Meridian 1

Power monitor/common equipment auxiliary shelves

Description and installation

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About this document

This document provides detailed instructions on how to engineer and install the NT7D44 and NT7D45 Power Monitor/Common Equipment (CE) Auxiliary Shelves.

References

See the *Planning and engineering guide* for

— *Library navigator* (553-3001-000)

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

— *Meridian 1 installation planning* (553-3001-120)

— *Meridian 1 system engineering* (553-3001-151)

— *Meridian 1 power engineering* (553-3001-152)

— *Spares planning* (553-3001-153)

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

See the *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)

— *Upgrade system installation* (553-3001-250)

— *Disk drive upgrade procedures* (553-3001-251)

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

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

— *Meridian 1 hardware replacement* (553-3001-520)

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* (553-3001-305)

See the *X11 input/output guide* (553-3001-400) for a description of all administration programs, maintenance programs, and system messages.

General information

The NT7D44 and NT7D45 Power Monitor/CE Auxiliary Shelves provide an alternate shelf location for the 3.5-in. disk drive units required for X11 release 15 and later systems. These shelves can also accommodate Digital Trunk Interface (DTI) or Primary Rate Interface (PRI) cards.

The NT7D44 and NT7D45 Power Monitor/CE Auxiliary Shelves are functionally equivalent; however, the NT7D44 shelf supports cantilever cabinet mounting and the NT7D45 shelf supports center cabinet mounting. Table 1 provides the description and compatibility of each shelf.

Table 1
Power monitor/CE auxiliary shelves compatibility

Order code	Description	Compatibility	
		System	Cabinet
NT7D44	Power Monitor/CE Auxiliary Shelf — cantilever mount	NT, XT, 61, or 71	QCA55 or QCA58 (Note 1)
NT7D45	Power Monitor/CE Auxiliary Shelf — center mount	NT, XT, 61, or 71	QCA23 or QCA24 (Note 2)

Note 1: The NT7D44 shelf is compatible with QCA55 and QCA58 cabinets that are retained as part of an upgrade to SL-1 NT or XT systems, or to Meridian 1 system options 61 or 71.

Note 2: The NT7D45 shelf is compatible with QCA23 and QCA24 cabinets that are retained as part of an upgrade to SL-1 NT or XT systems, or to Meridian 1 system options 61 or 71.

Physical description

The NT7D44 Power Monitor/CE Auxiliary Shelf is 48.3 cm (19 in.) wide, 35.5 cm (13.96 in.) high, and 28 cm (11 in.) deep, with the cantilever mount wings on both sides of the shelves (see Figure 1).

The NT7D45 Power Monitor/CE Auxiliary Shelf is 48.3 cm (19 in.) wide, 35.5 cm (13.96 in.) high, and 35.5 cm (14 in.) deep, with the center mount wings on both sides of the shelves (see Figure 2).

The shelves consist of the following:

— QPC699 CE Backplane

— NT7D4401 CE Auxiliary Cantilever Power Adapter Cable (for NT7D44 only)

— NT7D4501 CE Auxiliary Center Power Adapter Cable (for NT7D45 only)

Each shelf requires a QPC355C or QPC691 Power Converter Card and an NT6D81 Power Regulator Board (PRB). Each shelf also uses the existing QPC173 Power Monitor Card and QAA47 Power Monitor Adapter (for the NT7D44 shelf) or QAA33 Power Monitor Adapter (for the NT7D45 shelf).

The following optional hardware can be installed on each shelf:

— NT8D68 Floppy Disk Unit (FDU), one per system

— NT8D69 Multi Disk Unit (MDU), one per system

— QPC472 DTI Card

— QPC720 PRI Card

Note: The FDU and MDU are mutually exclusive.

Card slot assignments for each shelf vary depending on the system configuration. Three options are available:

— MDU is equipped on the shelf (see Table 2).

— FDU is equipped on the shelf (see Table 3).

— MDU and FDU are not equipped (see Table 4).

Table 2
Card slot assignments—MDU equipped

Circuit card	Card slot position	
	NT7D44	NT7D45
QPC173 Power Monitor Card	slot 16	slot 16
QPC355C or QPC691 Power Converter Card (Note 1)	slots 11 and 12	slots 1 and 2
QPC472 DTI Card and/or QPC720 PRI Card (Notes 2 and 3)	slots 2 and 3, or 7 and 8	slots 5 and 6, or 7 and 8
NT6D81 Power Regulator Board	slot 9 or 10	slot 3 or 4
NT8D69 Multi Disk Unit (Note 4)	slots 4, 5, and 6	slots 9, 10, and 11

Note 1: The power converter card occupies two card slots; however, only one slot provides power to the card (slot 11 on the NT7D44 and slot 2 on the NT7D45).

