to the system through the following maintenance overlays: LD 30, LD 32, LD 33, LD 34, LD 35, LD 36, LD 37, LD 38, LD 41, LD 42, LD 43, LD 45, LD 46, LD 60, LD 61, and LD 62.

Note: The Core Common Equipment Diagnostic (LD 135) and Core I/O Diagnostic (LD 137) are among the overlays that cannot be accessed through a maintenance telephone.

You can test tones and outpulsing through the maintenance telephone. Specific commands for those tests are given in the Tone and Digit Switch and Digitone Receiver Diagnostic (LD 34).

To access the system using the maintenance telephone, see Procedure 2. To enter commands, press the keys that correspond to the letters and numbers of the command (for example, to enter *LD 42 return*, key in *53#42##*). Table 1 shows the translation from a terminal keyboard to a telephone dial pad.

Note: To use the maintenance telephone, the peripheral equipment loop for that telephone must be operating.

Table 1
Translation from keyboard to telephone dial pad

Keyboard				Dial pad
			1	1
A	B	C	2	2
D	E	F	3	3
G	H	I	4	4
J	K	L	5	5
M	N	O	6	6
P	R	S	7	7
T	U	V	8	8
W	X	Y	9	9
			0	0
			Space or #	#
			Return	##

Note: There is no equivalent for Q or Z on a dial pad.

Procedure 2
Access through the maintenance telephone

1   Press the prime DN key.

2   Place the set in maintenance mode by entering

    xxxx91   "xxxx" is the customer Special Prefix (SPRE) number. It is defined in the Customer Data Block and can be printed using LD 21. The SPRE number is typically "1" (which means you would enter *191*).

3   Check for busy tone by entering "return"

    ##

    —   If there is no busy tone, go to Step 4.

    —   If there is a busy tone, a program is active. To end an active program and access the system enter
        ****

4   Load a program by entering

    53#xx##   "xx" represents the number of the program

5   Perform tasks.

6   Enter **** to exit the program and return the telephone to call processing mode. Background routines are then loaded automatically.

Hardware replacement guidelines

Precautions

To avoid personal injury and equipment damage, review the following guidelines before handling Meridian 1 equipment.

Power equipment

There are no user-repairable components in the power system. If a power supply fails, the complete unit must be replaced. Do *not* disassemble a power supply under any circumstances.

WARNING

To avoid the danger of electric shock, be very careful when you work with power equipment and connections. Warning notices are displayed and *must* be heeded.

Circuit cards

Handle cards as follows:

— Unpack or handle cards away from electric motors, transformers, or similar machinery.

— Handle cards by the edges only. Do not touch the contacts or components.

— Set cards on a protective antistatic bag. If an antistatic bag is not available, hand-hold the card, or set it in a card cage unseated from the connectors.

— Store cards in protective packing. Do not stack cards on top of each other unless they are packaged.

To avoid card damage from static discharge, wear a properly connected antistatic wrist strap when you work on Meridian 1 equipment. If a wrist strap is not available, regularly touch one of the bare metal strips in a module to discharge static. Figure 1 shows the recommended connection points for the wrist strap and the bare metal strips you should touch.

Figure 1
Static discharge points
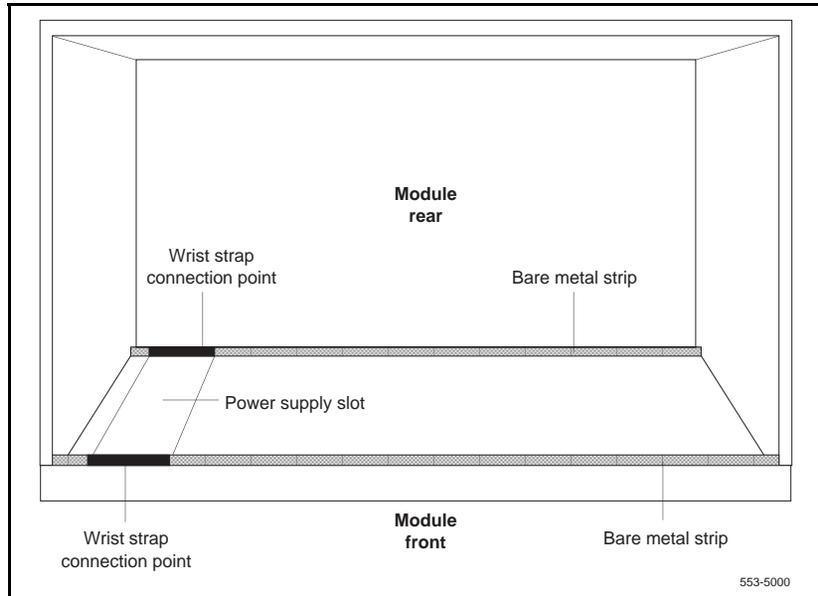
During replacement procedures:

— Turn off the circuit breaker or switch for a module power supply before the power supply is removed or inserted.

Note: In AC-powered systems, capacitors in the power supply must discharge. Wait five full minutes between turning off the circuit breaker and removing the power supply from the module.

— Software disable cards, if applicable, before they are removed or inserted.

— Hardware disable cards, whenever there is an enable/disable switch, before they are removed or inserted.

— Return defective or heavily contaminated cards to a repair center. Do not try to repair or clean them.

Data disks

Follow the precautions below to avoid damaging disks:

— Handle only the hard surface; never touch the recording surface.

— Keep disks away from strong magnetic fields.

— Avoid exposing disks to extreme heat, rapid changes in temperature, or high humidity.

— Store disks in a suitable container.

To install a disk, make sure the arrow on the label is pointing up and the rounded corner is on the bottom on the right-hand side (see Figure 2).

CAUTION
The disk drive can be damaged if an upside-down disk is forced into the slot. If there is significant resistance when you try to insert a disk, remove the disk and check the position.

Figure 2
Disk position

553-5001
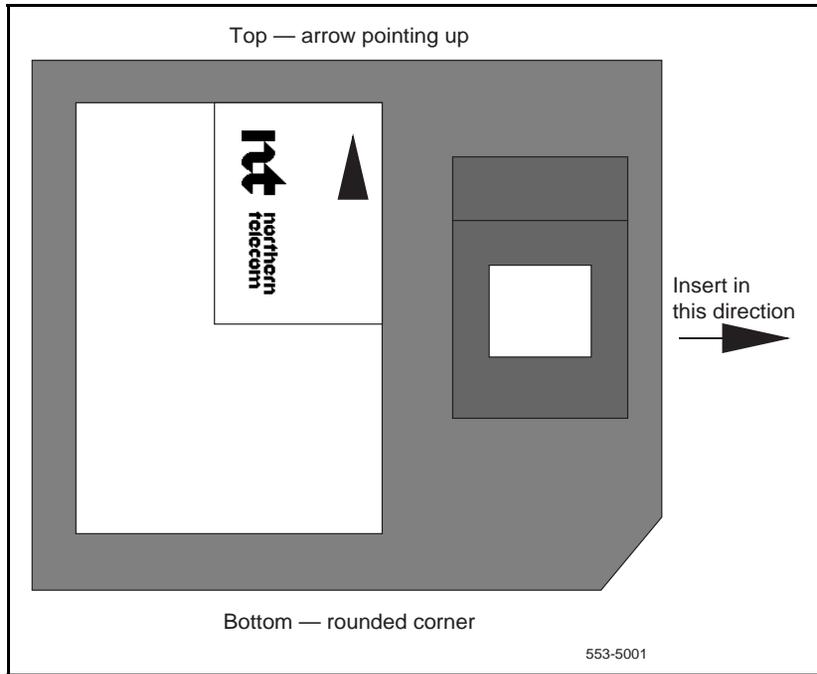
Options 51C, 61C, 81, and 81C cable guidelines

To disconnect a cable from the Core or Core/Network Module backplane, use the P0741489 Extraction Tool provided in the rear of the module (behind the I/O safety panel).

CAUTION
You must use the P0741489 Extraction Tool to disconnect cables from the backplane shrouds in NT6D60 Core, NT9D11 and NT5D21 Core/Network Modules.
Follow the procedure below to avoid bending or breaking pins when removing cable connectors from the backplane shrouds. Do not insert the extraction tool unless the cable connector is locked into the shroud. Do not force the extraction tool deeper than the detent on the cable connector.

---

1   Grasp the cable connector by the strain relief tab.

2   Center the longer flat edge on the angled end of the tool between the cable connector and the wall of the shroud on the right side of the cable connector.

   Note: If the straight end of the tool is notched, use that end if the connector can be accessed straight-on. If you must angle the tool at all, use the angled end.

3   *Gently* insert the extraction tool and gradually apply pressure while gently rocking the cable connector up and down.

4   Stop applying pressure as soon as the detent of the cable connector comes loose from the shroud.

5   Slowly remove the extraction tool and the cable connector.

Before you connect cables to the backplane, visually inspect the backplane shroud connectors to make sure there are no bent pins. To connect cables:

1   Orient the cable connector so the strain relief paddle is to the right.

2   Partially insert the cable connector so its guides mate to the corresponding backplane connector.

3   Apply a small amount of pressure to push the cable connector straight into the backplane connector. You will feel a detent click when the connector seats.

CAUTION

Pins may be bent or broken if you try to insert the cable connector at an angle. Do not push the connector in any further after you hear the detent click.

Replacing equipment

Removing module covers and pedestal grills

Module covers

To remove the front and rear covers from a module:

— With a flat-blade screwdriver, turn the lock clockwise on the two locking latches (see Figure 3).

— Simultaneously push the latches toward the center of the cover and pull the cover toward you while lifting it away from the module.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Figure 3
Locking latches on the module cover
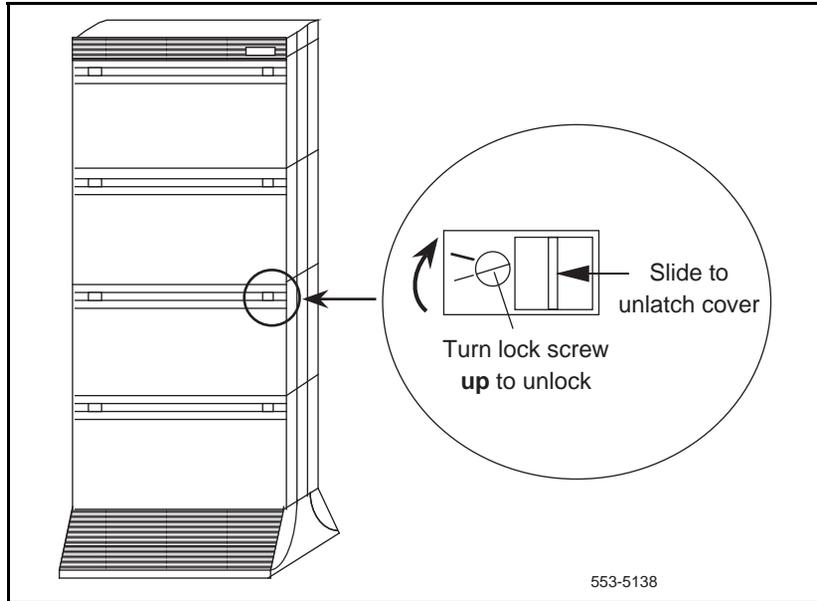
Pedestal grills

To remove the front and rear grills on the pedestal:

— Loosen the two captive screws that secure the grill.

— Pull the grill forward and lift it out of the base of the pedestal (see Figure 4).

Figure 4
Removing the pedestal grill

Captive screw

Captive screw

553-3054
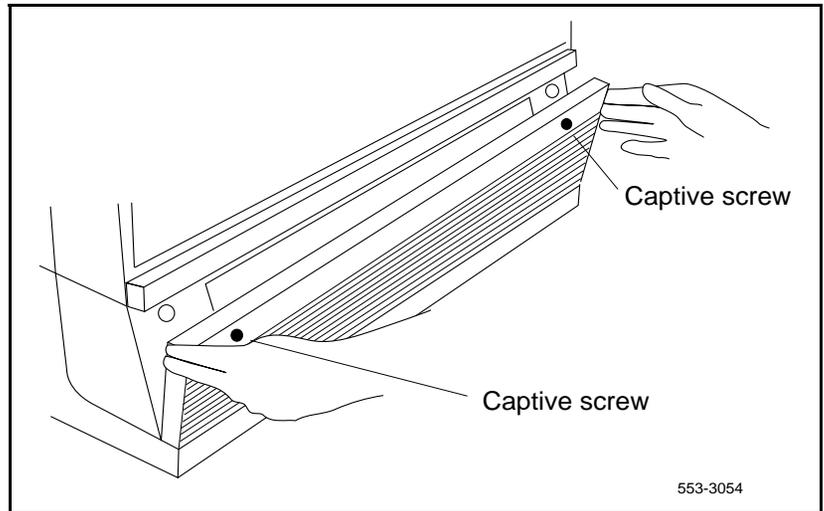
Removing UK air exhaust/intake grills

Use the following procedures to remove or replace the exhaust and intake grills on United Kingdom (UK) equipment.

Air exhaust grill

The front and rear air exhaust grills are secured by Southco fasteners located underneath the front edge of the grill. Use a #1 Phillips head screwdriver and turn the fasteners 1/4-turn to release or secure the grill (see Figure 4).

Figure 5
Removing air exhaust grill
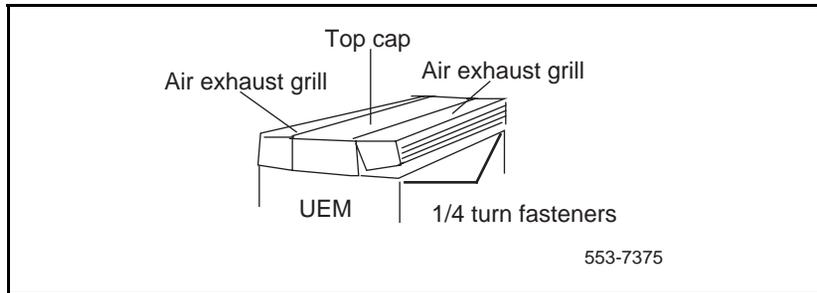
Air intake grill

The front and rear air intake grills are secured by captive panel screws located in the face of the grill (see Figure 4). Use a slotted screwdriver to release or secure the grill.

Figure 6
Removing air intake grill
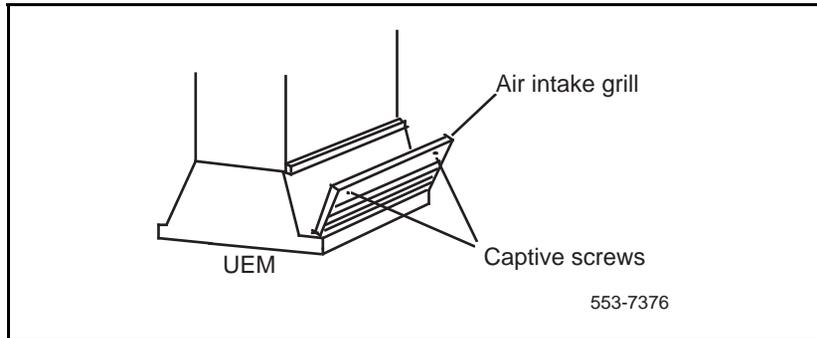
A0321130 Fan Unit

Use this procedure to replace the fan unit used in option 21A.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disconnect power to the top cap fan:

   •   Remove the rear cover on the module.

   •   Remove the I/O safety panel over the backplane.

   •   At the top of the rear of the module, disconnect the orange connector from the module power harness.

2   Remove the top cap:

   •   Remove air exhaust grills at the front and rear of the top cap. Pull forward on the two clips underneath the front edge of each grill and lift up to remove the grill (see Figure 7).

Figure 7
Air exhaust grills on the top cap
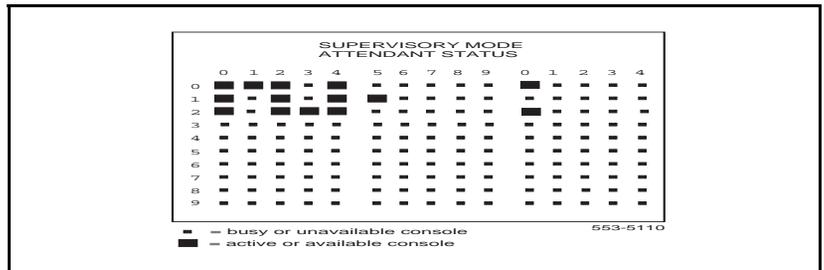
   •   Use a 5/16" socket wrench to remove the six bolts that secure the top cap (see Figure 8). Lift off the top cap only.

Note: You do not need to remove the perforated panel on the top of the module.

Figure 8
Top cap assembly
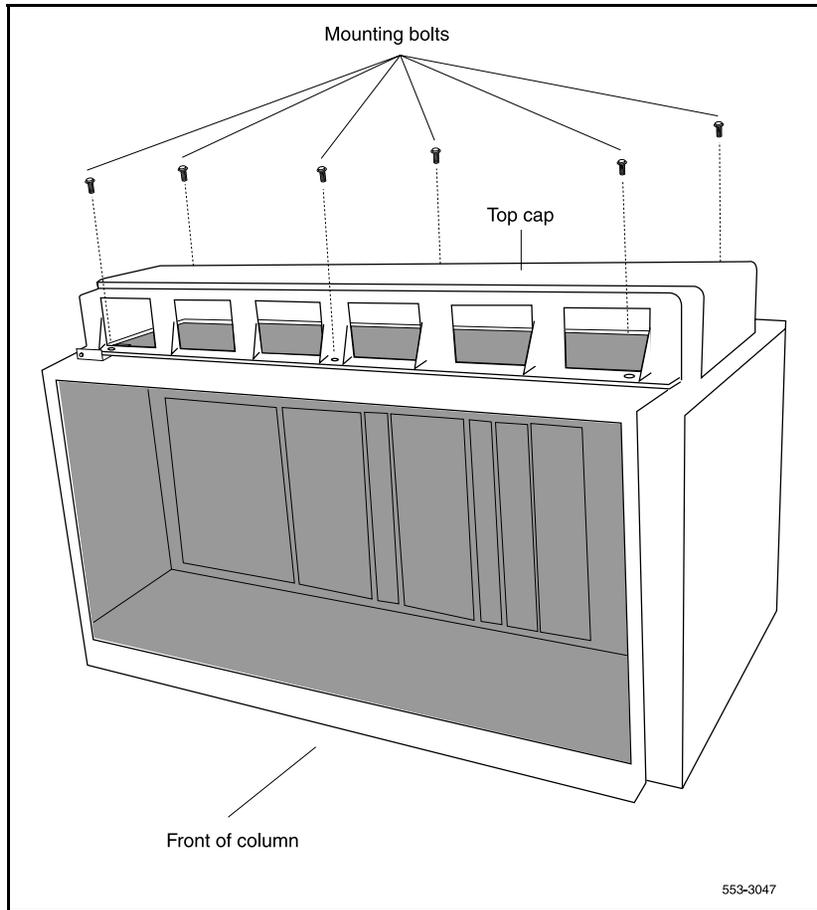
3   Remove the top cap fan:

- Remove the four corner screws that secure the fan and the metal cover plate on top of the fan. Keep the cover plate handy; you will use it with the replacement fan.

- Disconnect the black cord from the plug on the front of the fan.

Installing equipment

1   Install the replacement top cap fan:

- Position the fan. The air flow arrow must point *up*, and the plug on the black cord must face the *front* of the module.

- Connect the black cord to the plug on the front of the fan.

- Place the cover plate on top of the fan. Install the four corner screws that secure the fan and cover plate.

2   Install the top cap:

- Position the top cap and install the six bolts that secure it.

- Install the air exhaust grills at the front and rear of the top cap.

3   Connect power to the top cap fan:

- At the top of the rear of the module, connect the orange connector to the module power harness.

- Replace the I/O safety panel.

- Replace the rear cover on the module.

4   Tag defective equipment with a description of the problem and package it for return to a repair center.

A0378252 Battery Pack Assembly

The battery pack assembly is attached to the NTND02 Misc/SDI/Peripheral Signaling (MSPS) Card. Use this procedure to replace a battery pack.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the MSPS card is removed. An initialization will occur when a new card is installed.

Removing equipment

1   To replace the battery pack you must remove the MSPS card:

- Software disable each serial data interface (SDI) port configured on the MSPS card:

    LD 37
    DIS TTY X   "x" is the number of the interface device attached to the port

- Set the ENB/DIS switch to DIS.

- Disconnect the SDI cable from the faceplate connector.

- Unhook the locking devices on the card; pull it out of the card cage.

---

2   Remove the battery pack from the MSPS card:

- Disconnect the wire from the battery pack assembly to the connector on the MSPS card. Unplug the clip connector wired to the battery pack.

- On the back side of the MSPS card, remove the three screws that secure the battery pack.

Installing equipment

1   Install the battery pack on the MSPS card:

- Position the battery pack on the component side of the MSPS card; install the screws for the battery pack from the back of the card.

- On the component side of the MSPS card, plug in the clip connector wired to the battery pack. Make sure the connector key is centered on J2 (see Figure 9).

Note: The battery will not be fully charged until 24 hours after installation in a powered system.

Figure 9
Connector for the battery pack assembly
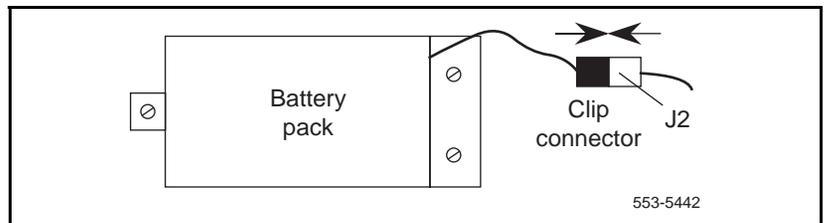
2   Reinsert the MSPS card and hook the locking devices:

- Connect the SDI cable to the card.

- Set the ENB/DIS switch to ENB.

- Set the ENB/DIS switch on the NT8D18 Network/DTR Card to DIS, then back to ENB.

- Press the initialize (Init) button on the NTND01 ICM Card to activate a clean initialization.

- Software enable each SDI port configured:

LD 37
ENL TTY x
TTY x

The response should be:

ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789''#$%*!&()<>-.:,.? READY FOR INPUT

Anything entered on the keyboard will be echoed until END is input.

If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

If there is no problem, exit LD 37:

****

3   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTAG26 Extended Multi-frequency receiver

Use the following procedure to replace a defective NTAG26 Multi-frequency Receiver Card (XMFR) in the IPE module.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Service is interrupted when a loop is disabled.

Removing equipment

1   Software disable the XMFR by entering
     LD 32
     DISS l s
     ("l s" represents loop and shelf number)

2   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Insert the replacement card into the vacated slot and hook the locking
     devices.

2   Software enable the loop on the card by entering
     ENLS l s

3   End the session in LD 32 by entering
     ****

4   Test the loop on the card by entering
     LD 30
     LOOP l

     If there is a problem, an NWS system message will be produced and the
     appropriate red LED will light on the faceplate of the card.

5   End the session in LD 30 by entering
     ****

6   Tag defective equipment with a description of the problem and package
     it for return to a repair center.

NT5K09 Quad Digitone Receiver

Use the following procedure to replace a defective Quad DIGITONE Receiver Card in the NT5K11 EEPE shelf.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Service is interrupted when a loop is disabled.

Removing equipment

1   Software disable the Quad DTMF Receiver by entering
     LD 32
     DISS l s
     ("l s" represents loop and shelf number)

2   Remove the backplane access plate at the rear of the UEM by removing the screws on each side. Set the plate aside.

3   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Check that the plug P2 0n the replacement card is oriented in the same way as the card being replaced.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Position the backplane access plate. Replace the screws.

4   Software enable each loop on the card by entering
    ENLS l s

5   End the session in LD 32 by entering
    ****

6   Test each loop on the card by entering
    LD 30
    LOOP l

    If there is a problem, an NWS system message will be produced and the appropriate red LED will light on the faceplate of the card.

7   End the session in LD 30 by entering
    ****

8   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT5K10 Dual Loop Peripheral Buffer Card

Use this procedure to replace a defective Enhanced Dual Loop Peripheral Buffer (IDLB) card in the NT5K11 shelf.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.


WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Service is interrupted when a loop is disabled.

Removing equipment

1   Software disable the Dual Loop Peripheral Buffer by entering
    LD 32
    DISS l s
    ("l s" represents loop and shelf number)

2   Remove the Backplane access plate at the rear of the UEM by removing the screws on each side. Set the plate aside.

3   Tag and disconnect cables to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set option switches on the replacement card the same as on the card you removed.

    To check switch settings, see Circuit pack installation and testing (553-3001-211) in the SL-1 installation and maintenance guide.

2   Insert the replacement card into the vacated slot and hook the locking devices.

---

3   Connect cables to the replacement card.

4   Position the backplane access plate. Replace the screws.

5   Software enable each loop on the card by entering
ENLS l s

6   End the session in LD 32 by entering
****

7   Test each loop on the card by entering
LD 30
LOOP l

If there is a problem, an NWS system message will be produced and the appropriate red LED will light on the faceplate of the card.

8   End the session in LD 30 by entering
****

9   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT5K1106 Enhanced Peripheral Equipment Card Cage

To replace a defective NT5K1102 Enhanced Peripheral Equipment Backplane in the NT5K11 EEPE UEM, you must replace the NT5K1106 Enhanced Peripheral Equipment Card Cage Assembly. Use this procedure to replace the unit.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING
Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disable the EEPE Enhanced Peripheral Equipment shelf by entering
     LD 32
     DISS l s
     ("l s c" represents loop, shelf number)

     If a second shelf is assigned to a loop, disable that shelf also by entering
     DISSI 1 s

     •   If the shelf is in single loop mode, two loops are disabled.

     •   If the shelf is in dual loop mode, four loops are disabled.

2   Turn off power to the UEM power supply by setting the switch on the
     NT5K12 Enhanced Equipment power supply to OFF(left).

3   Remove all cards from the shelf of the UEM:

     •   Tag and disconnect cables to all faceplate connectors.

     •   Tag cards so they can be returned to the same slot. Remove cards.

4   Disconnect cables, plugs, and wires from the back of the UEM to the
     backplane:

     •   Remove the Backplane access plate by removing the screws on each
          side (see Figure 10). Set the panel aside.

     •   Remove all cards from the back of the UEM.

     •   Tag and disconnect cables to all faceplate connectors.

     •   Tag cards so they can be returned to the same slot. Remove cards.

     •   Tag and disconnect all cables from the backplane to the interior of
          the I/O assembly.

     •   Tag and disconnect all plugs, wires, and cables to the backplane.

5   Remove the two mounting screws that secure the back of the card cage
     to the UEM assembly.

6   Remove the front cover plates on both sides of the card cage.

7   Remove the three mounting screws that secure the front of the card cage
     to the bottom of the UEM assembly. Pull the card cage out of the UEM.

Figure 10
EEPE access plates (rear view)

553-7377
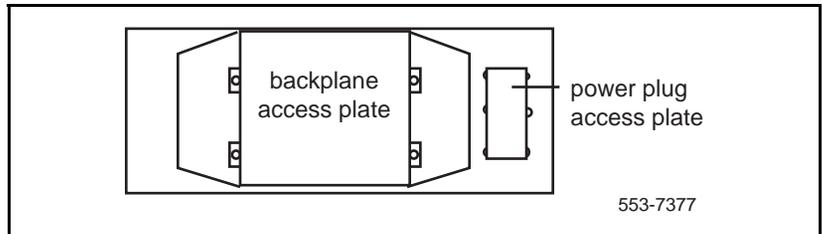
8 Slide the replacement card cage into position in the UEM leaving approximately 3" clearance between the card cage and the backplane.

9 Reconnect cables, plugs, and wires from the UEM to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Position the backplane access plate. Replace the screws.

- Connect all plugs, wires, and cables to the backplane.

Installing equipment

1 Slide the replacement card cage into position in the UEM taking care not to pinch the cables.

2 Install the three mounting screws that secure the front of the card cage to the bottom of the UEM assembly.

3 Replace the front cover plates on both sides of the card cage.

4 Install the mounting screws at the back of the card cage.

5 Reconnect cables, plugs, and wires from the UEM to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the power plug access plate. Replace the screws.

6   Return cards to their slots at the rear of the UEM. Reconnect all cables to connectors.

7   Position the backplane access plate. Replace the screws.

8   Return cards to their slots at the front of the UEM. Reconnect all cables to connectors.

9   Turn on power to the UEM power supply by setting the power supply switch to ON (right):

10 Enable the shelf by entering
    ENLS l s

    If a second shelf is assigned to a loop, enable that shelf also by entering
    ENLS l s

    End the session in LD 32 by entering
    ****

11 Test the shelf by testing each loop with
    LD 30
    LOOP l s

    If there is a problem, an NWS system message will be produced.

12 End the session in LD 30 by entering
    ****

13 Tag defective equipment with a description of the problem and package it for return to a repair center.

Replacing the NT5K21AA Circuit Card

Use this procedure to replace a NT5K21AA card in an IPE Modules.

WARNING

Module covers are not hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Software disable the card:
    LD 32
    STAT l s c
    DIS l s c
    ("l s c" represents loop, shelf, and card number)

    You will see "NPR011" on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

    You will see the LED light up when the card becomes disabled.

2   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Insert the replacement card into the vacated slot and hook the locking devices.

    Note: When IPE cards are installed, the red LED on the faceplate remains lit for 2 to 5 seconds as a self-test runs. If the self-test completes successfully, the LED flashes three times and remains lit until the card is configured and enabled in software, then the LED turns off. If the LED does not follow the pattern described or operates in any other manner (such as continually flashing or remaining weakly lit), replace the card.

2   Software enable the card:
     LD 32
     ENLC l s c
     When the process is complete, you will receive a system response
     STAT l s c
     Obtain the status of the card to ensure that the card is enabled
     ****
     To exit the program

3   (Optional): Test the card:
     LD 30
     SHLF l s
     ("l s" represents loop, shelf number)

     Note: This command tests every card on the designated shelf.

     If there is a problem, an NWS system message is generated and the red
     LED(s) on the faceplate of the card will remain lit.

     If there is no problem, exit LD 30.

4   Tag defective equipment with a description of the problem and package
     it for return to a repair center.

NT1P61 Fibre Superloop Network Card

Use this procedure to replace an NT1P61 Fibre Superloop Network card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.


WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing and replacing a Fibre Superloop Network card

1   Disable the Fibre Superloop Network card by logging in to the system terminal, loading the Network and Peripheral Equipment Diagnostic Program LD 32, and executing **DIS loop**, where **loop** is the actual loop number of the Fibre Superloop Network card.

2   Set the ENB/DIS switch to DIS.

3   Disconnect all the fibre-optic patchcords and the SDI/System Monitor cable from the card faceplate.

4   Unlatch the card's locking devices by squeezing the tabs and pulling the upper locking device away from the card and pressing the lower locking device downward.

5   Pull the card out of the network module and place it into an antistatic bag away from the work area.

6   Check the replacement card and make sure that the Electro-optical packlets are already installed. If not installed, install the new packlets or remove the packlets from the faulty Fibre Superloop Network card and install them on the replacement card if you are sure that the packlets are not faulty.

7   Set the replacement card ENB/DIS switch to DIS.

8   Hold the replacement card by the card locking devices and insert it partially into the card guides in the module.

9   Pull the upper locking device away from the faceplate on the card and press the lower locking device downward and insert the card firmly into the backplane connector. Press the upper locking device firmly against the faceplate and press the lower locking device upwards to latch the card inside the module.

10 Set the ENB/DIS switch on the Fibre Superloop Network card to ENB. The Fibre Superloop Network card automatically starts the self-test.

11 Observe the red LED on the front panel during self-test. If it flashes three times and stays on, it has passed the test; go on to step 13. If it does not flash three times and then stays on, it has failed the test. Pull the card partially out of the module and reinsert it firmly into the module. If the problem persists, troubleshoot or replace the Fibre Superloop Network card.

12 Connect the SDI/System Monitor cable and the fibre-optic patchcords to the faceplate connectors of the replacement Fibre Superloop Network card.

13 Enable the Fibre Superloop Network card by logging in to the system terminal, loading the Network and Peripheral Equipment Diagnostic Program LD 32, and executing **ENLL loop**, where **loop** is the actual loop number of the Fibre Superloop Network card.

14 Tag the defective card(s) with a description of the problem and prepare them for shipment to your equipment supplier's repair depot.

NT1P62 Fibre Peripheral Controller Card

Use this procedure to replace a Fibre Peripheral Controller card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing and replacing a Fibre Peripheral Controller card

1   Load Network and Peripheral Equipment Diagnostic Program LD 32. At the > prompt, type **LD 32** and press the Enter key to access the program.

2   Type **DSXP x**, where **x** is the Fibre Peripheral Controller card, and press the Enter key to disable the card. The Fibre Peripheral Controller card is now disabled and you can remove it.

3   Disconnect all the fibre-optic patchcords from the card faceplate.

4   Unlatch the card's locking devices by squeezing the tabs and pulling the upper locking device away from the card and the lower locking device downwards.

5   Pull the card out of the IPE module or cabinet and place it in an antistatic bag away from the work area.

6   Check the replacement card and make sure that the Electro-optical packlets are already installed. If not installed, install the new packlets or remove the packlets from the faulty Fibre Peripheral Controller card and install them on the replacement card if you are sure the packlets are not faulty.

7   Hold the replacement card by the card locking devices and insert it partially into the card guides in the module.

8   Pull the upper locking device away from the faceplate on the card and the lower locking device downwards and insert the card firmly into the backplane connector. Press the upper locking device firmly against the faceplate and the lower locking device upwards to latch the card inside the module. The Fibre Peripheral Controller card automatically starts the self-test.

9   Observe the red LED on the front panel during self-test. If it flashes three times and stays on, it has passed the test. Go to step 11. If it does not flash three times and then stays on, it has failed the test. Pull the card partially out of the module and reinsert it firmly into the module. If the problem persists, troubleshoot or replace the Fibre Peripheral Controller card.

10   Connect the fibre-optic patchcords to the optical connectors of the Fibre Peripheral Controller card faceplate. For a wall-mounted Fibre Remote IPE, plug the fibre-optic span FC/PC optical connectors into the FC/PC optical connectors on the Fibre Peripheral Controller card faceplate.

11   At the prompt in the LD 32 program, type **ENXP x**, where **x** is the Fibre Peripheral Controller card, and press the Enter key to enable the card. If the uppermost red LED on the Fibre Peripheral Controller card faceplate turns off, the card is functioning correctly and is enabled. The outcome of self-test will also be indicated by LD 32 on the MMI terminal connected to the Fibre Peripheral Controller card. If the LED stays on, replace the card.

12   Tag the defective card(s) with a description of the problem and prepare them for shipment to your equipment supplier's repair depot.

Replacing NT5D10 68060 Call Processor (CP) Cards in systems equipped with NT5D61 IODU/C cards

Use this procedure to replace an NT5D10 68060 Call Processor (CP) card in systems equipped with NT5D61 IODU/C cards. For systems equipped with NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards, refer to "NT5D10 68060 Call Processor (CP) card" on page 45.

WARNING

Replacing the CP card in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpretation of system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure, you will be required to warm start your system, causing a momentary interruption in call processing.

Removing equipment

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module or Core/Network Module for the CP card you are replacing. To communicate with the processor, you must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

---

2   The CP card you are replacing must be in the inactive Core. Check the status of the NT5D10 Call Processor cards:

LD 135

STAT CPU   determine which CP card is active

If necessary, switch Cores:

SCPU   switch Cores

****   exit LD 135

3   Set the NORM/MAINT switch on the NT5D10 Call Processor card to MAINT on the *active* Core.

4   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

5   Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

•   Press and hold down the MAN RST button on the CP card on the inactive Core.

•   Set the NORM/MAINT switch to MAINT.

•   Release the MAN RST button.

The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

Installing equipment

1   Set the NORM/MAINT switch to MAINT on the replacement card.

2   Insert the Install Program diskette which corresponds with the NT5D10 Call Processor.

3   Remove the current CP card and put it in a static bag and box.

4   Insert the CP replacement card into its vacated slot and hook the locking devices.

5   Press the MAN RST button on the replacement CP card.

6   When the NT Logo Screen appears on the terminal, press <CR>.

7   Enter the date and time.

8 When the Main Menu appears, select **<u>** to go to the Install Menu.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — —
                        M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>-->  <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.

Enter choice > u                                       553-7780
```

9 Insert the Keycode diskette when prompted and select **<a>** to continue with the keycode validation.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — —


Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>-->  <a> - Continue with the keycode validation
             (the keycode diskette is in the floppy drive).
         <q> - Quit.

Enter Choice > a                                       553-7729
```

10   Select the following options in sequence from the Install Menu:

      \<g>   to reinstall CP software

      \<y>   to start installation

      \<a>   to continue ROM upgrade

      \<cr>   to return to the Install Menu

11   When the Install Menu appears, select the following options in sequence

      \<e>   to install CP-BOOTROM

      \<y>   to start installation

      \<a>   to continue with the upgrade

12   A Status Summary is displayed indicating what was installed. Press \<CR> to return to the Install Menu.

13   **Remove the diskette** from the IODU/C.

14   Select the following options to quit the Install Tool:

      \<q>   to quit

      \<y>   to confirm quit

      \<a>   to reboot the system.

Note: The system will reboot. Wait for the "INI" and "DONE" messages to display before continuing. It will take at least 70 seconds between the "DONE" and "INI" messages.

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

15 Following a successful dial tone test, perform the following basic sanity tests:

  •   Make sure calls can be placed

  •   Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following five steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced CP card):

16 Press and hold down the MAN RST button on the CP card of the *inactive* Core.

17 While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

18 Enable all CNI switches in the inactive Core.

19 Release the MAN RST button.

20 Set the CP card in the active Core to NORM.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

21 Log into the system through the terminal, then check the status of the replacement CP card from the active side:

    LD 135   load LD 135
    STAT CPU   obtain the CPU status

22   If there are CCED messages generated by the STAT CPU command on
      the replacement CP card, set the NORM/MAINT switch to MAINT,
      press the reload (MAN RST) button and set the NORM/MAINT switch
      back to NORM. (It may take 2 to 4 minutes for memory synchronization
      to take place.)

      After the HWI0533 message is displayed, test the replacement CP card
      from the active CPU:

      TEST CPU   the test causes a cold start on the inactive CPU

      If the test results in:

      CCED014   "Test failed because unable to enter SPLIT
                                mode"

      On the active CP card set the NORM/MAINT switch to NORM, and
      from the active side enter:

      TEST CPU   to test the CP card

23   Set the NORM/MAINT switch to NORM on the active CP card (if not
      already set).

24   Check the status of the CPUs:

          STAT CPU

25   Test the CPU.

          TEST CPU

26   Check the status of the CNIs:

          STAT CNI

27   Switch Cores and exit the program:

          SCPU
          ****   exit LD 135

NT5D10 68060 Call Processor (CP) card

Use this procedure to replace an NT5D10 68060 Call Processor (CP) card in systems equipped with NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards. For systems equipped with NT5D61 IODU/C cards, refer to "Replacing NT5D10 68060 Call Processor (CP) Cards in systems equipped with NT5D61 IODU/C cards" on page 39.

WARNING

Replacing the CP card in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpretation of system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure, you will be required to warm start your system, causing a momentary interruption in call processing.

Removing equipment

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module or Core/Network Module for the CP card you are replacing. To communicate with the processor, you must use the following settings on the terminal:

     9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

     Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

2   The CP card you are replacing must be in the inactive Core. Check the status of the NT5D10 Call Processor cards:

LD 135

STAT CPU   determine which CP card is active

If necessary, switch Cores:

SCPU   switch Cores

****   exit LD 135

3   Set the NORM/MAINT switch on the NT5D10 Call Processor card to MAINT on the *active* Core.

4   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

5   Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

   •   Press and hold down the MAN RST button on the CP card on the inactive Core.

