Critical Release Notice

Publication number: 297-8021-547
Publication release: Standard 17.07

The content of this customer NTP supports the SN08 (DMS) software release.

Bookmarks used in this NTP highlight the changes between the NA015 baseline and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the NA015 baseline remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to content for the NA015 baseline that is valid through the current release.

Red: Applies to new or modified content for NA017 that is valid through the current release.

Blue: Applies to new or modified content for NA018 (SN05 DMS) that is valid through the current release.

Green: Applies to new or modified content for SN06 (DMS) that is valid through the current release.

Purple: Applies to new or modified content for SN07 (DMS) that is valid through the current release.

Pink: Applies to new or modified content for SN08 (DMS) that is valid through the current release.

Attention!
Adobe® Acrobat® Reader™ 5.0 or higher is required to view bookmarks in color.

Publication History

March 2005

Standard release 17.07 for software release SN08 (DMS). No changes have been made for SN08 (DMS) features.

Volume 7

New procedure – Backplane replacement, "NTRX4002 in NTRX40AA" due to CR Q01166307.

March 2005

Standard release 17.06 for software release SN08 (DMS). This release is current for the SN08 (DMS) software release, although no changes have been made for SN08 (DMS) features.

Volume 3

Modified procedure – Replacing processor and memory cards in an XPM (step 26). This change corrects the re-direction from step 26, and is due to CR Q01047311.

December 2004

Standard release 17.05 for software release SN07 (DMS).

Volume 7

New procedure for CR Q00840334 – NTMX82 in a DTCO2

September 2004

Standard release 17.04 for software release SN07 (DMS). This release is current for the SN07 (DMS) software release, although no changes have been made for SN07 (DMS) features.

Volume 2

Modified procedure - Bus interface cards in an LCD
Modified procedure - NTBX71 in an LCME
Modified procedure - NT9X30 in an LPP LIS

Volume 3

Modified procedure - NT2X70 in an XPM

Volumes 5

All of the changes below are due to CR Q00855532:

Modified procedure - NT6X40 in an SMA
Modified procedure - NT6X40 in an SMA-MVI-20
Modified procedure - NT6X40 in an SMA2

Modified procedure - NT6X40 in an SMS
Modified procedure - NT6X40 in an SMU

March 2004

Standard release 17.03 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1

Modified card replacement procedure: Power converter cards in a SuperNode SE 16k ENET - Card NT9X30AB is Manufacture Discontinued and is replaced by new card NT9X30AC (Note - there is a bookmark for each changed reference).

Volume 2

No changes

Volume 3

Modified card replacement procedure: Power converter cards in trunk and service modules.

Volumes 4 - 7

No changes

September 2003

Standard release 17.02 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1

Modified card replacement procedure: Power converter cards in a Supernode SE CM/SLM.

Volume 2

Modified card replacement procedure: NT6X30 in LCE-type frames.

Volumes 3 - 7

No changes

June 2003

Preliminary release 17.01 for software release SN06 (DMS). Updates for this release are shown below:

Volume 1

No changes

Volume 2

No changes

Volume 3

Added new card replacement procedure: SPM NTLX99BA STM-1 for DMS Spectrum Peripheral Module.

Volumes 4 - 7

No changes

297-8021-547

DMS-100 Family

North American DMS-100

Card Replacement Procedures

Volume 3 of 7

LET0015 and up Standard 14.02 May 2001

NORTEL NETWORKS™

DMS-100 Family

North American DMS-100

Card Replacement Procedures

Volume 3 of 7

Publication number: 297-8021-547
Product release: LET0015 and up
Document release: Standard 14.02
Date: May 2001

Contents

Card Replacement Procedures
Volume 3 of 7

NTP Summary Contents

Card Replacement Procedures
Volume 1 of 7

Card Replacement Procedures
Volume 2 of 7

Card Replacement Procedures Volume 3 of 7

Card Replacement Procedures
Volume 4 of 7

Card Replacement Procedures
Volume 5 of 7

Card Replacement Procedures
Volume 6 of 7

Card Replacement Procedures
Volume 7 of 7

1 Remote oscillator shelf card replacement procedures

Introduction

This chapter contains card replacement procedures for the remote oscillator shelf (ROS). The first section in the chapter provides diagrams that show ROS shelf layouts.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter “Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the ROS card(s) the replacement procedure covers.

Common procedures

This section lists common procedures that are used during the ROS card replacement procedures. A common procedure is a series of steps that you repeat within maintenance procedures. An example of a common procedure is card removal and replacement. Common procedures appear in the common procedures chapter in this NTP.

Do not go to the common procedures unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card replaced
- the date of the card replaced
- the reason you replaced the card.

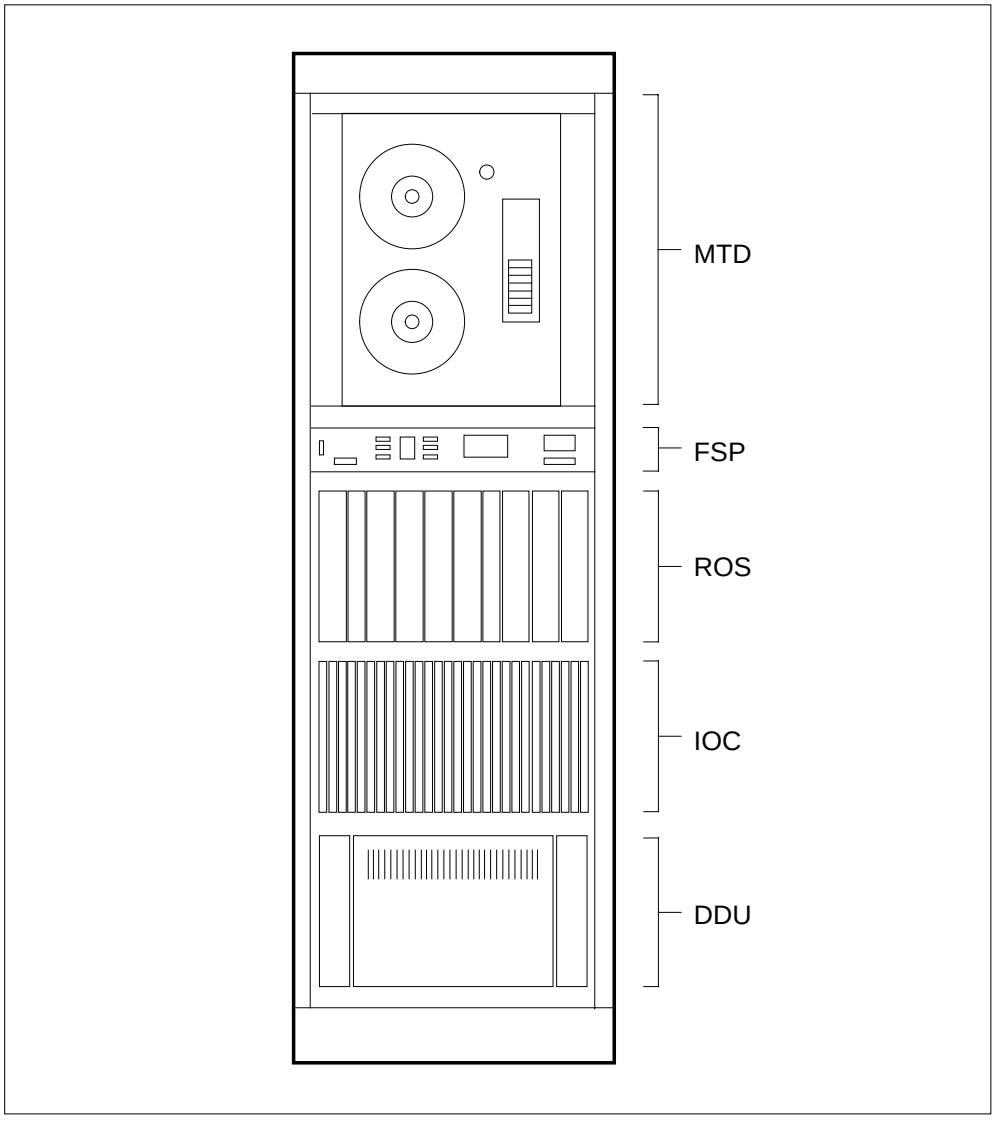
Remote oscillator shelf layouts

Application

This procedure provides the following layout diagrams:

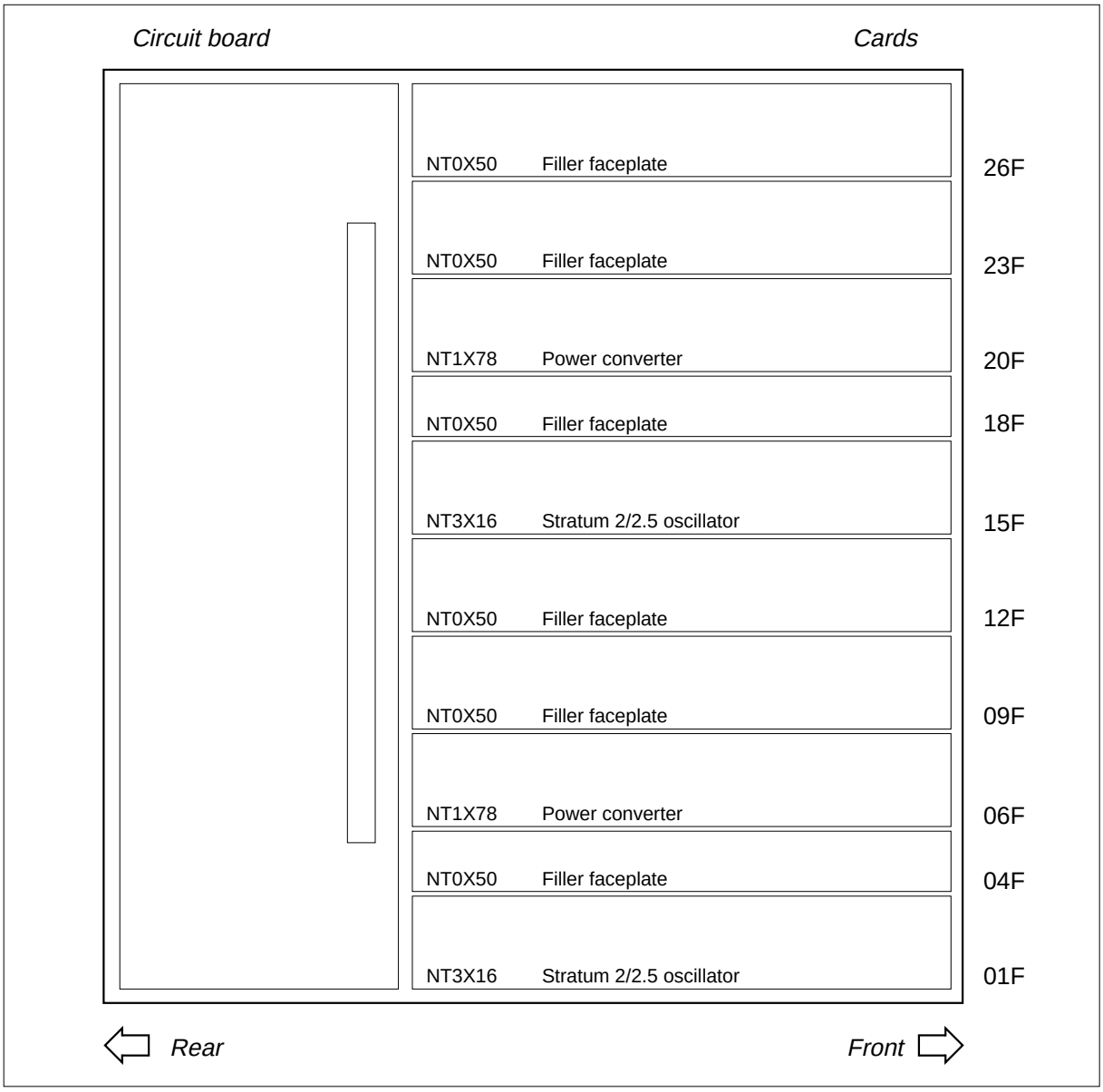
- input/output equipment (IOE) frame
- remote oscillator shelf (ROS)

Figure Input/output equipment frame



Remote oscillator shelf layouts (end)

Figure Remote oscillator shelf



NT1X78
in a remote oscillator shelf

Application

Use this procedure to replace an NT1X78 in a remote oscillator shelf (ROS), as listed in the following table.

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT1X78	AA	Power converter (+5 V, -5 V, -12 V, +24 V)	ROS
NT1X78	KA	Power converter (+5 V, -5 V, +12 V, -12 V, +24 V)	ROS

Common procedures

This procedure refers to the following common procedures:

- *Failure to switch clock mastership*
- *Replacing a card*

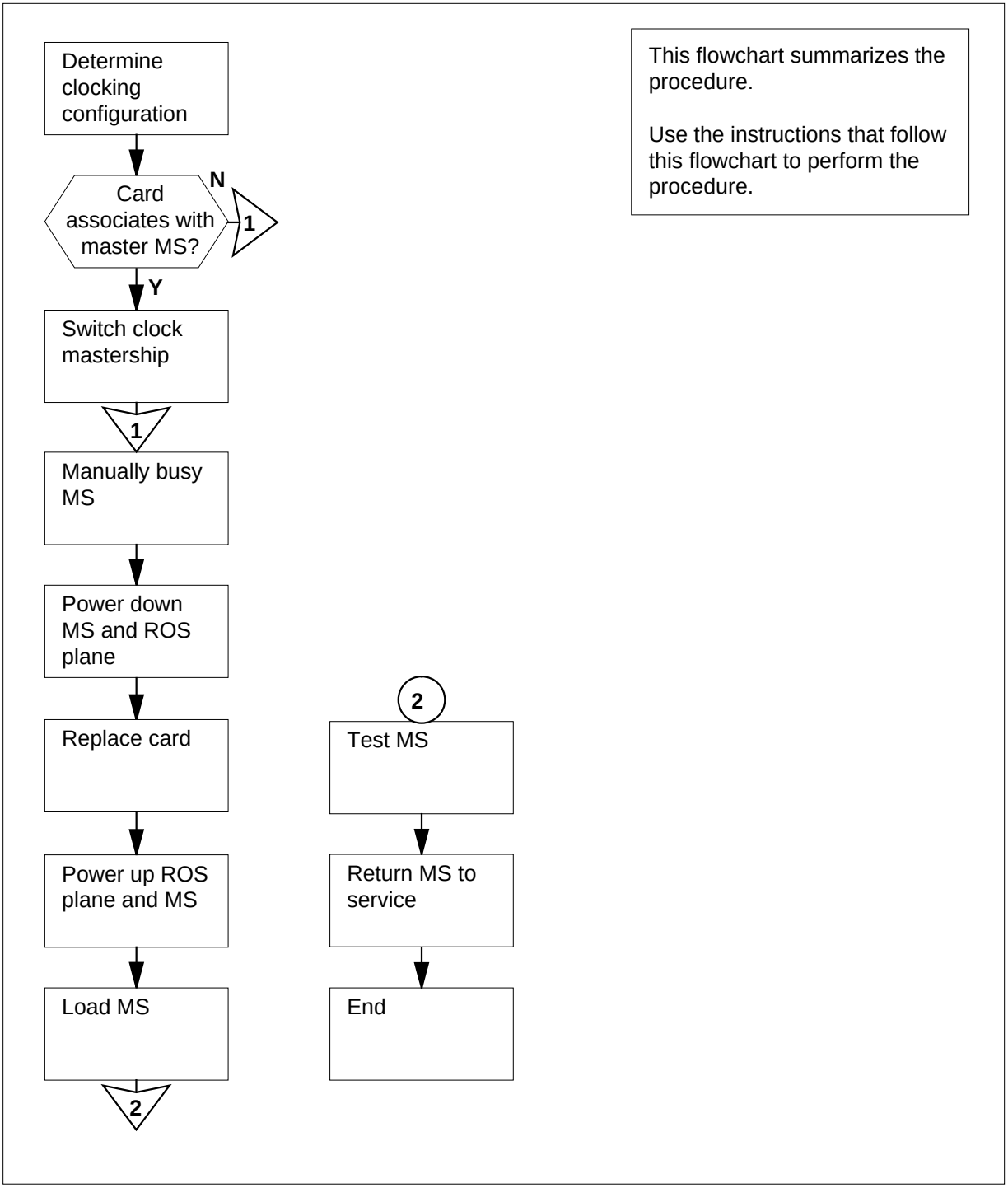
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT1X78
in a remote oscillator shelf (continued)

Summary of replacing an NT1X78 in a remote oscillator shelf



NT1X78
in a remote oscillator shelf (continued)

Replacing an NT1X78 in a remote oscillator shelf

At the MAP terminal

1

WARNING
Possible clocking signal degradation
If not stored in a warm up slot during the NT1X78 card replacement, the NT3X16 powered by the NT1X78 requires up to 12 h to warm up after you power up the remote oscillator. If you do not allow the warm up, degradation of the clocking signal from the remote oscillator can occur.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix, as the card that you remove.

2 To access the message switch (MS) level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display:

```
     Message Switch  Clock  Shelf 0  Inter-MS Link 0 1
MS 0        .        M Free       .                . .
MS 1        .        Slave        .                . .
```

3 Determine the clocking configuration.

Note: The clocking configuration appears under the Clock header of the MAP display.

If the message switch for the card you	Do
replace is the master MS, indicated by `Master`, `M Free`, or `M Flt` under the Clock header	step 4
replace is the slave MS, indicated by `Slave`, `S Flt`, `S OOS`, or `S Free` under the Clock header	step 7

4 To switch clock mastership, type

>SWMAST

and press the Enter key.

NT1X78
in a remote oscillator shelf (continued)

Example of a MAP response:

```
Request to Switch Clock Mastership MS: 0 submitted.
Request to Switch Clock Mastership MS: 0 passed.
```

If the SWMAST command	Do
passed	step 6
failed	step 5

5 Perform the procedure *Failure to switch clock mastership* in this document. Complete the procedure and return to this point.

6 Wait 10 min to make sure the MS has stability and continue the procedure.

7 Determine if the slave MS is manual busy.

Note: A manual busy MS appears as an M on the right side of the MS 0 or MS 1 header on the MAP display.

Example of a MAP display:

```
   Message Switch  Clock  Shelf 0  Inter-MS Link 0 1
MS 0      .       M Free        .                . .
MS 1      .       Slave         .                . .
```

If the slave MS	Do
is not manual busy	step 8
is manual busy	step 9

8 To manually busy the slave MS, type

>BSY ms_number

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the BSY command	Do
passed	step 9
failed	step 29

NT1X78
in a remote oscillator shelf (continued)

At the MS shelf

9 Determine if the LED that associates with the NT9X13 card is lit.

Note: Allow 5 min for the LED to illuminate.

If the LED	Do
is lit	step 10
is not lit	step 29

10

WARNING
Possible loss of service
Make sure that you power down the slave MS. If you power down the master MS, the system shuts down completely.

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Determine if the ROS associates with a SuperNode MS or a SuperNode SE (SNSE) MS.

If the ROS	Do
associates with a SuperNode MS	step 11
associates with an SNSE MS	step 13

At the MS shelf

11 Deactivate the interlock system between the MS and the remote oscillator shelf when you power down the slave MS, as follows:

a Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

b Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

c At the same time, press down and release the switches on the faceplates of the power converters in slots 33F and 36F.

12 Go to step 14.

NT1X78
in a remote oscillator shelf (continued)

At the MS shelf

13 Deactivate the interlock system between the MS and the ROS when you power down the slave MS, as follows:

a Press down and release the switch on the faceplate of the NT9X30 power converter that associates with the ROS that contains the card to replace.

Note: If the slave MS is MS 0, slot 4F contains the NT9X30 power converter. If the slave MS is MS 1, slot 36F contains the associated NT9X30.

b Press down and release the switch on the faceplate of the NT9X31 power converter that associates with the ROS that contains the card to replace.

Note: If the slave MS is MS 0, slot 1F contains the associated NT9X31 power converter. If the slave MS is MS 1, slot 33F contains the associated NT9X31.

At the ROS shelf

14

WARNING
Possible service degradation
If a warm up slot is available, store the NT3X16 powered by the NT1X78 in the warm up slot during the period that the remote oscillator is powered down.

Set the power switch on the NT1X78 to the OFF position to power down the side of the ROS shelf that contains the card to replace.

Note: Slots 1 to 13 of the ROS shelf associate with MS 0. Slots 14 to 26 of the ROS shelf associate with MS 1.

If the converter fail light on the power converter	Do
does not illuminate	step 15
illuminates	step 16

15 Disconnect the control cable from the back of the ROS plane involved.

Note: Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1.

16 Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

NT1X78
in a remote oscillator shelf (continued)

At the ROS shelf

17 Power up the ROS plane as follows:

a Set the power switch on the replacement NT1X78 to the ON position.

b Press the reset button on the replacement NT1X78 until the power fail light is no longer lit. Release the reset button.

18 Reconnect the control cable to the back of the ROS plane in use.

19 Determine if the ROS associates with a SuperNode MS or an SNSE MS.

If the ROS	Do
is a SuperNode MS	step 20
is an SNSE MS	step 22

At the MS shelf

20 Power up the slave MS, as follows:

a At the same time, lift and release the switches on the faceplates of the power converters in slots 33F and 36F.

b Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

c Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

21 Go to step 23.

At the MS shelf

22 Power up the slave MS, as follows:

a Lift and release the switch on the faceplate of the NT9X31 power converter for the ROS that contains the card you replace.

Note: If the slave MS is MS 0, slot 1F contains the associated NT9X31 power converter. If the slave MS is MS 1, slot 33F contains the associated NT9X31 power converter.

b Lift and release the switch on the faceplate of the NT9X30 power converter for the ROS that contains the card you replace.

Note: If the slave MS is MS 0, slot 4F contains the associated NT9X30 power converter. If the slave MS is MS 1, slot 36F contains the associated NT9X30 power converter.

At the MAP terminal

23 To access the MS level of the MAP display, type

```
>MAPCI;MTC;MS
```

and press the Enter key.

24 To load the slave MS again, type

```
>LOADMS  ms_number
```

NT1X78
in a remote oscillator shelf (continued)

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the LOADMS command	Do
passed	step 25
failed	step 29

25 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 26
did not direct you to this procedure	step 27

26 Return to the maintenance procedure that sent you to this procedure. Continue as directed.

27 To perform an out-of-service test on the slave MS, type

>TST ms_number

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the TST command	Do
passed	step 28
failed	step 29

28 To return the slave MS to service, type

>RTS ms_number

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the RTS command	Do
passed	step 30
failed	step 29

NT1X78 in a remote oscillator shelf (end)

29 For additional help, contact the next level of support.

30 The procedure is complete.

NT3X16
in a remote oscillator shelf

Application

Use this procedure to replace an NT3X16 in a remote oscillator shelf (ROS), as listed in the following table.

If you cannot identify the product engineering code (PEC), PEC suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT3X16	AB	Layer 2 oscillator/interface card for SuperNode	ROS
NT3X16	BB	Layer 2.5 oscillator/interface card for SuperNode	ROS

Common procedures

This procedure refers to the following common procedures:

- *Replacing a card*
- *Failure to switch clock mastership*

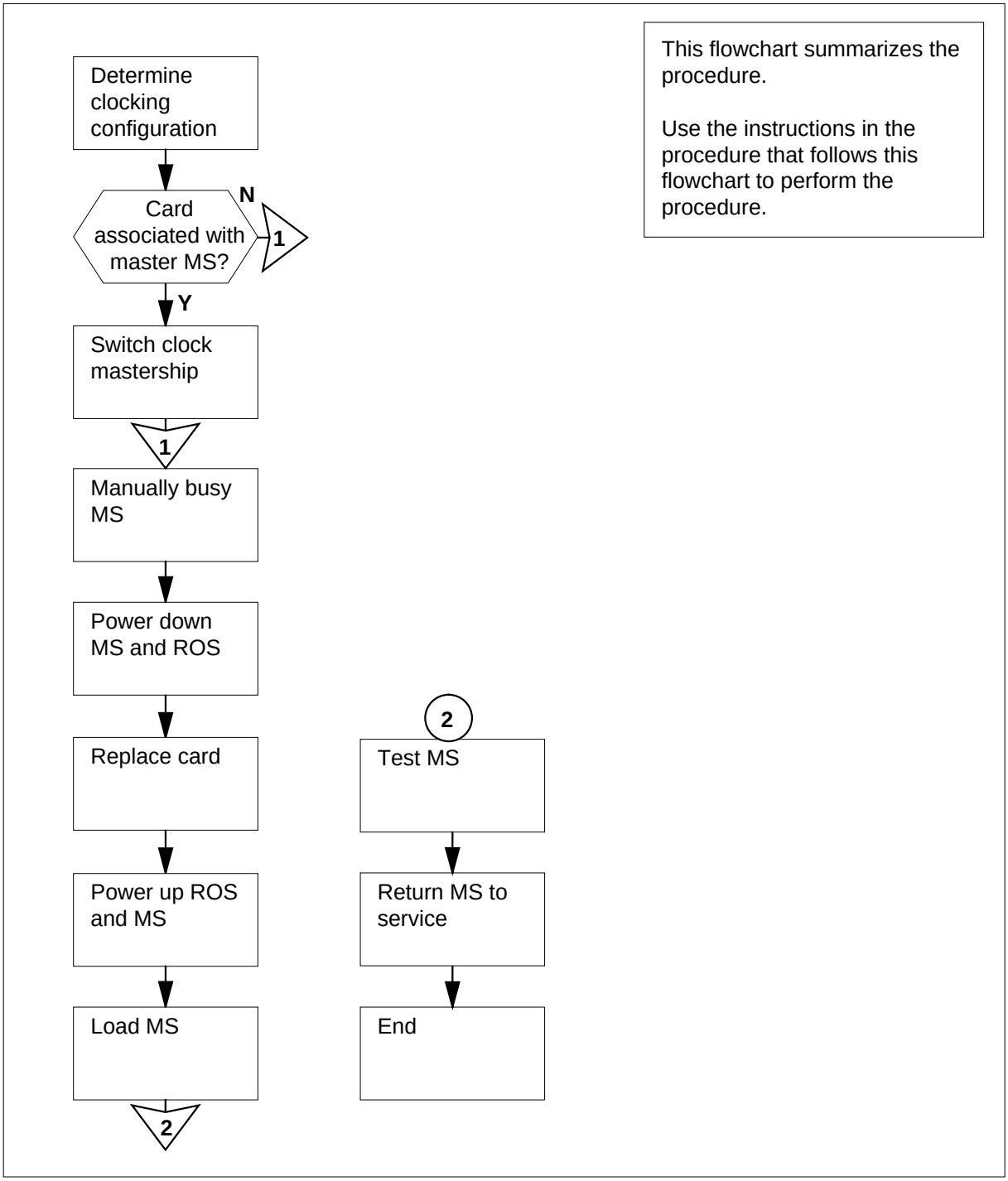
Do not go to the common procedure unless directed to in the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT3X16
in a remote oscillator shelf (continued)

Summary of replacing an NT3X16 in a remote oscillator shelf



NT3X16
in a remote oscillator shelf (continued)

Replacing an NT3X16 in a remote oscillator shelf

At the MAP terminal

1

WARNING
Loss of service for extended time period
If the replacement card does not store in a warm up slot before insertion, the clocking signal from the remote oscillator can be lost. If the replacement card is an NT3X16AB, you require a 12 h warm up. If the replacement card is an NT3X16BB, you require a 1 h warm up.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card that you remove.

2 To access the message switch (MS) level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display:

```
     Message Switch  Clock  Shelf 0  Inter-MS Link 0 1
MS 0        .        M Free       .                . .
MS 1        .        Slave        .                . .
```

3 Determine the clocking configuration.

Note: The clocking configuration appears under the Clock header of the MAP display.

If the message switch for the card you	Do
replace the master MS, indicated by `Master`, `M Free`, or `M Flt` under the Clock header	step 4
replace the slave MS, indicated by `Slave`, `S Flt`, `S OOS`, or `S Free` under the Clock header	step 7

4 To switch clock mastership, type

>SWMAST

and press the Enter key.

Example of a MAP response:

NT3X16
in a remote oscillator shelf (continued)

```
Request to Switch Clock Mastership MS: 0 submitted.
Request to Switch Clock Mastership MS: 0 passed.
```

If the SWMAST command	Do
passed	step 6
failed	step 5

5 Perform the procedure *Failure to switch clock mastership* in this document. Complete the procedure and return to this point.

6 Wait 10 min to make sure the MS has stability, and continue this procedure.

7 Determine if the slave MS is manual busy.

Note: A manual-busy MS appears as an M on the right of the MS 0 or MS 1 header on the MAP display.

Example of a MAP display:

```
   Message Switch  Clock  Shelf 0  Inter-MS Link 0 1
MS 0      .       M Free        .                . .
MS 1      .       Slave         .                . .
```

If the slave MS	Do
is not manual busy	step 8
is manual busy	step 9

8 To manually busy the slave MS, type

>BSY ms_number

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the BSY command	Do
passed	step 9
failed	step 33

NT3X16
in a remote oscillator shelf (continued)

At the MS shelf

9 Determine if the LED on the associated NT9X13 card is lit.

Note: Allow five min for the LED to light.

If the LED	Do
is lit	step 10
is not lit	step 33

10

CAUTION
Possible loss of service
Make sure that you power down the slave MS. If you power down the master MS the system shuts down completely.

WARNING
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point of the frame supervisory panel (FSP) while handling cards. The wrist strap protects the cards against static electricity damage.

Determine if the ROS associates with a SuperNode MS or a SuperNode SE (SNSE) MS.

If the ROS	Do
associates with a SuperNode MS	step 11
associates with an SNSE MS	step 13

At the MS shelf

11 To deactivate the interlock system between the MS and the remote oscillator shelf, power down the slave MS as follows:

a Press down and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

b Press down and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

c At the same time, press down and release the switches on the faceplates of the power converters in slots 33F and 36F.

NT3X16
in a remote oscillator shelf (continued)

12 Go to step 14.

At the MS shelf

13 To deactivate the interlock system between the MS and the ROS, power down the slave MS as follows:

a Press down and release the switch on the faceplate of the NT9X30 power converter that associates with the ROS that contains the card that you replace.

Note: If the slave MS is MS 0, the associated NT9X30 power converter is in slot 4F. If the slave MS is MS 1, the associated NT9X30 power converter is in slot 36F.

b Press down and release the switch on the faceplate of the NT9X31 power converter that associates with the ROS that contains the card that you replace.

Note: If the slave MS is MS 0, the associated NT9X31 power converter is in slot 1F. If the slave MS is MS 1, the associated NT9X31 power converter is in slot 33F.

At the ROS shelf

14 Set the power switch on the NT1X78 to the OFF position to power down the side of the ROS shelf that contains the card you replace.

If the CONVERTER FAIL light on the converter	Do
is lit	step 16
is not lit	step 15

Note: Slots 1 to 13 of the ROS shelf associate with MS 0. Slots 14 to 26 of the ROS shelf associate with MS 1.

15 Disconnect the control cable from the back of the ROS plane involved.

Note: Connector C00 corresponds to MS 0. Connector C01 corresponds to MS 1.

16 Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

At the ROS shelf

17 Power up the ROS plane as follows:

a Set the power switch on the associated NT1X78 to the ON position.

b Press the reset button on the associated NT1X78 until the power fail light is no longer lit, and release.

18 Reconnect the control cable to the back of the ROS plane.

NT3X16
in a remote oscillator shelf (continued)

19 Determine if the ROS associates with a SuperNode MS or an SNSE MS.

If the ROS	Do
associates with a SuperNode MS	step 20
associates with an SNSE MS	step 22

At the MS shelf

20 Power up the slave MS, as follows:

a At the same time, lift and release the switches on the faceplates of the power converters in slots 33F and 36F.

b Lift and release the switch on the faceplate of the NT9X31 power converter in slot 1F.

c Lift and release the switch on the faceplate of the NT9X30 power converter in slot 4F.

21 Go to step 23.

At the MS shelf

22 Power up the slave MS, as follows:

a Lift and release the switch on the faceplate of the NT9X31 power converter that associates with the ROS that contains the card you replace.

Note: If the slave MS is MS 0, the associated NT9X31 power converter is in slot 1F. If the slave MS is MS 1, locate the associated NT9X31 power converter in slot 33F.

b Lift and release the switch on the faceplate of the NT9X30 power converter that associates with the ROS that contains the card you replace.

Note: If the slave MS is MS 0, the associated NT9X30 power converter is in slot 4F. If the slave MS is MS 1, the associated NT9X30 power converter is in slot 36F.

23 Determine how the replacement card was stored.

If the replacement card	Do
was not stored in a warm up slot	step 24
was stored in a warm up slot	step 27

NT3X16 in a remote oscillator shelf (continued)

At the MAP terminal

24 Determine if the NT3X16 card that you replaced is a Stratum 2 clock or a Stratum 2.5 clock.

If the NT3X16 card	Do
is a Stratum 2 clock (NT9X16AB)	step 25
is a Stratum 2.5 clock (NT9X16BB)	step 26

25 Allow the card to soak for 12 h before you continue the procedure.

Go to step 27.

26 Allow the card to soak for 1 h before you continue the procedure.

At the MAP terminal

27 To access the MS level of the MAP display, type

`>MAPCI;MTC;MS`

and press the Enter key.

28 To reload the slave MS, type

`>LOADMS ms_number`

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the LOADMS command	Do
passed	step 29
failed	step 33

29 The next step depends on the reason that you perform this procedure.

If the maintenance procedure	Do
directed you to this procedure	step 30
did not direct you to this procedure	step 31

30 Return to the maintenance procedure that sent you to this procedure and continue as directed.

31 To perform an out-of-service test on the slave MS, type

`>TST ms_number`

and press the Enter key.

NT3X16
in a remote oscillator shelf (end)

where

ms_number
is the number of the slave MS (0 or 1)

If the TST command	Do
passed	step 32
failed	step 33

32 To return the slave MS to service, type

>RTS ms_number

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the RTS command	Do
passed	step 34
failed	step 33

33 For additional help contact the next level of support.

34 The procedure is complete.

2 Single shelf link peripheral processor card replacement procedures

Introduction

This chapter contains card replacement procedures for the single-shelf link peripheral processor (SSLPP). The first section in the chapter provides illustrations that show SSLPP shelf layouts.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter “Frame supervisory panel and maintenance supervisory panel card replacement procedures".

These procedures contain the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the SSLPP card(s) that the replacement procedure covers.

Common procedures

This section lists common procedures that you use within the SSLPP card replacement procedure. A common procedure is a series of steps that repeats in maintenance procedures. An example of a common procedure is the procedure for removal and replacement of a card. Common procedures appear in the common procedures chapter in this NTP.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This section provides a summary flowchart of the procedure. A detailed step-action replacement procedure follows the flowchart.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card you replaced
- the time you replaced the card
- the reason you replaced the card

SSLPP shelf layouts

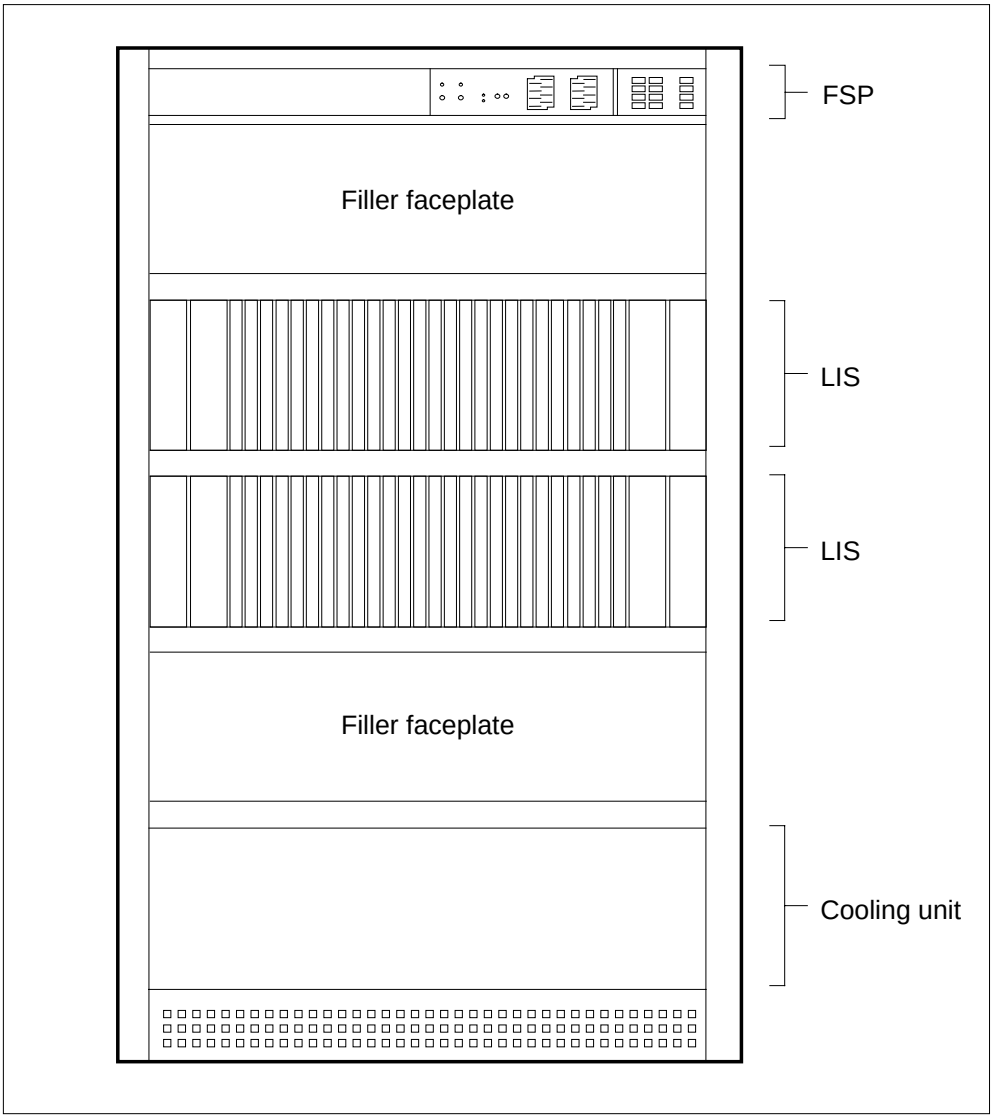
Application

This module provides layout diagrams for the following:

- enhanced multipurpose cabinet (EMC) with single-shelf link peripheral processors (SSLPP)
- SSLPP, with common fill cards and paddle boards for 2-slot application specific units (ASU)
- SSLPP 2-slot ASU, that includes ethernet interface units (EIU), frame relay interface units (FRIU), CCS7 link interface units (LIU7), network interface units (NIU), and X.25/X.75 interface units (XLIU)

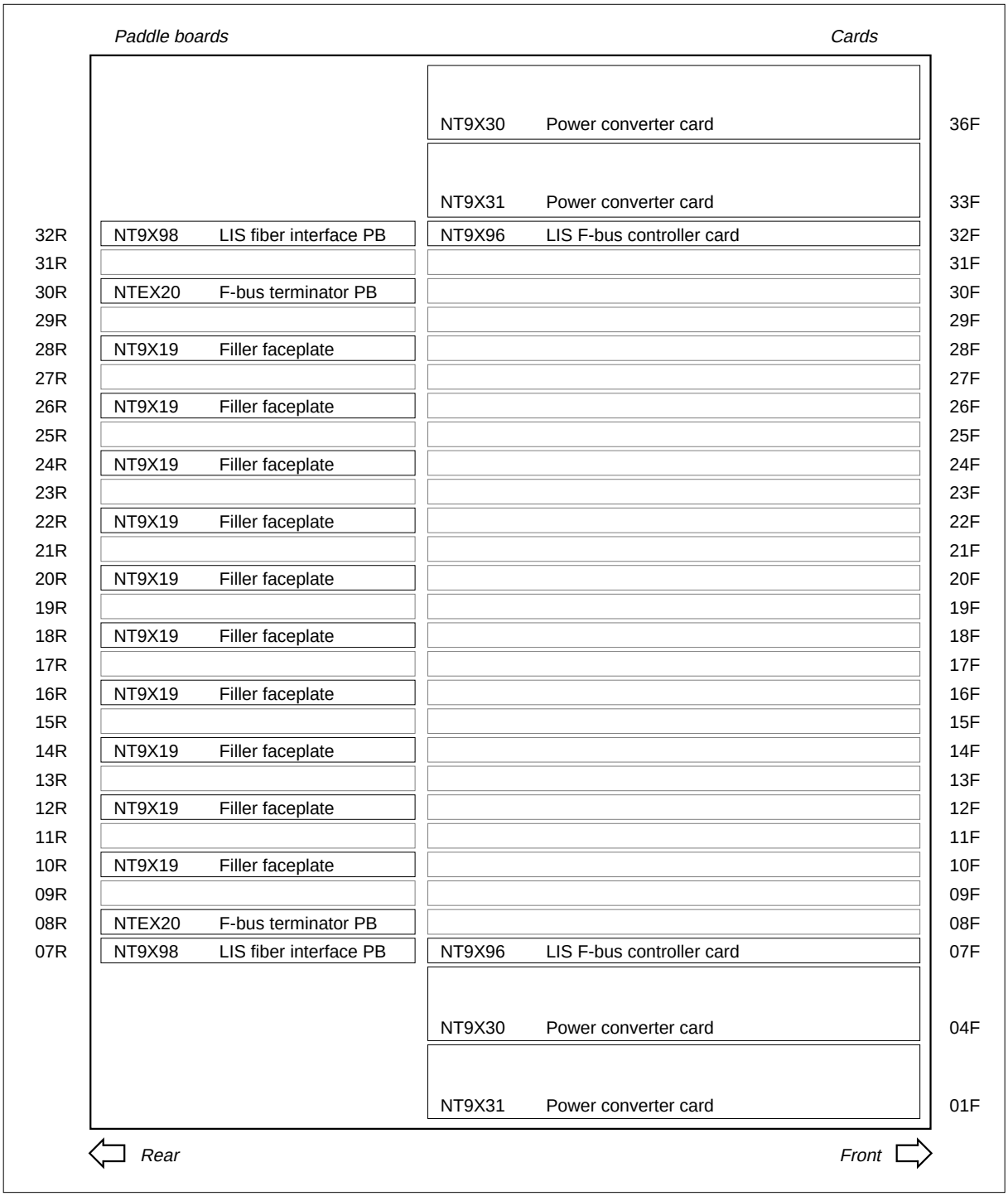
SSLPP shelf layouts (continued)

Figure Enhanced multipurpose cabinet with SSLPP



SSLPP shelf layouts (continued)

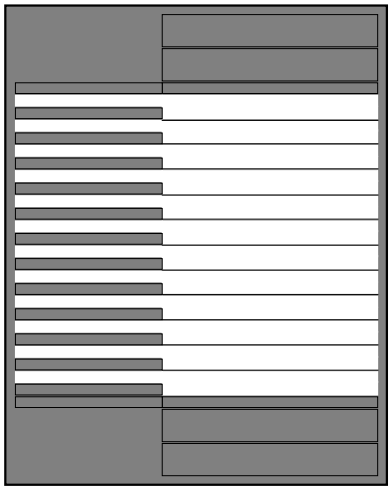
Figure Single-shelf link peripheral processor, showing common fill



SSLPP shelf layouts (end)

Figure Single-shelf link peripheral processor, that shows 2-slot ASU configuration

Top view of SSLPP shelf



Available 2-slot ASUs are shown below.

Rear paddle boards	*Front cards*
NTEX26 C-bus interface PB	NT9X76 Signaling terminal card
2-slot LIU7 (channelized)	NTEX22 Integrated processor and F-bus card
NT9X77 or NT9X78 V.35 or DS-0A PB	NT9X76 Signaling terminal card
2-slot LIU7 (non-channelized)	NTEX22 Integrated processor and F-bus card
NTFX09 C-bus access interface PB	NTFX10 HDLC frame processor card
2-slot XLIU	NTEX22 Integrated processor and F-bus card
NTEX30 T1 access PB	NTEX31 Frame relay access processor card
2-slot FRIU	NTEX22 Integrated processor and F-bus card
NTEX28 NIU link interface PB	NTEX25 Channel bus controller card
2-slot NIU	NTEX22 Integrated processor and F-bus card
NT9X85 Ethernet AUI PB	NT9X76 Signaling terminal card
2-slot EIU	NTEX22 Integrated processor and F-bus card

Common fill cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, shelf, or frame for the card you must replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X96	AA	LIS F-bus controller card	SSLPP
NT9X98	AA	F-bus extension paddle board	SSLPP
NTEX20	AA, BA	LIS fiber interface paddle board	SSLPP

Common procedures

This procedure references the following common procedures:

- *Verifying load compatibility of SuperNode cards*
- *Replacing a card*

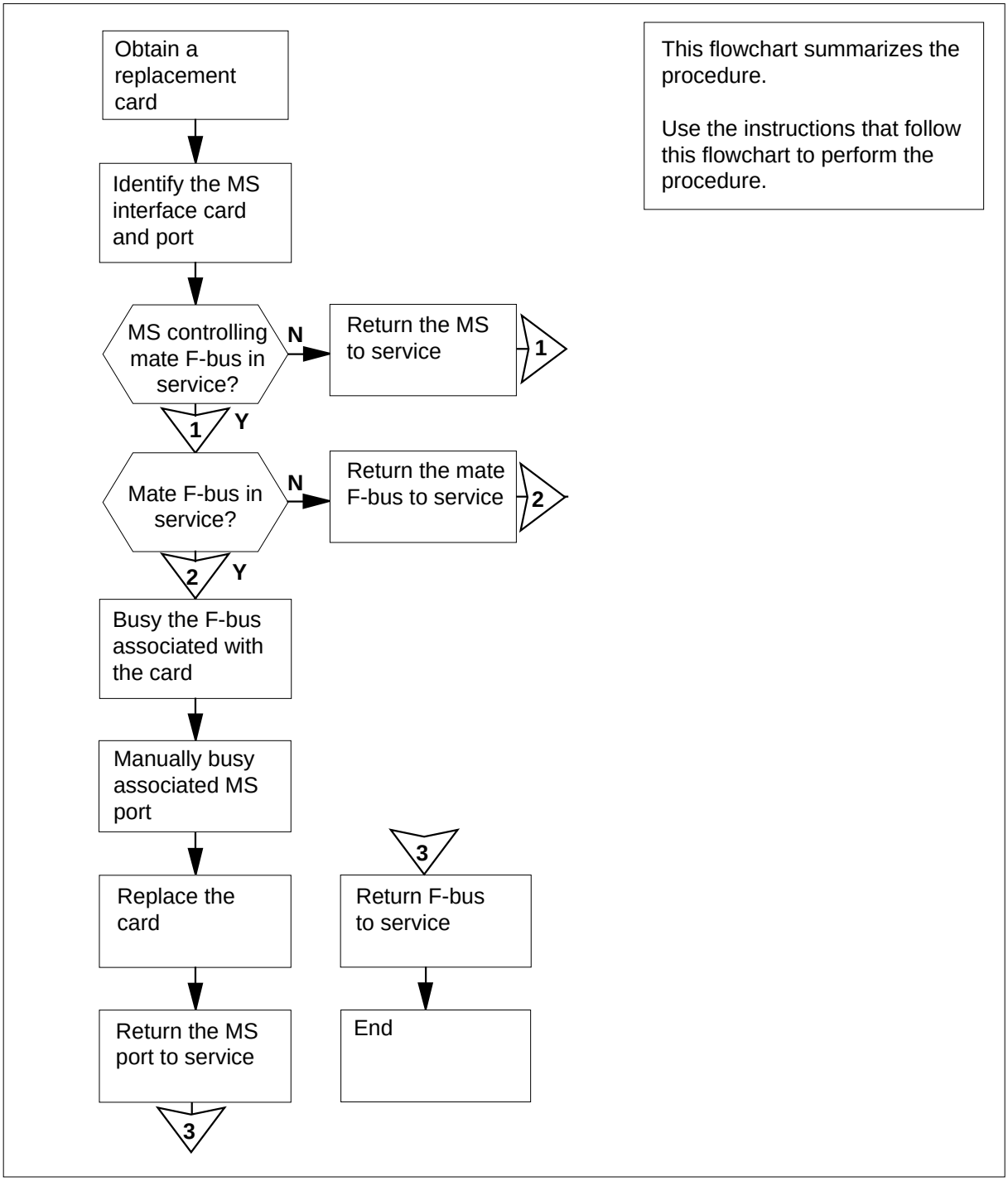
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Common fill cards in an SSLPP (continued)

Summary of Replacing Common fill cards in an SSLPP



Common fill cards in an SSLPP (continued)

Replacing Common fill cards in an SSLPP

At your current location

1 Obtain a replacement card. Make sure the replacement card has the same PEC and PEC suffix as the card that you remove.

2

DANGER
Possible loss of service
Do not use an NT9X96 card with a release code of 11, 13, 15, or 17. A system outage can occur.

Make sure that the replacement card is compatible with the software load. Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the CI level of the MAP display, type

```
>QUIT  ALL
```

and press the Enter key.

4 To access table SUSHELF, type

```
>TABLE  SUSHELF
```

and press the Enter key.

Example of a MAP display:

```
TABLE: SUSHELF
```

5 To list the contents of the table, type

```
>LIST  ALL
```

and press the Enter key.

Example of a MAP display:

Common fill cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC        4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note 1: This MAP display example is for two SSLPPs supported by a SuperNode switch. The last two tuples give the SSLPP information.

Note 2: The controlling entity (MS for SSLPP) is in column 1. The MS interface card number is in column 3. The port number on the MS interface card is in column 4. The LIUSHELF number is in column 5. The frame type (EMC for SSLPP) is in column 9. The shelf position is in column 11.

6 Record the number of the MS interface card that associates with the SSLPP and the number of the port on the MS interface card.

Example of a MAP display

Common fill cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
-------------------------------------------------------------------------------

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The following items describe the entries in the MAP display example:

- controlling entity is MS (column 1)
- interface card number is 17 (column 3)
- interface card port number is 0 (column 4)
- LIUSHELF is 1 (column 5). (The LIUSHELF is always 1 in an SSLPP.)
- frame type is EMC (column 9)
- shelf position is 26 (column 11)

7 To quit table SUSHELF, type

>QUIT

and press the Enter key.

8 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display

```
     Message Switch Clock    Shelf 0 Inter–MS Link 0 1
MS 0    .          M Free    .                    . .
MS 1    .          Slave     .                    . .
```

Note: The following items describe the entries under the Message Switch header in the map display example:

- dot (.) indicates the MS is in service
- S indicates the MS is system busy
- M indicates the MS is manual busy
- I indicates the MS is in-service trouble
- O indicates the MS is offline

9 Determine the state of the MS that controls the mate F-bus.

If you need to change the card in slot:

- 32F
- 32R
- or 30R

Common fill cards in an SSLPP (continued)

then the SSLPP card and port for MS 0 must be in service (.) or in-service trouble (I).

If you need to change the card in slot:

- 7F
- 7R
- or 8R

then the SSLPP card and port for MS 1 must be in service (.) or in-service trouble (I).

If the MS identified above	Do
is system busy (S), manual busy (M), or offline (O)	step 10
is in service (.) or in-service trouble (I)	step 11

10 Return the MS to service. Perform the correct MS alarm clearing procedure in *Alarm and Performance Monitoring Procedures*. Complete the procedure and return to this point.

11 To access the F-bus level of the MAP display, type

`>SHELF 0;CARD card_no;PORT port_no`

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 6

port_no
is the MS port number that you recorded in step 6

Example of a MAP display for SuperNode:

```
Shelf     0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card      1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0       . . . . . . - . . . . . . . . . . . . . . . . . .
MS 1       . . . . . . - . . . . . . . . . . . . . . . . . .
Card15    Port 00    FBusTap:  0    4   8
MS 0 .       .   .             ......-.....
MS 1 .       .   .             ...M..-.....
```

Example of a MAP display for SuperNode SE:

Common fill cards in an SSLPP (continued)

```
Shelf 0                  1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1  . . . . . - - . . . . . .
Card 04   Port 00   FBus Tap:  0   4   8
MS 0  .      .   .             ......-.....
MS 1  .      .   .             ......-.....
```

The following items describe the entries under the F-bus header in the MAP display example:

- dot (.) indicates the F-bus is in service
- S indicates the F-bus is system busy
- M indicates the F-bus is manual busy
- I indicates the F-bus in-service trouble
- O indicates the F-bus is offline

The following items describe the entries under the F-bus tap numbers in the MAP display example:

- dot (.) indicates the F-bus tap is in service
- C indicates the F-bus tap is manual busy. A C can also indicate the controlling MS or MS port is system busy or manual busy.
- S indicates the F-bus tap is system busy
- M indicates the F-bus tap is manual busy
- I indicates the F-bus tap is in-service trouble
- dash (-) indicates the F-bus tap is offline

12 Determine the state of the mate F-bus and the mate F-bus taps.

If you need to change the card in slot:

- 32F
- 32R
- or 30R

then the F-bus 0 must be in service (.) or in-service trouble (I).

If you need to change the card in slot:

- 7F
- 7R
- or 8R

then the F-bus 1 must be in service (.) or in-service trouble (I).

If the state	Do
of the F-bus is `InSv` and all F-bus taps are `.` (dot)	step 13

Common fill cards in an SSLPP (continued)

If the state	Do
of the F-bus is: system busy (S), manual busy (M), in-service trouble (I) or offline (O) and any F-bus tap is: C-side busy (C), system busy (S), manual busy (M), in-service trouble (I), or offline (O)	step 21

13 To manually busy the F-bus for the card you replace, type

>BSY ms_no FBUS

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1) that controls the F-bus

Note: F-bus 0 associates with a card in slot 1F or 4F. MS 0 controls F-bus 0. F-bus 1 associates with a card in slot 33F or 36F. MS 1 controls F-bus 1.

Example of a MAP display:

```
Request to MAN BUSY MS: 0 shelf: 0 card:15 port: 0
 FBus submitted.
 Request to MAN BUSY MS: 0 shelf: 0 card:15 port: 0
 FBus passed.
```

If the response	Do
requests confirmation	step 14
indicates the BSY command passed	step 15

14 To confirm the command, type

>YES

and press the Enter key.

15 To manually busy the MS port that terminates the DS512 fiber link for the card that you replace, type

>BSY ms_no PORT

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1) that controls the F-bus

Example of a MAP display:

```
Request to MAN BUSY MS: 0 shelf: 0 card:04 port: 0 FBus submitted.

Request to MAN BUSY MS: 0 shelf: 0 card:04 port: 0 FBus passed.
```

At the SSLPP shelf

16

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point. The wrist-strap grounding point is on the frame supervisory panel (FSP) or the modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

At the MAP terminal

17 To return to service the MS port you busied in step 15, type

`>RTS ms_no PORT`

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1) that controls the F-bus

Example of a MAP response:

```
Request to RTS MS: 0 shelf: 0 card: 6 port:  0  submitted.

Request to RTS MS: 0 shelf: 0 card: 6 port:  0  passed.
```

If the RTS command	Do
passed	step18

Common fill cards in an SSLPP (end)

If the RTS command	Do
failed	step 22

18 To return to service the F-bus you busied in step 13, type

>RTS ms_no FBUS

and press the Enter key.

where

ms_no
is the number of MS (0 or 1) that controls the F-bus

Example of a MAP response:

```
Request return to Service MS: 0 shelf 0 card:12 port 0
FBus submitted

Request return to Service MS: 0 shelf 0 card:12  port 0
FBus passed
```

If the RTS command	Do
passed	step 19
failed	step 22

19 The next action depends on the reason you performed this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 20
did not direct you to this procedure	step 23

20 Return to the maintenance procedure that sent you to this procedure and continue as directed.

21 This procedure can isolate one or more application specific units (ASU). Consult the next level of support to determine if you can continue this procedure, and proceed as directed.

22 For additional help, contact the next level of support.

23 The procedure is complete.

EIU cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card you must replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X76	AA, BA, CA	STP signalling terminal card	SSLPP
NT9X85	AA	Ethernet AUI interface paddle board	SSLPP
NTEX22	BA, BB, CA	Integrated processor and F-bus interface card	SSLPP

Common procedures

This procedure references the following common procedures:

- *Loading a PM*
- *Replacing a card*
- *Reseating cards in equipment shelves*
- *Unseating cards in equipment shelves*
- *Verifying load compatibility of SuperNode cards*

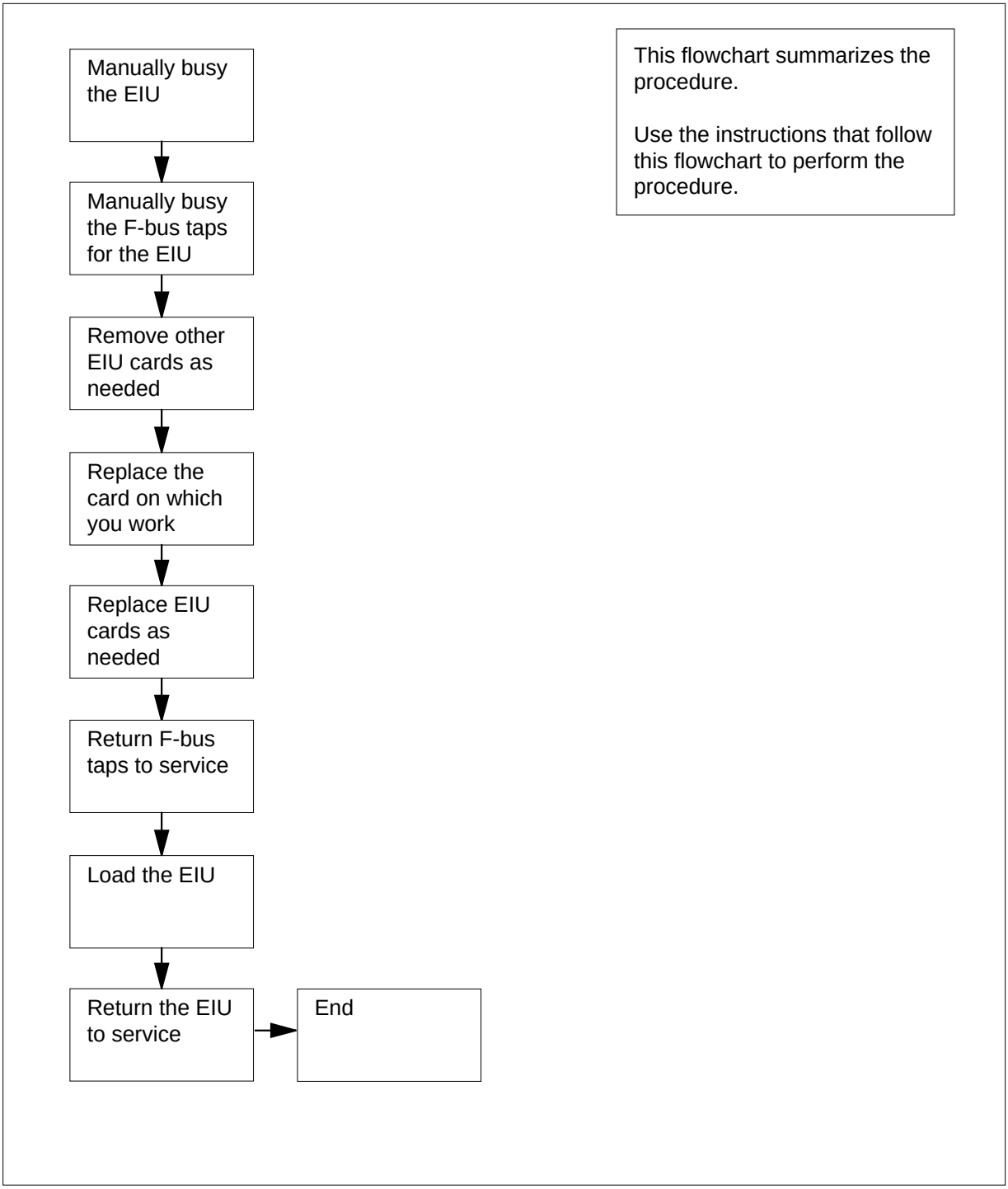
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

EIU cards in an SSLPP (continued)

Summary of replacing EIU cards in an SSLPP



EIU cards in an SSLPP (continued)

Replacing EIU cards in an SSLPP

At your Current Location

1

WARNING
Loss of Ethernet connection
This procedure removes an EIU from service. You cannot access the Ethernet address from an out of service EIU. If no other EIUs that provide alternative addresses to the LAN are present, the system isolates ASUs on the LIS. Perform this procedure during high traffic periods only when you must return the EIU to service. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you remove.

2 Make sure that the replacement card is compatible with the software load. Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the PM level of the MAP display , type

>MAPCI;MTC;PM

and press the Enter key

Example of a MAP display:

```
                    SysB    ManB    OffL    CBsy    ISTb    InSv
PM                     0       0       1       0       2      48
```

4 To post the EIU that contains the card that you replace, type

>POST EIU eiu_no

and press the Enter key

where

eiu_no
is the number of the EIU (0 to 511)

Example of a MAP display:

```
                    SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                    0       0       1       0       2      48

EIU      0 InSv       Rsvd
```

EIU cards in an SSLPP (continued)

5 Determine the state of the EIU.

If the state of the EIU	Do
is ISTb, InSv, SysB, SysB (NA), ISTb (NA), or ManB (NA)	step 6
is ManB	step 10
is OffL	step 35

6 To manually busy the EIU, type

>BSY

and press the Enter key

If the response is	Do
Bsy EIU 0 requires confirmation becausethe action may isolate the SuperNode fromthe nodes on the LAN.Please confirm ("YES", "Y", "NO", or "N"):	Step 9
Warning: The EIU 0 is currently being imaged. The BSY command will be aborted unless the FORCE option is used.	step 7

7 To manually force bsy the EIU, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
WARNING: EIU 0 is currently being imaged.
Do you wish to abort imaging to proceed with the BSY
request?
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

If To	Do
proceed with BSY FORCE request	step 8
abort BSY FORCE request	step 37

8 To force bsy the EIU, type

>YES

EIU cards in an SSLPP (continued)

and press the Enter key. Go to step10

Example of a MAP response:

```
Imaging will be aborted on EIU 0.
```

9 To confirm the command, type

>YES

and press the Enter key

Example of a MAP response:
Confirmed...EIU 0 BSY Passed

10 To access table SUSHELF, type

>TABLE SUSHELF

and press the Enter key.