Note 2: The DTI or PRI card occupies two card slots.

Note 3: If the shelf is equipped with one MDU and two DTI or PRI cards, the PRB is no longer needed; therefore, another DTI or PRI card can be installed in slots 9 and 10 on the NT7D44, or slots 3 and 4 on the NT7D45.

Note 4: The MDU occupies three card slots.

Table 3
Card slot assignments—FDU equipped

Circuit card	Card slot position	
	NT7D44	**NT7D45**
QPC173 Power Monitor Card	slot 16	slot 16
QPC355C or QPC691 Power Converter Card (Note 1)	slots 11 and 12	slots 1 and 2
QPC472 DTI Card and/or QPC720 PRI Card (Notes 2 and 3)	slots 3 and 4, 5 and 6, or 7 and 8	slots 5 and 6, 7 and 8, or 9 and 10
NT6D81 Power Regulator Board	slot 9 or 10	slot 3 or 4
NT8D68 Floppy Disk Unit (Note 4)	slots 1 and 2	slots 11 and 12

Note 1: The power converter card occupies two card slots; however, only one slot provides power to the card (slot 11 on the NT7D44 and slot 2 on the NT7D45).

Note 2: The DTI or PRI card occupies two card slots.

Note 3: If the shelf is equipped with three DTI or PRI cards, the PRB is no longer needed; therefore, another DTI or PRI card can be installed in slots 9 and 10 on the NT7D44, or slots 3 and 4 on the NT7D45.

Note 4: The FDU occupies two card slots.

Table 4
Card slot assignments—MDU and FDU not equipped

Circuit card	Card slot position	
	NT7D44	**NT7D45**
QPC173 Power Monitor Card	slot 16	slot 16
QPC355C or QPC691 Power Converter Card (Note 1)	slots 11 and 12	slots 1 and 2
QPC472 DTI Card and/or QPC720 PRI Card (Notes 2 and 3)	slots 3 and 4, 5 and 6, or 7 and 8	slots 5 and 6, 7 and 8, or 9 and 10
NT6D81 Power Regulator Board	slot 9 or 10	slot 3 or 4

Note 1: The power converter card occupies two card slots; however, only one slot provides power to the card (slot 11 on the NT7D44 and slot 2 on the NT7D45).

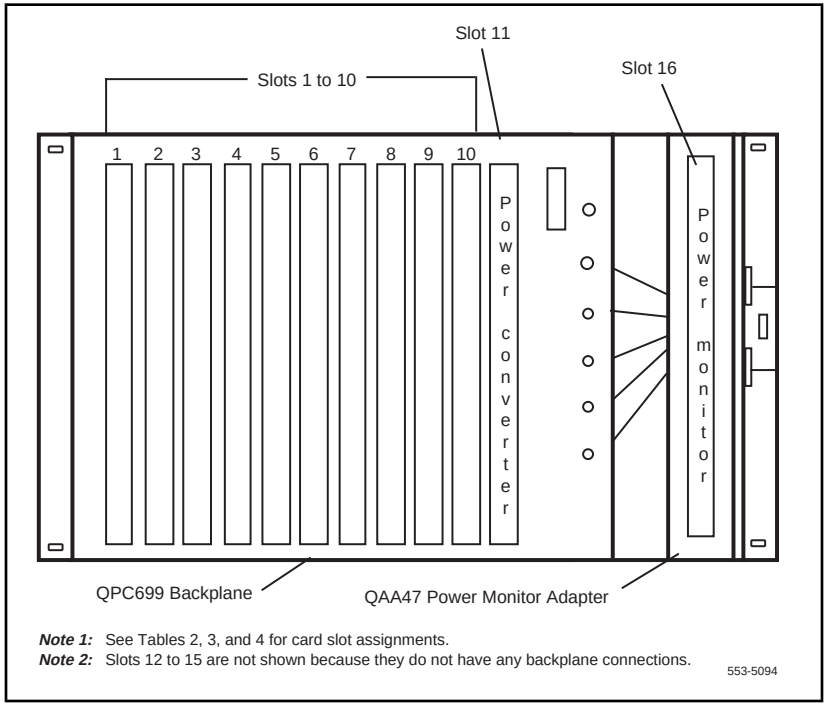
Note 2: The DTI or PRI card occupies two card slots.