   •   Set the NORM/MAINT switch to MAINT.

   •   Release the MAN RST button.

   The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

Installing equipment

1   Set the NORM/MAINT switch to MAINT on the replacement card.

2   Insert disk A1 into the IOP/CMDU or CMDU.

3   Remove the current CP card and put it in a static bag and box.

4   Ensure the NORM/MAINT switch is set to MAINT, and insert the CP replacement card into its vacated slot and hook the locking devices.

5   Press the MAN RST button on the replacement CP card.

6   Select the following options in sequence from the Install Menu:

   \<g>   to reinstall CP software

   \<y>   to start installation

   \<y>   to continue installation

	<a>	to continue with ROM upgrade
	<cr>	to return to the Install Menu

7   At the Install Menu, select the following options in sequence

	<e>	to install CP-BOOTROM
	<y>	to start installation
	<y>	to continue installation
	<a>	to continue with ROM upgrade
	<cr>	to return to the Install Menu

8   **Remove the diskette** from the IOP/CMDU or CMDU.

9   Select the following options to quit:

	<q>	to quit
	<y>	to confirm quit
	<a>	to reboot the system.

Note: The system will reboot. Wait for the "INI" and "DONE" messages to display before continuing. It will take at least 70 seconds between the "DONE" and "INI" messages.

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

10 Following a successful dial tone test, perform the following basic sanity tests:

   •   Make sure calls can be placed

   •   Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following five steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced CP card):

11 Press and hold down the MAN RST button on the CP card of the *inactive* Core.

12 While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

13 Enable all CNI switches in the inactive Core.

14 Release the MAN RST button.

15 Set the CP card in the active Core to NORM.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

16 Log into the system through the terminal, then check the status of the replacement CP card from the active side:

   LD 135   load LD 135
   STAT CPU   obtain the CPU status

17 If there are CCED messages generated by the STAT CPU command on the replacement CP card, set the NORM/MAINT switch to MAINT, press the reload (MAN RST) button and set the NORM/MAINT switch back to NORM. (It may take 2 to 4 minutes for memory synchronization to take place.)

After the HWI0533 message is displayed, test the replacement CP card from the active CPU:

TEST CPU   the test causes a cold start on the inactive CPU

If the test results in:

CCED014   "Test failed because unable to enter SPLIT mode"

On the active CP card set the NORM/MAINT switch to NORM, and from the active side enter:

TEST CPU   to test the CP card

18 Set the NORM/MAINT switch to NORM on the active CP card (if not already set).

19 Check the status of the CPUs:

   STAT CPU

20 Test the CPU.

   TEST CPU

21 Check the status of the CNIs:

   STAT CNI

22 Switch Cores and exit the program:

   SCPU

   ****   exit LD 135

NT5D12AA Dual DTI/PRI (DDP)

Use this procedure to replace an NT5D12AA DDP card. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

WARNING

The static discharge bracelet located inside the cabinet must be worn before handling circuit cards. Failure to wear the bracelet can result in damage to the circuit cards.

Removing the DDP card

1   Determine the cabinet and shelf location of the DDP card to be removed.

2   Disable Network Loop using Overlay 60. The command is DISL "loop number".

    The associated DCHI may have to be disabled first. The faceplate switch S1 should not be disabled until both PRI loops are disabled first.

3   If the DDP pack is being completely removed, not replaced, remove data from memory. See the *ISDN PRI Description and Administration* NTP (553-2901-100).

4   Remove cross connections at the MDF to the wall-mounted cross-connect terminal.

5   Tag and disconnect cables from card.

6   Rearrange Clock Controller cables, if required.

> **WARNING**
>
> Do NOT route Clock Controller cables connecting the Clock
> Controller and DDP card through the center of the cabinet past the
> power harness. Instead, route them around the outside of the
> equipment shelves.

7   In the other circuit of a DDP card is in use, DO NOT remove the card.

8   Remove the DDP card if both loops are disabled. Switch S1 (faceplate switch) must be in the OFF (DIS) position before you remove the card.

9   Pack and store the DDP card and cables.

Installing the DDP card

1   Set the option switches on the DDP circuit pack before installation; see Table 2 below, where bold font indicates factory settings.

Table 2
DDP general purpose switch settings

Switch	Description	S9/S15 Switch Setting
1	Framing mode	**off = ESF** on = SF
2	Yellow alarm method	**off = FDL** on = Digit2
3	Zero code suppression mode	**off = B8ZS** on = AMI
4	Unused	**off**

Note: SW1 (faceplate switch) must be off (DIS) when installing the DDP.SW1 on the DDP corresponds to the faceplate switch on the QPC414 Network card.

2   Run and connect the DDP cables.

> **WARNING**
> Do NOT route Clock Controller cables connecting the Clock
> Controller and DDP card through the center of the cabinet past the
> power harness. Instead, route them around the outside of the
> equipment shelves.

3   Enable faceplate switch S1. This is the "Loop Enable" switch.

The faceplate LEDs should light for four seconds, then go out, and the
OOS, DIS, and ACT LEDs should light again and stay lit.

If DDCH is installed, the DCH LED should flash 3 times.

4   Run PRI/DTI Verification Test. Refer to the *ISDN PRI Maintenance*
NTP (553-2901-500).

5   Run PRI status check. Refer to the *ISDN PRI Maintenance* NTP
(553-2901-500) for the PRI verification tests, DDP self-test, PRI status
check, and PRI start-up test.

NT5D20 IOP/CMDU

Use this procedure to replace an IOP/CMDU combination unit in a:

- redundant system without disrupting call processing

- single CPU system, which requires disruption of call processing

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Replacing the IOP/CMDU in a redundant system option

Note: In redundant system options 61C and 81C, the normal procedure is to replace the faulty IOP/CMDU on the inactive Core to allow uninterrupted call processing by the active Core. The Core that is processing calls is defined as *active* and the Core not processing calls is defined as *inactive*.

1 Identify the faulty IOP/CMDU in the system and check if the faulty unit is in the active or inactive Core by checking the status of both CPU:

LD 135	to load the program
STAT CPU	to check CPUs status

If CPU 0 is active and the faulty IOP/CMDU is associated with inactive CPU 1, proceed with step 2. If CPU 0 is active and the faulty IOP/CMDU is associated with CPU 0, perform switchover to make CPU1 the active CPU.

Perform switchover and check the CPU status:

SCPU	to perform switchover to CPU 1
STAT CPU	to check CPUs status
****	to exit the program

Verify that the switchover to CPU1 was successful and that CPU 0 is now inactive.

2   Verify that disk drives in two Cores are synchronized:

LD 137   to load the program

STAT   to get the status of the two disk drives

If disk drives are synchronized, proceed with step 3. If they are not synchronized, execute the SYNC command:

SYNC   to synchronize the drives

****   to exit the program

3   Perform equipment data dump from the active Core (with a known good IOP/CMDU):

LD 43   load LD 43

EDD   execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program

****   exit LD 43

4   Set the NORM/MAINT switch on the Call Processor (CP) card to MAINT on the *active* Core.

5   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

6   Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

- Press and hold down the MAN RST button on the CP card on the inactive Core.

- While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to MAINT.

- Release the MAN RST button.

The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

7   To remove the faulty IOP/CMDU and replace the data cartridge from the faulty IOP/CMDU to the replacement IOP/CMDU:

- Set the ENB/DIS switch on the faulty IOP/CMDU to DIS.

- Remove the IOP/CMDU from its card slot in the *inactive* Core.

- Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the IOP/CMDU.

- Plug the above QMM42 Data Cartridge into the replacement IOP/CMDU and install the screw that secures it to the IOP/CMDU.

8   To install the replacement IOP/CMDU into the IOP/CMDU slot:

- Set the ENB/DIS switch on the replacement IOP/CMDU to DIS.

- Install the IOP/CMDU into its vacant card slot and lock the locking devices by pushing them gently towards the faceplate.

- Set the ENB/DIS switch to ENB and observe the card LED during self-test. The LED should flash three times and stay lit until the card is enabled.

9   Press the MAN RST button on the CP card on the inactive Core and wait until system sysloads and initializes.

10   Enable the IOP/CMDU and check its status:

LD 137	to load the program
ENL IOP	to enable the IOP part of the IOP/CMDU
STAT IOP	to check the status of the IOP part of the IOP/CMDU

11   To update the ROM on the replacement IOP/CMDU to the software currently residing on the IOP/CMDU hard disk:

Note: Refer to "Software installation tool reference" in *Software conversion procedures* (553-2001-320).

- Activate the software installation tool by inserting disk A1 from the software package into the IOP/CMDU in the Core containing the replacement IOP/CMDU.

- Press the MAN RST button on the CP card in the Core containing the replacement IOP/CMDU.

- Select the following options in sequence:

<f>	to install ROM on the IOP part of the IOP/CMDU only
<y>	to start installation

- Specify software installation from the hard disk and follow screen directions until the install menu returns.

- Remove the disk from the IOP/CMDU.

- Select the following options to quit and reboot the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

12 Test the replacement IOP/CMDU:

LD 137	to load the program
DIS IOP	to disable the IOP part of the IOP/CMDU
TEST IOP	to test the operation of the IOP part of the IOP/CMDU
ENL IOP	to enable the IOP part of the IOP/CMDU
TEST CMDU n	to test the operation of the CMDU part of the IOP/CMDU where **n** is the inactive Core IOP/CMDU

If there is a problem, a CIOD system message is generated.

13 To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following three steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced IOP/CMDU):

- Press and hold down the MAN RST button on the CP card of the *inactive* Core.

- While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

- Release the MAN RST button.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

14 Set the ENB/DIS switch on all CNI cards in the *inactive* Core to ENB.

15 Synchronize the disk drives of the two Cores:

LD 137	to load the program
STAT	to get status of both IOP/CMDUs
SYNC	to synchronize the drives
****	to exit the program

16 Verify CPU redundancy and CNI operation:

LD 135	to load the program
STAT CPU	to get status of both CPUs
STAT CNI	to verify the operation of all CNI cards

17 Place the *active* CPU in the normal mode by setting the NORM/MAINT switch on the CP card to NORM.

18 Check the CPUs and switch the call processing to the currently *inactive* CPU:

LD 135	to load the program
STAT CPU	to get status of both CPUs
SCPU	to switch to currently inactive CPU and make it active
STAT CPU	to check the status of both CPUs again to verify that the switchover occurred
****	to exit the program

19 Check the status of the replacement IOP/CMDU in the *active* Core and make sure it is operating correctly:

LD 137	to load the program
STAT	to get status of both IOP/CMDUs
DIS IOP	to disable the IOP part of the IOP/CMDU in the active Core
TEST IOP	to verify the operation of the IOP part of the IOP/CMDU in the active Core (replacement IOP/CMDU)
ENL IOP	to enable the IOP part of the IOP/CMDU after the test
TEST CMDU n	to test the operation of the CMDU part of the IOP/CMDU
****	to exit the program

20 Tag defective equipment with a description of the problem and package it for return to a repair center.

Replacing the IOP/CMDU in a single CPU system option

Note: In a single CPU system option, i.e. option 51C, replacing the faulty IOP/CMDU will disrupt call processing.

1 Check the status of the IOP/CMDU:

LD 137	to load the program
STAT	to get the status of the IOP/CMDU
****	to exit the program

2 Perform equipment data dump if possible. If the IOP/CMDU is faulty, a successful data dump may not be possible:

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

3 Disable the IOP portion of the IOP/CMDU:

> **LD 137**   load LD 137
>
> **DIS IOP**   Disable the IOP.

4 To remove the faulty IOP/CMDU and replace the data cartridge from the faulty IOP/CMDU to the replacement IOP/CMDU:

- Set the ENB/DIS switch on the faulty IOP/CMDU to DIS.

- Remove the IOP/CMDU.

- Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the IOP/CMDU.

- Plug the above QMM42 Data Cartridge into the replacement IOP/CMDU and install the screw that secures it to the IOP/CMDU.

5 Installing the replacement IOP/CMDU into the IOP/CMDU slot:

- Set the ENB/DIS switch on the replacement IOP/CMDU to DIS.

- Install the IOP/CMDU into its vacant card slot and lock the locking devices by pushing them gently towards the faceplate.

- Set the ENB/DIS switch to ENB and observe the card LED during self-test. The LED should flash three times and stay lit until the card is software enabled.

6 Enable the IOP/CMDU and test its operation:

> **LD 137**   to load the program
>
> **ENL IOP**   to enable the IOP part of the IOP/CMDU
>
> **STAT IOP**   to check the status of the IOP part of the IOP/CMDU
>
> ********   exit LD 137

7   Perform equipment data dumb again if the previous attempt (in step 2) was not successful. With the replacement IOP/CMDU, successful data dump should be obtained:

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

8   *The following procedure will disrupt the call processing*. To update the ROM on the replacement IOP/CMDU to the software currently residing on the IOP/CMDU hard disk, perform the following steps:

Note: . Refer to "Software installation tool reference" in *Software conversion procedures* (553-2001-320).

- Activate the software installation tool by inserting disk A1 from the software package into the IOP/CMDU.

- Press the MAN RST button on the CP card.

- Select the following options in sequence:

<f>	to install ROM only on the IOP part of the IOP/CMDU
<y>	to start installation

- Specify software installation from the hard disk and follow screen directions until the install menu returns.

- Remove the disk from the IOP/CMDU.

- Select the following options to quit and reboot the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

9   Test the replacement IOP/CMDU:

LD 137	to load the program
DIS IOP	to disable the IOP part of the IOP/CMDU
TEST IOP	to test the operation of the IOP part of the IOP/CMDU
ENL IOP	to enable the IOP part of the IOP/CMDU
TEST CMDU	to test the CMDU part of the IOP/CMDU
****	exit LD 137

If there is a problem, a CIOD system message is generated.

10   Tag defective equipment with a description of the problem and package it for return to a repair center.

Replacing the NT6D63 IOP and the NT6D64 CMDU with the NT5D20 IOP/CMDU

Use this procedure to replace a NT6D63 I/O Processor and a NT6D64 CMDU with an NT5D20 IOP/CMDU combination unit. This procedure is used when an IOP or a CMDU is faulty and you have to replace both the IOP and the CMDU with an IOP/CMDU. The replacement procedure differs for a:

- redundant system without disrupting call processing

- single CPU system, which requires disruption of call processing

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Replacing the IOP and the CMDU with the IOP/CMDU in a redundant system option

Note: In redundant system options 61C and 81C, the normal procedure is to replace the faulty IOP and CMDU on the inactive Core to allow uninterrupted call processing by the active Core. The Core that is processing calls is defined as *active* and the Core not processing calls is defined as *inactive*.

1   Identify the faulty IOP or CMDU in the system and check if the faulty unit is in the active or inactive Core by checking the status of both CPUs:

LD 135	to load the program
STAT CPU	to check CPUs status

If CPU 0 is active and the faulty IOP or CMDU is associated with inactive CPU 1, proceed with step 2. If CPU 0 is active and the faulty IOP or CMDU is associated with CPU 0, perform switchover to make CPU1 the active CPU.

Perform switchover and check the CPU status:

SCPU	to perform switchover to CPU 1
STAT CPU	to check CPUs status
****	to exit the program

Verify that the switchover to CPU1 was successful and that CPU 0 is now inactive.

2   Verify that disk drives in two Cores are synchronized:

LD 137	to load the program
STAT	to get the status of the two disk drives

If disk drives are synchronized, proceed with step 3. If they are not synchronized, execute the SYNC command:

SYNC	to synchronize the drives
****	to exit the program

3   Perform equipment data dump from the active Core (with a known good IOP and CMDU):

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

4   Set the NORM/MAINT switch on the Call Processor (CP) card to MAINT on the *active* Core.

5   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

6   Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

- Press and hold down the MAN RST button on the CP card on the inactive Core.

- While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to MAINT.

- Release the MAN RST button.

The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

7   To remove the faulty IOP and replace the data cartridge from the faulty IOP to the replacement IOP/CMDU:

- Set the ENB/DIS switch on the faulty IOP to DIS.

- Remove the IOP from its card slot in the *inactive* Core.

- Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the IOP.

- Plug the above QMM42 Data Cartridge into the replacement IOP/CMDU and install the screw that secures it to the IOP/CMDU.

8   To remove the faulty CMDU:

- If there is a floppy disk in the CMDU you are replacing, remove the floppy disk.

- Set the power switch on the front of the CMDU to OFF (down).

- Wait at least 10 seconds, then unhook the locking devices on the CMDU and gently pull the unit out of the card cage. To install the replacement IOP/CMDU into the IOP/CMDU slot:

- Set the ENB/DIS switch on the replacement IOP/CMDU to DIS.

- Install the IOP/CMDU into slots 17, 18, and 19 in the NT5D21 Core/Network Module or slots 16, 17, and 18 in the NT9D11 Core/Network Module and NT6D60 Core Module. Lock the locking devices by pushing them gently towards the faceplate.

- Set the ENB/DIS switch to ENB and observe the card LED during self-test. The LED should flash three times and stay lit until the card is enabled.

9   To update the software on the CMDU and the ROM on the replacement IOP/CMDU to the software currently residing on the active CMDU hard disk:

Note: Refer to "Software installation tool reference" in *Software conversion procedures* (553-2001-320).

- Activate the software installation tool by inserting disk A1 from the software package into the IOP/CMDU in the Core containing the replacement IOP/CMDU.

- Press the MAN RST button on the CP card in the Core containing the replacement IOP/CMDU.

- Select the following options in sequence:

<c>	to install software only
<f>	to install ROM on the IOP part of the IOP/CMDU only
<y>	to start installation

- Specify software installation from the hard disk and follow screen directions until the install menu returns.

- Remove the disk from the IOP/CMDU.

- Select the following options to quit and reboot the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

The system will load the software.

Wait until the system sysloads and initializes.

10 Test the replacement IOP/CMDU:

LD 137	to load the program
DIS IOP	to disable the IOP part of the IOP/CMDU
TEST IOP	to test the operation of the IOP part of the IOP/CMDU
ENL IOP	to enable the IOP part of the IOP/CMDU
TEST CMDU n	to test the operation of the CMDU part of the IOP/CMDU where **n** is the inactive Core IOP/CMDU

If there is a problem, a CIOD system message is generated.

11 To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following three steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced IOP/CMDU):

- Press and hold down the MAN RST button on the CP card of the *inactive* Core.

- While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

- Release the MAN RST button.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

12 Set the ENB/DIS switch on all CNI cards in the *inactive* Core to ENB.

13 Synchronize the disk drives of the two Cores:

LD 137	to load the program
STAT	to get status of both the replacement IOP/CMDUs and the IOP and CMDU (or IOP/CMDU) in the other Core
SYNC	to synchronize the drives
****	to exit the program

14 Verify CPU redundancy and CNI operation:

LD 135	to load the program
STAT CPU	to get status of both CPUs
STAT CNI	to verify the operation of all CNI cards

15 Place the *active* CPU in the normal mode by setting the NORM/MAINT switch on the CP card to NORM.

16 Check the CPUs and switch the call processing to the currently *inactive* CPU:

LD 135	to load the program
STAT CPU	to get status of both CPUs
SCPU	to switch to currently inactive CPU and make it active
STAT CPU	to check the status of both CPUs again to verify that the switchover occurred
****	to exit the program

17 Check the status of the replacement IOP/CMDU in the *active* Core and make sure it is operating correctly:

LD 137	to load the program
STAT	to get status of both IOP/CMDUs
DIS IOP	to disable the IOP part of the IOP/CMDU in the active Core
TEST IOP	to verify the operation of the IOP part of the IOP/CMDU in the active Core (replacement IOP/CMDU)
ENL IOP	to enable the IOP part of the IOP/CMDU after the test
TEST CMDU n	to test the operation of the CMDU part of the IOP/CMDU
****	to exit the program

18 Tag defective equipment with a description of the problem and package it for return to a repair center.

Replacing the IOP and the CMDU with the IOP/CMDU in a single CPU system option

Note: In a single CPU system option, i.e. option 51C, replacing a faulty IOP or a CMDU with an IOP/CMDU will disrupt call processing.

1   Check the status of the IOP and the CMDU:

LD 137	to load the program
STAT	to get the status of the IOP and the CMDU
****	to exit the program

2   Perform equipment data dump if possible. If the IOP or the CMDU is faulty, a successful data dump may not be possible:

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

3   Disable the IOP:

LD 137	load LD 137
DIS IOP	Disable the IOP.

4   To remove the faulty IOP and replace the data cartridge from the faulty IOP to the replacement IOP/CMDU:

- Set the ENB/DIS switch on the faulty IOP to DIS.

- Remove the IOP.

- Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the IOP.

- Plug the above QMM42 Data Cartridge into the replacement IOP/CMDU and install the screw that secures it to the IOP/CMDU.

5   To remove the faulty CMDU:

- If there is a floppy disk in the CMDU you are replacing, remove the floppy disk.

- Set the power switch on the front of the CMDU, if present, to OFF (down).

- Wait at least 10 seconds, then unhook the locking devices on the CMDU and gently pull the unit out of the card cage.

6   Installing the replacement IOP/CMDU into the IOP/CMDU slot:

- Set the ENB/DIS switch on the replacement IOP/CMDU to DIS.

- Install the IOP/CMDU into slots 17, 18, and 19 in the NT5D21 Core/Network Module or slots 16, 17, and 18 in the NT9D11 Core/Network Module and NT6D60 Core Module. Lock the locking devices by pushing them gently towards the faceplate.

- Set the ENB/DIS switch to ENB and observe the card LED during self-test. The LED should flash three times and stay lit until the card is software enabled.

7   Enable the IOP/CMDU and test its operation:

LD 137	to load the program
ENL IOP	to enable the IOP part of the IOP/CMDU
STAT IOP	to check the status of the IOP part of the IOP/CMDU
****	exit LD 137

8   Perform equipment data dumb again if the previous attempt (in step 2) was not successful. With the replacement IOP/CMDU, successful data dump should be obtained:

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

9   *The following procedure will disrupt the call processing*. To update the software and the ROM on the replacement IOP/CMDU to the software currently residing on the IOP/CMDU hard disk, perform the following steps:

Note: . Refer to "Software installation tool reference" in *Software conversion procedures* (553-2001-320).

- Activate the software installation tool by inserting disk A1 from the software package into the IOP/CMDU.

- Press the MAN RST button on the CP card.

- Select the following options in sequence:

<c>	to install software only
<f>	to install ROM only on the IOP part of the IOP/CMDU
<y>	to start installation

- Specify software installation from the hard disk and follow screen directions until the install menu returns.

- Remove the disk from the IOP/CMDU.

- Select the following options to quit and reboot the system:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system

10 Test the replacement IOP/CMDU:

LD 137	to load the program
DIS IOP	to disable the IOP part of the IOP/CMDU
TEST IOP	to test the operation of the IOP part of the IOP/CMDU
ENL IOP	to enable the IOP part of the IOP/CMDU
TEST CMDU	to test the CMDU part of the IOP/CMDU
****	exit LD 137

If there is a problem, a CIOD system message is generated.

11 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT5D30AA Dual InterGroup Switch (DIGS) card

Use this procedure to replace two QPC412 Intergroup Switch (IGS) cards with one new NT5D30 Dual Intergroup Switch (DIGS) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 System message guide* for interpreting system messages.

WARNING

Module covers are not hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Before removing the IGS cards, the associated CPU must be inactive. For example, if CPU 0 is active, any odd numbered IGS cards are replaceable without switching CPUs. Refer to Table 3 for IGS card locations.

Table 3

Network Group 0	Shelf 0 Shelf 1	IGS 0 & 2 IGS 1 & 3
Network Group 1	Shelf 0 Shelf 1	IGS 4& 6 IGS 5& 7
Network Group 2	Shelf 0 Shelf 1	IGS 8 & 10 IGS 9 & 11
Network Group 3	Shelf 0 Shelf 1	IGS 12 & 14 IGS 13 & 15
Network Group 4	Shelf 0 Shelf 1	IGS 16 & 18 IGS 17 & 19

2   If you need to switch CPUs:

LD 135 to load the program

STAT CPU to verify CPU status

SCPU to switch CPUs (if necessary)

**** to exit

3   Check the clock status:

LD 60

SSCK x (x= 0 or 1)

The associated clock must be in STANDBY. If you need to switch clocks:

SWCK (if needed)

Note: Even numbered IGS cards are associated with clock 0. Odd numbered IGS cards are associated with clock 1.

4   Software disable the IGS card:

LD 39

DISI IGS xx ("xx" refers to IGS card number 0-19)

ISR043 appears on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

5   Software disable the second IGS card:

DISI IGS xx ("xx" refers to IGS card number 0-19)

ISR043 appears on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

6   Faceplate disable the IGS cards.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

7   Tag and disconnect cables 0 and 1 to the card you are removing.

8   Unlock the locking devices on the cards; pull them out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the NT5D30 DIGS card.

2   Insert the DIGS card:

WARNING

Insertion of the DIGS cards in the incorrect slot will have an effect on system performance.

- For NT8D35 Network modules, insert the DIGS card into slot 2

- For NT5D21 Core/Net modules, insert the DIGS card into slot 9

- For QSD39 Network shelves, insert the DIGS card into slot 13

- For QSD40 Network shelves, insert the DIGS card into slot 2

3   Connect tagged cables 0 and 1 to the replacement card.

4   Set the ENB/DIS switch to ENB on the new card.

5   Software enable the DIGS card in LD 39

ENL IGS xx

STAT IGS

- When the process is complete, you will receive a system response.

- If there is a problem, an ISR system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 39:

    ****

6   Test the DIGS card:

LD 45

NSIG

- If there is a problem, a CED system message is generated.

**** to exit

7   Switch clocks to the SCG (System Clock Generator)

LD 39

SCLK to switch the clock

**** to exit

The DIGS card replacement procedure is complete.

NT6D3903 CPU/Network Module Card Cage

To replace a defective backplane in an NT6D39 CPU/Network Module, you must replace the card cage. Use this procedure to replace the CPU/Network Module card cage.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disable the CPU:

- In a single-CPU system, set the ENB/DIS switch to DIS on the QPC580 CPU Interface (IF) Card. This will stop call processing.

- In a dual-CPU system, the CPU on the backplane you are replacing must be inactive:

    If you need to switch CPUs:

    LD 35
    TCPU   test CPU
    SCPU   switch CPU
    ****   exit LD 35

    Set the NORM/MAINT switch to MAINT on the *active* CPU interface (IF) card. (This keeps the system from switching to the inactive CPU.)

    Set the ENB/DIS switch to DIS on the *inactive* interface card.

---

2   Software disable network equipment cards:

- Disable all network loops on the shelf by disabling the peripheral signaling card:

  LD 32
  DSPS x   Table 4 lists the loops represented by "x"
  ****   exit LD 32

- Disable all other cards that might be in the module, such as serial data interface (SDI) cards or primary rate interface (PRI) cards.

CAUTION

If the system terminal is assigned to an SDI that will be disabled, assign it to another port before the SDI is disabled.

Table 4
Network loop codes

Group/ shelf	Peripheral signaling card	Loops disabled/enabled		
0 / 0	0	0	—	15
0 / 1	1	16	—	31

3   If the multi disk unit (MDU) or floppy disk unit (FDU) is located in the module, unseat disks from the disk drives. (In an option 61, move the MDU or FDU to the active CPU module.)

4   Turn off power to the column or the module power supply:

- With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column.

- With DC power, set the switch on the NT6D41 CE Power Supply to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

5   Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not* turn off the blower unit in the front of the pedestal.)

Note: If this is the master system monitor, disconnect the RJ11 cables before you pull the system monitor out of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down.

---

6   Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.
- Tag cards so they can be returned to the same slot. Remove cards.

7   Disconnect cables, plugs, and wires from the rear of the module to the backplane:

- Remove the I/O safety panel by turning the screws on each side. Set the cover aside.
- Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- Tag and disconnect all plugs, wires, and cables to the backplane.

8   Remove the two mounting screws that secure the rear of the card cage to the module.

9   Remove the front cover plates on both sides of the card cage.

10   Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1 Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2 Replace the front cover plates on both sides of the card cage.

3 Install the mounting screws at the rear of the card cage.

4 Reconnect cables, plugs, and wires to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the I/O safety panel. Tighten the screws.

5 Return cards to their slots. Reconnect all cables to connectors.

6 Reinstall the system monitor. If this is the master system monitor, reconnect the RJ11 cables after it is installed.

7 Turn on power to the column or the module power supply:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply in the module.

8 If the MDU or FDU is in the module, reinsert disks into the drive.

9 Enable the CPU:

- Set the ENB/DIS switch to ENB on the inactive interface card.

- In a dual-CPU system, set the NORM/MAINT switch to NORM on both interface cards.

10 Software enable network equipment cards:

- Enable the peripheral signaling card:

    LD 32

    ENPS x

    ****   exit LD 32

- Enable any other disabled cards.

11 Test network loops:

LD 30
LOOP ALL

If there is a problem, an NWS system message is generated.

If there is no problem, exit LD 30:

****

12 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D40, NT6D41, NT6D42, NT6D43 Power Supply DC

Use this procedure to replace the following DC power supplies:

— NT5K12 Enhanced Peripheral Equipment (EEPE) Power Supply DC

— NT6D40 PE Supply DC

— NT6D41 CE Power Supply DC

— NT6D42 Ringing Generator DC

— NT6D43 CE/PE Power Supply DC

CAUTION

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Set the switch on the front of the power supply to OFF (down).

2   Unhook the locking devices on the power supply; pull it out of the card cage.

Installing equipment

1   Set the switch on the replacement power supply to OFF (down).

   Note: On a replacement NT6D42 or NT6D43, set option switches the same as on the one you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

2   Insert the replacement power supply into the vacated slot and hook the locking devices.

3   Set the switch on the replacement power supply to ON (up). The green LED on the power supply should light and stay lit.

4   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C)

Use this procedure to replace a faulty IODU/C card with a new IODU/C card.

WARNING

Performing this procedure in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system will warm start, causing a momentary interruption in call processing.

Performing a data dump

Before starting this procedure, make a backup copy of the customer database on a 4MB diskette using the data dump routine:

1 Log into the system

2 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

    LD 43   to load the program

3 When "EDD000" appears on the terminal, enter

    EDD   to begin the data dump

---

4   When "DATADUMP COMPLETE" and "DATABASE BACKUP
     COMPLETE" appear on the terminal, enter

****   to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your
technical support organization. A data dump problem must be
corrected before proceeding.

To access the Core during the replacement procedure, connect a terminal to
the J25 port on the I/O panel in the *inactive* Core Module or Core/Network
Module. To communicate with the processor, you must use the following
settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

If you are using only one terminal or a switch box, switch the connection from
Core to Core as needed.

Splitting the Cores

1   Verify that the disk drives are synchronized:

LD 137   to load the program
STAT   to get the status of the disk drives

If the disks are synchronized, proceed with step 2. If they are not
synchronized, execute the SYNC command:

SYNC   to synchronize the drives
****   to exit the program

2   Verify that the clock controller associated with the faulty IODU/C is
     inactive. If it is not, switch clock controllers:

LD 60   to load the program
SSCK   to get the status of the clock controllers
SWCK   to switch clock controllers (if necessary)
****   to exit the program

3   Verify that the IODU/C card you are replacing is on the *inactive* Core:

   LD 135   to load the program
   STAT CPU   to check CPU status
   TEST CPU   to test the CPU

   If the IODU/C you are replacing is on the *inactive* Core, proceed with step 5. If the IODU/C you are replacing is not on the *inactive* Core, swap Cores and verify again:

   SCPU   to swap CPUs
   STAT CPU   to check CPU status

4   Verify that the faulty IODU/C is *inactive*. You may need to switch IODU/Cs.

   LD 137
   STAT   Get the status of IODU/C.
   SWAP   Switch IODU/Cs (if necessary).

5   Set the MAINT/NORM switch on the CP card to MAINT on the *active* Core.

6   Set the ENB/DIS switch on all CNI cards to DIS on the *inactive* Core.

7   Perform the following three steps in uninterrupted sequence:

   •   press and hold the MAN RST button on the CP card in the *inactive* Core

   •   set the MAINT/NORM switch on the CP card in the *inactive* Core to MAINT

   •   release the MAN RST button

Replacing the IODU/C in a redundant system

1   Set the ENB/DIS switch on the faulty IODU/C to DIS.

2   Unhook the locking devices and remove the IODU/C.

3   Remove the round 1/2" diameter IODU/C Security Device from the black round Security Device holder on the top right corner of the IODU/C card being replaced.

4   Put the IODU/C being replaced into a static bag and box.

5   With the Nortel side facing upward, slide the Security Device between the security device holder and the holder clip in the new IODU/C card. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

6   Insert the new IODU/C into the following slots:

   •   For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

   •   For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

7   Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

   A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

8   Press the MAN RST button on the CP card.

Once the keycode is validated against the Security Device, the Install menu is displayed.

9   At the Install menu, select **<o>** to copy the software from the active Core.

```
   Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
   ═ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══ ══
                   I N S T A L L   M E N U
   The Software Installation Tool will install or upgrade Meridian-1
   System Software, Database and the PE-ROM (both CP and IOP ROM).
   You will be prompted throughout the installation and given the
   opportunity to quit at any time.

   Please enter:
<CR>-->  <a> - To install Software, CP-BOOTROM, IOP-ROM.
         <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.
         <c> - To install Software only.
         <d> - To install Database only.
         <e> - To install CP-BOOTROM only.
         <f> - To install IOP-ROM only.
         <g> - To reinstall CP-Software.
         <o> - To copy System Software from the other Core.
         <t> - To go to the Tools menu.
         <k> - To install Keycode only.
                For Feature Expansion, use OVL143.
         <q> - Quit.
                                                      553-7784

         Enter choice > o
```

10   Select **<a>** to confirm.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —

You selected to copy the hard disk /p partition from IODU on Core 1
to IODU on Core 0.
60 MB of disk will be copied.
This wil erase old system files, Database files will NOT be erased.
Note that ERASED FILES CANNOT BE RECOVERED.

NOTE: Copy progress will be indicated by ... , one '.' per MB.

You may Continue with the copy operation or Quit now
and leave your system unchanged.

Please enter:
<CR>-->  <a> -Copy /p partition from one Core 1 to Core 0.
<q> - Quit.


Enter Choice > a
                                                      553-7739
```

11   Select **<a>** to confirm the software release to be copied.

12   When the software is installed successfully, press **<CR>** to install
CP-software from the hard disk to Flash EEPROM, and install
CP-BOOT ROM. Follow the screen directions until the Main Menu
returns.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —

Release: xxxx was installed successfully into /p partition
on your side

NOTE: In order to complete the install you must install flash ROM
        In order to complete the install you must install CP BOOT ROM

Please press <CR> when ready...
                                                      553-7741
```

13   When the Main Menu returns, select **<f>** to install IOP-ROM.

14   Select **<a>** to continue with the IOP-ROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

You have chosen to Upgrade IOP-ROM in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old IOP-ROM with the ROM image files:
"/p/os/ioprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:
<CR>--> <a> - Continue with ROM Upgrade.
        <q> - Quit.

Enter choice > **a**

553-7787

---

15   At the Install Menu, select the following options in sequence to copy the customer database from the redundant disk.

<d>	to go to the Database menu
<d>	to copy the database from the redundant disk
<y>	to confirm installation status summary
<a>	to confirm database copy

16 **Remove the diskette** from the IODU/C and select **<q>** to quit and reload the system.

17 Select **<y>** to confirm quit

18 Select **<a>** to reboot the system.

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

19 In the **inactive** Core, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.

20 In the **inactive** Core, perform the following steps in uninterrupted sequence:

• press and release the MAN RST button

• when SYS700 messages appear on CP LCD display, set the MAINT/NORM switch to NORM.

Within 60 seconds, the LCD will display the following messages, confirming the process.

RUNNING ROM OS
ENTERING CP VOTE

An "HWI534" message from the CPSI or SDI port indicates the start of memory synchronization. Within 10 minutes, an HWI533 message on the *inactive* Core CPSI or SDI TTY indicates the memory synchronization is taking place. Wait until the memory synchronization is complete.

21 Switch the NORM/MAINT switch on the **active** CP card to NORM.

22 Synchronize the disk drives:

LD 137	to load the program
SYNC	to synchronize the drives
****	to exit the program

Note: Synchronization may take up to 50 minutes.

Replacing the IODU/C in an option 51C

1   Perform a data dump in LD 43 (if possible).

1   Set the ENB/DIS switch on the faulty IODU/C to DIS.

2   Unhook the locking devices and remove the IODU/C.

3   Remove the round 1/2" diameter IODU/C Security Device from the black round Security Device holder on the top right corner of the IODU/C card being replaced.

4   Put the IODU/C being replaced into a static bag and box.

5   With the Nortel side facing upward, slide the Security Device between the security device holder and the holder clip in the new IODU/C card. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

6   Insert the new IODU/C into the following slots:

   • For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

   • For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

7   Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

   A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

8   Activate the software installation tool by inserting the Install disk from the software package into the IODU/C.

9   Press the MAN RST button on the CP card in the Core containing the replacement IODU/C.

10   At the Main Menu select **<u>** to go to the Install Menu.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — —
                          M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>-->  <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.


Enter choice > u                                            553-7780
```

11   Insert the Keycode diskette when prompted and select **<a>** to continue
with the keycode validation.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — —


Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>-->  <a> - Continue with the keycode validation
            (the keycode diskette is in the floppy drive).
         <q> - Quit.


Enter Choice > a                                            553-7729
```

Once the keycode is validated against the Security Device, the Install menu is displayed.

12   At the Install menu, select **<b>** to install software, database, CP-BOOTROM, and IOP-ROM.

```
          Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
          ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═
                         I N S T A L L   M E N U

          The Software Installation Tool will install or upgrade Meridian-1
          System Software, Database and the PE-ROM (both CP and IOP ROM).
          You will be prompted throughout the installation and given the
          opportunity to quit at any time.

          Please enter:
<CR>-->   <a> - To install Software, CP-BOOTROM, IOP-ROM.
          <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.
          <c> - To install Software only.
          <d> - To install Database only.
          <e> - To install CP-BOOTROM only.
          <f> - To install IOP-ROM only.
          <g> - To reinstall CP-Software.
          <o> - To copy System Software from the other Core.
          <t> - To go to the Tools menu.
          <k> - To install Keycode only.
                  For Feature Expansion, use OVL143.
          <q> - Quit.
                                                         553-7783

          Enter choice > b
```

The Install Tool displays the software release to be installed and prompts you to confirm that the CD-ROM containing the software has been inserted.

13 Select **<a>** to continue with the software upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Install Utility will install x1123xx software for s/w for software generic xxxx
(Call Processor, System Type) on your system.
Please insert the installation CDROM into the drive on Core 1.

The labeled side of the CDROM should be side up in the CDROM tray.

Please enter:

<CR>--> <a> - CDROM is now in drive.

                Continue with installation.

<q> - Quit.

Enter Choice > **a**

553-7732

---

14 A Status Summary is displayed indicating what will be installed. Select
<y> to confirm the start of installation.

INSTALLATION STATUS SUMMARY

Option	Choice	Status	Comment
SW: CD to disk	yes		from xxxx to xxxx
SW: disk to ROM	yes		
Database	yes		
CP-BOOTROM	yes		
IOP-ROM	yes		

Please enter:
<CR> -> <y> - Yes, start Installation.
<n> - No, stop Installation. Return to the Main Menu.

Enter Choice> **y**

553-7731

The terminal displays information about the software upgrade.

15 Select **<a>** to continue with software installation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You selected to upgrade the system from release: xxxx to release: xxxx.

This will erase all old system files.
Database files will NOT be erased. You may continue installing
the software or quit now and leave your system unchanged.

Please enter:

<CR>--> <a> - Continue with Upgrade.