Example of a MAP display:

```
TABLE: SUSHELF
```

11 To list the contents of the table, type

>LIST ALL

and press the Enter key.

Example of a MAP display:

EIU cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
-------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC        4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The device that controls (MS) is in column 1. The MS interface card number is in column 3. The port number on the MS interface card is in column 4. The frame type (EMC for SSLPP) is in column 9. The shelf position is in column 11.

12 Record the number of the MS interface card for the SSLPP on which you work. Record the number of the port on the MS interface card.

13 To quit table SUSHELF, type

>QUIT

and press the Enter key.

14 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

EIU cards
in an SSLPP (continued)

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0    .           M Free                      . .
MS 1    .           Slave       .               . .
```

15 To access the F-bus level of the MAP display, type

>SHELF 0;CARD card_no;PORT port_no

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 12

port_no
is the MS port number that you recorded in step 12

Example of a MAP display for SuperNode:

```
Shelf    0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0     . . . . . . - . . . . . . . . . . . . . . . .
MS 1     . . . . . . - . . . . . . . . . . . . . . . .
Card 15  Port 00   FBusTap:  0    4    8
MS 0 .      .      .         .... ..-. ....
MS 1 .      .      .         .... ..-. ....
```

Example of a MAP display for SNSE:

```
Shelf 0                 1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1  . . . . . - - . . . . . .
Card 04   Port 00   FBus Tap: 0    4    8
MS  0 .      .      .         .... ..-. ....
MS  1 .      .      .         .... ..-. ....
```

Note 1: A dot under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: Under the F-bus tap numbers, a C indicates the F-bus is manual busy. A C can also indicate that controlling MS or MS port is system busy or manual busy. An S indicates the F-bus tap is system busy. A dot indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline.

16 To determine which F-bus taps associate with the card you replace, type

>TRNSL 0

and press the Enter key.

EIU cards in an SSLPP (continued)

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers in the example are for the F-buses that both MSs control. The example MAP response indicates that tap 5 on F-bus 0 and tap 5 on F-bus 1 both associate with unit 0 of NIU 5.

17 Record the tap number that associates with the EIU on which you work.

18 To manually busy the EIU tap on F-bus 0, type

`>BSY 0 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 17

Example of a MAP display:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 5
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 5
passed.
```

19 To manually busy the EIU tap on F-bus 1, type

`>BSY 1 TAP tap_no FORCE`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 17

Example of a MAP display:

```
Warning, P-side nodes may be isolated.
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

EIU cards in an SSLPP (continued)

20 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP display:

```
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 5
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 5
passed.
```

At the SSLPP shelf

21

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on the frame supervisory panel (FSP) or a modular supervisory panel (MSP). This protects the cards against static electricity damage.

The next action depends on the card that you must replace.

If you	Do
replace the NTEX22	step 22
replace another card	step 23

22 To replace the NTEX22 card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

Go to step 28.

23 Unseat the NTEX22 card for the EIU on which you work. To unseat the card, perform the procedure *Unseating cards in equipment shelves* in this document. Complete the procedure and return to this point.

24 To replace the card on which you work, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure that the switches on the replacement card have the same settings.

25 Reseat the NTEX22 card for the EIU on which you work. To reseat the card, perform the procedure *How to reseat cards in equipment shelves* in this document. Complete the procedure and return to this point.

EIU cards in an SSLPP (continued)

At the MAP terminal

26 To return to service the F-bus 0 tap that you busied in step 18, type

`>RTS 0 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 17

Example of a MAP display:

```
Request to RTS MS: 1 shelf: 0 card: 6 port: 0 Tap: 5
submitted.
Request to RTS MS: 1 shelf: 0 card: 6 port: 0 Tap: 5
passed.
```

If the RTS command	Do
passed	step 27
failed	step 36

27 To return to service the F-bus tap that you busied in step 19, type

`>RTS 1 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 17

If the RTS command	Do
passed	step 28
failed	step 36

28 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 29
did not direct you to this procedure	step 30

29 Return to the maintenance procedure that sent you to this procedure and continue as directed.

30 To access the PM level of the MAP display, type

`>PM`

EIU cards in an SSLPP (continued)

and press the Enter key

31 To post the EIU, type

>POST EIU eiu_no

and press the Enter key

where

eiu_no
is the number of the EIU (0 to 511)

32 To load the EIU, type

>LOADPM

and press the Enter key

Example of a MAP response:

```
EIU 0 LOADPM passed
```

If the LOADPM command	Do
passed	step 34
failed	step 33

33 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

34 To return the EIU to service, type

>RTS

and press the Enter key

Example of a MAP response:

```
EIU 0 RTS Passed
```

If the RTS command	Do
passed	step 38
failed	step 36

35 Contact operating company to determine why the component is offline. Continue as directed by operating company personnel.

36 For additional help, contact the next level of support.

37 Abort the BSY FORCE request by typing

>NO

and pressing the Enter key.

Example of a MAP response:

EIU cards in an SSLPP (end)

```
BSY command aborted due to imaging in progress.
```

38 The procedure is complete.

FRIU cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card you must replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NTEX22	BB, CA	Integrated processor and F-bus interface card	SSLPP
NTEX30	AA	T1 analog paddle board	SSLPP
NTEX31	AA	Frame relay access processor card	SSLPP
NTEX31	BA	Enhanced frame relay access processor card	SSLPP

Common procedures

This procedure references the following common procedures:

- *Verifying load compatibility of SuperNode cards*
- *Replacing a card*
- *Loading a PM*

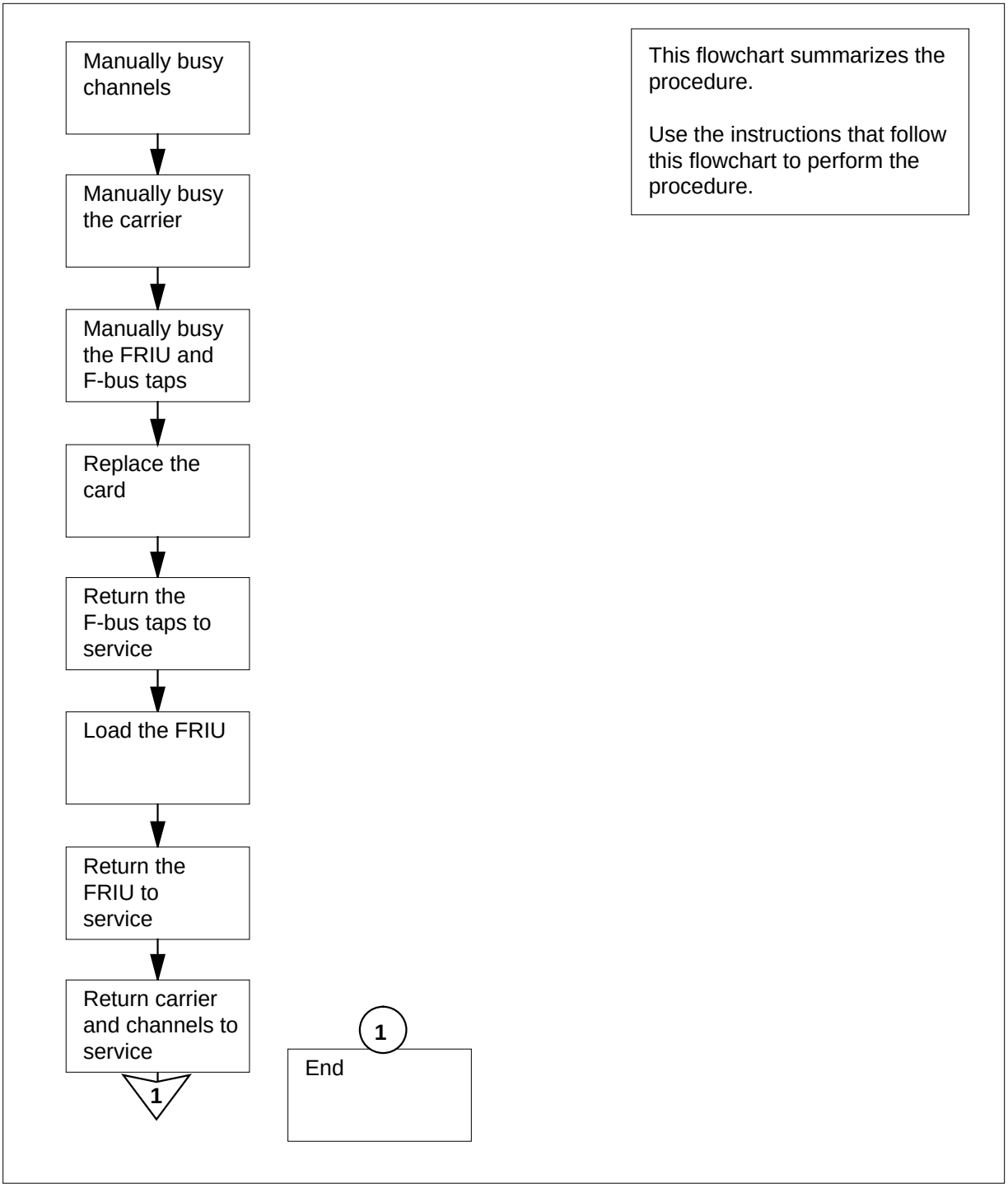
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

FRIU cards in an SSLPP (continued)

Summary of replacing FRIU cards in an SSLPP



FRIU cards in an SSLPP (continued)

Replacing FRIU cards in an SSLPP

A t your Current Location

1

WARNING
Loss of service
This procedure removes an FRIU from service and temporarily interrupts traffic on the associated access or trunking DS-1 channels. Only perform this procedure when you need to return the FRIU to service. Unless it is urgent, perform this procedure in periods of low traffic only.

Obtain a replacement card. Make sure the replacement card has the same PEC and PEC suffix as the card that you remove.

2 Make sure that the replacement card is compatible with the software load. Use the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                  1       0      27       0       8      29
```

4 To post the FRIU that contains the NTEX22 card that you replace, type

`>POST FRIU friu_no`

and press the Enter key.

where

friu_no
is the number of the FRIU (0 to 500)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                  1       0      27       0       8      29
 FRIU                1       0      19       0       6      28

FRIU     8 InSv       Rsvd
```

FRIU cards in an SSLPP (continued)

5 Determine the state of the FRIU.

Note: The state of the FRIU appears on the right of the FRIU number, as the example MAP display in step 4 shows.

If the state of the FRIU	Do
is SysB, ISTb (NA),InSv, or ISTb	step 6
is ManB	step 17
is OffL	step 46

6 To access the CHAN level of the MAP display, type

>CARR;CHAN

and press the Enter key.

Example of a MAP display:

```
                  SysB     ManB     OffL     CBsy     ISTb     InSv
   PM                1        0       27        0        8       29
   FRIU              1        0       19        0        6       28

FRIU     8 InSv       Rsvd

CARRIER                            Alarm   BER      ES   SES   UAS
 InSv                                       -8.3      0     0     0

CHANNEL  1
         .

CHANNEL    1       ( 24  x DS0)
InSv
CHAN:
```

7 To manually busy all channels, type

>BSY ALL

and press the Enter key.

8 To confirm the command, type

>YES

and press the Enter key.

Note: If all channels are out of service, no request is necessary.

9 To access the CARR level of the MAP display, type

>QUIT

and press the Enter key.

Example of a MAP display:

FRIU cards in an SSLPP (continued)

```
                   SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                 1       0      27       0       8      29
   FRIU               1       0      19       0       6      28

FRIU     8 InSv       Rsvd

CARRIER                            Alarm   BER     ES   SES   UAS
 InSv                                       -8.3     0     0     0

CHANNEL  1
         .
```

10 To manually busy the carrier, type

>BSY

and press the Enter key.

Example of a MAP response:

```
Busying this carrier will affect 1 channels.
Please confirm ("YES", "Y", "NO", or "N"):
```

11 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Confirmed...BSY passed.
```

Note: If the carrier is out of service, no request is necessary.

12 To quit the CARR level, type

>QUIT

and press the Enter key.

13 To manually busy the FRIU, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
FRIU 8 BSY Passed
```

14 To manually busy the FRIU, type

>BSY FORCE

and press the Enter key.

If MAP response is	Do
FRIU 8 BSY Passed	step 17

FRIU cards in an SSLPP (continued)

If MAP response is	Do
WARNING: FRIU 8 is currently being imaged. Do you wish to abort imaging to proceed with the busy request. Please confirm ("YES", "Y", "NO" or "N")	step 15

15 Determine if you should proceed with the BSY and proceed as shown below.

Ifproceed with	Do
BUSY and abort imaging	step 16
abort BSY request	step 48

16 To continue with BSY FORCE the FRIU, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
Imaging will be aborted on FRIU 8.
```

17 To access table SUSHELF, type

>TABLE SUSHELF

and press the Enter key.

Example of a MAP display:

```
TABLE: SUSHELF
```

18 To list the contents of the table, type

>LIST ALL

and press the Enter key.

Example of a MAP display:

FRIU cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
------------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC        4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The controlling entity (MS) appears in column 1. The MS interface card number is in column 3. The port number on the MS is in column 4. The shelf number is in column 5. The frame type (EMC for SSLPP) is in column 9. The shelf position is in column 11.

19 Record the number of the MS interface card that associates with the SSLPP on which you work. Record the number of the port on the MS.

20 To quit table SUSHELF, type

>QUIT

and press the Enter key.

21 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display:

FRIU cards in an SSLPP (continued)

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0    .           M Free                      . .
MS 1    .           Slave       .               . .
```

22 To access the F-bus level of the MAP display, type

>SHELF 0;CARD card_no;PORT port_no

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 19

port_no
is the MS port number that you recorded in step 19

Example of a MAP display for SuperNode:

```
Shelf    0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0     . . . . . . - . . . . . . . . . . . . . . . .
MS 1     . . . . . . - . . . . . . . . . . . . . . . .
Card 15  Port 00   FBusTap:  0    4    8
MS 0 .      .      .         .... ..-. ....
MS 1 .      .      .         .... ..-. ....
```

Example of a MAP display for SuperNode SE:

```
Shelf 0                 1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1  . . . . . - - . . . . . .
Card 04   Port 00   FBus Tap: 0    4    8
MS  0 .      .      .         .... ..-. ....
MS  1 .      .      .         .... ..-. ....
```

Note 1: A dot under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: Refer to the codes under the F-bus tap numbers. A C indicates the F-bus is manual busy. A C can also indicate that the controlling MS or MS port is system busy or manual busy. An S indicates the F-bus tap is system busy. A dot indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline .

FRIU cards in an SSLPP (continued)

23 To determine which F-bus taps that associate with the card that you replace, type

>TRNSL 0

and press the Enter key.

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers in the example are for the F-buses that both MSs control. The example MAP response indicates that tap 8 on F-bus 0 and tap 8 on F-bus 1 both associate with FRIU number 208.

24 Record the tap number associated with the FRIU on which you work.

25 To manually busy the FRIU tap on F-bus 0, type

>BSY 0 TAP tap_no

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 24

Example of a MAP response:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
passed.
```

26 To manually busy the FRIU tap on F-bus 1, type

>BSY 1 TAP tap_no FORCE

and press the Enter key.

where

FRIU cards in an SSLPP (continued)

tap_no
is the number of the F-bus tap that you recorded in step 24

27 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 7
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 7
passed.
```

At the SSLPP shelf

28

WARNING
Static electricity damage
Wear a wrist strap that connects the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you must replace has switches, make sure that the switches on the replacement card have the same settings.

At the MAP terminal

29 To return to service the F-bus tap that you busied in step 25, type

>RTS 0 TAP tap_no

and press the Enter key.

where

tap_no
is the number of the FRIU tap that you recorded in step 24

Example of a MAP response:

FRIU cards in an SSLPP (continued)

```
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
submitted.
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
passed.
```

If the RTS command	Do
passed	step 31
failed, and you did not test the tap	step 30
failed, and you tested the tap	step 47

Note: You can perform a test to manually return the tap to service.

30 To test the F-bus tap, type

`>TST 0 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 24

If the TST command	Do
passed	step 31
failed	step 47

31 To return to service the F-bus tap that you busied in step 26, type

`>RTS 1 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 25

If the RTS command	Do
passed	step 33
failed, and you did not test the tap	step 32
failed, and you tested the tap	step 47

FRIU cards in an SSLPP (continued)

32 To test the F-bus tap, type

>TST 1 TAP tap_no

and press the Enter key.

where

tap_no
is the number of the FRIU tap that you recorded in step 25

Example of a MAP response:

```
Request to TEST INSV MS: 0 shelf: 0 card: 6 port: 0 Tap:
7 submitted.
Request to TEST INSV MS: 0 shelf: 0 card: 6 port: 0 Tap:
7 passed.
```

If the RTS command	Do
passed	step 33
failed	step 47

33 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 34
did not direct you to this procedure	step 35

34 Return to the maintenance procedure that sent you to this procedure and continue as directed.

35 To access the PM level of the MAP display, type

>PM

and press the Enter key

36 To post the FRIU on which you work, type

>POST FRIU friu_no

and press the Enter key.

where

friu_no
is the number of the FRIU (0 to 500)

37 To load the FRIU, type

>LOADPM

and press the Enter key.

Example of a MAP response:

FRIU cards in an SSLPP (continued)

```
FRIU 8 LOADPM Passed
```

If the LOADPM command	Do
passed	step 39
failed	step 38

38 Use the procedure *Loading a PM* in this document to load the PM. Complete the procedure and return to this point.

39 To return to service the FRIU, type

>RTS

and press the Enter key.

Example of a MAP response:

```
FRIU 8 RTS Passed
```

If the RTS command	Do
passed	step 40
failed	step 47

40 To access the CARR level of the MAP display, type

>CARR

and press the Enter key.

41 To return to service the carrier, type

>RTS

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                1       0      27       0       9      28
   FRIU              1       0      19       0       7      27

FRIU     8 ISTb       Rsvd

CARRIER   Mtce  /T1 proving       Alarm   BER     ES   SES   UAS
 ManB                                    -8.3     0     0     0

CHANNEL  1
         C
rts
RTS passed.
```

FRIU cards in an SSLPP (continued)

42 Wait until the Mtce flag on the right side of the CARRIER header disappears from the display. The carrier goes ISTb at this point.

43 Wait 1 min for the carrier to go in service.

If after 1 min the state of the carrier	Do
is InSv	step 44
is other than listed here	step 47

44 To access the CHAN level of the MAP display, type

>CHAN

and press the Enter key.

45 To return the channels to service, type

>RTS ALL

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                1       0      27       0       9      28
   FRIU              1       0      19       0       7      27

FRIU     8 ISTb       Rsvd

CARRIER   Mtce  /T1 proving       Alarm   BER     ES   SES    UAS
 ManB                                    -8.3     0     0      0


CHANNEL  1
         C
rts
RTS passed.
```

If the RTS command	Do
passed	step 49
failed	step 47

46 Contact operating company personnel to determine why the component is offline. Continue as operating company personnel direct.

47 For additional help, contact the next level of support.

48 Abort the BSY FORCE request by typing

>NO

and pressing the Enter key

Example of a MAP response:

FRIU cards in an SSLPP (end)

BSY command aborted due to imaging in progress.

49 This procedure is complete.

LIU7 cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card you must replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X76	AA, BA, CA	STP signaling terminal card	SSLPP
NT9X77	AA, AB	DMS-100 V.35 interface paddle board	SSLPP
NT9X78	AA	DS-0A interface paddle board	SSLPP
NT9X78	BA, DA, CA	Enhanced DS-0A interface paddle board	SSLPP
NTEX22	BA, BB, CA	Integrated processor and F-bus interface card	SSLPP
NTEX26	AA	LIU channel bus interface card	SSLPP

Common procedures

This procedure refers to the following common procedures:

- *Activating CCS7 links*
- *Deactivating CCS7 links*
- *Loading a PM*
- *Replacing a card*
- *Reseating cards in equipment shelves*
- *Unseating cards in equipment shelves*
- *Verifying load compatibility of SuperNode cards*

LIU7 cards in an SSLPP (continued)

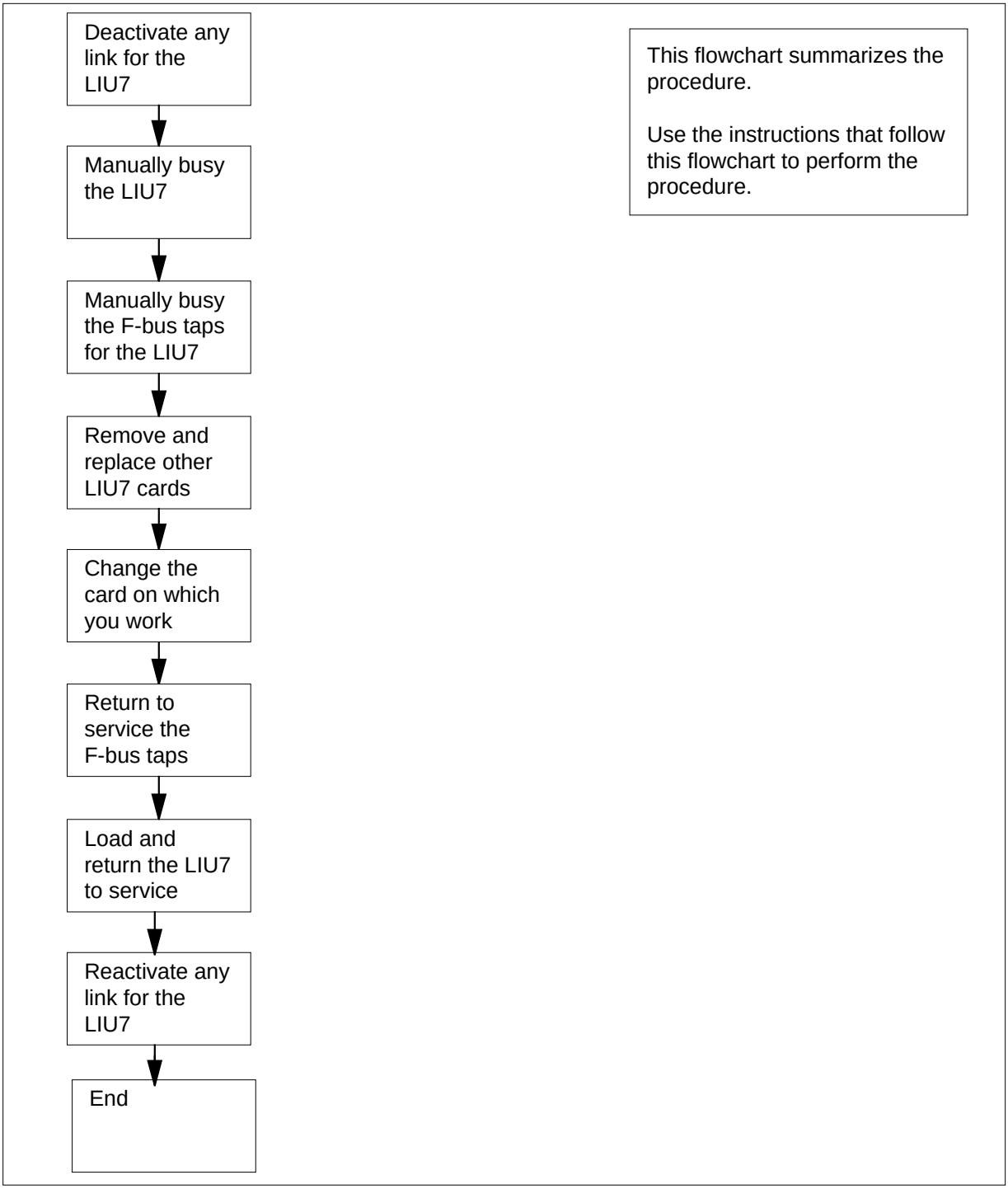
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

LIU7 cards in an SSLPP (continued)

Summar6y of Replacing LIU7 cards in an SSLPP



LIU7 cards in an SSLPP (continued)

Replacing LIU7 cards in an SSLPP

At your Current Location

1

WARNING
Loss of service
This procedure removes an LIU7 from service and temporarily interrupts messaging on the associated CCS7 link. Only perform this procedure when you need to return the LIU7 to service. Unless it is urgent, perform this procedure in periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card you remove.

2 Make sure that the replacement card is compatible with the software load. To make sure the card is compatible, perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

At the MAP terminal

3 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
 PM                    1        0        2        0        3        6
```

4 To post the LIU7 that contains the card you replace, type

`>POST  LIU7  liu_no`

and press the Enter key.

where

liu_no
is the number of the LIU7 (0 to 511)

Example of a MAP display:

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
 PM                    1        0        2        0        3        6
 LIU7                  1        0        0        0        0        3

LIU7   208 InSv       Rsvd
```

LIU7 cards in an SSLPP (continued)

5 Determine the state of the LIU7.

If the state of the LIU7	Do
is SysB, SysB (NA), ISTb, or InSv	step 6
is ManB or ManB (NA)	step 12
is OffL	step 40

6 To deactivate the CCS7 link that associates with the LIU7, use the procedure *Deactivating CCS7 links* in this document. Complete the procedure and return to this point.

7 To manually busy the LIU7, type

>BSY FORCE

and press the Enter key.

If	Do
you need to confirm the command	step 10
the command passed	step 12
WARNING: LIU7 208 is currently being imaged. Do you wish to abort imaging to proceed with the BSY request? Please confirm ("YES", "Y", "NO", or "N"):	step 8

8 Determine if it is safe to continue with this procedure.

If it is	Do
safe to proceed with BSY FORCE request	step 9
not safe, abort BSY FORCE request	step 42

9 To force bsy the LIU7, type

>YES

and press the Enter key. Go to step 12

Example of a MAP response:

```
Imaging will be aborted on LIU7 208.
```

LIU7 cards in an SSLPP (continued)

10 To confirm the command, type

>YES

and press the Enter key.

11 To access the CI level of the MAP display, type

> QUIT ALL

and press the Enter key.

12 To access table SUSHELF, type

>TABLE SUSHELF

and press the Enter key.

Example of a MAP display:

```
TABLE: SUSHELF
```

13 To list the contents of the table, type

>LIST ALL

and press the Enter key.

Example of a MAP display

LIU7 cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
-------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC        4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The controlling device (MS for SSLPP) is in column 1. The MS interface card number is in column 3. The port number on the MS is in column 4. The shelf number is in column 5. The frame type (EMC for SSLPP) is in column 9. The shelf position is in column 11.

14 Record the number of the MS interface for the SSLPP on which you work. Record the number of the port on the MS.

15 To quit table SUSHELF, type

`>QUIT`

and press the Enter key.

16 To access the MS level of the MAP display, type

`>MAPCI;MTC;MS`

and press the Enter key.

Example of a MAP display:

LIU7 cards in an SSLPP (continued)

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0    .           M Free                      . .
MS 1    .           Slave       .               . .
```

17 To access the F-bus level of the MAP display, type

>SHELF 0;CARD card_no;PORT port_no

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 14

port_no
is the MS port number that you recorded in step 14

Example of a MAP display for SuperNode:

```
Shelf    0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0     . . . . . . - . . . . . . . . . . . . . . .
MS 1     . . . . . . - . . . . . . . . . . . . . . .
Card 15  Port 00   FBusTap:  0    4    8
MS 0  .      .     .         .... ..-. ....
MS 1  .      .     .         .... ..-. ....
```

Example of a MAP display for SuperNode SE:

```
Shelf 0                 1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1  . . . . . - - . . . . . .
Card 04   Port 00   FBusTap:  0     4   8
MS 0  .      .      .         .... ..-. ....
MS 1  .      .      .         .... ..-. ....
```

Note 1: A dot under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: Code letters can appear under the F-bus tap numbers. A C indicates the F-bus is manual busy. A C can also indicate that the controlling MS or MS port is system busy or manual busy. An S indicates the F-bus tap is system busy. A dot indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline.

18 To determine which F-bus taps associate with the card you replace, type

>TRNSL 0

and press the Enter key.

LIU7 cards in an SSLPP (continued)

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers in the example are for the F-buses that both MSs control. The example MAP response indicates that tap 0 on F-bus 0 and tap 0 on F-bus 1 both associate with LIU7 number 200.

19 Record the tap number for the LIU7 on which you work.

20 To manually busy the LIU7 tap on F-bus 0, type

`>BSY  0  TAP  tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 19

Example of a MAP response:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
passed.
```

21 To manually busy the LIU7 tap on F-bus 1, type

`>BSY  1  TAP  tap_no  FORCE`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 19

Example of a MAP display:

```
Warning, P-side nodes may be isolated.
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

LIU7 cards in an SSLPP (continued)

22 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 7
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 7
passed.
```

At the SSLPP shelf

23

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on the frame supervisory panel (FSP) or the modular supervisory panel (MSP). This protects the cards against static electricity damage.

Determine your next action based on the type of card that you replace.

If you	Do
must replace an NT9X76	step 24
must replace an NTEX22	step 26
must replace a back plane card	step 29

24 To change an NT9X76 card, perform the following steps to unseat and reseat the cards in the LIU7 . To unseat a card, perform the procedure *Unseating cards in equipment shelves* in this document. To reseat a card, perform the procedure *Reseating cards in equipment shelves* in this document.

a Unseat the NT9X76 card.

b Unseat the NTEX22 card.

c Reseat the NTEX22 card.

25 To replace the NT9X76 card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you must replace has switches, make sure that the switches on the replacement card have the same settings.

Go to step 30.

LIU7 cards in an SSLPP (continued)

26 To change an NTEX22 card, first perform the procedure *Unseating cards in equipment shelves* in this document. Complete the procedure and return to this point.

27 To replace the NTEX22 card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you must replace has switches, make sure that the switches on the replacement card have the same settings.

28 To reseat the NT9X76 card, perform the procedure *Reseating cards in equipment shelves* in this document. Complete the procedure and return to this point.

Go to step 30.

29 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you must replace has switches, make sure that the switches on the replacement card have the same settings.

At the MAP terminal

30 To return to service the F-bus 0 tap you busied in step 20, type

`>RTS 0 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 19

Example of a MAP response:

```
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
submitted.
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 7
passed.
```

If the RTS command	Do
passed	step 31
failed	step 41

31 To return to service the F-bus tap that you busied in step 21, type

`>RTS 1 TAP tap_no`

and press the Enter key.

where

LIU7 cards in an SSLPP (continued)

tap_no
is the number of the F-bus tap that you recorded in step 19

If the RTS command	Do
passed	step 32
failed	step 41

32 The next action depends on the reason you performed this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 33
did not direct you to this procedure	step 34

33 Return to the maintenance procedure that sent you to this procedure and continue as directed.

34 To access the PM level of the MAP display, type

>PM

and press the Enter key

35 To post the LIU7 you are working on, type

>POST LIU7 liu_no

and press the Enter key.

where

liu_no
is the number of the LIU7 (0 to 511)

36 To load the LIU7, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
LIU7 208 LOADPM Passed
```

If the LOADPM command	Do
passed	step 38
failed	step 37

37 To load the LIU7, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

LIU7 cards in an SSLPP (end)

38 To return the LIU7 to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
LIU7 100 RTS Passed
```

If the RTS command	Do
passed	step 39
failed	step 41

39 To activate the CCS7 link associated with the LIU7, perform the procedure *Activating CCS7 links* in this document. Complete the procedure and return to this point.

Go to step 43.

40 Contact operating company personnel to determine why the component is offline. Continue as operating company personnel direct.

41 For additional help, contact the next level of support.

42 Abort the BSY FORCE request, type

>NO

and press the Enter key.

Example of a MAP response:

```
BSY command aborted due to imaging in progress.
```

43 The procedure is complete.

NIU cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

PEC	Suffix	Card name	Shelf or frame name
NTEX22	BB, CA	Integrated processor and F-bus interface card	SSLPP
NTEX25	AA, BA	NIU channel bus controller card	SSLPP
NTEX28	AA	NIU DS30 link interface paddle board	SSLPP

Refer to the Index if you cannot identify one of the following features for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The Index contains a list of the cards, shelves, and frames documented in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- *Loading a PM*
- *Replacing a card*
- *Verifying load compatibility of SuperNode cards*

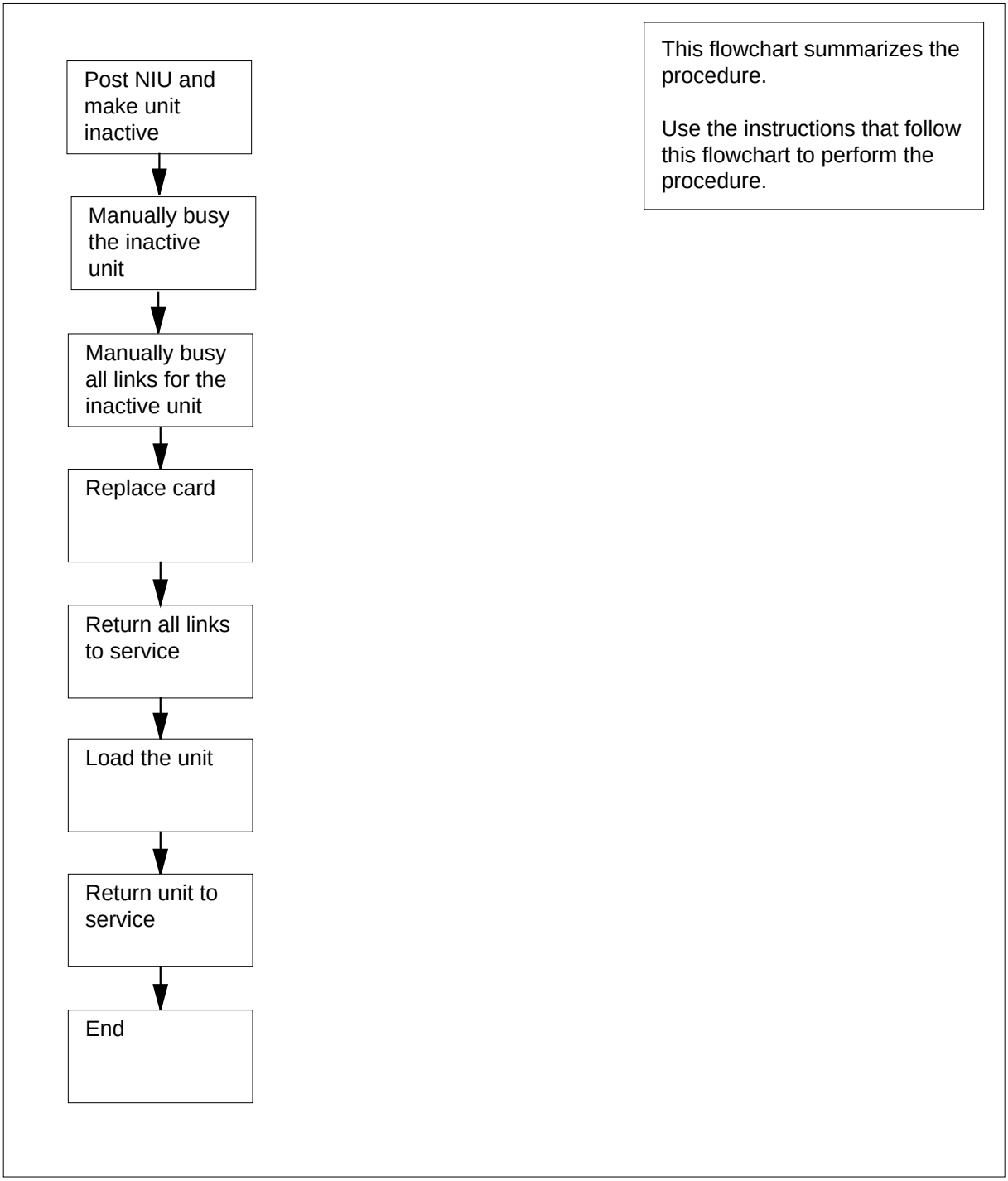
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NIU cards in an SSLPP (continued)

Summary of Replacing NIU cards in an SSLPP



NIU cards in an SSLPP (continued)

Replacing NIU cards in an SSLPP

At your Current Location

1

WARNING
Service degradation
If you remove an NIU unit from service you eliminate NIU redundancy for the shelf. If the in-service NIU unit goes out of service at any time during this maintenance procedure, this affects channelized access for ASUs on the shelf. Perform this procedure during high traffic periods only if you need to return the NIU to service. Unless it is urgent, perform this procedure during periods of low traffic only.

WARNING
Loss of packet handler service
If you remove the NTEX28 paddle board, a temporary loss of service can occur on associated X.25/X.75 link interface units (XLIU). Perform this procedure during high traffic periods when you need to return the NIU to service. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure the replacement card and the card you remove have the same PEC and PEC suffix.

2 Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. You must perform this procedure to make sure the replacement card is compatible with the software load. Complete the procedure and return to this point.

At the MAP terminal

3 To access the PM level of the MAP display, type

```
>MAPCI;MTC;PM
```

and press the Enter key

Example of a MAP display:

NIU cards in an SSLPP (continued)

```
           SysB     ManB     OffL     CBsy     ISTb      InSv
PM            0        0        1        0        2        48
NIU           0        0        0        0        0         1
```

4 To post the NIU that contains the card you replace, type

`>POST NIU niu_no`

and press the Enter key

where

niu_no
is the NIU number (0 to 29)

Example of a MAP display:

```
           SysB     ManB     OffL     CBsy     ISTb      InSv
PM            0        0        1        0        2        48
NIU           0        0        0        0        0         1

NIU 1:  InSv
Unit 0:  InAct InSv
Unit 1:  Act   InSv
```

5 Determine the state of the NIU unit that contains the card you replace.

If the state of the NIU unit	Do
is ISTb, InSv, SysB, SysB (NA), ISTb (NA), or ManB (NA), and active	step 6
is ISTb, InSv, SysB, SysB (NA), ISTb (NA), or ManB (NA), and inactive	step 9
is ManB	step 12
is OffL	step 47

6 Determine the state of the mate NIU unit.

If the state of the mate NIU unit	Do
is ISTb or InSv	step 8
is other than listed here	step 7

7 The mate unit is not in service. If you busy the unit a loss of service occurs. Contact the next level of support. Continue as directed by the next level of support.

NIU cards in an SSLPP (continued)

8 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
NIU 1 SwAct PM: Request has been submitted.
NIU 1 SwAct PM:  Command completed.
The node has switched activity
```

If the SWACT command	Do
passed	step 9
failed	step 48

9 To manually busy the inactive NIU unit, type

>BSY INACTIVE

and press the Enter key.

Example 1 of a MAP display:

```
NIU 1 Busy Inactive Unit: Request has been submitted.
NIU 1 Busy Inactive Unit: Command completed.
The Unit is manually busy.
```

Example 2 of MAP display:

```
Imaging is currently in progress on NIU x Unit Y. Busying
the NIU will cause imaging on this NIU to be aborted.

Do you wish to continue?
Please conform ("YES", "Y", "NO" or "N").
```

If the response is	Do
as shown in example 2	step 10
anything else	step 12

10 Imaging is being performed on the NIU unit you are working on. Contact the next level of support to determine if it is safe to proceed. Continue as directed.

If the response is	Do
yes, proceed with busy	step 11

NIU cards in an SSLPP (continued)

If the response is	Do
no, abort busy	step 49

11 To confirm Busy, type

>YES

and press the Enter key.

Example of a MAP response:

```
Imaging will be aborted on NIU x, Unit y.
```

12 The next action depends on the type of card that you replace.

If the card	Do
is an NTEX28	step 13
is other than listed here	step 15

13 To access the DEVICES level of the MAP display, type

>DEVICES

and press the Enter key

Example of a MAP display:

```
            SysB    ManB    OffL    CBsy    ISTb   InSv
 PM            0       0       1       0       5     45
 NIU           0       0       0       0       1      0

NIU 1:  ISTb
Unit 0:  InAct ManB
Unit 1:  Act   InSv

         Net Links
         0 1 2 3           CBUS ports OOS
PB 0     . . . .               2
PB 1     . . . .               .
```

14 To manually busy all the links for the NIU, type

>BSYLNKS INACTIVE

and press the Enter key

Example of a MAP display:

NIU cards in an SSLPP (continued)

```
          Net Links
          0 1 2 3           CBUS ports  OOS
PB 0      P P P P               2
PB 1      . . . .               .
BSYLNKS INACTIVE
Command completed.
```

Note: Paddleboard 0 associates with NIU unit 0. Paddleboard 1 associates with NIU unit 1.

If the BSYLNKS command	Do
passed	step 15
failed	step 48

15 To access the CI level of the MAP display, type

>QUIT ALL

and press the Enter key.

16 To access table SUSHELF, type

>TABLE SUSHELF

and press the Enter key.

Example of a MAP display

```
TABLE: SUSHELF
```

17 To list the contents of the table, type

>LIST ALL

and press the Enter key.

Example of a MAP display:

NIU cards in an SSLPP (continued)

```
      SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                                CARDINFO
-------------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC       4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC       4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The controlling device (MS for SSLPP) appears in column 1. The MS interface card number appears in column 3. The port number on the MS appears in column 4. The shelf number appears in column 5. The frame type (EMC for SSLPP) appears in column 9. The shelf position appears in column 11.

18 Record the number of the MS interface card that associates with the SSLPP. Record the number of the port on the MS.

19 To quit table SUSHELF, type

`>QUIT`

and press the Enter key.

20 To access the MS level of the MAP display, type

`>MAPCI;MTC;MS`

and press the Enter key.

Example of a MAP display:

NIU cards in an SSLPP (continued)

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0    .           M Free                      . .
MS 1    .           Slave       .               . .
```

Note: A dot (.) under the Message Switch header indicates the MS is in service. The letter S indicates the MS is system busy. The letter M indicates the MS is manually busy. The letter I indicates the MS is in-service trouble. The letter O indicates the MS is offline.

21 Determine the state of the MS that controls the mate F-bus.

Note: MS 0 controls F-bus 0. F-bus 0 is the mate F-bus for a card in slot 32F, 32R, or 30R. MS 1 controls F-bus 1. F-bus 1 is the mate F-bus for a card in slot 7F, 7R, or 8R.

If the MS that controls the mate F-bus	Do
is in service or in-service trouble	step 23
is other than listed here	step 22

22 Perform the correct MS alarm clearing procedure in *Alarm and Performance Monitoring Procedures* to return the MS to service. Complete the procedure and return to this point.

23 To access the F-bus level of the MAP display, type

`>SHELF 0;CARD card_no;PORT port_no`

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 18

port_no
is the MS port number that you recorded in step 18

Example of a MAP display for SuperNode:

```
Shelf    0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0     . . . . . . - . . . . . . . . . . . . . . . . . . .
MS 1     . . . . . . - . . . . . . . . . . . . . . . . . . .
Card 15    Port 00   FBus Tap:0   4   8
MS 0         .      .  .       . .....-.....
MS 1          .      .   .      ......-.....
```

Example of a MAP display for SuperNode SE:

NIU cards in an SSLPP (continued)

```
Shelf 0                  1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1. . . . . - - . . . . . .
Card 04   Port 00   FBus Tap:0   4   8
 MS 0     .      .   .          ......-.....
MS 1      .      .   .          ......-.....
```

Note 1: A dot (.) under the F-bus header indicates the F-bus is in service. The letter S indicates the F-bus is system busy. The letter M indicates the F-bus is manual busy. The letter I indicates the F-bus is in-service trouble. The letter O indicates an the F-bus is offline.

Note 2: Letter codes can appear under the F-bus tap numbers. The letter C indicates the F-bus is manual busy. The letter C can indicate the controlling MS or MS port is system busy or manually busy. The letter S indicates the F-bus tap is system busy. A dot (.) indicates the F-bus tap is in service. The letter M indicates the F-bus tap is manually busy. The letter I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline.

24 To determine the F-bus taps associate with the card you replace, type

`>TRNSL  0`

and press the Enter key.

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers are for the F-buses that both MSs control. The example MAP response indicates that tap 5 on F-bus 0 and tap 5 on F-bus 1 both associate with unit 0 of NIU 5.

25 Record the tap number that associates with the NIU unit.

26 To manually busy the NIU tap on F-bus 0, type

`>BSY  0  TAP  tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap you recorded in step 25

Example of a MAP response:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
passed.
```

27 To manually busy the NIU tap on F-bus 1, type

>BSY 1 TAP tap_no FORCE

and press the Enter key.

where

tap_no
is the number of the F-bus tap you recorded in step 25

Example of a MAP response:

```
Warning, P-side nodes may be isolated.
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

28 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 6
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 6
passed.
```

29 The next action depends on the type of card you replace.

If the card	Do
is an NTEX28	step 30
is other than listed here	step 37

NIU cards in an SSLPP (continued)

At the SSLPP shelf

30

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

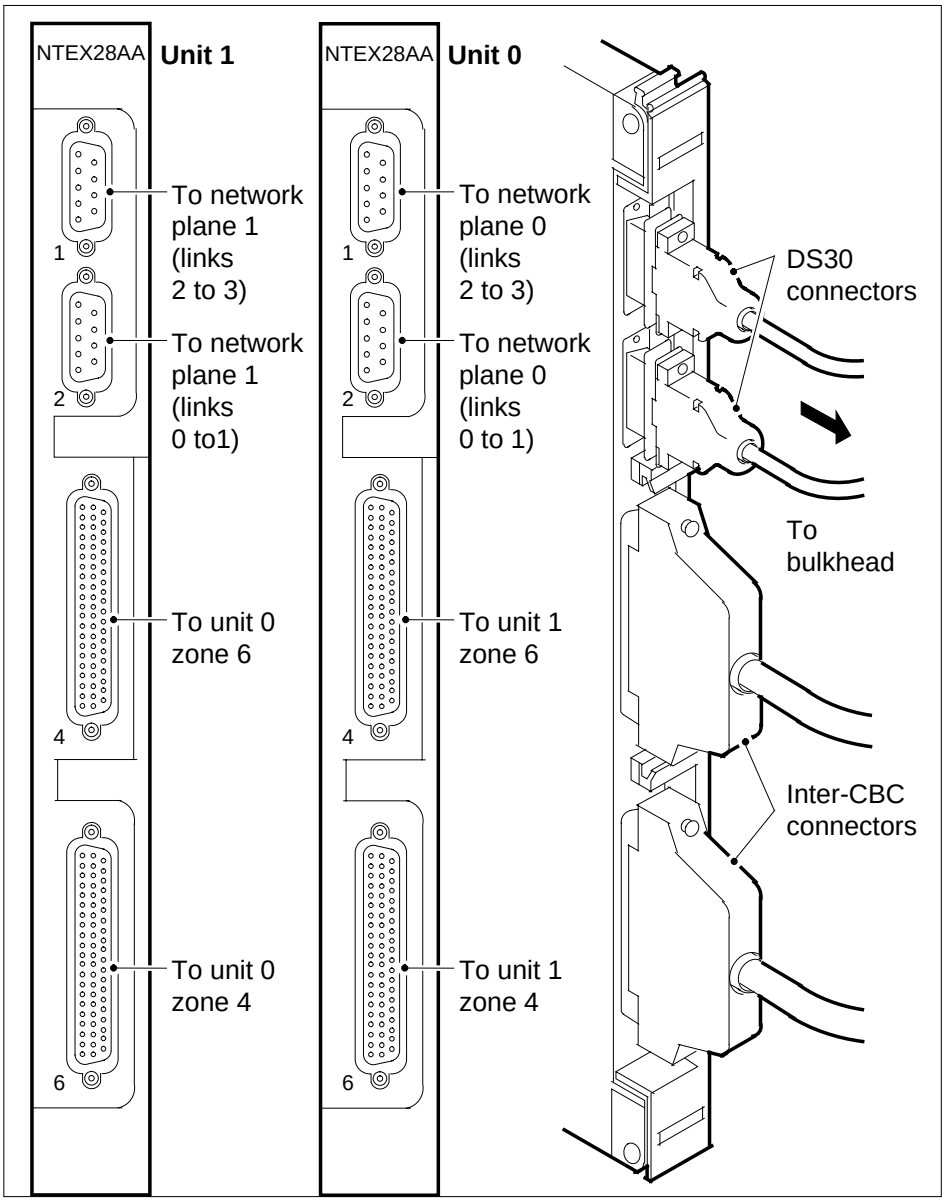
WARNING
Possible loss of service
Do not cross-connect the cables when you connect the cables to the new NTEX28 paddle board. If you cross-connect the cables a loss of service occurs when you return the NIU to service.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note 1: Determine if the card you replace has switches. Make sure the switches on the replacement card and the card you replace have the same settings.

Note 2: When you remove the NTEX28 card and insert the replacement card, use the following diagram to identify and label connectors.

NIU cards in an SSLPP (continued)



At the MAP terminal

31 To access the PM level of the MAP display, type

```
>MAPCI;MTC;PM
```

and press the Enter key

32 To post the NIU that contains the card you replace, type

```
>POST  NIU  niu_no
```

NIU cards in an SSLPP (continued)

and press the Enter key

where

niu_no
is the NIU number (0 to 29)

33 To access the DEVICES level of the MAP display, type

>DEVICES

and press the Enter key

34 To return the links to service, type

>RTSLNKS INACTIVE

and press the Enter key

Example of a MAP display:

```
          Net Links
         0 1 2 3           CBUS ports OOS
PB 0     . . . .               2
PB 1     . . . .               .
RTSLNKS INACTIVE
Command completed.
```

If the RTSLNKS command	Do
passed	step 35
failed	step 48

35 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

36 To access the F-bus level of the MAP display, type

>SHELF 0;CARD card_no;PORT port_no

and press the Enter key.

where

card_no
is the MS card number you recorded in step 18

port_no
is the MS port number you recorded in step 18

Go to step 38.

NIU cards in an SSLPP (continued)

At the SSLPP shelf

37

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Determine if the card you replace has switches. Make sure the switches on the replacement card and the card you replace have the same settings.

At the MAP terminal

38 To return the F-bus 0 tap you busied in step 26 to service, type

`>RTS 0 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap you recorded in step 25

Example of a MAP response:

```
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
submitted.
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 6
passed.
```

If the RTS command	Do
passed	step 39
failed	step 48

39 To return the F-bus tap you busied in step 27 to service, type

`>RTS 1 TAP tap_no`

and press the Enter key.

where

NIU cards in an SSLPP (continued)

tap_no
is the number of the F-bus tap you recorded in step 25

If the RTS command	Do
passed	step 40
failed	step 48

40 The next action depends on why you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 41
did not direct you to this procedure	step 42

41 Return to the maintenance procedure that sent you to this procedure. Continue as directed by the maintenance procedure.

42 To access the PM level of the MAP display, type

>PM

and press the Enter key

43 To post the NIU that contains the card you replace, type

>POST NIU niu_no

and press the Enter key

where

niu_no
is the NIU number (0 to 29)

44 To load the NIU unit, type

>LOADPM INACTIVE

and press the Enter key

Examples of MAP responses:

Example 1

```
NIU 1 Load Inactive Unit: Request has been submitted.
NIU 1 Load Unit 0: Command completed.
The Unit contains the "NRS0 123BA" load.
```

Example 2

```
Warning: Loadfile NRS09BA is meant for an EX22BB.
Warning: NIU 2 Unit 1 has been datafilled with an EX22CA.
Warning: Load/Processor mismatch.
Warning: Valid only for EX22 upgrades.
NIU 2 load Inactive Unit: Request has been submitted.
NIU 2 Load Unit 1: Command completed.
The Unitcontains the "NRS09BA" load.
```

If the LOADPM command	Do
passed	step 46
failed	step 45

45 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

46 To return the NIU unit to service, type

>RTS INACTIVE

and press the Enter key

Example of a MAP response:

```
NIU 1 RTS Inactive Unit: Request has been submitted.
NIU 1RTS Inactive Unit: Command completed.
The Unit is in service trouble.
```

If the RTS command	Do
passed	step 50
failed	step 48

47 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

48 For additional help, contact the next level of support.

49 To abort Busy, type

>NO

and press the Enter key. Busy request has been aborted, node imaging is continuing.

Example of a MAP response:

```
Aborted.
```

50 This procedure is complete.

Power converter cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card you replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X30	AA	+5V 86-A power converter	SSLPP
NT9X30	AB	Global +5V 86-A power converter	SSLPP
NT9X31	AA, AB	-5V 20-A power converter	SSLPP

Note: This procedure applies to cards in SSLPP supported by SuperNode and SuperNode SE.

Common procedures

This procedure refers to the following common procedures:

- *Activating CCS7 links*
- *Deactivating CCS7 links*
- *Loading a PM*
- *Moving an XSG to a spare XLIU*
- *Replacing a card*
- *Reseating cards in equipment shelves*
- *Unseatiing cards in equipment shelves*
- *Verifying load compatibility of SuperNode cards*

Do not go to the common procedure unless the step action procedure directs you to go.

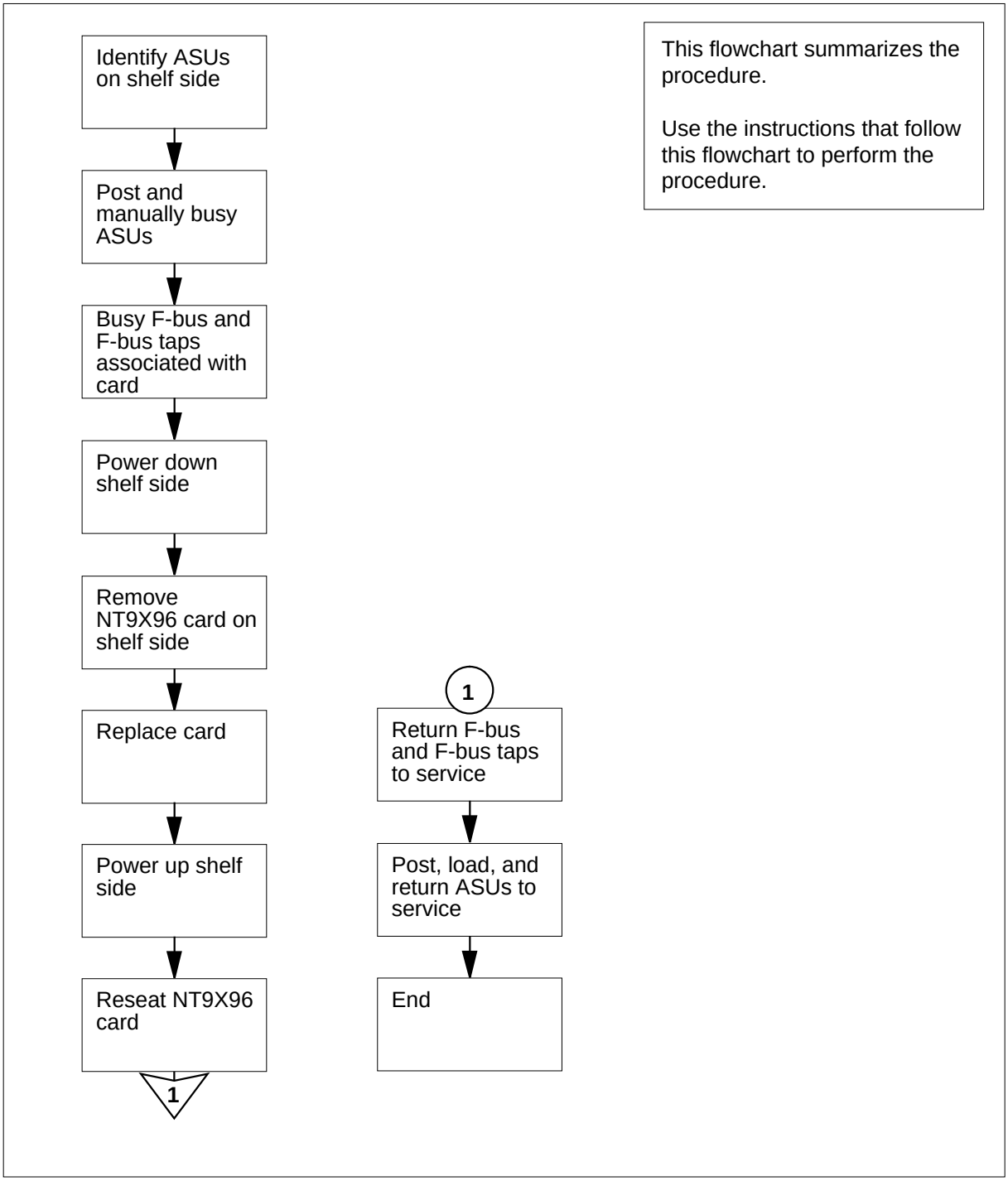
Power converter cards in an SSLPP (continued)

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Power converter cards in an SSLPP (continued)

Summary of Replacing Power converter cards in an SSLPP



Power converter cards in an SSLPP (continued)

Replacing Power converter cards in an SSLPP

At your Current Location

1

CAUTION
Loss of service
This procedure removes from service all application specific units (ASU) for a complete shelf side. Service that ASUs provide degrades or stops for several hours. After you replace the power converter card, reload the peripheral modules (PM) for all ASUs on the shelf side. Perform this procedure during high traffic periods only if you must return power to the shelf side. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card you remove.

2 Make sure that the replacement card is compatible with the software load. Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

3 From office records or operating company personnel, determine the location of the SSLPP that contains the card.

4 The next step depends on the information on the ASUs in the SSLPP that contains the card you replace.

The following ASUs are available on an SSLPP:

- network interface units (NIU)
- CCS7 link interface units (LIU7)
- X.25/X.75 interface units (XLIU)
- Ethernet interface units (EIU)
- frame-relay interface units (FRIU)

If you	Do
know the PM number and slot locations of each ASU on the SSLPP	step 15

Power converter cards in an SSLPP (continued)

If you	Do
do not know the PM number and slot locations of each ASU on the SSLPP	step 5

5 To access the CI level of the MAP display, type

>QUIT ALL

and press the Enter key.

6 To access table NIUINV, type

>TABLE NIUINV;FORMAT PACK

and press the Enter key.

Example of a MAP display:

```
JOURNAL FILE NOT AVAILABLE - DMOS NOT ALLOWED TABLE: NIUINV
<line length>:   76 columns can be output per line.
<pack mode>:     Pack mode is ON.
<indent column>:Indented lines will begin in column 1.
<first column>:  Thefirst column of output is column 1.
```

7 To list the NIUs available, type

>LIST ALL

and press the Enter key.

Example of a MAP display:

```
NUMBER LOCATION LOAD U0INFO U1INFO  NETLINKS
----------------------------------------
1 MS12 0 2 NRS04AY NTEX22BB NTEX25AA NTEX28AA NTEX22BB NTEX25BA NTEX28AA
(0 13 0 0) (0 13 1 0) (0 13 2 0) (0 13 3 0) $

2 LIM 0 1 NRS04AY NTEX22BB NTEX25AA NTEX28AA NTEX22BB  NTEX25BA NTEX28AA
(0 15 0 0) (0 15 1 0) (0 15 2 0) (0 15 3 0) $

3 LIM 0 2 NRS04AY NTEX22BB NTEX25AA NTEX28AA NTEX22BB  NTEX25BA NTEX28AA
(0 15 4 0) (0 15 5 0) (0 15 6 0) (0 15 7 0) $

4 LIM 0 3 NRS04AY NTEX22BB NTEX25AA NTEX28AA NTEX22BB  NTEX25BA NTEX28AA
(0 15 8 0) (0 15 9 0) (0 15 10 0) (0 15 11 0) $

5 MS 6 0 1 NRS04AY NTEX22BB NTEX25AA NTEX28AA NTEX22BB NTEX25BA NTEX28AA
(0 15 12 0) (0 15 13 0) (0 15  14 0) (0 15 15 0) $
```

Note: The NIU number is in column 1. The controlling device (MS for SSLPP) is in column 2. The number of the associated interface card on

Power converter cards in an SSLPP (continued)

the MS is in column 3. The number of the associated port on the MS is in column 4. The slot number of the the top left ASU card is in column 7.

If an NIU	Do
is in the SSLPP that contains the card you replace	step 8
is not in the SSLPP that contains the card you replace	step 9

8 Record the number of the NIU in the SSLPP on which you work. Record the number of the associated MS interface card and MS port.

9 To quit table NIUINV, type

```
>QUIT
```

and press the Enter key.

10 To access table LIUINV, type

```
>TABLE  LIUINV;FORMAT  PACK
```

and press the Enter key.

11 To list all ASUs in the office, type

```
>LIST  ALL
```

and press the Enter key.

Example of a MAP display:

Power converter cards in an SSLPP (continued)

```
LIUNAME LOCATION LOAD PROCINFO CARDINFO
---------------------------------------
LIU7 400MS 17 0 1 8 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI

LIU7 401 MS 17 0 1 10 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 410 MS 17 0 1 28 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI

FRIU 403 MS 17 0 1 14 F8X04AMTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN
DS1_LLEQ_125 ESF N B8ZS

FRIU 404 MS 17 0 1 16 F8X04AY NTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN
DS1_LLEQ_125 ESF N B8ZS

FRIU 407 MS 170 1 22 F8X04AY NTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN
DS1_LLEQ_125 ESF N B8ZS

FRIU 408 MS 17 0 1 24 F8X04AMTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN
DS1_LLEQ_125 ESF N B8ZS

XLIU 402 MS 17 0 1 12 XRX04AY NTEX22BB NTFX10AA  NTFX09AA N
XLIU 409 MS 17 0 1 26 XRX04AY NTEX22BB NTFX10AA  NTFX09AA N
LIU7 100 LIM 1 1 9 ARS04AY NTEX22BB NT9X76AA  NTEX26AA $ 56000 ABI
LIU7 101 LIM 1 1 12 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 106 LIM 1 1 27 ARS04AMTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 107 LIM 1 1 30ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 108 LIM 1 2 9 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 110 LIM 1 2 15 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 115 LIM 1 2 30 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABI
LIU7 118 LIM 1 3 15 ARS04AY NTEX22BB NT9X76AA NTEX26AA $ 56000 ABII
```

Note: The ASU number is in columns 1 and 2. The controlling device (MS for SSLPP) is in column 3. The number of the associated interface card on the MS is in column 4. The number of associated port on the MS is in column 5. The slot number of the the top left ASU card is in column 7.

12 Record the number of the MS interface card that associates with the SSLPP on which you work. Record the number of the associated port on the interface card in the MS.

13 Record the number and slot location for each ASU on the side of the SSLPP that contains the power converter card you replace.

14 To quit table LIUINV, type

>QUIT

and press the Enter key.

Power converter cards in an SSLPP (continued)

At the MAP terminal

15

ATTENTION

The following routines provide instructions to remove ASUs from service in this order: NIU, LIU7, XLIU, FRIU, and EIU.

The priority of services that the ASUs support can require you to remove ASUs from service in a different order. The configuration of the shelf side can require you to remove ASUS from service in a different order. Contact operating company personnel or the next level of support to verify service priorities.

To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
   SysB    ManB    OffL    Cbsy    ISTb    InSv
PM   11       0      11       4      16      38
```

16 The next step depends on if NIUs are present in the SSLPP that contains the card you replace.

If an NIU	Do
is present on the SSLPP	step 17
is not present on the SSLPP	step 26

17

CAUTION

Potential loss of channelized access

The next routine removes an NIU unit from service, which eliminates NIU redundancy for the SSLPP. If the in-service NIU unit goes out of service during this maintenance procedure, the loss of service affects channelized access. This loss affects Channelized access for ASUs on both sides of the SSLPP.