Note 3: If the shelf is equipped with three DTI or PRI cards, the PRB is no longer needed; therefore, another DTI or PRI card can be installed in slots 9 and 10 on the NT7D44, or slots 3 and 4 on the NT7D45.

QPC699 CE Backplane

For the NT7D44 Power Monitor/CE Auxiliary Shelf, twelve 120-pin connectors are vertically mounted on the backplane for slots 1 to 10, slot 11 (power converter), and slot 16 (power monitor). See Figure 1.

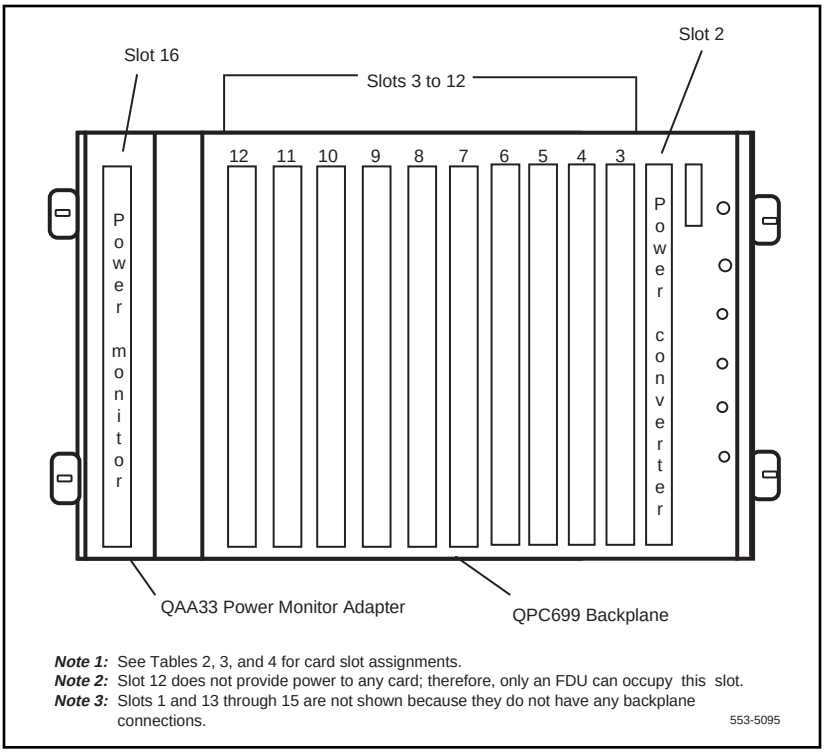
Figure 1
Front view of backplane for NT7D44 Power Monitor/CE Auxiliary Shelf



Note 1: See Tables 2, 3, and 4 for card slot assignments.
Note 2: Slots 12 to 15 are not shown because they do not have any backplane connections.

For the NT7D45 Power Monitor/CE Auxiliary Shelf, twelve 120-pin connectors are vertically mounted on the backplane for slot 2 (power converter), slots 3 to 12, and slot 16 (power monitor). See Figure 2.

Figure 2
Front view of backplane for NT7D45 Power Monitor/CE Auxiliary Shelf



Note 1: See Tables 2, 3, and 4 for card slot assignments.
Note 2: Slot 12 does not provide power to any card; therefore, only an FDU can occupy this slot.
Note 3: Slots 1 and 13 through 15 are not shown because they do not have any backplane connections.

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The power and ground paths are connected from the power distribution unit to the backplane through the Power Adapter Cable (NT7D4401 or NT7D4501). The following power and ground paths are provided on the backplane: –48 V, –48 V ground, +12 V, +5 V, and logic ground (LGND).

The QPC699 CE Backplane does not provide any electrical busing. All circuit cards have the input/output (I/O) connections accessible through faceplate connector cables.