        <q> - Quit.

Enter Choice > **a**

                                                 553-7733

---

16 Select **<a>** to confirm the software release to be installed.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Upgrading from release xxxx to release xxxx

Please enter:

<CR>--> <a> - Continue with upgrade.

        <q> - Quit.

Enter choice > **a**

                                                 553-7740

---

17   Select **<a>** to continue with the ROM upgrade.

```
      Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
      ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ──

      You have chosen to Upgrade CP-software in card slot xx from
      the context: x11xxxx to the context: x11xxxx.

      This will replace old CP-software with the ROM image files:
      "/p/os/flashos,/p/sl1/sl1res,/p/sl1/ovlres,/p/os/flashfs".

      You may Continue with ROM upgrade or Quit now and leave ROM
      unchanged.

      Please enter:
<CR>-->  <a> - Continue with ROM Upgrade.
      <q> - Quit.

      Enter Choice > a                                      553-7734
```

18 At the Database Menu, insert the first 2MB Database diskette in the IODU/C.

19 Select **<a>** to install the customer database.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You will now perform the database installation.

Note: If you are installing the Database from a floppy disk,
     please insert the correct disk now.

Please enter:

<CR>--> <a> - Install CUSTOMER Database

    (the customer database diskette must be in the Core 1 disk drive).

<b> - Install DEFAULT Database

    (the installation CDROM must be in the Core 1 disk drive).

<d> - Copy Database from the redundant disk.

<e> - Check the Database that exists on the hard disk.

<q> - Quit.

Enter Choice > **a**   553-7779

---

20 Follow all screen instructions regarding insertion of any additional Database diskettes.

21 Select **<a>** to continue with the CP-BOOTROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
———

You have chosen to Upgrade CP-BOOTROM in card slot xx from
the context: xxxxx to the context: xxxxx.

This will replace old CP-BOOTROM with the ROM image files:
"/p/os/cprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:
<CR>--> <a> - Continue with ROM Upgrade.
        <q> - Quit.

Enter Choice > **a**

553-7738

22   Select **<y>** to begin installation of IOP-ROM upgrade.

23   Select **<a>** to continue with the IOP-ROM upgrade

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

You have chosen to Upgrade IOP-ROM in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old IOP-ROM with the ROM image files:
"/p/os/ioprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:
<CR>--> <a> - Continue with ROM Upgrade.
<q> - Quit.

Enter choice > **a**

553-7787

---

24   Select **<q>** to quit and reload the system.

25   **Remove the diskette** from the IODU/C.

26   Select **<y>** to confirm quit.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

You selected to Quit. Please confirm.

Please enter:
<CR>--> <y> - Yes, Quit.
<n> - No, DO NOT Quit.

Enter choice > **y**

553-7751

---

27   Select **<a>** to reboot the system.

```
    Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
    — — — — — — — — — — — — — — — — — — — — — — — — — — — —

    You have selected to Quit the Software Installation Tool
    You may reboot the system or return to the Main Menu.
    Before rebooting the system, remove Install diskette from the floppy drive.


    ----------------------------------------------
    DO NOT REBOOT USING BUTTON!!
    ----------------------------------------------

    Please enter:

    <a> - Reboot the system.

<CR>-->  <m> - Return to the Main menu.


    Enter Choice > a                         553-7752
```

The system will automatically perform a sysload and system initialization during which several messages will appear on the system terminal. Wait until initialization has finished (INI messages are no longer displayed on the system terminal) before continuing.

28   Verify that the "DONE" message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to appear.

Completing the upgrade

To complete the IODU/C card upgrade, verify CPU and CNI status.

1 Log into the system.

2 Verify CPU and CNI functionality:

LD 135   to load the overlay
STAT CPU   to check the CPU status
STAT CNI   to verify CNI functionality
****   to exit the program

3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43   to load the program

4 When "EDD000" appears on the terminal, enter

EDD   to begin the data dump

5 When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

****   to exit the program

6 Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The IODU/C card upgrade is complete.

NT6D52 Rectifier –48 V/30 A

Use this procedure to replace the NT6D52 Rectifier.

Removing equipment

1   Make sure power to the system is completely shut down by first placing all breakers on all Meridian 1 columns to OFF and then placing the AC BRKR switches on all rectifiers to OFF. This includes the AC BRKR switches on other rectifiers that may be connected to the system through another QBL15 Power Distribution Box (see Figure 11 on page 105).

2   Unplug the AC power plug of the rectifier being replaced from its AC receptacle and remove any plastic cable ties that might be securing this power cord to the rack.

3   Remove the rear cover from the rectifier.

4   Tag and disconnect all wiring from TB3 and TB4 on the rear panel of the rectifier.

5   Unscrew the nut from the conduit fitting (located below TB3) and carefully remove the fitting and wires from the rectifier.

6   Remove the two sheet metal screws that secure the baffle assembly to the bottom of the rectifier.

7   Remove the rack mounting screws that secure the rectifier in the rack, and lift the rectifier out of the rack.

8   Tag the defective rectifier with a description of the failure symptoms and package it for return to a repair center.

Installing equipment

1   Position the replacement rectifier in the rack. Replace the rack mounting screws and the two sheet metal screws that secure the baffle assembly to the bottom of the rectifier.

2   Remove the rear cover from the replacement rectifier.

3   Remove the conduit fitting that is installed below TB3 in the replacement rectifier; it will not be used.

4   Remove the switch locking bracket from the 220 V/110 V switch (SW1 on the front of the rectifier) and set the switch to match the commercial power source. Make sure the bracket is properly reinstalled to prevent the switch from being operated.

5   Remove the safety shield from TB3.

6   Carefully insert the wires and conduit fitting from the QBL15 into the hole below TB3 and secure the fitting to the chassis with a nut.

7   Reconnect the wiring from the QBL15 to the rectifier as follows (see Figure 11):

   •   Connect the #4 AWG black wire to terminal 2 on TB3 (48 V return).

   •   Connect the #4 AWG red wire to terminal 1 on TB3 (– 48 V).

   •   **For systems without battery backup:**

      –   Make sure that the two factory-installed jumpers are properly connected to TB4, one from + OUT to +SENS and the other from – OUT to – SENS.

   For systems with battery backup:

      –   Remove all jumpers from TB4; they will not be used.

      –   Connect the #22 AWG black wire to the + SENS terminal on TB4.

      –   Connect the #22 AWG red wire to the – SENS terminal on TB4.

   •   Connect the #22 AWG blue wire to the DCON terminal on TB4.

CAUTION
Incorrect wiring connections between a rectifier and the QBL15 can cause serious system damage. Refer to Figure 11 and verify that all wiring is properly connected before proceeding.

---

8   Reinstall the safety shield on TB3 and then install the rear cover on the rectifier.

9   Make sure the AC BRKR switch on the rectifier is OFF.

10   Plug the AC power plug from the rectifier into the commercial power source and then dress the power cord to the rack using plastic cable ties.

Adjusting equipment

Note: Do not adjust the over voltage shutdown (OV ADJ) potentiometer on the front panel of replacement rectifiers. This potentiometer is adjusted at the factory and does not require readjustment upon installation into an existing power system.

Note: The following steps adjust the float voltage of the replacement rectifier. This float voltage must be adjusted to match the float voltage settings of all other system rectifiers to ensure proper load sharing.

1   At the QBL15, connect a voltmeter to the positive (+) and negative (–) test points (located with the QPC188 Battery Monitor).

2   Set the AC BRKR switch on the replacement rectifier to ON.

3   Set the CB0 circuit breaker on just one Meridian 1 column to ON to establish a minimum load.

4   Adjust the VOLT ADJ potentiometer on the front panel of the replacement rectifier to obtain the desired float voltage reading, ± 100 mV dc.

5   Set the CB0 breaker on the Meridian 1 column to OFF and then set the AC BRKR switch on the rectifier to OFF.

6   Disconnect the multimeter and follow normal power up procedure to restore the system to service.

Figure 11
NT6D52 Rectifier and QBL15 Power/Battery Distribution Box connections

Note 1: All wiring between the rectifier and the QBL15 is contained in the same conduit.
Note 2: Use single cable for 30 m (100 ft) or less, double cable for 30 to 60 m (100 to 200 ft).
Note 3: The terminal function is marked, but the terminal numbers may not be marked.   553-3041
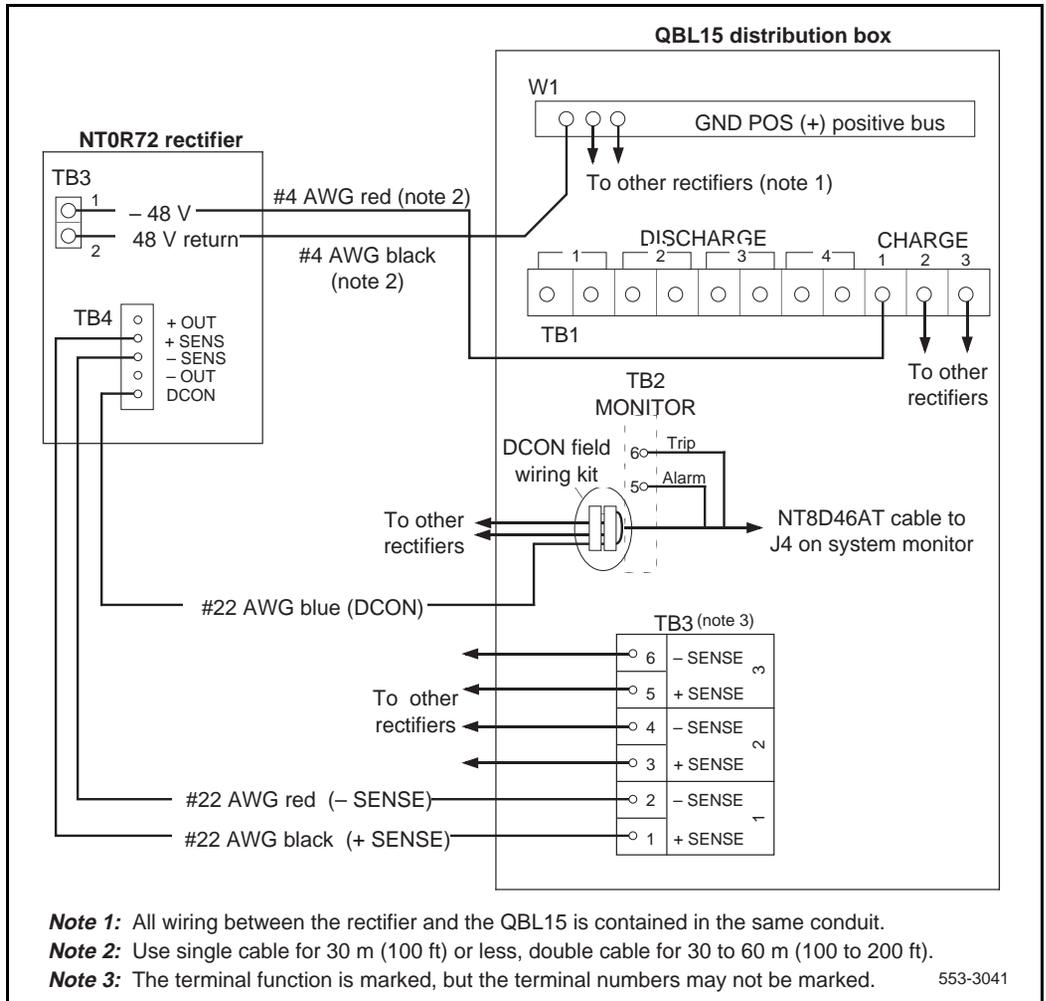
NT6D6008 Core and NT9D1103/NT5D2103 Core/Network Card Cage

To replace a defective backplane in an NT6D60 Core Module, an NT5D21 Core/Network Module, or in an NT9D11 Core/Network Module, you must replace the card cage.

Note: You will receive a NT5D2103 card cage as a replacement for a NT9D1103 card cage; the latter unit is no longer available.

WARNING

The following procedures describe card cage replacement for redundant systems such as 61C, 81, and 81C. A single-CPU system, such as 51C, must be shut down to replace the card cage.

Use this procedure to replace the card cage in a redundant system by maintaining system operation with the active CPU and replacing the card cage of the standby CPU. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   To access the Cores during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the rear of each Core or Core/Network Module. You must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XON

Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

2   The Call Processor (CP) Card must be inactive in the card cage you are
    replacing.

    • Check the status of the CP cards:

    LD 135
    STAT CPU   determine which CP card is active
    If necessary, switch Cores:
    SCPU   switch Cores
    ****   exit LD 135

    • Set the NORM/MAINT switch to MAINT on the now *active* CP
      card.

    • Connect the terminal to the port on the inactive Core.

3   Set the NORM/MAINT switch to MAINT on the CP card in the card
    cage you are replacing (the inactive Core). Wait 2 minutes for the system
    to initialize. (A series of INI messages will be seen on the terminal for
    the inactive Core.)

4   The NT6D64 Core Multi Disk Unit (CMDU) or NT5D20 IOP/CMDU in
    the card cage you are replacing must be inactive:

    • Check the status of the CMDUs or IOP/CMDU:

    LD 137
    STAT CMDU   determine which CMDU or IOP/CMDU is
                        active
    If necessary, switch CMDUs or IOP/CMDUs:
    SWAP   switch CMDUs or IOP/CMDUs
    ****   exit LD 137

    • Set the ENB/DIS switch to DIS on the CMDU or IOP/CMDU in the
      card cage you are replacing.

5   Disable the clock controller card and any QPC720 Primary Rate
    Interface or QPC472 Digital Trunk Interface (PRI/DTI) Cards in the card
    cage you are replacing.

    •   Check the status of the clock controller cards:

        LD 60

        SSCK x   "x" is the Core (0 or 1)

        If the clock controller card is active, switch to make it inactive:

        SWCK

        Disable the clock controller card:

        DIS CC x   "x" is the Core (0 or 1)

    •   Set the ENB/DIS switch to DIS on the clock controller card in the
        card cage you are replacing.

    •   Disable any PRI/DTI cards in the card cage you are replacing.

        DISL loop   disable the network loop and the card
        ****   exit LD 60

    Note: If the PRI/DTI cards service loops that cannot be out of service,
    move the cards to a different module and reenable them.

6   Set the ENB/DIS switch to DIS on all CNI cards and the IOP/CMDU or
    IOP/CMDU in the card cage you are replacing.

7   Follow the steps below to disconnect and remove the NT8D22 System
       Monitor (do *not* turn off the blower unit in the front of the pedestals):

   • Load LD 37 and software disable the associated SDI port:

     LD 37
     DIS TTY x   disable the device associated with the port
     ****   exit LD 37

   • If the card cage you are removing is in the column with the master
     system monitor (should be column 0):

     On the master system monitor (column 0), disconnect the RJ11 cable
     to J3, then the cable to J6, then pull the system monitor out of the
     slot.

   • If the card cage you are removing is in the column with a slave
     system monitor (should be column 1):

     On the master system monitor (column 0), disconnect the RJ11 cable
     to J3, then the cable to J6, then pull the system monitor out of the
     slot.

     On column 1, disconnect the cables, then pull the system monitor out
     of the slot.

CAUTION
If the system monitors are not removed, the system may shut down.

---

8   Follow the appropriate step below to turn off power to the module:

- With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column INCLUDING THE NETWORK GROUP IN THAT COLUMN. Relocate essential services from this group before proceeding.

- With DC power, set the switch on the NT6D41 CE Power Supply to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

9   Follow the steps below to remove all cards from the module:

- Tag and disconnect all cables to the front of the module. Tape over the contacts to avoid grounding. Tape or tie all cables to the sides so the working area in front of the card cage is totally clear.

- Set the ENB/DIS switch to DIS on any cards that are not already set to disable.

- Tag the cards so they can be returned to the same slot in the replacement card cage. Remove the cards, including the bus terminating units (BTUs) between slots 4 and 5, and slots 5 and 6 in option 81 and between slots 0 and 1 and 1 and 2 in option 61C when equipped with the NT9D11 Core/Network Modules.

10 Follow the steps below to disconnect cables to the I/O panels and backplane at the rear of the module:

- Tag and disconnect cables from the I/O panels.

- Remove the I/O panels and the I/O safety panel over the backplane to access the rear backplane connectors.

- Use the P0741489 Extraction Tool to disconnect cables to the backplane connectors. (See "Options 51C, 61C, 81, and 81C cable guidelines" on page 13.)

11 Follow the steps below to disengage the module:

- Remove the two mounting screws that secure the rear of the card cage to the module.

- Remove the front trim panels on each side of the card cage.

- Remove the three mounting screws that secure the front of the card cage to the bottom of the module.

- Pull the card cage halfway out of the module.

12 Follow the steps below to disconnect power and ground connections at the rear of the module:

- Disconnect the system monitor ribbon cables to J1 and J2.

- Disconnect the module power connectors. These are small orange connectors plugged into the module power distribution unit (MPDU) with AC power, or connected to each other with DC power.

- Disconnect the logic ground (orange) wire from the backplane bolt.

- Disconnect the frame ground (green) wire from the frame ground post.

WARNING

Do *not* disconnect the main power connectors (large orange connectors) at the top and bottom of the module.

---

13 Pull the card cage all the way out of the module.

Note: For AC-powered systems, after the card cage is out of the module you must remove the MPDU and reinstall it on the replacement card cage. The screw-heads for the MPDU are in the wall of the power supply slot.

14 Remove the floating power connector (the black connector) on the rear of the card cage. Using the same mounting screws and nuts, attach the connector to the new card cage.

Note: Check the orientation of the connector. Looking at it from the rear of the card cage, the upper left corner pin should be empty (no wire) and the lower right corner pin should have a wire installed. The green wire should be up.

Installing equipment

1 Set the backplane jumpers in the card cage for Core 0 and Core 1 in option 81, Core/Network 0 and Core/Network 1 in options 61C and 81C, and Core/Network Module in option 51C. The jumpers are located on the backplane, along the bottom of the front side (the side facing into the card cage assembly):

- For Core 0, verify that all four jumpers are closed (there is a plug over both pins). For Core/Network 0, verify that the jumper between card slots 14 and 15 is closed.

- For Core 1, verify that jumper JB4, between slots 9 and 10, is open (jumper plug not installed). Verify that the other three backplane jumpers are closed. For Core/Network 1, verify that the jumper between card slots 14 and 15 is open.

CAUTION

If the Core or Core/Network Module jumpers are set incorrectly, the system will not load and operate correctly.

Note: If you are replacing your NT9D1103 card cage with a NT5D2103 card cage, skip the following step, Step 2. Network terminators in the NT9D1103 card cage have been replaced by hybrid bus terminators that are actually built into the NT5D2103 card cage.

2   Install the BTUs in the replacement NT6D6008 Core card cage. The components must be on the right (looking at the front of the card cage):

- Install Q477A-9 between slots 4 and 5

- Install Q477B-10 between slots 5 and 6

3   Reposition the EMI shield (it looks like a brass grill) in the base of the module. Tape over the front mounting tabs to hold the shield in position. The tape will be removed later.

4   Slide the new card cage about halfway into the module. Hold the card cage firmly while the ground and power connections are attached at the rear of the module:

- Attach the system monitor ribbon cables (J1 goes down to the pedestal, J2 goes up the column).

- Attach the frame ground (green) wire to the frame ground post on the module. (A 5/16" socket wrench is needed for this operation.) Remove the nut and the lockwasher at the top of the post. Put the frame ground connector over the post. Reinstall the top lockwasher and the nut, then tighten the nut down.

- Attach the logic ground (orange) wire. Remove one nut and the lockwasher. Put the connector over the post, reinstall the lockwasher and nut, then tighten the nut down. (A 3/8" socket wrench is needed for this operation.)

- Connect the module power connectors to the MPDU for AC power, or to each other for DC power.

5   Follow the steps below to install the new card cage in the module:

- Slide the card cage the remainder of the way into the module.

- Check the position of the EMI shield. If it has shifted, reposition it. Remove the tape holding the EMI shield.

- Secure the card cage to the module with the three screws in the front and the two screws in the rear.

6   Replace the trim panels on both sides of the card cage.

Note: If you are replacing your NT9D1103 card cage with a NT5D2103 card cage, skip the following step (Step 7). In the NT5D2103 card cage, the Core Bus Terminator function has been taken over by the hybrid bus terminators actually built into the card cage.

7   Install the NT6D6003 CBT Card in slot 13 in the NT6D60 Core module.

Note: All jumpers on the CBT card are preset to open (the two pins are not connected together by a jumper plug) and must be left open. The card may, however, have jumper plugs installed over one pin on the jumpers. The plugs are provided as extra plugs that may be required on some other card or for future requirements.

8   Install the module power supply in the slot labeled "CE pwr sup" in the Core or Core/Network card cage. Perform a hardware sanity check:

   • Turn on power to the module:

     With AC power, set the main circuit breaker to ON (up) in the rear of the pedestal.

     With DC power, set the breaker to ON (up) in the pedestal, then set the switch to ON (up) on the power supply in the module.

   • Check the LED pattern for the card cage you are installing:

     -- On the NT6D003 CBT Card, there are five LEDs are on the component side of the card (not on the faceplate). The top light is not used. The pattern of the remaining four LEDs must be OFF-OFF-OFF-OFF (from the top down) for Core 0, and ON-OFF-OFF-OFF for Core 1.

     -- On the NT5D2103 card cage, the LEDs are on the front side of the backplane. The LEDs are in two vertical columns, one on either side of slot 12 (if necessary, remove the CNI card to view the LEDs). The LEDs on the right side of the slot apply to Core 0 and must be (from the top down) OFF-OFF-OFF-OFF. Those on the left side apply to Core 1 and must be ON-OFF-OFF-OFF.

   • Shut down power to the module again.

     With AC power, set the main breaker for the column to OFF (down).

     With DC power, set the switch on the power supply and the pedestal breaker for the module to OFF (down).

9   Install the module power supply in the slot labeled "CE pwr sup" in the Core or Core/Network card cage.Follow the steps below to reconnect cables to the backplane:

   • Reconnect all cables to the backplane connectors.

CAUTION

If you try to insert the cable connector at an angle, pins may be bent or broken.

- Route the NTND14 CNI to 3PE cables to the right side (facing the rear) of the module and tie-wrap them to the cable restraint bracket behind the I/O panel.

- Position and secure the I/O panels.

- Position and secure the I/O safety panel.

10 Reinstall the 3PE card. Set the ENB/DIS switch to ENB.

11 Set the ENB/DIS switch on the clock controller card to DIS. Seat the clock controller card; leave the ENB/DIS switch set to DIS and do not connect the faceplate cables.

12 Follow the appropriate step below to turn on power to the column or the module power supply:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply in the module.

13 Follow the appropriate steps below to connect the clock controller cables:

- For a QPC471 Clock Controller card, connect the NT8D79 cables from the primary or secondary reference to the faceplate of the clock controller card. For options 81 and 81C, connect the NT8D74 cable from the NT8D36 InterGroup Module to the clock controller card.

- For QPC775 Clock Controller Cards in options 81 and 81C, connect the NT8D74 cable from the junctor board to the faceplate of the clock controller card. Then connect the NT8D79 cables from the primary or secondary reference to the faceplate of the clock controller card.

- Leave the ENB/DIS switch set to DIS on QPC471 or QPC775 cards.

14 Reinstall the NT5D20 IOP/CMDU, then set the ENB/DIS switch to ENB.

As the card performs card-level power-up tests, watch the faceplate HEX display for flashing error codes. See *X11 input/output guide* for an explanation of the codes.

15 Set the NORM/MAINT switch on the CP card to MAINT. (This will keep the system in split mode when the card is reinstalled.)

16 Reinstall the CP card. As the card performs card-level power-up tests, watch the LCD display and output from the CPSI port for error messages:

- Following the "Selftest Complete" message, watch the LCD on the CP card for the message "IOP in Slot 16."

- Watch the LCD for the message "Loading Disk OS." As the system attempts to access the hard disk, watch the LCD for error messages.

- Watch for system reload (SYS) and initialization (INI) messages on the terminal.

Note: If you replaced the CMDU during the card cage replacement procedure, you must match the hard drive to the current software. If you replaced a CP card or an IOP/CMDU, you must match the ROM on the card to the current software. To match the software, follow the appropriate steps in "Software installation tool" in *Software conversion procedures* (553-2001-320).

17 Seat all CNI cards, but leave the ENB/DIS switches set to DIS.

18 Load LD 135 and check the status of all configured CNI cards:

LD 135
STAT CNI   get the status of all configured CNIs
TEST CNI c s   test each configured CNI on the inactive side
****   exit LD 135

19 Set the ENB/DIS switch to ENB on the clock controller card.

20 Set the ENB/DIS switch to ENB on all CNI cards.

21 Press and release the MAN RST button on the CP card in the new card cage. When SYS700 messages appear on the LCD display, set the NORM/MAINT switch to NORM. Within 60 seconds, the LCD will display the following messages, confirming the process:

> RUNNING ROM OS
> ENTERING CPU VOTE

By the active CPU, an HWI533 message from the CPSI or SDI port indicates the memory is shadowed.

Note 1: At this point, the other Core is still active and in split mode. The Core in the new card cage is the standby (inactive) side. The memories are shadowed (synchronized), but the hard disks are not synchronized (redundancy is disabled).

Note 2: A CNI port LED may not go out if a network loop corresponding to that port is disabled.

22 Set the NORM/MAINT switch to NORM on the CP card in the active Core and perform a redundancy sanity test:

LD 135

STAT CNI	get the status of all configured CNIs
STAT CPU	get the status of both Cores
TEST CPU	test the inactive CP card and CP to CP cable
TEST CNI c s	test each configured CNI on the inactive side

Note: Testing the CP and CNI cards can take 2 minutes or more for each test.

23 Switch Cores and test the other side:

SCPU	switch to Core 0
TEST CPU	test the inactive CP card and CP to CP cable

24 Get the status of the CP cards and memories, and of the CNIs:

STAT CPU	get the status of both Cores
STAT CNI	get the status of all configured CNIs
****	exit LD 135

25 Load LD 137 and synchronize the hard disks. To be sure the contents of CMDU 1 are copied to CMDU 0, verify that CMDU 0 is disabled:

LD 137	
STAT	get the status of CMDUs, IOPs, and redundancy
SWAP	switch CMDUs (if necessary)
SYNC	synchronize the hard disks

Note: Synchronization may take up to 15 minutes.

26 Get the status of the CMDUs and be sure CMDU 0 is active. Switch CMDUs if necessary:

STAT	get the status of CMDUs, IOPs, and redundancy
SWAP	switch CMDUs (if necessary)
****	exit LD 137

27 Test the IOP to IOP SCSI connection and test the CMDUs:

LD 137	
TEST SCSI	check the IOP to IOP connection and access to the CMDUs
TEST CMDU	test the hard and floppy disk drives
	(a floppy disk must be installed)
****	exit LD 137

28 Test Core functions:

    LD 135

TEST CPU	test the inactive CP card and CP to CP cable
TEST IPB	test the backplane protocol on the inactive side
TEST CNI c s	test each configured CNI on the inactive side

    If all the tests pass, switch Cores and test the side that is now inactive:

SCPU	switch to the other Core
TEST CPU	test the inactive CP card and CP to CP cable
TEST IPB	test the backplane protocol on the inactive side
TEST CNI c s	test each configured CNI on the inactive side

29 Clear displays, major alarms, and minor alarms:

CDSP	clear the display
CMAJ	clear all major alarms
CMIN ALL	clear all minor alarms
SCPU	switch to the other Core
CDSP	clear the display
****	exit LD 135

30 Software enable, from the active side, the clock controller and PRI/DTI cards:

- Enable the clock controller card:

    LD 60

    ENL CC x

TRCK aaa	if necessary, set tracking

- Enable the PRI/DTI cards:

    ENLL loop

****	exit LD 60

31 Follow the appropriate steps below to reinstall and check the system monitor:

- If you replaced the card cage in the column with the master system monitor:

  Reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.

- If you replaced the card cage in the column with the slave system monitor:

  Reinstall the system monitor in column 1 first.

  On the master system monitor, reconnect the RJ11 cable to J6, then the cable to J3. Reinstall the system monitor.

- Enter:

  LD 37
  STAT XSM   check the status of the system monitors
  ****   exit LD 37

32 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D6003 Core Bus Terminator Card

Use this procedure to replace a Core Bus Terminator (CBT) card.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Note: The CBT is not required with NT5D21 Core/Network Modules.

1   The CBT card must be on the inactive Core. If you need to switch the active Core:

LD 135
SCPU

2   Unhook the locking devices on the CBT card; pull it out of the card cage.

3   Check the replacement CBT card. All jumpers on the card should be preset to open (the two pins are not connected together by a jumper plug) and must be left open.

Note: The card may, however, have jumper plugs installed over one pin on the jumpers. The plugs are provided as extra plugs that may be required on some other card or for future requirements.

4   Insert the replacement CBT card into the vacated slot.

5   Test the functions of the CBT card in LD 135:

TEST CPU	test the CP card and CP to CP cable
TEST IPB	test the backplane protocol
TEST CNI c s	"c" is the CPU (0 or 1), "s" is the slot (8–12); perform this test for each CNI in the module

If all the tests pass, switch the active Core:

SCPU

• If there is a problem with any of the tests, CCED system messages are generated.

• If there is no problem, exit LD 135 by entering ********

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D63 I/O Processor Card

Use this procedure to replace an I/O Processor (IOP) card in a:

- redundant system without disrupting call processing

- single CPU system, which requires disruption of call processing

Note: If you are replacing a faulty IOP and an associated CMDU with an NT5D20 IOP/CMDU, refer to "Replacing the NT6D63 IOP and the NT6D64 CMDU with the NT5D20 IOP/CMDU" on page 61

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Note: In redundant system option 61C with the NT9D11 Core/Network Modules and option 81, the normal procedure is to replace the faulty I/O Processor card on the inactive Core to allow uninterrupted call processing by the active Core. The Core that is processing calls is defined as *active* and the Core not processing calls is defined as *inactive*.

Check the status of the system CPUs, the disk drives synchronization, and perform data dump as preliminary steps in the replacement procedure:

1   Identify the faulty IOP card in the system and check if the faulty card is in the active or inactive Core by checking the status of both CPU:

LD 135	to load the program
STAT CPU	to check CPUs status

If CPU 0 is active and the faulty IOP is associated with inactive CPU 1, proceed with step 2. If CPU 0 is active and the faulty IOP is associated with CPU 0, perform switchover to make CPU1 the active CPU. Perform switchover and check the CPU status:

SCPU	to perform switchover to CPU 1
STAT CPU	to check CPUs status
****	to exit the program

Verify that the switchover to CPU1 was successful and that CPU 0 is now inactive.

2   Verify that disk drives in two Cores are synchronized:

LD 137	to load the program
STAT	to get the status of the two disk drives

If disk drives are synchronized, proceed with step 3. If they are not synchronized, execute the SYNC command:

SYNC	to synchronize the drives
****	to exit the program

3   Perform equipment data dumb from the active Core (with a known good IOP card):

LD 43	load LD 43
EDD	execute datadump and wait until "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" are displayed before exiting the program.
****	exit LD 43

4   Set the NORM/MAINT switch on the Call Processor (CP) card to
    MAINT on the *active* Core.

5   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

6   Perform the following three steps on the *inactive* Core in an
    uninterrupted sequence:

    •   Press and hold down the MAN RST button on the CP card on the
        inactive Core.

    •   While holding down the MAN RST button, set the NORM/MAINT
        switch on the same CP card to MAINT.

    •   Release the MAN RST button.

    The system is now in split mode where each Core is functioning
    independently and the automatic switchover has been disabled.

7   To remove the faulty IOP card and replace the data cartridge from the
    faulty IOP to the replacement IOP:

    •   Set the ENB/DIS switch on the faulty IOP to DIS.

    •   Remove the IOP from its card slot in the *inactive* Core.

    •   Remove the screw that secures the QMM42 Data Cartridge. Gently
        unplug the cartridge from the connectors on the component side of
        the IOP card.

    •   Plug the above QMM42 Data Cartridge into the replacement IOP
        card and install the screw that secures it to the IOP card.

8   To install the replacement IOP card into the IOP card slot:

    •   Set the ENB/DIS switch on the replacement IOP to DIS.

    •   Install the IOP card into its vacant card slot and lock the locking
        devices by pushing them gently towards the faceplate.

    •   Set the ENB/DIS switch to ENB and observe the card LED during
        self-test. The LED should flash three times and stay lit until the card
        is enabled.

9   Press the MAN RST button on the CP card on the inactive Core and wait
    until system sysloads and initializes.

10   Enable the IOP and check its status:

       LD 137   to load the program
       ENL IOP   to enable the IOP
       STAT IOP   to check the IOP status

11   To update the ROM on the replacement IOP card to the software
currently residing on the CMDU hard disk:

Note: Refer to "Software installation tool reference" in *Software
conversion procedures* (553-2001-320).

- Activate the software installation tool by inserting disk A1 from the
software package into the CMDU in the Core containing the
replacement IOP card.

- Press the MAN RST button on the CP card in the Core containing
the replacement IOP card.

- Select the following options in sequence:

       <f>   to install IOP ROM only
       <y>   to start installation

- Specify software installation from the hard disk and follow screen
directions until the install menu returns.

- Remove the disk from the CMDU.

- Select the following options to quit and reboot the system:

       <q>   to quit
       <y>   to confirm quit
       <a>   to reboot the system

12   Test the replacement IOP card and the CMDU:

LD 137	to load the program
DIS IOP	to disable the IOP card
TEST IOP	to test the IOP operation
ENL IOP	to enable the IOP
TEST CMDU n	to test the CMDU(s) operation where **n** is the inactive Core CMDU

If there is a problem, a CIOD system message is generated.

13   To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following three steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced IOP):

- Press and hold down the MAN RST button on the CP card of the *inactive* Core.

- While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

- Release the MAN RST button.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

14   Set the ENB/DIS switch on all CNI cards in the *inactive* Core to ENB.

15   Synchronize the disk drives of the two Cores:

LD 137	to load the program
STAT	to get status of both IOPs and CMDUs
SYNC	to synchronize the drives
****	to exit the program

16   Verify CPU redundancy and CNI operation:

LD 135	to load the program
STAT CPU	to get status of both CPUs
STAT CNI	to verify the operation of all CNI cards

17   Place the *active* CPU in the normal mode by setting the NORM/MAINT switch on the CP card to NORM.

18 Check the CPUs and switch the call processing to the currently *inactive* CPU:

LD 135	to load the program
STAT CPU	to get status of both CPUs
SCPU	to switch to currently inactive CPU and make it active
STAT CPU	to check the status of both CPUs again to verify that the switchover occurred
****	to exit the program

19 Check the status of the replacement IOP and the associated CMDU in the *active* Core and make sure they are operating correctly:

LD 137	to load the program
STAT	to get status of both IOPs and CMDUs
DIS IOP	to disable the IOP in the active Core
TEST IOP	to verify the operation of IOP card in the active Core (replacement IOP)
ENL IOP	to enable the IOP after the test
TEST CMDU n	to test the operation of the CMDU
****	to exit the program

20 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D64 Core Multi Drive Unit

Use this procedure to replace the Core Multi Drive Unit (CMDU). See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Note: If you are replacing a faulty CMDU and an associated IOP with an NT5D20 IOP/CMDU, refer to "Replacing the NT6D63 IOP and the NT6D64 CMDU with the NT5D20 IOP/CMDU" on page 61

Removing equipment

1   Software disable the CMDU you are replacing:

 LD 137

 STAT CMDU x   x is the CMDU number (0 or 1)

 If the CMDU is not disabled enter:

 DIS CMDU x

 ****   exit LD 137

2   If needed, save (datadump) the current data configuration to the known good CMDU:

 LD 43

 EDD   execute datadump

 ****   exit LD 43

3   If there is a floppy disk in the CMDU you are replacing, remove the floppy disk.

4   Set the power switch on the front of the CMDU to OFF (down).

5   Wait at least 10 seconds, then unhook the locking devices on the CMDU and gently pull the unit out of the card cage.

CAUTION

You must wait *at least 10 seconds* before you remove the CMDU from the card cage. This allows the hard disk to stop.

Installing equipment

1   Insert the replacement CMDU into the vacated slot and hook the locking devices.

2   Set the power switch on the front of the CMDU to ON (up).

3   If there was a floppy disk in the CMDU you replaced, install the floppy disk in the replacement CMDU.

4   Software enable and test the CMDU:

LD 137
ENL CMDU x

The system will respond with:

DISK RDUN WILL BE ENABLED, ENTER Y(ES) TO CONFIRM.

Enter:

YES

If this operation fails, enter:

SYNC	synchronizes the hard disks
TEST SCSI	check access to the CMDU
TEST CMDU x	check the hard and floppy disk drives
****	exit LD 137

If there is a problem, a CIOD system message is generated.

5   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D65 Core to Network Interface Card

Use this procedure to replace the Core to Network Interface (CNI) card. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Replacing the CNI card in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time (after midnight).

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Before replacing a Core to Network Interface (CNI) card, you can test it in an unused CNI slot (in case, for example, there is a bent pin on the backplane). If the card works correctly in the new slot, you can leave it there. To switch slots:

— The Core associated with the CNI card must be inactive:

   • If you need to switch Cores:

      LD 135
      SCPU

   • Set the NORM/MAINT switch to MAINT on the *active* CP card.

— Software disable the CNI card:

   DIS CNI c s   "c" is the CPU (0 or 1), "s" is the card slot (8–12)
   ****   exit LD 135

— Software configure the new slot:

LD 17

EXT x 3PE   "x" is the number (0–4) of the associated 3PE
                       card(s)

CNI X s p   delete the group(s) associated slot

CNI s p g   add group(s) to new slot

****   exit LD 17

LD 43

EDD   datadump the new configuration

****   exit LD 43

— Insert the CNI card in the new slot. Move the cables to the shrouds on
  the backplane to the connectors for the new slot.

— Enable the CNI card and switch the CP cards:

  • Set the NORM/MAINT switch to NORM on the *active* CP card.

  • **LD 135**
    ENL CNI c s
    SCPU
    ****

Use the following procedure to replace a CNI card.

Removing equipment

1 The Core associated with the CNI card must be inactive:

   • If you need to switch Cores:

     LD 135
     SCPU

   • Set the NORM/MAINT switch to MAINT on the *active* CP card.

2 Set the ENB/DIS switch to DIS on the CNI card you are replacing.

3 Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Set the ENB/DIS switch to ENB on the replacement card.

4   Set the NORM/MAINT switch to NORM on the *active* CP card.

5   Software enable and test the CNI card and configured ports on the card:

ENL CNI c s   "c" is the CPU (0 or 1), "s" is the card slot (8–12)
TEST CNI c s
SCPU
****   exit LD 135

Note: Due to the need to reestablish memory shadowing and contents, the test command may take a minute or more depending on memory size. The LED on the CNI card flashes as the test runs.

If there is a problem, a CCED system message is generated (LEDs on the CNI cards stay lit on the inactive Core).

Note: If the network loop corresponding to a CNI port is not enabled, the LED for that port may not go out.

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT6D66 Call Processor Card

Use this procedure to replace an NT6D66 Call Processor (CP) card.

WARNING

Replacing the CP in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time (after midnight).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.


WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Note: The following procedure can be performed on a system equipped with NT5D61 IODU/C, NT5D20 IOP/CMDU, or NT6D63 IOP and NT6D64 CMDU cards.

Removing equipment

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module in option 81 or Core/Network Module in options 51C, 61C, and 81C for the card you are replacing. You must use the following settings on the terminal:

    9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

    Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

There should be an SDI TTY connection at J30, which should remain connected at all times to monitor system status.