To post the NIU, type

>POST NIU niu_no

and press the Enter key.

Power converter cards in an SSLPP (continued)

where

niu_no
is the NIU number (0 to 29)

Example of a MAP display:

```
                SysB    ManB    OffL    Cbsy    ISTb   InSv
  PM              0       0       1       0       2     48
  NIU             0       0       0       0       0      1
NIU 1:  InSv
Unit 0:  InAct InSv
Unit 1:  Act   InSv
```

18 Determine the state of the NIU unit associated with the shelf side on which you work.

If the state of the NIU unit	Do
is ISTb, InSv, SysB, SysB (NA), ISTb (NA), or ManB (NA), and active	step 19
is ISTb, InSv, SysB, SysB (NA), or ISTb (NA), and inactive	step 22
is ManB or ManB (NA)	step 26
is OffL	step 123

19 Determine the state of the mate NIU unit.

If the state of the mate NIU unit	Do
is ISTb or InSv	step 21
is other than listed here	step 20

20 The mate NIU unit is not in service. If you busy the unit you work on, a loss of service occurs. Contact the next level of support and proceed as directed.

21 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

Power converter cards in an SSLPP (continued)

```
NIU 1 SwAct PM: Request has been submitted.
NIU 1 SwAct PM:Command completed.
The node has switched activity
```

If the SWACT command	Do
passed	step 22
failed	step 124

22 To manually busy the inactive NIU unit, type

>BSY INACTIVE

and press the Enter key.

Example 1 of a MAP response:

```
NIU 1 Busy Inactive Unit: Request has been submitted.
NIU 1 Busy Inactive Unit: Command completed.
The Unit is manually busy.
```

Example 2 of MAP display:

```
Imaging is currently in progress on NIU x Unit Y. Busying
the NIU will will cause imaging on this NIU to be aborted.
Do you wish to continue?
Please conform ("YES", "Y", "NO" or "N").
```

If the response is	Do
as shown in example 2	step 23
anything else	step 25

23 Imaging is being performed on the NIU unit you are working on. Contact the next level of support to determine if it is safe to proceed. Continue as directed.

If the response is	Do
yes, proceed with busy	step 24
no, abort busy	step 125

24 To confirm Busy, type

>YES

and press the Enter key.

Example of a MAP response:

Power converter cards in an SSLPP (continued)

```
Imaging will be aborted on NIU x, Unit y.
```

25 The next step depends on if CCS7 link interface units (LIU7) are on the side of the SSLPP that contains the card you replace.

If the SSLPP	Do
has LIU7s	step 26
does not LIU7s	step 33

26

CAUTION
Loss of service
The following routine removes an LIU7 from service. This temporarily interrupts messaging on the associated CCS7 link.

To post the LIU7, type

>POST LIU7 liu_no

and press the Enter key.

where

liu_no
is the LIU7 number (0 to 511)

Example of a MAP display:

```
          SysB    ManB    OffL    Cbsy    ISTb    InSv
PM           1       0       2       0       3       6
LIU7         1       0       0       0       0       3

LIU7   208 InSv       Rsvd
```

27 To deactivate the CCS7 link associated with the LIU7, perform the procedure *Deactivating CCS7 links* in this document. Complete the procedure and return to this point.

28 Determine the state of the LIU7.

Note: The state of the LIU7 appears on the right of the LIU7 number. Refer to the example MAP display in step 26.

If the state of the LIU7	Do
is SysB, SysB (NA), ISTb, or InSv	step 29

Power converter cards in an SSLPP (continued)

If the state of the LIU7	Do
is ManB or ManB (NA)	step 32
is OffL	step 123

29 To manually busy the LIU7, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
LIU7 201 BSY passed.
```

If	Do
you need to confirm the command	step 31
the command passed	step 32
The MAP response is Warning: LIU7 201 is currently being imaged. Do you want to abort imaging to proceed with the BSY request?Please confirm ("YES", "Y","NO" or "N"):	step 30

30 Continue the procedure.

If you	Do
proceed with BSY FORCE request	step 31
abort BSY FORCE request	step 125

31 To confirm the command, type

>YES

and press the Enter key.

32 Repeat steps 26 to 31 for all LIU7s on the shelf side on which you work.

33 The next step depends on if XLIUs are present on the side of the SSLPP that contains the card you replace.

If XLIUs	Do
are present on the SSLPP	step 34
are not present on the SSLPP	step 41

Power converter cards in an SSLPP (continued)

34

CAUTION
Loss of packet handler service
The following routine removes an XLIU from service. This routine interrupts traffic on associated X.25/X.75 channels.

To post the XLIU, type

>POST XLIU xliu_no

and press the Enter key.

where

xliu_no
is the XLIU number (0 to 511)

Example of a MAP display:

```
              SysB     ManB     OffL     Cbsy     ISTb    InSv
PM               0        2       23        0       10      30
XLIU             0        0        0        0        0       3

XLIU    27 InSv        Rsvd
```

35 Determine the state of the XLIU.

Note: The state of the XLIU appears on the right of the XLIU number. Refer to the example MAP display in step 34.

If the state of the XLIU	Do
is SysB, ISTb (NA), ManB, ISTb, or InSv	step 36
is OffL	step 123

36 Determine if the XLIU is a spare.

Note: The code Spre on the right side of the service condition identifies a spare. Refer to the example MAP display. The code Rsvd identifies an XLIU with an assigned X.25/X.75 service group (XSG).

If the XLIU	Do
is a spare, and the state is ManB	step 40
is a spare, and the state is other items	step 39

Power converter cards in an SSLPP (continued)

If the XLIU	Do
is not a spare	step 37

37 Determine from office records or from operating company personnel the number of a spare XLIU.

Note: The spare XLIU must be on the same shelf as the out-of-service XLIU.

If a spare XLIU	Do
is available	step 38
is not available and the reserved XLIU is out of service	step 39
is not available and the reserved XLIU is in service	step 120

38 Move the XSG from the reserved XLIU to the spare XLIU. Perform the procedure *Moving an XSG to a spare XLIU* in this document. Complete the procedure and return to this point.

Note: The XLIU that associates with the card you replace is now the spare. All the next steps refer to this XLIU as the spare.

Go to step 40.

39 To manually busy the XLIU, type

>BSY

and press the Enter key.

Example of a MAP response:

```
XLIU 27 BSY Passed
```

40 Repeat steps 34 to 39 for the other XLIUs on the shelf side that you work on.

41 The next step depends on if FRIUs are on the side of the SSLPP that contains the card you replace.

If an FRIU	Do
is present on the SSLPP	step 42
is not present on the SSLPP	step 56

Power converter cards in an SSLPP (continued)

42

CAUTION
Loss of frame relay service
The following routine removes an FRIU from service and temporarily interrupts traffic on the associated access or trunking DS-1 channels.

To post the FRIU, type

>POST FRIU friu_no

and press the Enter key.

where

friu_no
is the FRIU number (0 to 500)

Example of a MAP display:

```
          SysB    ManB    OffL    Cbsy    ISTb     InSv
PM           1       0      27       0       8       29
FRIU         1       0      19       0       6       28

FRIU     8 InSv       Rsvd
```

43 Determine the state of the FRIU.

Note: The state of the FRIU appears on the right of the FRIU number. Refer to the example MAP display in step 42.

If the state of the FRIU	Do
is SysB, ISTb (NA), InSv, or ISTb	step 44
is ManB	step 55
is OffL	step 123

44 To access the CHAN level of the MAP display, type

>CARR;CHAN

and press the Enter key.

Example of a MAP display:

Power converter cards in an SSLPP (continued)

```
              SysB    ManB    OffL    Cbsy    ISTb     InSv
       PM        1       0      27       0       8       29
       FRIU      1       0      19       0       6       28

FRIU     8 InSv       Rsvd


CARRIER                          Alarm   BER     ES   SES   UAS
InSv                                    -8.3     0     0     0

CHANNEL  1
         .


CHANNEL    1        ( 24  x DS0)
InSv
CHAN:
```

45 Determine if the FRIU is channelized.

Note: A non-channelized FRIU has one assigned channel. A channelized FRIU has either four or 24 assigned channels.

If the FRIU	Do
is non-channelized	step 46
is channelized	step 48

46 To manually busy the channel, type

>BSY

and press the Enter key.

47 To confirm the command, type

>YES

and press the Enter key.

Note: If the channel is out of service, the system does not request confirmation.

Go to step 50.

48 To manually busy all channels, type

>BSY ALL

and press the Enter key.

49 To confirm the command, type

>YES

and press the Enter key.

Note: If all channels are out of service, the system does not request confirmation.

Power converter cards in an SSLPP (continued)

50 To access the CARR level of the MAP display, type

>QUIT

and press the Enter key.

Example of a MAP display:

```
             SysB    ManB    OffL    Cbsy    ISTb    InSv
     PM         1       0      27       0       8      29
     FRIU       1       0      19       0       6      28

FRIU     8 InSv       Rsvd

CARRIER                  Alarm   BER     ES   SES   UAS
InSv                             -8.3     0     0     0

CHANNEL  1
         .
```

51 To manually busy the carrier, type

>BSY

and press the Enter key.

Example of a MAP response:

```
 Busying this carrier will affect 1 channels.
 Pleaseconfirm ("YES", "Y", "NO", or "N"):
```

52 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Confirmed...BSY passed.
```

Note: If the carrier is out of service, the system does not request confirmation.

53 To quit the CARR level, type

>QUIT

and press the Enter key.

54 To manually busy the FRIU, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
FRIU 8 BSY Passed
```

Power converter cards in an SSLPP (continued)

55 Repeat steps 42 to 54 for all FRIUs on the shelf side on which you work.

56 The next step depends on if EIUs are on the side of the SSLPP that contains the card you replace.

If EIUs	Do
are present on the shelf side	step 57
are not present on the shelf side	step 63

57

CAUTION
Loss of service capacity
The following routine can remove an EIU from service. This makes the Ethernet address not available to the LAN. If there are no other EIUs that provide alternative addresses to the LAN, the system isolates ASUs on the shelf.

To post the EIU, type

>POST EIU eiu_no

and press the Enter key.

where

eiu_no
is the EIU number (0 to 511)

Example of a MAP display:

```
          SysB     ManB     OffL     Cbsy     ISTb     InSv
    PM       2        0        7        0       14       63
    EIU      0        0        0        0        0        1

EIU      1 InSv       Rsvd
```

58 Determine the state of the EIU.

If the state of the EIU	Do
is SysB, SysB (NA), ISTb, or InSv	step 59
is ManB or ManB (NA)	step 61
is Offl	step 123

59 To manually busy the EIU, type

>BSY FORCE

Power converter cards in an SSLPP (continued)

and press the Enter key.

If	Do
you need to confirm the command	step 61
the command passed	step 62
The MAP response is Warning: EIU 201 is currently being imaged. Do you want to abort imaging to proceed with the BSY request? Please confirm ("YES", "Y","NO" or "N"):	step 60

60 Continue the procedure.

If you	Do
proceed with BSY FORCE request	step 61
abort BSY FORCE request	step 125

61 To confirm the busy command, type

>YES

and press the Enter key.

If the BSY command	Do
passed	step 62
failed	step 124

62 Repeat steps 57 to 61 for all EIUs on the shelf side on which you work.

63 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display:

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0        .       M Free                      . .
MS 1        .       Slave                       . .
```

Power converter cards in an SSLPP (continued)

64 Determine the state of the MS that controls the mate F-bus.

Note: MS 0 controls F-bus 0. F-bus 0 associates with the power converters in slots 1F and 4F. MS 1 controls F-bus 1. F-bus 1 associates with the power converters in slots 33F and 36F.

If the MS that controls the mate F-bus	Do
is in service or in-service trouble	step 66
is other than listed here	step 65

65 To return to service the MS, perform the correct MS alarm clearing procedure in *Alarm and Performance Monitoring Procedures*. Complete the procedure and return to this point.

66 To access the F-bus level of the MAP display, type

`>SHELF 0;CARD card_no;PORT port_no`

and press the Enter key.

where

card_no
the number of the MS interface card that you recorded in step 12

port_no
the number of the MS interface card port that you recorded in step 12

Example of a MAP display for SuperNode:

```
Shelf 0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . . . – . . . . . . . . . . . . . . . . . . .
MS 1  . . . . . . – . . . . . . . . . . . . . . . . . . .

Card 15     Port 00 FBus    Tap:0           4       8
MS 0  .       .       .          ....        ..–.    ....
MS 1  .       .       .          ....        ..–.    ....
```

Example of a MAP display for SuperNode SE:

Power converter cards in an SSLPP (continued)

```
Shelf 0                 1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . – – . . . . . .
MS 1  . . . . . – – . . . . . .

Card 12          FBus Tap: 0           11 12   16   20
MS 0  .            .       .            . .... .... ....
MS 1  .            .       .            . .... .... ....

CARD:
```

Note 1: A dot (.) under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: There can be letter codes under the F-bus tap numbers. A C indicates the F-bus is manual busy. A C also indicates the controlling MS or MS port is system busy or manual busy. An S indicates the F-bus tap is system busy, A dot (.) indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline .

67 Determine the state of the mate F-bus and the mate F-bus taps.

Note: MS 0 controls F-bus 0. F-bus 0 is the mate F-bus associated with a card in slot 30R, 32R, or 32F. MS 1 controls F-bus 1. F-bus 1 is the mate associated with a card in slot 7R, 8R, or 7F.

If the states are	Do
in-service (state of the F-bus is `InSv` and all F-bus taps are `.` (dot)	step 68
any other state (state of the F-bus is not `InSv` and one or more F-bus taps are not `.` (dot)	step 121

68 To manually busy the F-bus associated with the card you replace, type

`>BSY ms_no FBUS`

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1)

Note: MS 0 controls F-bus 0. F-bus 0 associates with a card in slot 1F or 4F. MS-1 controls F-bus 1. F-bus 1 associates with a card in slot 33F or 36F.

Example of a MAP response:

Power converter cards in an SSLPP (continued)

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 FBus
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 FBus
passed.
```

If the response	Do
indicates the BSY command passed	step 70
requests confirmation	step 69

69 To confirm the command, type

>YES

and press the Enter key.

70 To determine which taps on the mate F-bus associate with each ASU powered by the card you replace, type

>TRNSL 0

and press the Enter key.

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers are for the F-buses that MS 0 and MS 1 control. The MAP response example indicates that tap 0 on F-bus 0 and tap 0 on F-bus 1 associate with LIU7 number 200.

71 Record the tap number for each ASU powered by the card you replace.

72 Choose a tap to work on.

73 To manually busy the first tap you recorded in step 71, type

>BSY ms_no TAP tap_no

Power converter cards in an SSLPP (continued)

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1) that controls the mate F-bus

tap_no
is the number of the tap

Note: MS 0 controls F-bus 0. F-bus 0 is the mate F-bus for a card in slot 33F 0r 36F. MS 1 controls the F-bus 1. F-bus 1 and is the mate F-bus for a card in slot 1F or 4F.

Example of a MAP response:

```
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 0
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card: 6 port: 0 Tap: 0
passed.
```

74 Repeat step 72 and 73 for the other mate F-bus taps that you recorded in step 71.

At the SSLPP

75

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Power down the NT9X30 card on the shelf side on which you work. To power down the card, press down and release the power switch on the faceplate of the card. The CONVERTER OFF LED lights when the converter correctly powers down.

If the CONVERTER OFF LED	Do
is lit	step 76
is not lit	step 122

76 Power down the NT9X31 card on the shelf side on which you work. To power down the card, press down and release the power switch on the faceplate of

Power converter cards in an SSLPP (continued)

the card. The CONVERTER OFF LED lights when the converter correctly powers down.

If the CONVERTER OFF LED	Do
is lit	step 77
is not lit	step 122

77 Locate the NT9X96 card powered by the card you replace.

Note: The power converters in slots 1F and 4F power the NT9X96 card in slot 7F. The power converters in slots 33F and 36F power the NT9X96 card in slot 32F.

78 To unseat the NT9X96 card, perform the procedure *Unseating cards in equipment shelves* in this document.

79 To replace the power converter card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

80 To power up the NT9X31 card, lift and release the POWER switch on the faceplate of the card. The CONVERTER OFF LED goes out when the converter correctly powers up.

If the CONVERTER OFF LED	Do
is not lit	step 81
is lit	step 124

81 To power up the NT9X30 card, lift and release the POWER switch on the faceplate of the card. The CONVERTER OFF LED goes out when the converter powers up correctly.

If the CONVERTER OFF LED	Do
is not lit	step 82
is lit	step 124

82 To reseat the NT9X96 card, perform the procedure *Reseating cards in equipment shelves* in this document.

At the MAP terminal

83 To return to service the F-bus that you manually busied in step 68, type

>RTS ms_no FBUS

and press the Enter key.

where

Power converter cards in an SSLPP (continued)

ms_no
is the number of the MS (0 or 1) that controls the mate F-bus

Example of a MAP response:

```
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 FBus
submitted.
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 FBus
passed.
```

If the RTS command	Do
passed	step 84
failed	step 124

84 To return to service one of the mate F-bus taps you busied in steps 73 and 74, type

>RTS ms_no TAP tap_no

and press the Enter key.

where

ms_no
is the number of the MS (0 or 1) that controls the mate F-bus

tap_no
is the tap number

Note: You recorded the tap numbers in step 71.

Example of a MAP response:

```
Request to RTS MS: 1 shelf: 0 card: 6 port: 0 Tap: 0
submitted.
Request to RTS MS: 1 shelf: 0 card: 6 port: 0 Tap: 0
passed.
```

If the RTS command	Do
passed	step 85
failed	step 124

85 Repeat step 84 for each of the mate F-bus taps you busied in steps 73 and 74.

86 To access the PM level of the MAP display, type

>PM

and press the Enter key.

Power converter cards in an SSLPP (continued)

87 The next step depends on if NIUs are present in the SSLPP on which you work.

If NIUs	Do
are present on the shelf	step 88
are not present on the shelf	step 92

88

ATTENTION

The following routines provide instructions to return ASUs to service in this order: NIU, LIU7, FRIU, XLIU, and EIU.

The priority of services the ASUs support can require you to return ASUs to service in a different order. The configuration of the shelf side can require you to return ASUs to service in a different order. Contact operating company personnel or the next level of support to verify service priorities.

To post the NIU, type

>POST NIU niu_no

and press the Enter key.

where

niu_no
is the NIU number (0 to 29)

89 To load the inactive NIU unit, type

>LOADPM INACTIVE

and press the Enter key.

Example of a MAP response:

```
NIU 1 Load Inactive Unit: Request has been submitted.
NIU 1 Load Unit 0: Command completed.
The Unit contains the "NRS0 123BA" load.
```

If the LOADPM command	Do
passed	step 91
failed	step 90

90 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

Power converter cards in an SSLPP (continued)

91 To return to service the inactive NIU unit, type

>RTS INACTIVE

and press the Enter key.

Example of a MAP response:

```
NIU 1 RTS Inactive Unit: Request has been submitted.
NIU 1RTS Inactive Unit: Command completed.
The Unit is in service trouble.
```

If the RTS command	Do
passed	step 92
failed	step 124

92 The next step depends on if CCS7 link interface units (LIU7) are present in the shelf side on which you work.

If CCS7 LIU7s	Do
are present on the shelf side	step 93
are not present on the shelf side	step 99

93 To post the LIU7, type

>POST LIU7 liu_no

and press the Enter key.

where

liu_no
is the LIU7 number (0 to 511)

94 To load the LIU7, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
LIU7 208 LOADPM Passed
```

If the LOADPM command	Do
passed	step 96
failed	step 95

95 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

Power converter cards in an SSLPP (continued)

96 To return the LIU7 to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
LIU7 100 RTS Passed
```

If the RTS command	Do
passed	step 97
failed	step 124

97 To activate the CCS7 link that associates with the LIU7, perform the procedure *How to activate CCS7 links* in this document. Complete this procedure and return to this point.

98 Repeat steps 93 to 97 for all LIU7s on the shelf side on which you work.

99 The next step depends on if FRIUs are present in the shelf side on which you work.

If FRIUs	Do
are present on the shelf side	step 100
are not present on the shelf side	step 111

100 To post the FRIU, type

>POST FRIU friu_no

and press the Enter key.

where

friu_no
is the FRIU number (0 to 500)

101 To load the FRIU, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
FRIU 8 LOADPM Passed
```

If the LOADPM command	Do
passed	step 103
failed	step 102

Power converter cards in an SSLPP (continued)

102 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

103 To return the FRIU to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
FRIU 8 RTS Passed
```

If the RTS command	Do
passed	step 104
failed	step 124

104 To access the CARR level of the MAP display, type

>CARR

and press the Enter key.

105 To return to service the carrier, type

>RTS

and press the Enter key.

Example of a MAP response:

```
RTS passed.
```

106 Wait until the Mtce flag on the right of the CARRIER header disappears from the display. The carrier goes ISTb at this point.

107 Wait 1 min for the carrier to go in service.

If after 1 min the state of the carrier	Do
is InSv	step 108
is other than listed here	step 124

108 To access the CHAN level of the MAP display, type

>CHAN

and press the Enter key.

109 To return to service the channel, type

>RTS ALL

and press the Enter key.

Power converter cards in an SSLPP (continued)

Example of a MAP response:

```
RTS passed.
```

110 Repeat steps 100 to 109 for all FRIUs in the shelf side on which you work.

111 The next step depends on if XLIUs or EIUs are present in the shelf side on which you work.

If XLIUs or EIUs	Do
are present on the shelf side	step 112
are not present on the shelf side	step 117

112 To post the XLIU or EIU, type

>POST asu_type asu_no

and press the Enter key.

where

asu_type
is the ASU type (XLIU or EIU)

asu_no
is the number of the ASU (0 to 511)

113 To load the XLIU or EIU, type

>LOADPM

and press the Enter key.

If the LOADPM command	Do
passed	step 115
failed	step 114

114 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

115 To return to service the XLIU or EIU, type

>RTS

and press the Enter key.

If the RTS command	Do
passed	step 116
failed	step 124

116 Repeat steps 112 to 115 for all XLIU and EIUs on the shelf side on which you work.

Power converter cards in an SSLPP (end)

117 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 118
did not direct you to this procedure	step 126

118 Return to the maintenance procedure that sent you to this procedure and continue as directed.

119 You must clear all faults on the inactive NIU unit before you complete the activity switch, or loss of service will result. Contact the next level of support and continue as directed.

120 Move the XSG to a spare XLIU before you manual busy an XLIU to which an XSG is assigned. If you do not move the XSG, service can degrade for a prolonged period of time. Contact the next level of support for directions on how to proceed without a spare XLIU and continue as instructed.

121 If you continue this procedure you can isolate one or more application specific units (ASU). Consult operating company personnel or your next level of support and proceed as directed.

122 It is not safe to continue this procedure if the power converter is not powered down correctly. Contact the next level of support and proceed as directed.

123 Contact operating company personnel to determine why the component is offline. Proceed as operating company personnel direct.

124 For additional help contact the next level of support. The procedure is complete.

125 To abort the BSY FORCE request, type

>NO

and press the Enter key

Example of a MAP response:

```
BSY command aborted due to imaging in progress.
```

126 The procedure is complete.

XLIU cards in an SSLPP

Application

Use this procedure to replace the following cards in a single-shelf link peripheral processor (SSLPP).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NTEX22	BA, BB, CA	Integrated processor and F-bus interface card	SSLPP
NTFX09	AA	C-bus interface paddle board	SSLPP
NTFX10	AA	HDLC frame processor card	SSLPP

Common procedures

This procedure refers to the following common procedures:

- *Loading a PM*
- *Moving an XSG to a spare XLIU*
- *Replacing a card*
- *Verifying load compatibility of SuperNode cards*

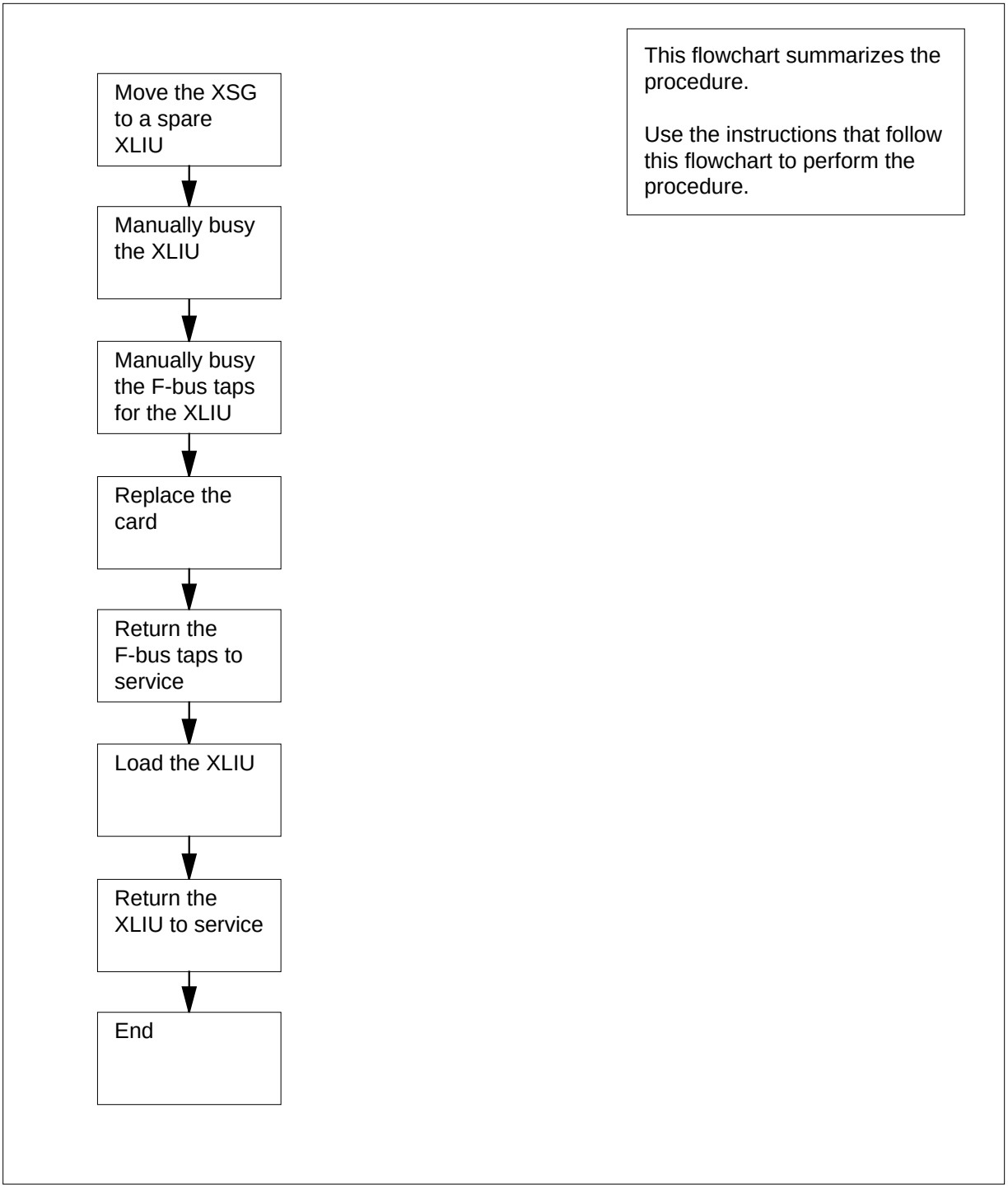
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

XLIU cards in an SSLPP (continued)

Summary of replacing XLIU cards in an SSLPP



XLIU cards in an SSLPP (continued)

Replacing XLIU cards in an SSLPP

At your Current Location

1

WARNING
Loss of service
This procedure removes an XLIU from service. The procedure interrupts traffic on associated X.25/X.75 channels. Perform the procedure only if you need to return the XLIU to service. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same PEC, including PEC suffix, as the card you remove.

2 Make sure that the replacement card is compatible with the software load. Perform the procedure *Verifying load compatibility of SuperNode cards* in this document. Complete the procedure and return to this point.

Note: Do not use this common procedure for XLIU cards with PECs NTFX09 and NTFX10.

At the MAP terminal

3 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    Cbsy    ISTb    InSv
PM                   0       1      23       0      10      30
```

4 To post the XLIU that associates with the card you replace, type

>POST XLIU xliu_no

and press the Enter key.

where

xliu_no
is the number of the XLIU (0 to 511)

Example of a MAP display:

```
                  SysB    ManB    OffL    Cbsy    ISTb    InSv
PM                   0       2      23       0      10      30
XLIU                 0       0       0       0       0       3

XLIU    27 InSv       Rsvd
```

XLIU cards in an SSLPP (continued)

5 Determine the state of the XLIU.

Note: The state of the XLIU appears on the right of the XLIU number. Refer to the example MAP display in step 4.

If the state of the XLIU	Do
is SysB, ISTb (NA), ManB, ISTb, or InSv	step 6
is OffL	step 35

6 Determine if the XLIU is a spare.

Note: The code Spre on the right of the service condition in the MAP display identifies a spare XLIU. The code Rsvd identifies an XLIU with an assigned X.25/X.75 service group (XSG).

If the XLIU	Do
is not a spare	step 7
is a spare, and the service state is SysB, ISTb (NA), ISTb, or InSv	step 9
is a spare, and the service state is ManB	step 13

7 Determine from office records or from operating company personnel the number of a spare XLIU.

Note: The spare XLIU must be on the same shelf as the out-of-service XLIU.

If a spare XLIU	Do
is available	step 8
is not available and the reserved XLIU is out of service	step 9
is not available and the reserved XLIU is in service	step 34

8 Move the XSG from the reserved XLIU to the spare XLIU. Perform the procedure *Moving an XSG to a spare XLIU* in this document. Complete the procedure and return to this point.

Note: The XLIU for which you change cards is now the spare. All of the next steps refer to this XLIU as the spare.

Go to step 13.

XLIU cards in an SSLPP (continued)

9 To manually busy the XLIU, type

>BSY

and press the Enter key.

If the response is	Do
XLIU 27 BSY Passed	step 13
Warning: XLIU 27 is currently being imaged. The BSY command will be aborted unless the FORCE option is used.	step 10

10 Manually force bsy the XLIU by typing

>BSY FORCE

and pressing the Enter key.

Example of a MAP response:

```
WARNING: XLIU 27 is currently being imaged.
Do you wish to abort imaging to proceed with the BSY
request?
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

11 Determine if it is safe to continue with this procedure.

If it is	Do
proceed with BSY FORCE request	step 12
abort BSY FORCE request	step 37

12 Force bsy the XLIU by typing

>YES

and pressing the Enter key.

Example of a MAP response:

```
Imaging will be aborted on XLIU 27.
```

13 To access table SUSHELF, type

>TABLE SUSHELF

and press the Enter key.

Example of a MAP display:

```
TABLE: SUSHELF
```

XLIU cards in an SSLPP (continued)

14 To list the contents of the table, type

>LIST ALL

and press the Enter key.

Example of a MAP display:

```
   SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
                                                              CARDINFO
-------------------------------------------------------------------------------
LIM   1 12 0 2     3   C        3      LIM      500       13 NT9X72AA
(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   1 12 0 3     3   C        3      LIM      500        0 NT9X72AA
(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 1     3   C        2      LIM      501       26 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 2     3   C        2      LIM      501       13 NT9X72BA
(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

LIM   2 12 0 3     3   C        2      LIM      501        0 NT9X72BA
(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 16 0 1     3   C        4      EMC        4       39 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $

 MS NIL 17 0 1     3   C        4      EMC        4       26 NT9X72CA
(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) $
(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) $
```

Note: The controlling device (MS) is in column 1. The MS interface card number is in column 3. The port number on the MS is in column 4. The shelf number is in column 5. The frame type (EMC for SSLPP) is in column 9. The shelf position is in column 11.

15 Record the number of the MS interface card that associates with the SSLPP on which you work. Record the number of the port on the MS.

16 To quit table SUSHELF, type

>QUIT

and press the Enter key.

XLIU cards in an SSLPP (continued)

17 To access the MS level of the MAP display, type

>MAPCI;MTC;MS

and press the Enter key.

Example of a MAP display:

```
    Message Switch  Clock   Shelf 0 Inter-MS Link 0 1
MS 0    .           M Free                      . .
MS 1    .           Slave       .               . .
```

18 To access the F-bus level of the MAP display, type

>SHELF 0;CARD card_no;PORT port_no

and press the Enter key.

where

card_no
is the MS card number that you recorded in step 15

port_no
is the MS port number that you recorded in step 15

Example of a MAP display for SuperNode:

```
Shelf   0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card    1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0    . . . . . . - . . . . . . . . . . . . . . . .
MS 1    . . . . . . - . . . . . . . . . . . . . . . .
Card 15 Port 00   FBus Tap: 0     4    8
MS 0 .      .     .          ....  ..-. ....
MS 1 .      .     .          ....  ..-. ....
```

Example of a MAP display for SuperNode SE:

```
Shelf 0                 1 1 1 1
Card  1 2 3 4 5 6 7 8 9 0 1 2 3
Chain         |
MS 0  . . . . . - - . . . . . .
MS 1  . . . . . - - . . . . . .
Card 04   Port00     FBusTap: 0     4    8
MS 0  .      .       .        ....  ..-. ....
MS 1  .      .       .        ....  ..-. ....
```

Note 1: A dot (.) under the F-bus header indicates the F-bus is in service. An S indicates the F-bus is system busy. An M indicates the F-bus is manual busy. An I indicates the F-bus is in-service trouble. An O indicates the F-bus is offline.

Note 2: A letter code can appear under the F-bus tap numbers. A C indicates the F-bus is manual busy. A C can also indicate the controlling MS or MS port is system busy or manual busy. An S indicates the F-bus

XLIU cards in an SSLPP (continued)

tap is system busy. A dot (.) indicates the F-bus tap is in service. An M indicates the F-bus tap is manual busy. An I indicates the F-bus tap is in-service trouble. A dash (-) indicates the F-bus tap is offline.

19 To determine which F-bus taps are associated with the card you replace, type

>TRNSL 0

and press the Enter key.

Example of a MAP response:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X17AD FRNT
HOST  03  A01  SCC   0   39  MS 0:0: 6      14       9X62BA BACK
FBus 0 Tap  0 is on LIU7 200
FBus 0 Tap  1 is on LIU7 201
FBus 0 Tap  2 is on XLIU 202
FBus 0 Tap  3 is on FRIU 203
FBus 0 Tap  4 is on FRIU 204
FBus 0 Tap  5 is on NIU  5 unit 0
FBus 0 Tap  6 is on NIU  5 unit 1
FBus 0 Tap  7 is on FRIU 207
FBus 0 Tap  8 is on FRIU 208
FBus 0 Tap  9 is on XLIU 209
FBus 0 Tap 10 is on LIU7 210
FBus 0 Tap 11 is on LIU7 211
```

Note: The tap numbers in the example are for the F-buses that both MSs control. The example MAP response indicates that tap 9 on F-bus 0 and tap 9 on F-bus 1 both associate with XLIU number 209.

20 Record the tap number that associates with the XLIU on which you work.

21 To manually busy the XLIU tap on F-bus 0, type

>BSY 0 TAP tap_no

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 20

Example of a MAP response:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
passed.
```

22 To manually busy the XLIU tap on F-bus 1, type

>BSY 1 TAP tap_no FORCE

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 20

Example of a MAP response:

```
Warning, P-side nodes may be isolated.
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

23 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
submitted.
Request to MAN BUSY MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
passed.
```

At the SSLPP shelf

24 To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

At the MAP terminal

25 To return to service the F-bus 0 tap that you busied in step 21, type

>RTS 0 TAP tap_no

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 20

Example of a MAP response:

```
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
submitted.
Request to RTS MS: 0 shelf: 0 card: 6 port: 0 Tap: 9
passed.
```

If the RTS command	Do
passed	step 26
failed	step 36

XLIU cards in an SSLPP (continued)

26 To return to service the F-bus tap that you busied in step 22, type

`>RTS 1 TAP tap_no`

and press the Enter key.

where

tap_no
is the number of the F-bus tap that you recorded in step 20

If the RTS command	Do
passed	step 27
failed	step 36

27 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 28
did not direct you to this procedure	step 29

28 Return to the maintenance procedure that sent you to this procedure and continue as directed.

29 To access the PM level of the MAP display, type

`>PM`

and press the Enter key

30 To post the XLIU, type

`>POST XLIU xliu_no`

and press the Enter key.

where

xliu_no
is the number of the XLIU (0 to 511)

31 To load the XLIU, type

`>LOADPM`

and press the Enter key.

Example of a MAP response:

```
XLIU 209 LOADPM Passed
```

If the LOADPM command	Do
passed	step 33

XLIU cards in an SSLPP (end)

If the LOADPM command	Do
failed	step 32

32 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

33 To return the XLIU to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
XLIU 209 RTS Passed
```

If the RTS command	Do
passed	step 38
failed	step 36

34 To manually busy an XLIU with an assigned XSG, move the XSG to a spare XLIU. If you do not first move the XSG, service will degrade for a prolonged period of time. Contact operating company personnel or the next level of support on how to proceed without a spare XLIU. Continue as operating company personnel direct.

35 Contact operating company personnel to determine why the component is offline. Continue as operating company personnel direct.

36 For additional help, contact the next level of support.

37 To abort the BSY FORCE request, type

>NO

and press the Enter key.

Example of a MAP response:

```
BSY command aborted due to imaging in progress.
```

38 The procedure is complete.

3 SuperNode system load module card replacement procedures

Introduction

This chapter contains card replacement procedures for the SuperNode system load module (SLM). The first section in the chapter provides illustrations that show SLM shelf layouts.

Card replacement procedures for the SuperNode SE SLM are in the chapter “SuperNode SE computing module and system load module card replacement procedures".

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter “Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each of these procedures contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the SLM card(s) the replacement procedures cover.

Common procedures

This section lists common procedures used during the SLM card replacement procedure. A common procedure is a series of steps that repeat within maintenance procedures. An example of a common procedure is card removal and replacement. Common procedures appear in the common procedures chapter in this NTP.

Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card replaced
- the time you replaced the card
- the reason you replaced the card

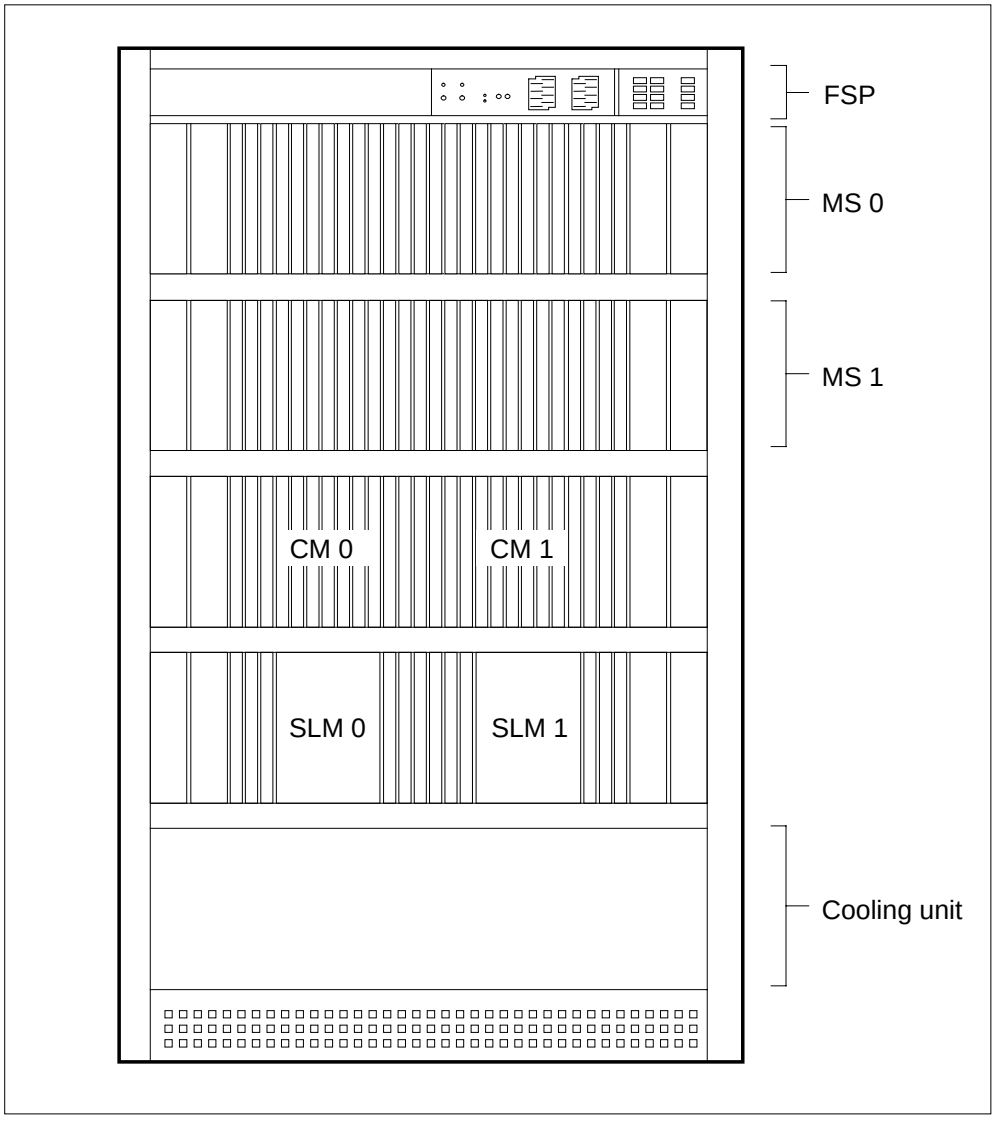
SuperNode SLM shelf layouts

Application

This procedure provides the following layout diagrams:

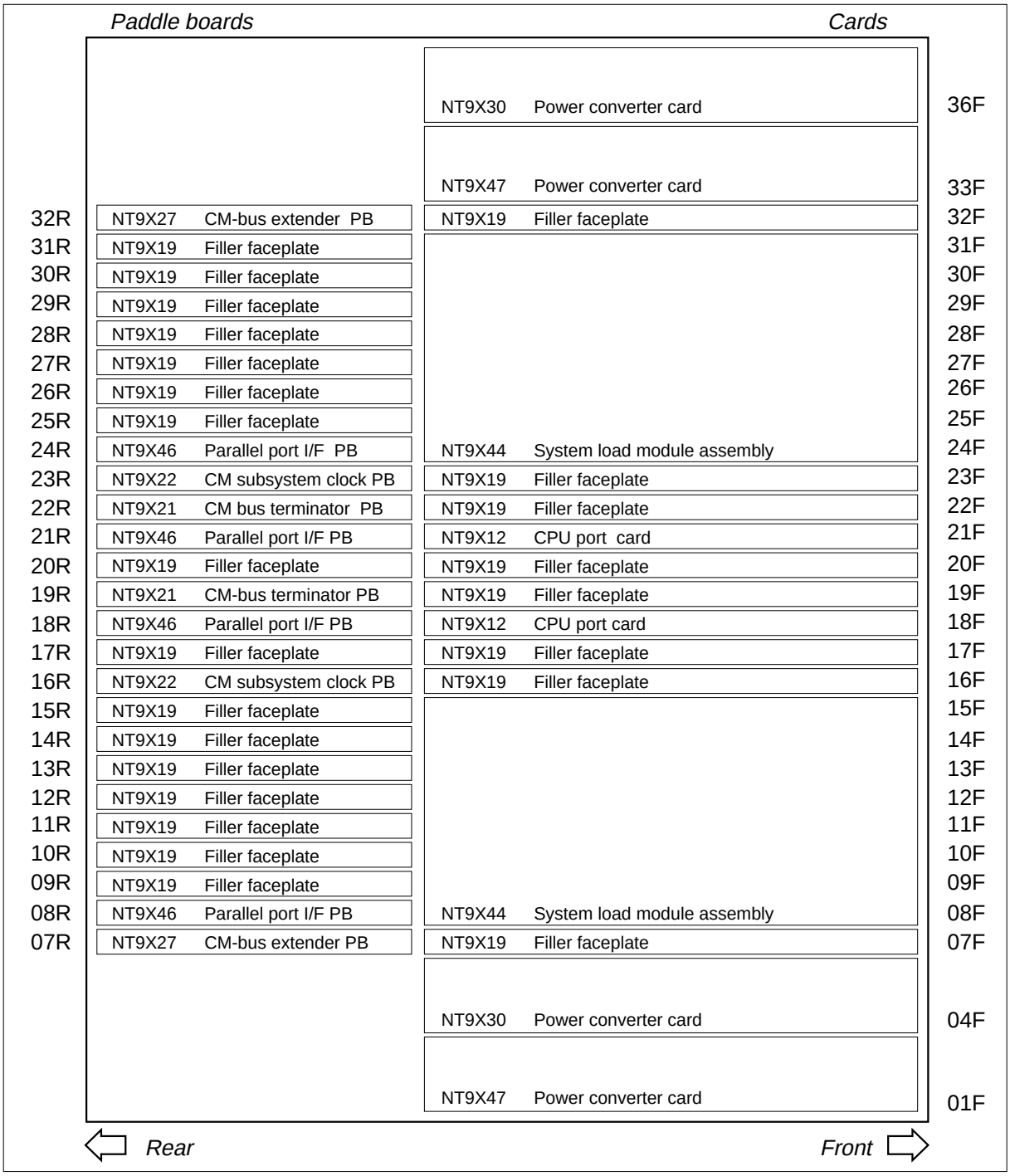
- dual-plane combined core cabinet (DPCC)
- SuperNode system load module (SLM)

Figure Dual-plane combined core cabinet



SuperNode SLM shelf layouts (end)

Figure SuperNode system load module



NT9X44 in a SuperNode SLM

Application

Use this procedure to replace an NT9X44 in a SuperNode system load module (SLM), as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT9X44	AA	System load module I assembly	SLM
NT9X44	AB	System load module II assembly	SLM
NT9X44	AD	System load module III assembly	SLM

If you cannot identify the product engineering code (PEC), PEC suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

Because of sparing and field returns, SLM IIIs in SuperNode and SuperNode SE switches can have a combination of the Connor and Tandberg drives. You can identify the new Tandberg drive by the tape door on the unit.

Use the recommended tape cartridge as follows:

- DC600 for SLM I tape drive
- DC6250 for SLM IA and II tape drives
- DC6525 for SLM III tape drives

Common procedures

This procedure refers to the following common procedures:

- *Activity switch with memory match*
- *Switching the clock source*

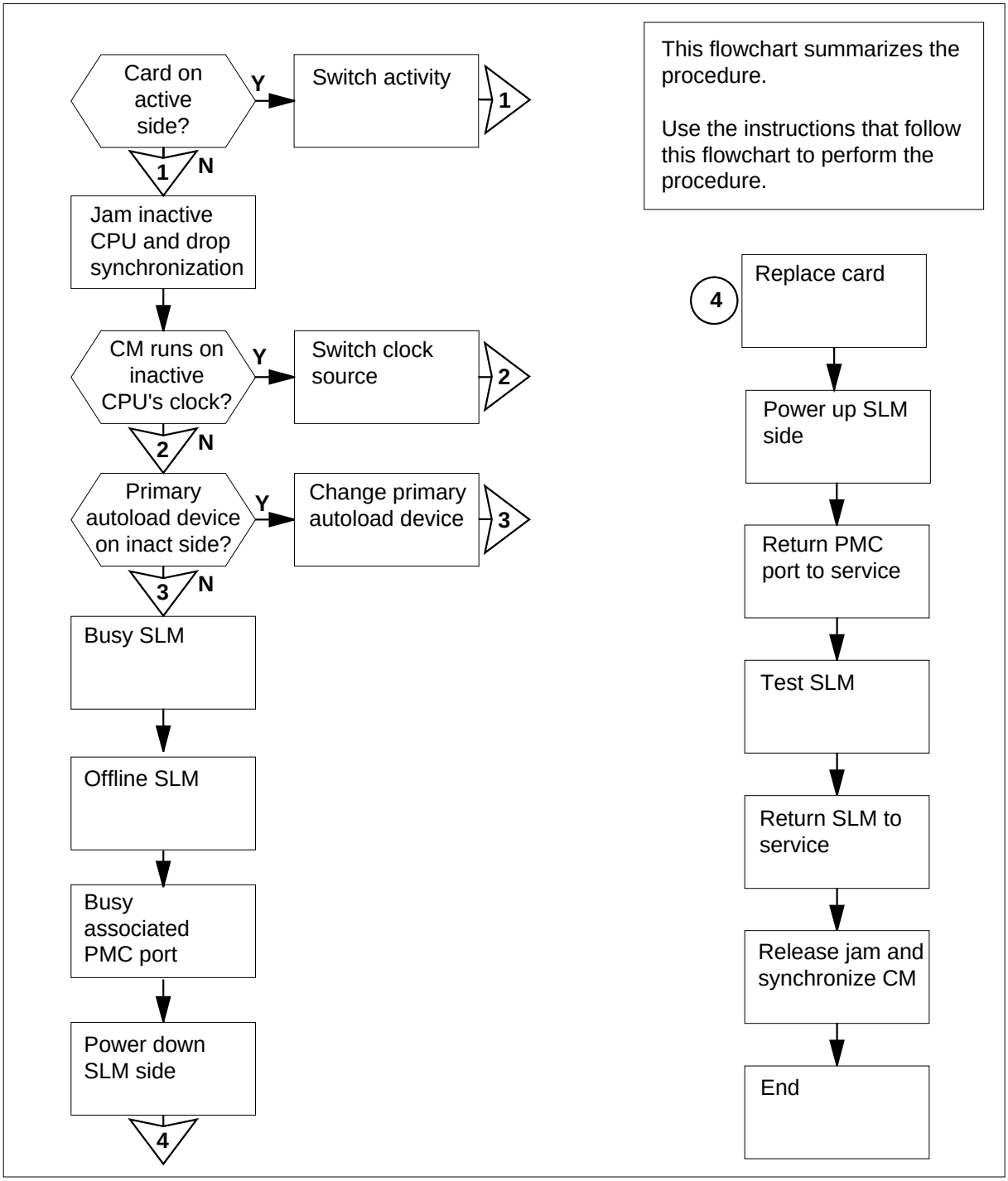
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT9X44
in a SuperNode SLM (continued)

Summary of Replacing an NT9X44 in a SuperNode SLM



Replacing an NT9X44 in a SuperNode SLM

At your current location

1

CAUTION
Loss of data recording services
This procedure removes the SLM from service. Make sure that another device assumes the data recording services of the SLM that you remove from service, before you attempt this procedure. Make sure that the other device has the data storage capacity to assume recording.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you replace.

2 Make sure that you have a backup SLM tape.

Note: The backup tape must contain copies of all of the disk files on the SLM you replace.

If you	Do
have a back-up SLM tape	step 3
do not have a back-up SLM tape	step 83

At the MAP terminal

3 To access the CM level of the MAP display, type

`>MAPCI;MTC;CM`

and press the Enter key.

Example of a MAP display:

```
CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC
 0   no  cpu 1   .     .  yes    .     .     .   .
```

4 Determine if the computing module (CM) plane that contains the SLM you want to replace also contains the inactive CPU.

Note: The active CPU is the CPU shown under the Act header on the MAP display. In the example in step 3, the active CPU is CPU 1.

If the CM plane contains the	Do
inactive CPU	step 5

NT9X44
in a SuperNode SLM (continued)

If the CM plane contains the	Do
active CPU	step 12

5 Determine if the inactive CPU is jammed.

Note: The word 'yes' under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed.

If the inactive CPU	Do
is not jammed	step 6
is jammed	step 8

At the CM reset terminal for the inactive CPU

6

DANGER
Loss of service
Do not jam the active CPU. When you Jam the active CPU while the CM is out of sync, a cold restart occurs.. You identify the reset terminal for the active CPU by the word Active on the top banner of its display.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
Please confirm: (YES/NO)
```

7 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

At the MAP terminal

8 Determine if the CM is synchronized

Note: A dot or EccOn under the Sync header means that the CM is synchronized. The word 'no' means that the CM is not synchronized.

If the CM is	Do
synchronized	step 9
not synchronized	step 13

9 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response is	Do
is About to drop sync with CPU n active. is The inactive CPU is JAMMED. is Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"):Text>	step 10
other than listed here	step 83

10 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU n.
```

At the CM reset terminal for the inactive CPU

11 Wait until 'A1' flashes on the reset terminal for the inactive CPU.

Note: Allow 5 min for 'A1' to start to flash.

If A1	Do
flashes	step 13
does not flash	step 83

12 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

NT9X44
in a SuperNode SLM (continued)

At the MAP terminal

13

WARNING
Loss of service
Make sure that the CM runs on the clock of the active CPU. A cold restart or system image reload can occur if you power down the inactive side of the CM, while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the inactive CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

```
CPU pair is NOT insync, CPU 0 is active.
CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.
```

If the CM runs on the clock of the	Do
inactive CPU	step 14
active CPU	step 15

14 To run the CM on the clock of the active CPU, perform the procedure *Switching the clock source* in this document. Complete the procedure and return to this point.

15 To access the CMMNT level of the MAP display, type

>CMMNT

and press the Enter key.

Example of a MAP display:

NT9X44
in a SuperNode SLM (continued)

```
CM   Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC
 0    no  cpu 0  .     .     yes   .       .     .    .

Traps:          Per minute =     0      Total =     5

AutoLdev:       Primary = SLM 0 DISK  Secondary =  SLM 1
DISK

Image Restartable = No image test since last restart

Next image restart type =  WARM

Last CM REXTST executed

System memory in kbytes as of  14:39:07
Memory (kbytes): Used = 105984 Avail =  12800 Total =
118784
```

16 Determine if the primary autoload device is on the same side of the switch as the active CPU or the inactive CPU.

Note: The primary autoload device appears on the right of the primary header. In the example in step 15, the primary autoload device is the disk of SLM 0.

If the primary autoload device is on the same side of the switch as the	Do
active CPU	step 23
inactive CPU	step 17

17 To change the primary autoload device to a device on the same side of the switch as the active CPU, type

`>AUTOLD SLM slm_number device_type`

and press the Enter key.

where

slm_number
is the number of the active CPU (0 or 1)

device_type
is the type of SLM device (DISK or TAPE)

Example of a MAP response:

```
New autoload route has been set.
```

NT9X44
in a SuperNode SLM (continued)

18 To access the DIRP level of the MAP display, type

>IOD;DIRP

and press the Enter key.

19 To determine if there are any active files for each subsystem on the SLM to be made busy, type

>query ssys

and press the Enter key.

where

ssys
is the active subsystem (AMA, OM, or JF)

20 To close any active files for each subsystem on the SLM to be made busy, type

>close ssys [active]

and press the Enter key.

where

ssys
is the active subsystem (AMA, OM, or JF)

21 Demount the volume by typing

>DMNT ssys vol_name [paralel]

and pressing the Enter key.

where

ssys
is the subsystem (AMA, OM, or JF)

vol_name
is the name of the volume to be demounted

[paralel]
indicates that the volume is a parallel volume

Example of a MAP response:

```
UPDATING VOLUME INFORMATION FOR
vol_name:  vol_no IN pool_type POOL
pool_no, pool_name
PLEASE CONFIRM (”YES” OR ”NO”):.
```

22 Confirm the demount by typing

>YES

and pressing the Enter key.

Example of a MAP response:

```
REGULAR VOLUME vol_name WILL BE
TAKEN OUT OF DIRP AS SOON AS
POSSIBLE..
```

23 To access the SLM that corresponds to the inactive CPU, type

>IOD;SLM slm_number

and press the Enter key.

where

slm_number
is the number of the inactive CPU (0 or 1)

Example of a MAP display:

```
IOD
IOC  0  1  2  3
STAT .  .  .  .

DIRP:  .   XFER:  .   DVI :  .   DPPP:  .   DPPU:  .
NOP :  .   SLM :  .   NX25:   .  MLP :  .   SCAI:  .

SLM   0  1
Stat  .  .

SLM 0       device      TAPE        DISK
            status        .           .
            drive       idle        on line
            user                    SYSTEM
```

Note: Dots on the right side of the SLM Stat header mean that the associated SLMs are in service.

24 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

```
SLM 0 busy passed.
```

Example of a MAP display:

```
SLM   0  1
Stat  M  .
```

Note: The letter M on the right side of the SLM Stat header means that the associated SLM is manual busy.

NT9X44
in a SuperNode SLM (continued)

25 To offline the SLM, type

>OFFL

and press the Enter key.

Note: Wait for light on the faceplate of the SLM to turn off before you continue with the rest of this procedure.

Example of a MAP response:

```
SLM 0 now offline. Do not remove SLM card
until disk drive is spun down! This will be
indicated when the SLM card light turns off.
```

26 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

```
          PMC 0
           .

PORT0:    pbsy
PORT1:     .
```

27 To manually busy the port that corresponds to the inactive CPU, type

>BSY 0 PORT port_number

and press the Enter key.

where

port_number
is the number of the inactive CPU (0 or 1)

Example input:

>BSY 0 PORT 0

Example of a MAP response:

```
Maintenance action submitted.
Passed.
```

NT9X44
in a SuperNode SLM (continued)

At the SLM shelf

28

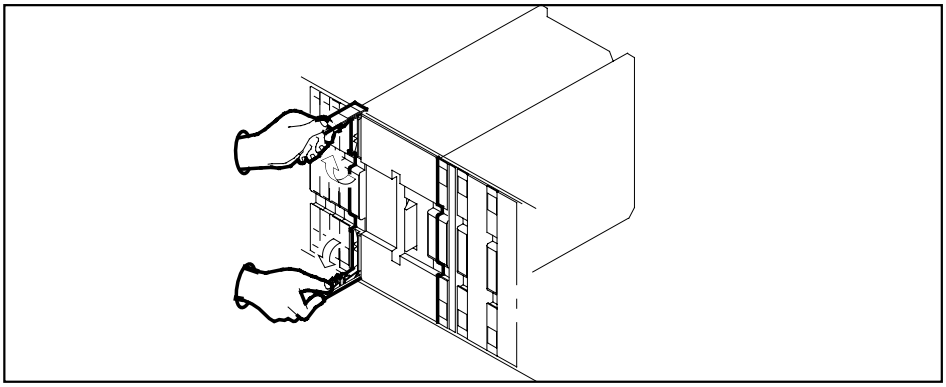
WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the correct SLM side. Switch off the two power converters, NT9X47 and NT9X30. Press down and release the power switches located on the faceplates of both converters at the same time.

Note 1: For CPU 0, the NT9X47 power converter is in slots 1F through 3F. For CPU 1, the NT9X47 power converter is in slots 33F through 35F.

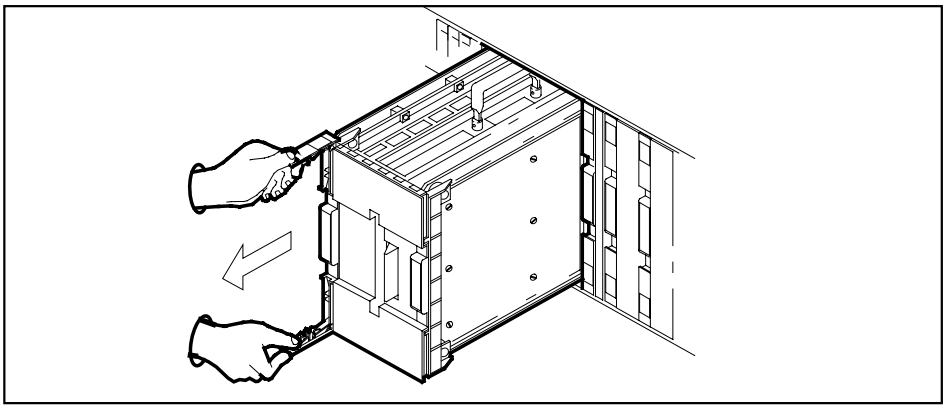
Note 2: For CPU 0, the NT9X30 power converter is in slots 4F through 6F. For CPU 1, the NT9X30 power converter is in slots 36F through 38F.