QAA47 or QAA33 Power Monitor Adapter

The QAA47 or QAA33 Power Monitor Adapter supports the power monitor. The QAA47 Power Monitor Adapter is installed on the NT7D44 shelf; the QAA33 Power Monitor Adapter is installed on the NT7D45 shelf. The power monitor assembly includes the following:

— mounting brackets

— a 120-pin backplane connector

— I/O connectors (three for QAA47; four for QAA33)

The power monitor adapter is mounted on the NT7D44 or NT7D45 shelf with the slider assigned as slot 16. Slot 16 is designated for the QPC173 Power Monitor Card only.

Figures 3 and 4 show the QAA47 and QAA33 Power Monitor Adapters mounted on the shelf side panel.

Figure 3
QAA47 Power Monitor Adapter on shelf—right side view

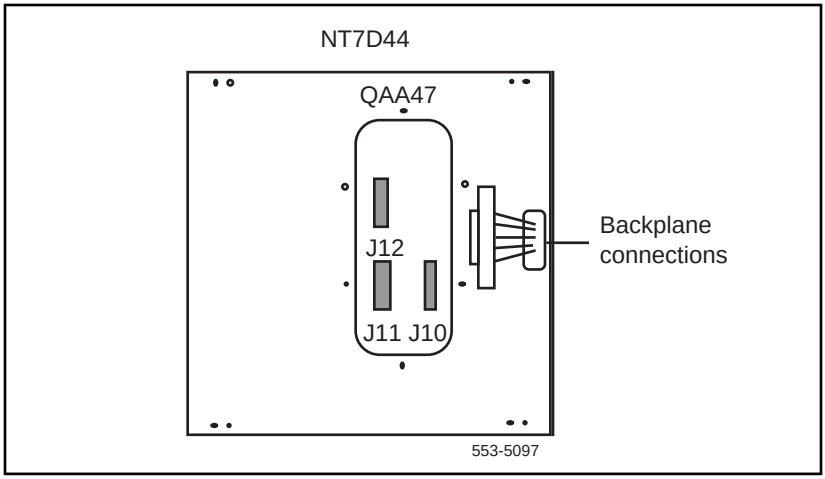
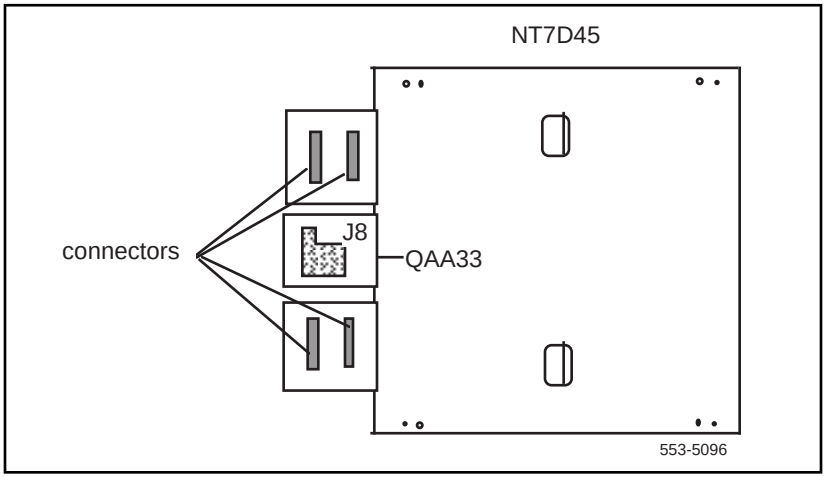


Figure 4
QAA33 Power Monitor Adapter on shelf—left side view



NT7D4401 or NT7D4501 Power Adapter Cable

The NT7D4401 and NT7D4501 Power Adapter Cables provide power and ground paths to the QPC355C or QPC691 Power Converter Card on the NT7D44 and NT7D45 shelves, respectively.

The NT7D4401 Power Adapter Cable connects power and ground paths to the backplane and slot 11 connector on the NT7D44 shelf. The NT7D4501 Power Adapter Cable connects power and ground paths to the backplane and slot 2 connector on the NT7D45 shelf. No electrical signal paths are connected on the backplane.

NT6D81 Power Regulator Board

The PRB ensures that the +5 V source is loaded with at least 8 A, which is the minimum load required for the QPC355C or QPC691 Power Converter Card to function properly.

The PRB is required when:

— none or only two QPC472 DTI or QPC720 PRI Cards are used in the shelf (see Tables 2, 3, and 4)

— only the MDU or FDU is used in the shelf

QPC173 Power Monitor Card

The QPC173 Power Monitor Card has a dedicated slot on the shelf. On the NT7D44 shelf, it is located in slot 16, where the shroud is mounted on the QAA47 adapter chassis. On the NT7D45 shelf, it is located in slot 16, where the shroud is mounted on the QAA33 adapter chassis.