2   The CP card you are replacing must be on the inactive Core. Check the status of the CP cards:

LD 135

STAT CPU   determine which CP card is active

If necessary, switch Cores:

SCPU   switch Cores

****   exit LD 135

3   Put both Cores into maintenance mode and remove the CP card you are replacing using the following sequence:

- First, set the NORM/MAINT switch to MAINT on the *active* CP card (the one you are *not* replacing).

WARNING

Setting the NORM/MAINT switch to MAINT on the inactive CP card at this point will cause an init.

- Then, set the NORM/MAINT switch to MAINT and press the MAN RST button on the CP card you are replacing. Unhook the locking devices in the CP card you are replacing and pull it out of the card cage.

Installing equipment

1   Set the NORM/MAINT switch to MAINT on the replacement card.

2   Match the ROM on the replacement card to the software currently on the
    CMDU hard disk by using the following procedure:

    •   For systems equipped with an IODU/C, insert the Install diskette
        which corresponds to the NT6D66 Call Processor

    •   For systems equipped with a CMDU or IOP/CMDU, insert disk A1.

    •   Insert the CP replacement card into its vacated slot and hook the
        locking devices.

    •   Press the MAN RST button on the replacement CP card.

3   Perform the following 2 steps for systems equipped with an NT5D61 IODU/C:

•   At the Main Menu select **<u>** to go to the Install Menu.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —
                        M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>-->  <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.


Enter choice > u                                       553-7780
```

•   Insert the Keycode diskette when prompted and select **<a>** to continue with the keycode validation.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —


Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>-->  <a> - Continue with the keycode validation
             (the keycode diskette is in the floppy drive).
         <q> - Quit.


Enter Choice > a                                       553-7729
```

- Select the following options in sequence from the Install Menu:

  <e>   to install CP ROM only

  <y>   to start installation

  Specify software installation from the hard disk.

- Follow all screen directions until the Install Menu returns.

- Select the following options to quit:

  <q>   to quit
  <y>   to confirm quit

- Remove disk A1 from the CMDU or IOP/CMDU and then reload the system:

  <a>   to reboot the system.

- Press the MAN RST button and then set the NORM/MAINT switch to NORM on the replacement CP card. (It may take 2 to 4 minutes for memory synchronization to take place.)

- Refer to "Software Installation Tool Reference" in *Software conversion procedures* (553-2001-320).

- Check the status of the replacement CP card from the active side:

  LD 135
  STAT CPU

If there are CCED messages generated by the STAT CPU command on the replacement CP card, set the NORM/MAINT switch to MAINT, press the reload (MAN RST) button and set the NORM/MAINT switch back to NORM. (It may take 2 to 4 minutes for memory synchronization to take place.)

If there are no CCED messages generated by the STAT CPU command, continue with step 4.

4   After the HWI0533 message is displayed, test the replacement CP card from the active CPU:

TEST CPU   the test causes a cold start on the inactive CPU

If the test results in:

> **CCED014**   "Test failed because unable to enter SPLIT mode"

On the active CP card set the NORM/MAINT switch to NORM, and from the active side enter:

TEST CPU   to test the CP card

5   After a successful test that takes 2 or 4 minutes, proceed with the following:

- Set the NORM/MAINT switch to NORM on the active CP card (if not already set).

- Check the status of the CPUs:

   STAT CPU

- Check the status of the CNIs:

   STAT CNI

- Switch Cores and exit the program:

   SCPU
   ****   exit LD 135

   If there is a problem, CCED system messages are generated.

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

Note: Repeat the process for the replacement of the second CP card (if applicable) by moving the terminal cable to the J25 port on the I/O panel of the other Core or Core/Network Module and continuing the procedure starting at step 2 of the "Removing equipment" section.

7   Synchronize the hard disks on both CMDUs or IOP/CMDUs:

   LD 137
   SYNC   synchronizes the CPUs

   Synchronization may take as long as 40 minutes. Progress reports appear on the TTY periodically.

NT7D10 Power Distribution Unit DC

Use this procedure to replace the power distribution unit (PDU) for DC-powered systems.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.
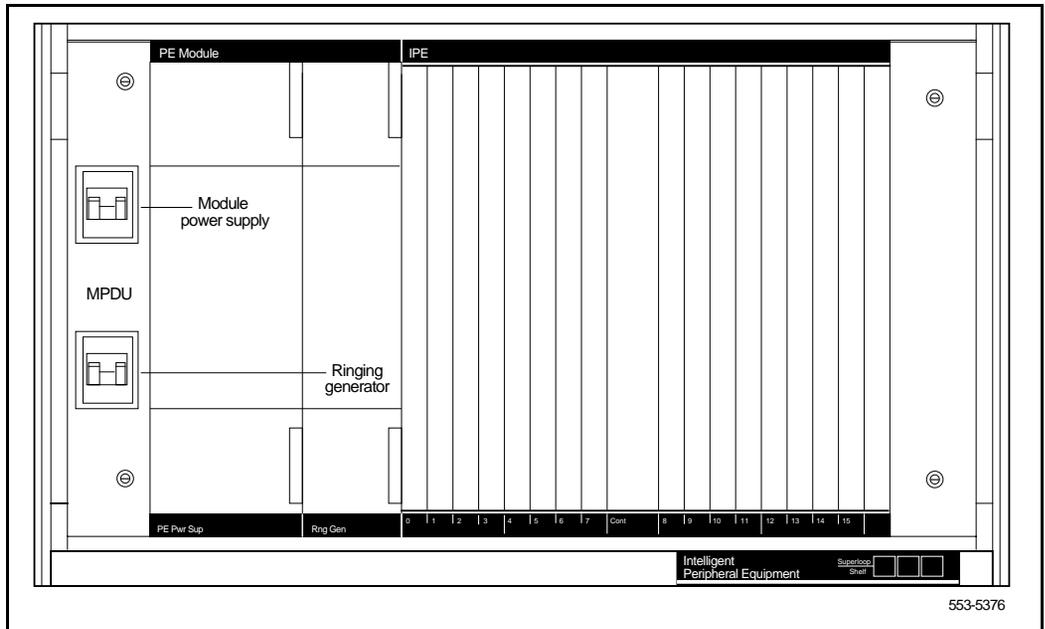

Removing equipment

1   Disconnect the DC power at the source (not at the PDU).

2   Remove the grill on the rear of the pedestal.

3   Set all five circuit breakers on the PDU to OFF (down). Figure 12 shows the location of the PDU in the rear of the pedestal.

Figure 12
NT7D10 Power Distribution Unit DC
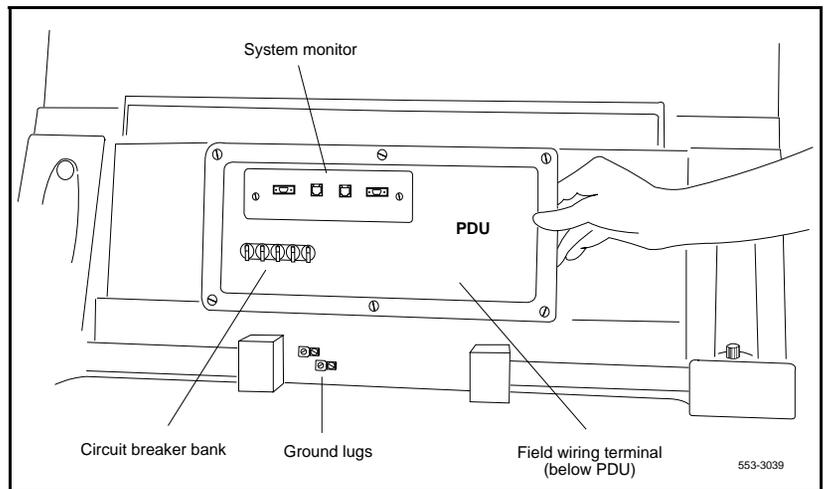
4   Unseat the blower unit in the front of the pedestal:

- Remove the grill on the front of the pedestal. Set the toggle switch on the front of the unit to OFF (left).

- Turn the screws on the front of the unit counterclockwise and pull the unit forward several inches so the connector on the rear disengages.

WARNING

Do not pull the blower unit out of the pedestal. The unit is heavy and the blades on the blower may still be rotating up to 2 minutes after the power is turned off.

---

5   Disconnect cables that run between the module above the pedestal (module 0) and the top of the PDU:

- Remove the rear cover on the module.

- Remove the I/O safety panel over the backplane in the module.

- Disconnect the system monitor ribbon cable from the PDU.

- Disconnect the large orange power connector (J1) from the PDU.

   Note: To disconnect the power plug, you must press a latch trip on the front and rear of the plug. You may need to use a screwdriver blade against the latch trip on the front of the plug.

6   Tag and disconnect cables to the NT8D22 System Monitor. Loosen the two screws on the system monitor card and remove it from the PDU.

7   Remove the six screws that position the PDU. Carefully pull the unit straight forward and set it on the floor next to the pedestal (see Figure 13).

CAUTION

The PDU cannot be completely removed from the pedestal until cables to the field wiring terminal block are disconnected. Label wires carefully. Improper wiring can cause system damage.

Figure 13
Cabling between the PDU and the field wiring terminal block

View looking down at the pedestal

Blower unit

PDU position in the pedestal

Pedestal rear

PDU pulled out of the pedestal

Field wiring terminal block (located beneath the PDU)

553-5487
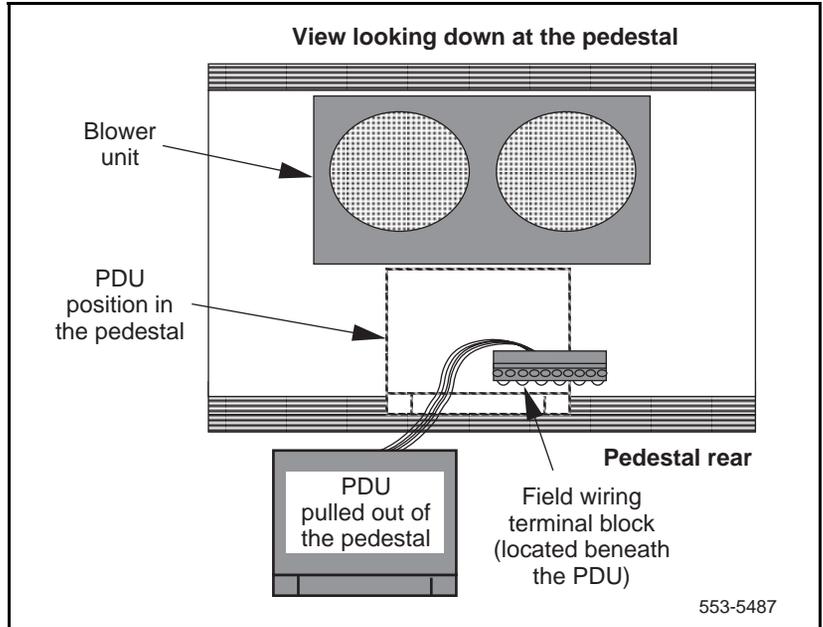
8   Remove the field wiring terminal block:

• Remove the cover over the field wiring terminal block.

• Locate the frame ground wire that runs from the field wiring terminal block to the frame ground bolt inside the pedestal. Disconnect this wire at the terminal block.

• Carefully tag and then disconnect all input wiring to the field wiring terminal block. Take special note of any jumper wires that might be installed. It is not necessary to disconnect wiring that runs from the terminal block to the PDU.

• Remove the four screws that secure the terminal block in place and lift it out of the pedestal.

Installing equipment

1 Install the replacement field wiring terminal block:

   • Position the replacement PDU next to the rear of the pedestal.

   • Position the replacement field wiring terminal block and replace its mounting screws.

   • Reconnect all wiring to the field wiring terminal block, including any jumpers that might have been present on the terminal block that was removed.

   • Reconnect the frame ground wire from the frame ground bolt inside the pedestal to the field wiring terminal block.

   • Replace the cover over the field wiring terminal block.

2 Gently push the PDU into the pedestal. Replace the screws on the PDU.

   Note: Be sure you push the unit straight back so the connector on the rear will seat properly with the connector for the blower unit.

3 Reconnect cables from module 0 to the PDU:

   • Attach power plug J1 and the system monitor cable.

   • Replace the I/O safety panel on the module.

   • Replace the rear cover on the module.

4 Reseat the blower unit:

   • Lift the unit slightly and slide it into the pedestal glides. Set the toggle switch to ON (right).

   • Tighten the screws on the front of the unit.

5   Insert the system monitor card into the PDU. Tighten the screws on the card. Reconnect cables to the system monitor faceplate.

6   Set all five circuit breakers on the PDU to OFF (down). Reconnect the source of DC power.

7   One at a time starting with the breaker for the blower unit, set the circuit breakers on the PDU to ON (up). Make sure the green LED lights on the power supply unit(s) in each module.

Note: On initial power up, the blower may rotate slower than expected. As the sensor detects heat, the blower will rotate more rapidly.

8   Replace the pedestal grills in the front and rear.

9   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT7D14, NT8D06, NT8D21, NT8D29 Power Supply AC

Use this procedure to replace AC power supplies:

— NT7D14 CE/PE Power Supply AC

— NT8D06 PE Power Supply AC

— NT8D21 Ringing Generator AC

— NT8D29 CE Power Supply AC

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Turn off power to the module power supply:

  •   If there is a Module Power Distribution Unit (MPDU), set the circuit breaker(s) on the associated MPDU to OFF (down).

  Note: If there are two circuit breakers on the MPDU, the top one is associated with the module power supply, the bottom one with the ringing generator (see Figure 14).

  •   If there is no MPDU, set the switch on the power supply faceplate to OFF (down).

2   Unhook the locking devices on the power supply. Wait at least 5 minutes, then pull the power supply out of the card cage.

CAUTION

Power must discharge. Wait *five full minutes* before you remove the power supply from the module.

Figure 14
Dual circuit breaker and associated module power supplies

553-5376

Installing equipment

1 Insert the replacement power supply into the vacated slot and hook the locking devices.

Note 1: If there is a switch on the power supply, set the switch to OFF (down) before you insert the power supply.

Note 2: On a replacement NT8D21, set option strapping the same as on the one you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

2 Turn on power to the module power supply. The green LED on the power supply should light and stay lit:

• If there is an MPDU, set the circuit breaker(s) to ON (up).

• If there is no MPDU, set the power supply switch to ON (up).

3   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT7D15 System Monitor

The NT7D15 System Monitor, used only in option 21A, attaches to the rear of the backplane in the NT8D11 CE/PE Module. Use this procedure to replace the system monitor.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Remove the rear cover on the module.

2   Remove the I/O safety panel by turning the screws on each side. Set the cover aside.

3   Tag and disconnect cables to the system monitor in the following order: disconnect the cable to connector P3, then P2, then P1.

CAUTION

If you do not disconnect cables in the order given, the system will shut down.

---

4   Pull the card out of the connector on the backplane.

Installing equipment

1   Plug the replacement card into the vacated connector (the connector closest to the right) on the backplane before the cables are connected.

CAUTION

Cables must be *disconnected* when the card is installed. When you connect the cables, you must follow the order given or the system will shut down.

---

2   Connect cables to the system monitor in the following order: connect the cable to connector P1, then P2, then P3.

3   Replace the I/O safety panel.

4   Replace the rear cover on the module.

5   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT7D67CB Power Distribution Unit DC

Use this procedure to replace the power distribution unit (PDU) for DC-powered systems.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disconnect the DC power at the source (not at the PDU).

2   Remove the grill on the rear of the pedestal.

3   In the rear of the pedestal, set all five circuit breakers on the PDU to OFF (down). Figure 15 shows the PDU (labeled FLTR/PWR DIST UNIT ASSY on the equipment) and the NT7D10CA System Monitor/Power Supply Assembly (labeled XSM/PWR SUPPLY ASSY on the equipment).

4   Unseat the blower unit in the front of the pedestal:

     •   Remove the grill on the front of the pedestal. Set the toggle switch on the front of the unit to OFF (left).

     •   Turn the screws on the front of the unit counterclockwise and pull it forward several inches (you will see the L-bracket on the rear of the unit) until the connector disengages from the rear of the PDU.

WARNING

Do not pull the blower unit out of the pedestal. The unit is heavy and the blades on the blower may still be rotating up to 2 minutes after the power is turned off.

Figure 15
NT7D67CB Power Distribution Unit DC

System monitor/power supply assembly

NT7D10CA

J3   J5   J6   J4

NT7D67CB

FLTR / PWR DIST
UNIT ASSY

Safety cover—the
field terminal block
is behind the cover

BLO   CB
0   CB
1

CB
2   CB
3

Circuit
breakers

Circuit
breakers

Filter / Power distribution unit assembly

553-5488
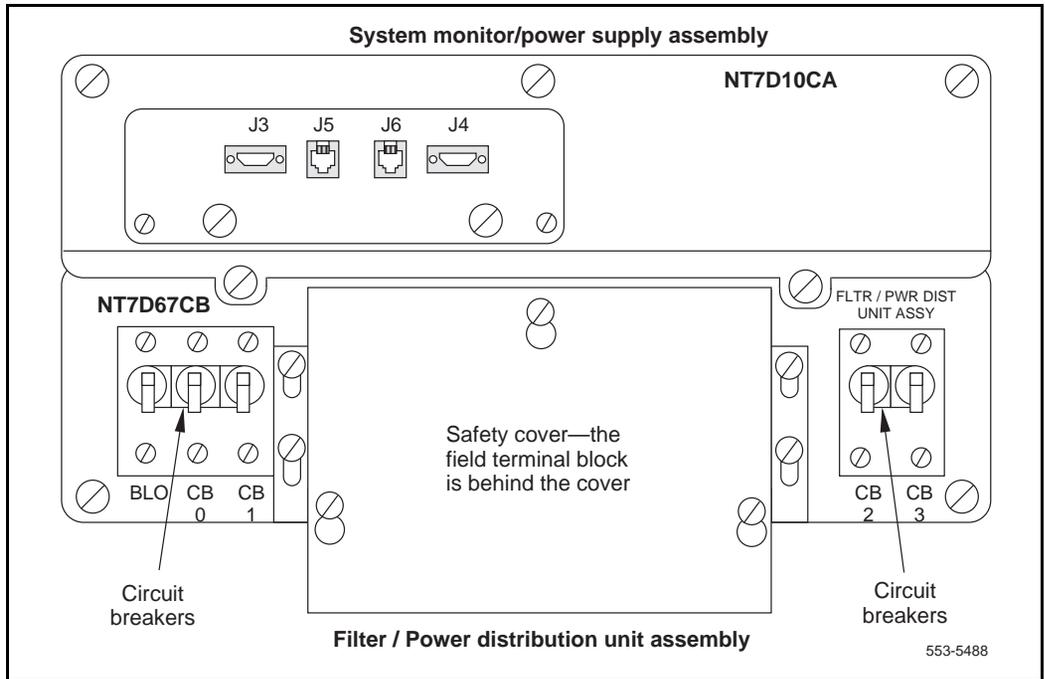
5   Disconnect cables that run between the module above the pedestal
(module 0) and the PDU:

• Remove the rear cover on the module.

• Remove the I/O safety panel over the backplane in the module.

• Disconnect the system monitor ribbon cable from module 0.

• Disconnect the large orange power connector (J1) from the PDU.

Note: To disconnect the power plug, you must press a latch trip on the
front and rear of the plug. You may need to use a screwdriver blade
against the latch trip on the front of the plug.

6   Tag and disconnect cables to the NT8D22 System Monitor faceplate.

7   Loosen the five screws that secure the NT7D10CA system monitor assembly. Pull the assembly out of the pedestal far enough to disconnect the cables to the PDU:

   •   Disconnect the small orange connectors (J2 on the PDU, P2 on the system monitor assembly) on the left side of the PDU.

   •   Disconnect the flat white connector to the small circuit board (P1 on the PDU, J1 on the system monitor assembly) on the right side of the PDU.

8   Pull the system monitor assembly out of the pedestal along with the attached ribbon cable and set it aside until the replacement PDU is installed.

9   Remove the plastic safety cover over the terminal block on the PDU:

   •   Loosen the three screws holding the cover.

   •   Lift the cover up, then over the three mounting screws on the front panel of the cover.

10 Tag and disconnect all wiring to the field wiring terminal block on the PDU (see Figure 16).

CAUTION
Label wires carefully. Improper wiring can cause system damage.

Figure 16
Field wiring terminals in the NT7D67CB PDU
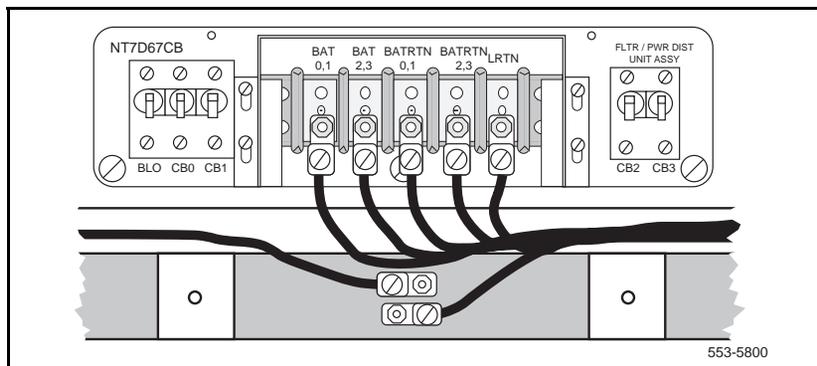
11 Remove the PDU:

Note: When a system is shipped, a set of screws secures the leveling bracket at the rear of the PDU to protect against vibration during transit. If the shipping screws were not removed during initial installation, you must remove them now to pull the PDU out of the pedestal. Pull the blower unit all the way out of the pedestal so you can access the shipping screws on the leveling bracket.

- Loosen the three screws that secure the PDU.

- Remove the two vertical screws located in the rear of the PDU that hold the L-bracket to the lower pedestal.

- Pull the PDU out of the pedestal, being careful to not chafe the cables against the pedestal.

- Disconnect the frame ground wire from the PDU at the frame ground bolt inside the pedestal.

Installing equipment

1 Install the replacement PDU:

- Connect the frame ground wire from the PDU to the frame ground bolt inside the pedestal.

- Guide the connector for the power cable through the hole in the top of the pedestal (do not allow the PDU to drop).

- Gently push the PDU into the pedestal. Position the leveling bracket (attached to the rear of the PDU) in the small opening toward the front of the pedestal. The leveling bracket will support the back of the PDU.

2 Install the NT7D10CA system monitor assembly:

- Connect the small orange connectors (J2 on the PDU, P2 on the system monitor assembly) on the left side of the PDU.

- Connect the flat white connector to the small circuit board (P1 on the PDU, J1 on the system monitor assembly) on the right side of the PDU.

- Guide the connector on the free end of the system monitor ribbon cable (from J2) up through the hole in the top of the pedestal and connect it to module 0.

- Install and tighten the two vertical screws that attach the L-bracket to the PDU.

- Gently push the system monitor assembly into the pedestal.

3 Tighten the screws that secure the PDU and the system monitor assembly.

4 Reconnect the remaining cables from module 0:

- Reconnect the large orange power connector (J1).

- Replace the I/O safety panel.

- Replace the rear cover to the module.

5 Reconnect all external wiring to the field wiring terminal block on the PDU:

Note: All wiring to the PDU must be routed within the cable-tie saddles and under the cable restraint bar at the base of the pedestal.

- Remove the plastic safety cover over the terminal block.

- Connect the red BAT (–48 V) wires to the terminal block:
    - for modules 0 and 1 connect to the BAT 0,1 terminal
    - for modules 2 and 3 connect to the BAT 2,3 terminal

The safety ground/protective earth wires and all wiring to the block in the PDU must be neatly routed within the cable-tie saddles and under the cable restraint bar at the base of the pedestal. This ensures that there is room to install the PDU cover, safety cover, and rear grill.

- Connect the black BATRTN (48 V return) wires to the terminal block:
    - for modules 0 and 1 connect to the BATRTN 0,1 terminal
    - for modules 2 and 3 connect to the BATRTN 2,3 terminal

- Connect the orange (or white) wire to the LRTN terminal.

6   Reinstall the plastic safety cover over the terminal block.

7   Reseat the blower unit:

   •   Lift the unit slightly and slide it into the pedestal glides. Set the toggle switch to ON (right).

   •   Tighten the screws on the front of the unit.

8   Reconnect cables to the system monitor faceplate.

9   Set all five circuit breakers on the PDU to OFF (down). Reconnect the source of DC power.

10   One at a time starting with the breaker for the blower unit, set the circuit breakers on the PDU to ON (up). Make sure the green LED lights on the power supply unit(s) in each module.

   Note: On initial power up the blower may rotate slower than expected. As the sensor detects heat, the blower will rotate more rapidly.

11   Replace the pedestal grills in the front and rear.

12   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT7R51 Local Carrier Interface Card

Use this procedure to replace a Local Carrier Interface card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing and replacing a Local Carrier Interface card

1   Disable the Local Carrier Interface card by logging in to the system terminal, loading the Network and Peripheral Equipment Diagnostic Program LD 32, and executing **DISL loop**, where **loop** is the actual loop number of the Local Carrier Interface card.

2   Set the ENL/DIS switch to DIS.

3   Disconnect the cable from the Local Carrier Interface card faceplate.

4   Unlatch the card locking devices by squeezing the tabs and pulling the locking devices away from the card.

5   Pull the card out of the network module and place it into an antistatic bag away from the work area.

6   Set the replacement card ENL/DIS switch to DIS.

7   Hold the replacement card by the card locking devices and insert it partially into the card guides in the module.

8   Pull the upper and lower locking devices away from the faceplate on the card and insert the card firmly into the backplane connector. Press the card locking devices firmly against the faceplate to latch the card inside the module.

9   Set the replacement card ENL/DIS switch to ENL, the Local Carrier Interface card automatically starts the self-test

10   Observe the red LED on the front panel during self-test. If it flashes three times and stays on, it has passed the test. Go to step 11. If it does not flash three times and then stays on, it has failed the test. Pull the card partially out of the module and reinsert it firmly into the module. If the problem persists, troubleshoot or replace the Local Carrier Interface card.

11   Connect the cable to the Local Carrier Interface card faceplate connector.

12   Enable the Local Carrier Interface card. Load the Network and Peripheral Equipment Diagnostic Program LD 32, and executing **ENLL loop**, where **loop** is the actual loop number of the Local Carrier Interface card.r.

13   Tag the defective card(s) with a description of the problem and prepare them for shipment to your equipment suppliers' repair depot.

NT7R52 Remote Carrier Interface Card

Use this procedure to replace a Remote Carrier Interface card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing and replacing a Remote Carrier Interface card

1 Load Network and Peripheral Equipment Diagnostic Program LD 32. At the > prompt, type **LD 32** and press the Enter key to access the program.

2 Type **DSXP x**, where **x** is the Remote Carrier Interface card number, and press the Enter key to disable the card. The Remote Carrier Interface card is now disabled and you can remove it.

3 Unlatch the card locking devices by squeezing the tabs and pulling them away from the card.

4 Pull the card out of the IPE module or cabinet and place it into an antistatic bag away from the work area.

5 Hold the replacement card by the card locking devices and insert it partially into the card guides in the module.

6 Pull the upper and lower locking devices away from the faceplate on the card and insert the card firmly into the backplane connector. Press the card locking devices firmly against the faceplate to latch the card inside the module. The Remote Carrier Interface card automatically starts the self-test.

7   Observe the red LED on the front panel during self-test. If it flashes three times and stays on, it has passed the test. Go to step 8. If it does not flash three times and then stays on, it has failed the test. Pull the card partially out of the module and reinsert it firmly into the module. If the problem persists, troubleshoot or replace the Remote Carrier Interface card.

8   At the**.** prompt in the LD 32 program, type **ENXP x**, where **x** is the Remote Carrier Interface card number, and press the Enter key to enable the card. If the upper most red LED on the Remote Carrier Interface card faceplate turns off, the card is functioning correctly and is enabled. The outcome of self-test will also be indicated by LD 32 on the MMI terminal connected to the Remote Carrier Interface card. If the LED stays on, replace the card.

9   Tag the defective card(s) with a description of the problem and prepare them for shipment to your equipment suppliers' repair depot.

NT8D01 Controller Card

Use this procedure to replace a controller card.

See the *X11 input/output guide* for a description of all maintenance
commands, and the *X11 system messages guide* for interpreting system
messages.

<div style="border:1px solid black; padding:10px;">

<div align="center">**WARNING**</div>

Module covers are *not* hinged; do not let go of the cover. Lift the cover
away from the module and set it out of your work area.

</div>

Removing equipment

1   Turn off power to the module:

- With AC power, set the associated circuit breaker on the module
power supply (MPDU) to OFF (down)**.**

Note: If there are two circuit breakers on the MPDU, the top one is
associated with the module power supply, the bottom one with the
ringing generator.

- With DC power, set the switch on the module power supply to OFF
(down).

2   Software disable the controller card (and all cards connected to the
controller):

LD 32
DSXP x   "x" is the controller card number

3   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1 Insert the replacement card into the vacated slot and hook the locking devices.

2 Turn on power to the module:

   • With AC power, set the associated circuit breaker on the MPDU to ON (up)**.**

   • With DC power, set the switch on the module power supply to ON (up).

3 Watch the controller card as it runs a series of self-tests:

   • During the tests, the maintenance display on the card shows the code for each test running (see "HEX" in the *X11 System messages guide*). If the tests complete successfully, the display begins normal operation. If the card continuously fails a test, the code for that test is displayed.

   • When IPE cards are installed, the red LED on the faceplate remains lit for 2 to 5 seconds as a self-test runs. If the self-test completes successfully, the LED flashes three times and remains lit until the card is configured and enabled in software, then the LED goes out. If the LED does not follow the pattern described or operates in any other manner (such as continually flashing or remaining weakly lit), replace the card.

4 Software enable and test the controller card (and all cards connected to the controller):

   ENXP x

   • If there is a problem, an NPR, NWS, or SDL system message may be produced and the red LED lights on the controller card.

   • If there is no problem, exit LD 32:

     ****

5 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D02, NT8D03, NT8D09, NT8D14, NT8D15, NT8D16 Intelligent Peripheral Equipment Card

Use this procedure to replace the following intelligent peripheral equipment (IPE) cards:

— NT5D11 Line Side T1

— NT5D60AA CLASS Modem Card

— NT5K02 Flexible Analog Line Card

— NT5K07 Universal Trunk Card

— NT5K17 Direct Dial Inward Trunk Card

— NT5K18 Central Office Trunk Card

— NT5K19 E&M Trunk Card

— NT5K20 Tone Detector Card

— NT5K36 Direct Inward/Direct Outward Dial Trunk Card

— NT5K48 Tone Detector Card

— NT5K70 Central Office Trunk Card

— NT5K71 Central Office Trunk Card

— NT5K72 E&M Trunk Card

— NT5K82 Central Office Trunk Card

— NT5K83 E&M Trunk Card

— NT5K84 Direct Inward Dial Trunk Card

— NT5K90 Central Office Trunk Card

— NT5K93 Central Office Trunk Card

— NT5K96 Analog Line Card

— NT5K99 Central Office Trunk Card

— NT8D02 Digital Line Card

— NT8D03 Analog Line Card

— NT8D09 Analog Message Waiting Line Card

— NT8D14 Universal Trunk Card

— NT8D15 E&M Trunk Card

— NT8D16 Digitone Receiver (DTR) Card

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

```
                              WARNING
  Module covers are not hinged; do not let go of the cover. Lift the cover
  away from the module and set it out of your work area.
```

Removing equipment

1   Software disable the card:

    LD 32

    DISI l s c   "l s c" are loop, shelf, and card numbers

    You will see "NPR011" on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

2   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set jumpers on the following replacement cards the same as on the card you removed:

        NT8D14 Universal Trunk Card
        NT8D15 E&M Trunk Card

    To check settings, see *Circuit card installation and testing* (553-3001-211).

2   Insert the replacement card into the vacated slot and hook the locking devices.

Note: When IPE cards are installed, the red LED on the faceplate remains lit for 2 to 5 seconds as a self-test runs. If the self-test completes successfully, the LED flashes three times and remains lit until the card is configured and enabled in software, then the LED goes out. If the LED does not follow the pattern described or operates in any other manner (such as continually flashing or remaining weakly lit), replace the card.

3   Software enable the card:

ENLC l s c

- When the process is complete, you will receive a system response.

- Exit LD 32:

   ****

4   Test the card:

LD 30
SHLF l s

Note: This command tests every card on the designated shelf.

- If there is a problem, an NPR system message is generated and the red LED(s) on the faceplate of the card will remain lit.

- If there is no problem, exit LD 30:

   ****

5   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D04 Superloop Network Card, QPC414 Network Card

Use this procedure to replace a superloop network card or network card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.


WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

All services on a loop are interrupted while the loop is disabled.

Removing equipment

1 Check the status of each loop on the network or superloop network card:

LD 32

STAT loop   "loop" is a loop number

- If the response is **DSBL** for the loop(s), go to Step 2.

- If there are responses other than **DSBL**, see "LD 32" in the *X11 input/output guide* for an interpretation.

2 Set the ENB/DIS switch to DIS.

3 Tag and disconnect cables to the card you are removing.

4 Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

Note: On a replacement QPC414, set jumpers the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Connect cables to the replacement card.

4   Set the ENB/DIS switch to ENB on the replacement card.

5   Software enable each loop on the card:

ENLL loop

•   When the process is complete, you will receive a system response.

•   The card is tested automatically when all loops are enabled.

•   If there is a problem, an NWS system message is generated and the red LED on the faceplate of the card will flash (on the NT8D04) or be steadily lit (on the QPC414).

•   If there is no problem, exit LD 32:

   ****

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D17 Conference/TDS Card

The conference/TDS card provides conference functions on one loop and both tone and digit switch (TDS) and multifrequency sender (MFS) functions on a second loop. Use this procedure to replace a conference/TDS card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1 Software disable the conference/TDS card:

LD 34 or **LD 38** or **LD 46**

DISX loop   In LD 38 "loop" is the conference loop that is the odd loop of the conference/TDS loop pair. In LD 34 and LD 46 "loop" is the TDS/MFS loop that is the even loop of the conference/TDS loop pair.

Note: You must use the command DISX to disable both loops and all hardware functions. Disabling loops with the command DISL prevents software from using the loops but does not disable the card.

2 Set the ENB/DIS switch to DIS.

3 Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1 Set the ENB/DIS switch to DIS on the replacement card.

2 Set option switches and jumpers on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3   Insert the replacement card into the vacated slot and hook the locking devices. Both red LEDs should flash three times and remain lit if the card is good.

4   Set the ENB/DIS switch to ENB on the replacement card.

5   Software enable the card:

ENLX loop   This prompt is available in LD 34, LD 38, and LD 46. Use the appropriate loop number (see Step 1 in "Removing equipment" on page 167).

Note: You must enable the card with the command ENLX. Enabling the loops with the command ENLL does not enable the card.

6   Test each loop on the card (when each test completes, enter ********):

•   Test TDS capability:

LD 34
TDS loop   "loop" is an even loop number

•   Test Conference capability:

LD 38
CNFC loop   "loop" is an odd loop number

•   Test MFS capability:

LD 46
MFS loop   "loop" is an even loop number

•   If there is a problem, a TDS, CNF, or MFS system message is generated and the appropriate red LED lights on the card faceplate.

7   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D18 Network/DTR Card

The network/DTR card provides network and peripheral controller functions along with Digitone receiver capability. Use this procedure to replace a network/DTR card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

All services on a loop are interrupted while the loop is disabled.

Removing equipment

1   Check the status of the superloop:

   LD 32
   STAT 28   the superloop must be loops 28–31

   - If the response is **DSBL** for all loops, go to Step 1 on page 170.

   - If there are responses other than **DSBL**, see "LD 32" in the *X11 input/output guide* for an interpretation.

2   Set the ENB/DIS switch to DIS.

3   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Set the ENB/DIS switch to ENB on the replacement card.

4   Software enable the superloop:

ENLL 28

- When the process is complete, you will receive a system response.

- If there is a problem, an NPR system message is generated and the red LED on the faceplate of the card lights.

- If there is no problem, exit LD 32:

****

5   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D19 Memory/Peripheral Signaling Card

Use this procedure to replace a memory/peripheral signaling card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the NT8D19 card is removed.

---

1   Unhook the locking devices on the memory/peripheral signaling card; pull it out of the card cage.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   The system will sysload when the NT8D19 card is inserted.

    Press the reload button on the QPC687 CPU Card to activate a clean sysload.

4   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D22 System Monitor

Use this procedure to replace the system monitor.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

Removing equipment

CAUTION

Be sure to follow the steps in this procedure in the order shown. Removing the system monitor before disconnecting cables may result in loss of power and interruption of telephone service.

---

1   Remove the grill on the rear of the pedestal.

2   Tag and disconnect cables to the system monitor. Figure 17 shows the location of the system monitor in the rear of an AC-power pedestal.

Figure 17
NT8D22 System Monitor in an AC-power pedestal
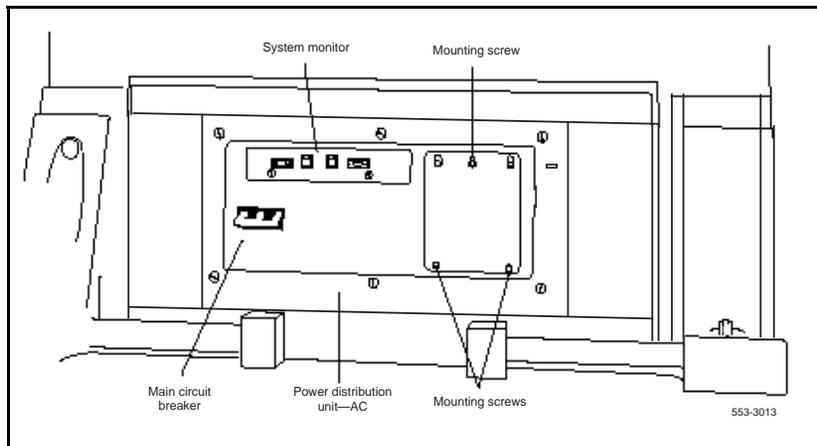
3 Loosen the two screws on the card and pull it out of the slot.

Note: If a slave is removed, the master considers that slave and all slaves with a higher address as disabled. For example, if the slave designated "XSM 2" is disabled, the master also reports slaves 3, 4, and up are disabled.

Installing equipment

1 Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

2 Insert the replacement card into the vacated slot and tighten the two screws on the front of the card.

3 Connect cables to the replacement card.

4 Replace the grill on the rear of the pedestal.

5 Test the system monitor:

LD 37
STAT XSM

- If a single or master system monitor was replaced successfully, you will receive system message "PWR000 XSMC 00 0 0."

- If a slave was replaced successfully, you will receive "PWR053 XSMC xx 0 0" ("x" is the system monitor address).

- If there is a problem with a slave, you will receive system message "PWR013 XSMC xx 0 0."

- If there is no problem, exit LD 37:

  ****

6 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D41 Dual or Quad Port Serial Data Interface card

The serial data interface (SDI) paddle board attaches to the rear of the backplane in an NT8D11 CE/PE or NT6D39 CPU/Network Module. Use this procedure to replace an SDI paddle board.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

If the system terminal is assigned to the SDI being replaced, assign it to another port before this SDI is disabled.

Removing equipment

1   Software disable each port on the SDI paddle board:

LD 37

DIS TTY x   "x" is the number of the interface device attached to the port

2   Remove the rear cover on the module.

3   Remove the I/O safety panel by turning the screws on each side. Set the cover aside.

4   Set the ENB/DIS switch to the disable position (down) on the paddle board.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

5 Tag and disconnect cables to the paddle board you are removing (connector J1 for port 1, connector J2 for port 2).

6 Pull the paddle board out of the connector on the backplane.

Installing equipment

1 Set the ENB/DIS switch to the disable position (down) on the replacement paddle board.

2 Set option switches on the replacement paddle board the same as on the board you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3 Plug the replacement paddle board into the vacated connector on the backplane.