29 Pull open the locking levers on the SLM until the levers are horizontal.



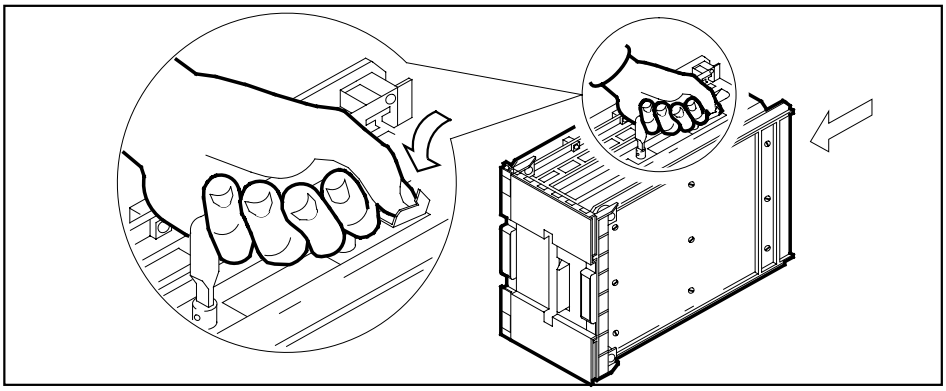
30 Grasp the locking levers and pull the SLM toward you until the locking latch at the back of the SLM assembly prevents the SLM from clearing the shelf.

NT9X44
in a SuperNode SLM (continued)



31 Close the locking levers.

32 Grasp the carry handle, and use your thumb to press the locking latch while you slide the SLM from the shelf.



33 Place the SLM you removed in an electrostatic discharge (ESD) protective container.

34 Lift up the replacement SLM by the handle.

35 Pull open the locking levers until the levers are horizontal.

36 Use your free hand to align the SLM with the slots in the shelf. Carefully slide the SLM into the shelf until the locking latch at the back of the SLM engages the shelf.

Note: Do not use excessive force to slide the SLM into the shelf.

37 Slide the SLM into the shelf until the SLM stops.

38 Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the SLM sits completely in the shelf.

39 Close the locking levers.

NT9X44
in a SuperNode SLM (continued)

40 To power up the two power converters, NT9X47 and NT9X30, lift and release the power switches located on the faceplates of both converters at the same time.

Note 1: For CPU 0, the NT9X47 power converter is in slots 1F through 3F. For CPU 1, the NT9X47 power converter is in slots 33F through 35F.

Note 2: For CPU 0, the NT9X30 power converter is in slots 4F through 6F. For CPU 1, the NT9X30 power converter is in slots 36F through 38F.

If the SLM has a	Do
Connor tape drive	step 41
Tandberg tape drive	step 43

41 Insert a scratch tape into the SLM.

Use the recommended tape cartridge listed in the application section at the start of this procedure.

Note: Insert a tape cartridge with the metal plate to the left and the open tape access facing up.

42 To lock the tape in place, press down on the locking lever.

Go to step 44.

43 Push on the Tandberg drive door button to open the drive door. Insert a scratch tape with the read/write tape facing the bottom of the drive and close the drive door.

At the MAP terminal

44 To make sure you are at the PMC level of the MAP display, type

```
>CM;PMC
```

and press the Enter key.

45 To return the manual busy PMC port to service, type

```
>RTS  0  PORT  port_number
```

and press the Enter key.

where

port_number
is the number of the manual busy port (0 or 1)

Example of a MAP response:

```
Maintenance action submitted.
Passed.
```

If the RTS command	Do
passed	step 46

NT9X44
in a SuperNode SLM (continued)

If the RTS command	Do
failed	step 83

46 To access the MAP level for the SLM that you replaced, type

>IOD;SLM slm_number

and press the Enter key.

where

slm_number
is the number of the SLM (0 or 1) that you replaced

47 To manually busy the SLM, type

>BSY

and press the Enter key.

If the BSY command	Do
passed	step 48
failed	step 83

48 To spin the SLM disk, type

>SPIN UP

and press the Enter key.

Note: Wait for the light on the faceplate of the SLM to light before you continue with the rest of this procedure.

Example of a MAP response:

```
Disk of SLM 0 is  ready.
```

49 To test the replacement SLM, type

>TST ALL

and press the Enter key.

MAP response:

```
The tape test will write on the tape media.
It is recommended to insert a scratch tape,
otherwise data on the current tape may be
destroyed.  Are you ready to continue?
Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

50 To confirm the command, type

>YES

and press the Enter key.

If the TST command	Do
passed	step 53
failed, and the command generated a card list	step 51
did other than listed here	step 83

51 Record the location, description, slot number, PEC, and PEC suffix of the cards on the list.

52 To replace each of the cards on the list, perform the correct card replacement procedure in this document. Replace all the cards on the list and return to this point.

At the CM reset terminal for the inactive CPU

53 To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

```
JAM RELEASE DONE
```

At the MAP terminal

54 To synchronize the CM, type

>CM;SYNC

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Synchronization successful.
```

If the response indicates	Do
the SYNC command was successful	step 55
iother than listed here	step 83

55 To access the disk administration utility, type

>DISKADM disk_name

and press the Enter key.

where

NT9X44
in a SuperNode SLM (continued)

disk_name
is the name of the disk in the SLM that you replace (S00D for SLM 0, or S01D for SLM 1)

Example of a MAP response:

```
Start up command sequence is in progress.
This may take a few minutes.
Administration of device S00D on CM is now active.
DISKADM;  CM
```

56 To format the disk, type

>FORMATDISK disk_name

and press the Enter key.

where

disk_name
is the name of the disk in the SLM that you replace (S00D for SLM 0, or S01D for SLM 1)

Example of a MAP response:

```
                  *****  WARNING  *****

  Formatting of S00D
  will destroy the contents of the disk.

  The formatting will:
     allocate 3 spare or alternate sectors per track,
     allocate 16 spare or alternate tracks per disk,
     use the G defect list,
     assign S00D as the name for the disk.
     perform quick format,
     exclude force option.

  Do you want to continue?
  Please confirm (”YES”, ”Y”, ”NO”, or ”N”):
```

57 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:
Formatting of disk has started.This may take 10 to 30 minutes.Formatting of disk has finished.

58 Consult office records or operating company personnel to obtain a list of all the volumes required on the SLM disk.

59 To create a volume, type

>CREATEVOL volume_name volume_size STD

and press the Enter key.

where

volume_name
is the name of the volume (maximum of eight characters)

volume_size
is the size of the volume in megabytes

Example input:

```
>CREATEVOL  VOL1  20  STD
```

Example of a MAP response:

```
STD volume VOL1 will be created on S00D.

Volume size:                 20 megabytes
File Directory size:         128 files
Volume Free Space Map size:  64 segments

Do you want to continue?
Please confirm ("YES", "Y", "NO", or "N"):
```

60 To confirm the command, type

```
>YES
```

and press the Enter key.

MAP response:

```
Creation of the volume is completed.
```

61 Repeat steps 59 and 60 for each volume on the list that you obtained in step 58.

62 To quit the disk administration utility, type

```
>QUIT
```

and press the Enter key.

63 To access the replacement SLM, type

```
>IOD;SLM  slm_number
```

and press the Enter key.

where

slm_number
is the number of the replacement SLM (0 or 1)

64 To return the SLM to service, type

```
>RTS
```

and press the Enter key.

Example of a MAP response:

NT9X44
in a SuperNode SLM (continued)

```
SLM 0 return to service passed.
```

If the RTS command	Do
passed	step 65
failed	step 83

65 Obtain the back-up tape for the SLM that you replaced.

If the SLM has a	Do
Connor tape drive	step 66
Tandberg tape drive	step 67

At the SLM shelf

66 Remove the scratch tape and insert the back-up tape into the SLM.

Note: Insert the tape cartridge with the metal plate on the left side and the open tape access facing up.

Go to step 69.

67 Push on the Tandberg drive door button to open the door. Push the button again to release the tape cartridge. To withdraw the scratch tape, pull the scratch tape out of the drive unit.

68 Insert the back-up tape with the read and write tape facing the bottom of the drive and push on the drive door to close the door.

Note: A diagram located on the inside of the Tandberg drive door indicates the position of the tape.

At the MAP terminal

69 To access the disk utility, type

`>DISKUT`

and press the Enter key.

MAP response:

```
Disk utility is now active.
DISKUT:
```

70 To mount the back-up tape cartridge, type

`>INSERTTAPE  tape_device_name`

and press the Enter key.

where

tape_device_name
is the name of the tape device that contains the back-up SLM tape (S00T for SLM 0, or S01T for SLM 1)

Example of a MAP response:

```
The INSERT operation may take
up to 5 minutes to tension the tape.
```

71 List the files stored on the back-up SLM tape by typing

>LISTFL tape_device_name

and pressing the Enter key.

where

tape_device_name
is the name of the tape device containing the back-upSLM tape (S00T for SLM0 or S01T for SLM1)

72 The next action depends on the name of the disk volume on tape.

If the disk volume name is	Do
the same on the back-up tape and the SLM disk	step 73
not the same on the back-up tape and the SLM disk	step 75

73 To copy the back-up files to the disk in the SLM you replaced, type

>RESTORE STDVOL ROOTDIR.disk_volume_name tape_device_name tape_file_name

and press the Enter key.

where

disk_volume_name
is the name of the disk (S00D or S01D), and the name of the volume on the disk to which the back-up files will be restored

tape_device_name
is the name of the tape device (S00T or S01T) that contains the back-up SLM tape

tape_file_name
is the name of the tape file that contains the backup files

Example input

>RESTORE STDVOL ROOTDIR.S00DPMLOADS S00T S00DPMLOADS

74 Repeat step 73 for each disk volume you created and proceed to step 77.

75 To copy the back-up files to the disk in the SLM you replaced, type

>RESTORE STDVOL disk_volume_name tape_device_name tape_file_name

and press the Enter key.

where

NT9X44
in a SuperNode SLM (continued)

disk_volume_name
is the name of the disk (S00D or S01D), and the name of the volume on the disk to which the backup files will be restored

tape_device_name
is the name of the tape device (S00T or S01T) that contains the back-up SLM tape

tape_file_name
is the name of the tape file that contains the backup files

Example input

```
>RESTORE  STDVOL  S00DPMLOADS  S00T  PMLOADS
```

76 Repeat step 75 for each disk volume you created.

77 To demount the tape cartridge, type

```
>EJECTTAPE  tape_device_name
```

and press the Enter key.

where

tape_device_name
is the name of the tape device (S00T or S01T) that contains the back-up SLM tape

Example of a MAP response:

```
The eject operation may take up to 5 minutes
to position the tape to the beginning.
```

78 To quit the disk utility, type

```
>QUIT
```

and press the Enter key.

79 Determine if an ITOC alarm under the IOD header of the alarm banner is present.

If an ITOC alarm is	Do
present	step 80
not present	step 81

80 Perform the correct ITOC alarm clearing procedure in *Alarm and Performance Monitoring Procedures*. Complete the procedure and return to this point.

81 Your next step depends on the reason that you perform this procedure.

If you perform this procedure as a result of	Do
another maintenance procedure	step 82

NT9X44
in a SuperNode SLM (end)

If you perform this procedure as a result of	Do
other than listed here	step 84

82 Return to the maintenance procedure that sent you to this procedure and continue as directed.

83 For additional help, contact the next level of support.

84 The procedure is complete.

SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module

Application

Use this procedure to expand an SPM node by replacing a NTLX60AA filler modules (FIL) with an NTLX65AA digital signal processor (DSP) resource modules (RM). FIL cards and DSP cards are located in the DMS-Spectrum Peripheral Module (SPM) frame.

To identify the product engineering code (PEC) and release, or the provisioned shelf or frame for the cards involved in this procedure, refer to the following table.

PEC	Release	Card name	Shelf or frame name
NTLX60	AA	FIL	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly
NTLX65	AA	DSP	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly

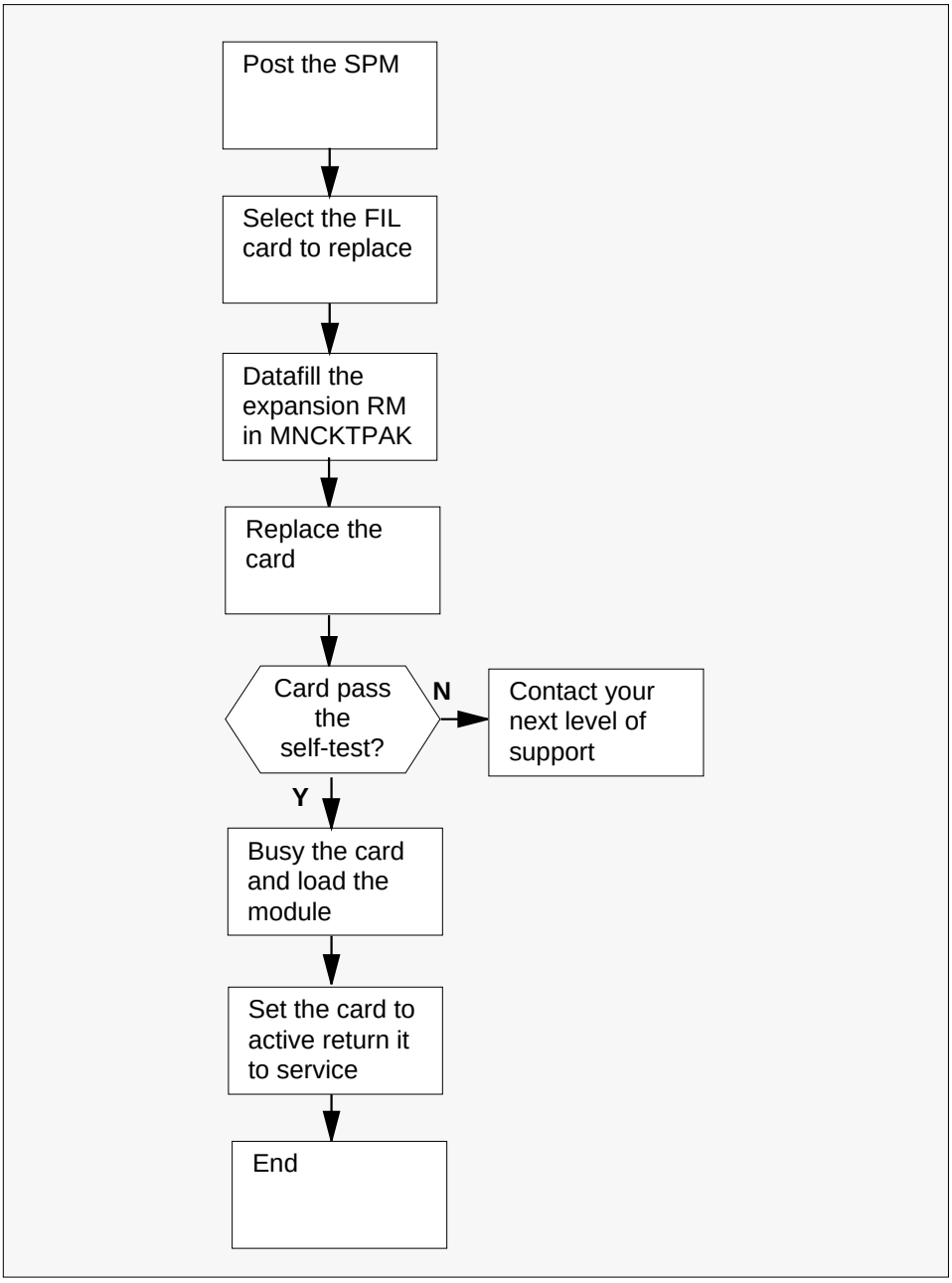
Information about the expansion DSP RM cards must be entered in Table MNCKTPAK. Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for a description of the information required in table MNCKTPAK.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)

Summary of replacing the NTLXAA filler card



SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX60AA filler card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

>MAPCI;MTC;PM

and pressing the Enter key.

2 Access the SPM screen by typing

>POST SPM spm_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of an SPM screen. The example may not reflect your SPM screen.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .         .     .       .


SPM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                  0       0       0       0       0      38
 2 Post_         SPM                 0       0       0       0       0       1
 3 ListSet
 4 ListRes   SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6           Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7           DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8           DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9           DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10           DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_     --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next      --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_   CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM   SPM:
15 ListAlm_
16
17
18

   14:12 >
```

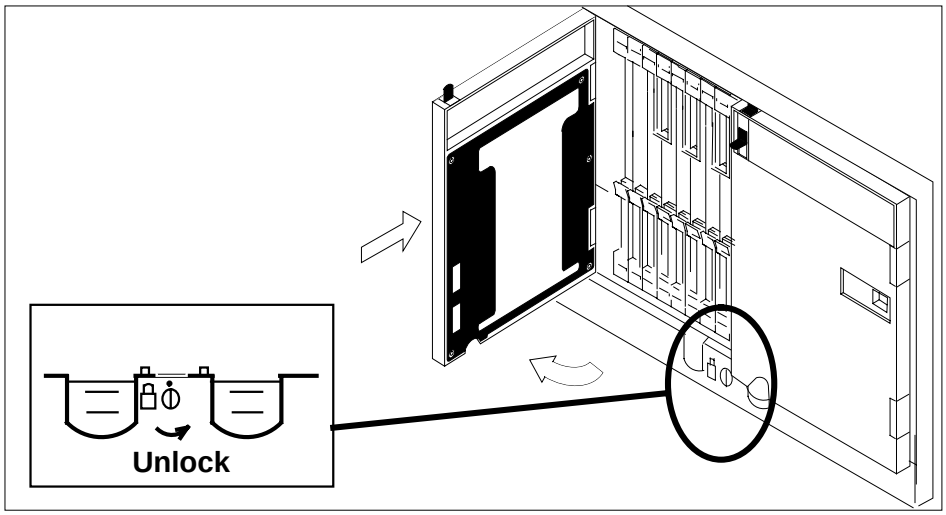
3 Choose a shelf and slot location for the expansion card.

4 Datafill the required information in table MNCKTPAK.

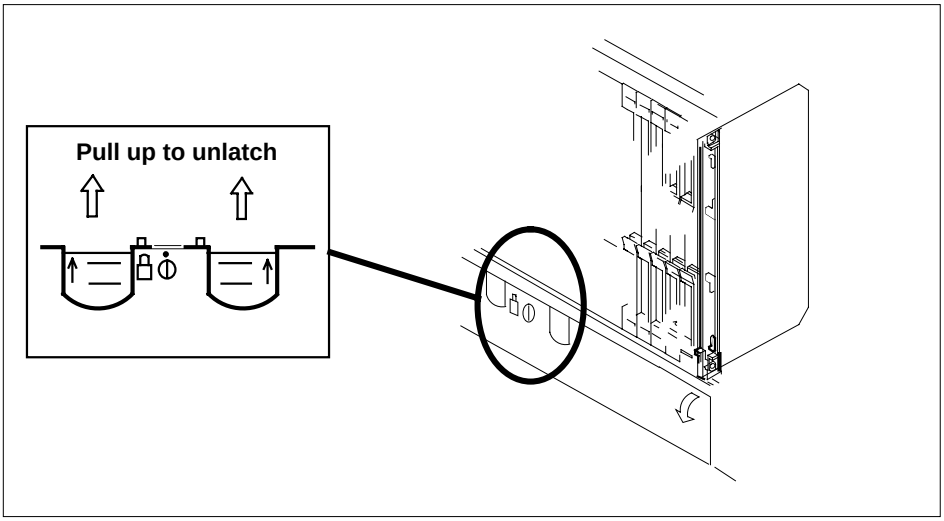
SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)

At the SPM frame

5 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



6 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

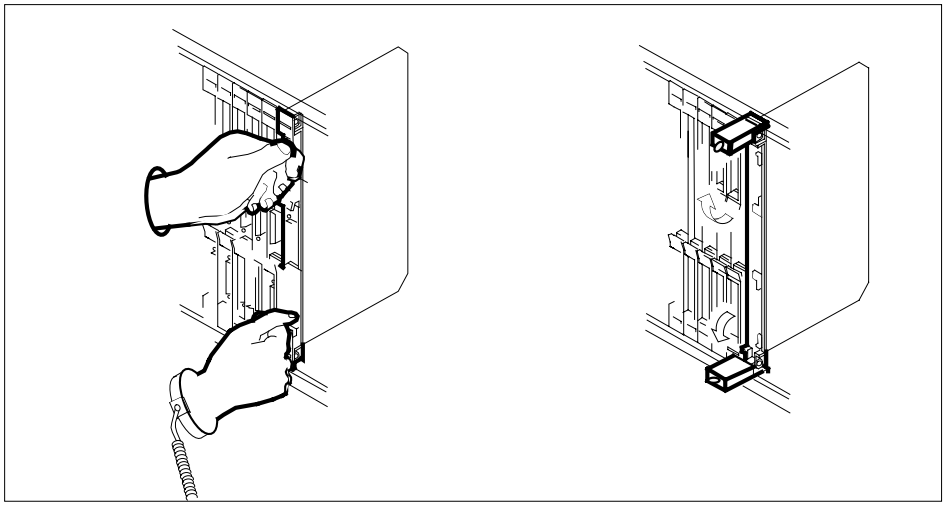


SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)

7

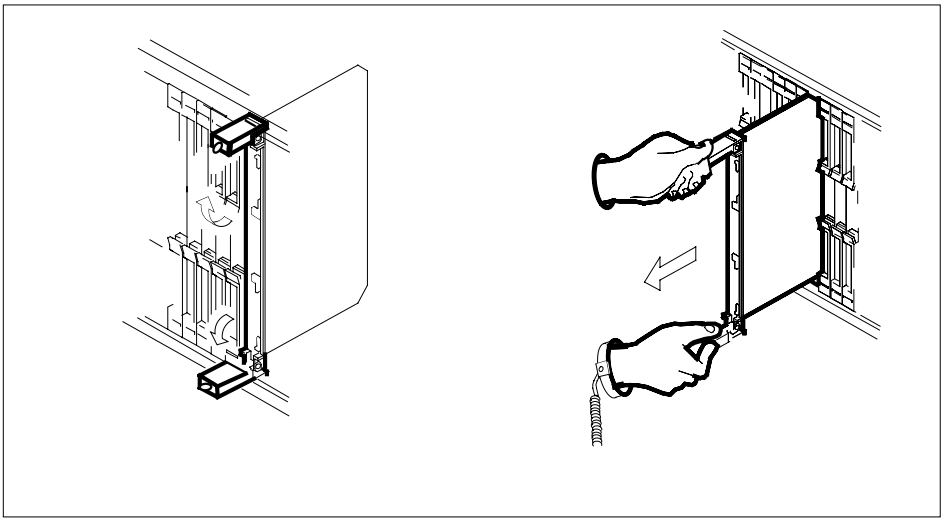
CAUTION
Card lever breakage
Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.



8 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)



9

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

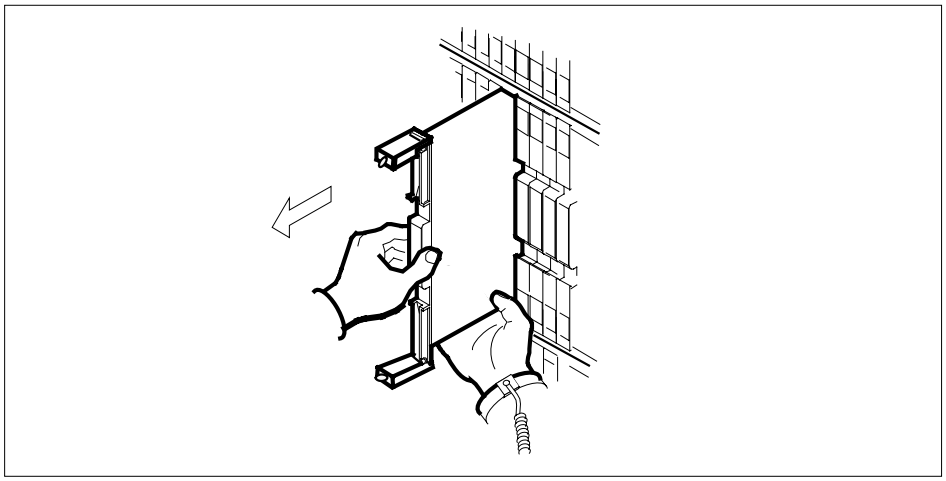
CAUTION

Static electricity damage

While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.

SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)



10

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement DSP card with the same PEC and the same release as datafilled in table MNCKTPAK in Step 4.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

11

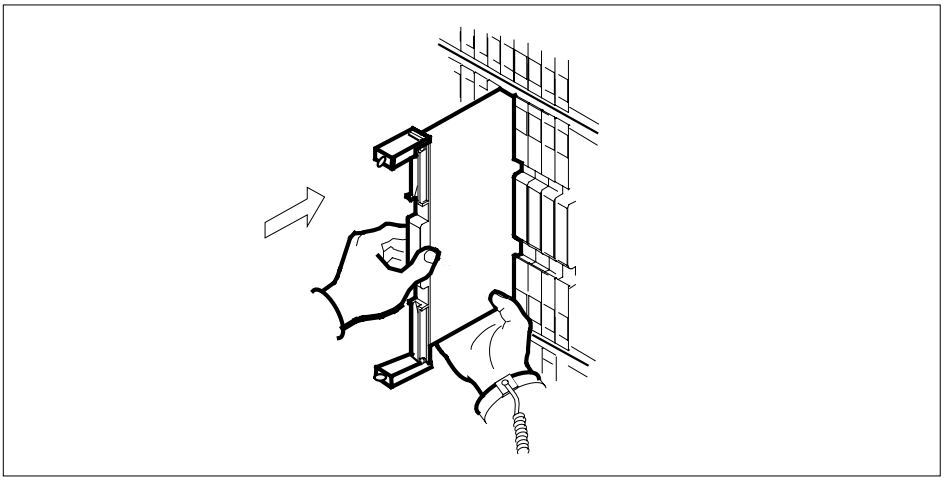
CAUTION
Equipment damage due to empty slots
Equip all unused slots on a powered shelf with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

Insert the replacement DSP card into the shelf.

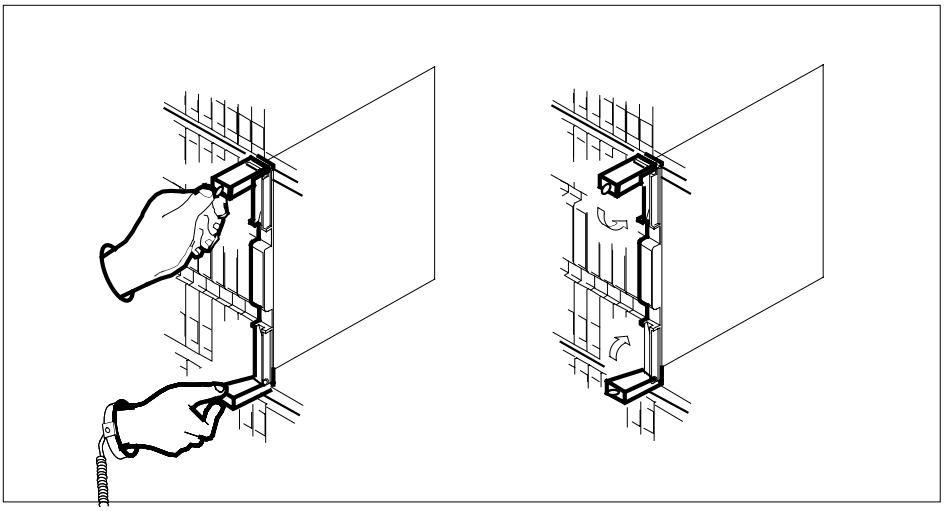
12 Open the locking levers on the card.

SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)

13 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.



14 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



15 Close the locking levers to secure the card.

16 Wait until the card performs a self test (less than one minute). The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement RM card may be defective; remove the card and replace it with another RM

SPM NTLX60AA FIL with DSP RM
DMS-Spectrum Peripheral Module (continued)

replacement card of the same type. If both LEDs remain on with the second replacement card, contact your next level of support.

17 Close and lock the access door.

At the MAP terminal SPM screen

18 Access the DSP card by typing

>SELECT DSP dsp_no

and pressing the Enter key.

where

dsp_no
is the number of the expansion DSP (0 to 27)

This is an example of a DSP screen.

```
   CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
   .       .       .        .        .       .        .        .        .        .


DSP                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                    0        0        0        0        0       38
 2               SPM                   0        0        0        0        0        1
 3 ListSet         DSP                 0        0        0        0        0        4
 4 ListRes
 5               SPM 11    DSP 0  Act  InSv
 6 Tst
 7 Bsy           Loc : Row A FrPos 0 ShPos 43 ShId 0 Slot 2  Prot Grp : 1
 8 RTS           Default Load: DSPnnnn                       Prot Role: Working
 9 Offl          DSP:
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Pro
17
18

    14:12 >
```

19

CAUTION
Mixing activity states and service states
RMs can be busy and active at the same time. To avoid this situation, do not busy (BSY) an active RM and do not attempt a protection switch to a BYS'd RM.

Ensure the replacement module is inactive before setting it to manual busy. Change the DSP card from the OffL state to ManB state by typing

```
>BSY
```

and pressing the Enter key.

20 Load the module software by typing

```
>LOADMOD
```

and pressing the Enter key.

Note: Module loading can take up to seven minutes to complete.

At the MAP terminal DSP screen

21 Ensure that the replacement module is inactive and Manb before returning it to service. Return the new DSP card to service by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to one minute to complete.

22 From the DSP screen, type

```
>PROT
```

and press the Enter key.

23 Set the DSP to active (A) by typing

```
>MANUAL from_unit_no  to_unit_no
```

and pressing the Enter key.

where

SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module (end)

from_unit_no
is the number of the inactive unit (0 to 27)

to_unit_no
is the number of the active unit (0 to 27)

24 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module

Application

Use this procedure to replace a DMS-Spectrum Peripheral Module (SPM) NTLX61AA shelf interface module (SIM).

Refer to the following table to identify the product engineering code (PEC) and release, or provisioned shelf or frame for the card you want to replace.

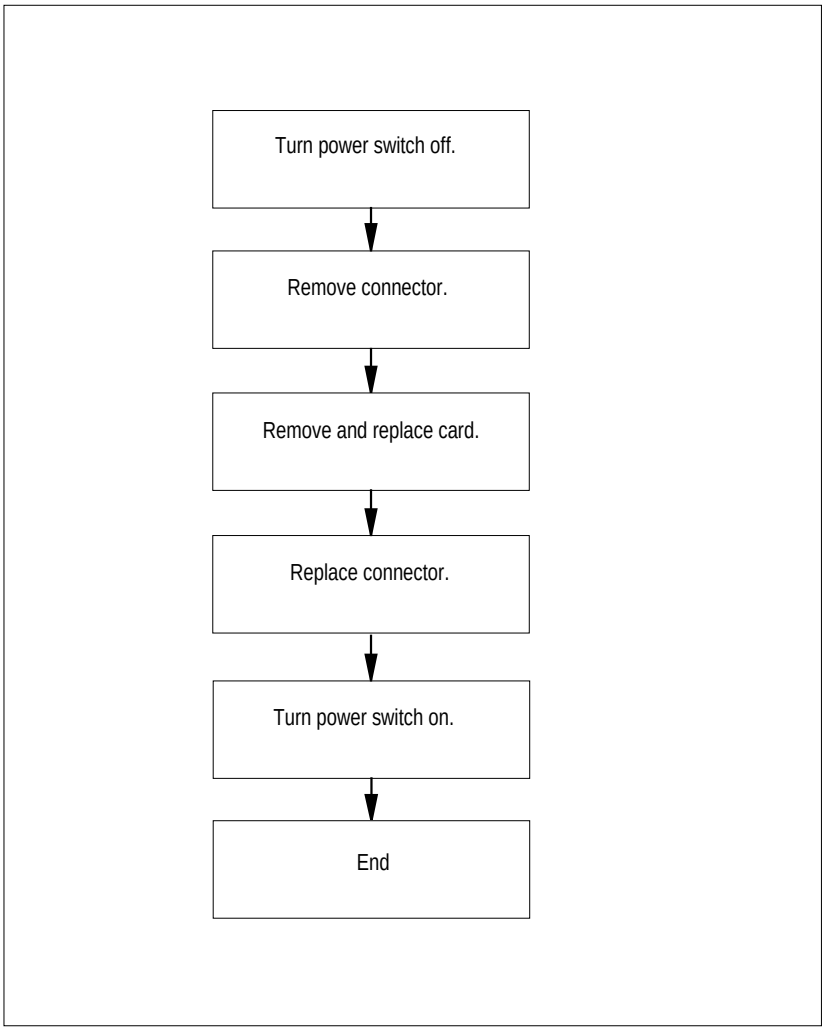
PEC	Release	Card name	Shelf or frame name
NTLX61	AA	SIM	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)

Summary of replacing the NTLX61AA SIM card



SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)

Replacing the SPM NTLX61AA SIM card

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP). This protects the cards against damage caused by static electricity.

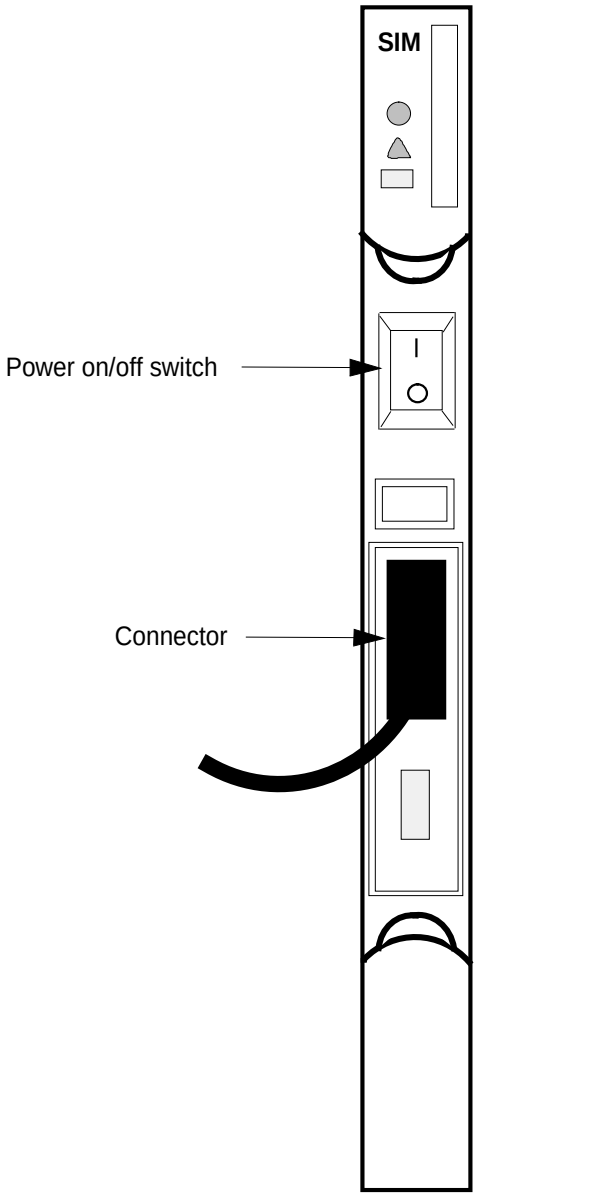
1 Locate the SIM (card to be removed) on the shelf.

2

DANGER
Electrical short
Equipment damage can result if the exposed pins of the SIM power-cable connector come into contact with metal surfaces. Tie-off or cap the cable connector when it is removed from the SIM.

Set the power switch (as shown in the following figure) to the off position and wait 15 seconds before proceeding to next step.

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)



NTLX61AA SIM faceplate view

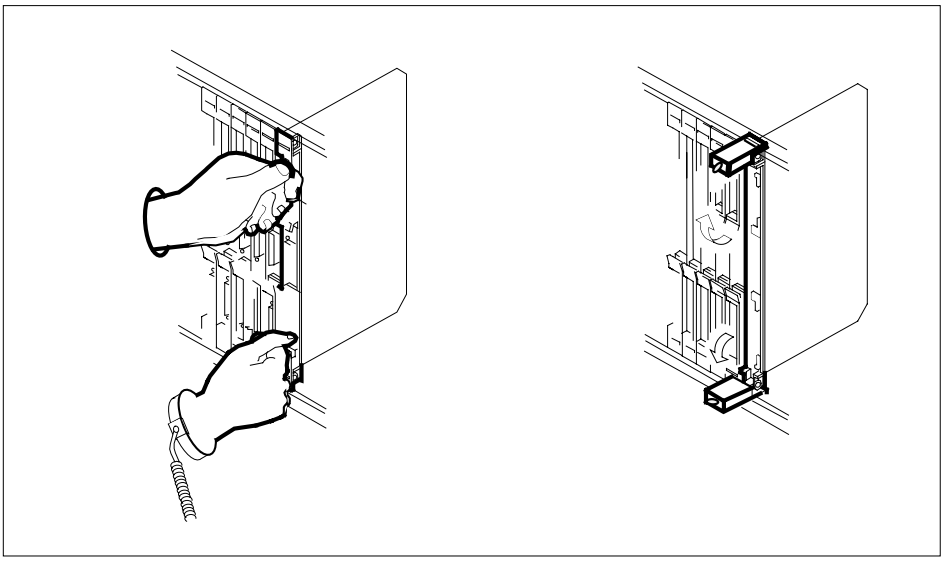
SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)

3

CAUTION
Wait 15 s for power dissipation
After setting the SIM power switch to off, wait at least 15 seconds for the power to dissipate before disconnecting the power cable.

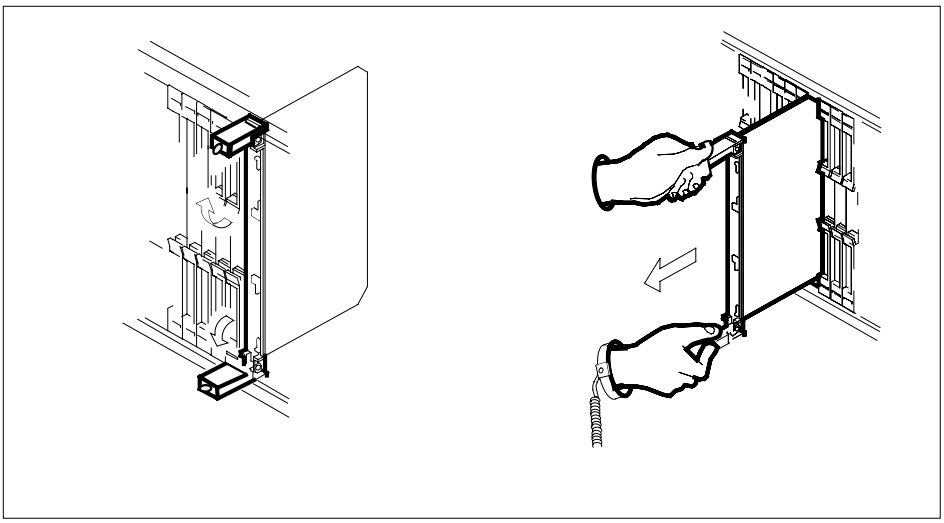
Remove the cable connector located on the front of the card. Tie-off or cap the cable connector.

4 As shown in the following figure, open the locking levers on the card to be replaced.



5 While grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf (as shown in the following figure).

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)



6

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

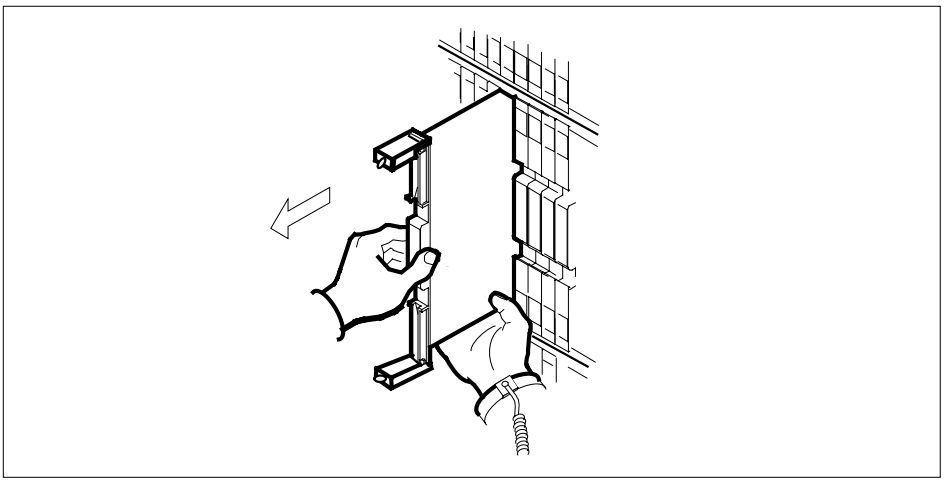
CAUTION

Card lever breakage

Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

Hold the card by the face plate with one hand while supporting the bottom edge with the other hand. As shown in the following figure, gently pull the card toward you until it clears the shelf.

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (continued)



7 Place the card you have removed in an electrostatic discharge (ESD) protective container.

8

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Ensure the replacement card has the same PEC and the same release.

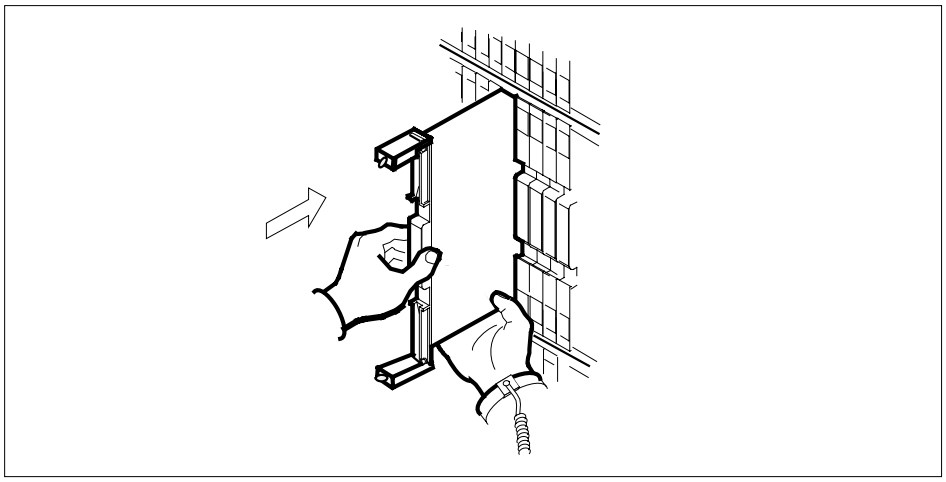
Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

9 Insert the replacement SIM card into the shelf.

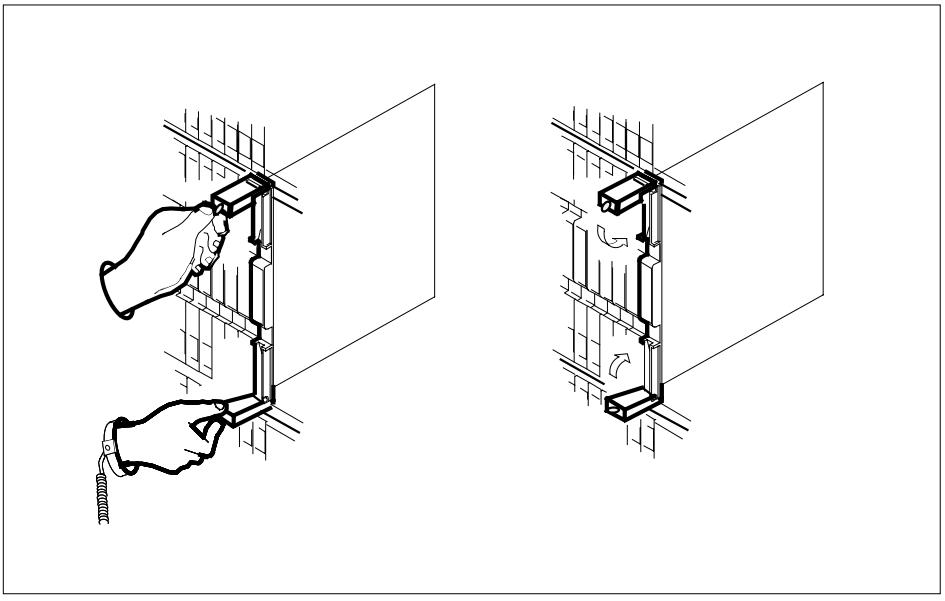
10 Open the locking levers on the card.

11 Hold the card by the face plate with one hand while supporting the bottom edge with the other hand. As shown in the following figure, gently slide the card into the shelf.

SPM NTLX61AA SIM card
DMS-Spectrum Peripheral Module (end)



12 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



13 Close the locking levers to secure the card.

14 Replace the power cable.

15 Set the power switch (located on the front of the card) to the on position.

16 You have completed this procedure.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX63AA common equipment module (CEM) card. The CEM cards are located in the DMS-Spectrum Peripheral Module (SPM) frame.

Refer to the following table to identify the product engineering code (PEC) and release, or the provisioned shelf or frame for the card to be replaced.

PEC	Release	Card name	Shelf or frame name
NTLX63	AA	CEM	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly

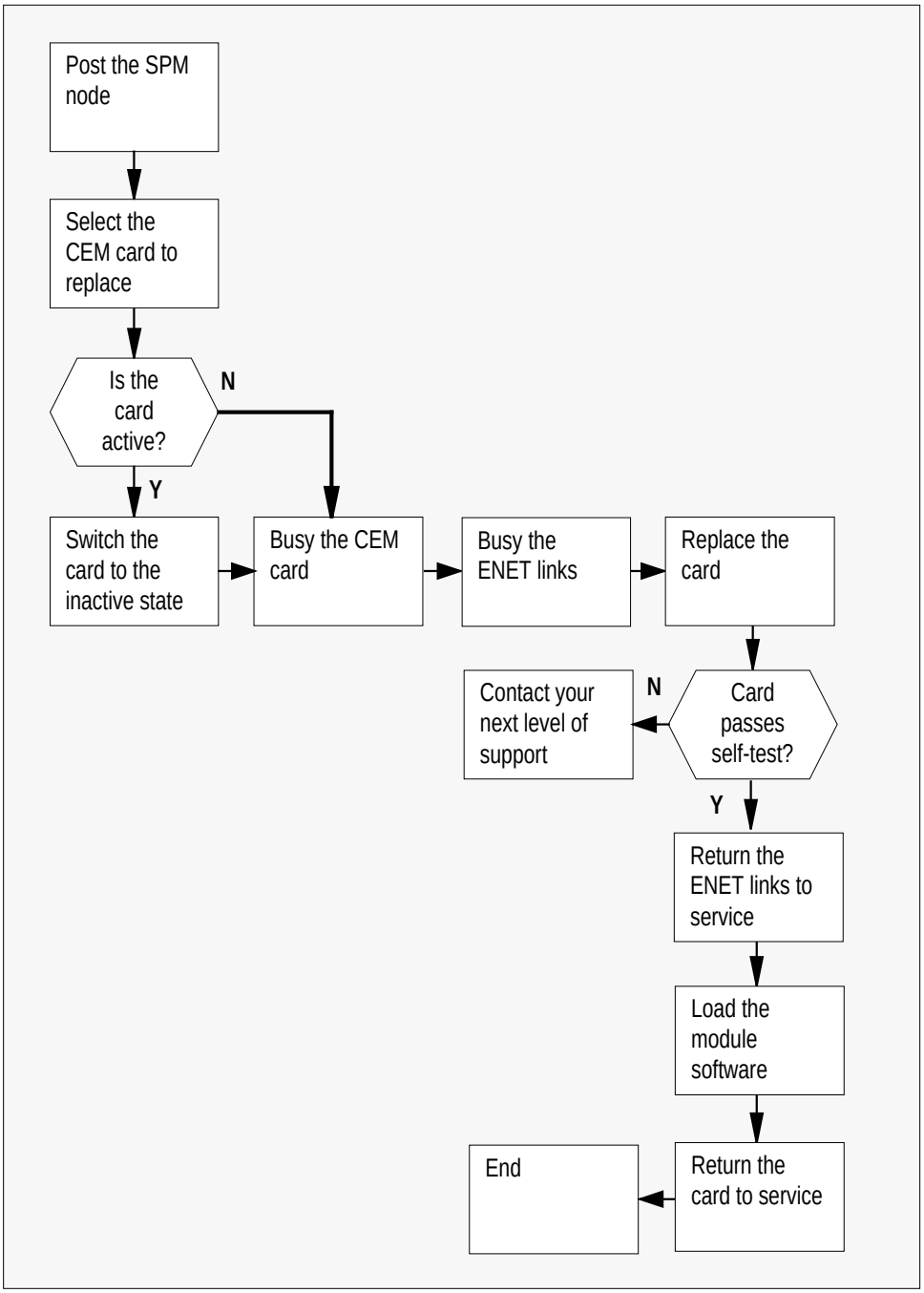
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

Summary of replacing the NTLX63AA CEM card



SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX63AA SPM CEM card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

>MAPCI;MTC;PM

and pressing the Enter key.

2 Access the SPM screen by typing

>POST SPM spm_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

The following illustration is an example of an SPM screen. This example may not reflect your SPM screen.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .       .


SPM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                 0       0       0       0       0       1
 2 Post_         SPM                0       0       0       0       0       1
 3 ListSet
 4 ListRes     SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6             Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7             DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8             DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9             DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10             DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_       --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next        --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_     CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM     SPM:
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the CEM card by typing

>SELECT CEM cem_no

and pressing the Enter key.

where

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

cem_no
is the number of the CEM card (0 or 1)

The following illustration is an example of a CEM screen.

```
  CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
  .       .       .        .        .       .        .        .        .        .


CEM                                    SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                     0       0       0       0       0       1
 2               SPM                    0       0       0       0       0       1
 3 Listset        CEM                   0       0       0       0       0       2
 4
 5 Trnsl       SPM 20    CEM 0  Act  INSV
 6 Tst
 7 Bsy         Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS         Default Load: CEMnnnn
 9 Offl        Clock:
10 LoadMod     Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11             POST:
12 Next        CEM:
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the CEM screen, type

>PROT

and press the Enter key.

The following is an example of a Protection screen.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .         .     .       .


Protectn                          SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                0       0       0       0       0       1
 2               SPM               0       0       0       0       0       1
 3                 CEM             0       0       0       0       0       2
 4
 5             SPM   11  InSv
 6             Prot Grp: CEM    Mode: Non-revertive   Schema: N/A
 7 Force       Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 8 Manual       1 -- - - ----    8  1 S I InSv    1 -- - - ----    8 -- - - ----
 9              2 -- - - ----    9 -- - - ----    2 -- - - ----    9 -- - - ----
10              3 -- - - ----   10 -- - - ----    3 -- - - ----   10 -- - - ----
11              4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
12              5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
13 Select_      6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
14              7  0 S A InSv   14 -- - - ----    7 -- - - ----   14 -- - - ----
15 ListAlm    PROT:
16
17
18

    14:10 >
```

5 At the Protection (PROT) screen, determine if the CEM being replaced is active (A) or inactive (I). If the CEM is in service and active, make the CEM inactive by typing

>MANUAL

and pressing the Enter key. Monitor the MAP screen to ensure the change of state occurs.

At the CEM screen

6 Take the CEM card out of service by typing

>BSY

and pressing the Enter key.

7 Confirm the command by typing

>YES

and pressing the Enter key.

8 Return to the SPM screen and wait for the CEM to change to the manual busy (ManB) state. Please note that the state change to ManB may take several minutes to complete.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

At the CEM screen

9 Before removing the CEM card, you must change the state of the ENET links to ManB. Perform the following substeps to record the applicable ENET information:

a List the ENET links by typing

>TRNSL

and pressing the Enter key.

Example of a MAP screen:

```
SPM   11 CEM   0  InAct    ManB          /

Loc : Row C  FrPos  4 ShPos  6 ShId 0 Slot  7
Default Load: SPMnnnn
Clock:
Input Ref:            Source:           Current Mode:
Trnsl
Link 1: ENET 0  0  14  0; Status: OK
Link 2: ENET 1  0  14  1; Status: OK
Link 3: ENET 0  0  14  2; Status: OK
Link 4: ENET 1  0  14  3; Status: OK
```

b Record the ENET plane, shelf, and slot number (`0,0,14 and 1,0,14` in the example above).

Note: CEM links to the ENET can be configured as dual-shelf or single-shelf connections. For single-shelf connections, all four CEM links connect to either Plane 0 or Plane 1.

10 Go to the ENET level of the MAP by typing

>MTC;NET

and pressing the Enter key.

The following is an example of an ENET screen.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .       .


CEM              ENET     System    Matrix    Shelf 0 1 2 3
 0 Quit           Plane 0 CSLink    Fault           F - - -
 2                Plane 1 CSLink     .              F - - -
 3 QueryEN
 4 Locate        MTC:
 5 Deload_       ENET:
 6
 7
 8
 9
10
11 RExTst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

    14:12 >
```

11 Go to the ENET-shelf level of the MAP by typing

>SHELF <shelf_no>

and pressing the Enter key.

where

shelf_no
is the number of the ENET shelf (0 to 3) that holds the card

Example of a MAP screen:

```
SHELF 00  Slot         1111111 11122222 22222333 333333
           123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ..OO.F-- -------- ..OO.F.. .  .
 Plane 1    .  .   .F ..OO..-- -------- ..OO.F.. .  .

SHELF:
```

12 Locate the first ENET card by typing

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

>LOCATE 0 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

13 If dual-shelf connections are used, locate the second ENET card by typing

>LOCATE 1 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

14 Go to the card level of the ENET by typing

>CARD <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET card (0 to 38)

Example of a MAP screen:

```
SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ......F. -------- ...S.... .  .
 Plane 1    .  .   .F ......F. -------- ..FS.... .  .

CARD 14   Front:     Back:   DS-512 Links
           Xpt        I/F    0 1 2 3
 Plane 0    .          .     . . . .
 Plane 1    .          .     . . . .
CARD:
```

15 Translate the peripheral-side links of the ENET by typing

>TRNSL P <plane_no><link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 3)

Example of a MAP screen:

```
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 submitted.
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 passed.
ENET Plane:0 Shelf:00 Slot:14 Link:00 :
  SPM 11 CEM 0 Lnk 1
```

Repeat the TRNSL P command to determine all four ENET P-side links to the CEM being replaced. Record the link connections. The following example shows the ENET links for a typical dual-shelf SPM connection.

(Sheet 1 of 2)

ENET Plane	Link	SPM CEM	Link
0	0	0	1
0	1	0	2
0	2	0	3
0	3	0	4
1	0	1	1
1	1	1	2

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

(Sheet 2 of 2)

ENET Plane	Link	SPM CEM	Link
1	2	1	3
1	3	1	4

16

CAUTION
Loss of service
A temporary interruption of service occurs when ENET links are busied. The interruption can affect data calls.

Busy (BSY) the four ENET links to the CEM being replaced by typing

>BSY <plane_no> LINK <link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the BSY command for each link to the CEM being replaced. Do not busy the links to the other CEM.

At the equipment frame

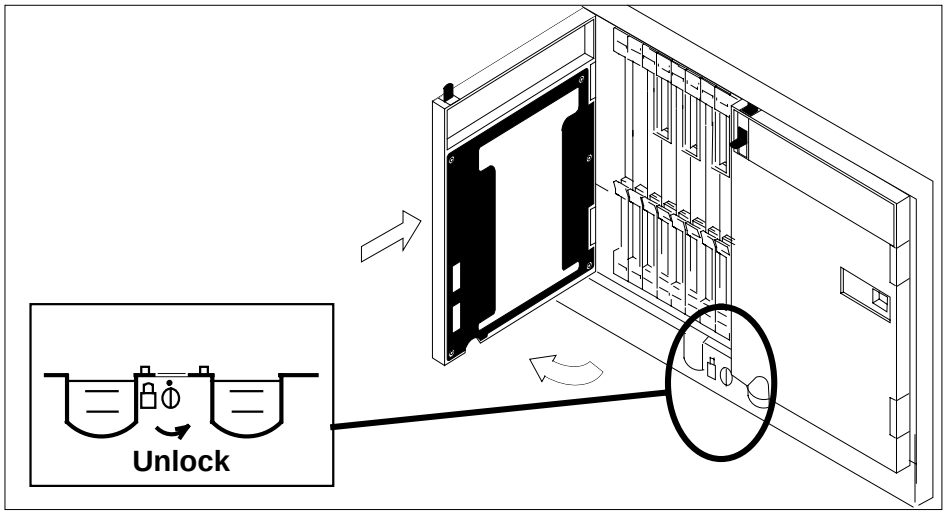
17

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

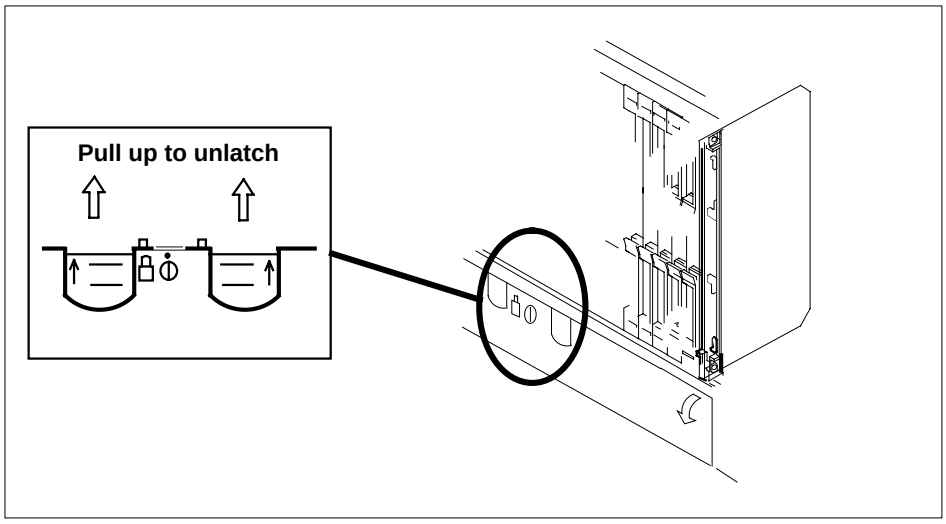
As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



18 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

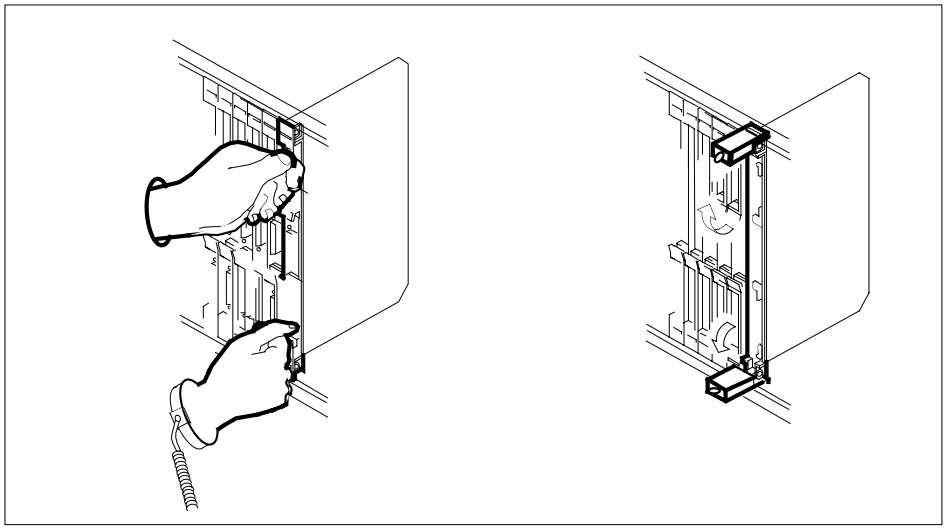


SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

19

CAUTION
Card lever breakage
Cards can weigh up to 9 lbs (4 kg). Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf.

As shown in the following figure, open the locking levers on the card to be replaced.