QPC355C/QPC691 Power Converter Card

The QPC355C or QPC691 Power Converter Card is a double-width card with a dedicated slot on the shelf (slot 11 on the NT7D44 shelf and slot 2 on the NT7D45 shelf). However, because it is a double-width card, it occupies slots 11 and 12 on the NT7D44 shelf, or slots 1 and 2 on the NT7D45 shelf.

NT8D68 Floppy Disk Unit

The FDU provides two floppy disk drives. The FDU does not have any connections to the backplane connectors. It occupies two adjacent card slots: slots 1 and 2 on the NT7D44 shelf, and slots 11 and 12 on the NT7D45 shelf.

NT8D69 Multi Disk Unit

The MDU provides one hard disk drive and two floppy disk drives. The MDU does not have any electrical signal connections except power and ground paths from the backplane connectors. It occupies three adjacent card slots: slots 4, 5, and 6 on the NT7D44 shelf, and slots 9, 10, and 11 on the NT7D45 shelf.

Depending on the system configurtaion, either an NT8D68 FDU or an NT8D69 MDU may be used, but not both in one system.

QPC472 Digital Trunk Interface and QPC720 Primary Rate Interface Cards

See Tables 2, 3, and 4 for the DTI or PRI card slot positions.

Functional description

The NT7D44 and NT7D45 Power Monitor/CE Auxiliary Shelves provide the following functional characteristics:

— The shelves replace QUW1 or QSP45 Tape or QSD67/68 5.25-in. disk drive shelves that do not support X11 release 15 and later software.

— When used in XT-type system cabinets, the shelves provide replacement capability for an existing tape or 5.25-in. disk drive shelf that is maintained for power monitor purposes only.

— The shelves provide an alternate shelf location for 3.5-in. disk drive units used with X11 release 15 and later software.

— The shelves allow faster access time, greater memory, and greater storage size.

— The shelves provide necessary power and ground paths for installed hardware. The signal paths are provided through faceplate connectors.

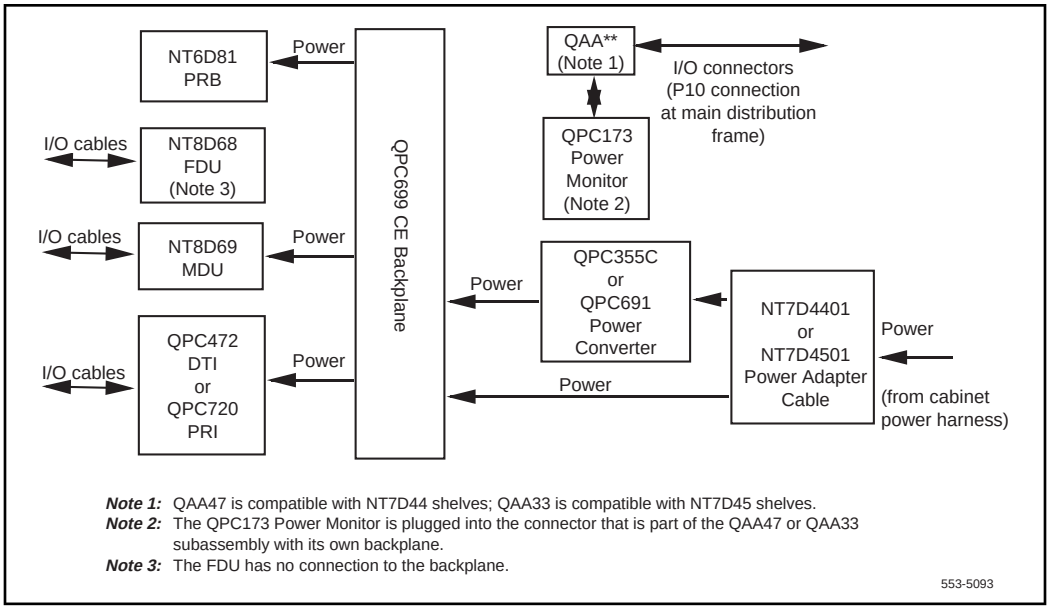
— The shelves support the following circuit cards through 120-pin backplane connectors:

- NT8D68 FDU
- NT8D69 MDU
- QPC173 Power Monitor Card
- QPC355C or QPC691 Power Converter Card
- QPC472 DTI Card
- QPC720 PRI Card

— The shelves support the NT6D81 PRB for the minimum required power load.