4 Connect cables to the replacement paddle board.

5 Set the ENB/DIS switch to the enable position (up) on the replacement paddle board.

6 Replace the I/O safety panel. Replace the rear cover on the module.

7 Software enable and test each port on the paddle board:

ENL TTY x
TTY x

- If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 37:

   ****

8 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D46AC Thermostat Harness

Use this procedure to replace the thermostat harness located in the top cap of each column.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disconnect the system monitor from the circuit breaker system:

Note: For system option 21A, go to the note in Step 2.

- Remove the grill on the rear of the column pedestal.

- Loosen the two screws on the system monitor and pull it out a few inches.

CAUTION

If the system monitor is not unseated, column operation will shut down when the thermostat harness is disconnected.

---

2   Disconnect power to the top cap:

- Remove the rear cover on the module below the top cap.

- Remove the I/O safety panel over the backplane.

Note: For system option 21A, disconnect the cable to connector J3 on the NT7D15 System Monitor at this point.

- At the top of the rear of the module, disconnect the connector from the module power harness.

- Disconnect the pin headers on connector J2 on the backplane; disconnect the ribbon cable connector.

---

3   Remove the top cap:

- Remove air exhaust grills at the front and rear of the top cap (see Figure 18). Pull forward on the two clips underneath the front edge of each grill and lift up to remove the grill.

- Use a 5/16" socket wrench to remove the six bolts that secure the top cap and perforated panel (see Figure 19). Lift off the top cap only.
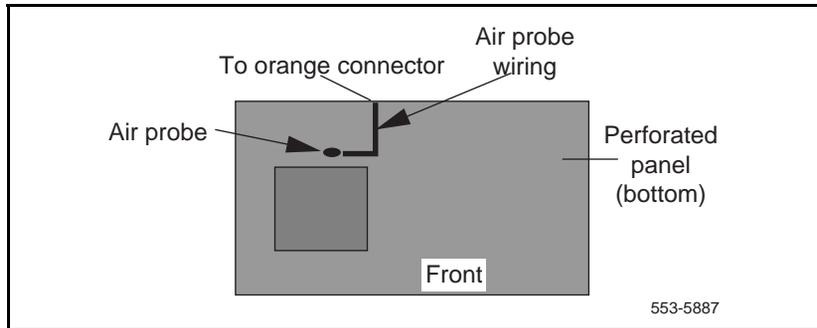
Figure 18
Air exhaust grills on the top cap
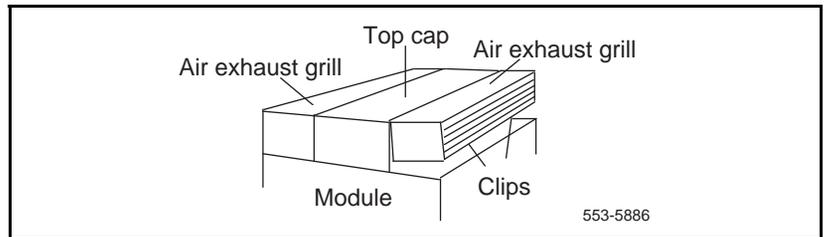
Figure 19
Top cap assembly
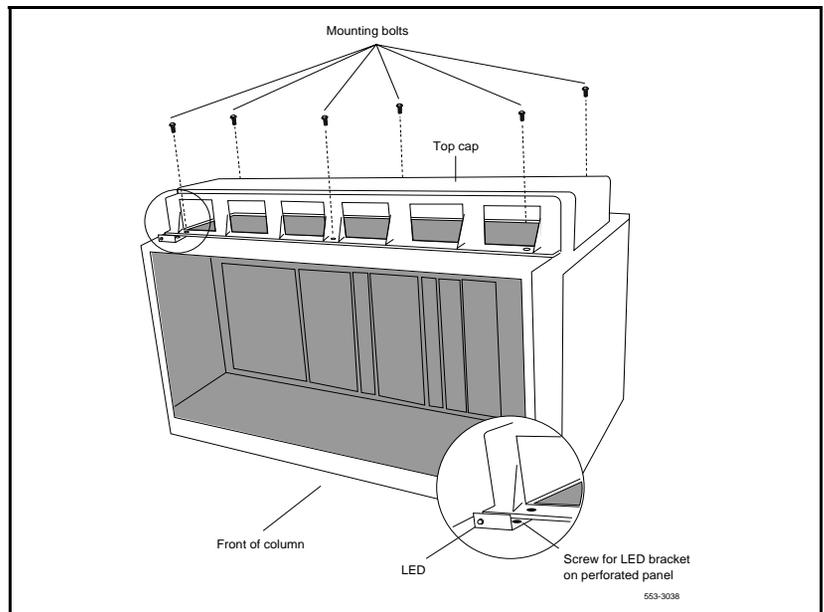
4   Remove the thermostat harness:

Note: The column LED and LED wiring are part of the thermostat harness.

- Pull the LED ring away from the LED mounting bracket (see Figure 20). You may need to loosen it with a standard screwdriver.

Figure 20
Mounting for the column LED
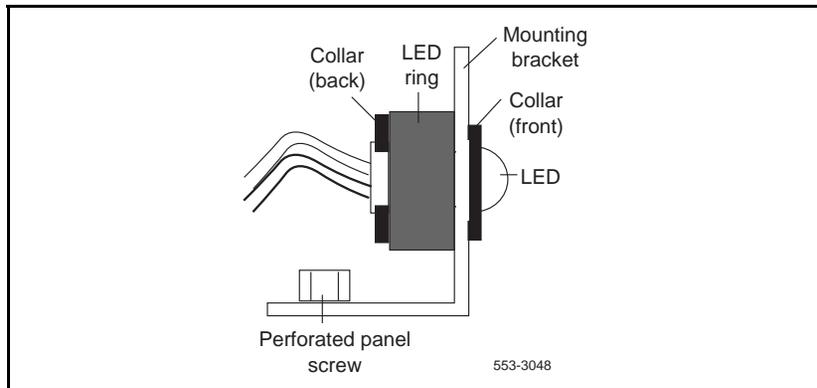
- Push the LED back completely out of the collar on the LED mounting bracket.

- Remove the LED ring by pulling it forward over the LED. Keep the ring handy; you will use it with the replacement equipment.

- Remove the screw that secures the perforated panel at the LED mounting bracket.

- Slide the perforated panel slightly to the left (looking at it from the rear of the column). Lift the panel and turn it over.

- Clip all cable ties that secure the thermostat harness. Be careful not to damage other wiring (such as the air probe harness).

- Pull the LED through the rubber grommet at the front of the perforated panel.

- Remove the screws (two each) that secure the thermostats. Remove the thermostats and wiring (see Figure 21).

Figure 21
Thermostat harness
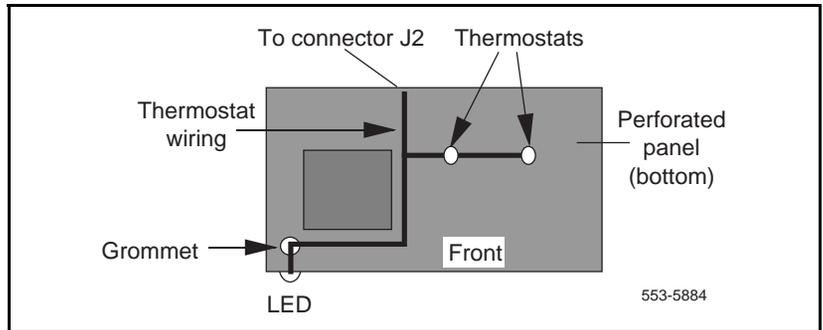
Installing equipment

1   Install the replacement thermostat harness:

- Position the replacement thermostats and install the screws.

- Push the LED through the rubber grommet.

- Route the thermostat wiring on the perforated panel. At the rear edge of the panel, route the wires with wiring for the air probe harness (or top cap fan in system option 21A). Secure loose wiring to the perforated panel with cable ties.

2   Turn the perforated panel over. Slide it slightly to the right (at the rear of the column) so it is in a secure position. Position wiring from the perforated panel so it rests in the cable well next to the orange connector at the rear of the module (see Figure 22). Position the perforated panel and install the screw that secures it at the LED mounting bracket.

- Slide the LED ring over the LED (see Figure 23). The ring will hang loosely at this point.

- Gently push the LED forward completely through the collar on the LED mounting bracket.

- Push the LED ring into position over the back of the collar and tight against the LED mounting bracket.

Figure 22
Routing the thermostat harness from the top cap

Cable well   Orange connector

Top of module

Bracket

View at rear of module

553-5889
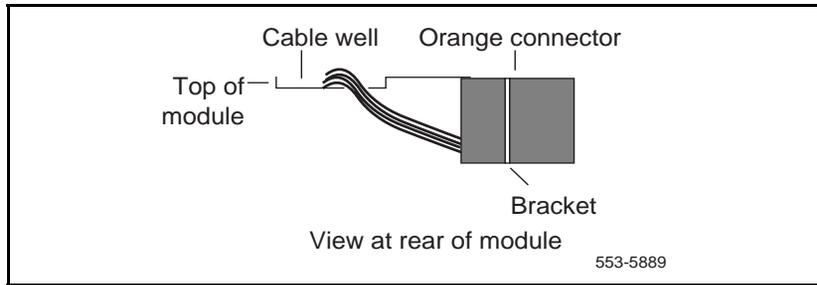
Figure 23
Installing the column LED

LED ring   LED   Collar (back)   Collar (front)

Mounting bracket

553-5883
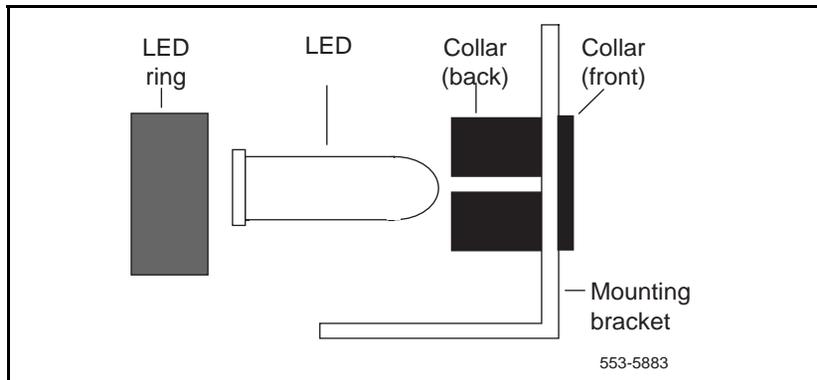
3   Install the top cap:

- Position the top cap and install the six bolts that secure the top cap and perforated panel.

- Install the air exhaust grills at the front and rear of the top cap.

4 Reconnect power to the top cap:

- Connect the ribbon cable connector to connector J2 on the backplane. Line up the alignment tab on the connector and snap on the pin headers to position the connector correctly (see Figure 24).

Figure 24
Aligning the thermostat harness connector
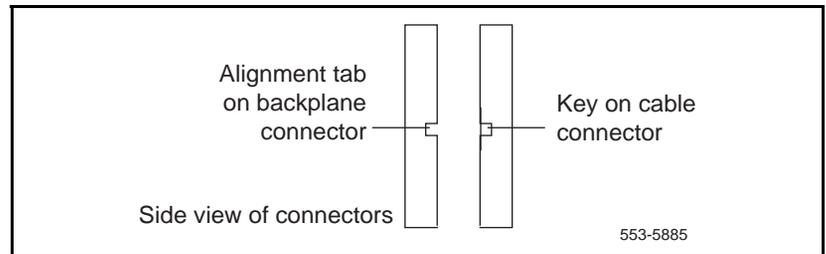
• Connect the orange connector to the module power harness.

Note: For system option 21A, reconnect the cable to connector J3 on the system monitor at this point.

- Replace the rear cover on the module.

5 Reconnect the system monitor to the circuit breaker system:

Note: For system option 21A, skip this step (the system monitor is already connected).

- Push the system monitor into position and tighten the screws.

- Replace the grill on the pedestal.

6 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D46AM, NT8D46DC Air Probe Harness

Use this procedure to replace the air probe harness located in the top cap of each column (except option 21A).

**WARNING**

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disconnect the air probe harness plug:

- Remove the rear cover on the module below the top cap.

- Remove the I/O safety panel over the backplane.

- At the top of the rear of the module, disconnect the orange connector from the module power harness.

2   Remove the top cap:

- Remove air exhaust grills at the front and rear of the top cap (see Figure 25). Pull forward on the two clips underneath the front edge of each grill and lift up to remove the grill.

- Use a 5/16" socket wrench to remove the six bolts that secure the top cap and perforated panel (see Figure 26). Lift off the top cap.

Figure 25
Air exhaust grills in the top cap
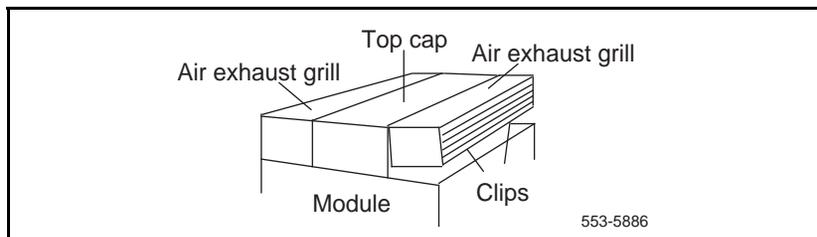
Figure 26
Top cap assembly
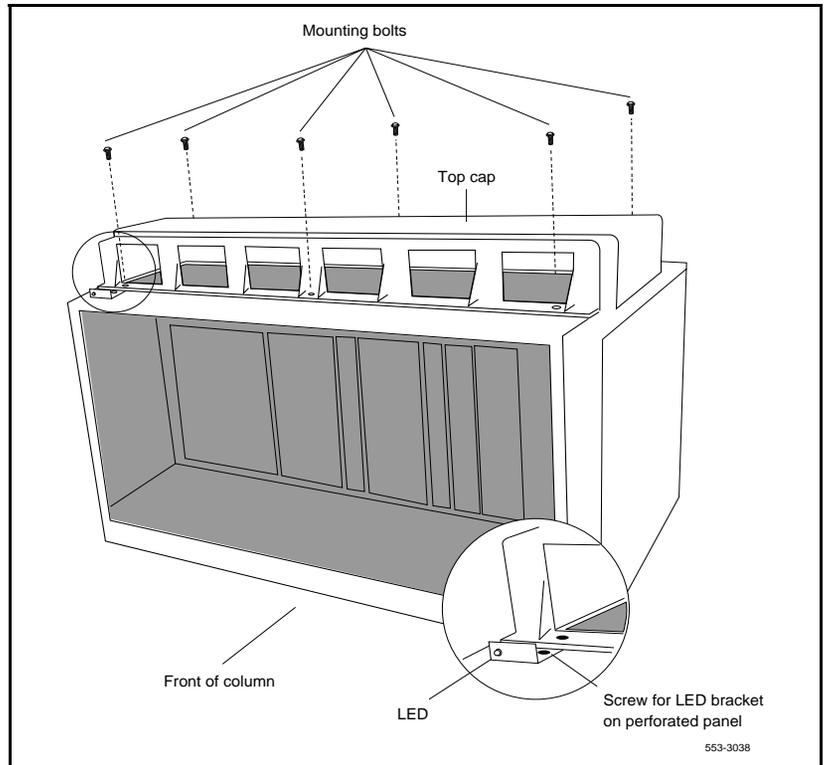
3   Remove the air probe harness:

   •   Remove the screw that secures the perforated panel at the LED
       mounting bracket.

   •   Slide the perforated panel slightly to the left (looking at it from the
       rear of the column). Lift the panel and turn it over.

   •   Pull the air probe out of the clip holder (see Figure 27).

   •   Clip cable ties that secure the air probe wiring. Be careful not to
       damage other wiring (such as the thermostat harness).

Figure 27
Air probe harness

553-5887

- Remove the orange connector from the right-angle bracket at the top of the module. Simultaneously push the four small snaps (two on each side) on the connector to release it from the bracket (see Figure 28).

Figure 28
Connector for the air probe harness

553-5888
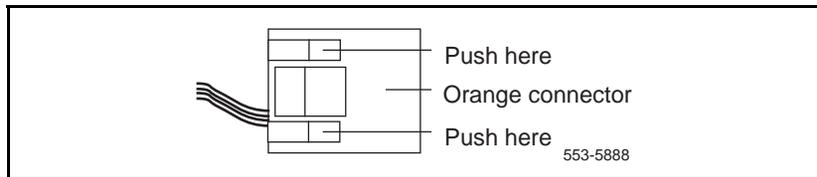
Installing equipment

1   Install the replacement air probe harness:

- Gently push the air probe into the clip holder.

- Route the air probe wiring on the perforated panel. At the rear edge of the panel, route the wires with wiring for the thermostat harness. Secure loose cabling to the perforated panel with cable ties.

- Turn the perforated panel over. Slide it slightly to the right (at the rear of the column) so it is in a secure position. Position wiring from the perforated panel so it rests in the cable well next to the orange connector at the rear of the module (see Figure 29).

Figure 29
Routing the air probe harness from the top cap

View at rear of module

553-5889
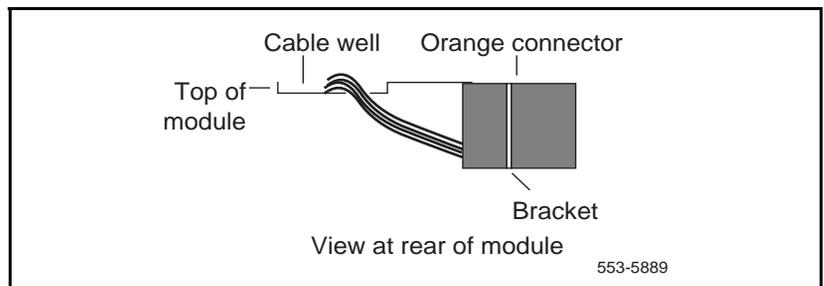
- Insert the orange connector into the right-angle bracket at the top of the module. Simultaneously push the four small snaps on the connector to insert it.

2   Install the top cap and perforated panel:

- Position the perforated panel and install the screw that secures it at the LED bracket.

- Position the top cap and install the six bolts that secure the top cap and perforated panel.

- Install the air exhaust grills at the front and rear of the top cap.

3   Reconnect the air probe harness plug:

- Connect the orange connector to the module power harness.

- Replace the I/O safety panel.

- Replace the rear cover on the module.

4   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D52AB, NT8D52DD Pedestal Blower Unit

Use this procedure to replace a blower unit.

Removing equipment

1   Remove the front pedestal grill and set it aside. Figure 30 shows the blower unit and its location in the front of the pedestal.

Figure 30
NT8D52 Blower Unit

Retaining screw

Blower unit circuit breaker

Retaining screw

553-3040
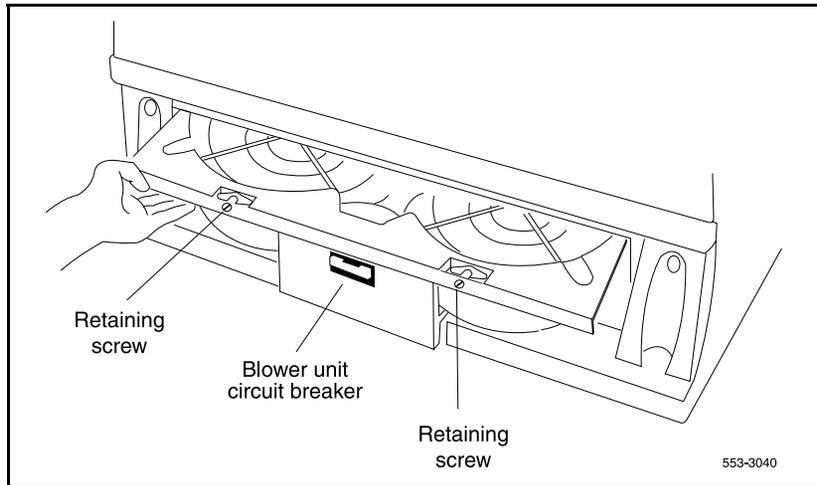
2   Turn off power to the blower unit:

- With AC power, set the circuit breaker on the front of the unit to OFF (down).

- With DC power, set the toggle switch on the front of the unit to OFF (left).

WARNING

Impellers in the blower unit do not stop instantly when the power is turned off. Wait *two full* minutes before you remove the unit.

---

3   Loosen the two screws on the front of the blower unit by turning them counterclockwise.

4   Grasp the lip at the top edge of the blower unit. Slide the unit out of the glides and onto the bottom ledge of the pedestal. Lift the unit out of the pedestal.

Note: Store the blower unit in an upright position.

Installing equipment

1   Set the replacement blower unit on the bottom ledge of the pedestal.

2   Tilt the back of the blower unit up slightly so it will slide into the pedestal glides (you may need to lift the unit). Gently push the unit into position.

3   Tighten the screws on the front of the unit.

4   Turn on power to the blower unit:

•   With AC power, set the circuit breaker to ON (up).

•   With DC power, set the toggle switch to ON (right).

Note: On initial power up the blower may rotate slower than expected. As the sensor detects heat, the blower will rotate more rapidly.

5   Fit the grill into the holes in the bottom ledge of the pedestal. Push the grill back into a locked position.

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D53AB Power Distribution Unit AC

Use this procedure to replace the power distribution unit (PDU) for
AC-powered systems.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover
away from the module and set it out of your work area.

Removing equipment

1   Turn off power at the distribution box. If the column is not hardwired,
unplug the power cable.

2   Remove the grill on the rear of the pedestal. Figure 31 shows the location
of the unit in the rear of the pedestal.

Figure 31
NT8D53AB Power Distribution Unit AC
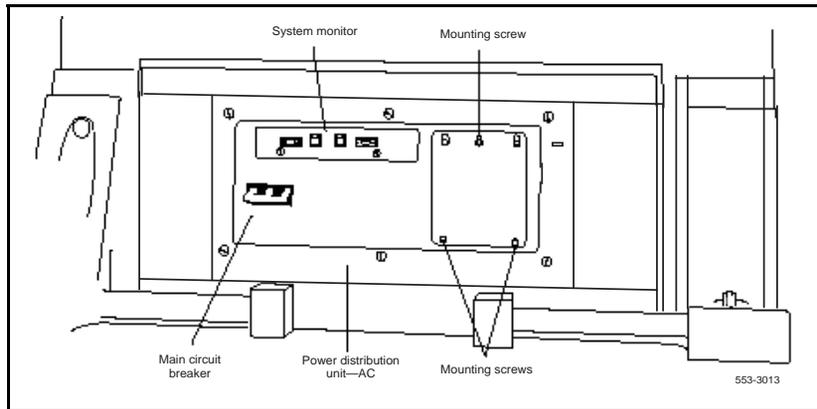
3   Loosen the three mounting screws that secure the field wiring access
plate. Lift the plate over the screws and set it aside.

---

4   Tag and disconnect wiring to the LRTN, GND, L2, and L1 connections on the right side of the field wiring terminal (see Figure 32). Push all the wires down into the empty area under the pedestal.

CAUTION

Label wires carefully. They must be reconnected correctly or the system may be damaged.

Figure 32
Connections at the field wiring terminal
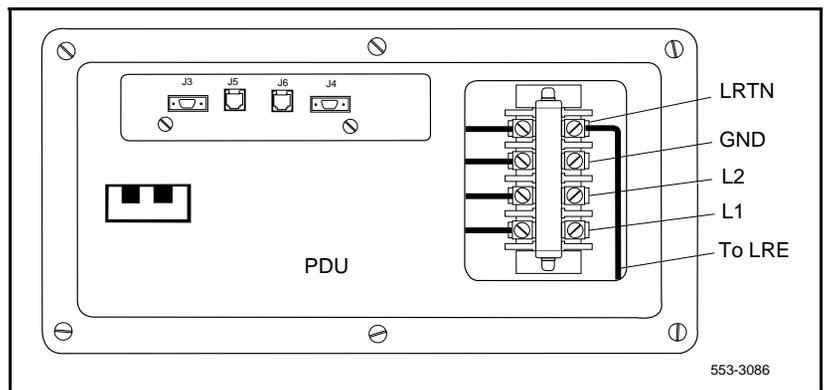
5   Tag and disconnect cables to the NT8D22 System Monitor. Loosen the two retaining screws on the system monitor. Remove the card.

6   Disconnect cables to the module above the pedestal (module 0):

•   Remove the rear cover on the module.

•   Remove the I/O safety panel over the backplane in the module.

•   Disconnect the power plug (J1) and system monitor ribbon cable to the module.

Note: To disconnect the power plug, you must press a latch trip on the front and rear of the plug. You may need to use a screwdriver blade against the latch trip on the front of the plug.

7   Remove the six screws that position the PDU. Carefully pull the unit straight forward out of the pedestal.

Installing equipment

1   Set the main circuit breaker on the replacement PDU to OFF (down).

2   Position the replacement PDU and gently push it into the pedestal.

Note: Be sure you push the unit straight back, so the connector on the rear will seat properly with the blower unit connector. It may be easier to position the PDU if you temporarily pull the blower unit out several inches.

3   Reconnect cables to module 0:

- • Attach power plug J1 and the system monitor cable.

- • Replace the I/O safety panel.

- • Replace the rear cover.

4   Insert the system monitor. Tighten the screws on the card. Reconnect cables to the system monitor faceplate.

5   Connect wiring to the right side of the field wiring terminal.

6   Position the field wiring access plate over the three mounting screws. Tighten the screws.

7   Turn on power at the distribution box or plug in the power cable.

8   Set the main circuit breaker to ON (up).

9   Replace the pedestal grill.

10   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D53AD Power Distribution Unit

Use this procedure to replace the power distribution unit (PDU); used in option 21A.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Set the circuit breaker on the PDU to OFF (down). Figure 33 shows the location of the unit in the rear of the pedestal.

Figure 33
NT8D53AD Power Distribution Unit (option 21A)

Main circuit breaker   Power Distribution Unit
                              (system option 21A)   553-3036
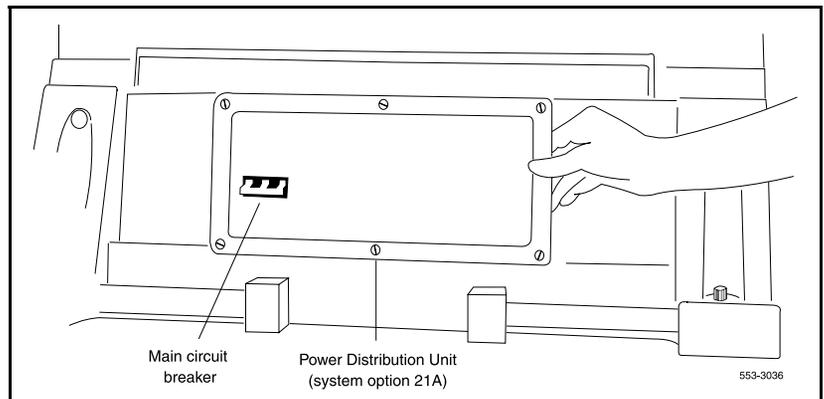
2   Unplug the power cable from the external outlet.

3   Disconnect the power cable from the pedestal to the module:

   •   Remove the rear cover on the module.

   •   Remove the I/O safety panel over the backplane.

   •   Disconnect the power plug at connector J1.

Note: To disconnect the power plug, you must press a latch trip on the front and rear of the plug. You may need to use a screwdriver blade against the latch trip on the front of the plug.

4   Remove the six screws that position the PDU and lift the unit out of the pedestal.

5   Remove the grill on the rear of the pedestal.

6   Tag and disconnect wiring to the rear of the panel:

- Disconnect cables from the system monitor to connectors C1 and C2.

- Remove the cover over the terminal block (TB1). Disconnect wiring from the power cord to connectors L1 and L2 on the terminal block.

- Disconnect the ground wiring from the ground bolt from inside the pedestal.

CAUTION

Label wires carefully. They must be reconnected correctly or the system may be damaged.

Installing equipment

1   Set the circuit breaker on the replacement panel to OFF (down).

2   Connect wiring to the replacement panel:

- Install the ground bolt and wiring inside the pedestal.

- Connect wiring from the power cord to connectors L1 and L2 on the terminal block. Replace the cover over the terminal block.

- Connect cables from the system monitor to connectors C1 and C2.

3   Reconnect the power cable from the pedestal to the module:

- Attach the power plug at connector J1.

- Replace the I/O safety panel.

- Replace the rear cover on the module.

4   Position the replacement panel and replace the screws.

5   Plug the power cable into the external outlet.

6   Set the circuit breaker on the panel to ON (up).

7   Replace the pedestal grill.

8   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D56AA, NT8D56AC, NT8D57 Module Power Distribution Unit

Use this procedure to replace the following module power distribution units (MPDUs):

— NT8D56AA single-breaker MPDU for the NT8D29 CE Power Supply AC

— NT8D56AC single-breaker MPDU for the NT7D14 CE/PE Power Supply AC

— NT8D57 dual-breaker MPDU for the NT8D06 PE Power Supply AC and NT8D21 Ringing Generator AC

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Remove the rear grill on the column pedestal. Set the main circuit breaker to OFF (down).

CAUTION

Shutting off the main circuit breaker disables the entire column.

---

2   Remove the I/O safety panel over the backplane.

3   Tag and disconnect the power plugs to the MPDU.

4   Remove the metal plate covering the MPDU in the front of the module by removing the mounting screw in each corner.

5   Unhook the locking devices on the power supply next to the MPDU. Pull the power supply out of the card cage.

6   Remove the mounting screws for the MPDU; the screw-heads are in the wall of the power supply slot (see Figure 34). (Be careful—do not let the screws fall into the module below.) Lift the unit out of the module.

Figure 34
Mounting screws for the MPDU
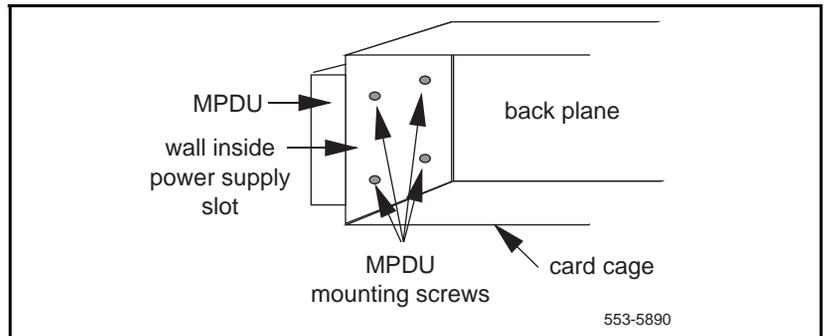
Installing equipment

1   Set the circuit breaker(s) on the replacement MPDU to OFF (down).

2   Position the replacement MPDU in the module. Install the mounting screws through the wall of the power supply slot.

3   Reinsert the power supply and hook the locking devices.

4   Position the metal plate in front of the MPDU and install the mounting screw in each corner.

5   Connect the power plugs to the rear of the MPDU.

6   Position the I/O safety panel. Tighten the screws.

7   Set the circuit breaker(s) on the replacement MPDU to ON (up).

8   Reset the main circuit breaker in the column pedestal to ON (up) and replace the pedestal grill.

9   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D1103 CE/PE Module Card Cage

To replace a defective backplane in an NT8D11 CE/PE Module, you must replace the card cage. Use this procedure to replace the CE/PE Module card cage.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1 Unseat disks in the Floppy Disk Unit (FDU) or Small Systems Multi Disk Unit (SMDU) from the disk drives.

2 Turn off power to the column or the module power supply:

- With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column.

- With DC power, set the switch on the NT6D43 CE/PE Power Supply to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

3 Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not* turn off the blower unit in the front of the pedestal.)

Note: Disconnect the RJ11 cables before you pull the system monitor out of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down.

---

4   Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.

- Tag cards so they can be returned to the same slot. Remove cards.

5   Disconnect cables, plugs, and wires from the rear of the module to the backplane:

- Remove the I/O safety panel by turning the screws on each side. Set the cover aside.

- Tag and disconnect all cables from the backplane to the interior of the I/O assembly.

- Tag and disconnect all plugs, wires, and cables to the backplane.

6   Remove the two mounting screws that secure the rear of the card cage to the module.

7   Remove the front cover plates on both sides of the card cage.

8   Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1   Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2   Replace the front cover plates on both sides of the card cage.

3   Install the mounting screws at the rear of the card cage.

4   Reconnect cables, plugs, and wires from the rear of the module to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the I/O safety panel. Tighten the screws.

5   Return cards to their slots. Reconnect all cables to faceplate connectors.

6   Reinstall the system monitor. Reconnect the RJ11 cables after it is installed.

7   Turn on power to the column or the module power supply:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply in the module.

8   Reinsert disks into the disk drive unit.

9   Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D1303 PE Module Card Cage

To replace a defective backplane in an NT8D13 Peripheral Equipment Module, you must replace the card cage. Use this procedure to replace the PE Module card cage.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disable the peripheral equipment (PE) shelf:

LD 32

DISS l s   "l s" are the loop and shelf numbers

If a second shelf is assigned to a loop, disable that shelf also:

DISS l s

2   Turn off power to the column or the module power supply and ringing generator (if equipped):

   •   With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column.

   •   With DC power, set the switch on the NT6D40 PE Power Supply and NT6D42 Ringing Generator to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

3   Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not* turn off the blower unit in the front of the pedestal.)

Note: If this is the master system monitor, disconnect the RJ11 cables before you pull the system monitor out of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down.

---

4   Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.
- Tag cards so they can be returned to the same slot. Remove cards.

5   Disconnect cables, plugs, and wires from the rear of the module to the backplane:

- Remove the I/O safety panel by turning the screws on each side. Set the cover aside.
- Tag and disconnect all cables from the backplane to the interior of the I/O assembly.
- Tag and disconnect all plugs, wires, and cables to the backplane.

6   Remove the two mounting screws that secure the rear of the card cage to the module.

7   Remove the front cover plates on both sides of the card cage.

8   Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1   Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2   Replace the front cover plates on both sides of the card cage.

3   Install the mounting screws at the rear of the card cage.

4   Reconnect cables, plugs, and wires from the module to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the I/O safety panel. Tighten the screws.

5   Return cards to their slots. Reconnect all cables to connectors.

6   Reinstall the system monitor. If this is the master system monitor, reconnect the RJ11 cables after it is installed.

7   Turn on power to the column or the module power supply and ringing generator:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply and the ringing generator in the module.

8   Enable the shelf:

ENLS l s

If a second shelf is assigned to a loop, enable that shelf also:

ENLS l s

Exit LD 32:

****

9   Test the shelf by testing each loop with:

LD 30
SHLF l s

If there is a problem, an NWS system message is generated.

If there is no problem, exit LD 30:

****

10 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D3403 CPU Module Card Cage

To replace a defective backplane in an NT8D34 CPU Module, you must replace the card cage. Use this procedure to replace the CPU Module card cage.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   The CPU on the backplane you are replacing must be inactive:

   •   If you need to switch CPUs:

      LD 35
      SCPU

   •   Set the NORM/MAINT switch to MAINT on the *active* CPU interface (IF) card. (This keeps the system from switching to the inactive CPU.)

   •   Set the ENB/DIS switch to DIS on the *inactive* interface card.

2   If the multi disk unit (MDU) or floppy disk unit (FDU) is located in the module, move the unit to the other CPU module:

   •   Remove floppy disks from the disk drives.

   •   Tag and disconnect cables to the unit.

   •   Unhook the locking devices on the unit; pull it out of the card cage.

CAUTION

If you are moving an MDU, pull it forward two or three inches, then wait *at least 10 seconds* before you remove the MDU from the card cage.

- Insert the unit in an acceptable slot in the other CPU module. See *Circuit card installation and testing* (553-3001-211) for slot assignments.

- Return floppy disks to the disk drives.

- Reconnect cables to the unit.

3   Turn off power to the column or the module power supply:

- With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column.

- With DC power, set the switch on the NT6D41 CE Power Supply to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

4   Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not* turn off the blower unit in the front of the pedestal.)

Note: If this is the master system monitor, disconnect the RJ11 cables before you pull the system monitor out of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down.

---

5   Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.

- Tag cards so they can be returned to the same slot. Remove cards.

6   Disconnect cables, plugs, and wires from the rear of the module to the backplane:

- Remove the I/O safety panel by turning the screws on each side. Set the cover aside.

- Tag and disconnect all cables from the backplane to the interior of the I/O assembly.

- Tag and disconnect all plugs, wires, and cables to the backplane.

7   Remove the two mounting screws that secure the rear of the card cage to the module.

8   Remove the front cover plates on both sides of the card cage.

9   Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1   Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2   Replace the front cover plates on both sides of the card cage.

3   Install the mounting screws at the rear of the card cage.

4   Reconnect cables, plugs, and wires from the rear of the module to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Position the I/O safety panel. Tighten the screws.

5   Return cards to their slots. Reconnect all cables to faceplate connectors.

6   Reinstall the system monitor. If this is the master system monitor, reconnect the RJ11 cables after it is installed.

7 Turn on power to the column or the module power supply:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply in the module.

8 If the MDU or FDU is located in the module, reinsert disks into the disk drive unit.

9 Enable the CPU:

- Set the ENB/DIS switch to ENB on the inactive interface card.

- Set the NORM/MAINT switch to NORM on the active interface card.

10 Test and switch CPUs:

TCPU
SCPU

If you are unable to test and switch CPUs, check the extenders:

STAT EXT

Enable any that are disabled:

ENL EXT x   "x" is the number of the extender pair
****   exit LD 35

11 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D3503/NT8D3507 Network Module Card Cage

The NT8D3503 Network Module Card Cage uses BTUs, however, the NT8D3507 Network Module Card Cage does not use BTUs, it uses hybrid terminators that are an integral part of the backplane. To replace a defective backplane in an NT8D35 Network Module, you must replace the card cage. Use this procedure to replace the Network Module card cage.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Disable the QPC441 3-Port Extender (3PE) Card by disabling the
    associated QPC215 Segmented Bus Extender (SBE) Card (the CPU
    associated with the SBE must be inactive):

LD 35 (or LD 135 for option 81 and 81C systems)

DIS EXT xxx **or**	Table 8 lists extender codes specified by "xxx"
DIS CNI core slot port **for option 81 and 81C**	refer to Table 5, Table 6, and Table 7
****	exit

Table 5
Typical CNI configurations

System	CNI card slot	Port	Network group
option 81C	12	0	Group 0
	12	1	Group 1
	13	0	Group 2
	13	1	Group 3
	14	0	Group 4
option 81	8	0	pre-configured as "group 5"
	8	1	Group 0
	9	0	Group 1
	9	1	Group 2
	10	0	Group 3
	10	1	Group 4

Note: Each port on the CNI card provides functions similar to one QPC215 SBE Card in option 71. You do not have to configure both ports on the CNI card.

Table 6
Option 81C NTND95AA cable connections to 3PE cards

Network group	Cable label	Connector housing	Connector position	3PE connector
0	CPU1-CNI-12A to 3PE-GRP0/1-J3	Group 0	H12	J3
0	CPU1-CNI-12C to 3PE-GRP0/1-J4	Group 0	H14	J4
1	CPU1-CNI-12D to 3PE-GRP1/1-J3	Groups 1 & 2	H10	J3
1	CPU1-CNI-12F to 3PE-GRP1/1-J4	Groups 1 & 2	H12	J4
2	CPU1-CNI-13A to 3PE-GRP2/1-J3	Groups 1 & 2	H14	J3
2	CPU1-CNI-13C to 3PE-GRP2/1-J4	Groups 1 & 2	H16	J4
3	CPU1-CNI-13D to 3PE-GRP3/1-J3	Groups 3 & 4	H10	J3
3	CPU1-CNI-13F to 3PE-GRP3/1-J4	Groups 3 & 4	H12	J4
4	CPU1-CNI-14A to 3PE-GRP4/1-J3	Groups 3 & 4	H14	J3
4	CPU1-CNI-14C to 3PE-GRP4/1-J4	Groups 3 & 4	H16	J4

Table 7
Option 81 CNI to 3PE connections—NTND14 cables

Backplane connection	Group	3PE shelf from Core 1 / from Core 0		3PE connection
8D	0	1	0	J3
8F	0	1	0	J4
9A	1	1	0	J3
9C	1	1	0	J4
9D	2	1	0	J3
9F	2	1	0	J4
10A	3	1	0	J3
10C	3	1	0	J4
10D	4	1	0	J3
10F	4	1	0	J4

Note: Backplane shroud designations are 18 through 8 from left to right and A through F from top to bottom.