20

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label the DS-512 fiber cables to ensure that they are reconnected in the original order.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

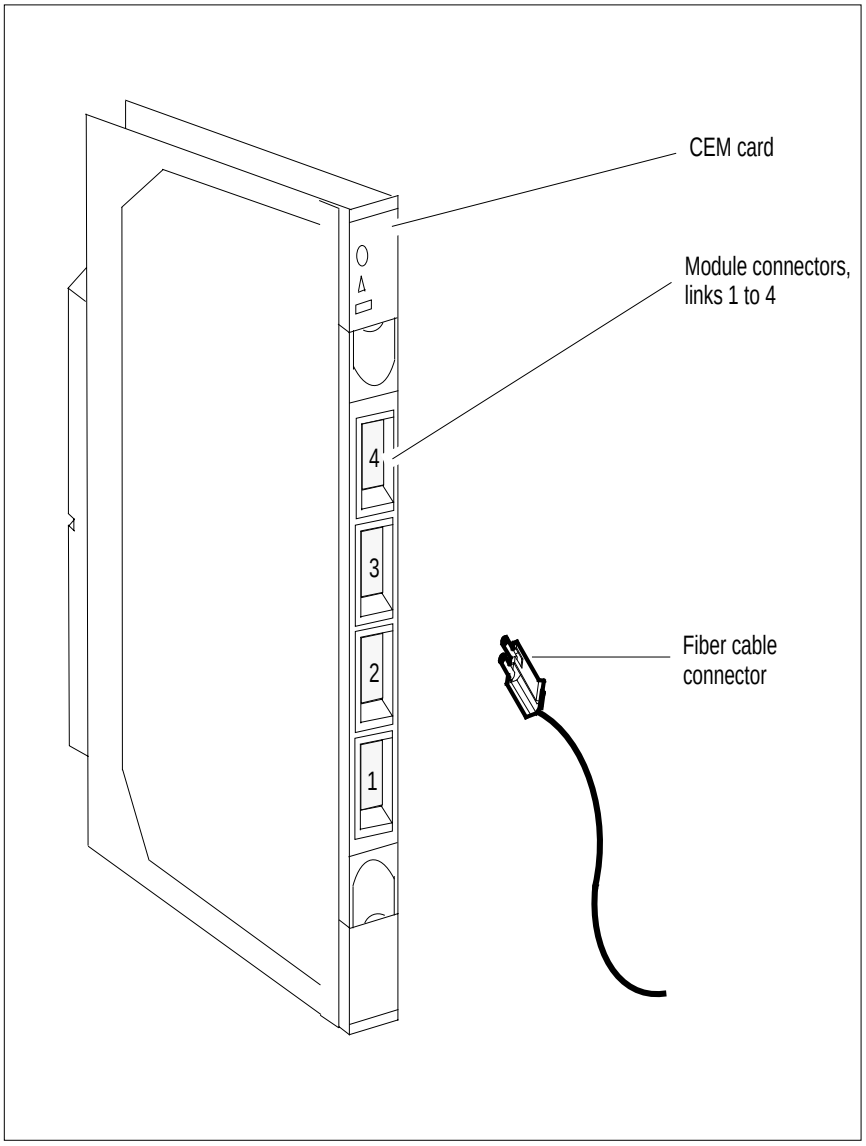
21

DANGER
Laser radiation exposure
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

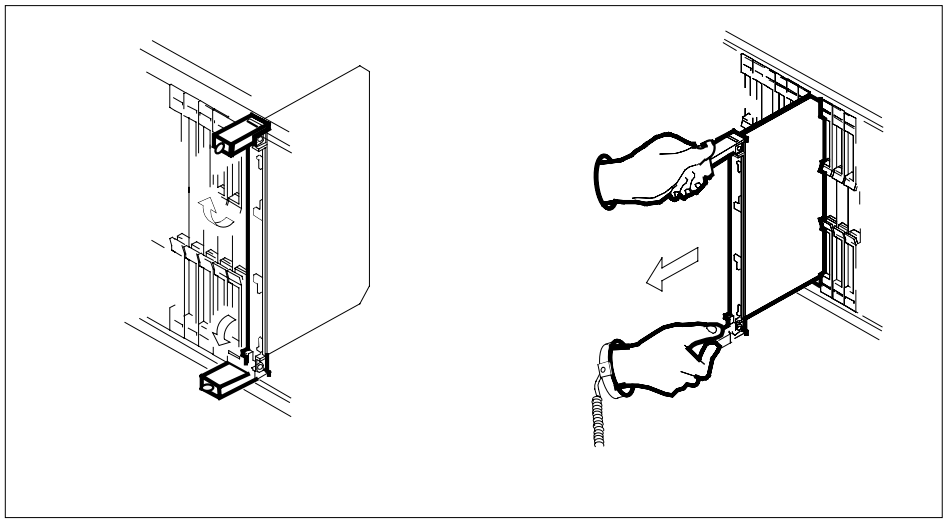
- Gently squeeze the locking clips on the connector.
- Pull the connector out of the receptacle.
- After the cables have been removed, cap the connectors on the module and on the fiber cable.
- Store the cables in the cable trough.
- Before removing the CEM card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)



22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

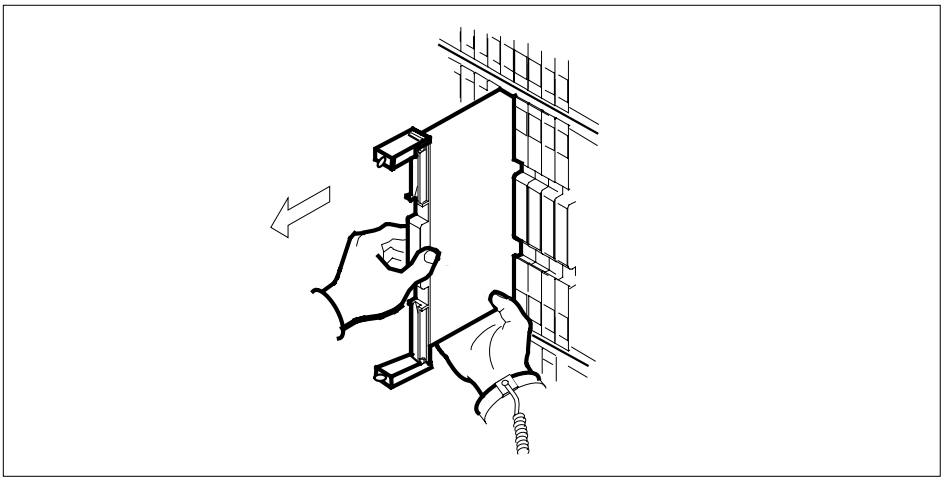


23

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

24

CAUTION
Equipment damage due to empty slots
All slots not used on a powered shelf must be equipped with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity and they maintain shelf airflow patterns to ensure proper cooling.

Place the card you have removed in an electrostatic discharge (ESD) protective container.

25

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Ensure that the replacement card has the same PEC and release number.

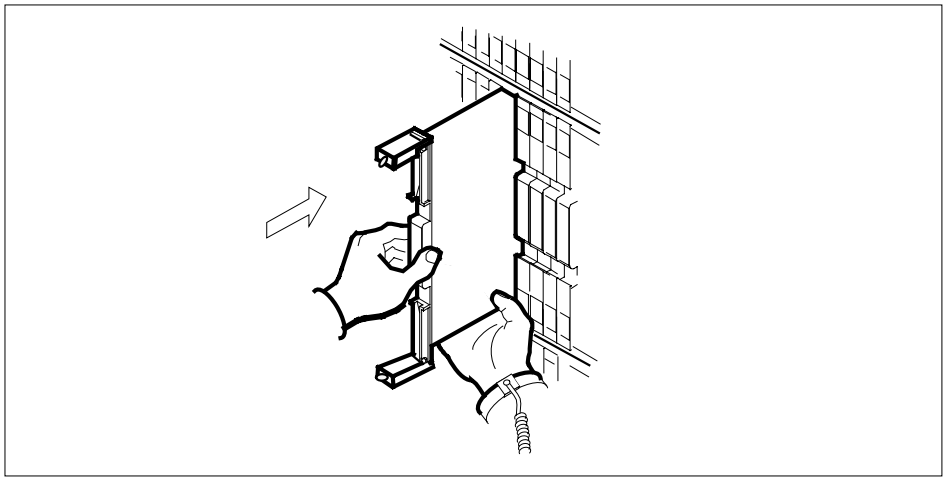
Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

26 Insert the replacement CEM card into the shelf. If a replacement card is not available, insert an NTLX60AA filler module into the slot until a replacement CEM is provided.

27 Open the locking levers on the card.

28 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)

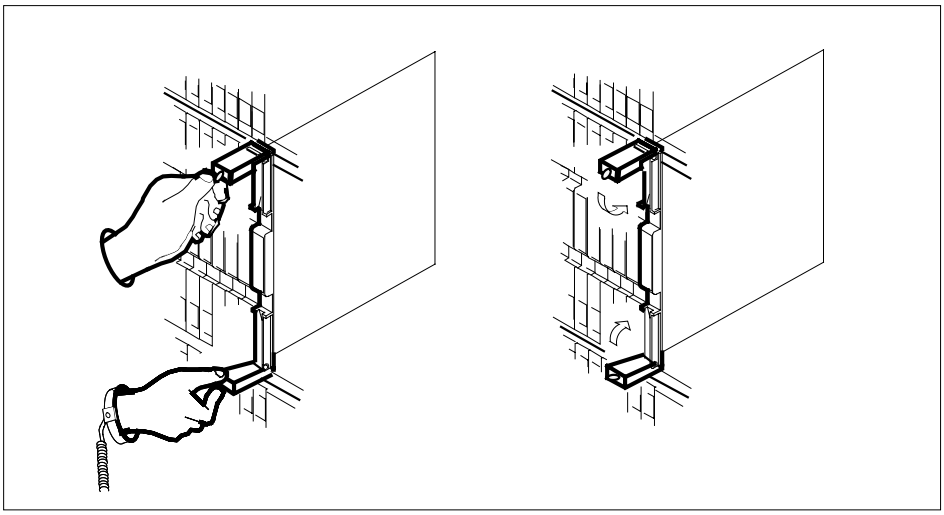


29

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (continued)



30 Close the locking levers to secure the card.

31 Wait until the card performs a self test. The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement CEM card may be defective; remove the card and replace it with another replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Reconnect the DS-512 fiber cables as follows:

- Remove the caps on the module and cable connectors.
- Gently guide the cable connector into its receptacle notches.
- Squeeze the locking clip and gently push the connector into the receptacle until it clicks into place.

33 Close the cable-trough door. Close and lock the card-access door.

At the MAP terminal:

34 Return-to-service (RTS) the four ENET links to the replacement CEM by typing

>RTS <plane_no> LINK <link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the RTS command for each link to the replacement CEM.

SPM NTLX63AA CEM card
DMS-Spectrum Peripheral Module (end)

35 At the CEM screen, reset the replacement CEM card by typing

>RESETMOD FW

and pressing the Enter key.

Wait until the MS ports clear and the maintenance activity completes.

Note: MS port is in Insv state because the *RESETMOD FW* command initializes the new CEM card firmware. This brings the MS port to "." state from "P" state.

36 Load the replacement CEM card with the default software load by typing

>LOADMOD

and pressing the Enter key.

Note: The LOADMOD process can take up to 15 minutes to complete. Monitor the progress at the `/Load:` indicator at the end of the SPM line on the CEM MAP display.

37 Return the replacement CEM card to service by typing

>RTS

and pressing the Enter key.

Note: The state change from ManB to InSv may take several minutes to complete.

38 If the replacement CEM card must be the active CEM, go to the protection (PROT) screen and type

>MANUAL

and press the Enter key. Monitor the MAP screen to ensure the change of status occurs.

39 You have completed this procedure. Return to the CI level of the MAP screen by typing

>QUIT ALL

and pressing the Enter key.

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX65BA digital signal processor (DSP) resource module (RM) card. The DSP RM card is located in the Spectrum Peripheral Module (SPM) frame. The AA version of the card is replaced by the BA version.

For the new BA version of DSP, the following changes are made:

- The Celestica Point of Use Power Supplies (PUPS) are replaced by Lucent PUPS.
- The Mitsubishi 1V26 memory chip (8 megabytes) is replaced with the Mitsubishi 4V36 (16 megabytes) chip.
- The self-test diagnostics have improved power.

To identify the product engineering code (PEC) and release, or provisioned shelf or frame for the card you want to replace, refer to the following table.

PEC	Release	Card name	Shelf or frame name
NTLX65	BA	DSP RM	NTLX51BA dual-shelf assembly, NTLX91BA DMS frame assembly

To verify the PEC of the card being replaced, check the datafill in table MNCKTPAK.

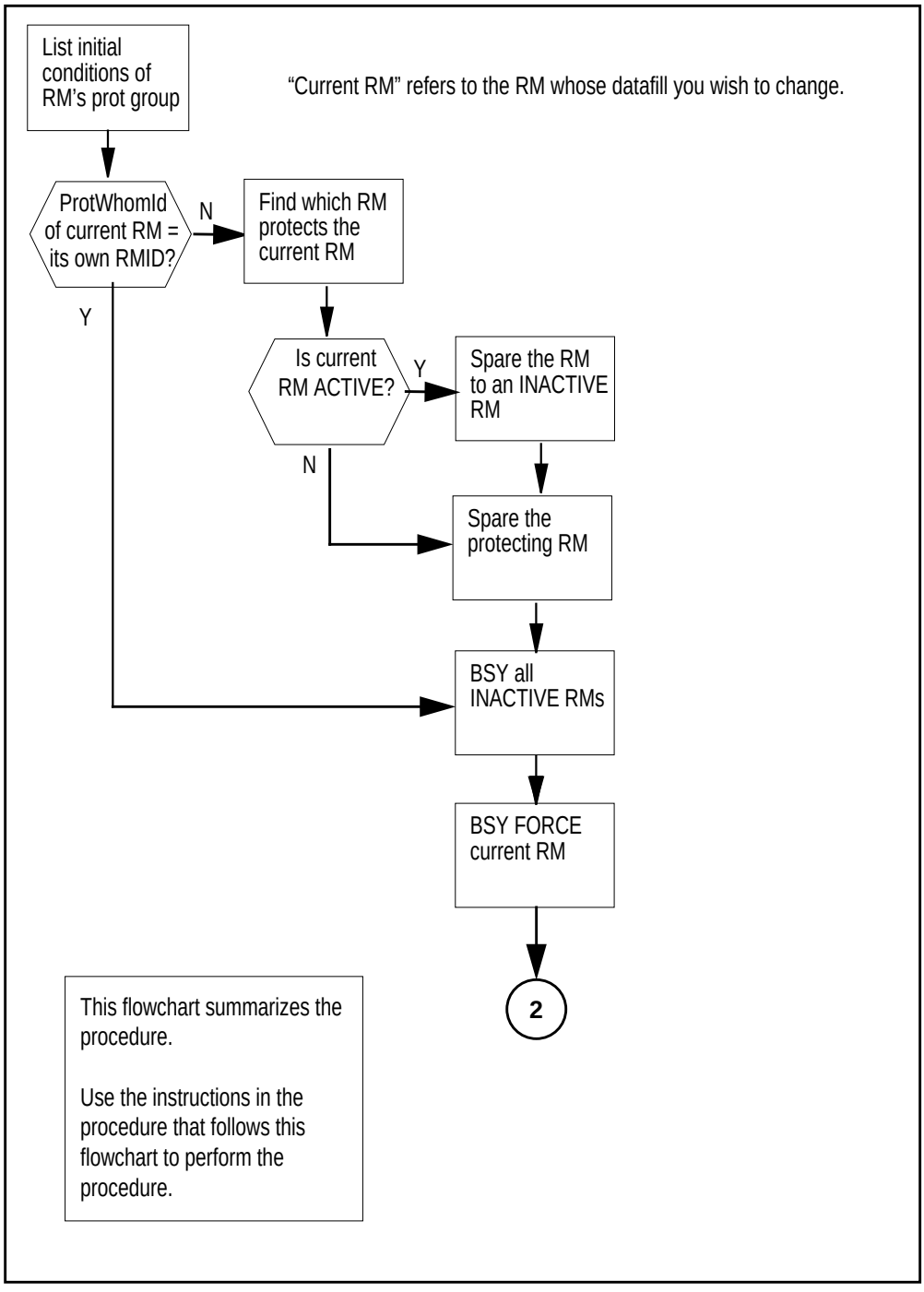
Note: When the DSP RM is part of a protection group, special procedures apply for modifying or deleting MNCKTPAK datafill. See the MNCKTPAK section of the *Data Schema Reference Manual* or *Translation Guide*, as appropriate for your product, for these procedures.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

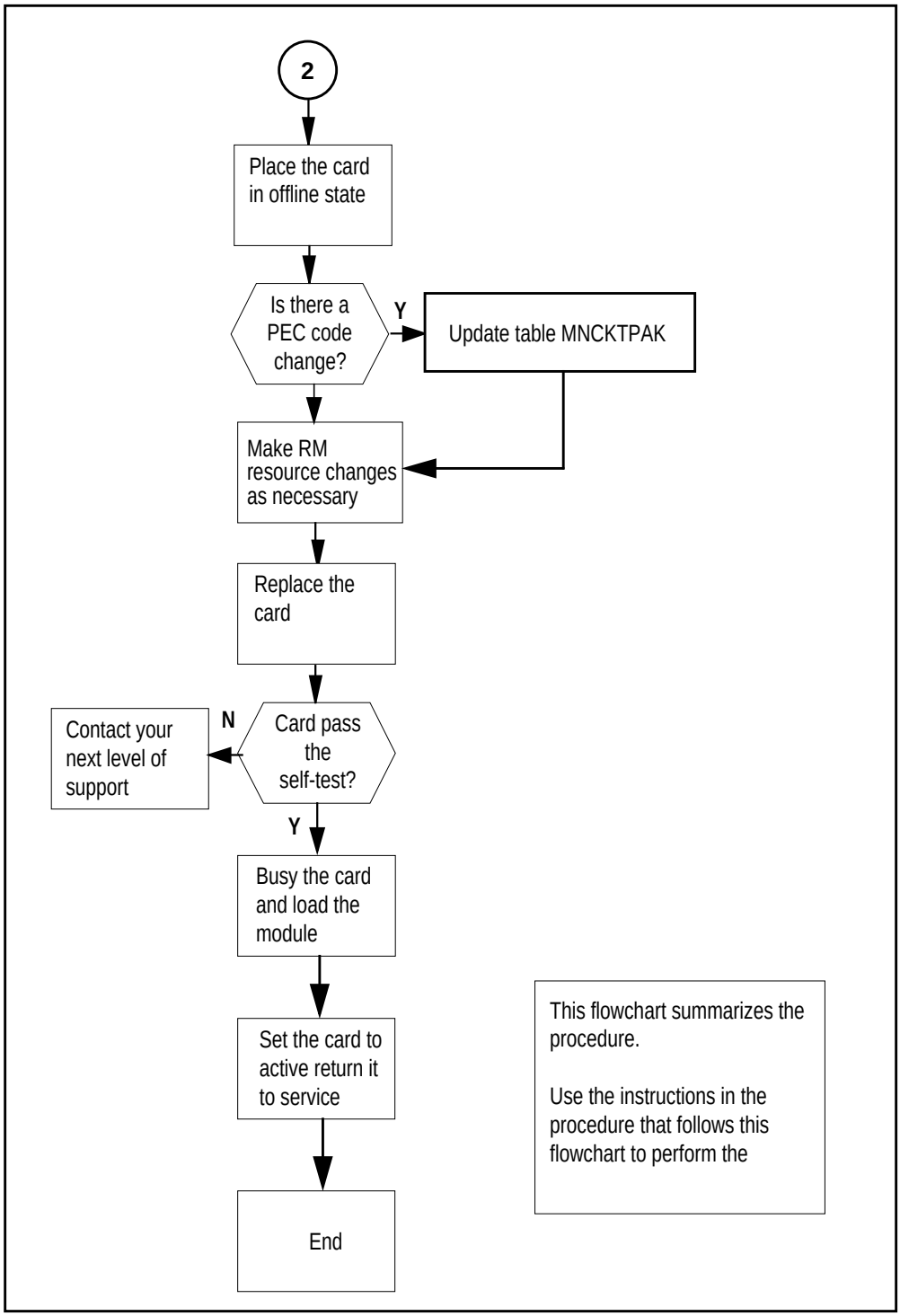
SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

Summary of replacing an SPM NTLX65BA DSP RM card, Part 1



SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

Summary of replacing an SPM NTLX65BA DSP RM card, Part 2



SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX65BA SPM DSP RM card

At the MAP terminal

1 Ensure you have access to both the CM and the CEM.

2 Determine the initial conditions of the RMs in the protection group of the RM whose datafill you need to modify.

```
CI> spmresman spm <spm#> DSP <rm#>
```

where

spm#
is the SPM number of the SPM housing the RM whose datafill is to be changed

rm#
is the number of the RM whose datafill is to be changed

Note: The SPMRESMAN command is available on loads SP12, SP11, or SP10 only if patch DCW25 has been applied. If patch DCW25 has not been applied, you must apply it, then begin this procedure again.

Example of an initial SPMRESMAN command and results

```
>spmresman spm 5 DSP 1
SPM 5
 ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DSP  0    23    ACTIVE          24        2              NO
DSP  1    24    ACTIVE          25        2              NO
DSP  2    25  INACTIVE          23        2              NO
DSP  3    26    ACTIVE          26        2              NO
DSP  4    27    ACTIVE          27        2              NO
```

For the RM whose datafill needs to be changed, note the values of the RMID, activity state, and ProtWhomID.

If	Do
ProtWhomID is the same as ithe RM's own RMID, regardless of its activity state	step 6
ProtWhomID is not the same as ithe RM's own RMID, regardless of its activity state	step 3

3 Determine which RM currently has its ProtWhomID set to the RMID of the RM whose datafill is to be changed.

Example
Assume you want to change the datafill for DSP 1 in the SPMRESMAN output illustrated in step 2. DSP 1 has an RMID of 24. Look for RMID=24

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

in the ProtWhomID column; you see that DSP 0 has this value. This means DSP 0 is protecting DSP 1.

4 Using the SPMRESMAN results from step 2, note the activity status of the RM whose datafill you need to change.

If the activity status is ACTIVE, then spare the RM to an INACTIVE RM.

Example
As before, assume you want to change the datafill for DSP 1. Note that its activity status is ACTIVE in the output example in step 2. DSP 2 is INACTIVE, so spare DSP 1 to DSP 2. The following command sequence accomplishes this.

```
mapci; mtc; pm; post spm 5
-->select DSP 1
-->prot
-->manual 1 2
-->y
```

Note: Do not type this example verbatim; remember to substitute appropriate values for your system.

SPMRESMAN command updated results

```
>spmresman spm 5 DSP 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DSP  0    23    ACTIVE          24        2              NO
DSP  1    24  INACTIVE          23        2              NO
DSP  2    25    ACTIVE          25        2              NO
DSP  3    26    ACTIVE          26        2              NO
DSP  4    27    ACTIVE          27        2              NO
```

Observe that DSP 1, the one whose Datafill you wish to change, is now INACTIVE.

5 Spare the RM (found in step 3) that is protecting the RM whose datafill you want to change. Spare it to the INACTIVE RM from step 4.

Example
Based on the SPMRESMAN output in the preceding step, perform a SPARE operation of DSP 0 to DSP1 (since DSP 0 is currently protecting DSP1, and DSP 1 is INACTIVE). The follow command sequence illustrates this action.

```
mapci; mtc; pm; post spm5; select DSP 0;
-->listres
-->prot
-->manual 0 1
-->y
```

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

Issue the SPMRESMAN command again. In the sample output that follows, note that DSP 0 is inactive and protecting itself (the RMID and ProtWhomID field are the same), and DSP 1 is active and protecting itself.

SPMRESMAN command updated results

```
>spmresman spm 5 DSP 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DSP  0    23  INACTIVE          23        2              NO
DSP  1    24    ACTIVE          24        2              NO
DSP  2    25    ACTIVE          25        2              NO
DSP  3    26    ACTIVE          26        2              NO
DSP  4    27    ACTIVE          27        2              NO
```

6 BSY all inactive RMs by entering the following for each one:

CI> mapci;mtc;pm;post spm <#>;select DSP <#>;bsy force

Example
In the SPMRESMAN output in the preceding step, there is one inactive RM, DSP 0. So you would enter the command

CI> mapci;mtc;pm;post spm 5;select DSP 0; bsy force

SPMRESMAN command results

```
>spmresman spm 5 DSP 1
SPM 5
ProtGroup: 2

        RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DSP  0    23  INACTIVE          23        2             YES
DSP  1    24    ACTIVE          24        2              NO
DSP  2    25    ACTIVE          25        2              NO
DSP  3    26    ACTIVE          26        2              NO
DSP  4    27    ACTIVE          27        2              NO
```

In the example printout, note that DSP 0 is inactive and the “safe to change” field is YES.

7 BSY FORCE the RM whose datafill is to be modified by entering the following:

CI> mapci;mtc;pm;post spm <#>;select DSP <#>;bsy force

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

SPMRESMAN command results

```
>spmresman spm 5 DSP 1
SPM 5
ProtGroup: 2

         RMID  Activity  ProtWhomID  ProtGrp  Safe to Change?
-------------------------------------------------------------
DSP  0    23  INACTIVE          23        2              YES
DSP  1    24    ACTIVE          24        2              YES
DSP  2    25    ACTIVE          25        2              NO
DSP  3    26    ACTIVE          26        2              NO
DSP  4    27    ACTIVE          27        2              NO
```

Note that the “safe to change” field for the RM whose datafill you wish to change, DSP 1 in the example, now is YES.

8 Take the DSP card to be replaced off line by typing

>0FFL

and pressing the Enter key.

If	Do
there is a PEC code change	Update Table MNCKTPAK to match the replacement card

Note: Other fields in the RM’s data tuple besides PEC code may be changed, such as resource type or the number of resources of each type. These changes should be made at this point in the replacement procedure.

9

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame to protect the cards against static electricity damage.

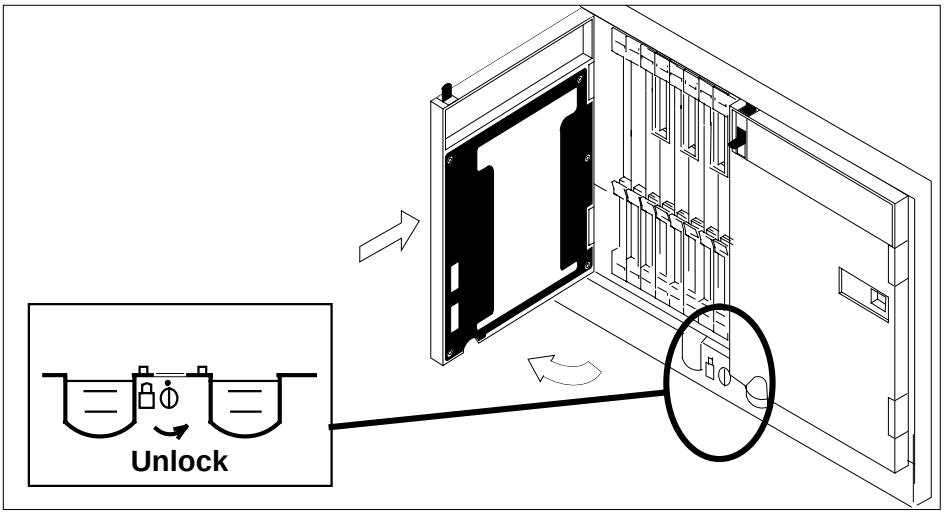
Return to the SPM screen and wait for the module state to change.

Note: The state change from ManB (manual busy) to OffL (offline) can take several minutes to complete. After the state change is complete, remove the DSP card.

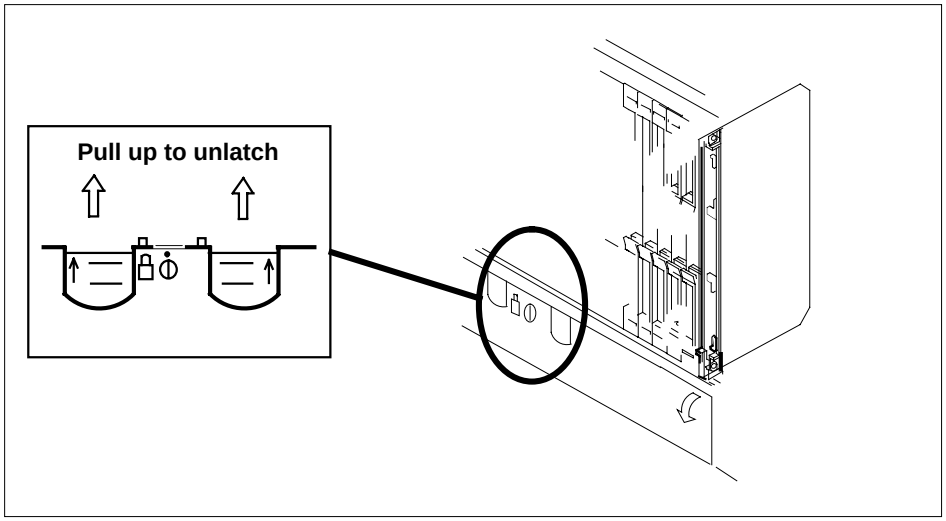
10 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



11 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

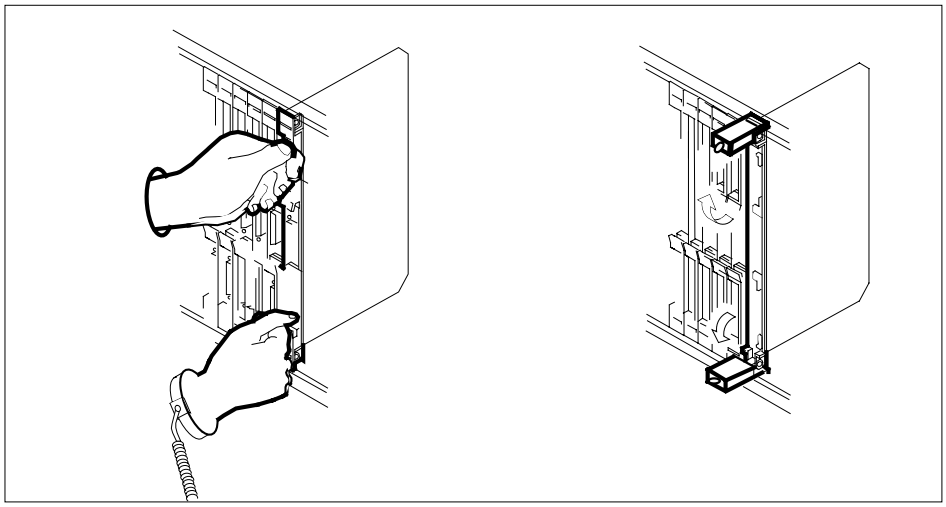


SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

12

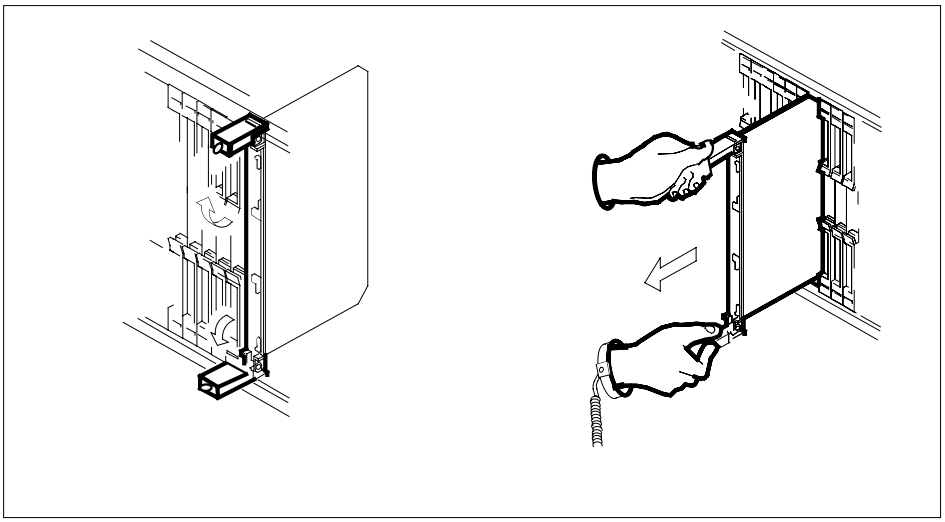
CAUTION
Card lever breakage
Holding a card by the levers only can result in lever breakage. Once the card has been pulled halfway out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.



13 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

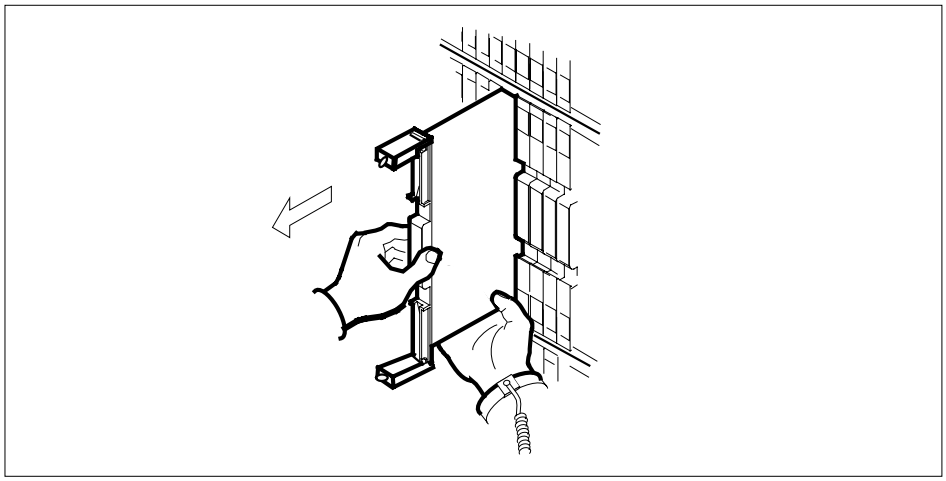


14

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

15

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Place the card in an electrostatic discharge (ESD) protective container.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

16

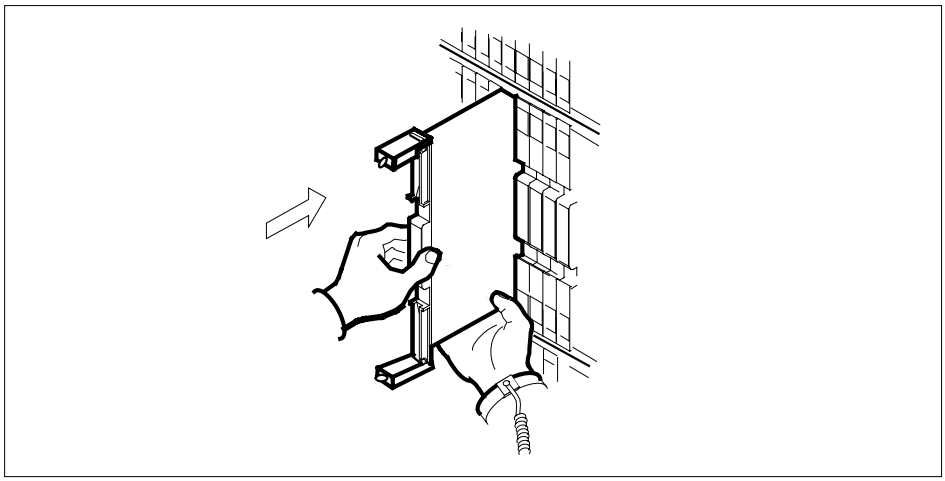
CAUTION
Equipment damage due to empty slots
Equip all unused slots on a powered shelf with NTLX60BA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

Insert the replacement DSP card into the shelf. If a replacement card is not available, insert an NTLX60BA filler module in the slot until a replacement card is available.

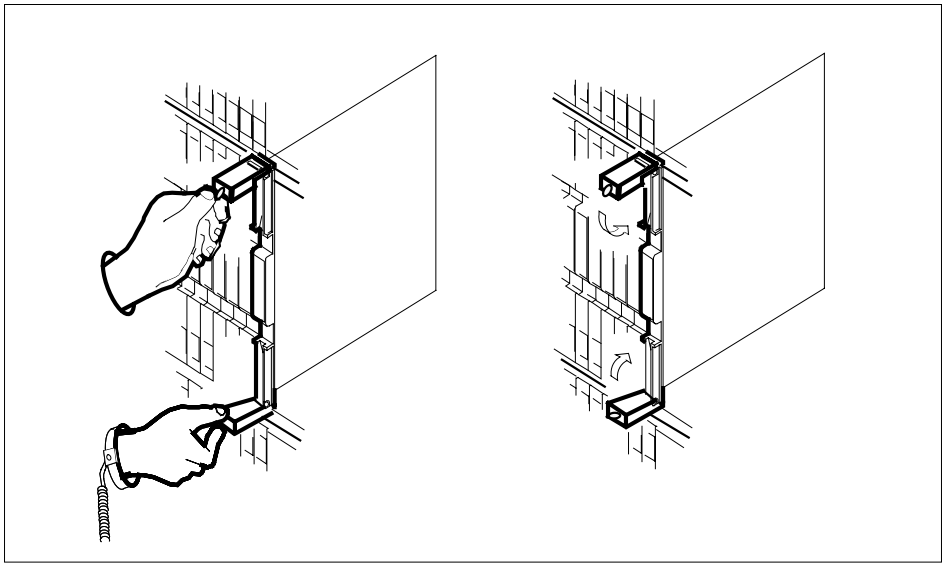
17 Open the locking levers on the card.

18 As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)



19 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



20 Close the locking levers to secure the card.

21 *Wait until the card performs a self-test (less than one minute).* The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement RM card is defective; remove the card and replace it with another RM replacement card of the same type. If both LEDs remain on with the second replacement card, contact your next level of support.

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (continued)

22 Close and lock the access door.

23

CAUTION
Mixing activity states and service states
RMs can be busy and active at the same time. To avoid this situation, do not busy (BSY) an active RM and do not attempt a protection switch to a BYS'd RM.

Ensure the replacement module is inactive before setting it to manual busy. Change the DSP card from the OffL state to ManB state by typing

```
>BSY
```

and pressing the Enter key.

24 Reset the firmware by typing

```
>RESETMOD FW
```

and pressing the Enter key.

25 Load the module software by typing

```
>LOADMOD
```

and pressing the Enter key.

Note: Module loading can take up to seven minutes to complete.

26 Return the new DSP card to service by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to one minute to complete.

27 From the DSP screen, type

```
>PROT
```

and press the Enter key.

28 Set the DSP to active (A) by using these definitions:

from_unit_no
is the number (0 to 27) of the active unit [spare]

SPM NTLX65BA DSP RM
DMS-Spectrum Peripheral Module (end)

to_unit_no
is the number (0 to 27) of the inactive unit [newly replaced]

Type the command

```
>MANUAL from_unit_no  to_unit_no
```

and press the Enter key.

29 If you need to replace another card, go to Step 2.

30 RTS the remaining inactive RMs that you busied in step 6 by entering the following command:

```
CI> mapci;mtc;pm;post spm <#>;select DSP <#>;bsy rts
```

The modification to the provisioned data is complete.

31 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

SPM NTLX71AA OC3 card DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX71AA OC3 interface card. The OC3 cards are located in the DMS-Spectrum Peripheral Module (SPM) frame.

To identify the product engineering code (PEC) and release, or provisioned shelf or frame for the card you want to replace, refer to the following table.

PEC	Release	Card name	Shelf or frame name
NTLX71	AA	OC3 interface module	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly

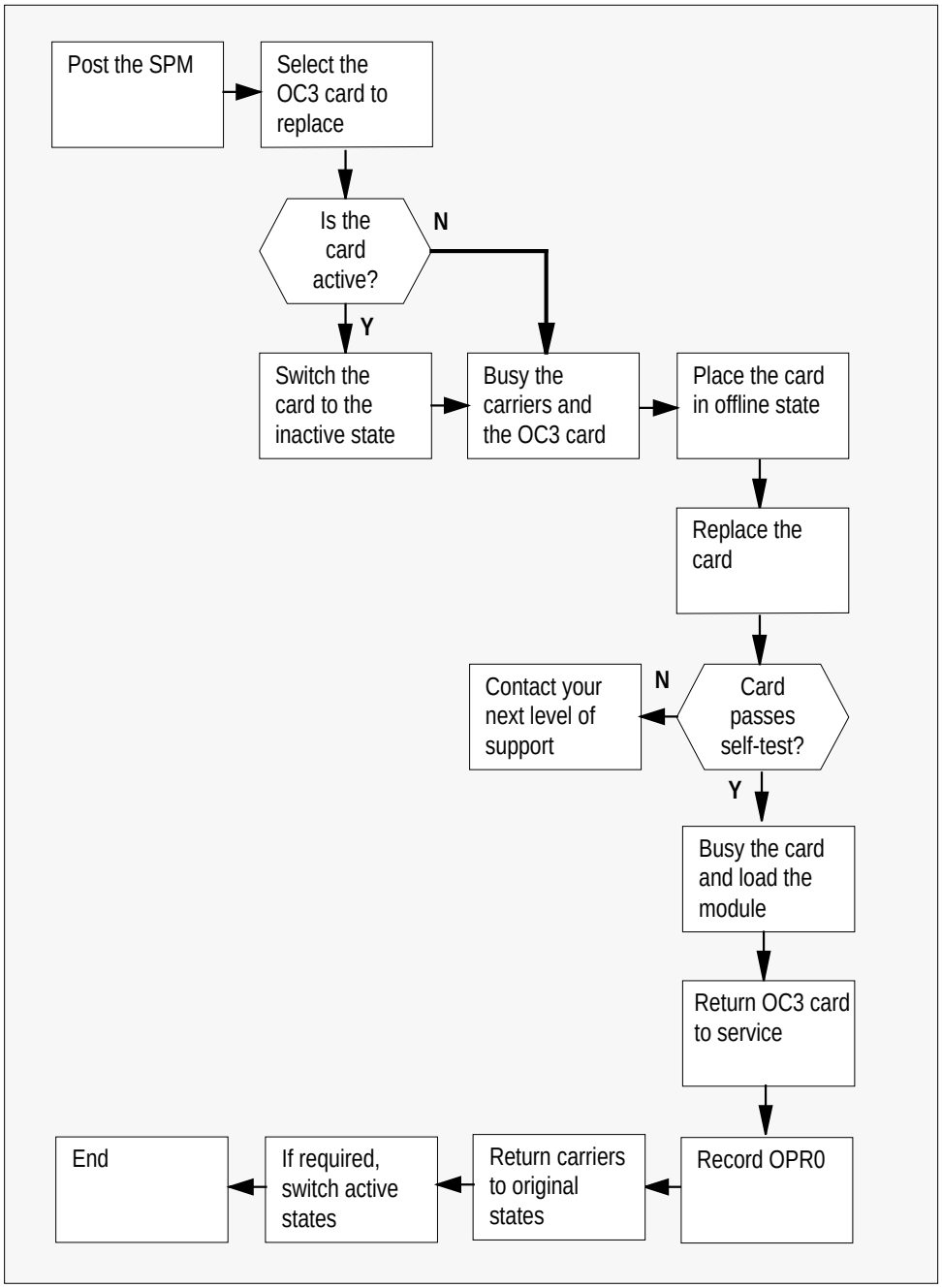
To verify the PEC of the card being replaced, check the datafill in table MNCKTPAK.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

Summary of replacing the NTLX71AA OC3 card



SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX71AA SPM OC3 card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

>MAPCI;MTC;PM

and pressing the Enter key.

2 Access the SPM screen by typing

>POST SPM spm_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of an SPM screen. This example may not reflect your SPM screen.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .
 .

SPM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                   0       0       0       0       0       1
 2 Post_         SPM                  0       0       0       0       0       1
 3 ListSet
 4 ListRes    SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7            DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8            DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9            DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10            DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_      --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next       --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_    CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the OC3 card by typing

>SELECT OC3 oc3_no

and pressing the Enter key.

where

oc3_no
is the number of the OC3 card (0 or 1)

This is an example of an OC3 screen.

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .       .      .       .        .      .       .       .
.

OC3                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                  0       0       0       0       0       1
 2               SPM                 0       0       0       0       0       1
 3 ListSet       OC3                 0       0       0       0       0       2
 4
 5              SPM 11    OC3 0  Act  InSv
 6 Tst
 7 Bsy          Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9  Prot Grp : 1
 8 RTS          Default Load: OC3LOAD                      Prot Role: Working
 9 OffL
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

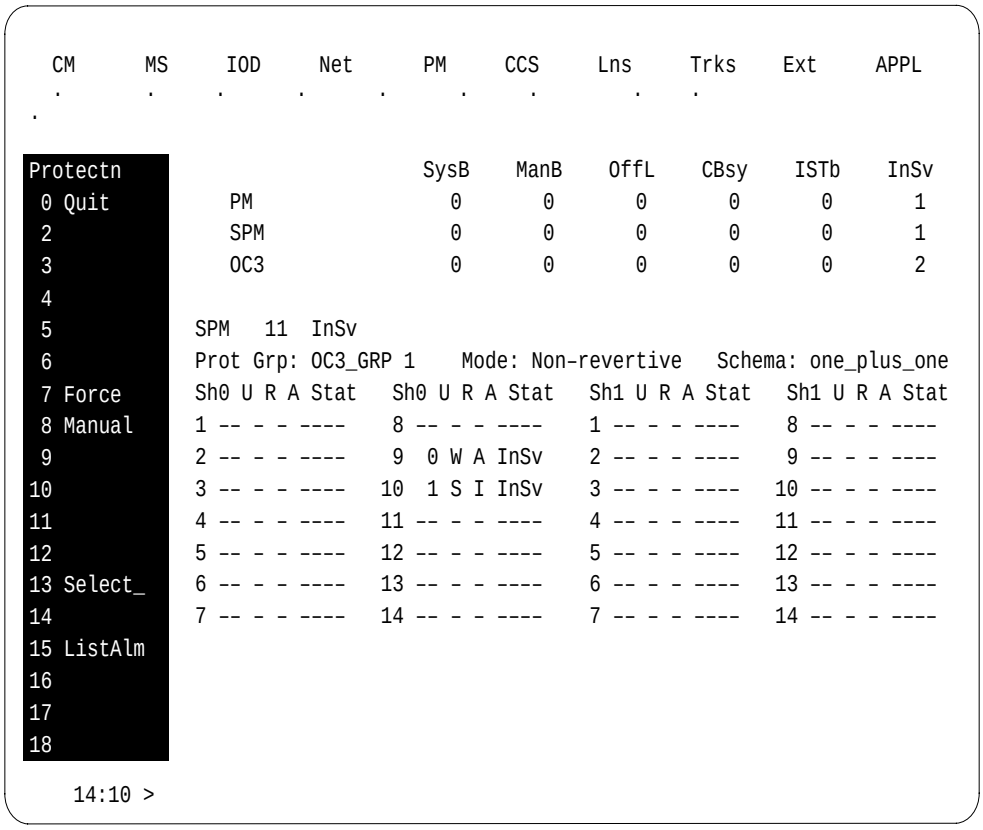
4 From the OC3 screen, type

>PROT

and press the Enter key.

This is an example of a Protection screen.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



5 At the Protection (PROT) screen, determine if the OC3 being replaced is active (A) or inactive (I). If the card is active, set it to the inactive state by typing

>MANUAL from_unit_no to_unit_no

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

to_unit_no
is the number of the inactive unit (0 or 1)

Note: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

6 Access the carrier maintenance screen and post the STS3L line carriers by typing

>MAPCI;MTC;TRKS;CARRIER;POST SPM spm_no STS3L

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of the CARRIER screen showing posted STS3L carriers.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .
.

POST              CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
 0 Quit           TRUNKS    1    0   28    28     0    0    0     0    0    50
 2 Post_          TIMING    0    0    0     0     0    0    0     0    0     2
 3                HSCARR    0    0    0     1     3    0    1     0    0   180
 4                 STS3L
 5 Loop_          N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
 6 Tst_           0  HSCARR HOST   11    0     0     0   3 InSv   .S --
 7 Bsy_           1  HSCARR HOST   11    1     0     0   4 InSv   -- --
 8 RTS_           SIZE OF POSTED SET  :  2
 9 Offl_          MTC:
10                TRKS:
11 Disp_          CARRIER:
12 Next           POST:
13
14 Detail_
15 ListAlm_
16
17 Perfmon_
18

    14:12 >
```

7 Record the STS3L line carrier number (listed under N) associated with the OC3 card being replaced (listed under OC3RM). Record the state of the carrier (listed under STATE).

8 Manual busy (ManB) the STS3L line carrier by typing

>BSY carrier_no

and pressing the Enter key.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

where

carrier_no
is the carrier identification (N) number (0 to 4)

9 Post the SPM OC3 section carriers by typing

```
>POST  SPM  spm_no  OC3S
```

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

Example of a MAP screen:

```
CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
TRUNKS    1    0   28    28     0    0    0     0    0    50
TIMING    0    0    0     0     0    0    0     0    0     2
HSCARR    0    0    0     1     3    0    1     0    0   180
 OC3S
N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
0  HSCARR HOST  11     0     0     -   1 InSv   .S --
1  HSCARR HOST  11     1     0     -   2 InSv   -- --
SIZE OF POSTED SET  :  2
POST:
```

10 Record the OC3 Section carrier number (listed under N) associated with the OC3 card being replaced (listed under OC3RM). Record the state of the carrier (listed under STATE).

11 Manual busy (ManB) the OC3 Section carrier by typing

```
>BSY  carrier_no
```

and pressing the Enter key.

where

carrier_no
is the carrier identification (N) number (0 to 4)

At the OC3 RM card level of the SPM

12 Take the OC3 card to be replaced out-of-service by typing

```
>BSY
```

and pressing the Enter key.

13 Set the OC3 card offline (OffL) by typing

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

>0FFL

and pressing the Enter key.

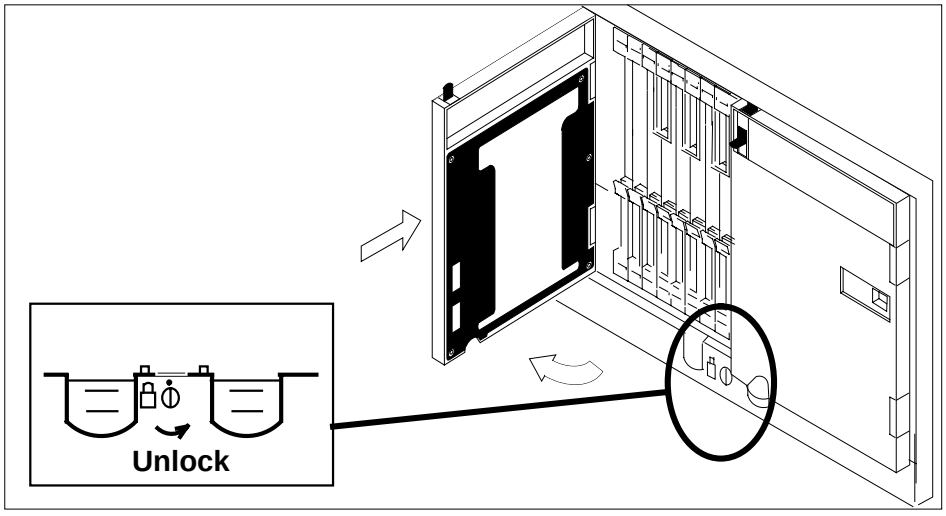
14 Return to the SPM screen and wait for the module to change state.

Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change completes, remove the OC3 card.

15

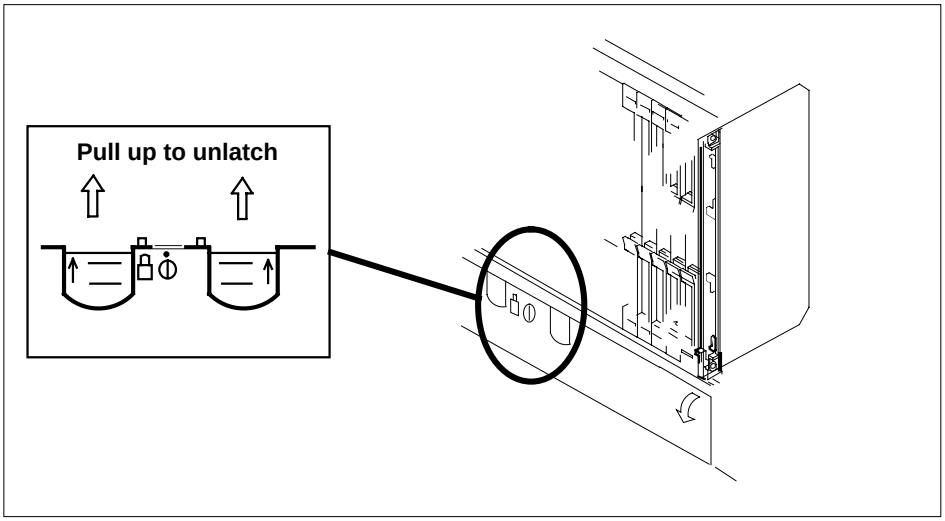
CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



16 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

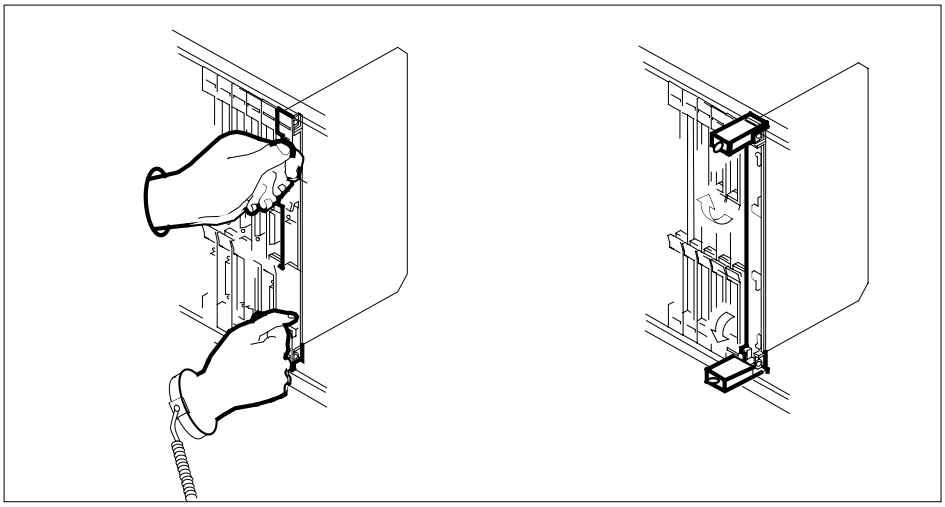


17

CAUTION
Card lever breakage
Holding a card by the levers only can result in lever breakage. Once the card has been pulled halfway out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



18

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label each fiber cable. Use *transmit* for the top cable and *receive* for the bottom cable.

19

DANGER
Laser radiation exposure
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

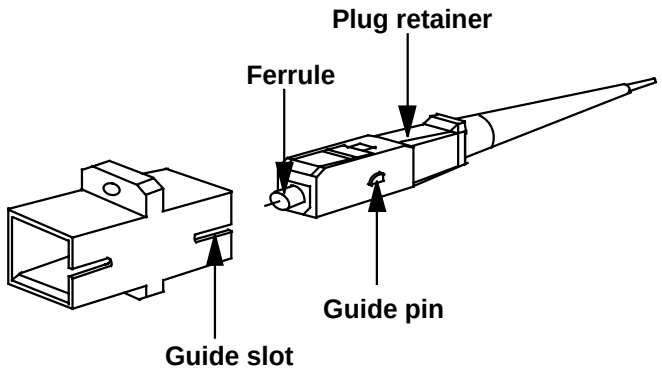
SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

Determine which type of fiber optic adapter you have before disconnecting the cables from the faceplate of the card. The following three types of fiber optic adapters are used for securing the equipment:

- SC to SC fiber optic adapter
- FC fiber optic adapter
- ST fiber optic adapter

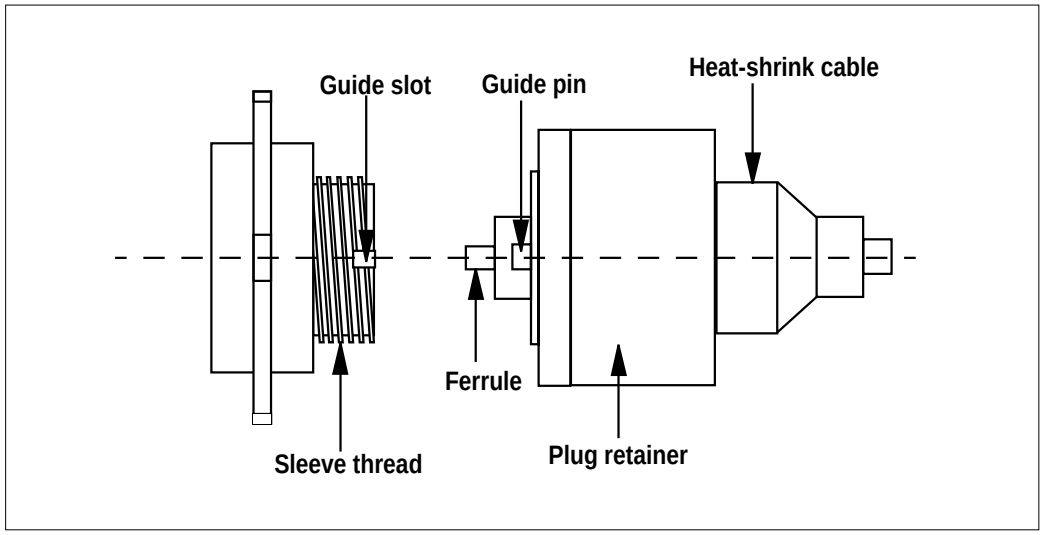
Refer to the following figures for each type of adapter.

SC to SC fiber optic adapter

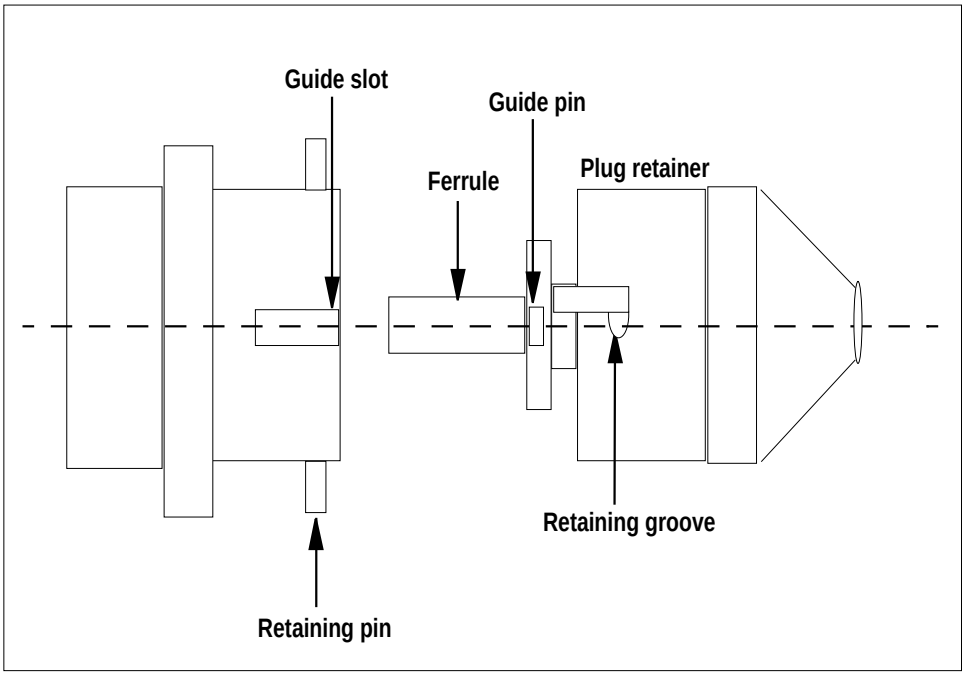


Note: A connector extender is installed on all SC connectors mating on the inside of the faceplate to facilitate connector removal.

FC fiber optic adapter



ST fiber optic adapter



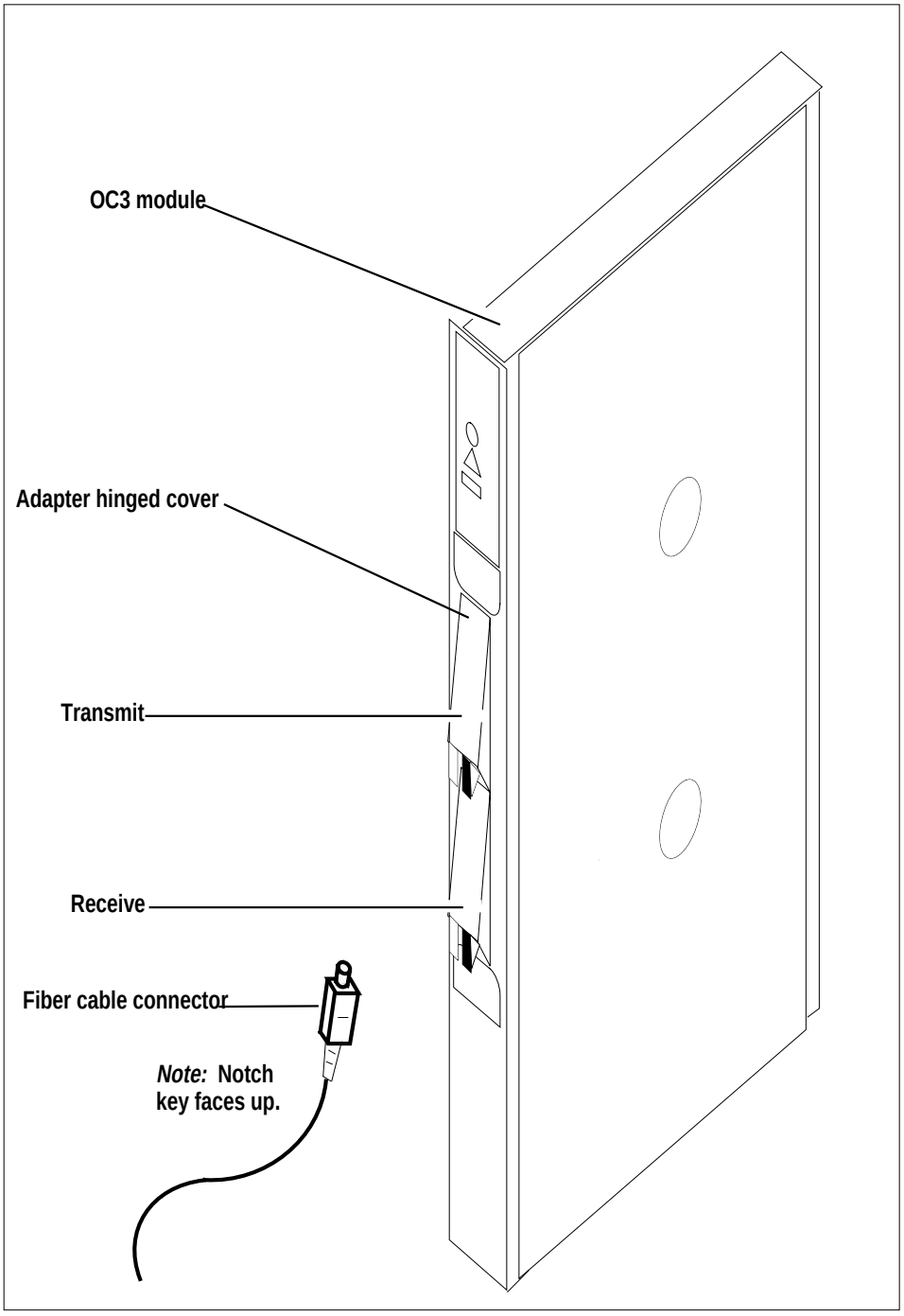
20 Disconnect the fiber cables from the faceplate of the card.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

21 After the cables have been removed, cap the connectors on the module and the fiber cable. Store the cables in the cable trough.

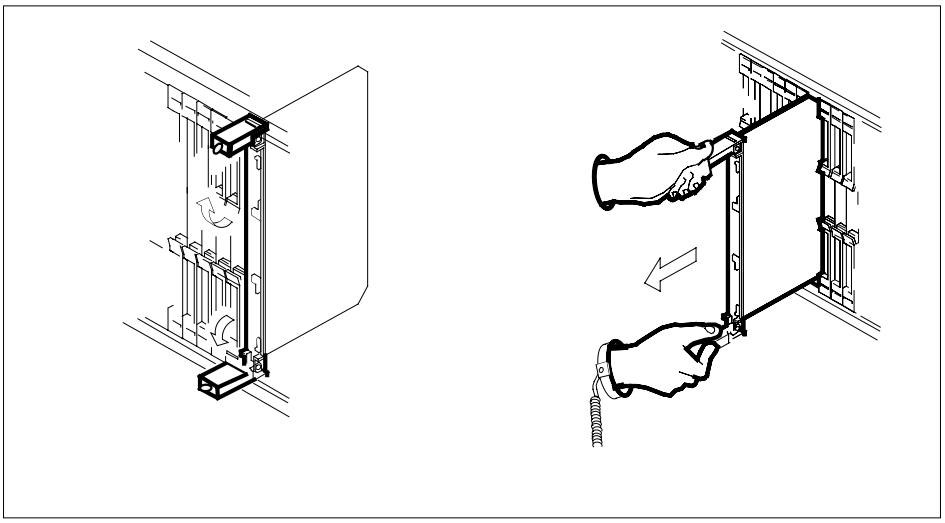
Note: Before removing the OC3 card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.



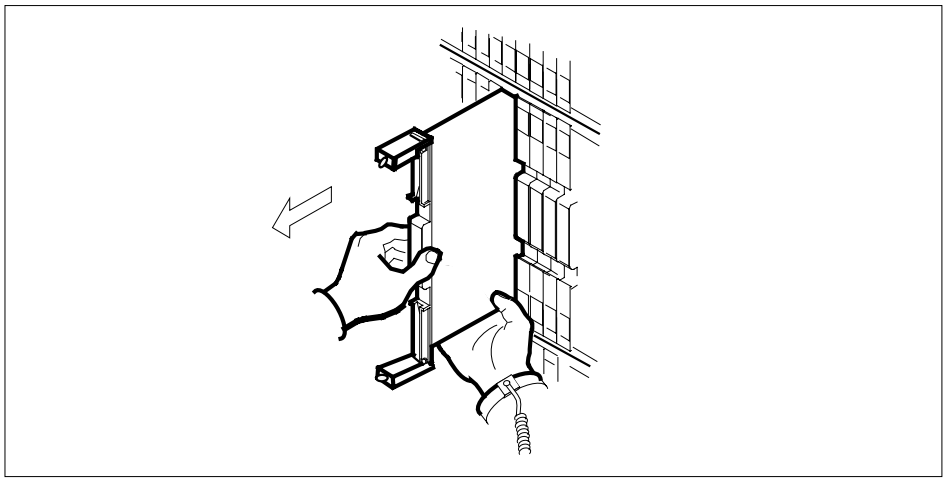
23

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



24 Place the card you have removed in an electrostatic discharge (ESD) protective container.

25

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement card with the same PEC and the same release.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

26

ATTENTION

Examine the fiber connectors on the replacement NTLX71AA OC3 card and connectors on the OC3 fiber cables. To prevent eye damage, do not look directly into the end of the fiber cables. If the fiber connectors and the cable connectors do not mate, replace the fiber connectors on the replacement card. Each NTLX71AA replacement card is shipped with two pairs of spare fiber connectors. To select the correct fiber connectors, compare the spare fiber connectors with the fiber connectors on the card you removed. Also check the spare fiber connectors against the connectors on the OC3 fiber cables. Do not connect the OC3 fiber cables until instructed to do so.

CAUTION

Equipment damage due to empty slots

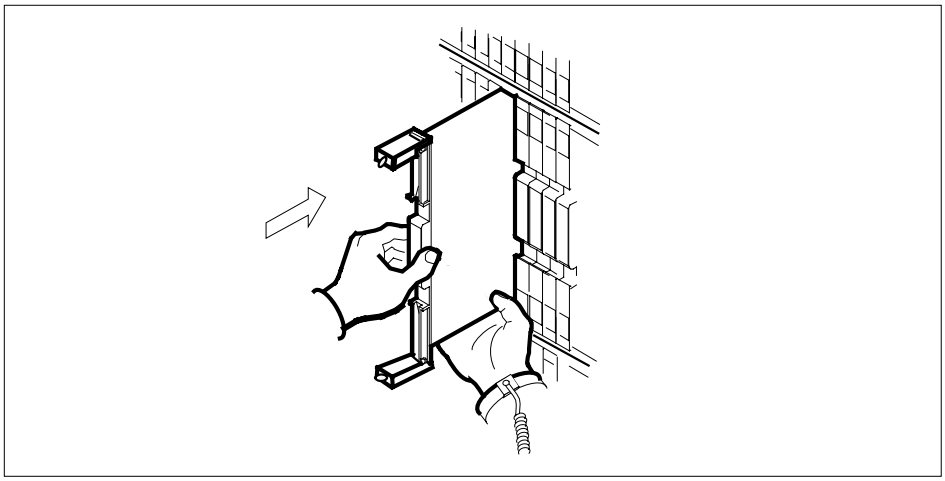
Equip all unused slots on a powered shelf with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

Insert the replacement OC3 card into the shelf. If a replacement card is not available, insert an NTLX60AA filler module in the slot until a replacement card is available.

27 Open the locking levers on the card.

28 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



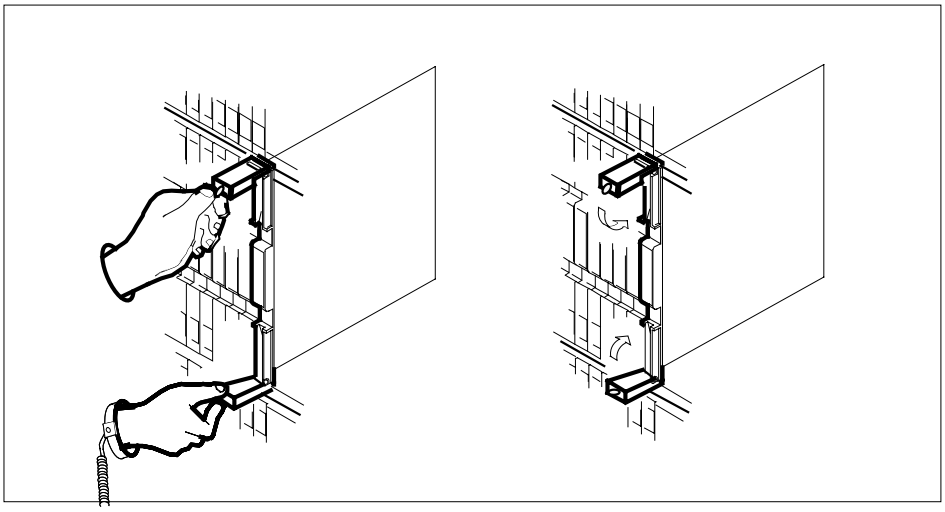
29

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

30 As shown in the following figure, close the locking levers to secure the card.

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)



31 Wait until the card performs a self-test (less than one minute). The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement OC3 card is defective; remove the card and replace it with another OC3 replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Determine which type of fiber optic adapter you have before reconnecting the cables from the faceplate of the card. Refer to figures under Step 19 for an illustration of different adapters.

33 Reconnect the cables from the faceplate of the card.

34 Close the cable trough door. Close and lock the card-access door.

At the MAP terminal

35 Return to the OC3 screen and take the OC3 card from the OffL state to ManB state by typing