Figure 5 shows a block diagram of the NT7D44 and NT7D45 Power Monitor/CE Auxiliary Shelves.

Figure 5
Power monitor/CE auxiliary shelves block diagram



Installation procedure

Perform the following procedure when replacing the QSD67 Disk Drive Shelf (cantilever mount) with the NT7D44 Power Monitor/CE Auxiliary Shelf, or when replacing the QSD68 Disk Drive Shelf (center mount) with the NT7D45 Power Monitor/CE Auxiliary Shelf.

This procedure refers to QSD67 and QSD68 shelves. However, references to the QSD67 and QSD68 shelves also apply to the QUW1 and QSP45 Tape Shelves that may be present in the existing system.

Procedure 1
Installing shelves

1 Set the ENB/DIS switch on the QPC173 Power Monitor Card to DIS.

Note: This action generates a system alarm that you can disregard at this time.

2 Set the CB11 switch on the QBL21 Power Distribution Unit to OFF.

3 For the QSD67 Disk Drive Shelf, disconnect the I/O cables to the QAA47 Power Monitor Adapter located on the side of the shelf (refer to Figure 3).

For the QSD68 Disk Drive Shelf, disconnect the I/O cables to the QAA33 Power Monitor Adapter located on the side of the shelf (refer to Figure 4).

4 Unplug the power connector and remove the shelf mounting screws.

5 Remove the QSD67/68 Disk Drive Shelf from the cabinet.

6 Unpack and inspect the power monitor/CE auxiliary shelf.

7 Disassemble the QAA47 (on QSD67) or QAA33 (on QSD68) Power Monitor Adapter from the QSD67/68 Disk Drive Shelf.

8 Reassemble the QAA47 or QAA33 Power Monitor Adapter on the NT7D44 or NT7D45 power monitor/CE auxiliary shelf, respectively.

9 Install the power monitor/CE auxiliary shelf in the same location as the QSD67/68 Disk Drive Shelf.

10 Reconnect the power connector to the power monitor/CE auxiliary shelf.

11 Reconnect the I/O cables to the QAA47 or QAA33 Power Monitor Adapter in the power monitor/CE auxiliary shelf (refer to Figures 3 and 4).

12 Remove the QPC173 Power Monitor Card from the QSD67/68 Disk Drive Shelf and install it in slot 16 of the power monitor/CE auxiliary shelf.

13 Install the NT6D81 Power Regulator Board in slots 9 and 10 of the NT7D44 shelf, or slots 3 and 4 of the NT7D45 shelf.

14 Install the QPC355C or QPC691 Power Converter Card in slots 11 and 12 of the NT7D44 shelf, or slots 1 and 2 of the NT7D45 shelf.

15 Install the NT8D68 FDU or NT8D69 MDU in the appropriate slots on the power monitor/CE auxiliary shelf (refer to Tables 2 and 3).

16 If needed, install QPC472 DTI and/or QPC720 PRI cards in the appropriate slots on the power monitor/CE auxiliary shelf (refer to Tables 2, 3, and 4).

17 Connect and enable the NT8D68 FDU or NT8D69 MDU. Refer to *Disk drive upgrade procedures* (553-3001-251).

Note: The FDU interfaces with the QPC742 (vintage D or later) Floppy Disk Interface (FDI) card; the MDU interfaces with the QPC584 (vintage F4, or K, or later) Mass Storage Interface (MSI) card. See *Circuit card installation and testing* (553-3001-211) for the correct switch settings for the QPC742 and QPC584 cards.

18 Set the CB11 switch on the QBL21 Power Distribution Unit to ON.

19 Set the ENB/DIS switch on the QPC173 Power Monitor Card to ENB.

Note: This action should clear the system alarm generated in step 1. If the alarm does not clear, check the power connections to the new shelf and the power monitor adapter.

20 Connect and enable the QPC472 DTI and/or QPC720 PRI Cards. See *Digital Trunk Interface/Computer-to-PBX Interface installation and data administration* (553-2811-200) and *ISDN Primary Rate Interface installation* (553-2901-200).

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