2   Disable all network loops on the shelf by disabling the peripheral signaling card:

LD 32
DSPS x   Table 9 lists the loops represented by "x"
****   exit LD 32

3   Disable all other cards that might be in the module, such as serial data interface (SDI) cards or primary rate interface (PRI) cards.

CAUTION
If the system terminal is assigned to an SDI that will be disabled, assign it to another port before the SDI is disabled.

Table 8
Extender codes

Extender number	From	To
0G0	CPU 0	Network Group 0
0G1	CPU 0	Network Group 1
0G2	CPU 0	Network Group 2
0G3	CPU 0	Network Group 3
0G4	CPU 0	Network Group 4
1G0	CPU 1	Network Group 0
1G1	CPU 1	Network Group 1
1G2	CPU 1	Network Group 2
1G3	CPU 1	Network Group 3
1G4	CPU 1	Network Group 4

Table 9
Network loop codes

Group/ shelf	Peripheral signaling card	Loops disabled/enabled	
0 / 0	0	0	– 15
0 / 1	1	16	– 31
1 / 0	2	32	– 47
1 / 1	3	48	– 63
2 / 0	4	64	– 79
2 / 1	5	80	– 95
3 / 0	6	96	– 111
3 / 1	7	112	– 127
4 / 0	8	128	– 143
4 / 1	9	144	– 159

4   If the multi disk unit (MDU) or floppy disk unit (FDU) is located in the module, unseat disks from the disk drives and move the MDU or FDU to another location.

5   Turn off power to the column or the module power supply:

•   With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

> **WARNING**
>
> Due to hazardous voltage in AC-powered systems, power to the entire
> column must be shut down. This shuts down all functions in the
> column.

- With DC power, set the switch on the NT6D41 CE Power Supply to
  OFF (down). Set the circuit breaker *for just this module* to OFF
  (down) in the rear of the pedestal. (All other modules in the column
  retain power.)

6   Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not*
turn off the blower unit in the front of the pedestal.)

Note: If this is the master system monitor, disconnect the RJ11 cables
before you pull the system monitor out of the pedestal.

> **CAUTION**
>
> If the system monitor is not removed, the system may shut down.

7   Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.

- Tag cards so they can be returned to the same slot. Remove cards.

8   Disconnect cables, plugs, and wires from the rear of the module to the
backplane:

- Remove the I/O safety panel by turning the screws on each side. Set
  the cover aside.

- Tag and disconnect all cables from the backplane to the interior of
  the I/O assembly.

- Tag and disconnect all plugs, wires, and cables to the backplane.

9   Remove the two mounting screws that secure the rear of the card cage to
the bottom of the module.

10   Remove the front cover plates on both sides of the card cage.

11   Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1   Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2   Replace the front cover plates on both sides of the card cage.

3   Install the mounting screws at the rear of the card cage.

4   Reconnect cables, plugs, and wires to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the I/O safety panel. Tighten the screws.

5   Return cards to their slots. Reconnect all cables to connectors.

6   Reinstall the system monitor. If this is the master system monitor, reconnect the RJ11 cables after it is installed.

7   Turn on power to the column or the module power supply:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply in the module.

8   If the MDU or FDU is in the module, reinsert disks into the drive.

9 Software enable the following:

- Enable the 3PE by enabling the associated SBE:

  LD 35 (or LD 135 for option 81 or 81C)
  ENL EXT xxx
  or
  ENL CNI core slot port
  ****

- Enable the peripheral signaling card:

  LD 32
  ENPS x
  ****

- Enable any other disabled cards.

10 Test network loops:

  LD 30
  LOOP ALL

- If there is a problem, an NWS system message is generated.

- If there is no problem, exit LD 30:

  ****

11 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D3703 IPE Module Card Cage

To replace a defective backplane in an NT8D37 IPE Module, you must replace the card cage. Use this procedure to replace the IPE Module card cage.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Software disable the controller card (and all cards connected to the controller):

    LD 32

    DSXP x   "x" is the controller card number

2   Turn off power to the column or the module power supply and ringing generator (if equipped):

    •   With AC power, set the main circuit breaker for the column to OFF (down) in the rear of the pedestal.

WARNING

Due to hazardous voltage in AC-powered systems, power to the entire column must be shut down. This shuts down all functions in the column.

    •   With DC power, set the switch on the NT6D40 PE Power Supply and NT6D42 Ringing Generator to OFF (down). Set the circuit breaker *for just this module* to OFF (down) in the rear of the pedestal. (All other modules in the column retain power.)

---

3 Remove the NT8D22 System Monitor in the rear of the pedestal. (Do *not* turn off the blower unit in the front of the pedestal.)

Note: If this is the master system monitor, disconnect the RJ11 cables before you pull the system monitor out of the pedestal.

CAUTION

If the system monitor is not removed, the system may shut down.

---

4 Remove all cards from the module:

- Tag and disconnect cables to all faceplate connectors.

- Tag cards so they can be returned to the same slot. Remove cards.

5 Disconnect cables, plugs, and wires from the rear of the module to the backplane:

- Remove the I/O safety panel by turning the screws on each side. Set the cover aside.

- Tag and disconnect all cables from the backplane to the interior of the I/O assembly.

- Tag and disconnect all plugs, wires, and cables to the backplane.

6 Remove the two mounting screws that secure the rear of the card cage to the module.

7 Remove the front cover plates on both sides of the card cage.

8 Remove the three mounting screws that secure the front of the card cage to the bottom of the module. Pull the card cage out of the module.

Installing equipment

1 Slide the replacement card cage into position in the module. Install the mounting screws at the front of the card cage.

2 Replace the front cover plates on both sides of the card cage.

3 Install the mounting screws at the rear of the card cage.

4   Reconnect cables, plugs, and wires from the rear of the module to the backplane:

- Connect all cables from the interior of the I/O assembly to the backplane.

- Connect all plugs, wires, and cables to the backplane.

- Position the I/O safety panel. Tighten the screws.

5   Return cards to their slots. Reconnect all cables to faceplate connectors.

6   Reinstall the system monitor. If this is the master system monitor, reconnect the RJ11 cables after it is installed.

7   Turn on power to the column or the module power supply and ringing generator:

- With AC power, set the main circuit breaker in the pedestal to ON (up).

- With DC power, set the breaker to ON (up) in the pedestal. Set the switch to ON (up) on the power supply and the ringing generator in the module.

8   Software enable and test the controller card (and all cards connected to the controller):

ENXP x   "x" is the controller card number
****   exit LD 32

9   Test the shelf by testing each loop:

LD 30
SHLF l s   "l s" are the loop and shelf numbers

- If there is a problem, an NWS system message is generated.

- If there is no problem, exit LD 30:
    ****

10 Tag defective equipment with a description of the problem and package it for return to a repair center.

NT8D33 Small Systems Multi Disk Unit

Use this procedure to replace the small systems multi disk unit (SMDU).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1 Enter the Equipment Data Dump program:

LD 43

2 Set the ENB/DIS switch to DIS on the faceplate of the NT9D34 Enhanced Mass Storage Interface (EMSI) card.

3 Remove the floppy disks from their disk drives.

4 Tag and disconnect the cable(s) to the faceplate of the SMDU.

5 Unhook the locking devices on the SMDU and gently pull the unit forward two or three inches. Wait at least 10 seconds, then pull the unit out of the card cage.

CAUTION

You must wait *at least 10 seconds* before you remove the SMDU from the card cage. This allows the hard disk to stop.

Installing equipment

1   Insert the replacement SMDU into the vacated slot and hook the locking
    devices.

2   Connect the cable(s) to the faceplate of the SMDU.

3   Install the floppy disks in the replacement SMDU.

4   Set the ENB/DIS switch to ENB on the EMSI card.

5   Restore data from the floppy disks to the hard disk. Enter:

    RES

6   Test the SMDU:

    LD 37
    MSI 0

    •   If there is a problem, an IOD system message is generated.

    •   If there is no problem, exit LD 37:

        ****

7   Tag defective equipment with a description of the problem and package
    it for return to a repair center.

Replacing NT9D19 68040 Call Processor (CP) Cards in systems equipped with NT5D61 IODU/C cards

Use this procedure to replace an NT9D19 68040 Call Processor (CP) card in systems equipped with NT5D61 IODU/C cards. For systems equipped with NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards, refer to "NT9D19 68040 Call Processor (CP) card" on page 225.

Note: This procedure may also be used to replace a 64 MB NT9D19 CP card with a 96 MB NT9D19 CP card.

WARNING

Replacing the CP card in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpretation of system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure, you will be required to warm start your system, causing a momentary interruption in call processing.

Removing equipment

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module or Core/Network Module for the CP card you are replacing. To communicate with the processor, you must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

2　The CP card you are replacing must be in the inactive Core. Check the status of the NT9D19 Call Processor cards:

LD 135

STAT CPU　　　determine which CP card is active

If necessary, switch Cores:

SCPU　　　　　switch Cores

****　　　　　　exit LD 135

3　Set the NORM/MAINT switch on the NT9D19 Call Processor card to MAINT on the *active* Core.

4　Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

5　Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

- Press and hold down the MAN RST button on the CP card on the inactive Core.

- Set the NORM/MAINT switch to MAINT.

- Release the MAN RST button.

The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

Installing equipment

1　Set the NORM/MAINT switch to MAINT on the replacement card.

2　Insert the Install Program diskette which corresponds with the NT9D19 (68040) Call Processor card.

3　Remove the current CP card and put it in a static bag and box.

4　Insert the CP replacement card into its vacated slot and hook the locking devices.

5　Press the MAN RST button on the replacement CP card.

6 At the Main Menu select **<u>** to go to the Install Menu.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<CR>--> <u> - To Install menu.

<t> - To Tools menu.

<q> - Quit.

Enter choice > **u**   553-7780

• Insert the Keycode diskette when prompted and select **<a>** to
continue with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation

(the keycode diskette is in the floppy drive).

<q> - Quit.

Enter Choice > a   553-7729

7 Select the following options in sequence from the Install Menu:

<g>   to reinstall CP software

<y>   to start installation

\<y\>	to continue installation
\<a\>	to continue with ROM upgrade
\<cr\>	to return to the Install Menu

8   At the Install Menu, select the following options in sequence

\<e\>	to install CP-BOOTROM
\<y\>	to start installation
\<y\>	to continue installation
\<a\>	to continue with ROM upgrade
\<cr\>	to return to the Install Menu

9   **Remove the diskette** from the IODU/C.

10   Select the following options to quit:

\<q\>	to quit
\<y\>	to confirm quit
\<a\>	to reboot the system.

Note: The system will reboot. Wait for the "INI" and "DONE" messages to display before continuing. It will take at least 70 seconds between the "DONE" and "INI" messages.

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

11 Following a successful dial tone test, perform the following basic sanity tests:

   •   Make sure calls can be placed

   •   Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following five steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced CP card):

12 Press and hold down the MAN RST button on the CP card of the *inactive* Core.

13 While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

14 Enable all CNI switches in the inactive Core.

15 Release the MAN RST button.

16 Set the CP card in the active Core to NORM.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

17 Log into the system through the terminal, then check the status of the replacement CP card from the active side:

   LD 135   load LD 135
   STAT CPU   obtain the CPU status

18 If there are CCED messages generated by the STAT CPU command on the replacement CP card, set the NORM/MAINT switch to MAINT, press the reload (MAN RST) button and set the NORM/MAINT switch back to NORM. (It may take 2 to 4 minutes for memory synchronization to take place.)

After the HWI0533 message is displayed, test the replacement CP card from the active CPU:

TEST CPU   the test causes a cold start on the inactive CPU

If the test results in:

CCED014   "Test failed because unable to enter SPLIT mode"

On the active CP card set the NORM/MAINT switch to NORM, and from the active side enter:

TEST CPU   to test the CP card

19 Set the NORM/MAINT switch to NORM on the active CP card (if not already set).

20 Check the status of the CPUs:

    STAT CPU

21 Test the CPU.

    TEST CPU

22 Check the status of the CNIs:

    STAT CNI

23 Switch Cores and exit the program:

    SCPU
    ****   exit LD 135

NT9D19 68040 Call Processor (CP) card

Use this procedure to replace an NT9D19 68040 Call Processor (CP) card in systems equipped with NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards. For systems equipped with NT5D61 IODU/C cards, refer to "Replacing NT9D19 68040 Call Processor (CP) Cards in systems equipped with NT5D61 IODU/C cards" on page 219.

> *Note:* This procedure may also be used to replace a 64 MB NT9D19 CP card with a 96 MB NT9D19 CP card.

WARNING

Replacing the CP card in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpretation of system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure, you will be required to warm start your system, causing a momentary interruption in call processing.

Removing equipment

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module or Core/Network Module for the CP card you are replacing. To communicate with the processor, you must use the following settings on the terminal:

    9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

2   The CP card you are replacing must be in the inactive Core. Check the status of the NT9D19 Call Processor cards:

LD 135

STAT CPU   determine which CP card is active

If necessary, switch Cores:

SCPU   switch Cores

****   exit LD 135

3   Set the NORM/MAINT switch on the NT9D19 Call Processor card to MAINT on the *active* Core.

4   Set the ENB/DIS switch on all CNI cards on the *inactive* Core to DIS.

5   Perform the following three steps on the *inactive* Core in an uninterrupted sequence:

  •   Press and hold down the MAN RST button on the CP card on the inactive Core.

  •   Set the NORM/MAINT switch to MAINT.

  •   Release the MAN RST button.

The system is now in split mode where each Core is functioning independently and the automatic switchover has been disabled.

Installing equipment

1   Set the NORM/MAINT switch to MAINT on the replacement card.

2   Insert disk A1 into the IOP/CMDU or CMDU.

3   Remove the current CP card and put it in a static bag and box.

4   Ensure the NORM/MAINT switch is set to MAINT, and insert the CP replacement card into its vacated slot and hook the locking devices.

5   Press the MAN RST button on the replacement CP card.

6 Select the following options in sequence from the Install Menu:

<g>	to reinstall CP software
<y>	to start installation
<y>	to continue installation
<a>	to continue with ROM upgrade
<cr>	to return to the Install Menu

7 At the Install Menu, select the following options in sequence

<e>	to install CP-BOOTROM
<y>	to start installation
<y>	to continue installation
<a>	to continue with ROM upgrade
<cr>	to return to the Install Menu

8 **Remove the diskette** from the IOP/CMDU or CMDU.

9 Select the following options to quit:

<q>	to quit
<y>	to confirm quit
<a>	to reboot the system.

> *Note:* The system will reboot. Wait for the "INI" and "DONE" messages to display before continuing. It will take at least 70 seconds between the "DONE" and "INI" messages.

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

10 Following a successful dial tone test, perform the following basic sanity tests:

- Make sure calls can be placed

- Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

To place the system back in the redundant (normal) mode with automatic switchover capability. Perform the following five steps in uninterrupted sequence on the *inactive* Core (the Core with the replaced CP card):

11 Press and hold down the MAN RST button on the CP card of the *inactive* Core.

12 While holding down the MAN RST button, set the NORM/MAINT switch on the same CP card to NORM.

13 Enable all CNI switches in the inactive Core.

14 Release the MAN RST button.

15 Set the CP card in the active Core to NORM.

After several minutes, an "HWI533" message is issued by the *active* Core indicating that the *inactive* Core memory is being synchronized with the *active* Core memory.

16 Log into the system through the terminal, then check the status of the replacement CP card from the active side:

LD 135	load LD 135
STAT CPU	obtain the CPU status

17 If there are CCED messages generated by the STAT CPU command on the replacement CP card, set the NORM/MAINT switch to MAINT, press the reload (MAN RST) button and set the NORM/MAINT switch back to NORM. (It may take 2 to 4 minutes for memory synchronization to take place.)

After the HWI0533 message is displayed, test the replacement CP card from the active CPU:

TEST CPU   the test causes a cold start on the inactive CPU

If the test results in:

CCED014   "Test failed because unable to enter SPLIT mode"

On the active CP card set the NORM/MAINT switch to NORM, and from the active side enter:

TEST CPU   to test the CP card

18 Set the NORM/MAINT switch to NORM on the active CP card (if not already set).

19 Check the status of the CPUs:

    STAT CPU

20 Test the CPU.

    TEST CPU

21 Check the status of the CNIs:

    STAT CNI

22 Switch Cores and exit the program:

    SCPU

    ****   exit LD 135

NT9D34 Enhanced Mass Storage Interface Card

Use this procedure to replace an enhanced mass storage interface (EMSI) card. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING
Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Save the current data configuration to the disk drive unit:

   LD 43

   EDD   execute datadump
   ****   exit LD 43

2   Disable the EMSI card:

   • The associated CPU must be inactive. If you need to switch CPUs:

   LD 35
   SCPU
   ****

   • Software disable the EMSI card:

   LD 37
   DIS MSI 0
   ****

   • Set the ENB/DIS switch to DIS on the faceplate of the EMSI card.

CAUTION
To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect the cable(s) to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

5   Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the EMSI card.

Installing equipment

1   Plug the data cartridge into the connectors on the component side of the replacement EMSI card. Install the screw that secures the cartridge.

2   Set the ENB/DIS switch to DIS on the replacement card.

3   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

CAUTION

Incorrect switch settings on an EMSI card can cause a system failure.

---

4   Insert the replacement card into the vacated slot and hook the locking devices.

5   Connect the cable to the replacement card.

6   Set the ENB/DIS switch to ENB on the replacement card.

7   Switch to the active CPU:

LD 35
SCPU
****

8   Test the EMSI card:

LD 37
MSI 0

- If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 37:

  ****

9   Restore the current data configuration:

LD 43
RES
****

Note: If three system software disks are used, disks A1 and B1 must be installed in the disk drive units after the restore operation.

10   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTBK51AA Downloadable D-Channel Daughterboard

Use this procedure to replace the Downloadable D-Channel Daughterboard (DDCH).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

WARNING

The static discharge bracelet located inside the cabinet must be worn before handling circuit cards. Failure to wear the bracelet can result in damage to the circuit cards.

Removing the DDCH Daughterboard

1 The DDCH can only be removed when it is disabled in software.

2 Both ports of the associated DDP circuit card must be disabled.

3 Disable the faceplate switch on the DDP.

4 Remove the DDP and DDCH.

Installing the DDCH Daughterboard

Note 1: Test procedures require a 24-hour minimum bit error-rate testing before being used. Refer to the *ISDN PRI Description and Administration* NTP (553-2901-100) for these procedures.

Note 2: Dual DTI/PRI loops must be configured in software before defining DCH links.

Set the address for the DDCH; refer to Table 10 for DCH mode and address select switch settings. If a DDCH is present on a DDP card then an external D-Channel should NOT be connected to JC. If a DDCH is present, the LED "DCH" will light up.

Table 10
DCH mode and address select switch settings

Switch	Description	S3 switch setting
1-4	D-Channel Daughterboard Address	See Table 11 on page 235.
5-7	For future use	off
8	External DCH or Onboard DDCH	off - MSDL or DCHI card on - Onboard DDCH Daughterboard

1 The DDCH can be mounted on any DDP card.

2 Unpack and inspect the DDCH daughterboard.

3 Push the four stand-offs on the DDCH daughterboard into the four corresponding mounting holes on the DDP.

Note: The DDCH daughterboard mounts to mate correctly with P2 and P3 on the DDP motherboard.

Table 11
DDCH daughterboard address select switch settings

Device Addr.[1]	Switch Setting			
0[2]	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Note 1: The maximum number of DCHI, MSDL, and DDCH devices in the system is 16.
The Device Addresses are equivalent to the MSDL DNUM designations. For programming
information on the MSDL, refer to NTPs *Multi-purpose Serial Data Link description*
553-3001-195 and *X11 input/output guide*.

Note 2: Device address 0 is commonly assigned to the System Monitor.

NTND01 Integrated CPU/Memory Card

Use this procedure to replace the integrated CPU/memory (ICM) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the ICM card is removed.

Removing equipment

1   Unhook the locking devices on the card; pull it out of the card cage.

2   Remove the ROM card from the ICM card:

   •   On the top (component side) of the card, remove the screw and washer at each corner of the ROM card.

   •   Gently unplug the ROM card from the pin connector.

CAUTION

When you remove the ROM card, do not touch other components on the ICM card.

Installing equipment

1   Install the ROM card on the replacement ICM card:

- Plug the ROM card into the pin connector.

- Install the screw and washer at each corner of the ROM card.

2   Insert the replacement ICM card into the vacated slot and hook the locking devices.

The system will sysload. Check system messages in the *X11 system messages guide*.

Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND02 Misc/SDI/Peripheral Signaling Card

Use this procedure to replace a misc/SDI/peripheral signaling (MSPS) card.

See the *X11 input/output guide* for a description of all maintenance commands and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the MSPS card is removed. An initialization will occur when the new card is installed.

Removing equipment

1   Software disable each serial data interface (SDI) port configured on the MSPS card:

    LD 37
    DIS TTY x   "x" is the number of the interface device attached to the port

2   Set the ENB/DIS switch to DIS.

3   Disconnect the cable to the SDI connector from the faceplate of the card.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Set option switches and plugs on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3   Connect the wire from the battery pack assembly to the connector on the MSPS card (see Figure 35).

Figure 35
Connector for the battery pack assembly
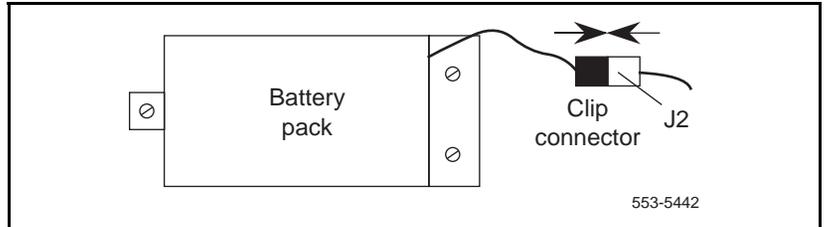
4   Insert the replacement card into the vacated slot and hook the locking devices.

5   Connect the SDI cable to the replacement card.

6   Set the ENB/DIS switch to ENB on the replacement card.

7   Set the ENB/DIS switch on the NT8D18 Network/DTR Card to DIS, then back to ENB.

8   Press the initialize (INIT) button on the NTND01 ICM Card to activate a clean initialization.

9   Software enable and test each configured port on the MSPS card:

LD 37
ENL TTY x
TTY x

The response should be:

ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789''#$%*!&()<>-.:,.? READY FOR INPUT

Anything entered on the keyboard will be echoed until END is input.

•   If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

•   If there is no problem, exit LD 37:

****

10   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND08, QPC939 ROM Card

These read-only memory (ROM) cards attach to the QPC579 CPU Function (FN) Card. Use this procedure to replace the ROM card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize or sysload, causing an interruption in call processing.

Removing equipment

1   To replace the ROM card you must disable and remove the function card. Disable the function card by disabling the associated QPC580 CPU Interface (IF) Card.

   • This CPU must be inactive. If you need to switch CPUs:

      LD 35
      SCPU

   • Set the NORM/MAINT switch to MAINT on the *active* interface card. (This keeps the system from switching to the inactive CPU.)

   • Set the ENB/DIS switch to DIS on the *inactive* interface card.

2   Disconnect the cable between the function and interface cards.

3   Unhook the locking devices on the function card; pull it out of the card cage.

4   Gently unplug the ROM card from the connectors on the component side of the function card.

CAUTION

When you remove the ROM card, do not touch other components on the function card.

Installing equipment

1   Plug the replacement ROM card into the connectors on the component side of the function card.

2   Reinsert the function card and hook the locking devices.

3   Connect the cable between the function and interface cards.

4   Enable the function card by enabling the interface card.

- Set the ENB/DIS switch to ENB on the inactive interface card.

- Set the NORM/MAINT switch to NORM on both interface cards.

5   Test the CPU:

TCPU
SCPU

- If there is a problem, a CED system message is generated.

- If there is no problem, exit LD 35:

    ****

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND09, QPC583 Memory Card

Use this procedure to replace a memory card with a matching memory card.

Note: If you are replacing a 6 Mbyte memory card with a 12 Mbyte memory card, you must perform a system reload (sysload).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Removing equipment

1   Software disable the memory card:

   •   The associated CPU must be inactive. If you need to switch CPUs:

   LD 35
   SCPU

   •   All memory cards on this CPU must be disabled before the defective memory card is removed. For each memory card:

   DIS x   "x" is a two-digit number—the first digit is the associated CPU interface card and the second is the memory card number

---

CAUTION

All memory cards on this CPU must be software disabled to avoid the possibility of a sysload.

---

2   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Insert the replacement card into the vacated slot and hook the locking devices.

2   Test and enable memory cards:

- Test the replacement card:

  MEM x

- When the process is complete, you will receive a system response.

- Enable each disabled memory card:

  ENL x

3   Test the CPU:

  TCPU

- If there is a problem with one of the memory cards, a CED system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 35:

  ****

4   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND10, QPC581 Changeover and Memory Arbitrator Card

Use this procedure to replace a changeover and memory arbitrator (CMA) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Removing equipment

1   Software disable the CMA:

   •   The associated CPU must be inactive. If you need to switch CPUs:

      LD 35
      SCPU

   •   All memory cards served by the CMA must be disabled before the CMA can be disabled. For each memory card:

      DIS x   "x" is a two-digit number—the first digit is the associated CPU card and the second is the memory card number

   •   Disable the CMA:

      DIS CMA x   "x" is the CMA number—0 or 1

   •   Set the NORM/MAINT switch to MAINT on the *active* QPC580 CPU Interface (IF) Card.

---

2   Set the ENB/DIS switch to DIS on the CMA.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect cables to the card you are removing; disconnect the top cable first.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

   Note: On an NTND10 card, for 768 K memory connect pins 2 and 3 on the jumper at J3. For 1 M to 4 M memory connect pins 1 and 2.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Connect cables to the replacement card; connect the bottom cable first.

4   Set the ENB/DIS switch to ENB on the replacement card.

5   Software enable any cards that were disabled:

   •   To enable the CMA:

      ENL CMA x

   •   To enable each memory card:

      ENL x

   •   Set the NORM/MAINT switch to NORM on both interface cards.

6   Test the CMA:

TCPU

- A CED065 message may be generated from this test. If this occurs,
  enter **TCPU** again to clear this condition.

- If the replacement CMA is faulty, further system messages will be
  generated and the red LED will light on the faceplate of the card.

- If there is no problem, exit LD 35:

  ****

7   Tag defective equipment with a description of the problem and package
     it for return to a repair center.

NTND15, NT8D68 Floppy Disk Unit

Use this procedure to replace the floppy disk unit (FDU).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   To software disable the FDU, log in on a system terminal. At the > prompt enter:

DIST

(This command is entered directly through the Overlay Loader program. No other program should be active.)

2   Set the ENB/DIS switch to DIS on the associated QPC742 Floppy Disk Interface (FDI) Card.

3   Remove the disks from the FDU.

4   Tag and disconnect the cable(s) to the faceplate of the FDU.

5   Unhook the locking devices on the FDU and pull the unit out of the card cage.

Installing equipment

1   Insert the replacement FDU into the vacated slot and hook the locking devices.

2   Connect the cable(s) to the replacement FDU.

3   Install the disks in the replacement FDU.

4   Set the ENB/DIS switch to ENB on the associated FDI.

5   To software enable the FDU, at the **>** prompt enter:

ENLT

(This command is entered directly through the Overlay Loader.)

6   Test the FDU:

LD 37
MSI 0

- If there is a problem, an IOD system message is generated.

- If there is no problem, exit LD 37:

  ****

7   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND16, NT8D69 Multi Disk Unit

Use this procedure to replace the multi disk unit (MDU).

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Enter the Equipment Data Dump program:

LD 43

2   Set the ENB/DIS switch to DIS on the faceplate of both QPC584 Mass Storage Interface (MSI) or NT9D34 Enhanced Mass Storage Interface (EMSI) cards.

3   Remove the floppy disks from their disk drives.

4   Tag and disconnect the cable(s) to the faceplate of the MDU.

5   Unhook the locking devices on the MDU and gently pull the unit forward two or three inches. Wait at least 10 seconds, then pull the unit out of the card cage.

CAUTION

You must wait *at least 10 seconds* before you remove the MDU from the card cage. This allows the hard disk to stop.

Installing equipment

1   Insert the replacement MDU into the vacated slot and hook the locking devices.

2   Connect the cable(s) to the faceplate of the MDU.

3   Install the floppy disks in the replacement MDU.

4   Set the ENB/DIS switch to ENB on both MSI or EMSI cards.

5   Restore data from the floppy disks to the hard disks. Enter:

    RES

6   Test the MDU:

    LD 37
    MSI 0

    •   If there is a problem, an IOD system message is generated.

    •   If there is no problem, exit LD 37:

        ****

7   Tag defective equipment with a description of the problem and package it for return to a repair center.

NTND31 ROM Card

This read-only memory (ROM) card is attached to the NTND01 Integrated CPU/Memory (ICM) Card. Use this procedure to replace an NTND31 ROM Card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the ICM card is removed.

Removing equipment

1   To replace the ROM card you must remove the ICM card. Unhook the locking devices on the ICM card; pull it out of the card cage.

2   Remove the ROM card from the ICM card:

  •   On the top (component side) of the ICM card, remove the screw and washer at each corner of the ROM card.

  •   Gently unplug the ROM card from the pin connector.

CAUTION

When you remove the ROM card, do not touch other components on the ICM card.

Installing equipment

1   Install the replacement ROM card on the ICM card:

   • Plug the replacement ROM card into the pin connector.

   • Install the screw and washer at each corner of the ROM card.

2   Reinsert the ICM card and hook the locking devices. The system will sysload at this point.

3   Tag defective equipment with a description of the problem and package it for return to a repair center.

P0699798 Air Filter

Use this procedure to replace the air filter in the pedestal.

Note: You do not need to power down the system to perform this procedure.

1   Remove the pedestal front grill and set it aside. The air filter is directly above the blower unit in a slot in the pedestal (see Figure 36).

Figure 36
Blower unit and air filter in the front of the pedestal

Air filter

Blower unit

553-3002
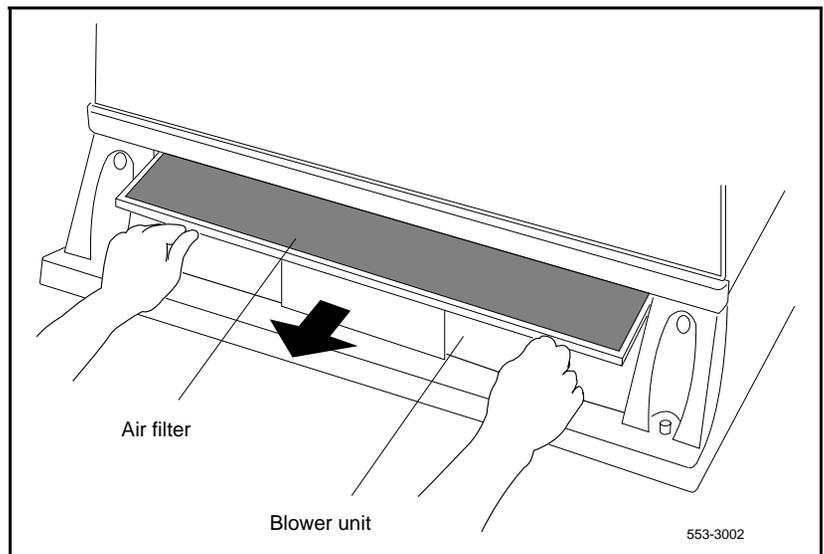
2   Grasp the plastic tabs on the front of the air filter. Pull the filter out of the pedestal.

3   To install a clean, dry air filter:

   •   Make sure the plastic tabs will be on the front of the filter (see Figure 37).

   •   Gently push the filter into the pedestal slot until it seats fully in the back.

Figure 37
Pull-tab locations on the air filter

Plastic tab   Plastic tab
                                              553-3049
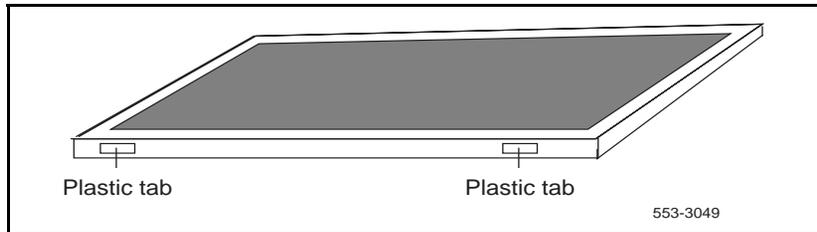
4   To reinstall the pedestal grill:

   •   Fit the bottom of the grill into the holes on the bottom edge of the pedestal.

   •   Push the grill into a locked position against the pedestal.

   •   If there are captive screws on the grill, tighten the screws.

QMM42 Security Data Cartridge

Use this procedure to replace the data cartridge on the NT6D63 I/O Processor (IOP), QPC584 Mass Storage Interface (MSI), NT9D34 Enhanced Mass Storage Interface (EMSI), or QPC742 Floppy Disk Interface (FDI) Card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1 Disable the host (MSI, EMSI, FDI, or IOP) card.

- For an MSI, EMSI, or FDI card, the associated CPU must be inactive.

  If you need to switch CPUs:

  LD 35
  SCPU
  ****   exit LD 35

  Software disable the MSI, EMSI, or FDI card:

  LD 37
  DIS MSI 0

- For an IOP card, software disable the IOP card associated with the active CPU:

  LD 137
  DIS IOP   this also disables the associated CMDU or IOP/CMDU, or both CMDUs or IOP/CMDUs if they are in sync

2 Set the ENB/DIS switch to DIS on the host card.

For an MSI, EMSI, or FDI card, also disconnect the cable to the card.

---

3   Unhook the locking devices on the card; pull it out of the card cage.

4   Remove the screw that secures the data cartridge. Gently unplug the cartridge from the connectors on the component side of the host card.

Installing equipment

1   Plug the replacement data cartridge into the connectors on the component side of the host card. Install the screw that secures the cartridge.

CAUTION

To avoid system failure, the ID number on the data cartridge must match the ID number of the system.

---

2   Reinsert the card and hook the locking devices.

For an MSI, EMSI, or FDI card, reconnect the cable to the card.

3   Set the ENB/DIS switch to ENB.

4   Test the host card.

- For an MSI, EMSI, or FDI card:

  LD 37
  MSI 0
  ****   exit LD 37

- For an IOP card, test and enable the card:

  LD 137
  DIS IOP   the card must be disabled for testing
  TEST IOP
  ENL IOP   this also enables the CMDU(s) or
                            IOP/CMDU(s)
  ****   exit LD 137

If there is a problem, an IOD or CIOD system message is generated and
the red LED lights on the faceplate of the card.

5   Tag defective equipment with a description of the problem and package
it for return to a repair center.

Note: For dual-CPU systems, repeat this procedure for the second data
cartridge.

QPC43 Peripheral Signaling Card

Use this procedure to replace a peripheral signaling card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Disabling or removing a peripheral signaling card from a network shelf disables all loops on that shelf.

Removing equipment

1 Check the status of the peripheral signaling card:

LD 32

STAT PER x   Table 12 lists peripheral signaling card numbers specified by "x"

- If the response is **DSBL**, go to Step 2.
- If the response is **ENBL**, enter **DSPS x** to disable the card, then go to Step 2.

2 Set the ENB/DIS switch to DIS.

3 Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1 Set the ENB/DIS switch to DIS on the replacement card.

2 Set the jumper plug on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

---

3   Insert the replacement card into the vacated slot and hook the locking devices.

4   Set the ENB/DIS switch to ENB on the replacement card.

5   Software enable the card and loops serviced by the card:

   ENPS x

- When the process is complete, you will receive a system response.

   - If there is a problem, an NPR system message is generated and the red LED lights on the faceplate of the card.

   - If there is no problem, exit LD 32:

      ****

6   Test each loop serviced by the peripheral signaling card:

   LD 30

   LOOP loop   "loop" is a loop number (see Table 12)
   ****   exit LD 30

7   Tag defective equipment with a description of the problem and package it for return to a repair center.

Table 12
Peripheral signaling card numbers

Group/ shelf	Peripheral signaling card	Loops disabled/enabled		
0 / 0	0	0	–	15
0 / 1	1	16	–	31
1 / 0	2	32	–	47
1 / 1	3	48	–	63
2 / 0	4	64	–	79
2 / 1	5	80	–	95
3 / 0	6	96	–	111
3 / 1	7	112	–	127
4 / 0	8	128	–	143
4 / 1	9	144	–	159

QPC215 Segmented Bus Extender Card

Use this procedure to replace a segmented bus extender (SBE) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Software disable the SBE (the QPC441 3-Port Extender Card will also be disabled):

   •   The CPU associated with the SBE must be inactive. To switch CPUs:

      LD 35
      SCPU

   •   Disable the SBE:

      DIS EXT xxx   Table 13 lists extender codes specified by "xxx"

Table 13
Extender codes

Extender number	From	To
0G0	CPU 0	Network Group 0
0G1	CPU 0	Network Group 1
0G2	CPU 0	Network Group 2
0G3	CPU 0	Network Group 3
0G4	CPU 0	Network Group 4
1G0	CPU 1	Network Group 0
1G1	CPU 1	Network Group 1
1G2	CPU 1	Network Group 2
1G3	CPU 1	Network Group 3
1G4	CPU 1	Network Group 4

2   Set the ENB/DIS switch to DIS.

3   Tag and disconnect cables to the card.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

CAUTION

Incorrect switch settings on the SBE can cause a system failure.

---

3   Insert the replacement card into the vacated slot and hook the locking devices.

4   Connect cables to the replacement card.

5   Set the ENB/DIS switch to ENB on the replacement card.

6   Software enable and test the SBE card:

ENL EXT xxx
TCPU
SCPU

- When the process is complete, you will receive a system response.

- If there is a problem, a CED system message is generated and the red LED lights on the faceplate of the appropriate card.

- If there is no problem, exit LD 35:

    ****

7   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC412 InterGroup Switch Card

Use this procedure to replace an intergroup switch (IGS) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Software disable the IGS:

   •   The associated CPU must be inactive. If you need to switch CPUs:

   LD 35
   SCPU   switch CPU
   ****   exit LD 35

   •   Disable the IGS:

   LD 39
   DISI IGS xx   "xx" is the IGS card number—0 to 19

   You will see **ISR043** on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

2   Set the ENB/DIS switch to DIS.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect cables to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Insert the replacement card into the vacated slot and hook the locking
    devices.

3   Connect cables to the replacement card.

4   Set the ENB/DIS switch to ENB on the replacement card.

5   Software enable and test the IGS:

    ENL IGS xx
    STAT IGS

    •   When the process is complete, you will receive a system response.

    •   If there is a problem, an ISR system message is generated and the red
        LED lights on the faceplate of the card.

    •   If there is no problem, exit LD 39:

        ****

6   Test the IGS cards:

    LD 45
    NSIG

    •   If there is a problem, a CED system message is generated.

    •   If there is no problem, exit LD 45:

        ****

7   Tag defective equipment with a description of the problem and package
    it for return to a repair center.

QPC441 Three-Port Extender Card

Use this procedure to replace a three-port extender (3PE) card. To software disable the 3PE card:

— In option 61, go directly to Step 2 on page 266.