```
>BSY
```

and pressing the Enter key.

36 Load the new OC3 card with the default software load by typing

```
>LOADMOD
```

and pressing the Enter key.

Monitor the progress of the loading activity on the SPM line of the OC3 screen.

37 Return the new OC3 card to Insv state by typing

SPM NTLX71AA OC3 card
DMS-Spectrum Peripheral Module (continued)

>RTS

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to seven minutes to complete.

38 Access the performance monitoring (PERFMON) screen and post the OC3 carrier by typing

>MTC;TRKS;CARRIER;POST SPM spm_no OC3S;PERFMON car_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

car_no
is the number of the OC3 carrier (0 or 1)

Example of a MAP screen:

```
CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
TRUNKS    1    0   28    28     0    0    0     0    0    50
TIMING    0    0    0     0     0    0    0     0    0     2
HSCARR    0    0    0     1     3    0    1     0    0   180

 PERFMON 0  SPM 11  OC3RM 0  OC3S 0
Interval:              Status:
Parm   Count  M D      Parm   Count M D      Parm    Count M D
SEFS-N   10            CV-N     35            ES-N        5
SES-N     9            LBC-N     0            OPT-N       7
OPR-N UNSET
PERFMON:
```

Note: The initial value of the optical power received (OPR) must be recorded for the OC3 Section carrier terminating on the replacement OC3. This initial reading is OPR0 (OPR zero). If the OPR0 value has not been recorded for the replacement OC3 card, the count for the PERFMON parameter OPR-N appears as UNSET(see the previous example).

39 Record the value for OPR0 by typing

>METERPP RECORDOPR0

and pressing the Enter key.

where

RECORDOPR0
means Record OPR 0 (zero)

SPM NTLX71AA OC3 card DMS-Spectrum Peripheral Module (end)

If an OPR0 value has already been recorded for the replacement OC3 card, confirm the reset confirmation request by typing

```
>YES
```

and pressing the Enter key.

40 At the carrier screen, restore the OC3S carrier and the STS3L carrier to their original state as recorded in Step 10 and Step 7. The OC3S carrier should be restored first.

41 To ensure sparing capability of the new OC3 RM, set the new OC3 card to working (W). To do this, access the Protection (PROT) screen from the OC3 screen and type

```
>MANUAL from_unit_no  to_unit_no
```

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

to_unit_no
is the number of the inactive unit (0 or 1)

Note 1: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

Note 2: The MANUAL command without options and the FORCE command can be used only with a CEM card.

42 To ensure that the new RM can release activity, repeat step 41.

43 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

SPM NTLX82AA CEM card DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX82AA common equipment module (CEM) card. The CEM cards are located in the DMS-Spectrum Peripheral Module (SPM) frame. The NTLX82AA CEM card is a replacement for NTLX63AA card.

For the NTLX82AA CEM card, the following changes are made:

- The Celestica Point of Use Power Supplies (PUPS) are replaced by Lucent PUPS.
- The CEM memory size is increased to 128 megabytes.
- The self-test diagnostics have improved power.
- The FLASH memory is increased to 96 megabytes.

  Note: The NTLX82AA CEM card uses a different FLASH format than the previous NTLX63AA CEM card. The new format is compatible with software releases SP12 and above, but not with the earlier releases. Refer to Step37 in this procedure. For more information on FLASH format, refer to DMS-SPM Hardware Maintenance Reference Manual, 297-1771-550.

- An ethernet port on the faceplate is productized. This port is a software loading port for a standalone Succession Multi-Services Gateway (SMG) configuration.

Refer to the following table to identify the product engineering code (PEC) and release, or the provisioned shelf or frame for the card to be replaced.

PEC	Release	Card name	Shelf or frame name
NTLX82	AA	CEM	NTLX51AA or BA dual-shelf assembly, NTLX91AA or BA DMS frame assembly

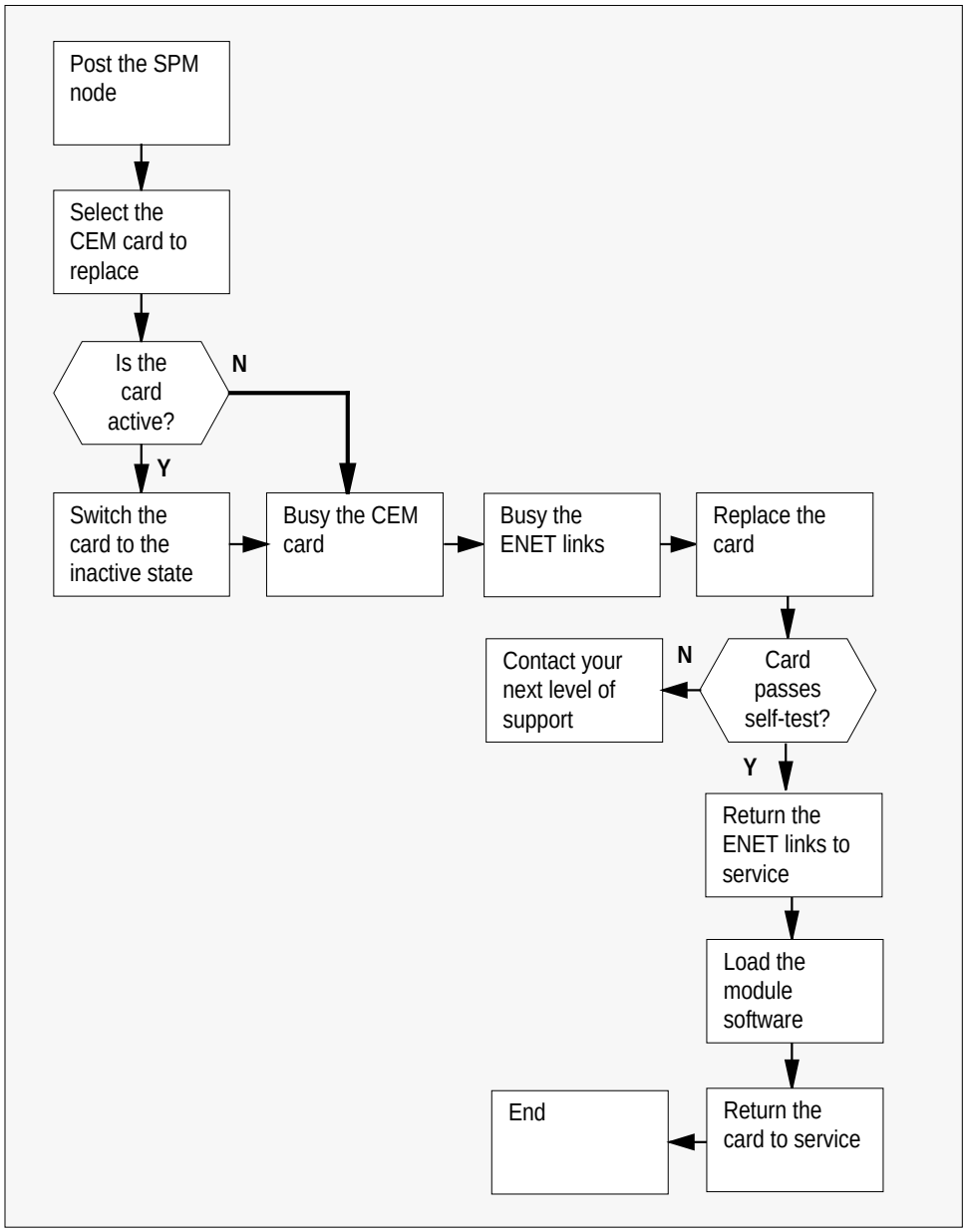
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of replaceing the NTLX82AA card



SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX82AA SPM CEM card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

`>MAPCI;MTC;PM`

and pressing the Enter key.

2 Access the SPM screen by typing

`>POST SPM spm_no`

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

The following illustration is an example of an SPM screen. This example may not reflect your SPM screen.

```
   CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
   .       .       .        .        .       .        .        .        .        .


SPM                                 SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                   0       0       0       0       0       1
 2 Post_         SPM                  0       0       0       0       0       1
 3 ListSet
 4 ListRes    SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7            DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8            DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9            DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10            DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_      --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next       --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_    CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM    SPM:
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the CEM card by typing

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

>SELECT CEM cem_no

and pressing the Enter key.

where

cem_no
is the number of the CEM card (0 or 1)

The following illustration is an example of a CEM screen.

```
  CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
  .       .       .        .        .       .        .        .        .        .


CEM                                SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                 0        0        0        0        0        1
 2               SPM                0        0        0        0        0        1
 3 Listset        CEM               0        0        0        0        0        2
 4
 5 Trnsl      SPM 20    CEM 0  Act  INSV
 6 Tst
 7 Bsy        Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS        Default Load: CEMnnnn
 9 Offl       Clock:
10 LoadMod    Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11            POST:
12 Next       CEM:
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the CEM screen, type

>PROT

and press the Enter key.

The following is an example of a Protection screen.

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .       .      .       .        .      .       .       .       .       .


Protectn                          SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                0       0       0       0       0       1
 2               SPM               0       0       0       0       0       1
 3                 CEM             0       0       0       0       0       2
 4
 5             SPM   11  InSv
 6             Prot Grp: CEM    Mode: Non-revertive   Schema: N/A
 7 Force       Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 8 Manual       1 -- - - ----    8  1 S I InSv    1 -- - - ----    8 -- - - ----
 9              2 -- - - ----    9 -- - - ----    2 -- - - ----    9 -- - - ----
10              3 -- - - ----   10 -- - - ----    3 -- - - ----   10 -- - - ----
11              4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
12              5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
13 Select_      6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
14              7  0 S A InSv   14 -- - - ----    7 -- - - ----   14 -- - - ----
15 ListAlm    PROT:
16
17
18

    14:10 >
```

5 At the Protection (PROT) screen, determine if the CEM being replaced is active (A) or inactive (I). If the CEM is in service and active, make the CEM inactive by typing

>MANUAL

and pressing the Enter key. Monitor the MAP screen to ensure the change of state occurs.

At the CEM screen

6 Take the CEM card out of service by typing

>BSY

and pressing the Enter key.

7 Confirm the command by typing

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

>YES

and pressing the Enter key.

8 Return to the SPM screen and wait for the CEM to change to the manual busy (ManB) state.

Note: The state change to ManB may take several minutes to complete.

At the CEM screen

9 Before removing the CEM card, you must change the state of the ENET links to ManB. Perform the following substeps to record the applicable ENET information:

a List the ENET links by typing

>TRSL

and pressing the Enter key.

Example of a MAP screen:

```
SPM   11 CEM   0  InAct    ManB          /

Loc : Row C  FrPos  4 ShPos  6 ShId 0 Slot  7
Default Load: SPMnnnn
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  X  14  0; Status: OK
Link 2: ENET 0  X  14  1; Status: OK
Link 3: ENET 0  Y  14  2; Status: OK
Link 4: ENET 0  Y  14  3; Status: OK
```

Note: In this example, the dual self configuration for X and Y are two different shelves, and the single shelf configuration for X and Y is one shelf.

b Record the ENET plane, shelf, and slot number (`0,X,14 and 1,X,14` in the example above).

10 Go to the ENET level of the MAP by typing

>MTC;NET

and pressing the Enter key.

The following is an example of an ENET screen.

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .       .      .       .        .      .       .         .     .       .


CEM             ENET     System    Matrix    Shelf 0 1 2 3
 0 Quit          Plane 0 CSLink    Fault           F - - -
 2               Plane 1 CSLink     .              F - - -
 3 QueryEN
 4 Locate       MTC:
 5 Deload_      ENET:
 6
 7
 8
 9
10
11 RExTst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

    14:12 >
```

11 Go to the ENET-shelf level of the MAP by typing

>SHELF <shelf_no>

and pressing the Enter key.

where

shelf_no
is the number of the ENET shelf (0 to 3) that holds the card

Example of a MAP screen:

```
SHELF 00  Slot         1111111 11122222 22222333 333333
           123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ..OO.F-- -------- ..OO.F.. .  .
 Plane 1    .  .   .F ..OO..-- -------- ..OO.F.. .  .

SHELF:
```

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

12 Locate the first ENET card by typing

>LOCATE 0 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

13 If dual-shelf connections are used, locate the second ENET card by typing

>LOCATE 1 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

14 Go to the card level of the ENET by typing

>CARD <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET card (0 to 38)

Example of a MAP screen:

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

```
SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ......F. -------- ...S.... .  .
 Plane 1    .  .   .F ......F. -------- ..FS.... .  .

CARD 14   Front:     Back:   DS-512 Links
           Xpt        I/F    0 1 2 3
 Plane 0    .          .     . . . .
 Plane 1    .          .     . . . .
CARD:
```

15 Translate the peripheral-side links of the ENET by typing

>TRNSL P <plane_no><link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 3)

Example of a MAP screen:

```
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 submitted.
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 passed.
ENET Plane:0 Shelf:00 Slot:14 Link:00 :
  SPM 11 CEM 0 Lnk 1
```

Repeat the TRNSL P command to determine all four ENET P-side links to the CEM being replaced. Record the link connections. The following example shows the ENET links for a typical dual-shelf SPM connection.

(Sheet 1 of 2)

ENET Plane	Link	SPMCEM	Link
0	0	0	1
0	1	0	2
0	2	0	3
0	3	0	4
1	0	1	1
1	1	1	2

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

(Sheet 2 of 2)

1	2	1	3
1	3	1	4

16

CAUTION
Loss of service
A temporary interruption of service occurs when ENET links are busied. The interruption can affect data calls.

Busy (BSY) the four ENET links to the CEM being replaced by typing

```
>BSY <plane_no> LINK <link_no>
```

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the BSY command for each link to the CEM being replaced. Do not busy the links to the other CEM.

At the equipment frame

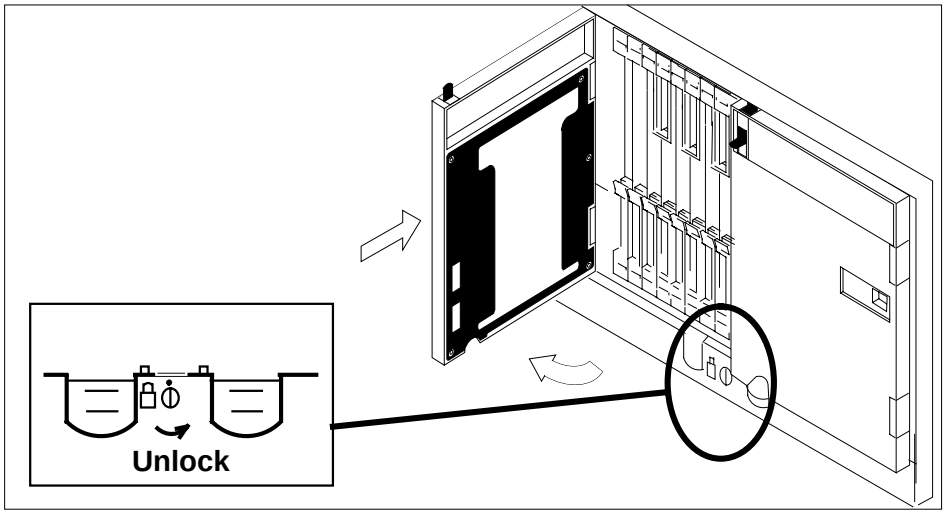
17

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

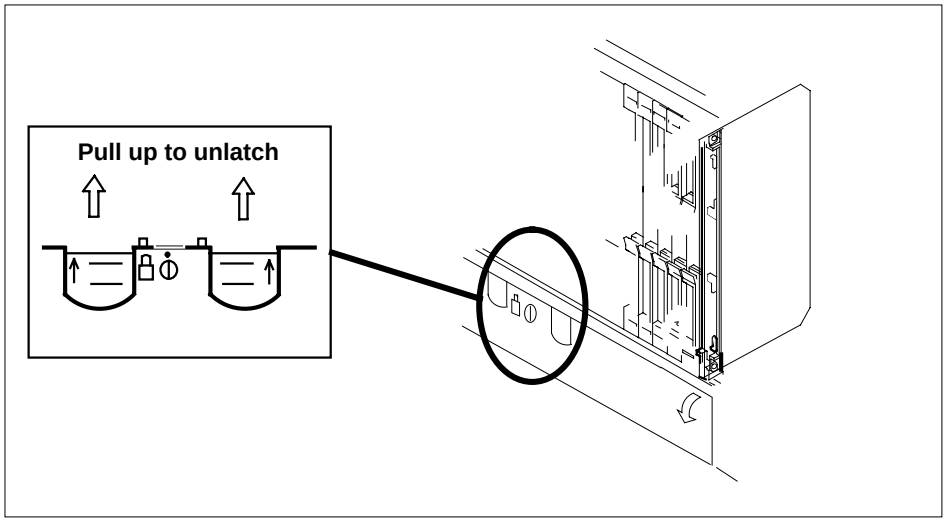
As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



18 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

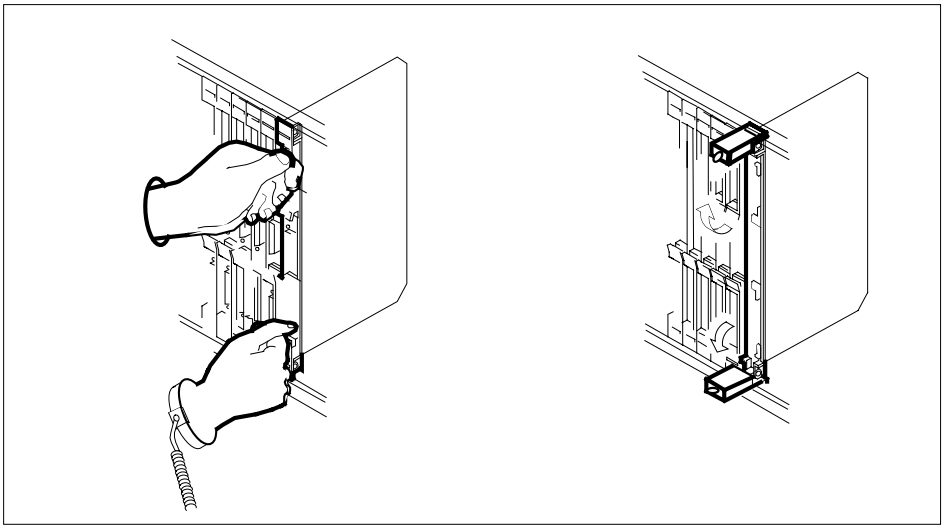


SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

19

CAUTION
Card lever breakage
Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.



20

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label the DS-512 fiber cables to ensure that they are reconnected in the original order.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

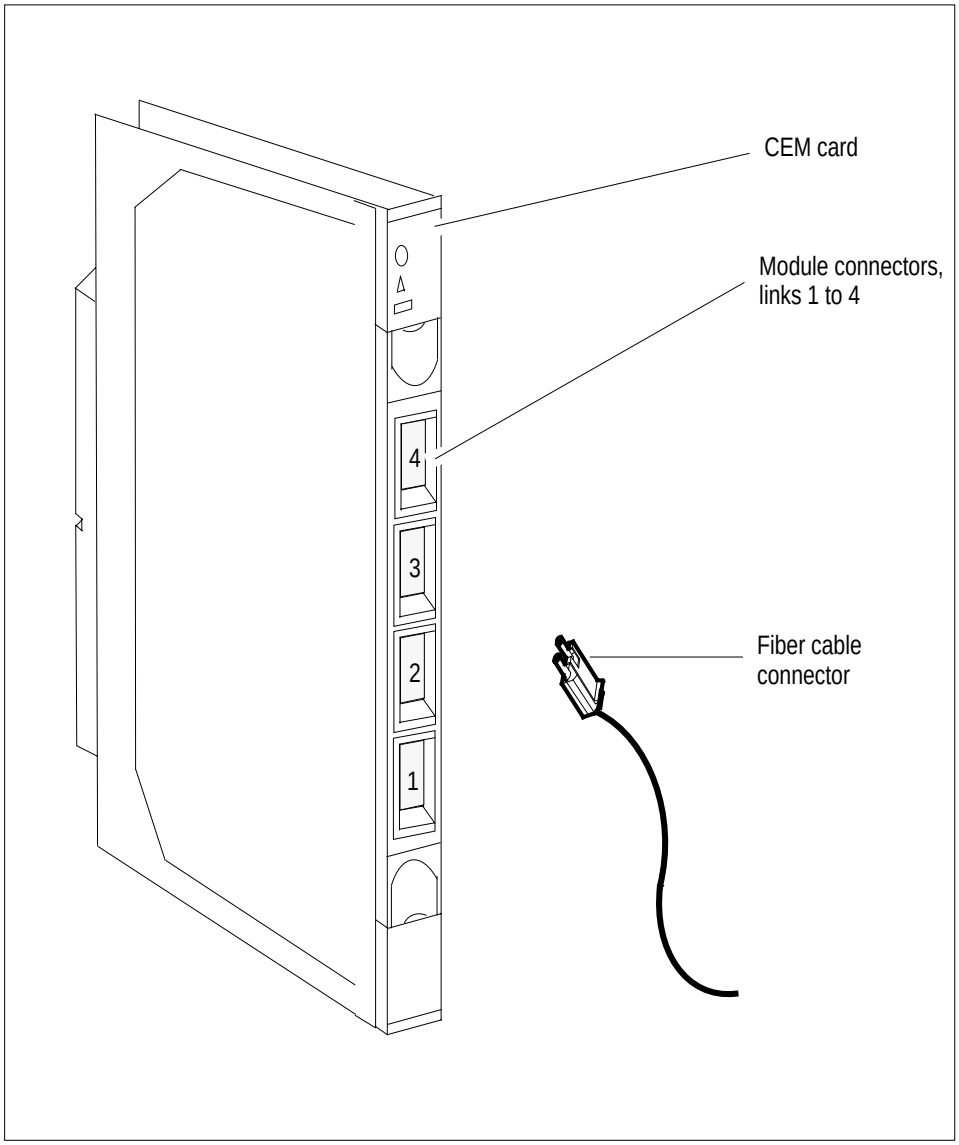
21

DANGER
Laser radiation exposure
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

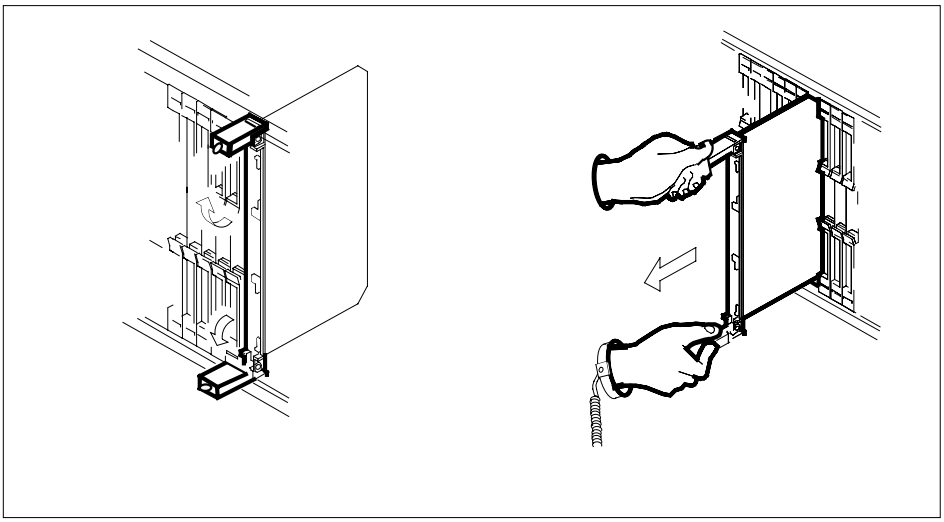
- Gently squeeze the locking clips on the connector.
- Pull the connector out of the receptacle.
- After the cables have been removed, cap the connectors on the module and on the fiber cable.
- Store the cables in the cable trough.
- Before removing the CEM card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)



22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

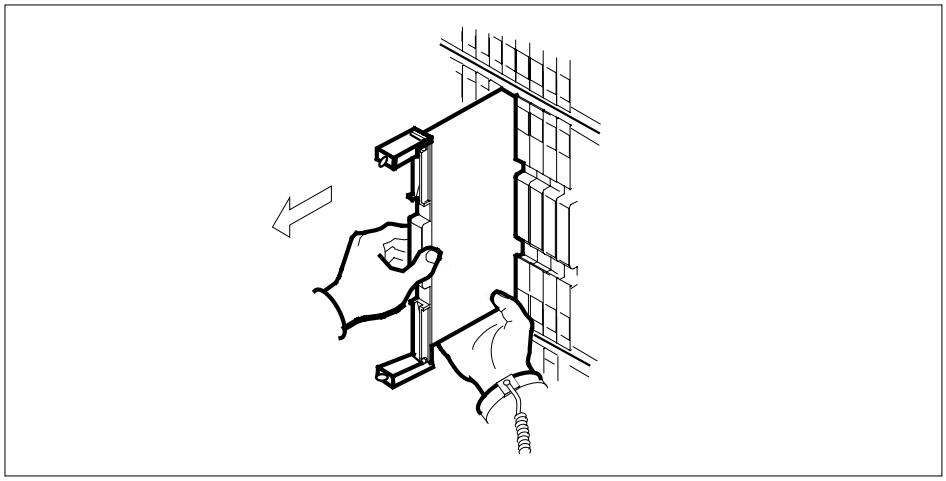


23

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



24 Place the card you have removed in an electrostatic discharge (ESD) protective container.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

25

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

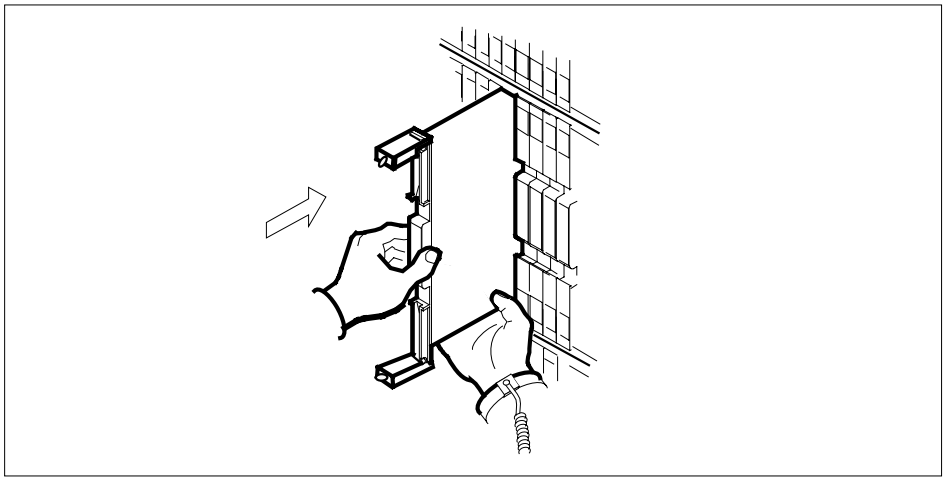
Ensure that the replacement card has the same PEC and release number.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

26 Insert the replacement CEM card into the shelf.

27 Open the locking levers on the card.

28 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

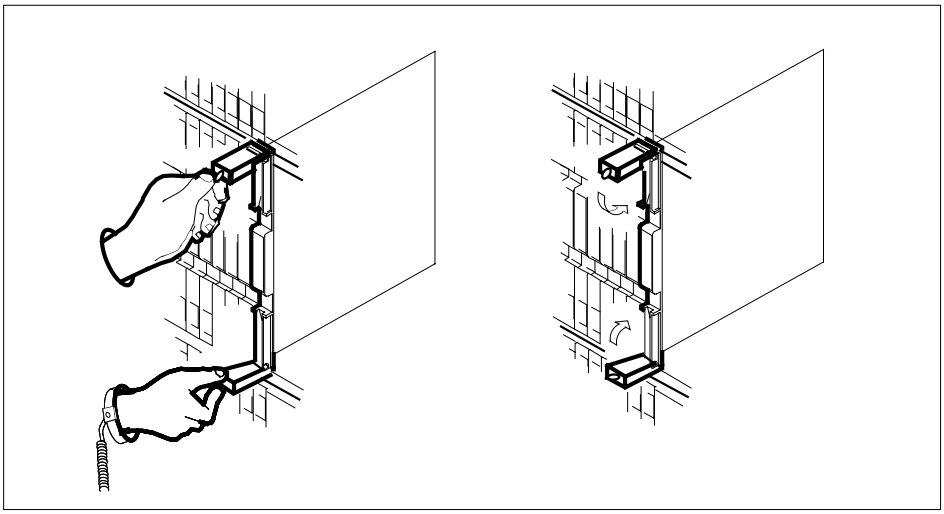


SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

29

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



30 Close the locking levers to secure the card.

31 Wait until the card performs a self test. The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement CEM card may be defective; remove the card and replace it with another replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Reconnect the DS-512 fiber cables as follows:

- Remove the caps on the module and cable connectors.
- Gently guide the cable connector into its receptacle notches.
- Squeeze the locking clip and gently push the connector into the receptacle until it clicks into place.

33 Close the cable-trough door. Close and lock the card-access door.

SPM NTLX82AA CEM card
DMS-Spectrum Peripheral Module (continued)

At the MAP terminal:

34 Return-to-service (RTS) the four ENET links to the replacement CEM by typing

```
>RTS <plane_no> LINK <link_no>
```

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the RTS command for each link to the replacement CEM.

35 At the CEM screen, reset the replacement CEM card by typing

```
>RESETMOD FW
```

and pressing the Enter key.

Wait until the MS ports clear and the maintenance activity completes.

36

37 Before loading the replacement CEM card, determine the default software load running on the SPM. If the default software load is SP11 or below, perform an inservice load of the CEM card by typing

```
>mapci;mtc;pm;post SPM x
```

and pressing the Enter key.

where x is the number of the SPM.

```
>select y
```

and pressing the Enter key.

where y is the NTLX82AA CEM displaying the problem.

```
>LOADMOD INSVLD
```

and pressing the Enter key.

If the default software load is SP12 or above, load the replacement CEM card by typing

```
>LOADMOD
```

and pressing the Enter key.

Note: The LOADMOD process can take up to 15 minutes to complete. Monitor the progress at the `/Load:` indicator at the end of the SPM line on the CEM MAP display.

38 Return the replacement CEM card to service by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to InSv may take several minutes to complete.

39 If the replacement CEM card must be the active CEM, go to the protection (PROT) screen and type

```
>MANUAL
```

and press the Enter key. Monitor the MAP screen to ensure the change of status occurs.

40 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

SPM NTLX82BA CEM card DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX82BA common equipment module (CEM) card. The CEM cards are located in the DMS-Spectrum Peripheral Module (SPM) frame. The NTLX82BA CEM card is a replacement for the NTLX82AA card.

For the NTLX82BA CEM card, the following changes are made:

- A PPC750 processer chip.
- Clock Bus Speed
- Ethernet Chip

Refer to the following table to identify the product engineering code (PEC) and release, or the provisioned shelf or frame for the card to be replaced.

PEC	Release	Card name	Shelf or frame name
NTLX82	BA	CEM	NTLX51AA or BA dual-shelf assembly, NTLX91AA or BA DMS frame assembly

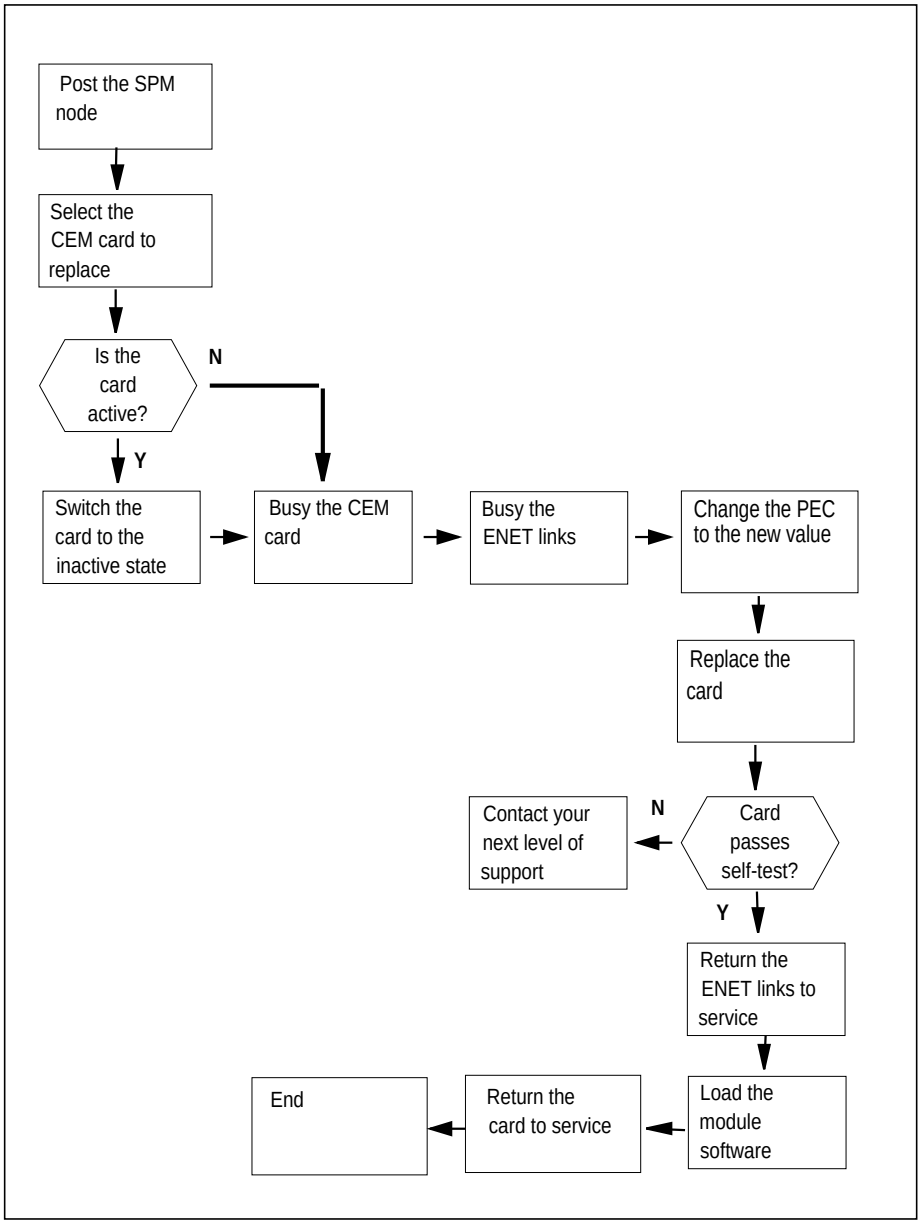
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

Summary of replaceing the NTLX82BA card



SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

Replacing the NTLX82BA SPM CEM card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

`>MAPCI;MTC;PM`

and pressing the Enter key.

2 Access the SPM screen by typing

`>POST SPM spm_no`

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

The following illustration is an example of an SPM screen. This example may not reflect your SPM screen.

```
   CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
   .       .       .        .        .       .        .        .       .        .


SPM                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                   0       0       0       0       0       1
 2 Post_         SPM                  0       0       0       0       0       1
 3 ListSet
 4 ListRes   SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6           Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7           DSP 2  1 A Insv  COT 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8           DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9           DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10           DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_     --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next      --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_   COT 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM   SPM:
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the CEM card by typing

>SELECT CEM cem_no

and pressing the Enter key.

where

cem_no
is the number of the CEM card (0 or 1)

The following illustration is an example of a CEM screen.

```
  CM      MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
  .       .       .        .        .       .        .        .        .        .


CEM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                 0       0       0       0       0       1
 2               SPM                0       0       0       0       0       1
 3 Listset        COT               0       0       0       0       0       2
 4
 5 Trnsl      SPM 20    CEM 0  Act  INSV
 6 Tst
 7 Bsy        Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS        Default Load: COTnnnn
 9 Offl       Clock:
10 LoadMod    Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11            POST:
12 Next       COT:
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

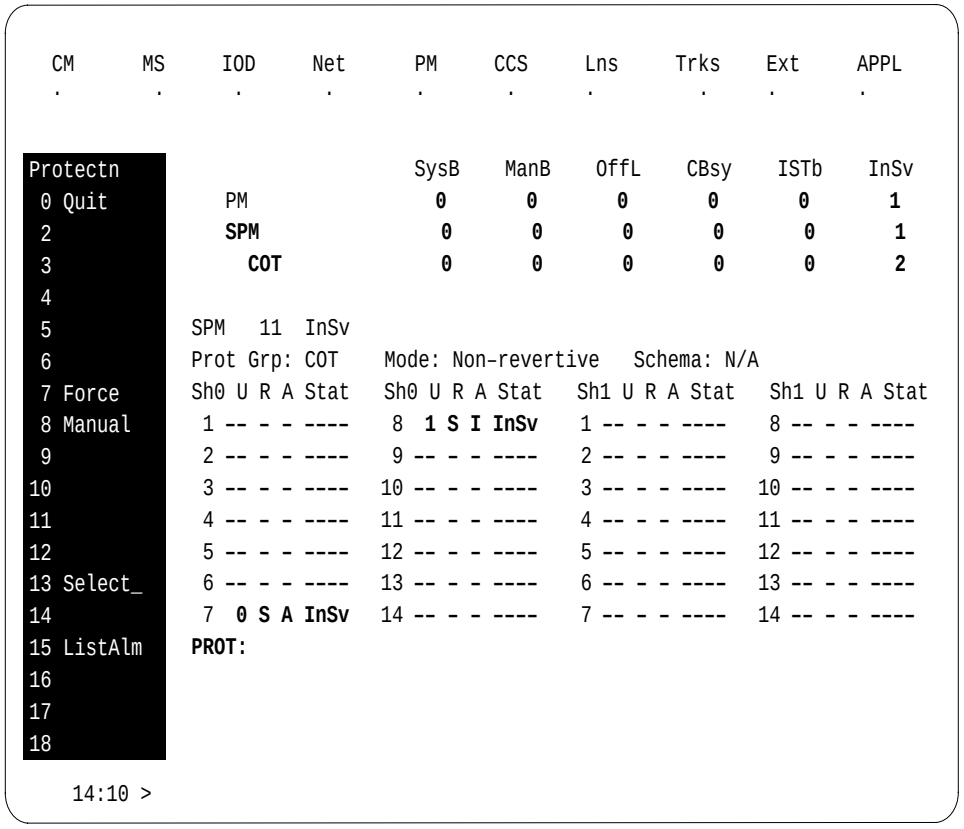
4 From the CEM screen, type

>PROT

and press the Enter key.

The following is an example of a Protection screen.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)



5 At the Protection (PROT) screen, determine if the CEM being replaced is active (A) or inactive (I). If the CEM is in service and active, make the CEM inactive by typing

>MANUAL

and pressing the Enter key. Monitor the MAP screen to ensure the change of state occurs.

At the CEM screen

6 Take the CEM card out of service by typing

>BSY

and pressing the Enter key.

7 Confirm the command by typing

>YES

and pressing the Enter key.

8 Return to the SPM screen and wait for the CEM to change to the manual busy (ManB) state.

Note: The state change to ManB may take several minutes to complete.

At the CEM screen

9 Before removing the CEM card, you must change the state of the ENET links to ManB. Perform the following substeps to record the applicable ENET information:

a List the ENET links by typing

>TRSL

and pressing the Enter key.

Example of a MAP screen:

```
SPM   11 CEM   0  InAct    ManB          /

Loc : Row C  FrPos  4 ShPos  6 ShId 0 Slot  7
Default Load: SPMnnnn
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  X  14  0; Status: OK
Link 2: ENET 0  X  14  1; Status: OK
Link 3: ENET 0  Y  14  2; Status: OK
Link 4: ENET 0  Y  14  3; Status: OK
```

Note: In this example, the dual self configuration for X and Y are two different shelves, and the single shelf configuration for X and Y is one shelf.

b Record the ENET plane, shelf, and slot number (`0,X,14 and 1,X,14` in the example above).

10 Go to the ENET level of the MAP by typing

>MTC;NET

and pressing the Enter key.

The following is an example of an ENET screen.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .       .      .       .        .      .       .         .     .       .


CEM            ENET     System    Matrix    Shelf 0 1 2 3
 0 Quit         Plane 0 CSLink    Fault           F - - -
 2              Plane 1 CSLink     .              F - - -
 3 QueryEN
 4 Locate      MTC:
 5 Deload_     ENET:
 6
 7
 8
 9
10
11 RExTst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

    14:12 >
```

11 Go to the ENET-shelf level of the MAP by typing

>SHELF <shelf_no>

and pressing the Enter key.

where

shelf_no
is the number of the ENET shelf (0 to 3) that holds the card

Example of a MAP screen:

```
SHELF 00  Slot        1111111 11122222 22222333 333333
           123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ..OO.F-- -------- ..OO.F.. .  .
 Plane 1    .  .   .F ..OO..-- -------- ..OO.F.. .  .

SHELF:
```

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

12 Locate the first ENET card by typing

>LOCATE 0 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:0 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   39  ENET:0:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

13 If dual-shelf connections are used, locate the second ENET card by typing

>LOCATE 1 <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET shelf (0 to 38)

Example of a MAP screen:

```
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 submitted
Request to LOCATE ENET Plane:1 Shelf:00 Slot:14 passed.
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X35BA FRNT
 HOST  01  A02  ENC 000   13  ENET:1:00:14   14       9X40DA BACK
```

Verify that the ENET card in the back of the slot has PEC 9X40DA.

14 Go to the card level of the ENET by typing

>CARD <slot_no>

and pressing the Enter key.

where

slot_no
is the slot number on the ENET card (0 to 38)

Example of a MAP screen:

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

```
SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
 Plane 0    .  .   .F ......F. -------- ...S.... .  .
 Plane 1    .  .   .F ......F. -------- ..FS.... .  .

CARD 14   Front:     Back:   DS-512 Links
           Xpt        I/F    0 1 2 3
 Plane 0    .          .     . . . .
 Plane 1    .          .     . . . .
CARD:
```

15 Translate the peripheral-side links of the ENET by typing

>TRNSL P <plane_no><link_no>

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 3)

Example of a MAP screen:

```
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 submitted.
Request to TRNSL ENET Plane:0 Shelf:00 Slot:14 Link:00 passed.
ENET Plane:0 Shelf:00 Slot:14 Link:00 :
  SPM 11 CEM 0 Lnk 1
```

Repeat the TRNSL P command to determine all four ENET P-side links to the CEM being replaced. Record the link connections. The following example shows the ENET links for a typical dual-shelf SPM connection.

(Sheet 1 of 2)

ENET Plane	Link	SPMCEM	Link
0	0	0	1
0	1	0	2
0	2	0	3
0	3	0	4
1	0	1	1
1	1	1	2

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

(Sheet 2 of 2)

1	2	1	3
1	3	1	4

16

CAUTION
Loss of service
A temporary interruption of service occurs when ENET links are busied. The interruption can affect data calls.

Busy (BSY) the four ENET links to the CEM being replaced by typing

```
>BSY <plane_no> LINK <link_no>
```

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the BSY command for each link to the CEM being replaced. Do not busy the links to the other CEM.

17 Change the PEC field to the new value.

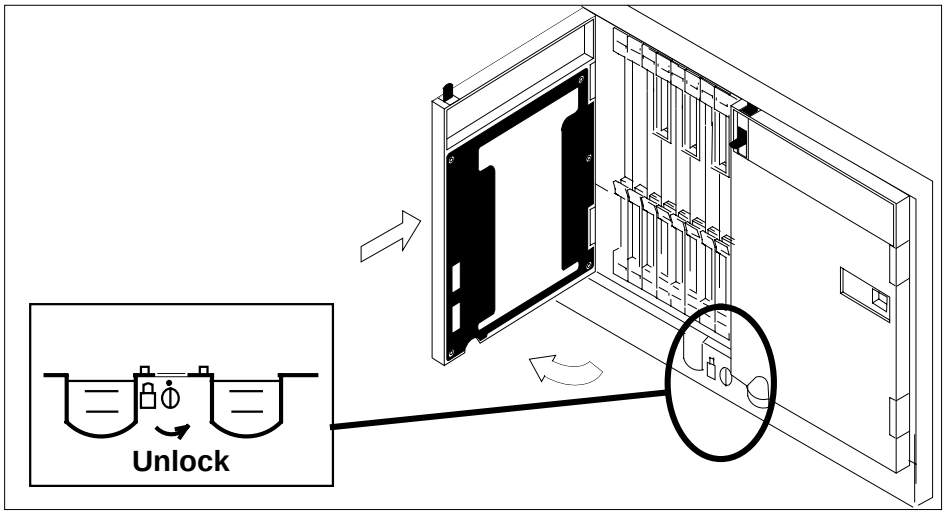
SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

At the equipment frame

18

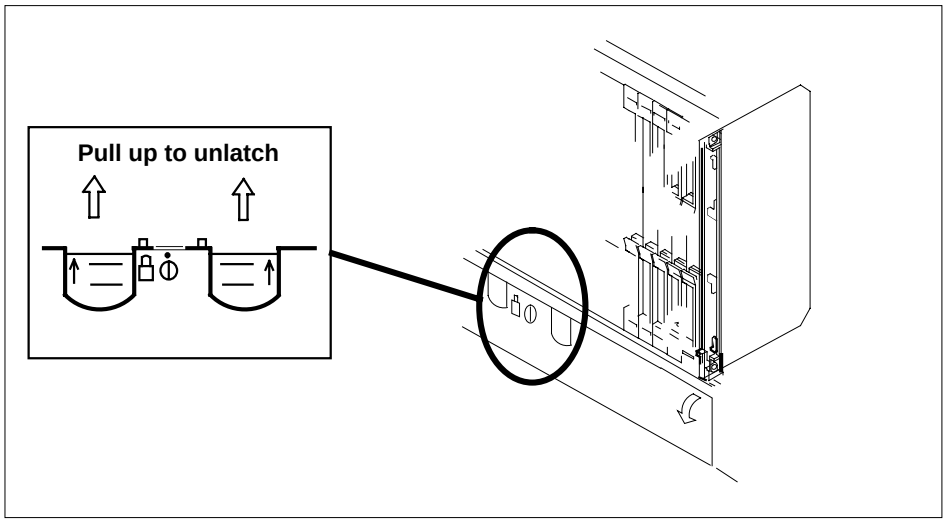
CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



19 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

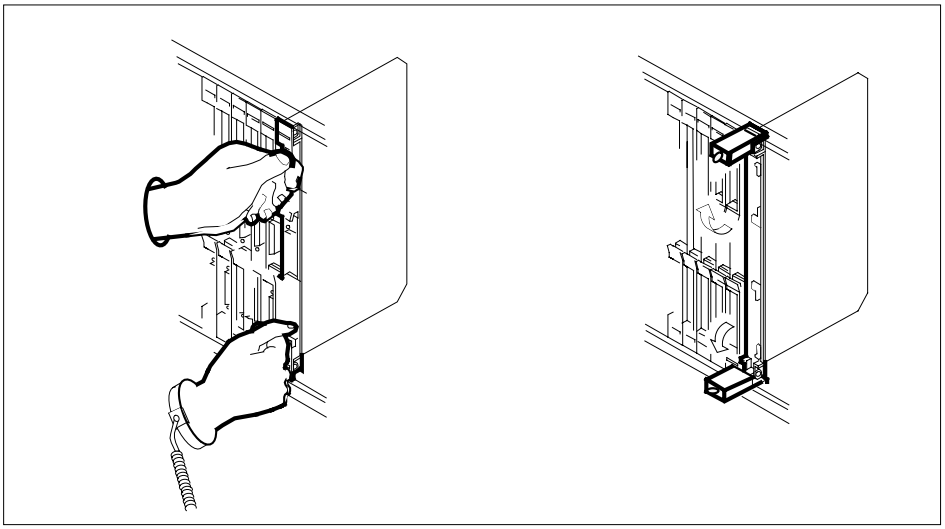


20

CAUTION
Card lever breakage
Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)



21

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label the DS-512 fiber cables to ensure that they are reconnected in the original order.

22

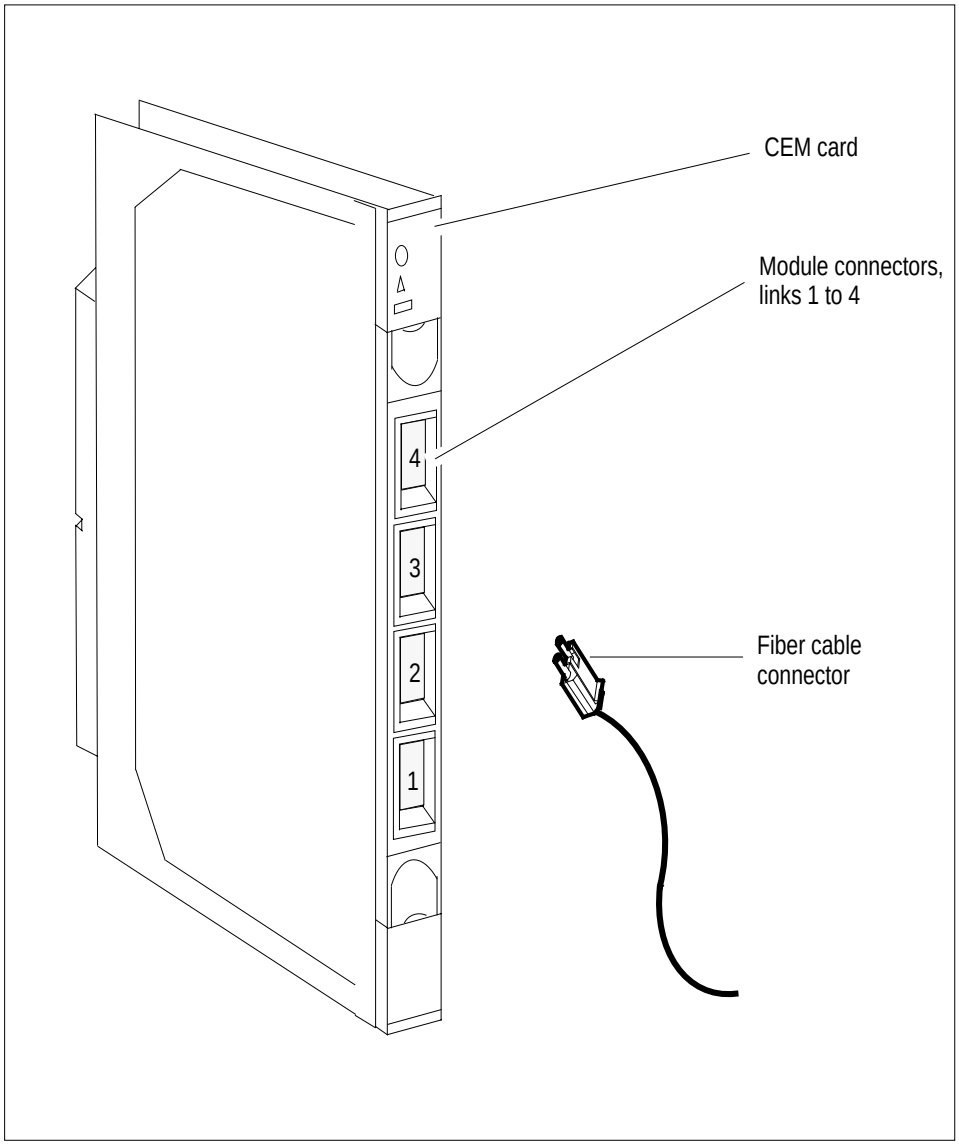
DANGER
Laser radiation exposure
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

- Gently squeeze the locking clips on the connector.
- Pull the connector out of the receptacle.

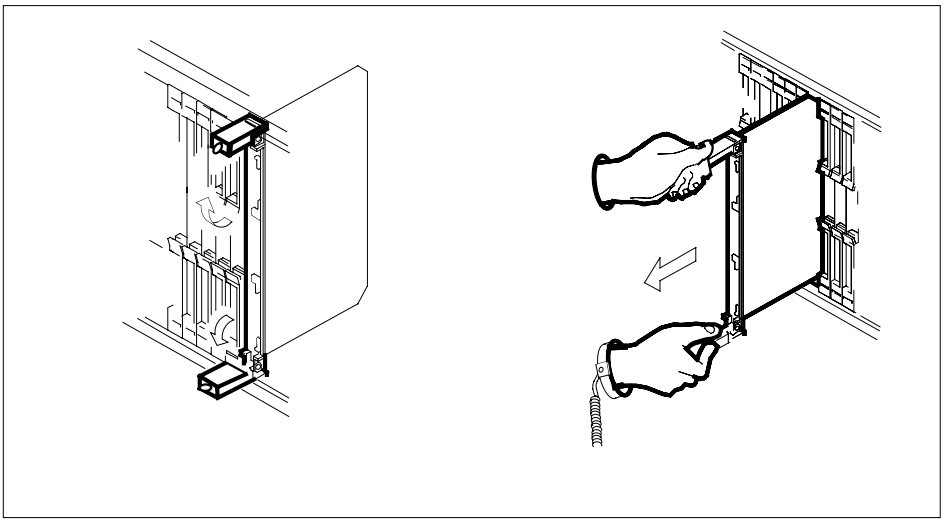
SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

- After the cables have been removed, cap the connectors on the module and on the fiber cable.
- Store the cables in the cable trough.
- Before removing the CEM card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.