— In option 71, you must disable the associated QPC215 Segmented Bus Extender (SBE) Card. Go to Step 1 on page 265.

— In options 51C, 61C, 81, and 81C, you must disable the associated NT6D65 Core to Network Interface (CNI) Card. Go to Step 1 on page 265.

Note 1: In any Network Module, before you hardware disable the 3PE card you must software disable the QPC43 Peripheral Signaling Card, the QPC412 Intergroup Switch (IGS) Card, and any serial data interface (SDI) cards in the card cage.

Note 2: In options 51C, 61C, 81, and 81C, if you are replacing the 3PE card in the Core/Network or Core Module, before you hardware disable the 3PE card you must software disable the QPC471 or QPC775 Clock Controller Card on the same CPU. Make sure the replacement card is QPC441 vintage F or later.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Removing equipment

1   Software disable the 3PE. The CPU associated with the SBE or CNI card must be inactive:

   •   In option 71, if you need to switch CPUs:

      LD 35
      SCPU

      Disable the SBE card:

      DIS EXT xxx   Table 14 lists extender codes specified by "xxx"
      ****   exit LD 35

Table 14
Extender codes

Extender number	From	To
0G0	CPU 0	Network Group 0
0G1	CPU 0	Network Group 1
0G2	CPU 0	Network Group 2
0G3	CPU 0	Network Group 3
0G4	CPU 0	Network Group 4
1G0	CPU 1	Network Group 0
1G1	CPU 1	Network Group 1
1G2	CPU 1	Network Group 2
1G3	CPU 1	Network Group 3
1G4	CPU 1	Network Group 4

   •   In options 51C, 61C, 81, and 81C, check the status of all configured CNI cards and the network group number of both ports on each CNI card:

      STAT CNI

      The CPU associated with the CNI card must become inactive. If you need to switch CPUs:

      LD 135
      SCPU

Disable the CNI port associated with the 3PE card:

DIS CNI c s p   "c" is the CPU (0 or 1), "s" is the card slot
(8–12), "p" is the port (0 or 1)

****   exit LD 135

In options 51C, 61C,81, and 81C, if the 3PE card is in the Core or
Core/Network Module, you must disable the clock controller card in
that module. Check the status of the clock:

LD 60
SSCK x   "x" is the CPU (0 or 1)

If the clock is active, switch the clock to make it inactive:

SWCK

Disable the clock:

DIS CC x
****   exit LD 60

2   Software disable the associated peripheral signaling card:

LD 32
DSPS x   Table 15 lists peripheral signaling card numbers
specified by "x"
****   exit LD 32

Table 15
Peripheral signaling card numbers

Group/ shelf	Peripheral signaling card	Loops disabled/enabled		
0 / 0	0	0	–	15
0 / 1	1	16	–	31
1 / 0	2	32	–	47
1 / 1	3	48	–	63
2 / 0	4	64	–	79
2 / 1	5	80	–	95
3 / 0	6	96	–	111
3 / 1	7	112	–	127
4 / 0	8	128	–	143
4 / 1	9	144	–	159

3   Software disable each port on any associated SDI cards:

LD 37

DIS TTY x   "x" is the number of the interface device attached to
a port

****   exit LD 37

CAUTION

If the system terminal is assigned to an SDI port that will be disabled,
assign it to another port before the SDI is disabled.

---

4   Software disable the associated IGS cards:

LD 39

DISI IGS x   "x" is the IGS card number—0 to 19

****   exit LD 39

You will see **ISR043** on the system terminal when the card is disabled.
Busy channels will not be disabled until the call is disconnected.

5   Set the ENB/DIS switch on the 3PE to DIS.

6   Tag and disconnect cables to the 3PE.

7   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement 3PE card.

2   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3   Insert the replacement card into the vacated slot and hook the locking devices.

4   Connect cables to the replacement card.

5   Set the ENB/DIS switch to ENB on the replacement card.

6   Enable cards.

   •   In options 61 and 71:

       LD 35
       ENL EXT xxx   Table 14 lists extender codes
       ****   exit LD 35

       Press the Man Int button to initialize the system.

   •   In options 51C, 61C, 81, and 81C, enable and test the CNI and 3PE cards:

       LD 135
       ENL CNI c s p CPU (0 or 1). Slot (8–10), port (0 or 1) for
                          option 81 and slot 12, port 0 for options 51C,
                          61C, and 81C.
       ****   exit LD 135

       If the LED on the 3PE card turns off, go to Step 7. If the LED stays lit, press the Man Int button to initialize the system.

In options 51C, 61C, 81, and 81C, if the 3PE card is in the Core/Network or the Core Module, enable the clock controller card:

LD 60

ENL CC x

****   exit LD 60

If there is a problem, a CED or CCED system message is generated and the red LED lights on the faceplate of the appropriate card.

7   Check to see that all cards were enabled.

Check the status of the IGS card:

LD 39

STAT IGS x   "x" is the IGS card number—0 to 19

If the card is still disabled, enable it:

ENL IGS xx

****   exit LD 39

Check the status of SDI ports:

LD 37

STAT

If any port still disabled, enable it:

ENL TTY x

****   exit LD 37

Check the status of the peripheral signaling card:

LD 32

STAT PER x   Table 15 lists peripheral signaling card numbers

If the card is still disabled, enable it:

ENPS x

****   exit LD 32

8   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC471, QPC775 Clock Controller Card

Use this procedure to replace a clock controller (CC) card.

Note: The QPC775 Clock Controller is used in Canadian and International applications. QPC775 and QPC471 cards cannot be combined in one system.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   The clock controller card must be on the inactive CPU. If you need to switch the active CPU:

   LD 35 (for other than options 51C, 61C, 81, and 81C) or **LD 135** (for options 51C, 61C, 81, and 81C)
   SCPU
   ****

2   Disable the clock controller card:

   •   The card you are removing must be inactive:

      LD 60

   •   In a single-CPU system:
      Disable the clock controller card.
      DIS CC x   "x" is the card number—0 or 1

   •   In a dual-CPU system:
      Check the status of the clock controller card you are removing.
      SSCK x   "x" is the card number—0 or 1
      If the clock is active, switch clocks.

SWCK   switch system clock from active to standby

Make sure the card you are removing is disabled and the other clock controller card is active and in free run mode.

SSCK x

TRCK FRUN

Disable the clock controller card you are removing.

DIS CC x   "x" is the card number—0 or 1

3   Set the ENB/DIS switch to DIS on the card you are removing.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

4   Tag and disconnect cables to the card you are removing.

5   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Set option switches on the replacement card. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3   Insert the replacement card into the vacated slot and hook the locking devices.

4   Connect cables to the replacement card.

5   Set the ENB/DIS switch to ENB on the replacement card.

6   Software enable the card:

ENL CC x

Note: With a vintage H clock controller card, do not issue the tracking (TRCK) or status (SSCK) commands at this time. If you do issue these commands, the system may respond with an inaccurate error condition.

- In a single-CPU system, complete the replacement procedure by exiting LD 60:

    ****

- In a dual-CPU system proceed with the following steps.

7 Switch CPUs:

LD 35 (for other than options 51C, 61C, 81, and 81C) or **LD 135** (for options 51C, 61C, 81, and 81C)
SCPU
****

8 Activate the newly installed card and verify that it is active:

LD 60
SWCK
SSCK x

9 If applicable, issue a tracking command:

TRCK aaa   "aaa" is PCK for track primary clock, SCLK for
                    track secondary clock, or FRUN for free run mode

Note: Set the clock source to the status it was in before the replacement procedure.

10 Verify clock switch-over and tracking:

SWCK
SSCK x
****   exit LD 60

11 Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC477 Bus Terminating Unit

Use this procedure to replace a bus terminating unit (BTU).

Note: Check the codes on all replacement BTUs.

- QPC477-A10 and QPC477-B10 BTUs are interchangeable in NT8D35 Network Modules.

- QPC477-B10 BTUs must be used in NT6D60 Core Modules.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

---

1 Turn off power to the module:

- With AC power, set the circuit breaker on the Module Power Distribution Unit (MPDU) to OFF (down).

- With DC power, set the switch on the power supply to OFF (down).

2 Remove enough cards on both sides of the BTU to access the unit.

See *Circuit card installation and testing* (553-3001-211) for BTU slot locations.

3 Gently pull the BTU out of the card cage.

4 Insert the replacement BTU into the vacated slot.

5 Reinstall the cards on both sides of the BTU.

6 Turn on power to the module:

- With AC power, set the MPDU circuit breaker to ON (up).

- With DC power, set the power supply switch to ON (up).

Note: As necessary, software reenable cards in the module. See the appropriate replacement procedures in this document.

7 Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC513, QPC841 Serial Data Interface Card

Use this procedure to replace a serial data interface (SDI) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

If the system terminal is assigned to the SDI being replaced, assign it to another port before this SDI is disabled.

Removing equipment

1   Software disable each port on the SDI:

    LD 37
    DIS TTY x   "x" is the number of the interface device attached to a port

2   Set the ENB/DIS switch to DIS.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect cables to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1 Set the ENB/DIS switch to DIS on the replacement card.

2 Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3 Insert the replacement card into the vacated slot and hook the locking devices.

4 Connect cables to the replacement card.

5 Set the ENB/DIS switch to ENB on the replacement card.

6 Software enable each port on the card:

   ENL TTY x

   •   When the process is complete, you will receive a system response.

   •   If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

   •   If there is no problem, exit LD 37:

      ****

7 Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC579 CPU Function Card

Use this procedure to replace a CPU function (FN) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Removing equipment

1   Disable the function card you are replacing by disabling the associated QPC580 CPU Interface (IF) Card. This CPU must be inactive.

•   If you need to switch CPUs:

   LD 35
   SCPU

•   Set the NORM/MAINT switch to MAINT on the *active* interface card. (This keeps the system from switching to the inactive CPU.)

•   Set the ENB/DIS switch to DIS on the *inactive* interface card.

2   Disconnect the cable between the function card and the interface card.

3   Unhook the locking devices on the card; pull it out of the card cage.

4   Gently unplug the ROM Card from the connectors on the component side of the function card.

CAUTION

When you remove the ROM card, do not touch other components on the function card.

Installing equipment

1   Plug the ROM card into connectors on the component side on the replacement function card.

2   Insert the replacement function card into the vacated slot and hook the locking devices.

3   Connect the cable between the replacement function card and the interface card.

4   Enable the function card by enabling the interface card:

•   Set the ENB/DIS switch to ENB on the inactive interface card.

•   Set the NORM/MAINT switch to NORM on both interface cards.

5   Test and switch CPUs:

TCPU
SCPU

•   If there is a problem, a CED system message is generated.

•   If there is no problem, exit LD 35:

****

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC580 CPU Interface Card

Use this procedure to replace a CPU interface (IF) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system may initialize, causing a momentary interruption in call processing.

Removing equipment

1   Disable the interface card. This CPU must be inactive.

   •   If you need to switch CPUs:

       LD 35
       SCPU

   •   Set the NORM/MAINT switch to MAINT on the *active* interface card. (This keeps the system from switching to the inactive CPU.)

   •   Set the ENB/DIS switch to DIS on the *inactive* interface card (the one you are replacing).

2   Disconnect the cable between the interface card and the QPC579 CPU function card.

3   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the faceplate of the replacement card.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Connect the cable between the interface card and the function card.

4   Enable the interface card:

   •   Set the ENB/DIS switch to ENB on the replacement card.

   •   Set the NORM/MAINT switch to NORM on both interface cards.

5   Test and switch CPUs:

   TCPU
   SCPU

   •   If there is a problem, a CED system message is generated and the red LED lights on the faceplate of the card.

   •   If there is no problem, exit LD 35:

      ****

6   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC584 Mass Storage Interface Card

Use this procedure to replace a mass storage interface (MSI) card. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Save the current data configuration to the disk drive unit:

LD 43

EDD   execute datadump

****   exit LD 43

2   Disable the MSI card:

•   The associated CPU must be inactive. If you need to switch CPUs:

   LD 35
   SCPU
   ****

•   Software disable the MSI card:

   LD 37
   DIS MSI 0
   ****

•   Set the ENB/DIS switch to DIS on the faceplate of the MSI card.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect the cable to the card you are removing. If the replacement card is an EMSI card, remove the NT8D80 cable from the connector on the MDU.

4   Unhook the locking devices on the card; pull it out of the card cage.

5   Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the MSI card.

Installing equipment

1   Plug the data cartridge into the connectors on the component side of the replacement MSI or EMSI card. Install the screw that secures the cartridge.

2   Set the ENB/DIS switch to DIS on the replacement card.

3   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

CAUTION

Incorrect switch settings on an MSI or EMSI card can cause a system failure.

---

4   Insert the replacement card into the vacated slot and hook the locking devices.

5   Connect the cable to the replacement card. If the replacement card is an EMSI card, install an NT9D89 cable between the connectors on the MDU and the EMSI card.

6   Set the ENB/DIS switch to ENB on the replacement card.

7   Switch to the active CPU:

LD 35
SCPU
****

8   Test the MSI card:

LD 37
MSI 0

- If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 37:

    ****

9   Restore the current data configuration:

LD 43
RES
****

Note: If three system software disks are used, disks A1 and B1 must be installed in the disk drive units after the restore operation.

10 Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC659 Dual Loop Peripheral Buffer Card

Use this procedure to replace a dual loop peripheral buffer (DLB) card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Service is interrupted when a loop is disabled.

Removing equipment

1   Software disable the dual loop peripheral buffer:

   LD 32
   DISS l s   "l s" are the loop and shelf numbers

2   Set the ENB/DIS switch to DIS.

3   Tag and disconnect cables to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   Set the ENB/DIS switch to DIS on the replacement card.

2   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

3   Insert the replacement card into the vacated slot and hook the locking devices.

4   Connect cables to the replacement card.

5   Set the ENB/DIS switch to ENB on the replacement card.

6   Software enable the replacement card by enabling the shelf:

   ENLS l s

   • When the process is complete, you will receive a system response.

   • If there is no problem, exit LD 32:

     ****

7   Test each shelf:

   LD 30
   SHLF l s

   • If there is a problem, an NWS system message is generated and the appropriate red LED lights on the faceplate of the card.

   • If there is no problem, exit LD 30:

     ****

8   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC687 CPU Card

Use this procedure to replace the CPU card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the CPU card is removed.

Removing equipment

1   If the serial data interface (SDI) port is used, software disable it:

   LD 37
   DIS TTY x   "x" is the number of the interface device attached to
                        the port

2   Disconnect the cable to the SDI port.

3   Unhook the locking devices on the card; pull it out of the card cage.

4   Gently unplug the QPC940 ROM Card from the connectors on the component side of the CPU card.

CAUTION

When you remove the ROM card, do not touch other components on the CPU card.

Installing equipment

1   Plug the ROM card into the connectors on the component side on the
    replacement CPU card.

2   Set option switches and plugs on the replacement card the same as on the
    card you removed. If there is a vintage change, be sure to check *Circuit
    card installation and testing* (553-3001-211) for any differences.

3   Connect the cable to the SDI port.

4   Insert the replacement card into the vacated slot and hook the locking
    devices.

    The system will sysload, or initialize, or both. Check system messages in
    the *X11 system messages guide*.

5   If the SDI port is used, software enable it:

    LD 37
    ENL TTY x
    TTY x

    The response should be:

    ABCDEFGHIJKLMNOPQRSTUVWXYZ
    0123456789"#$%*!&()<>-.:,.? READY FOR INPUT

    Anything entered on the keyboard will be echoed until END is input.

    •   If there is a problem, an IOD system message is generated and the
        red LED lights on the faceplate of the card.

    •   If there is no problem, exit LD 37:

        ****

6   Tag defective equipment with a description of the problem and package
    it for return to a repair center.

Replacing the QPC723A Circuit Card

Use this procedure to replace a QPC723A card in a peripheral equipment (PE) module.

WARNING

Module covers are not hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Record the on/off status of the LEDs on the faceplate.

2   Software disable the card:
    LD 32
    STAT l s c
    DIS l s c
    ("l s c" represents loop, shelf number)

    You will see "NPR011" on the system terminal when the card is disabled. Busy channels will not be disabled until the call is disconnected.

    You will see the LED light up when the card becomes disabled.

3   Unhook the locking devices on the card; pull it out of the card cage.

Installing equipment

1   et option switches on the QPC723A replacement card the same as on the card you removed.

2   Insert the replacement card into the vacated slot and hook the locking devices.

3   Depress the SELECT button on the faceplate so that the LEDs match the LEDs you recorded from the removed card.

4   Software enable the card:
LD 32
ENLC l s c
When the process is complete, you will receive a system response
STAT l s c
Obtain the status of the card to ensure that the card is enabled
****
To exit the program

5   (Optional): Test the card:
LD 30
SHLF l s
("l s" represents loop, shelf number)

Note: This command tests every card on the designated shelf.

If there is a problem, an NWS system message is generated and the red
LED(s) on the faceplate of the card will remain lit.

If there is no problem, exit LD 30.

6   Tag defective equipment with a description of the problem and package
it for return to a repair center.

QPC742 Floppy Disk Interface Card

Use this procedure to replace a floppy disk interface (FDI) card. See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Save the current data configuration to the disk drive unit:

LD 43

EDD   execute datadump

****   exit LD 43

2   Disable the FDI card:

• The associated CPU must be inactive. If you need to switch CPUs:

LD 35
SCPU
****

• Software disable the FDI card:

LD 37
DIS MSI 0
****

• Set the ENB/DIS switch to DIS on the faceplate of the FDI card.

CAUTION

To avoid interrupting service, set ENB/DIS switches to DIS before disconnecting or connecting cables.

---

3   Tag and disconnect the cable to the card you are removing.

4   Unhook the locking devices on the card; pull it out of the card cage.

5   Remove the screw that secures the QMM42 Data Cartridge. Gently unplug the cartridge from the connectors on the component side of the FDI card.

Installing equipment

1   Plug the data cartridge into the connectors on the component side of the replacement FDI card. Install the screw that secures the cartridge.

2   Set the ENB/DIS switch to DIS on the replacement card.

3   Set option switches on the replacement card the same as on the card you removed. If there is a vintage change, be sure to check *Circuit card installation and testing* (553-3001-211) for any differences.

CAUTION
Incorrect switch settings on an FDI card can cause a system failure.

---

4   Insert the replacement card into the vacated slot and hook the locking devices.

5   Connect the cable to the replacement card.

6   Set the ENB/DIS switch to ENB on the replacement card.

7   Switch to the active CPU:

LD 35
SCPU
****

8   Test the FDI card:

LD 37
MSI 0

- If there is a problem, an IOD system message is generated and the red LED lights on the faceplate of the card.

- If there is no problem, exit LD 37:

    ****

9   Restore the current data configuration:

LD 43
RES
****

Note: If three system software disks are used, disks A1 and B1 must be installed in the disk drive units after the restore operation.

10   Tag defective equipment with a description of the problem and package it for return to a repair center.

QPC940 ROM Card

This read-only memory (ROM) card is attached to the QPC687 CPU Card. Use this procedure to replace a QPC940 ROM Card.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

Call processing will stop when the CPU card is removed.

Removing equipment

1   To replace the ROM card you must remove the CPU card. Unhook the locking devices on the CPU card; pull it out of the card cage.

2   Gently unplug the ROM card from the connectors on the component side of the CPU card.

CAUTION

When you remove the ROM card, do not touch other components on the CPU card.

Installing equipment

1   Plug the replacement ROM card into the connectors on the component side of the CPU card.

2   Reinsert the CPU card and hook the locking devices. The system will sysload at this point.

3   Tag defective equipment with a description of the problem and package it for return to a repair center.

Replacing the Security Device on the NT5D61 IODU/C

Use this procedure to replace the Security Device on the NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C) Card.

The Security Device is a field removable component and is located in the upper right corner of an IODU/C card. The device does not contain feature or software release specific information, but it has a unique custom program necessary for each customer. It is intended to serve the customer through numerous upgrade and feature changes.

The Security Device is replaced only if such a replacement is suggested by maintenance and/or diagnostic programs.

WARNING

Performing this procedure in a nonredundant system, such as a 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure the system will warm start, causing a momentary interruption in call processing.

Note: To replace the Security Device, a new Security Device and keycode are required. On redundant systems, the new keycode must validate against the new and existing Security Device.

Replacing the Security Device on a redundant system

The procedure begins with the validation of the new Keycode against the existing Security Device.

1   To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the *inactive* Core Module or Core/Network Module. To communicate with the processor, you must use the following settings on the terminal:

    9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

    Note: If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

2   Use LD 135 to switch to the Core which contains the non-faulty Security Device.

LD 135	to load the program
SCPU	switch CPUs (if necessary)
****	exit LD 135

3   Insert the keycode diskette into the floppy drive on the IODU/C with the non-faulty Security Device.

4   In LD 143, print the pending keycode contents. Use "KSHO F0" if your keycode is on the diskette in the floppy drive on Core 0, or "KSHO F1" if your keycode is on the diskette in the floppy drive on Core 1:

LD 143	to load the program
KSHO F0	print the contents of the candidate keycode
or	
KSHO F1	

5   Perform the KDIF command. Use "KDIF F0 REC" if the keycode diskette is inserted in the floppy drive on Core 0, or "KDIF F1 REC" if the keycode is inserted in the floppy drive on Core 1:

KDIF F0 REC	to print the differences between the candidate and
or	the current keycodes
KDIF F1 REC	
****	to exit LD 143

6   Disable the inactive IODU/C:

LD 137	to load the program
STAT	to find the status of the IODU/Cs
DIS CMDU x	to disable the CMDU part of the inactive IODU/C x
DIS IOP x	to disable the IOP part of the inactive IODU/C x

Perform the following steps on the *inactive* Core.

7   Set the ENB/DIS switch on the IODU/C with the faulty Security Device to DIS.

8   Unhook the locking devices and remove the IODU/C.

9   Remove the round 1/2" diameter IODU/C Security Device from the black round Security Device holder on the top right corner of the IODU/C card.

10 Locate the round 1/2" diameter IODU/C replacement Security Device.

11 Make sure the 8-digit code on the Keycode diskette matches the 8-digit code on the replacement Security Device.

12 With the Nortel side facing upward, slide the replacement Security Device between the security device holder and the holder clip. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

13 Reinsert the IODU/C into the following slots:

- For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

- For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

14 Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

15 Enable the IODU/C in LD 137:

STAT	to see the status of the IODU/Cs
ENL CMDU x	to enable the CMDU part of IODU/C x
ENL IOP x	to enable the IOP part of IODU/C x
STAT	to see the status of the IODU/Cs
****	to exit LD 137

16 Perform the KNEW command:

LD 143	to load the program
KNEW HD	to copy the keycode to the other Core
****	to exit the program

17 Reboot the system at a time that will minimize service impact.

The new keycode will not take effect until the system reboots.

Replacing the Security Device on an option 51C system

WARNING

Performing this procedure in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

---

1 To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the Core Module or Core/Network Module. To communicate with the processor, you must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

2 Set the ENB/DIS switch on the IODU/C with the faulty Security Device to DIS.

3 Unhook the locking devices and remove the IODU/C.

4 Remove the round 1/2" diameter Security Device from the black round Security Device holder on the top right corner of the IODU/C card.

5 Locate the round 1/2" diameter IODU/C replacement Security Device.

6 Make sure the 8-digit code on the Keycode diskette matches the 8-digit code on the replacement Security Device.

7 With the Nortel side facing upward, slide the replacement Security Device between the security device holder and the holder clip. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

8 Reinsert the IODU/C into the following slots:

- For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

- For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

---

9 Lock the locking devices by pushing them gently towards the faceplate.
   Set the ENB/DIS switch to ENB.

   A blinking letter "E" and number "5" displayed indicates that a failure
   occurred. In that case, reseat the Security Device in its holder and reinsert
   the card.

10 Insert the Install diskette that corresponds to your CP card and press the
    MAN RST button on the CP card.

11 When the NT Logo Screen appears on the terminal, the Software
    Installation Tool has loaded. Press **<CR>** to go to the Install Menu.

```
Nortel Meridian - 1   Software/Database/PEROM CDROM INSTALL Tool  (
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 * * * *          * * * *          * * * *      Nortel — Meridian 1
 * * * *          * * * *          * * * *        Install Tool (x11)
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              Copyright 1992 - 1997 Nortel, Inc.
```

12   At the Main menu select **<u>** to go to the Install menu.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — — —
                        M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>-->  <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.


Enter choice > u                                          553-7780
```

13   Insert the new Keycode diskette when prompted and select **<a>** to
continue with the keycode validation.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — — —


Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR>-->  <a> - Continue with the keycode validation
             (the keycode diskette is in the floppy drive).
         <q> - Quit.


Enter Choice > a                                          553-7729
```

Following keycode validation, the system erases all keycode files from the
hard disk and replaces them with the new keycode.

14   At the Install menu select **<k>** - "To install Keycode only."

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —
                   I N S T A L L   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<CR>-->   <a> - To install Software, CP-BOOTROM, IOP-ROM.

          <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.

          <c> - To install Software only.

          <d> - To install Database only.

          <e> - To install CP-BOOTROM only.

          <f> - To install IOP-ROM only.

          <g> - To reinstall CP-Software.

          <o> - To copy System Software from the other Core.

          <t> - To go to the Tools menu.

          <k> - To install Keycode only.

          <q> - Quit.

          Enter choice > **k**   553-7793

15   **Remove the diskette** from the IODU/C.

16 Select **<q>** to quit and reload the system.

17 Select **<y>** to confirm quit.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You selected to Quit. Please confirm.

Please enter:

<CR>-->   <y> - Yes, Quit.

         <n> - No, DO NOT Quit.

Enter choice > **y**   553-7751

---

18 Select **<a>** to reboot the system.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You have selected to Quit the Software Installation Tool
You may reboot the system or return to the Main Menu.
Before rebooting the system, remove Install diskette from the floppy drive.

DO NOT REBOOT USING BUTTON!!

Please enter:

<a> - Reboot the system.

<CR>-->   <m> - Return to the Main menu.

Enter Choice > **a**   553-7752

The Security Device replacement procedure is complete.

Replacing NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards with NT5D61 IODU/C cards

This procedure replaces NT5D20 IOP/CMDU cards or NT6D63 IOP and NT6D64 CMDU cards on options 51C/61C/81/81C with NT5D61 IODU/C cards. This procedure installs X11 release 23 software. Before performing this procedure you must be running X11 release 21 or later software. See *Software conversion procedures* (553-2001-320) for converting software to X11 release 21. The replacement procedure differs for a:

- redundant system

- single CPU system (procedure begins on page 328)

Note: IOP/CMDU or IOP and CMDU cards cannot be mixed with IODU/C cards in the same system.

WARNING

Performing this procedure in a nonredundant system, such as 51C, will disrupt system operation. If possible, schedule the replacement at the lowest traffic time.

See the *X11 input/output guide* for a description of all maintenance commands, and the *X11 system messages guide* for interpreting system messages.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

CAUTION

At some point in this procedure, you will be required to warm start your system, causing a momentary interruption in call processing.

Replacement procedures for redundant systems (options 61C, 81, 81C)

To perform this procedure the following is required:

- an Install Program diskette specific to your CP type

- a CD-ROM containing generic system software

- one Keycode diskette

- Database diskette(s)

- two NT5D61 IODU/C cards

- two IODU/C Security Devices

- a Database Transfer Utility diskette to archive the IOP/CMDU database on 2MB floppy diskettes.

Note: The diskettes in the Software Install Kit are write protected. Ensure that you unprotect the disks before installation.

Performing a data dump

Before starting this procedure, make a backup copy of the customer database on a 4MB diskette using the data dump routine:

1   Log into the system

2   Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43   to load the program

3   When "EDD000" appears on the terminal, enter

EDD   to begin the data dump

4   When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

****   to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

To access the Core during the replacement procedure, connect a terminal to the J25 port on the I/O panel in the *inactive* Core Module or Core/Network Module. To communicate with the processor, you must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

If you are using only one terminal or a switch box, switch the connection from Core to Core as needed.

Splitting the cores

1   Verify that the disk drives are synchronized:

LD 137	to load the program
STAT	to get the status of the disk drives

If the disks are synchronized, proceed with step 2. If they are not synchronized, execute the SYNC command:

SYNC	to synchronize the drives
****	to exit the program

2   Verify that clock controller 0 is active. If it is not, switch to clock controller 0:

LD 60	to load the program
SSCK 0	to get the status of clock controller 0
SWCK	to switch to clock controller 0 (if necessary)
****	to exit the program

3   Verify that Core 0 is the active Core:

LD 135   to load the program

STAT CPU   to check CPU status

TEST CPU   to test the CPU

If Core 0 is active, proceed with step 4. If Core 0 is not the active CPU, swap Cores and verify again:

SCPU   to swap CPUs

STAT CPU   to check CPU status

4   Verify that CMDU 0 is active. You may need to switch CMDUs.

LD 137   to load the program
STAT   Get the status of CMDU and IOP.
SWAP   Switch CMDUs (if necessary).

5   Set the MAINT/NORM switch on the CP card in Core 0 to MAINT.

6   Set the ENB/DIS switch on all CNI cards in Core 1 to DIS.

7   Insert the **Database Transfer Utility** diskette which corresponds to your Call Processor card into the IOP/CMDU or CMDU in Core 1.

8   Perform the following three steps in uninterrupted sequence:

   •   press and hold the MAN RST button on the CP card in Core 1

   •   set the MAINT/NORM switch on the CP card in Core 1 to MAINT

   •   release the MAN RST button

Transferring the database to 2MB

1   When the NT Logo Screen appears on the terminal, the Database
Transfer Utility has loaded. Press **<CR>** to continue.

```
NT Meridian - 1   Software/Database/PEROM INSTALL Tool  (x11)
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    * * * *          * * * *          * * * *        Northern Telecom — Meridian 1
    * * * *          * * * *          * * * *           Install Tool (x11)
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              Copyright 1992 - 1995 Nortthen Telecom, Inc.

  Please press <CR> when ready . . .
                                                        553-7790
```

CAUTION

When using the Database Transfer Utility, only select option *<t> Tools
Menu* and *<s> To archive existing database*. Selecting any other
option can result in operating system corruption.

---

2 At the Database Transfer Utility Install menu, select **<t>** to go to the Tools Menu.

NT Meridian - 1 Software/Database/PEROM INSTALL Tool (x11)
— —
INSTALL MENU

The Software Installation Tool will install or upgrade Meridian-1 System Software, Database and the PE-ROM (both CP and IOP ROM). You will be prompted throughout the installation and given the opportunity to quit at any time.

Please enter:

<CR>-->   <a> - To install Software, CP-BOOTROM, IOP-ROM.

<b> - To install Software, Database, CP-BOOTROM, IOP-ROM.

<c> - To install Software only.

<d> - To install Database only.

<e> - To install CP-BOOTROM only.

<f> - To install IOP-ROM only.

<g> - To reinstall CP-Software.

<t> - To go to the Tools menu.

<q> - Quit.

Enter choice > **t**   553-7791

---

3   At the Database Transfer Utility Tools menu select **<s>** to archive the database on one or more 2MB diskettes.

```
          NT Meridian - 1  Software/Database/PEROM INSTALL Tool (x11)  __
        __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
                          T O O L S   M E N U

        This is the Tools Menu for Install. You can select the tool that
        is appropriate. Please select one of the options below.

        Please enter:
<CR>-->  <a> - To set the system date and time.
         <b> - To partition the hard disk.
         <c> - To display the partition size of hard disk.
         <d> - To regenerate PDT Password.
         <s> - To archive existing database.
         <e> - To install CP software at a specified slot.
         <m> - To go back to the Main Menu


        Enter choice > s                          553-7792
```

4   When the number of 2MB diskettes required is displayed, select **<a>**.

```
          * * *      NT Meridian - 1  Database ARCHIVE Tool     * * *
        __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
        The Total Size of the backup files:  XXXX KBytes
        Estimated number of 2MB floppy diskettes:  X


 <CR>-->  Please enter:
          <a> - Continue.
          <q> - Quit.

          Enter choice >                          553-7776
```

5   When prompted, insert the database diskette and select **<a>** to continue.

6   The message "Database backup complete!" will be displayed, and the Tools menu will reappear.

7   Remove the 2MB diskette from the IOP/CMDU, but *do not* reboot the system at this point.

Upgrading Core 1

1   **In systems equipped with an NT6D63 IOP and NT6D64 CMDU**, perform the following two steps to remove these cards:

—   To remove the IOP:

   •   Set the ENB/DIS switch to DIS on the IOP being upgraded.

   •   Remove the IOP.

—   To remove the CMDU:

   •   If there is a floppy disk in the CMDU you are upgrading, remove the floppy disk.

   •   Set the power switch on the front of the CMDU, if present, to OFF (down).

   •   Wait at least 10 seconds, then unhook the locking devices on the CMDU and gently pull the unit out of the card cage.

2   **In system equipped with an NT5D20 IOP/CMDU**, perform the following two steps to remove this card:

   •   Set the ENB/DIS switch on the IOP/CMDU to DIS.

   •   Unhook the locking devices and remove the IOP/CMDU.

3   Locate the round 1/2" diameter IODU/C Security Device.

4   Make sure the 8-digit code on the keycode diskette matches the 8-digit code on the Security Device.

5   With the Nortel side facing upward, slide the Security Device between the black round security device holder on the top right hand corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

Note: The next step installs the NT5D61AA vintage IODU/C card in Core 1. The AA vintage card has a CD-ROM drive which is required for software installation on Core 1.

6   Ensure that the ENB/DIS switch on the NT5D61AA IODU/C you will install is set to DIS.

7   Insert the NT5D61AA IODU/C into the following slots:

  •   For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

  •   For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

8   Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

  A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

9   Insert the Install diskette that corresponds to your CP type (68030, 68040, 68060) into the IODU/C on Core 1.

10   Install the CD-ROM disk into the CD-ROM drive. To install the CD-ROM:

  •   press the button on the CD-ROM drive to open the CD-ROM disk holder

  •   place the CD-ROM disk into the holder with the disk label showing

  •   use the tabs to secure the CD-ROM in the disk holder

  •   press the button again to close the CD-ROM disk holder (don't push the holder in by hand)

11   Press the MAN RST button on the CP card.

12   When the NT Logo screen appears, press <CR> to continue.

13   Enter the date and time.

14   When the Main Menu appears, select **<u>** to go to the Install menu.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<CR>--> <u> - To Install menu.

<t> - To Tools menu.

<q> - Quit.

Enter choice > **u**   553-7780

---

15   Insert the Keycode diskette when prompted and select **<a>** to continue
with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation

(the keycode diskette is in the floppy drive).

<q> - Quit.

Enter Choice > a   553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

16   At the Install menu, select **<b>** to install software, database, CP-BOOTROM, and IOP-ROM.

```
        Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
        — — — — — — — — — — — — — — — — — — — — — — — — — —
                          I N S T A L L   M E N U

        The Software Installation Tool will install or upgrade Meridian-1
        System Software, Database and the PE-ROM (both CP and IOP ROM).
        You will be prompted throughout the installation and given the
        opportunity to quit at any time.

        Please enter:
<CR>-->  <a> - To install Software, CP-BOOTROM, IOP-ROM.
         <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.
         <c> - To install Software only.
         <d> - To install Database only.
         <e> - To install CP-BOOTROM only.
         <f> - To install IOP-ROM only.
         <g> - To reinstall CP-Software.
         <o> - To copy System Software from the other Core.
         <t> - To go to the Tools menu.
         <k> - To install Keycode only.
                 For Feature Expansion, use OVL143.
         <q> - Quit.
                                                         553-7783

         Enter choice > b
```

The Install Tool displays the software release to be installed and prompts you to confirm that the CD-ROM containing the software has been inserted.

17   Select **<a>** to continue with the software upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Install Utility will install x1123xx software for s/w for software generic xxxx
(Call Processor, System Type) on your system.
Please insert the installation CDROM into the drive on Core 1.

The labeled side of the CDROM should be side up in the CDROM tray.

Please enter:
<CR>--> <a> - CDROM is now in drive.
                  Continue with installation.
<q> - Quit.

Enter Choice > **a**

553-7732

---

18 A Status Summary is displayed indicating what will be installed. Select
<y> to confirm the start of installation.

INSTALLATION STATUS SUMMARY

Option	Choice	Status	Comment
SW: CD to disk	yes		from xxxx to xxxx
SW: disk to ROM	yes		
Database	yes		
CP-BOOTROM	yes		
IOP-ROM	yes		

Please enter:

<CR> -> <y> - Yes, start Installation.
        <n> - No, stop Installation. Return to the Main Menu.

Enter Choice> **y**

553-7731

The terminal displays information about the software upgrade.

19 Select **<a>** to continue with software installation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You selected to upgrade the system from release: xxxx to release: xxxx.

This will erase all old system files.
Database files will NOT be erased. You may continue installing
the software or quit now and leave your system unchanged.

Please enter:
 <CR>--> <a> - Continue with Upgrade.
          <q> - Quit.

Enter Choice > **a**   553-7733

20 Select **<a>** to continue with the ROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You have chosen to Upgrade CP-software in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old CP-software with the ROM image files:
"/p/os/flashos,/p/sl1/sl1res,/p/sl1/ovlres,/p/os/flashfs".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:
<CR>--> <a> - Continue with ROM Upgrade.
         <q> - Quit.

Enter Choice > **a**   553-7734

21 At the Database Menu, insert the first 2MB Database diskette in the IODU/C.

22 Select **<a>** to install the customer database.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

— —

You will now perform the database installation.

Note: If you are installing the Database from a floppy disk,
      please insert the correct disk now.

Please enter:

<CR>--> <a> - Install CUSTOMER Database

   (the customer database diskette must be in the Core 1 disk drive).

<b> - Install DEFAULT Database

   (the installation CDROM must be in the Core 1 disk drive).

<d> - Copy Database from the redundant disk.

<e> - Check the Database that exists on the hard disk.

<q> - Quit.

Enter Choice > **a**   553-7779

---

23 Select **<y>** to start installation.

24 Select **<a>** to continue the database installation.

25 Select **<a>** to confirm that the database disk is in the drive.

26 Select **<y>** to load the database.

If the database does not fit on one diskette, you will be prompted to insert additional diskettes.

27 Press **<CR>** to delete the hardware infrastructure database files from the hard disk.

28 Select **<a>** to continue with the ROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Please insert the DATABASE disk into the floppy drive.

Please enter:

<a> - DATABASE disk is now in the floppy drive.
<q> - Quit.

Enter Choice> **a**

29 Select **<y>** to continue with the ROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You have chosen to Upgrade CP-BOOTROM in card slot xx from
the context: xxxxx to the context: xxxxx.

This will replace old CP-BOOTROM with the ROM image files:
"/p/os/cprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:

<CR>--> <a> - Continue with ROM Upgrade.

<q> - Quit.

Enter Choice > **a**

553-7738

30   Select **\<y>** to begin installation of IOP-ROM upgrade.

31   Select **\<a>** to continue with the IOP-ROM upgrade

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

You have chosen to Upgrade IOP-ROM in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old IOP-ROM with the ROM image files:
"/p/os/ioprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:

\<CR>--> \<a> - Continue with ROM Upgrade.

\<q> - Quit.

Enter choice > **a**

553-7787

---

32   When the Status Summary screen appears, press **\<CR>**.

33   When the Install Menu appears, select **\<q>** to quit the Software Install
Tool.

34   Select **\<y>** to confirm quit

35   **Remove the diskette** from the floppy drive.

36   Select **\<a>** to reboot the system.

The system will reboot. Wait for the "INI" and "DONE" messages to
display before continuing. It will take at least 70 seconds between the
"DONE" and "INI" messages.