23 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

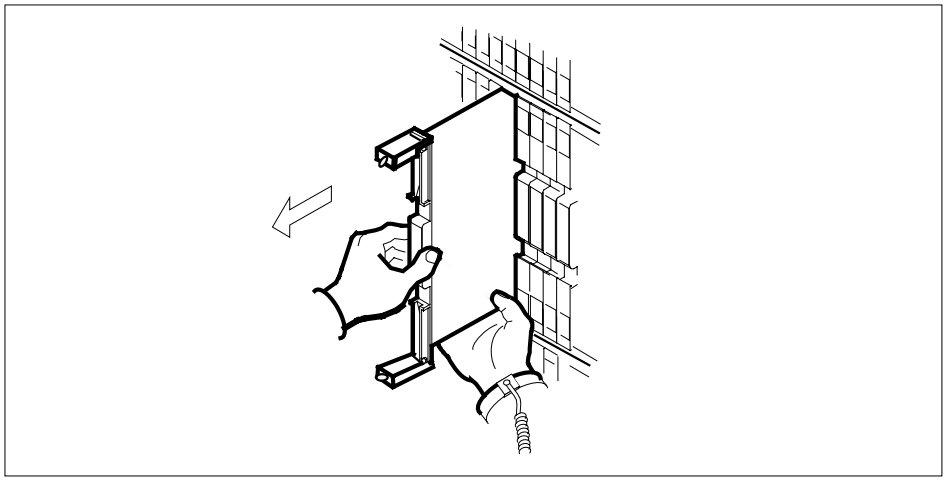
SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)



24

ATTENTION
Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



25 Place the card you have removed in an electrostatic discharge (ESD) protective container.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

26

DANGER
Equipment malfunction
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

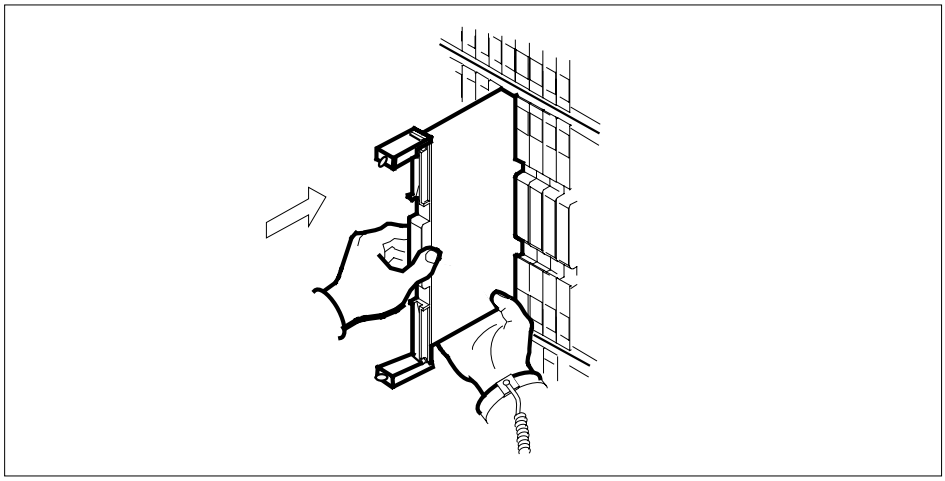
Ensure that the replacement card has the same PEC and release number.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

27 Insert the replacement CEM card into the shelf.

28 Open the locking levers on the card.

29 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

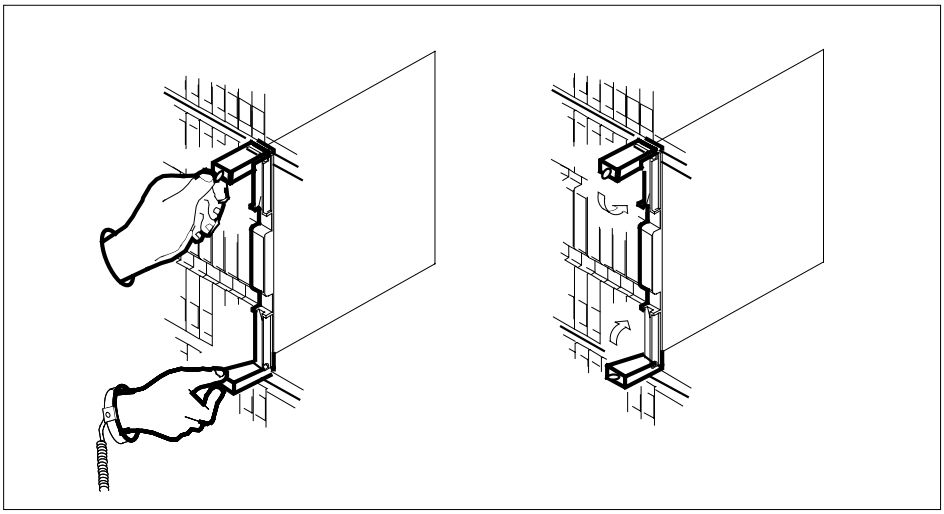


SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

30

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



31 Close the locking levers to secure the card.

32 Wait until the card performs a self test. The self test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement CEM card may be defective; remove the card and replace it with another replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

33 Reconnect the DS-512 fiber cables as follows:

- Remove the caps on the module and cable connectors.
- Gently guide the cable connector into its receptacle notches.
- Squeeze the locking clip and gently push the connector into the receptacle until it clicks into place.

34 Close the cable-trough door. Close and lock the card-access door.

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (continued)

At the MAP terminal:

35 Return-to-service (RTS) the four ENET links to the replacement CEM by typing

```
>RTS <plane_no> LINK <link_no>
```

and pressing the Enter key.

where

plane_no
is the number of the ENET plane (0 or 1)

link_no
is the number of an ENET link (0 to 4)

Repeat the RTS command for each link to the replacement CEM.

36 At the CEM screen, reset the replacement CEM card by typing

```
>RESETMOD FW
```

and pressing the Enter key.

Wait until the MS ports clear and the maintenance activity completes.

37

38 Before loading the replacement CEM card, determine the default software load running on the SPM. If the default software load is SP11 or below, perform an inservice load of the CEM card by typing

```
>mapci;mtc;pm;post SPM x
```

and pressing the Enter key.

where x is the number of the SPM.

```
>select y
```

and pressing the Enter key.

where y is the NTLX82BA CEM displaying the problem.

```
>LOADMOD INSVLD
```

and pressing the Enter key.

If the default software load is SP12 or above, load the replacement CEM card by typing

```
>LOADMOD
```

SPM NTLX82BA CEM card
DMS-Spectrum Peripheral Module (end)

and pressing the Enter key.

Note: The LOADMOD process can take up to 15 minutes to complete. Monitor the progress at the `/Load:` indicator at the end of the SPM line on the CEM MAP display.

39 Return the replacement CEM card to service by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to InSv may take several minutes to complete.

40 If the replacement CEM card must be the active CEM, go to the protection (PROT) screen and type

```
>MANUAL
```

and press the Enter key. Monitor the MAP screen to ensure the change of status occurs.

41 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

SPM NTLX99BA STM-1 card
DMS-Spectrum Peripheral Module

Application

Use this procedure to replace an NTLX99BA STM-1 interface card. The STM-1 cards are located in the DMS-Spectrum Peripheral Module (SPM) frame.

To identify the product engineering code (PEC) and release, or provisioned shelf or frame for the card you want to replace, refer to the following table.

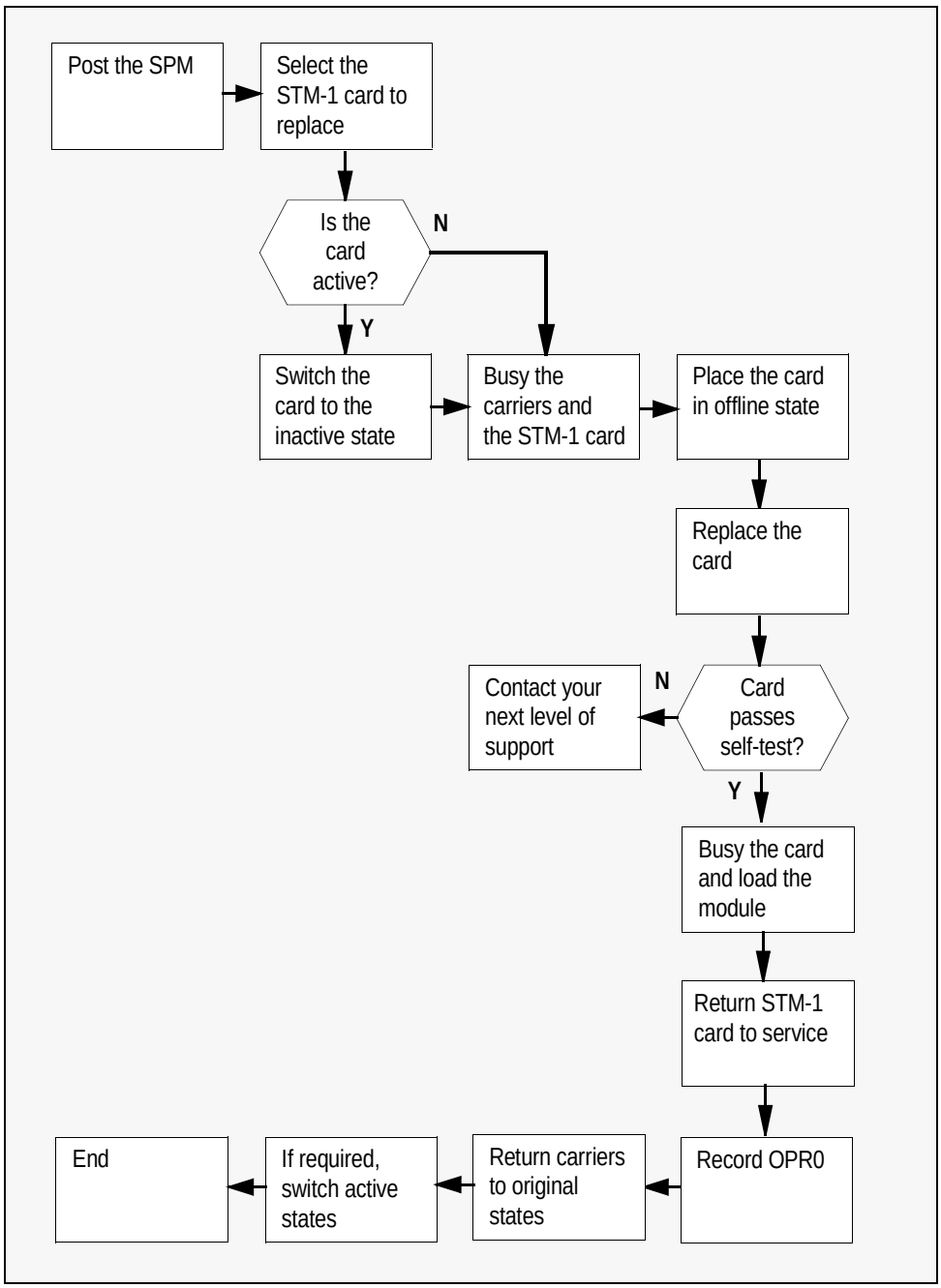
PEC	Release	Card name	Shelf or frame name
NTLX99	BA	STM-1 interface module	NTLX51AA dual-shelf assembly, NTLX50AA DMS frame assembly

To verify the PEC of the card being replaced, check the datafill in table MNCKTPAK.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Summary of replacing the NTLX99BA STM-1 card



Replacing the NTLX99BA SPM STM-1 card

At the MAP terminal

1 Access the PM screen level of the MAP display by typing

>MAPCI;MTC;PM

and pressing the Enter key.

2 Access the SPM screen by typing

>POST SPM spm_no

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of an SPM screen. This example may not reflect your SPM screen.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .
.

SPM                          SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM            0       0       0       0       0       1
 2 Post_         SPM           0       0       0       0       0       1
 3 ListSet
 4 ListRes     SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6             Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7             DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8             DSP 0  2 A Insv  STM 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9             DSP 1  3 I Insv  STM 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10             DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_       --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next        --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_     CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the STM-1 card by typing

>SELECT stm stm_no

and pressing the Enter key.

where

stm_no
is the number of the STM-1 card (0 or 1)

This is an example of an STM-1 screen.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .
.

STM-1                                 SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                     0       0       0       0       0       1
 2               SPM                    0       0       0       0       0       1
 3 ListSet       STM-1                    0       0       0       0       0       2
 4
 5               SPM 11    STM 0  Act  InSv
 6 Tst
 7 Bsy           Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9  Prot Grp : 1
 8 RTS           Default Load: STMLOAD                      Prot Role: Working
 9 OffL
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the STM-1 screen, type

>PROT

and press the Enter key.

This is an example of a Protection screen.

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .       .      .       .        .      .       .       .
.

Protectn                        SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM               0       0       0       0       0       1
 2               SPM              0       0       0       0       0       1
 3               STM-1              0       0       0       0       0       2
 4
 5              SPM   11  InSv
 6              Prot Grp: STM_GRP 1    Mode: Non-revertive   Schema: one_plus_one
 7 Force        Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 8 Manual       1 -- - - ----    8 -- - - ----    1 -- - - ----    8 -- - - ----
 9              2 -- - - ----    9  0 W A InSv    2 -- - - ----    9 -- - - ----
10              3 -- - - ----   10  1 S I InSv    3 -- - - ----   10 -- - - ----
11              4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
12              5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
13 Select_      6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
14              7 -- - - ----   14 -- - - ----    7 -- - - ----   14 -- - - ----
15 ListAlm
16
17
18

    14:10 >
```

5 At the Protection (PROT) screen, determine if the STM-1 being replaced is active (A) or inactive (I). If the card is active, set it to the inactive state by typing

>MANUAL from_unit_no to_unit_no

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

to_unit_no
is the number of the inactive unit (0 or 1)

Note: Protection switching an STM-1 normally requires protection switching of the network devices connected to the STM-1 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

6 Access the carrier maintenance screen and post the STM1M line carriers by typing

>MAPCI;MTC;TRKS;CARRIER;POST SPM spm_no STM1M

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

This is an example of the CARRIER screen showing posted STM1M carriers.

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   .       .      .       .        .      .       .       .       .
.

POST          CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
 0 Quit       TRUNKS    1    0   28    28     0    0    0     0    0    50
 2 Post_      TIMING    0    0    0     0     0    0    0     0    0     2
 3            HSCARR    0    0    0     1     3    0    1     0    0   180
 4             STM1M
 5 Loop_      N  CLASS  SITE SPM STMRM  STM1R STM1M CKT STATE  TR MA
 6 Tst_       0  HSCARR HOST   11    0     0     0   3 InSv   .S --
 7 Bsy_       1  HSCARR HOST   11    1     0     0   4 InSv   -- --
 8 RTS_       SIZE OF POSTED SET  :  2
 9 Offl_      MTC:
10            TRKS:
11 Disp_      CARRIER:
12 Next       POST:
13
14 Detail_
15 ListAlm_
16
17 Perfmon_
18

    14:12 >
```

7 Record the STM1M line carrier number (listed under N) associated with the STM-1 card being replaced (listed under STMRM). Record the state of the carrier (listed under STATE).

8 Manual busy (ManB) the STM1M line carrier by typing

>BSY carrier_no

and pressing the Enter key.

where

carrier_no
is the carrier identification (N) number (0 to 4)

9 Post the SPM STM-1 section carriers by typing

>POST SPM spm_no STM1R

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

Example of a MAP screen:

```
CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
TRUNKS    1    0   28    28     0    0    0     0    0    50
TIMING    0    0    0     0     0    0    0     0    0     2
HSCARR    0    0    0     1     3    0    1     0    0   180
 STM1R
N  CLASS  SITE SPM STMRM  STM1R STM1M CKT STATE  TR MA
0  HSCARR HOST  11     0     0     -   1 InSv   .S --
1  HSCARR HOST  11     1     0     -   2 InSv   -- --
SIZE OF POSTED SET  :  2
POST:
```

10 Record the STM-1R Section carrier number (listed under N) associated with the STM-1 card being replaced (listed under STMRM). Record the state of the carrier (listed under STATE).

11 Manual busy (ManB) the STM-1 Section carrier by typing

>BSY carrier_no

and pressing the Enter key.

where

carrier_no
is the carrier identification (N) number (0 to 4)

At the STM RM card level of the SPM

12 Take the STM-1 card to be replaced out-of-service by typing

>BSY

and pressing the Enter key.

13 Set the STM-1 card offline (OffL) by typing

>OFFL

and pressing the Enter key.

14 Return to the SPM screen and wait for the module to change state.

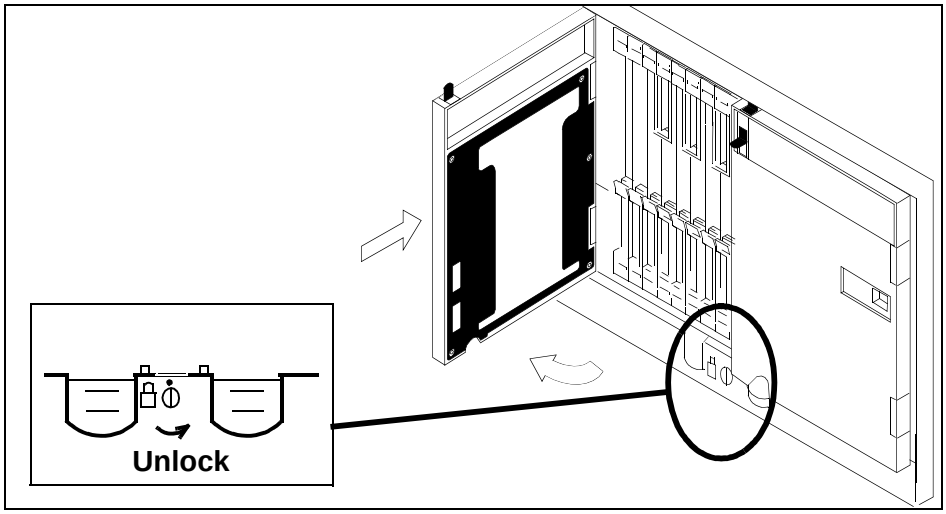
Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change completes, remove the STM-1 card.

15

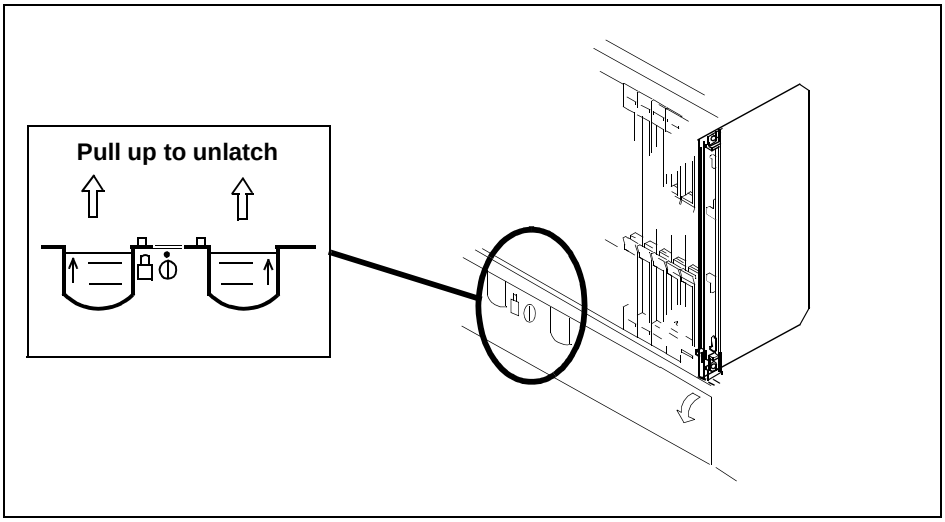
CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access

doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



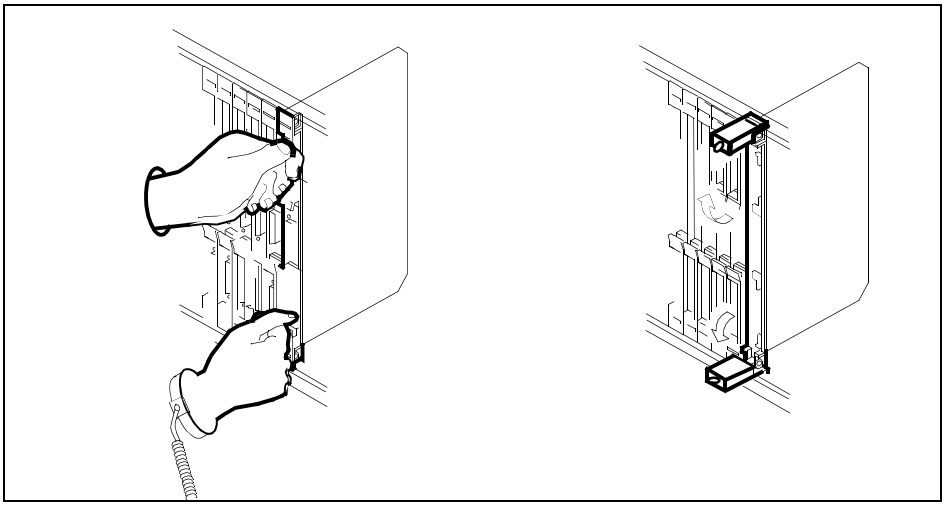
16 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



17

CAUTION
Card lever breakage
Holding a card by the levers only can result in lever breakage. Once the card has been pulled halfway out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

As shown in the following figure, open the locking levers on the card to be replaced.



18

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label each fiber cable. Use *transmit* for the top cable and *receive* for the bottom cable.

19

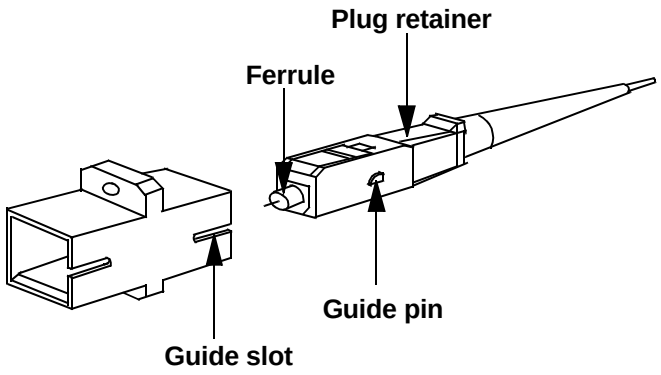
DANGER
Laser radiation exposure
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

Determine which type of fiber optic adapter you have before disconnecting the cables from the faceplate of the card. The following three types of fiber optic adapters are used for securing the equipment:

- SC to SC fiber optic adapter
- FC fiber optic adapter
- ST fiber optic adapter

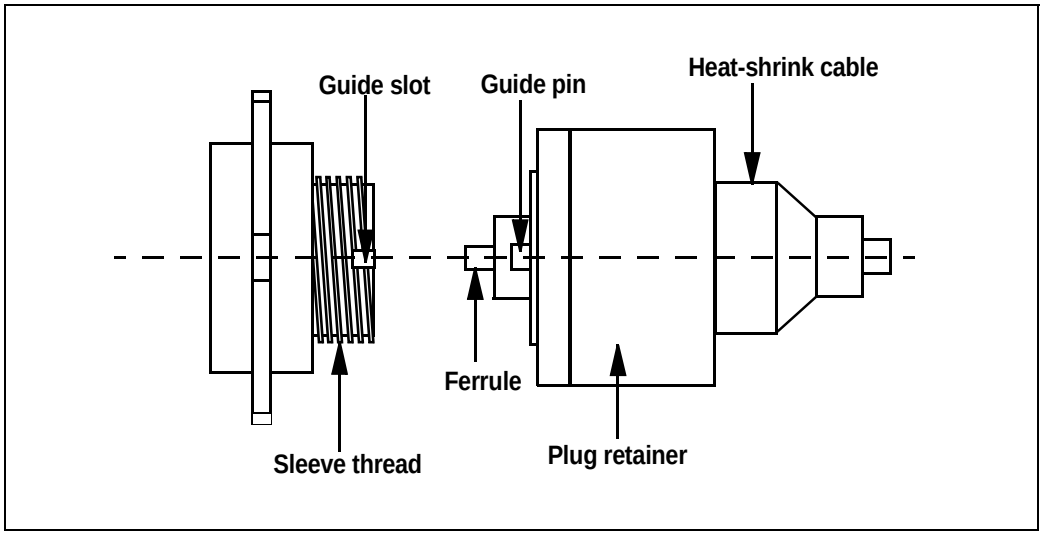
Refer to the following figures for each type of adapter.

SC to SC fiber optic adapter

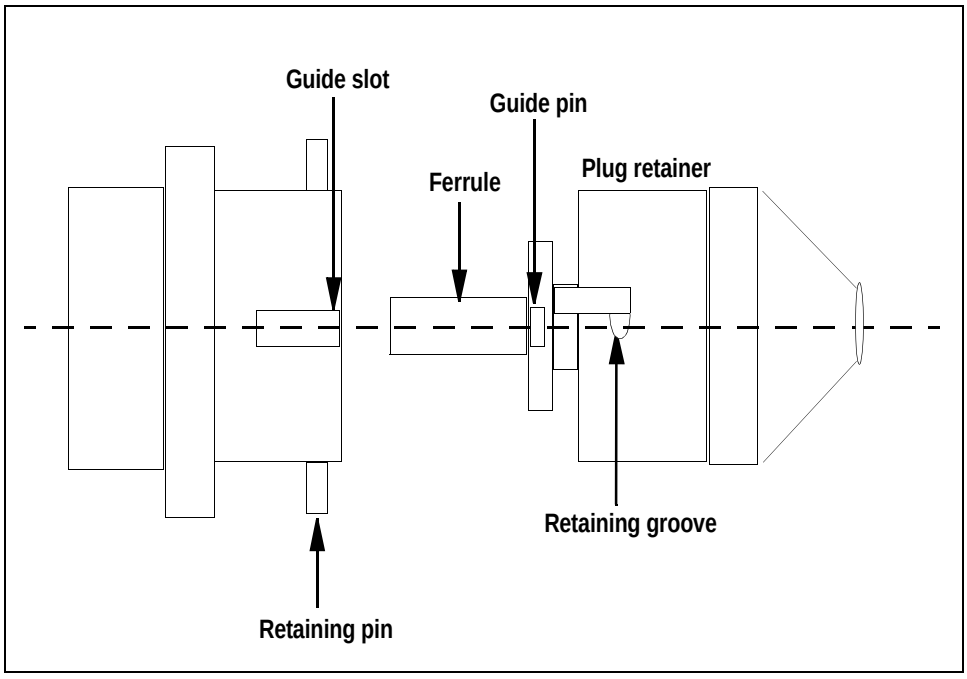


Note: A connector extender is installed on all SC connectors mating on the inside of the faceplate to facilitate connector removal.

FC fiber optic adapter



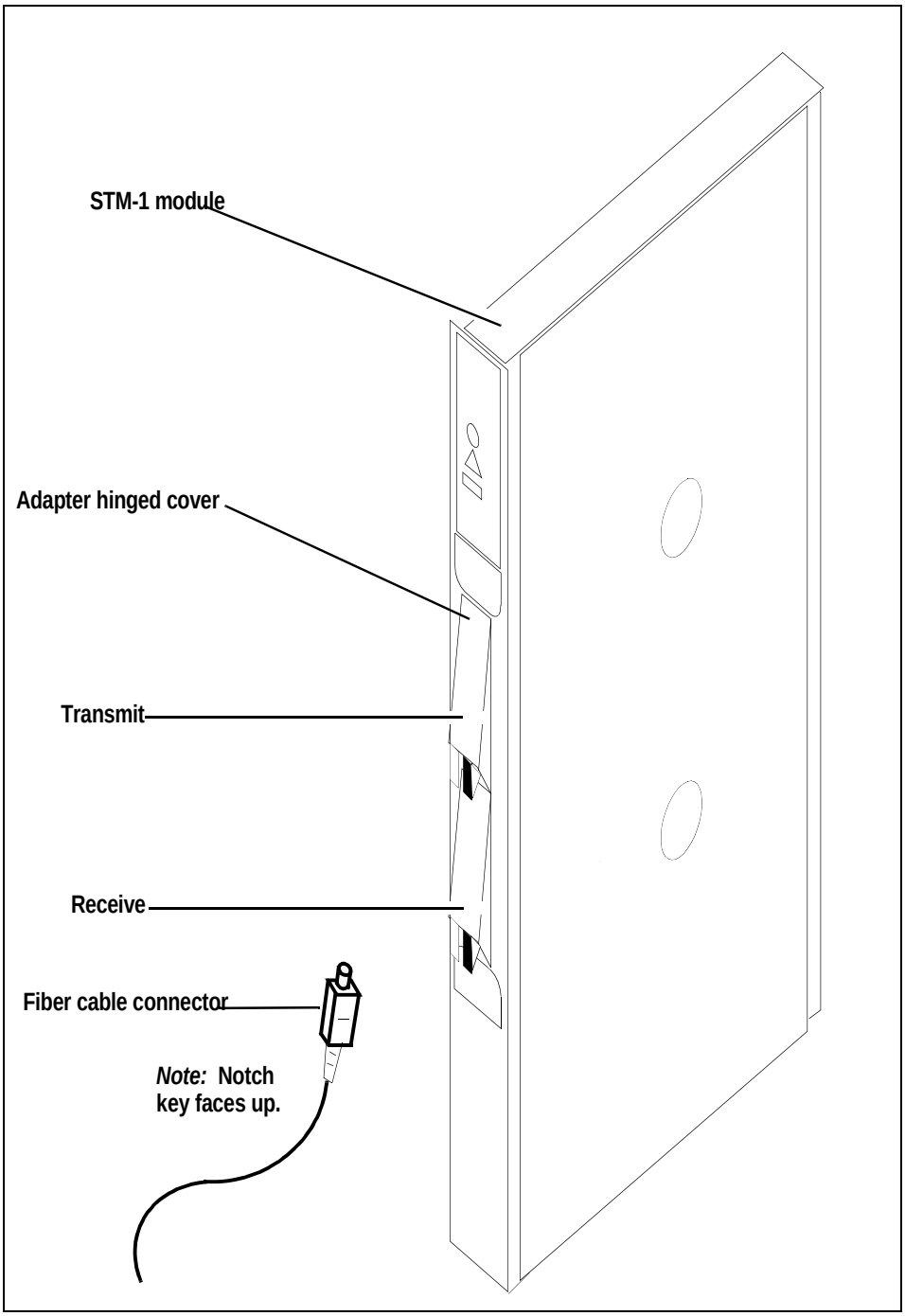
ST fiber optic adapter



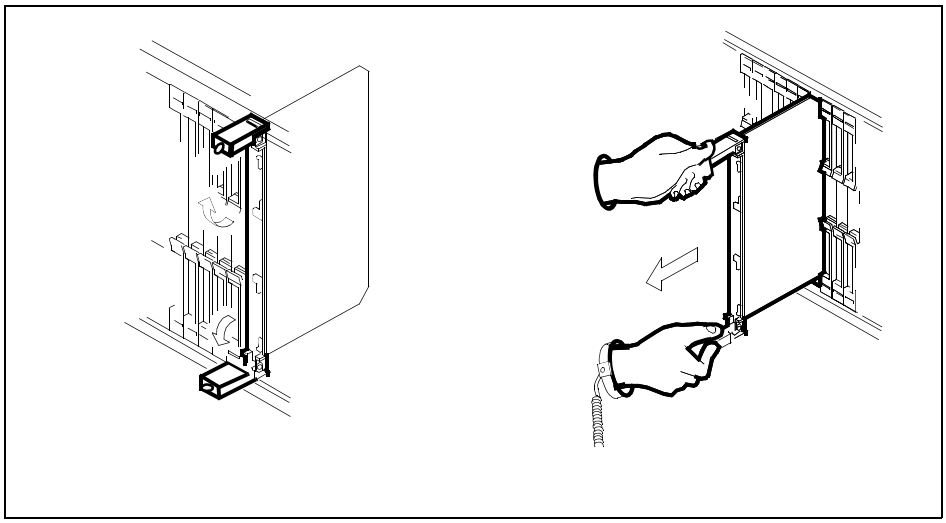
20 Disconnect the fiber cables from the faceplate of the card.

21 After the cables have been removed, cap the connectors on the module and the fiber cable. Store the cables in the cable trough.

Note: Before removing the STM-1 card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.



22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5.1 cm) from the equipment shelf.

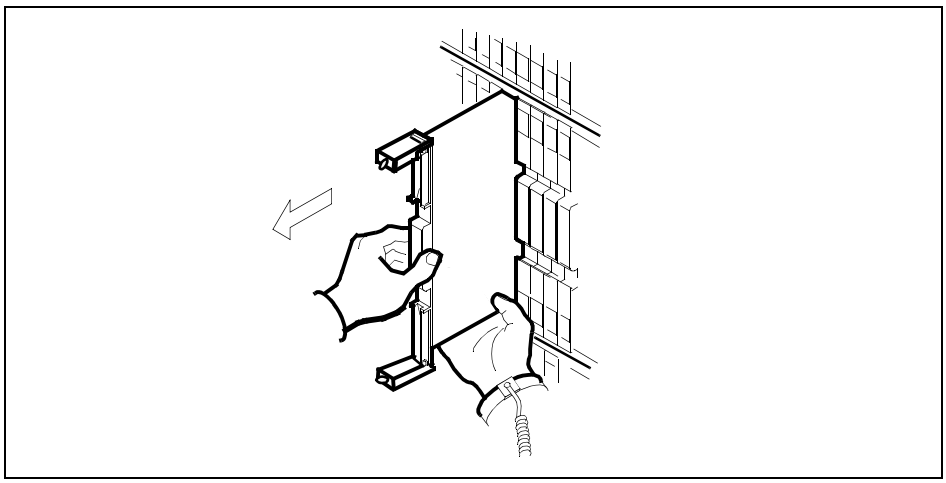


23

ATTENTION

Cards can weigh up to 9 lbs (4 kg).

As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



24 Place the card you have removed in an electrostatic discharge (ESD) protective container.

25

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement card with the same PEC and the same release.

Note: Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

26

ATTENTION

Examine the fiber connectors on the replacement NTLX99BA STM-1 card and connectors on the STM-1 fiber cables. To prevent eye damage, do not look directly into the end of the fiber cables. If the fiber connectors and the cable connectors do not mate, replace the fiber connectors on the replacement card. Each NTLX99BA replacement card is shipped with two pairs of spare fiber connectors. To select the correct fiber connectors, compare the spare fiber connectors with the fiber connectors on the card you removed. Also check the spare fiber connectors against the connectors on the STM-1 fiber cables. Do not connect the STM-1 fiber cables until instructed to do so.

CAUTION

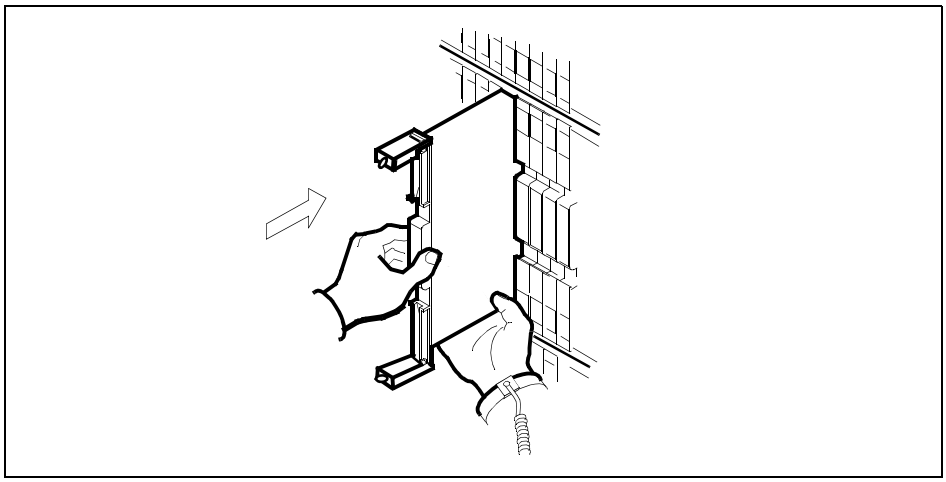
Equipment damage due to empty slots

Equip all unused slots on a powered shelf with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

Insert the replacement STM-1 card into the shelf. If a replacement card is not available, insert an NTLX60AA filler module in the slot until a replacement card is available.

27 Open the locking levers on the card.

28 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.

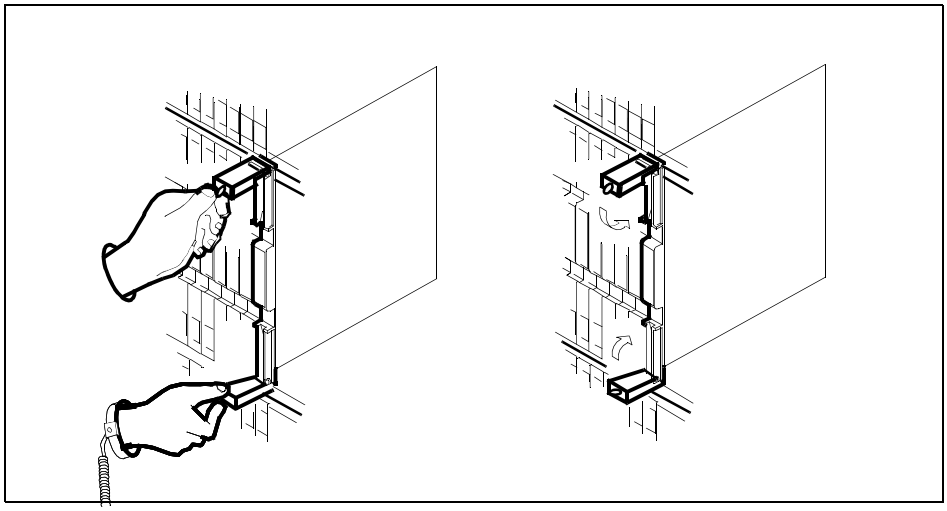


29

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

30 As shown in the following figure, close the locking levers to secure the card.



31 Wait until the card performs a self-test (less than one minute). The self test is complete when the green LED remains on and the red LED remains off. If

both LEDs stay on for an extended period of time, it means the replacement STM-1 card is defective; remove the card and replace it with another STM-1 replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Determine which type of fiber optic adapter you have before reconnecting the cables from the faceplate of the card. Refer to figures under Step 19 for an illustration of different adapters.

33 Reconnect the cables from the faceplate of the card.

34 Close the cable trough door. Close and lock the card-access door.

At the MAP terminal

35 Return to the STM-1 screen and take the STM-1 card from the OffL state to ManB state by typing

```
>BSY
```

and pressing the Enter key.

36 Load the new STM-1 card with the default software load by typing

```
>LOADMOD
```

and pressing the Enter key.

Monitor the progress of the loading activity on the SPM line of the STM-1 screen.

37 Return the new STM-1 card to Insv state by typing

```
>RTS
```

and pressing the Enter key.

Note: The state change from ManB to Insv can take up to seven minutes to complete.

38 Access the performance monitoring (PERFMON) screen and post the STM-1 carrier by typing

```
>MTC;TRKS;CARRIER;POST SPM spm_no STM1R;PERFMON car_no
```

and pressing the Enter key.

where

spm_no
is the number of the SPM (0 to 63)

car_no
is the number of the STM-1R carrier (0 or 1)

Example of a MAP screen:

```
CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
TRUNKS    1    0   28    28     0    0    0     0    0    50
TIMING    0    0    0     0     0    0    0     0    0     2
HSCARR    0    0    0     1     3    0    1     0    0   180
```

```
 PERFMON 0  SPM 11  STM-1RM 0  STM-1S 0
Interval:              Status:
Parm   Count  M D      Parm   Count M D      Parm    Count M D
SEFS-N   10            CV-N     35            ES-N        5
SES-N     9            LBC-N     0            OPT-N       7
OPR-N UNSET
PERFMON:
```

Note: The initial value of the optical power received (OPR) must be recorded for the STM-1 Section carrier terminating on the replacement STM-1. This initial reading is OPR0 (OPR zero). If the OPR0 value has not been recorded for the replacement STM-1 card, the count for the PERFMON parameter OPR-N appears as UNSET(see the previous example).

39 Record the value for OPR0 by typing

>METERPP RECORDOPR0

and pressing the Enter key.

where

RECORDOPR0
means Record OPR 0 (zero)

If an OPR0 value has already been recorded for the replacement STM-1 card, confirm the reset confirmation request by typing

>YES

and pressing the Enter key.

40 At the carrier screen, restore the STM-1R carrier and the STM1M carrier to their original state as recorded in Step 10 and Step 7. The STM-1R carrier should be restored first.

41 To ensure sparing capability of the new STM-1 RM, set the new STM-1 card to working (W). To do this, access the Protection (PROT) screen from the STM-1 screen and type

>MANUAL from_unit_no to_unit_no

and pressing the Enter key.

where

from_unit_no
is the number of the active unit (0 or 1)

to_unit_no
is the number of the inactive unit (0 or 1)

Note 1: Protection switching an STM-1 normally requires protection switching of the network devices connected to the STM-1 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

Note 2: The MANUAL command without options and the FORCE command can be used only with a CEM card.

42 To ensure that the new RM can release activity, repeat step 41.

43 You have completed this procedure. Return to the CI level of the MAP screen by typing

```
>QUIT ALL
```

and pressing the Enter key.

System cards in a SuperNode SLM

Application

Use this procedure to replace the following cards in a SuperNode system load module (SLM).

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT9X12	AB, AC, AD	CPU port card	SLM
NT9X21	AA	CM bus terminator paddle board	SLM
NT9X22	CA	CM subsystem clock paddle board	SLM
NT9X27	BA	CM bus extender paddle board	SLM
NT9X30	AA	+5V 86-A power converter	SLM
NT9X46	AA	Parallel port interface paddle board	SLM
NT9X47	AA	+12V power converter	SLM
NT9X47	AB	Global SLM power converter	SLM

Common procedures

This procedure refers to the following common procedures:

- *Activity switch with memory match*
- *Switching the clock source*
- *Replacing a card*

Do not go to the common procedure unless the step-action procedure directs you to go.

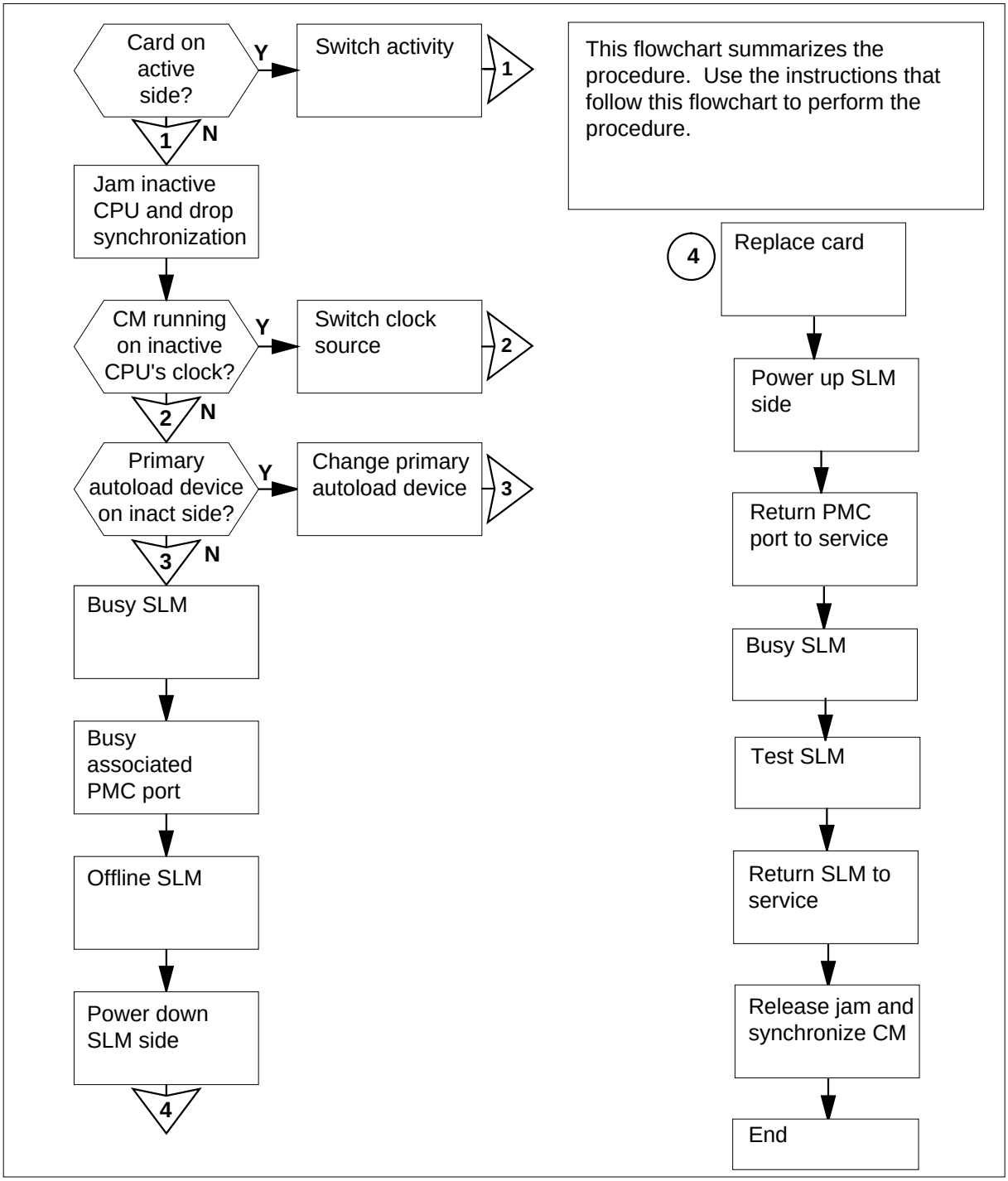
System cards in a SuperNode SLM (continued)

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

System cards in a SuperNode SLM (continued)

Summary of replacing System cards in a SuperNode SLM



System cards in a SuperNode SLM (continued)

Replacing System cards in a SuperNode SLM

At the MAP terminal

1

WARNING
Loss of data recording services
This procedure removes the SLM from service. Make sure that another recording device assumes the data recording services of the SLM that you remove from service, before you attempt this procedure. Make sure that the other device has the storage capacity to assume the recording.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card you replace.

2 To access the CM level of the MAP display, type

`>MAPCI;MTC;CM`

and press the Enter key.

Example of a MAP display:

```
CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC
 0   no  cpu 1   .     .  yes    .     .     .   .
```

3 Determine if the card you replace associates with the active CPU or the inactive CPU.

Note: The active CPU appears under the Act header on the MAP display. In the example in step 2, the active CPU is CPU 1

If the card	Do
associates with the inactive CPU	step 4
associates with the active CPU	step 11

4 Determine if the inactive CPU is jammed.

Note: The word 'yes' under the Jam header means that the inactive CPU is jammed. The area is blank if the CPU is not jammed.

If the inactive CPU	Do
is not jammed	step 5
is jammed	step 7

At the CM reset terminal for the inactive CPU

5

DANGER
Loss of service
Make sure you do not jam the active CPU. A cold restart occurs when you jam the active CPU while the CM is not in sync. The word ACTIVE on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
Please confirm: (YES/NO)
```

6 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

At the MAP terminal

7 Determine if the CM is synchronized.

Note: A dot or EccOn under the Sync header means that the CM is synchronized. The word 'no' means that the CM is not synchronized.

If the CM	Do
is synchronized	step 8
is not synchronized	step 12

8 To drop synchronization, type

>DPSYNC

System cards in a SuperNode SLM (continued)

and press the Enter key.

If the response	Do
is About to drop sync with CPU n active. is The inactive CPU is JAMMED. is Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"):	step 9
is other than listed here	step 39

9 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU n.
```

At the CM reset terminal for the inactive CPU

10 Wait until A1 flashes on the reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to flash.

If A1	Do
flashes	step 12
does not flash	step 39

11 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

At the MAP terminal

12

WARNING
Loss of service
Make sure that the CM runs on the clock of the active CPU. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU. A cold restart or system image reload can occur, which results in loss of service.

To determine if the CM runs on the clock of the inactive CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

```
CPU pair is NOT insync, CPU 0 is active.
CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU is Jammed.
```

If the CM	Do
runs on the inactive clock of the CPU	step 13
runs on the active clock of CPU	step 14

13 To run the CM on the clock of the active CPU, perform the procedure *Switching the clock source* in this document. Complete the procedure and return to this point.

14 To access the CMMNT level of the MAP display, type

>CMMNT

and press the Enter key.

Example of a MAP display:

System cards in a SuperNode SLM (continued)

```
CM   Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC
 0    no  cpu 0  .     .     yes   .       .     .    .

Traps:          Per minute =     0      Total =     5

AutoLdev:       Primary = SLM 0 DISK  Secondary =  SLM 1
DISK

Image Restartable = No image test since last restart

Next image restart type =  WARM

Last CM REXTST executed

System memory in kbytes as of  14:39:07
Memory (kbytes): Used = 105984 Avail =  12800 Total =
118784
```

15 Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU.

Note: The primary autoload device appears on the right of the Primary header. In the example in step 14, the primary autoload device is the disk of SLM 0.

If the primary autoload device	Do
is on the side of the switch with the active CPU	step 17
is on the side of the switch with the inactive CPU	step 16

16 To change the primary autoload device to a device on the same side of the switch as the active CPU, type

`>AUTOLD SLM slm_number device_type`

and press the Enter key.

where

slm_number
is the number of the active CPU (0 or 1)

device_type
is the type of SLM device (DISK or TAPE)

Example of a MAP response:

```
New autoload route has been set.
```

17 To access the SLM that corresponds to the inactive CPU, type

`>IOD;SLM slm_number`

and press the Enter key.

where

slm_number
is the number of the inactive CPU (0 or 1)

Example of a MAP display:

```
IOD
IOC  0  1  2  3
STAT .  .  .  .

DIRP:  .   XFER:  .   DVI :  .   DPPP:  .   DPPU:  .
NOP :  .   SLM :  .   NX25:   .  MLP :  .   SCAI:  .

SLM   0  1
Stat  .  .

SLM 0       device      TAPE        DISK
            status        .           .
            drive       idle        on line
            user                    SYSTEM
```

Note: Dots on the right of the SLM Stat header mean that the SLMs are in service.

18 To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

```
SLM 0 busy passed.
```

Example of a MAP display:

```
SLM   0  1
Stat  M  .
```

Note: The letter M on the right of the SLM Stat header means that the associated SLM is manual busy.

19 To spin down the SLM disk, type

>SPIN DOWN

and press the Enter key.

Note: The light on the faceplate of the SLM starts to blink. After 1 min, the light turns off. Wait for the light to turn off before you continue this procedure.

Example of a MAP response:

```
Disk of SLM 0 is  not ready.
```

System cards in a SuperNode SLM (continued)

20 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

```
           PMC 0
            .

 PORT0:    pbsy
 PORT1:     .
```

21 To manually busy the port that corresponds to the inactive CPU, type

>BSY 0 PORT port_number

and press the Enter key.

where

port_number
is the number of the inactive CPU (0 or 1)

Example input:

>BSY 0 PORT 0

Example of a MAP response:

```
Maintenance action submitted.
Passed.
```

22 To offline the SLM, type

>OFFL

and press the Enter key.

Note: Wait for light on the faceplate of the SLM to turn off before you continue with the rest of this procedure.

Example of a MAP response:

```
SLM 0 now offline. Do not remove SLM card
until disk drive is spun down! This will be
indicated when the SLM card light turns off.
```

System cards in a SuperNode SLM (continued)

At the SLM shelf

23

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of the frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the correct SLM side. Switch off the two power converters, NT9X47 and NT9X30. Press down and release the power switches on the faceplates of both converters at the same time.

Note 1: For CPU 0, the NT9X47 power converter is in slots 1F through 3F. For CPU 1, the NT9X47 power converter is in slots 33F through 35F.

Note 2: For CPU 0, the NT9X30 power converter is in slots 4F through 6F. For CPU 1, the NT9X30 power converter is in slots 36F through 38F.

24 Perform the procedure *Replacing a card* in this document to replace the card. Complete the procedure and return to this point.

25 Power up the two power converters, NT9X47 and NT9X30. Lift and release the power switches on the faceplates of both converters at the same time.

At the MAP terminal

26 To make sure you are at the PMC level of the MAP display, type

```
>CM;PMC
```

and press the Enter key.

27 To return the manual busy PMC port to service, type

```
>RTS  0  PORT  port_number
```

and press the Enter key.

where

port_number
is the number of the manual busy port (0 or 1)

Example of a MAP response:

```
Maintenance action submitted.
Passed.
```

If the RTS command	Do
passed	step 28
failed	step 39

System cards in a SuperNode SLM (continued)

28 To access the SLM you replaced, type

>IOD;SLM slm_number

and press the Enter key.

where

slm_number
is the number of the SLM (0 or 1) that contains the replaced card.

29 To manually busy the SLM, type

>BSY

and press the Enter key.

If the BSY command	Do
passed	step 30
failed	step 39

30 To spin up the SLM disk, type

>SPIN UP

and press the Enter key.

Note: Wait for the light on the faceplate of the SLM to light before you continue with the rest of this procedure.

Example of a MAP response:

```
Disk of SLM 0 is ready.
```

31 To test the SLM, type

>TST

and press the Enter key.

MAP response:

```
Minimum SLM 0 tests passed.
```

If the TST command	Do
passed	step 34
failed, and the system generates a card list	step 32
is other than listed here	step 39

32 Record the location, description, slot number, PEC, and PEC suffix of the cards on the list.

33 To replace each of the cards on the list, perform the correct card replacement procedure in this document. Complete the procedure and return to this point.

34 To return the SLM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
SLM 0 return to service passed.
```

If the RTS command	Do
passed	step 35
failed	step 39

At the CM reset terminal for the inactive CPU

35 To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

```
JAM RELEASE DONE
```

At the MAP terminal

36 To synchronize the CM, type

>CM;SYNC

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Synchronization successful.
```

If the response	Do
indicates the SYNC command was successful	step 37
indicates other than listed here	step 39

37 Your next step depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 38

System cards in a SuperNode SLM (end)

If a maintenance procedure	Do
did not direct you to this procedure	step 40

38 Return to the maintenance procedure that sent you to this procedure and continue as directed.

39 For additional help, contact the next level of support.

40 The procedure is complete.

4 TOPS message switch card replacement procedures

The TOPS message switch (TMS) card replacement procedures appear in the following chapter.

TMS shelf layouts

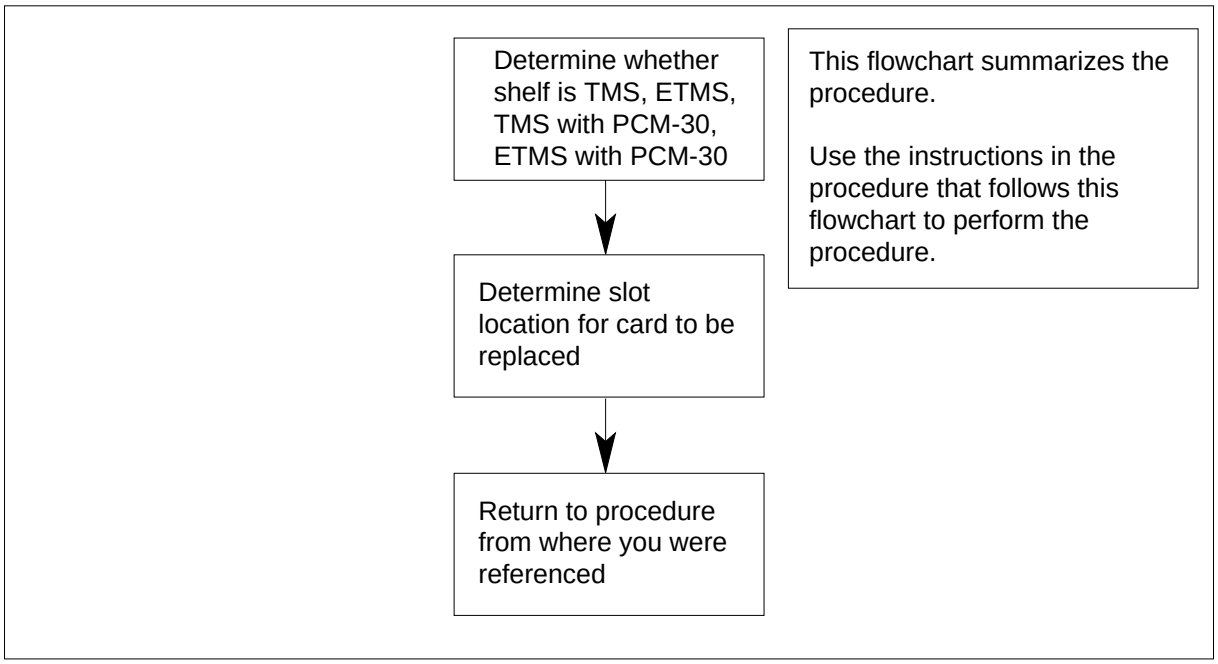
Application

Use this procedure to determine the correct physical card location (slot) and packfill configuration for ETMS/TMS shelf card replacement.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Summary of TMS shelf layouts



TMS shelf layouts

At the TMS shelf:

1 Use the correct packfill figure to determine the location of the card to be replaced.

If shelf is	DoUse
TMS	TMS packfill figure.
ETMS	ETMS packfill figure.
TMS with PCM-30 interfaces	TMS with PCM-30 interfaces packfill figure.

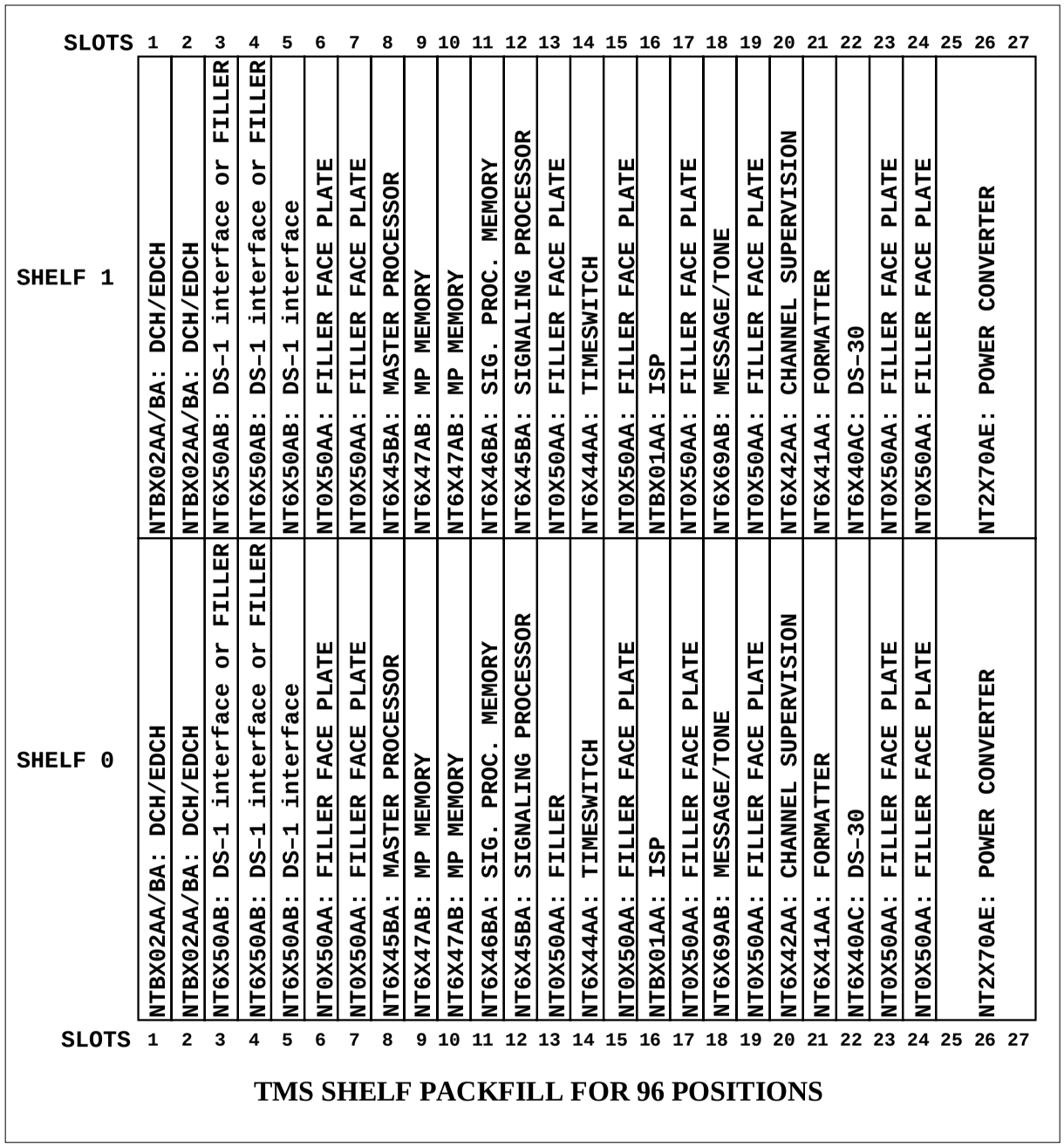
TMS shelf layouts (continued)

If shelf is	DoUse
ETMS with PCM-30 interfaces	ETMS with PCM-30 interfaces packfill figure.

2 Return to the card replacement procedure that you were following when you were referred to the card location procedure.