Switch call processing from Core 0 to Core 1

CAUTION
Call processing will be interrupted

Perform the next steps carefully. This is the point at which your service is interrupted. Calls in progress will be interrupted, especially if Peripheral Software Download takes place.

Perform the next 4 steps in succession. Call processing will be switched from Core 0 to Core 1.

1   In Core 0, set the DIS/ENB faceplate switch on the IOP or IOP/CMDU card to DIS.

2   In Core 0, disable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to DIS.

3   In Core 1, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate to ENB.

4   In Core 1, press the MAN INT button.

After the system initialization has finished (INI messages are no longer displayed on the system terminal), check for dial tone on a telephone set.

5   Following a successful dial tone test, perform the following basic sanity tests:

• Make sure calls can be placed

• Check for error messages, line noise, chatter, or other problems. Track sources and resolve problems as necessary.

Upgrading Core 0

1   Move the terminal cable to the J25 port on the I/O panel of the other Core or Core/Network Module, and continue with the following steps for the replacement of the second IOP/CMDU card.

2   **In systems equipped with an NT6D63 IOP and NT6D64 CMDU**, perform the following two steps to remove these cards:

— To remove the IOP:

   •   Set the ENB/DIS switch to DIS on the IOP being upgraded.

   •   Remove the IOP.

— To remove the CMDU:

   •   If there is a floppy disk in the CMDU you are upgrading, remove the floppy disk.

   •   Set the power switch on the front of the CMDU, if present, to OFF (down).

   •   Wait at least 10 seconds, then unhook the locking devices on the CMDU and gently pull the unit out of the card cage.

   •   Continue with step 4.

3   **In system equipped with an NT5D20 IOP/CMDU**, perform the following steps to remove this card:

   •   Set the ENB/DIS switch on the IOP/CMDU to DIS.

   •   Unhook the locking devices and remove the IOP/CMDU.

   •   Continue with step 4.

4   Locate the round 1/2" diameter IODU/C Security Device.

5   Make sure that the 8-digit code on the Keycode diskette matches the 8-digit code on the Security Device.

6   With the Nortel side facing upward, slide the Security Device between the black round security device holder on the top right hand corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

7 Ensure that the ENB/DIS switch on the IODU/C you will install is set to DIS.

8 Insert the IODU/C into the following slots:

- For NT5D21 Core/Net Modules, insert the IODU/C in slots 17,18, and 19.

- For NT9D11 Core/Network Modules and NT6D60 Core Modules, insert the IODU/C into slots 16, 17, and 18.

9 Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

10 Insert the Install diskette that corresponds to your CP type into the IODU/C on Core 0.

11 Press the MAN RST button on the CP card.

12 When the NT Logo screen appears, press <CR> to continue.

13 Enter the date and time.

14 When the Main Menu appears, select **<u>** to go to the Install Menu.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
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                        M A I N   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR>-->  <u> - To Install menu.
         <t> - To Tools menu.
         <q> - Quit.


Enter choice > u                                           553-7780
```

15 Insert the Keycode diskette when prompted and select **<a>** to continue
with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation

  (the keycode diskette is in the floppy drive).

<q> - Quit.

Enter Choice > a   553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

16 At the Install menu, select **<o>** to copy the software from Core 1 to Core 0.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —
I N S T A L L   M E N U

The Software Installation Tool will install or upgrade Meridian-1
System Software, Database and the PE-ROM (both CP and IOP ROM).
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<CR>--> <a> - To install Software, CP-BOOTROM, IOP-ROM.

    <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.

    <c> - To install Software only.

    <d> - To install Database only.

    <e> - To install CP-BOOTROM only.

    <f> - To install IOP-ROM only.

    <g> - To reinstall CP-Software.

    <o> - To copy System Software from the other Core.

    <t> - To go to the Tools menu.

    <k> - To install Keycode only.

      For Feature Expansion, use OVL143.

    <q> - Quit.

                 553-7784

Enter choice > **o**

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17   Select **<a>** to copy /p partition from Core 1 to Core 0.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —

You selected to copy the hard disk /p partition from IODU on Core 1
to IODU on Core 0.
60 MB of disk will be copied.
This wil erase old system files, Database files will NOT be erased.
Note that ERASED FILES CANNOT BE RECOVERED.

NOTE: Copy progress will be indicated by ... , one '.' per MB.

You may Continue with the copy operation or Quit now
and leave your system unchanged.

Please enter:
<CR>-->  <a> -Copy /p partition from one Core 1 to Core 0.
         <q> - Quit.


Enter Choice > a
                                                         553-7739
```

18   Select **<a>** to continue with the upgrade.

19   When the software is installed successfully, press **<CR>** to install
         CP-software from the hard disk to Flash EEPROM, and install
         CP-BOOT ROM.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — — —

Release: xxxx was installed successfully into /p partition
on your side

NOTE: In order to complete the install you must install flash ROM
      In order to complete the install you must install CP BOOT ROM

Please press <CR> when ready...
                                                         553-7741
```

20 Select **<a>** to continue with ROM upgrade.

21 Select **<a>** to continue with ROM upgrade.

22 When the Status Summary appears, press **<CR>** to continue.

23 When the Install Menu appears, select **<f>** to install IOP-ROM.

24 Select **<a>** to continue with the IOP-ROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)

You have chosen to Upgrade IOP-ROM in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old IOP-ROM with the ROM image files:
"/p/os/ioprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:

<CR>--> <a> - Continue with ROM Upgrade.

       <q> - Quit.

Enter choice > **a**

553-7787

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25 When the Status Summary appears, press **<CR>** to continue.

26 When the Install Menu appears, select **<d>** to install the database.

27 Select <d> to copy the database from the redundant disk.

28 Select <y> to continue installation.

29 Select <a> to continue database copy.

30 When the Install Menu appears, select **<q>** to quit the system.

31 Select **<y>** to confirm quit

32 **Remove the diskette** from the floppy drive.

33 Select **\<a\>** to reboot the system.

The system will reboot. Wait for the "INI" and "DONE" messages to display before continuing. It will take at least 70 seconds between the "DONE" and "INI" messages.

Return the system to redundant mode

To place the system back in the redundant (normal) mode with automatic switchover capability, perform the following steps in uninterrupted sequence on the *inactive* Core:

- Press and release the MAN RST button on the CP card in the inactive Core. When SYS700 messages appear on the inactive CP LCD display, set the inactive CP NORM/MAINT switch to NORM.

- An HWI534 message on the active Core will be displayed indicating that memory synchronization has begun. An HWI533 message on the active Core indicates that memory synchronization is complete.

- In the inactive Core, enable the NT6D65 CNI cards by setting the ENB/DIS faceplate switches to ENB.

- Place the active CP NORM/MAINT faceplate switch to NORM.

Completing the upgrade

1 Perform a redundancy sanity test using the following sequence:

LD 135
STAT CNI   Get status of CNI cards.
STAT CPU   Get status of CPU and memories.
TEST CNI core slot Test each inactive CNI card.

Note: Testing the CP and CNI cards and synchronizing memory takes up to 20 minutes for each test. When the CP test is complete, the memories are automatically synchronized.

2 Switch Cores, and test the other side.

TEST CPU   Test the standby (inactive) Core.
SCPU   Switch Cores.
TEST CNI core slot Test each inactive CNI card.

Note: Testing the CP cards can take up to 20 minutes for each test. When the test is complete, the memories are automatically synchronized.

3   Clear the display, and minor alarms on both Cores.

CDSP	Clear the displays on the Cores.
CMAJ	Clear major alarm.
CMIN ALL	Clear minor alarm.

4   Get the status of the Cores, CNIs, and memories

STAT CPU	Get the status of both Cores.
STAT CNI	Get the status of all configured CNIs and memories.

5   Load LD 137 and synchronize hard disks. Synchronization may take up to 50 minutes. To be sure that the contents of IODU/C 1 are copied to IODU/C 0, verify that IODU/C 0 is disabled.

LD 137	
STAT	Get the status of both IODU/Cs and redundancy.
SYNC	Enter "Yes" to synchronize disks. Wait until the memory synchronization successfully completes before continuing.

6   Get the status of the IODU/Cs and be sure IODU/C 0 is active. Switch if necessary.

LD 137	
STAT	Get the status of the IODU/Cs.
SWAP	Switch IODU/C (if necessary).
STAT CMDU	Get the status of the IODU/Cs. Be sure the same IODU/C and CPU are active.

7   Insert the database diskette into both IODU/Cs for backup. Load LD 43 and datadump. This creates a backup on the floppy disk in the active IODU/C.

LD 43
EDD
Data dump complete (or database backup complete) is printed when the data dump has been successfully completed. Investigate any EDD messages. Refer to *X11 input/output guide*.

8   Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The card replacement procedure is complete.

Replacement procedure for option 51C systems

To perform this procedure, the following is required:

- an Install diskette specific to your CP type

- a CD-ROM containing system software

- Keycode diskette

- Database diskette(s)

- one NT5D61AA IODU/C card

- one IODU/C Security Device

- a Database Transfer Utility to archive the IOP/CMDU or CMDU database on 2MB floppy diskettes.

Performing a data dump
Before starting this procedure, make a backup copy of the customer database on a 4MB diskette using the data dump routine:

1   Log into the system

2   Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43   to load the program

3   When "EDD000" appears on the terminal, enter

    EDD   to begin the data dump

4   When "DATADUMP COMPLETE" and "DATABASE BACKUP
COMPLETE" appear on the terminal, enter

    ****   to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your
technical support organization. A data dump problem must be
corrected before proceeding.

To access the Core during the replacement procedure, connect a terminal to
the J25 port on the I/O panel in the Core/Network Module. To communicate
with the processor, you must use the following settings on the terminal:

9600 baud, 7 data, space parity, 1 stop bit, full duplex, XOFF

Upgrading the IOP/CMDU or IOP and CMDU to an IODU/C

1   Insert the **Database Transfer Utility** diskette which corresponds to your
source (existing) Call Processor card into the IOP/CMDU or CMDU.

2   Press the MAN RST button on the CP card.

3   When the NT Logo Screen appears on the terminal, the Database
     Transfer Utility has loaded. Press **<CR>** to continue.

NT Meridian - 1   Software/Database/PEROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — —

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                                   * * *
    * * * *            * *            * * * *
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    * * * * * * * * * * * * * * * * * * * * * * * * *
    * * * *          * * * *          * * * *
    * * * *          * * * *          * * * *        Northern Telecom — Meridian 1
    * * * *          * * * *          * * * *            Install Tool (x11)
    * * * *          * * * *          * * * *
    * * * *        * * * * * * * * * * * * * * * *
    * * * *          * * * * * *        * * * * * *
    * * * *            * * *              * * *
```

Copyright 1992 - 1995 Nortthen Telecom, Inc.

Please press <CR> when ready . . .

553-7790

CAUTION
When using the Database Transfer Utility, only select options *<t>*
Tools Menu and *<s> To archive existing database*. Selecting any other
options can result in operating system corruption.

4   At the Database Transfer Utility Install menu, select **<t>** to go to the
Tools Menu.

NT Meridian - 1 Software/Database/PEROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — —
I N S T A L L   M E N U

The Software Installation Tool will install or upgrade Meridian-1 System
Software, Database and the PE-ROM (both CP and IOP ROM). You will be
prompted throughout the installation and given the opportunity
to quit at any time.

Please enter:

<CR>-->   <a> - To install Software, CP-BOOTROM, IOP-ROM.

<b> - To install Software, Database, CP-BOOTROM, IOP-ROM.

<c> - To install Software only.

<d> - To install Database only.

<e> - To install CP-BOOTROM only.

<f> - To install IOP-ROM only.

<g> - To reinstall CP-Software.

<t> - To go to the Tools menu.

<q> - Quit.

Enter choice > **t**   553-7791

---

5   At the Database Transfer Utility Tools menu select **<s>** to archive the database on one or more 2MB diskettes.

```
          NT Meridian - 1  Software/Database/PEROM INSTALL Tool (x11)
          ___ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
                              T O O L S   M E N U

          This is the Tools Menu for Install. You can select the tool that
          is appropriate. Please select one of the options below.

          Please enter:
<CR>-->   <a> - To set the system date and time.
          <b> - To partition the hard disk.
          <c> - To display the partition size of hard disk.
          <d> - To regenerate PDT Password.
          <s> - To archive existing database.
          <e> - To install CP software at a specified slot.
          <m> - To go back to the Main Menu

          Enter choice > s                              553-7792
```

6   When the number of 2MB diskettes required is displayed, select **<a>**.

```
            * * *      NT Meridian - 1  Database ARCHIVE Tool      * * *
          __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
          The Total Size of the backup files:  XXXX KBytes
          Estimated number of 2MB floppy diskettes:  X


<CR>-->   Please enter:
          <a> - Continue.
          <q> - Quit.

          Enter choice >                                553-7776
```

7   Insert the first database diskette and select **<a>** to continue.

8   The message "Database backup complete!" will be displayed, and the Tools menu will reappear.

9   Remove the 2MB diskette from the IOP/CMDU, but *do not* reboot the system at this point.

10   Set the ENB/DIS switch on the IOP/CMDU to DIS.

11   Unhook the locking devices and remove the IOP/CMDU.

12   Locate the round 1/2" diameter IODU/C replacement Security Device.

13   Make sure the 8-digit code on the Keycode diskette matches the 8-digit code on the Security Device.

14   With the Nortel side facing upward, slide the Security Device between the black round security device holder on the top right hand corner of the IODU/C card and the holder clip. Do not bend the clip more than necessary when inserting the Security Device. Ensure that the Security Device is securely in place.

15   Ensure that the ENB/DIS switch on the IODU/C you will install is set to DIS.

16   Insert the IODU/C into slots 17, 18, and 19 in the NT9D11 Core/Network Module or NT5D21 Core/Net Module.

17   Lock the locking devices by pushing them gently towards the faceplate. Set the ENB/DIS switch to ENB.

    A blinking letter "E" and number "5" displayed indicates that a failure occurred. In that case, reseat the Security Device in its holder and reinsert the card.

18   Insert the Install diskette that corresponds to your CP-type into the IODU/C.

19 Install the CD-ROM disk into the CD-ROM drive. To install the
CD-ROM:

- press the button on the CD-ROM drive to open the CD-ROM disk
holder

- place the CD-ROM disk into the holder with the disk label showing

- use the four tabs to secure the CD-ROM in the disk holder

- press the button again to close the CD-ROM disk holder (don't push
the holder in by hand)

20 Press the MAN RST button on the CP card.

21 At the Main menu select **<u>** to go to the Install menu.

```
          Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
          — — — — — — — — — — — — — — — — — — — — — — — — — —
                              M A I N   M E N U

          The Software Installation Tool will install or upgrade Meridian-1
          System Software, Database and the PE-ROM (both CP and IOP ROM).
          You will be prompted throughout the installation and given the
          opportunity to quit at any time.

          Please enter:
<CR>-->   <u> - To Install menu.
          <t> - To Tools menu.
          <q> - Quit.

          Enter choice > u                            553-7780
```

22 Insert the Keycode diskette when prompted and select **<a>** to continue
with the keycode validation.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:

<CR>--> <a> - Continue with the keycode validation

(the keycode diskette is in the floppy drive).

<q> - Quit.

Enter Choice > a   553-7729

Once the keycode is validated against the Security Device, the Install menu is displayed.

23 At the Install menu, select **\<b\>** to install software, database, CP-BOOTROM, and IOP-ROM.

```
         Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
         ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ──
                            I N S T A L L   M E N U

         The Software Installation Tool will install or upgrade Meridian-1
         System Software, Database and the PE-ROM (both CP and IOP ROM).
         You will be prompted throughout the installation and given the
         opportunity to quit at any time.

         Please enter:
 <CR>-->  <a> - To install Software, CP-BOOTROM, IOP-ROM.
          <b> - To install Software, Database, CP-BOOTROM, IOP-ROM.
          <c> - To install Software only.
          <d> - To install Database only.
          <e> - To install CP-BOOTROM only.
          <f> - To install IOP-ROM only.
          <g> - To reinstall CP-Software.
          <o> - To copy System Software from the other Core.
          <t> - To go to the Tools menu.
          <k> - To install Keycode only.
                  For Feature Expansion, use OVL143.
          <q> - Quit.
                                                         553-7783

         Enter choice > b
```

The Install Tool displays the software release to be installed and prompts you to confirm that the CD-ROM containing the software has been inserted.

24 Select **<a>** to continue with the software upgrade.

```
Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
— — — — — — — — — — — — — — — — — — — — — — — — —

Install Utility will install x1123xx software for s/w for software generic xxxx
(Call Processor, System Type) on your system.
Please insert the installation CDROM  into the drive on Core 1.


The labeled side of the CDROM should be side up in the CDROM tray.




          Please enter:
<CR>--> <a> - CDROM is now in drive.
                    Continue with installation.
          <q> - Quit.


          Enter Choice > a
                                                          553-7732
```

25 A Status Summary is displayed indicating what will be installed. Select **<y>** to confirm the start of installation.

INSTALLATION STATUS SUMMARY

Option	Choice	Status	Comment
SW: CD to disk	yes		from xxxx to xxxx
SW: disk to ROM	yes		
Database	yes		
CP-BOOTROM	yes		
IOP-ROM	yes		

Please enter:
<CR> -> <y> - Yes, start Installation.
<n> - No, stop Installation. Return to the Main Menu.

Enter Choice> **y**

553-7731

The terminal displays information about the software upgrade.

26   Select **<a>** to continue with software installation.

```
        Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
        — — — — — — — — — — — — — — — — — — — — — — — — —

        You selected to upgrade the system from release: xxxx to release: xxxx.

        This will erase all old system files.
        Database files will NOT be erased. You may continue installing
        the software or quit now and leave your system unchanged.


        Please enter:
 <CR>-->  <a> - Continue with Upgrade.
        <q> - Quit.


        Enter Choice > a                                    553-7733
```

27   Select **<a>** to continue with the ROM upgrade.

```
        Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
        — — — — — — — — — — — — — — — — — — — — — — — — —


        You have chosen to Upgrade CP-software in card slot xx from
        the context: x11xxxx to the context: x11xxxx.

        This will replace old CP-software with the ROM image files:
        "/p/os/flashos,/p/sl1/sl1res,/p/sl1/ovlres,/p/os/flashfs".

        You may Continue with ROM upgrade or Quit now and leave ROM
        unchanged.

        Please enter:
 <CR>-->  <a> - Continue with ROM Upgrade.
        <q> - Quit.


        Enter Choice > a                                    553-7734
```

28   At the Database Menu, insert the first 2MB Database diskette in the
IODU/C.

29   Select **<a>** to install the customer database.

```
     Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
     ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ──

     You will now perform the database installation.

     Note: If you are installing the Database from a floppy disk,
           please insert the correct disk now.


     Please enter:
 <CR>--> <a> - Install CUSTOMER Database
           (the customer database diskette must be in the Core 1 disk drive).
         <b> - Install DEFAULT Database
            (the installation CDROM must be in the Core 1 disk drive).
         <d> - Copy Database from the redundant disk.
         <e> - Check the Database that exists on the hard disk.
         <q> - Quit.


     Enter Choice > a                                        553-7779
```

30   Make sure the Database disk is inserted and select **<a>**:

```
 Nortel Meridian - 1  Software/Database/PEROM CDROM INSTALL Tool (x11)
 ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ── ──


 Please insert the DATABASE disk into the floppy drive.

 Please enter:

 <a> - DATABASE disk is now in the floppy drive.
 <q> - Quit.

 Enter Choice> a
                                                        553-8057
```

31   Select **<a>** to continue with the CP-BOOTROM upgrade.

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You have chosen to Upgrade CP-BOOTROM in card slot xx from
the context: xxxxx to the context: xxxxx.

This will replace old CP-BOOTROM with the ROM image files:
"/p/os/cprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:

<CR>--> <a> - Continue with ROM Upgrade.

<q> - Quit.

Enter Choice > **a**

553-7738

32 Select **<y>** to begin installation of IOP-ROM upgrade.

33 Select **<a>** to continue with the IOP-ROM upgrade

Nortel Meridian - 1 Software/Database/PEROM CDROM INSTALL Tool (x11)
— —

You have chosen to Upgrade IOP-ROM in card slot xx from
the context: x11xxxx to the context: x11xxxx.

This will replace old IOP-ROM with the ROM image files:
"/p/os/ioprom".

You may Continue with ROM upgrade or Quit now and leave ROM
unchanged.

Please enter:

  <CR>--> <a> - Continue with ROM Upgrade.

         <q> - Quit.

Enter choice > **a**

                                                    553-7787

---

34 Select **<q>** to quit and reload the system.

35 Select **<y>** to confirm quit.

36 **Remove the diskette** from the floppy drive.

37 Select **<a>** to reboot the system.

The system will automatically perform a sysload and system
initialization during which several messages will appear on the system
terminal. Wait until initialization has finished (INI messages are no
longer displayed on the system terminal) before continuing.

38 Verify that the "DONE" message appears on the system terminal.

Note: The SYSTEM INI message may take 70 seconds or more to
appear.

Completing the upgrade

1   Log into the system.

2   Verify CPU and CNI functionality:

      LD 135   to load the program
      STAT CPU   to check the CPU status
      STAT CNI   to verify CNI functionality
      ****   to exit the program

Make a backup of the customer database on 2MB diskettes:

3   Load the Equipment Data Dump Program (LD 43). At the prompt, enter

      LD 43   to load the program

4   When "EDD000" appears on the terminal, enter

      EDD   to begin the data dump

5   When "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" appear on the terminal, enter

      ****   to exit the program

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

---

6   Evaluate the number of call registers and telephone buffers that are configured for the system. Refer to *Meridian 1 capacity engineering* (553-3001-149).

The card replacement procedure is complete.

Replacing an NT7D10 PDU with an NT7D67CB PDU

Use this procedure to replace an NT7D10 PDU with an NT7D67CB PDU in DC-powered systems.

> *Note 1:* The NT7D67CB PDU replaces the NT7D10 PDU. However, both PDUs can be used in a system.

> *Note 2:* Conduit is not required with the NT7D67CB PDU but can be used.

Before you begin this procedure, prepare for the installation:

— Additional wire may be required (see Step 1).

— An electric drill, fitted with a .234-in. metal bit must be available.

— A Rear Mount Conduit Kit (NT7D0902) must be available.

WARNING

Module covers are *not* hinged; do not let go of the cover. Lift the cover away from the module and set it out of your work area.

Removing equipment

1   Check the length of existing wire to the PDU. Due to the location of the field wiring terminal block on the NT7D67CB PDU, 6 to 9 inches more length is required to reach its terminals than is required to reach those on the NT7D10 PDU.

Note 1: The existing service loop where wire enters the pedestal may have enough excess length or enough slack wire may exist in the conduit path from the power plant to allow pulling a sufficient amount through to the pedestal. Figure 42, located further on in this procedure, shows the location on the NT7D67CB PDU to which wiring must extend. If existing wiring will not reach, replace the entire wire run from the power plant. Do *not* splice short pieces of wire onto the end of existing wiring.

Note 2: If a QCAD321 or an NT6D53 junction box is installed on the power feed to the console, the wiring from the power plant may have to be altered as follows:

- If five #4 AWG wires are run from the power plant to the junction box (two BAT, two RTN, and one LRTN), then the junction box must *not* be used. The junction box must be removed and the entire wire run from the power plant to the pedestal must be replaced. Do *not* splice short pieces of wire onto the end of existing wiring.

- If nine #4 AWG wires are run from the power plant to the junction box (four BAT, four RTN, and one LRTN), then the junction box can be used. However, the #10 AWG wires from the junction box to the pedestal may have to be replaced to provide sufficient length. Do *not* splice short pieces of wire onto the end of existing wiring.

2   Disconnect DC power at the source (not at the PDU).

CAUTION

Before performing these procedures, disconnect the power at the source; simply turning off the circuit breakers does not shut off power to the system monitor.

---

3   Remove the grill on the rear of the pedestal.

4   Set all five circuit breakers on the PDU to OFF (down). Figure 38 shows the NT7D10 PDU in the rear of the pedestal.

Figure 38
NT7D10 Power Distribution Unit DC

System monitor

PDU

Circuit breaker bank   Ground lugs   Field wiring terminal
                                                   (below PDU)   553-3039
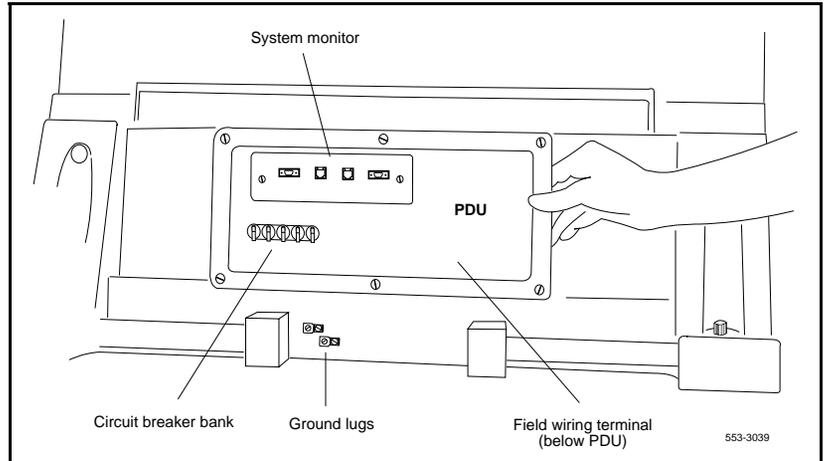
5   Unseat the blower unit in the front of the pedestal:

- Remove the grill on the front of the pedestal. Set the toggle switch on the front of the unit to OFF (left).

- Turn the screws on the front of the unit counterclockwise and pull the unit out several inches so the connector on the rear disengages.

WARNING

The unit is heavy and the blades on the blower may still be rotating up to 2 minutes after the power is turned off.

---

6   Disconnect cables to the module above the pedestal (module 0):

- Remove the rear cover on the module.

- Remove the I/O safety panel over the backplane in the module.

- Disconnect the system monitor ribbon cable from the PDU and from the module and set it aside for reconnection with the replacement NT7D67CB PDU.

- Disconnect the large orange power connector (J1) from the PDU.

Note: To disconnect the power plug, you must press a latch trip on the front and rear of the plug. You may need to use a screwdriver blade against the latch trip on the front of the plug.

7   Tag and disconnect cables to the NT8D22 System Monitor card. Loosen the two screws on the card faceplate and remove it.

8   Remove the six screws that position the NT7D10 PDU. Carefully pull the unit straight out and set it on the floor next to the pedestal (see Figure 39).

CAUTION

The PDU cannot be completely removed from the pedestal until wires to the field wiring terminal block are disconnected. Label wires carefully. Improper wiring can cause system damage.

Figure 39
Cabling between the PDU and the field wiring terminal block
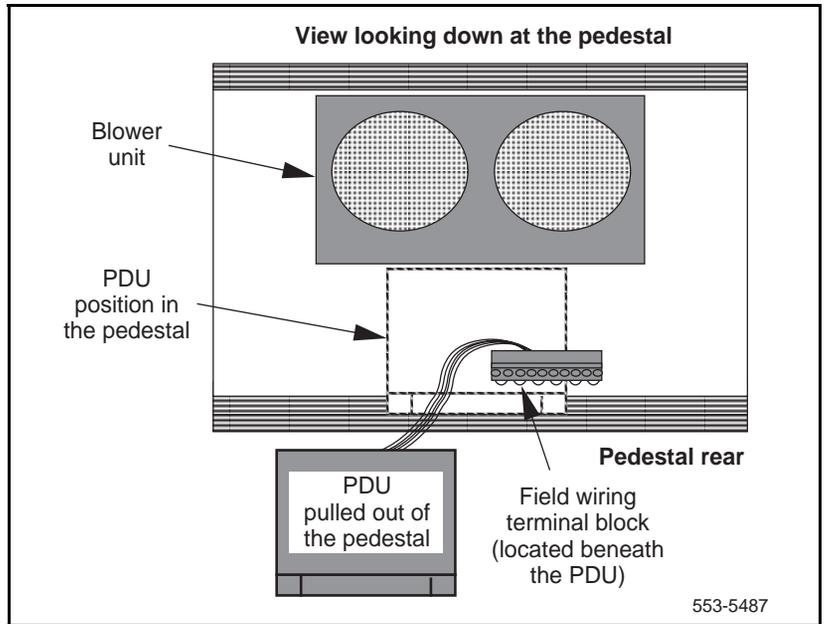
9   Tag and then disconnect all wiring to the field wiring terminal block.

10   Locate the frame ground wire from the field wiring terminal block to the frame ground bolt inside the pedestal. Disconnect this wire at the ground bolt.

11   Remove the field wiring terminal block:

- Remove the cover over the terminal block.

- Remove the four screws that secure the terminal block and lift it out of the pedestal.

12   Move the NT7D10 PDU out of the work area.

Installing equipment

WARNING

The NT7D67CB PDU is much heavier than the NT7D10 PDU.

Note: The conduit attachment plate provided in the NT7D0902 Rear Mount Conduit Kit must be installed as a safety cover and to restrain wiring to the terminal block.

1   Drill two .234-in. screw holes in the rear of the pedestal (see Figure 40). The holes will be used to install the conduit attachment plate.

Figure 40
Dimensions for drilling holes on the pedestal
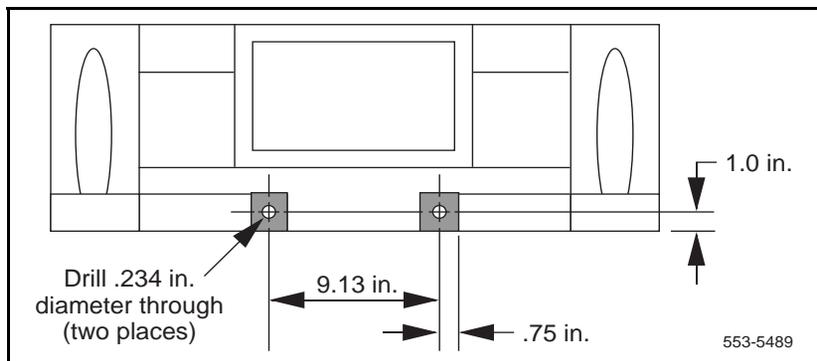
2   Place the NT7D67CB PDU next to the pedestal.

Figure 41 shows the PDU (labeled FLTR/PWR DIST UNIT ASSY on the equipment) and the NT7D10CA System Monitor/Power Supply Assembly (labeled XSM/PWR SUPPLY ASSY on the equipment).

Note: The NT7D09CA Pedestal has a brace that supports a leveling bracket on the rear of the PDU. There is no room for the leveling bracket in the NT7D09AA Pedestal, so the bracket must be removed before the PDU is installed.

Figure 41
NT7D67CB Power Distribution Unit DC

System monitor/power supply assembly

NT7D10CA

J3 J5 J6 J4

NT7D67CB

FLTR / PWR DIST UNIT ASSY

BLO CB 0 CB 1

Safety cover—the field terminal block is behind the cover

CB 2 CB 3

Circuit breakers

Circuit breakers

Filter / Power distribution unit assembly

553-5488
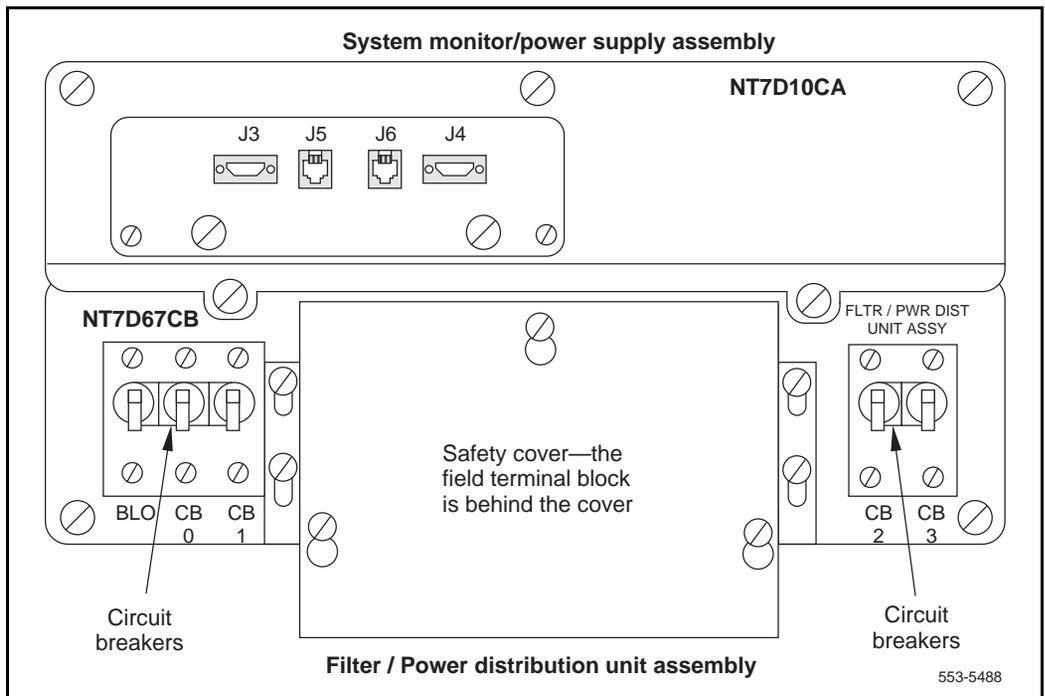
3   Remove the two screws that secure the leveling bracket on the rear of the PDU. Reinstall the screws to hold the rear cover on the PDU in place.

WARNING

You should support the PDU as far into the pedestal as you can without letting it drop to the bottom of the pedestal, but watch your hands! It becomes more difficult to support the PDU the further into the pedestal it is inserted. The PDU is held in its proper position only when the mounting screws on its faceplate are tightened.

---

4   Install the NT7D67CB PDU:

- Connect the green frame ground wire from the PDU to the frame ground bolt inside the pedestal.

- Guide the power cable connector through the hole in the top of the pedestal. Set the PDU in the pedestal and tighten the three screws that secure it to the pedestal.

5   Install the NT7D10CA system monitor assembly:

- Connect the small orange connectors (J2 on the PDU, P2 on the system monitor assembly) on the left side of the PDU.

- Connect the flat white connector to the small circuit board (P1 on the PDU, J1 on the system monitor assembly) on the right side of the PDU.

- Connect the ribbon cable (set aside when the NT7D10 PDU was removed) to the system monitor (J2). Guide the connector on the other end of the cable through the hole in the top of the pedestal and connect it to module 0.

- Gently push the system monitor assembly into the pedestal.

6   Tighten the screws that secure the system monitor assembly.

7   Reconnect the cables from module 0:

- Reconnect the large orange power connector (J1).

- Replace the I/O safety panel.

- Replace the rear cover on the module.

8   Reconnect all external wiring to the terminal block on the PDU (see Figure 42):

- Remove the plastic safety cover over the terminal block.

- Connect the red BAT (–48 V) wires:

    – for modules 0 and 1 connect to the BAT 0,1 terminal

    – for modules 2 and 3 connect to the BAT 2,3 terminal

- Connect the black BATRTN (48 V return) wires:

    – for modules 0 and 1 connect to the BATRTN 0,1 terminal

    – for modules 2 and 3 connect to the BATRTN 2,3 terminal

- Connect the orange (or white) wire from the ground bus/LRE in the power plant to the LRTN terminal.

Figure 42
Field wiring terminals in the NT7D67CB PDU
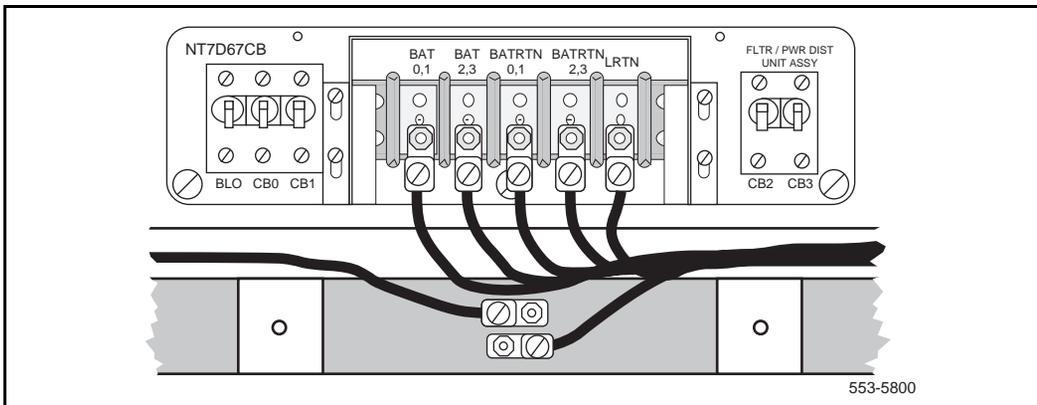
9   Position the conduit attachment plate on the rear of the pedestal (over the newly drilled holes) and secure it with two screws, nuts, and washers.

10   Reinstall the plastic safety cover over the terminal block.

11 Reseat the blower unit:

- Lift the unit slightly and slide it into the pedestal glides. Set the toggle switch to ON (right).

- Tighten the screws on the front of the unit.

- Replace the front pedestal grill.

12 Insert the system monitor card. Tighten the screws on the card faceplate. Reconnect cables to the system monitor.

13 Set all five circuit breakers on the PDU to OFF (down). Reconnect the source of DC power.

14 One at a time, starting with the breaker for the blower unit, set the circuit breakers on the PDU to ON (up). Make sure the green LED lights on the power supply unit(s) in each module.

Note: On initial power up the blower may rotate slower than expected. As the sensor detects heat, the blower will rotate more rapidly.

15 Replace the rear pedestal grill.

16 Tag defective equipment with a description of the problem and package it for return to a repair center.

Index

R

S

SBE (Segmented Bus Extender) Cards
    in 3PE Card replacement, 264, 265
    in Network Module Card Cage replacement, 207, 213
    installing, 261
    removing, 260

SDI (Serial Data Interface) Cards and ports
    in 3PE Card replacement, 267, 269
    in battery pack replacement, 22, 24
    in CPU Card replacement, 285, 286
    in CPU/Network Module Card Cage replacement, 77
    in MSPS Card replacement, 238
    in Network Module Card Cage replacement, 209
    installing, 275
    removing, 274

SDI (Serial Data Interface) Paddle Boards
    installing, 175
    removing, 174

SDL system messages, 161

Security Data Cartridges
    installing, 256
    removing, 255

serial data interface (SDI) card, 274

slaves in System Monitor replacement, 173

SPRE (Special Prefix) numbers for maintenance mode, 7

static discharge, 10

Superloop Network Cards
    installing, 166
    removing, 165

Superloop Network cards
    removing, 165

SYS messages, 117, 118

System Monitor, 148
    in CE/PE Module Card Cage replacement, 196
    in Core Module Card Cage replacement, 109, 121
    in CPU Module Card Cage replacement, 203, 204
    in CPU/Network Module Card Cage replacement, 79
    in IPE Module Card Cage replacement, 215, 216
    in Network Module Card Cage replacement, 211, 212
    in PDU replacement, 145, 151, 153, 189, 190, 348, 353
    in PE Module Card Cage replacement, 200
    in Thermostat Harness replacement, 176, 181
    installing, 149, 173
    removing, 148, 172

system passwords, 3, 4

system reloads, 242

system terminal, 3

T

TDS system messages, 168

telephone dial pad, keyboard translation, 6

Thermostat Harnesses
    installing, 179
    removing, 176

Tone Detector Cards
    removing, 162

tones, testing, 5

top caps
    in Air Probe Harness replacement, 182, 185
    in Fan Unit replacement, 19, 21
    in Thermostat Harness replacement, 176, 180

translation, keyboard to telephone dial pad, 6

Trunk Cards
    installing, 163
    removing, 162, 163

Meridian 1

Meridian 1
Hardware replacement

NORTEL
NETWORKS™