TMS shelf layouts (continued)

Packfill for a fully configured TMS



TMS SHELF PACKFILL FOR 96 POSITIONS

TMS shelf layouts (continued)

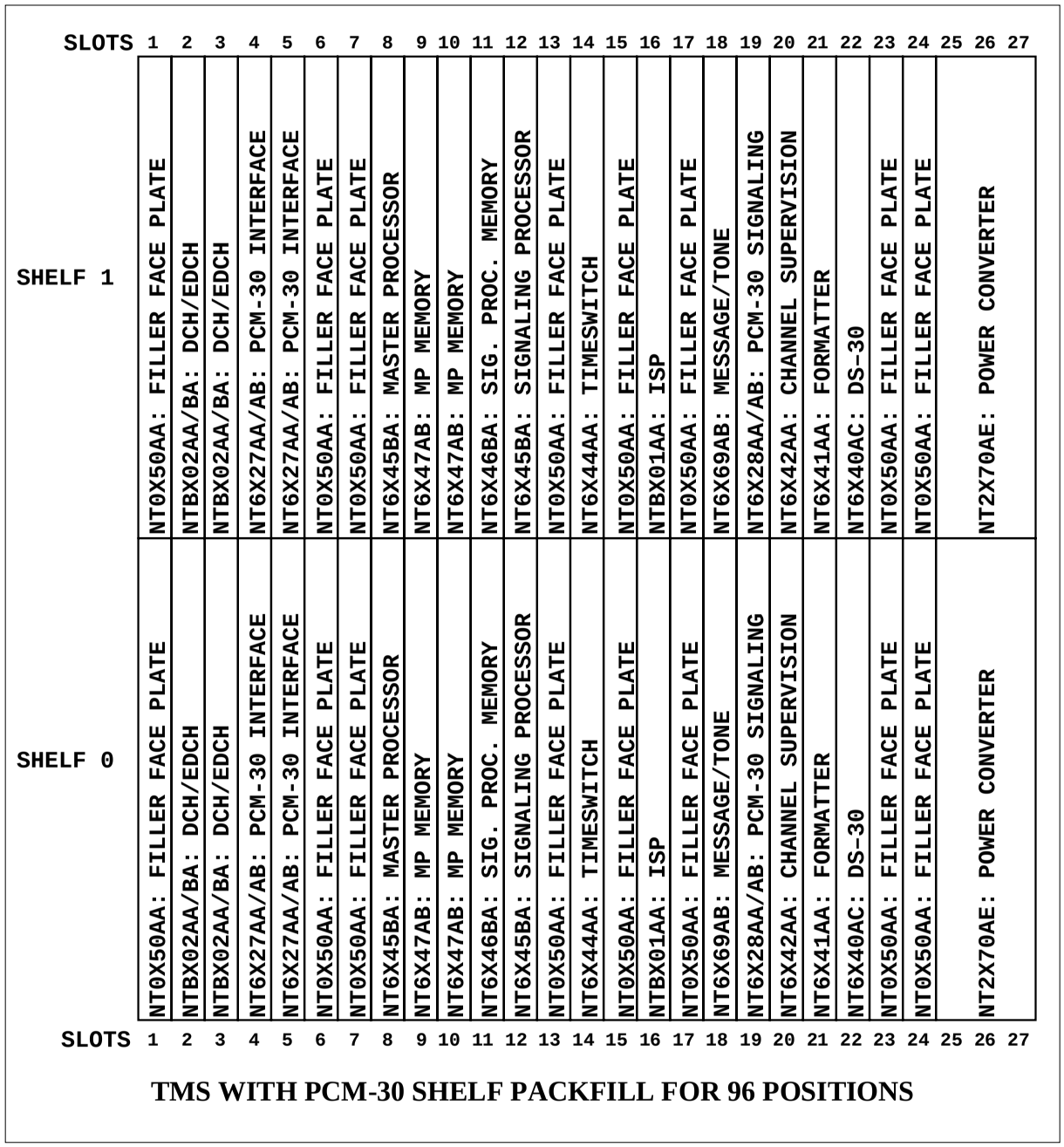
Packfill for a fully configured ETMS

	SLOTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
SHELF 1		NTBX02BA: EDCH	NTBX02BA: EDCH	NT6X50AB: DS-1 interface or FILLER	NT6X50AB: DS-1 interface or FILLER	NT6X50AB: DS-1 interface	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NTMX77AA: UNIFIED PROCESSOR	NT0X50AA: FILLER FACE PLATE	NT6X44AA: TIMESWITCH	NT0X50AA: FILLER FACE PLATE	NTBX01AB: EISP	NT0X50AA: FILLER FACE PLATE	NT6X69AB: MESSAGE/TONE	NT0X50AA: FILLER FACE PLATE	NT6X42AA: CHANNEL SUPERVISION	NT6X41AA: FORMATTER	NT6X40AC: DS-30	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT2X70AE: POWER CONVERTER		
SHELF 0		NTBX02BA: EDCH	NTBX02BA: EDCH	NT6X50AB: DS-1 interface or FILLER	NT6X50AB: DS-1 interface or FILLER	NT6X50AB: DS-1 interface	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NTMX77AA: UNIFIED PROCESSOR	NT0X50AA: FILLER FACE PLATE	NT6X44AA: TIMESWITCH	NT0X50AA: FILLER FACE PLATE	NTBX01AB: EISP	NT0X50AA: FILLER FACE PLATE	NT6X69AB: MESSAGE/TONE	NT0X50AA: FILLER FACE PLATE	NT6X42AA: CHANNEL SUPERVISION	NT6X41AA: FORMATTER	NT6X40AC: DS-30	NT0X50AA: FILLER FACE PLATE	NT0X50AA: FILLER FACE PLATE	NT2X70AE: POWER CONVERTER		
	SLOTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

ETMS SHELF PACKFILL FOR 96 POSITIONS

TMS shelf layouts (continued)

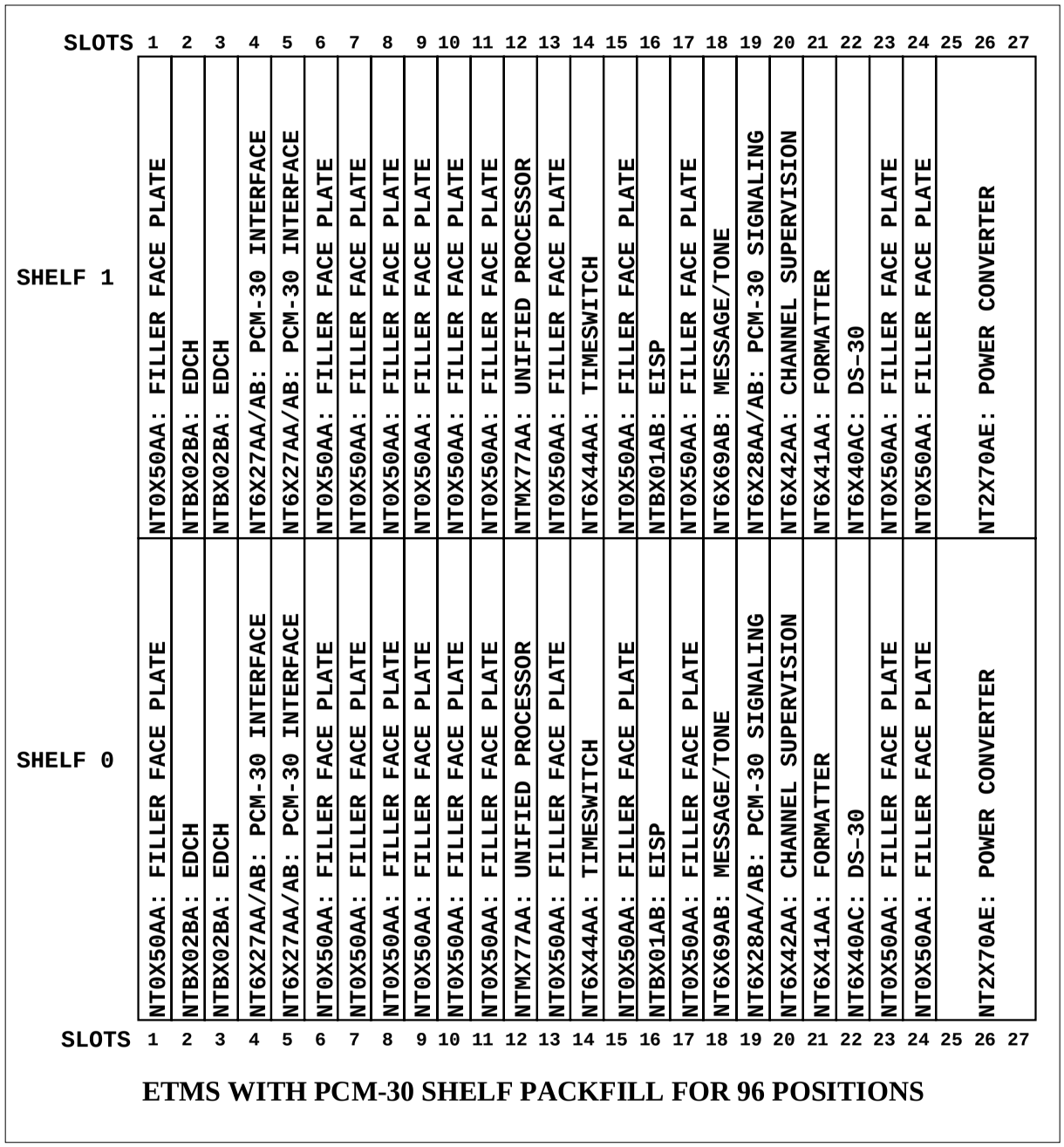
Packfill for a fully configured TMS with PCM-30 interfaces



TMS WITH PCM-30 SHELF PACKFILL FOR 96 POSITIONS

TMS shelf layouts (end)

Packfill for a fully configured ETMS with PCM-30 interfaces



ETMS WITH PCM-30 SHELF PACKFILL FOR 96 POSITIONS

NT2X70 in a TMS

Application

Use this procedure to replace an NT2X70 card in an Enhanced TOPS message switch (ETMS) or a TOPS message switch (TMS) shelf.

PEC	Suffixes	Name
NT2X70	AE	Power Converter

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

Common procedures

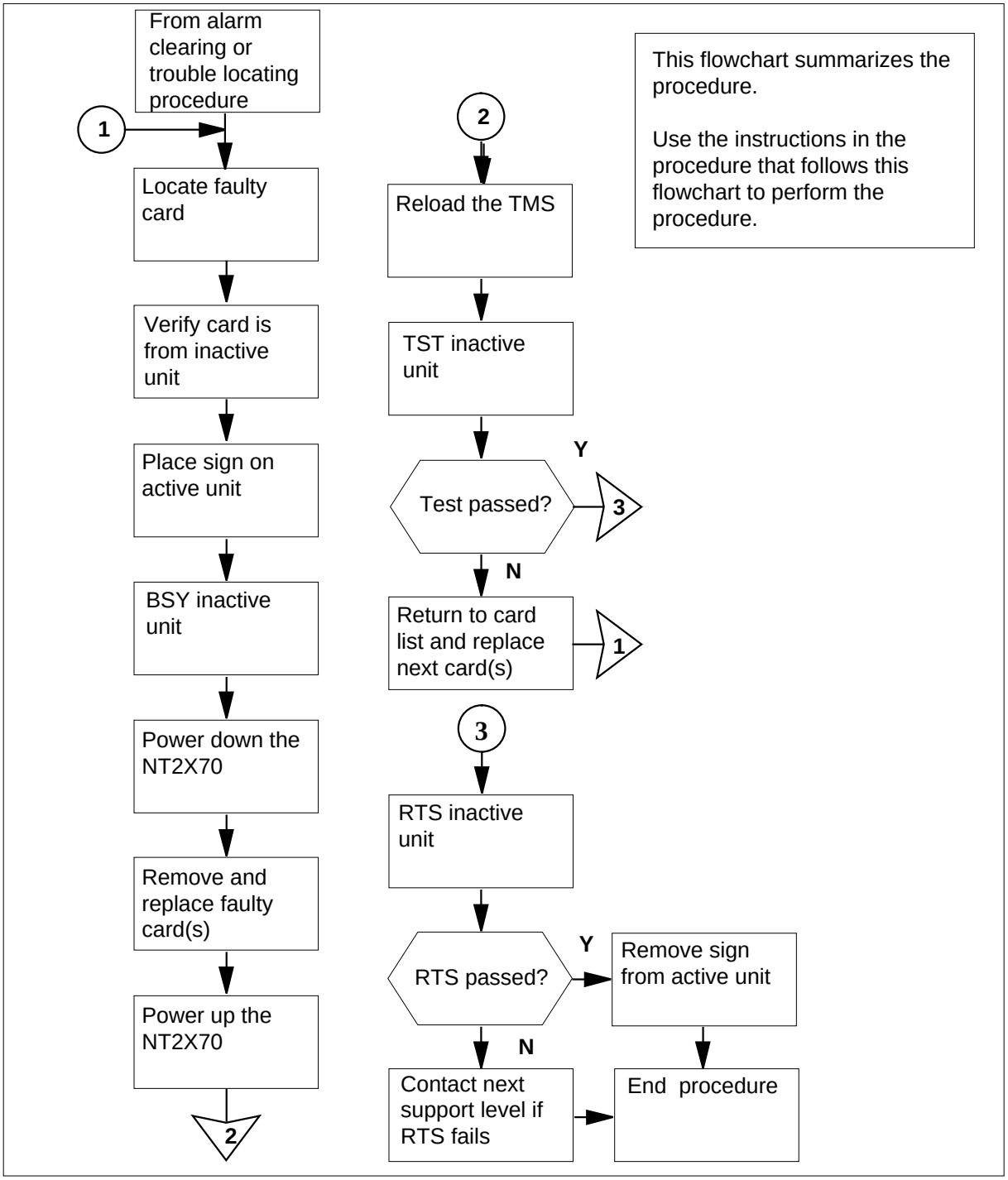
Card removal and replacement procedure is referenced in this procedure:

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NT2X70 in a TMS (continued)

Summary of replacing an NT2X70 in a TMS



NT2X70 in a TMS (continued)

Replacing an NT2X70 in a TMS

At your current location:

1

CAUTION
Loss of service
Whenever replacing a card in the TMS, ensure that the MP positions have been removed from service and that the TPC subtending the TMS is turned off.

DANGER
Electrical and mechanical damage
Take these precautions to protect the circuit cards from electrical and mechanical damage while transporting cards.

When handling a circuit card not in an electrostatic discharge (ESD) protective container, stand on a conductive floor mat and wear a wrist strap connected, through a 1-megohm resistor, to a suitably grounded object, such as a metal workbench or a DMS frame (Northern Telecom Corporate Standard 5028).

Store and transport circuit cards in an ESD protective container.

Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Using this procedure independently may cause equipment damage or service interruption.

At the MAP:

2 Set the MAP to TMS level by entering:

```
>MAPCI;MTC;PM:POST TMS n
```

and pressing the Enter key.

where

n
is the TMS number

3

CAUTION
Possible loss of service
Removing a card from the active unit will cause a loss of call handling capability for all TOPS MP positions subtending that TMS.

Be certain that the card being changed is on the inactive unit. If necessary, perform a SwAct of the TMS from the MAP by entering:

>SWACT

and pressing the Enter key.

Example of a MAP display response:

```
CC     CMC     IOD     Net     PM     CCS     LNS     Trks     Ext   APPL

TMS            SysB       ManB      OffL      CBsy      ISTb     InSv
 0  Quit   PM   0          0        10       0         0        130
 2  Post_  TMS  0          0         0       0         1          4
 3
 4               TMS 0  ISTb    Links_OOS:     CSide 0     PSide  0
 5  Trnsl        Unit  0:  Inact    ISTb
 6  Tst          Unit  1:  Act      ISTb    Mtce
 7  Bsy
 8  RTS
 9  OffL
10  LoadPM
11  Disp_
12  Next
13  SwAct
14  QueryPM
15
16  DCH
17  Perform
18
```

Indicates active and inactive units

4 At the TMS level of the MAP, busy the inactive unit by entering:

>BSY unit_no

and pressing the Enter key.

where

unit_no
is the TMS unit number

Example of a MAP display response:

NT2X70
in a TMS (continued)

```
CC     CMC     IOD     Net     PM     CCS     LNS     Trks     Ext     APPL

TMS                SysB     ManB       OffL      CBsy     ISTb     InSv
 0  Quit    PM      0         0          10         0        0       130
 2  Post_   TMS     0         0           0         0        1         4
 3
 4             TMS 0  ISTb    Links_OOS:        CSide 0    PSide  0
 5  Trnsl   Unit  0:  Inact    ManB
 6  Tst     Unit  1:  Act       ISTb
 7  Bsy
 8  RTS
 9  OffL
10  LoadPM
11  Disp_
12  Next
13  SwAct
14  QueryPM
15
16  DCH
17  Perform
18
```

Indicates unit is busy

5 Busy the DCH associated with the card to be removed by entering:

>BSY

and pressing the Enter key.

At the TMS:

6 Put a sign on the active unit bearing the words “Active unit - Do not Touch."

7 Set power switch of NT2X70AE to be replaced to the off position.

a Convert fail LED on converter card will be on (lighted)

b Frame Fail lamp on FSP will be on (lighted)

c Audible alarm may sound. If objectionable, it may be silenced by entering:

>SIL

and pressing the Enter key.

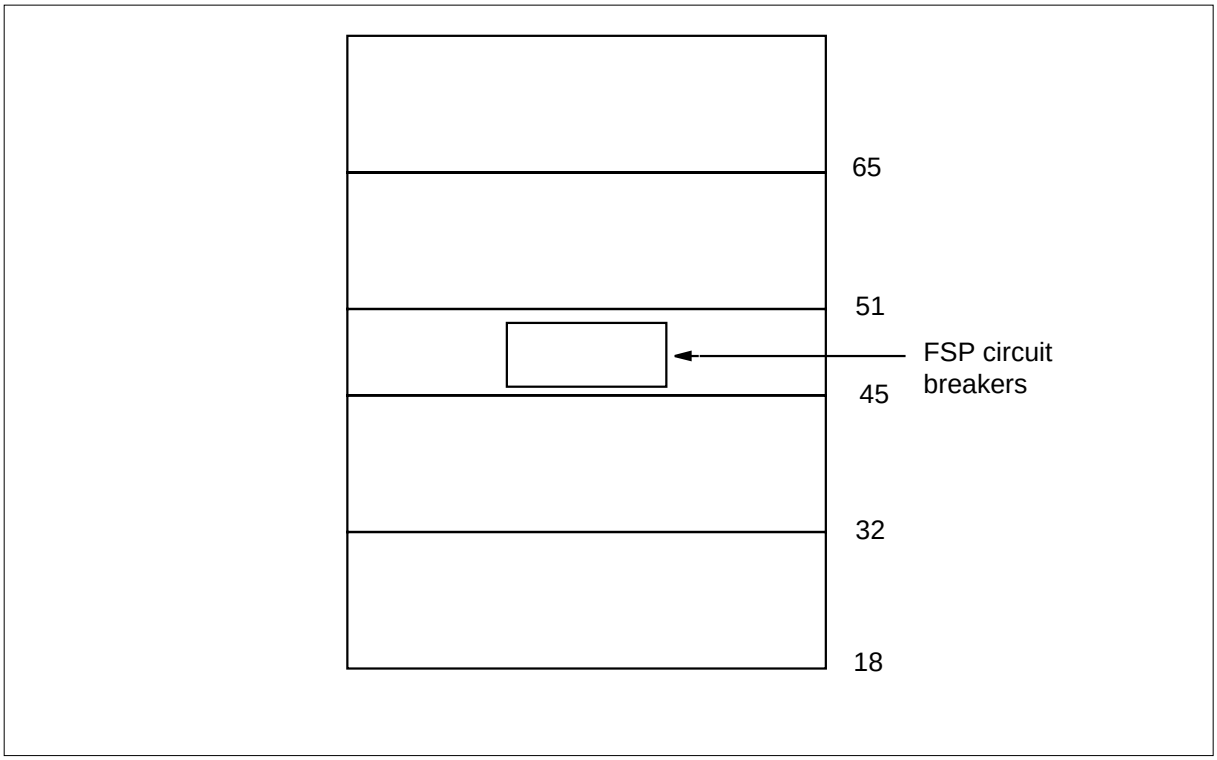
8 Remove and replace the NT2X70 card as shown in *Card removal and replacement* in this document. Go to step 9 after completing removal and replacement procedure.

9 Power up the NT2X70AE converter just inserted.

Using the diagram below determine the correct FSP switch for the shelf in which the DCH was replaced. The switch numbers correspond to the shelf position.

Hold the FSP circuit breaker on. While holding the circuit breaker on, set the power switch on the converter to the POWER ON position.

- Convert fail LED on converter card will be extinguished
- Frame Fail lamp on FSP will be extinguished



At the MAP:

10 The peripheral/remote loader-16 card (NT7X05) allows local loading of XPM data, which reduces recovery time. Check to see if the NT7X05 card is provisioned by typing

```
>QUERYPM FILES
```

and pressing the Enter key.

Example of a MAP display:

NT2X70
in a TMS (continued)

```
   CM   MS   IOD   Net    PM    CCS    LNS    Trks    Ext    APPL
    .    .     .    .    1DTC    .      .       .      .      .


TMS             SysB     ManB     OffL     CBsy     ISTb     InSv
0 Quit     PM     2        0        2        0        2        25
2 Post     TMS    0        1        0        0        0        10
3 ListSet
4          TMS      0 ManB  Links_OOS:  CSide  0,  PSide   0
5 TRNSL_   Unit 0:    Act   ManB
6 TST_     Unit 1:    InAct ManB
7 BSY_
8 RTS_     QUERYPM files
9 OffL     Unit 0:
10 LoadPM_     NT7X05 load File: ETM06BB
11 Disp_       NT7X05 Image File:
12 Next_       NT7X05 Image Timestamp: 1996/02/07 13:56:25.663 WED
13 SwAct
14 QueryPM  Unit 1:
15             NT7X05 load File: ETM06BB
16             NT7X05 Image File:
17 Perform     NT7X05 Image Timestamp: 1996/02/07 13:54:09.523 WED
18
```

(NT7X05 load file name)

Note: If the NT7X05 card is not provisioned the MAP response is:`NT7X05 not datafilled, QueryPm files invalid`

If the NT7X05 card is	Do
provisioned	step 11
not provisioned	step 12

11

DANGER

Possible service interruption

The LOCAL LOADFILE option of the LOADPM command has a parameter of [<file> string}]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

NT2X70
in a TMS (continued)

Load the TMS software from the local loadfile by typing:

>LOADPM PM LOCAL LOADFILE

If LOADPM	Do
passed	step 14
failed	step 12

12 Reload the TMS unit from the CC that has been without power by entering:

>LOADPM unit_no

and pressing the Enter key.

where

unit_no
is the TMS unit number

13 Test the TMS unit containing the new card by entering:

>TST unit_no

and pressing the Enter key.

where

unit_no
is the TMS unit number

If	Do
passed	step 14
failed	Return to card list and replace next card on the list

14 Return the inactive TMS unit to service by entering:

>RTS unit_no

and pressing the Enter key.

where

unit_no
is the TMS unit number

If	Do
passed	step 15
failed	step 17

At the TMS:

15 Remove the sign from the active TMS unit.

NT2X70 in a TMS (end)

16 You have completed this procedure. Return to the maintenance procedure that directed you to this replacement procedure and continue as directed.

Note 1: Send any faulty cards for repair per local procedure.

Note 2: Note in office records:

- the date the card was replaced
- the serial number of the card
- the symptoms that prompted replacement of the card

17 For further assistance, contact the personnel responsible for the next level of support.

NT6X series in a TMS

Application

Go to the applicable manual as follows:

- *NA DMS-100 Card Replacement Procedures*, 297-8021-547
- *GTOP DMS-100 Card Replacement Procedures*, 297-8441-547

to replace the following cards in an Enhanced TOPS message switch (ETMS) or TOPS message switch (TMS) shelf:

NT6X series cards in a TMS (Sheet 1 of 2)

PEC	Suffixes	Name	Chapter in manual (Procedure in chapter)
NT6X27	AA/AB	PCM-30 Trunk Interface	XPM card replacement procedures (P-side interface cards in an XPM)
NT6X28	AA/AB	PCM-30 Signaling Interface	XPM card replacement procedures (Control complex cards in an XPM)
NT6X40	AC	DS30 Network Interface	XPM card replacement procedures (NT6X40 in an XPM)
NT6X41	AA	Speech Bus Formatter	XPM card replacement procedures (Control complex cards in an XPM)
NT6X42	AA	Channel Supervision Message	XPM card replacement procedures (Control complex cards in an XPM)
NT6X44	AA	Time Switch	XPM card replacement procedures (Control complex cards in an XPM)
NT6X45	BA	LGC/DTC Processor	MSB card replacement procedures (Processor and memory cards in an MSB)
NT6X46	BA	Signal Processor Memory	MSB card replacement procedures (Processor and memory cards in an MSB)
NT6X47	AB	Master Processor Memory	MSB card replacement procedures (Processor and memory cards in an MSB)

NT6X series in a TMS (end)

NT6X series cards in a TMS (Sheet 2 of 2)

PEC	Suffixes	Name	Chapter in manual (Procedure in chapter)
NT6X50	AB	DS-1 Interface	XPM card replacement procedures (P-side interface cards in an XPM)
NT6X69	AB	CPP Message Protocol and Tone	XPM card replacement procedures (Control complex cards in an XPM)

NT6X69 in a TMS

Application

Use this procedure to replace an NT6X69 card in a TMS.

PEC	Suffixes	Name
NT6X69	AC, AD, QA	Message Protocol and Tone Interface

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

Common procedures

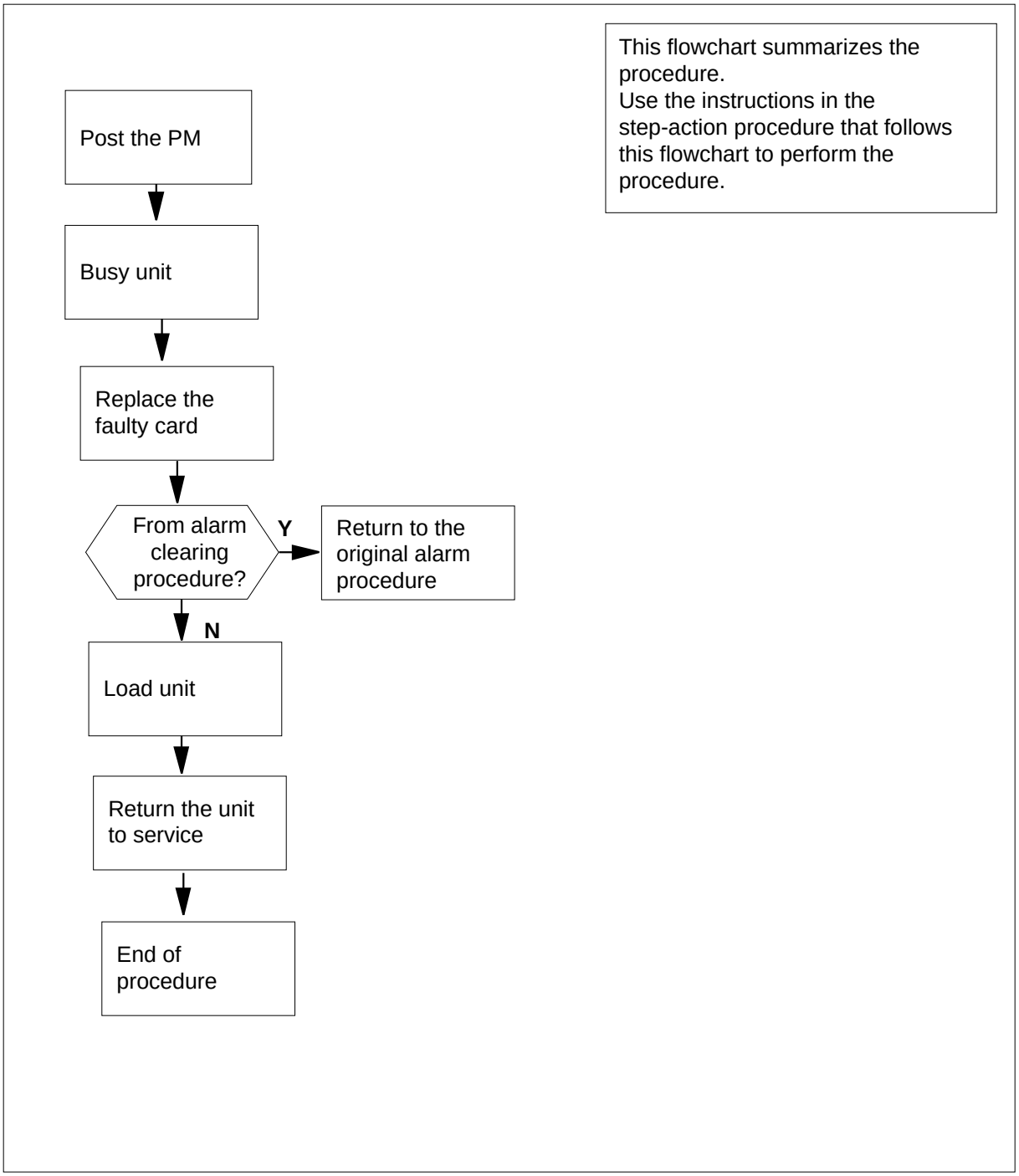
None

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NT6X69 in a TMS (continued)

Summary of replacing an NT6X69 in a TMS



NT6X69
in a TMS (continued)

Replacing an NT6X69 in a TMS

At the equipment frame:

1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.

2

CAUTION
Loss of service
Ensure you replace the card in the inactive unit and verify the mate unit is active.

Obtain a replacement card. Ensure the replacement card has the same product engineering code (PEC), including suffix, as the card being removed.

At the MAP terminal:

3 Ensure the current MAP display is at the PM level and post the TMS by typing

`>MAPCI;MTC;PM;POST TMS tms_no`

and pressing the Enter key.

where

tms_no
is the number of the TMS being posted

Example of a MAP response:

```
TMS     SysB  ManB  Offl  CBsy  ISTb  InSv
    PM     3     0    1     0     2    13
    TMS    0     0    0     0     1     7

TMS 0 ISTb  Links_OOS:  CSide 0, PSide 0
Unit0:  Act   InSv
Unit1:  Inact SysB
```

4 Observe the MAP display and determine if the faulty card is in the active or the inactive unit.

If the faulty card is in the	Do
active unit	step 5

NT6X69
in a TMS (continued)

If the faulty card is in the	Do
inactive unit	step 11

5 SWACT the units by typing

>SWACT

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal.

If SWACT	Do
cannot continue at this time	step 6
can continue at this time	step 7

6 Reject the prompt to SWACT the units by typing

>NO

and pressing the Enter key.

The system discontinues the SWACT.

7 Confirm the system prompt by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

Note: A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

If the message is	Do
`SWACT passed`	step 9
`SWACT failed Reason SWACTback`	step 8
`SWACT refused by SWACT Controller`	step 8

8 The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit.

Go to step 27.

NT6X69
in a TMS (continued)

At the equipment frame:

9 Hang a sign on the active unit bearing the words: *Active unit—Do not touch.* This sign should not be attached by magnets or tape.

At the MAP terminal:

10 Observe the MAP display and determine the state of the inactive unit.

If state is	Do
ManB	step12
SysB, CBsy, ISTb, or InSv	step11

11 Busy the inactive PM unit by typing

>BSY UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the inactive TMS unit 0 or 1

12 Reset the inactive PM unit to inhibit messaging by typing

>PMRESET UNIT unit_no NORUN

and pressing the Enter key.

NT6X69
in a TMS (continued)

At the equipment frame:

13

DANGER
Static electricity damage
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel of the TMS. This protects the equipment against damage caused by static electricity.

DANGER
Equipment damage
Take the following precautions when removing or inserting a card:

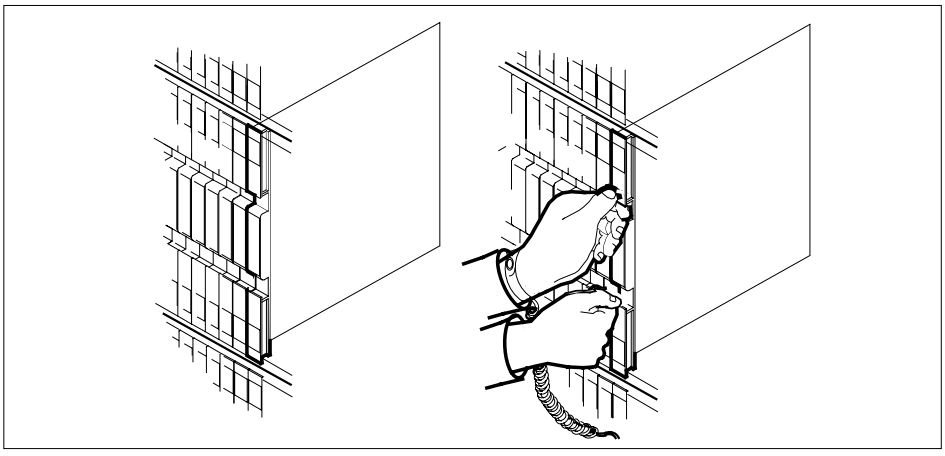
1. Do not apply direct pressure to the components.

2. Do not force the cards into the slots.

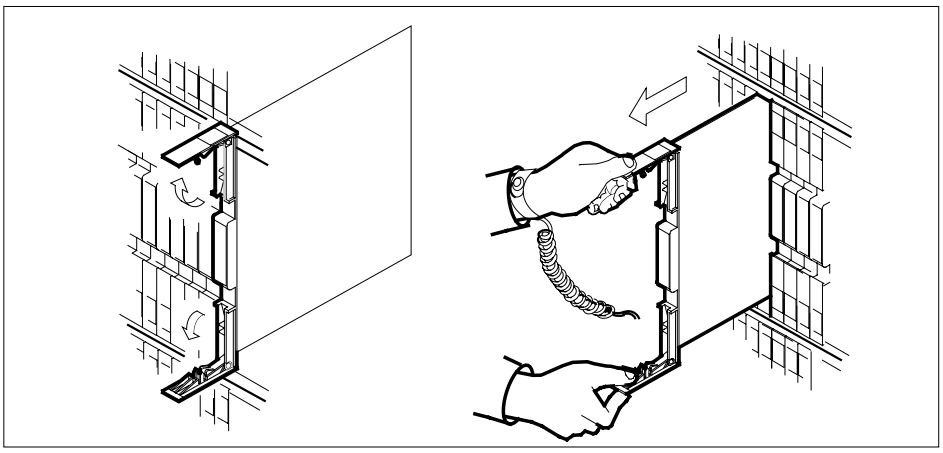
Put on a wrist strap.

14 Remove the NT6X69 card as shown in the following figures.

a Locate the card to be removed on the appropriate shelf.



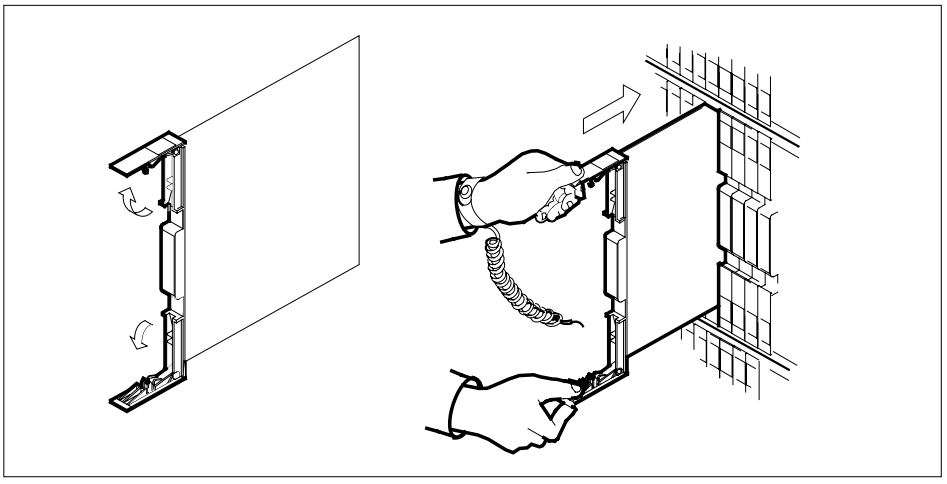
15 Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.



16 Ensure that the replacement card has the same PEC including suffix, as the card you just removed. Also ensure that all replacement card DIP switch settings match settings of the card just removed.

17 Open the locking levers on the replacement card.

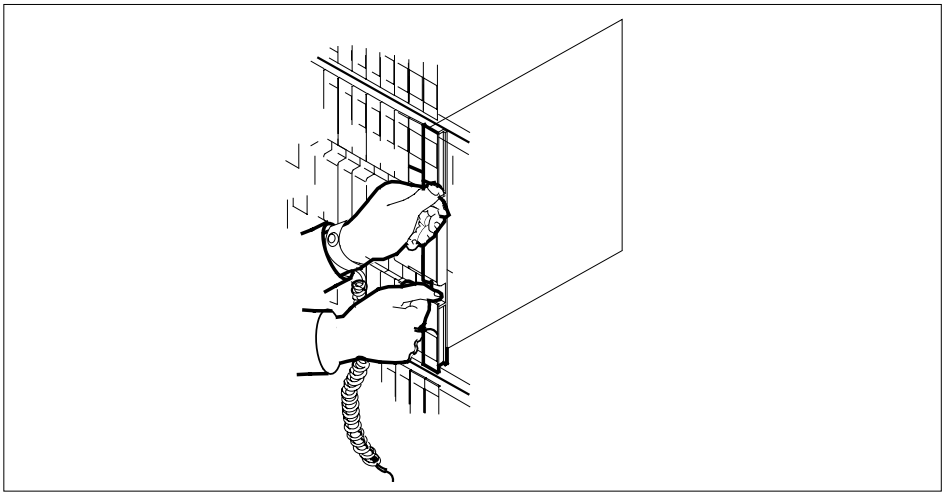
a Align the card with the slots in the shelf and gently slide the card into the shelf.



18 Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure the card is fully seated in the shelf.

19 Close the locking levers.

NT6X69
in a TMS (continued)



20 Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
an alarm clearing procedure	step 31
other	step 21

At the MAP terminal:

21 The peripheral loader card (NT7X05) allows local loading of the TMS data. Local data loading reduces recovery time. Determine if an NT7X05 is located in slot 12. Check if the NT7X05 card is provisioned by typing:

```
>QUERYPM FILES
```

and pressing the Enter key.

Example of a MAP display:

```
   CM   MS   IOD   Net    PM    CCS    LNS    Trks    Ext    APPL
    .    .     .    .    1TMS    .      .       .      .      .
                          *C*
 TMS            SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit     PM     2        0        2        0        2       25
 2 Post     TMS    1        0        0        0        1        1
 3 ListSet
 4          TMS      0 ISTb  Links_OOS:  CSide  0,  PSide   0
 5 TRNSL_   Unit 0:  Inact ManB
 6 TST_     Unit 1:  Inact InSv
 7 BSY_
 8 RTS_     QUERYPM files
 9 OffL          Unit 0:
10 LoadPM_          NT7X05 load File: ESU06AZ
11 Disp_            NT7X05 Image File:
12 Next_         Unit 1:
13 SwAct            NT7X05 load File: ESU06AZ
14 QueryPM          NT7X05 Image File:
15
16 IRLINK
17 Perform
18
```

If the NT7X05 card is	Do
provisioned	step 22
not provisioned	step 26

Note: If the NT7X05 card is not provisioned the MAP response is:
`Nt7X05 not datafilled,  QueryPm files invalid`

22 Load the TMS from the local image by typing

`>LOADPM UNIT unit_no LOCAL IMAGE`

and pressing the Enter key.

where

unit_no
is the number of the inactive TMS unit

If the load	Do
passed	step 25
failed	step23

NT6X69
in a TMS (continued)

23

DANGER
Possible service interruption
The LOADPM command, LOCAL LOADFILE option, parameter [<file> string}], will load the file_name from the parameter. The loadfile name will not be patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the TMS from the local loadfile by typing

>LOADPM UNIT unit_no LOCAL LOADFILE

and pressing the Enter key.

If the load	Do
passed	step 25
failed	step 24

At the MAP terminal:

24 Load the inactive TMS unit by typing

>LOADPM UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the busied TMS unit

If the load	Do
passed	step 25
failed	step 29

25 Return the inactive TMS unit to service by typing

>RTS UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the TMS unit 0 or 1

If RTS	Do
passed	step 26
failed	step 29

At the equipment frame:

26 Remove the sign from the active TMS unit.

27 Send any faulty cards for repair according to local procedure.

28 Note the following in the office records:

- date the card was replaced
- serial number of the card
- symptoms that prompted replacement of the card

Go to step 30.

29 For further assistance, contact the personnel responsible for the next level of support.

30 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

31 Return to the step in the *alarm clearing procedure* that refers the operating company personnel to this step; then continue with the next step.

NTBX01 in a TMS

Application

Use this procedure to replace an NTBX01 card in an Enhanced TOPS message switch (ETMS) or TOPS message switch (TMS) shelf.

Note: The NTBX01AB (EISP) card is used in the ETMS shelf; whereas, the NTBX01AA (ISP) card is used in the earlier TMS shelf.

PEC	Suffixes	Name
NTBX01	AA/AB	ISDN Signaling Pre-processor

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

Common procedures

The following procedures are referenced in this procedure:

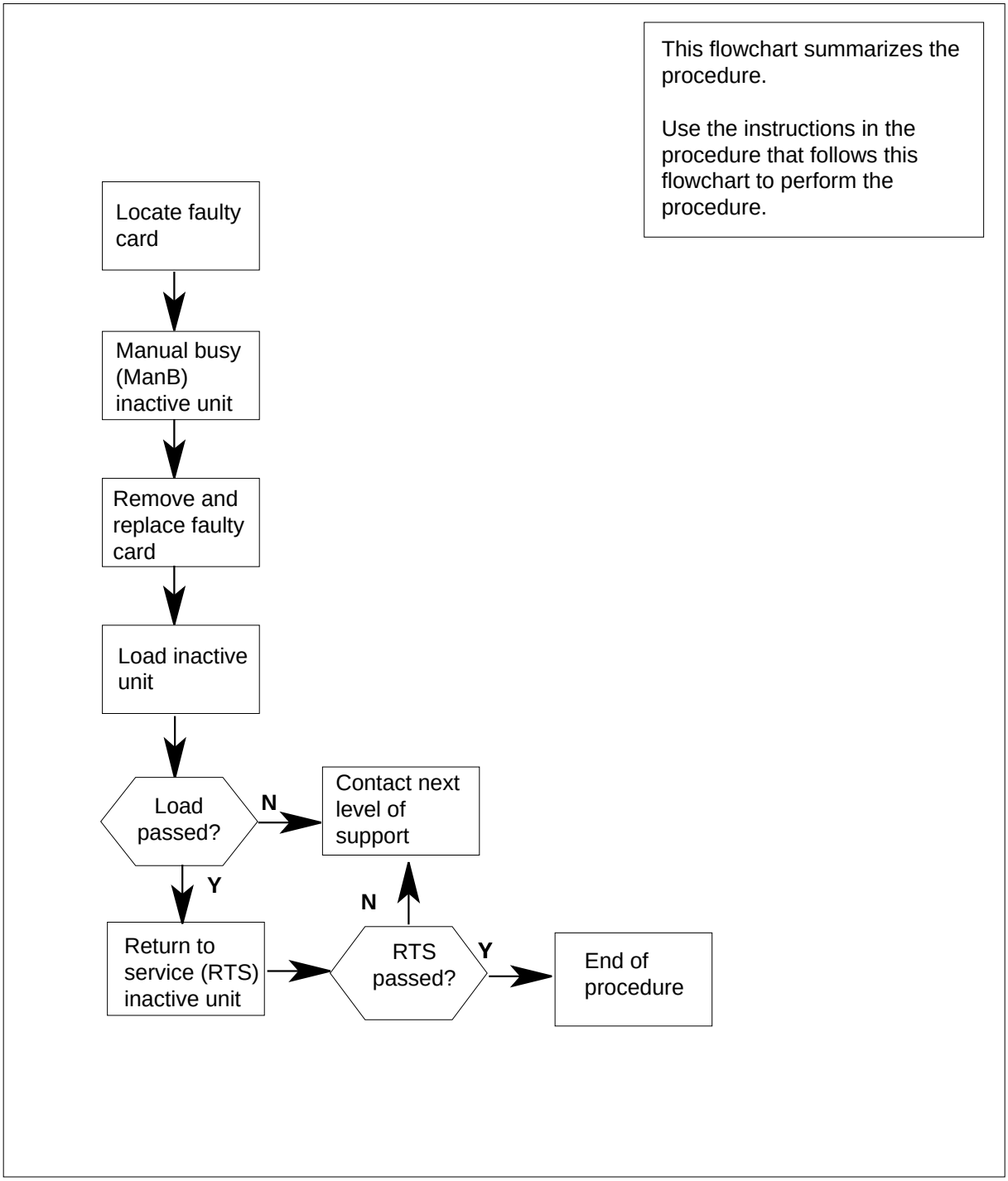
- *TMS shelf card location*
- *Card removal and replacement*

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NTBX01 in a TMS (continued)

Summary of replacing an NTBX01 in a TMS



NTBX01 in a TMS (continued)

Replacing an NTBX01 in a TMS

DANGER
Electrical and mechanical damage
Take these precautions to protect the circuit cards from electrical and mechanical damage while transporting cards.

When handling a circuit card not in an electrostatic discharge (ESD) protective container, stand on a conductive floor mat and wear a wrist strap connected, through a 1-megohm resistor, to a suitably grounded object, such as a metal workbench or a DMS frame (Northern Telecom Corporate Standard 5028).

Store and transport circuit cards in an ESD protective container.

At your current location:

1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure.

2 Use the *TMS shelf card location* instructions in common procedures to determine the physical location of the card to be replaced.

3 Verify that the product equipment codes (PEC) on the nameplate of the removed card and the spare card are the same, that is, NTBX01AA.

At the MAP:

4 Access the TMS level of the MAP by typing the following string:

```
>MAPCI;MTC;PM;POST TMS tms_no
```

and pressing the ENTER key.

where

tms_no
is the number of the TMS

5 By observing the MAP display, ensure the card to be removed is on the inactive unit.

If the faulty card is on	Do
active unit	step 6
inactive unit	step 9

NTBX01
in a TMS (continued)

6

CAUTION
Service disruption; calls may be dropped@
When replacing a card in the TMS, ensure the unit where you are replacing the card is inactive and the mate unit is active.

Switch the activity of the units by typing

>SWACT

and pressing the Enter key.

The system determines the type of SwAct it can perform, which is either a warm SwAct or a cold SwAct. The system displays a confirmation prompt for the selected SwAct.

If SwAct	Do
cannot continue at this time	step 7
can continue at this time	step 8

7 Do not switch activity of the units. Reject the switch by typing

>NO

and pressing the Enter key.

The system discontinues the switch of activity.

Return to step 6 during a period of low traffic.

8 Switch the activity of the unit by typing

>YES

and pressing the Enter key.

The system runs a pre-SwAct audit to determine the ability of the inactive unit to accept activity reliably.

Note: A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

9 Busy the inactive unit of the TMS by typing the following string:

> BSY UNIT unit_no

and pressing the ENTER key.

where

unit_no
is the TMS number

NTBX01
in a TMS (continued)

10 Reset the TMS at ROM level by typing the following string:

>PMRESET unit_no NORUN

and pressing the ENTER key.

where

unit_no
is the TMS unit number

At the TMS:

11 Put a sign on the active unit bearing the words *"Active unit - Do not touch."*

12 Remove and replace the NTBX01 card as shown in common procedure *Card removal and replacement*. Return to step 15 after completing removal and replacement procedure.

At the MAP terminal:

13 The peripheral/remote loader-16 card (NT7X05) allows local loading of XPM data, which reduces recovery time. Check to see if the NT7X05 card is provisioned by typing

>QUERYPM FILES

and pressing the Enter key.

Example of a MAP display:

NTBX01
in a TMS (continued)

```
   CM   MS   IOD   Net    PM    CCS    LNS    Trks    Ext    APPL
    .    .     .    .    1DTC    .      .       .      .      .


TMS             SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit     PM     2        0        2        0        2       25
 2 Post     TMS    0        1        0        0        0       10
 3 ListSet
 4          TMS      0 ManB  Links_OOS:  CSide  0,  PSide   0
 5 TRNSL_   Unit 0:    Act   ManB
 6 TST_     Unit 1:    InAct ManB
 7 BSY_
 8 RTS_     QUERYPM files
 9 OffL     Unit 0:
10 LoadPM_     NT7X05 load File: ETM06BB
11 Disp_       NT7X05 Image File:
12 Next_       NT7X05 Image Timestamp: 1996/02/07 13:56:25.663 WED
13 SwAct
14 QueryPM  Unit 1:
15             NT7X05 load File: ETM06BB
16             NT7X05 Image File:
17 Perform     NT7X05 Image Timestamp: 1996/02/07 13:54:09.523 WED
18
```

(NT7X05 load file name)

Note: If the NT7X05 card is not provisioned the MAP response is:`NT7X05 not datafilled, QueryPm files invalid`

If the NT7X05 card is	Do
provisioned	step 14
not provisioned	step 15

14

DANGER

Possible service interruption

The LOCAL LOADFILE option of the LOADPM command has a parameter of [<file> string}]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

NTBX01 in a TMS (end)

Load the TMS software from the local loadfile by typing:

```
>LOADPM PM LOCAL LOADFILE
```

If LOADPM	Do
passed	step 16
failed	step 19

15 Reload the TMS by typing the following string:

```
>LOADPM UNIT unit_no
```

and pressing the ENTER key.

where

unit_no
is the TMS unit number

16 Return the TMS to service by typing the following string:

```
>RTS UNIT unit_no
```

and pressing the ENTER key.

where

unit_no
is the TMS number

If RTS	Do
passed	step 17
failed	step 19

At the TMS:

17 Remove the sign from the active TMS unit.

18 Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

Note: Send any faulty cards for repair per local procedure.

Note in office records:

- the date the card was replaced
- the serial number of the card
- the symptoms that prompted replacement of the card

19 Obtain further assistance by contacting the personnel responsible for higher level support.

NTBX02 in a TMS

Application

Use this procedure to replace an NTBX02 ISDN D-Channel Handler (AA)/Enhanced DCH (BA) card in a TOPS message switch (TMS) shelf.

PEC	Suffixes	Name
NTBX02	AA/BA	ISDN D-Channel Handler (AA)/Enhanced DCH (BA)

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

Common procedures

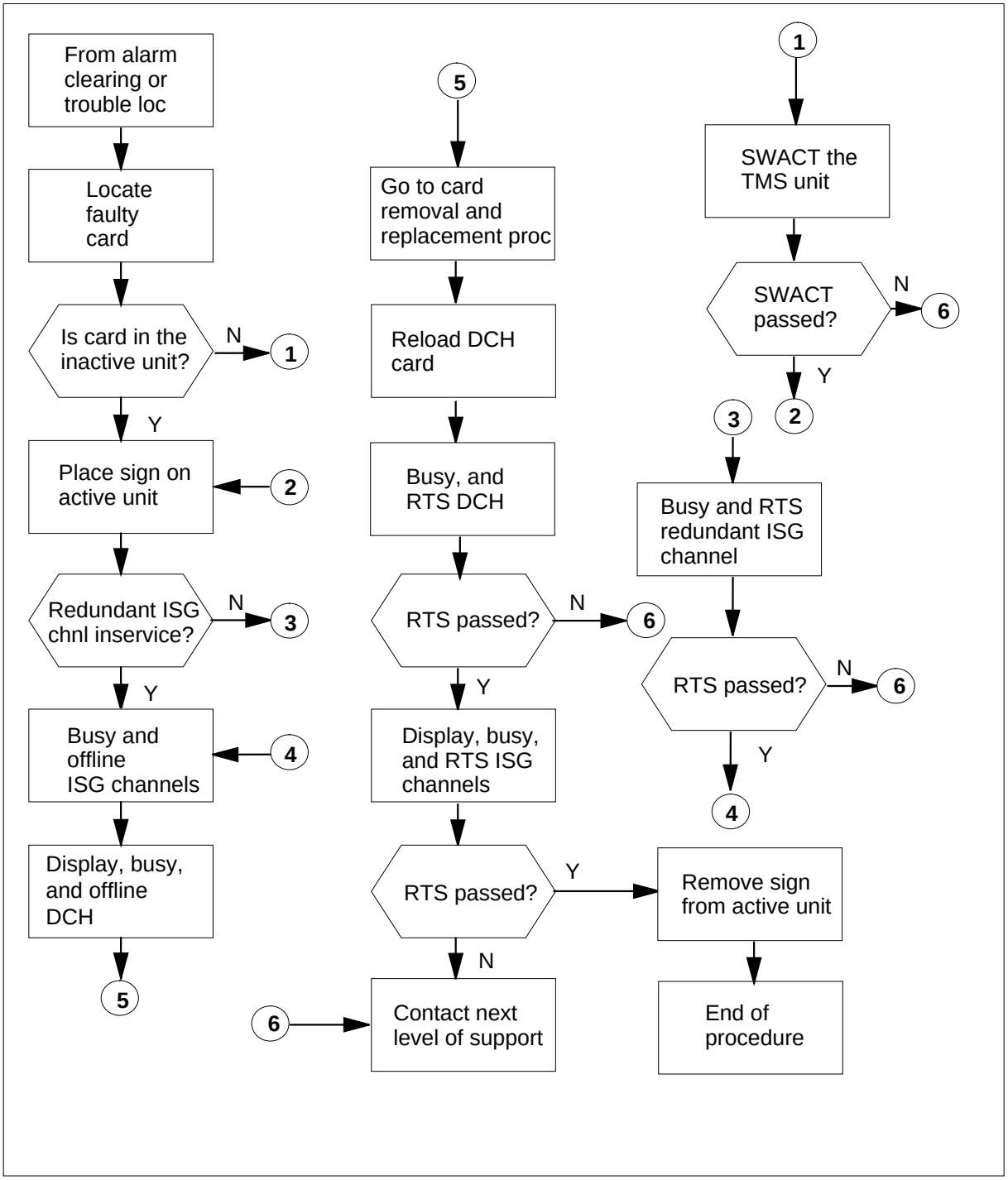
None

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NTBX02
in a TMS (continued)

Summary of replacing an NTBX02 in a TMS



NTBX02 in a TMS (continued)

Replacing an NTBX02 in a TMS

At the TMS:

1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure.

Use the *TMS shelf card location* instructions in common procedures to determine the physical location of the card to be replaced. Record the TMS unit number for the card being replaced.

2

DANGER

Electrical and mechanical damage

Take these precautions to protect the circuit cards from electrical and mechanical damage while transporting cards.

When handling a circuit card not in an electrostatic discharge (ESD) protective container, stand on a conductive floor mat and wear a wrist strap connected, through a 1-megohm resistor, to a suitably grounded object, such as a metal workbench or a DMS frame (Northern Telecom Corporate Standard 5028).Store and transport circuit cards in an ESD protective container.

Verify that the product equipment codes (PEC) on the nameplate of the removed card and the spare card are the same, that is, NTBX02AA or NTBX02BA.

At the MAP:

3 Post the TPC and determine the ISG number and ISG channel number for each data line by typing the following string:

```
>MAPCI;MTC;PM;POST TPC n;TRNSL
```

and pressing the ENTER key.

where

n
is the TPC number

Since two data lines are listed it is a redundant system. Record the TMS number, the ISG number, and the ISG channel number for both data lines.

4 Post the TMS identified in the previous step and determine if the card being replaced is in the active or inactive TMS unit (noted in step 1) by typing the following:

```
>POST TMS n
```

and pressing the ENTER key.

where

NTBX02
in a TMS (continued)

n
is the TMS number

Typical response on the MAP display

```
CM    MS   IOD   Net    PM    CCS   Lns   Trks   Ext   APPL
 .     .     .     .    n TPC   .     .     .      .     .
                          M
 TMS              SysB  ManB  OffL  CBsy  ISTb   InSv
  0 Quit      PM    0     0     0     0     1      48
  2 Post_     TMS   0     0     0     0     0       4
  3 Listset
  4           TMS  0  InSv   Links_OOS:  CSide 0 ,  PSide  0
  5 Trnsl_    Unit 0: Act   InSv  Mtce
  6 Tst_      Unit 1: Inact InSv  Mtce
  7 Bsy_      POST:
  8 RTS_
  9 OffL
 10 LoadPM_
 11 Disp_
 12 Next
 13 SwAct
 14 QueryPM
 15 DCH
 16
 17 PERFORM
 18 ISG
```

TMS unit number

Indicates active and inactive TMS unit

If the card is in	Do
the active unit	step 5
the inactive unit	step 6

5 Switch activity by typing the following:

>swact

and pressing the ENTER key.

Confirm SWACT by typing the following:

>yes

and pressing the ENTER key.

If the card is in	Do
successful (SWACT Passed)	step 6

If the card is in	Do
not successful	step 27

At the TMS:

6 Put a sign on the active unit bearing the words "Active unit - Do not touch."

7 Go to the ISG level of the MAP by typing the following:

>ISG

and pressing the ENTER key.

Example of a MAP display

```
CM  MS   IOD  Net  PM  CCS  LNS   Trks   Ext     APPL
  .   .     .   .  n TPC  .   .     .      .       .
                    M
ISG           SysB  ManB  OffL      CBsy  ISTb    InSv
 0 Quit   PM    0     0     12       0     3       48
 2  Post_ TMS   0     0     0        0     1       0
 3
 4        TMS   0 ISTb  Links_OOS:  CSide 0,  PSide 4
 5        Unit0:  Inact InSv
 6        Unit1:  Act   InSv
 7  Bsy_
 8  RTS_  ISG             1111111111  2222222222  33
 9  OffL        123456789 0123456789  0123456789  01
10
11
12  Next_     ISG
13
14  QueryCH_  ISG:
15  CONT_
16  Loopbk_
17
18
```

8 Post the first ISG number noted in step 3 by typing the following:

>POST n

and pressing the ENTER key.

where

n
is the ISG number

A series of ISG channels will be displayed. Locate the channel noted in step 3.

NTBX02
in a TMS (continued)

Example of a MAP display

```
CM    MS   IOD Net    PM  CCS LNS     Trks    Ext       APPL
  .   .     . .       n TPC .   .        .      .          .
                       M
ISG           SysB  ManB  OffL      CBsy      ISTb      InSv
 0  Quit  PM  0     0     12           0       3          48
 2  Post_ TMS 0     0     0            0       0           1
 3
 4        TMS 0   InSv    Links_OOS:  CSide 0,  PSide     4
 5        Unit0:  Inact InSv
 6        Unit1:  Act   InSv
 7  Bsy_
 8  RTS_  ISG               1111111111  2222222222  33
 9  OffL_         123456789 0123456789  0123456789  01
10                OOOO.OOOO OOOOOOOOOO  OOOOOOOOOO  OO
11
12  Next    ISG   2 DCH     2 InSv  TMS   0 port  17
13
14  QueryCH_  post 2
15  CONT_
16  Loopbk_
17
18
```

Port number

. = An in-service ISG channel

If the channel is	Do
SysB	step 9
ManB	step 10
InSv	step 11

9 Busy the ISG channel that is SysB by typing the following string:

>BSY n

and pressing the ENTER key.

where

n
is the ISG channel number

10 Return the busied ISG channel to service by typing the following string:

>RTS n

and pressing the ENTER key.

where

n
is the ISG channel number

If RTS is	Do
successful	step 11
not successful	step 27

11 Post the second ISG number noted in step 3 by typing the following:

>POST n

and pressing the ENTER key.

where

n
is the ISG number

A series of ISG channels will be displayed. Record the DCH number.

Example of a MAP display

```
CM    MS    IOD   Net   PM  CCS     LNS   Trks  Ext APPL
  .   .       .     .   n TPC .     .     .     .     .
                         M
ISG               SysB  ManB  OffL    CBsy    ISTb  InSv
 0  Quit  PM      0     0     12      0       3     48
 2  Post_ TMS     0     0     0       0       0     1
 3
 4        TMS     0   InSv  Links_OOS:  CSide 0,  PSide 4
 5        Unit0:  Inact InSv
 6        Unit1:  Act   InSv
 7  Bsy_
 8  RTS_  ISG                1111111111  2222222222  33
 9  OffL_           123456789 0123456789  0123456789  01
10                  000000000 00 0000000  0000000000  00
11
12  Next    ISG   3 DCH   2 InSv    TMS   0   port    17
13                      |
                        |_____ DCH number
14  QueryCH_  post
15  CONT
16  Loopbk_
17
18
```

12 Busy all of the ISG channels by typing the following string:

>BSY ALL

and pressing the ENTER key.

13 Offline all of the ISG channels by typing the following string:

>OFFL ALL

NTBX02
in a TMS (continued)

and pressing the ENTER key.

14 Post the DCH noted in step 11 by typing the following string:

>POST DCH n

and pressing the ENTER key.

where

n
is the DCH number

15 Busy the DCH noted in step 11 by typing the following string:

>BSY

and pressing the ENTER key.

16 Offline the DCH noted in step 11 by typing the following string:

>OFFL

and pressing the ENTER key.

At the TMS:

17 Remove and replace the NTBX02 card as shown in common procedure *Card removal and replacement*. Return to step 19 after completing removal and replacement procedure.

At the MAP:

18 Load the new DCH card by typing the following string:

>LOADPM

and pressing the ENTER key.

19 Busy the DCH by typing the following string:

>BSY

and pressing the ENTER key.

20 Return the DCH to service by typing the following string:

>RTS

and pressing the ENTER key.

If RTS	Do
passed	step 21
failed	step 27

21 Go to the ISG level of the MAP by typing the following:

>ISG

and pressing the ENTER key.

NTBX02
in a TMS (continued)

Example of a MAP display

```
CM    MS  IOD   Net   PM    CCS     LNS   Trks  Ext   APPL
  .   .   .     .     n TPC .         .     .   .       .
                      M
ISG             SysB  ManB  OffL      CBsy    ISTb    InSv
 0  Quit  PM    0     0     12        0       3       48
 2  Post_ TMS   0     0     0         0       1       0
 3
 4        TMS 0   ISTb  Links_OOS:  CSide 0,  PSide   4
 5        Unit0:  Inact InSv
 6        Unit1:  Act   InSv
 7  Bsy_
 8  RTS_  ISG                  1111111111  2222222222  33
 9  OffL              123456789 0123456789  0123456789  01
10
11
12  Next_     ISG
13
14  QueryCH_  ISG:
15  CONT_
16  Loopbk_
17
18
```

22 Post the second ISG number noted in step 3 by typing the following:

>POST n

and pressing the ENTER key.

where

n
is the ISG number

A series of ISG channels will be displayed.

NTBX02
in a TMS (continued)

Example of a MAP display

```
CM    MS    IOD   Net   PM    CCS   LNS Trks  Ext   APPL
  .   .       .   .     n TPC .     .     .   .       .
                        M
ISG               SysB  ManB  OffL  CBsy  ISTb      InSv
 0  Quit  PM      0     0     12      0   3          48
 2  Post_ TMS     0     0     0       0   0           1
 3
 4        TMS 0   InSv    Links_OOS:    CSide 0 , PSide 4
 5        Unit0:  Inact   InSv
 6        Unit1:  Act     InSv
 7  Bsy_
 8  RTS_      ISG              1111111111  2222222222  33
 9  OffL_             123456789 0123456789  0123456789  01
10                    000000000 00.0000000  0000000000  00
11
12  Next        ISG      3 DCH     2 InSv  TMS   0 port 17
13
14  QueryCH_  post
15  CONT_
16  Loopbk_                    DCH number
17
18
```

23 Busy all of the ISG channels by typing the following string:

>BSY ALL

and pressing the ENTER key.

24 Return all of the ISG channels to service by typing the following string:

>RTS ALL

and pressing the ENTER key.

If RTS	Do
passed	step 25
failed	step 27

At the TMS:

25 Remove the sign from the active TMS unit.

26 Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

Note: Send any faulty cards for repair per local procedure.

NTBX02 in a TMS (end)

Note in office records:

- the date the card was replaced
- the serial number of the card
- the symptoms that prompted replacement of the card

27 Obtain further assistance by contacting the personnel responsible for higher level support.

NTMX77 in a TMS

Application

Use this procedure to replace the following card in a host TMS.

PEC	Suffixes	Name
NTMX77	AA	Unified processor card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

Common procedures

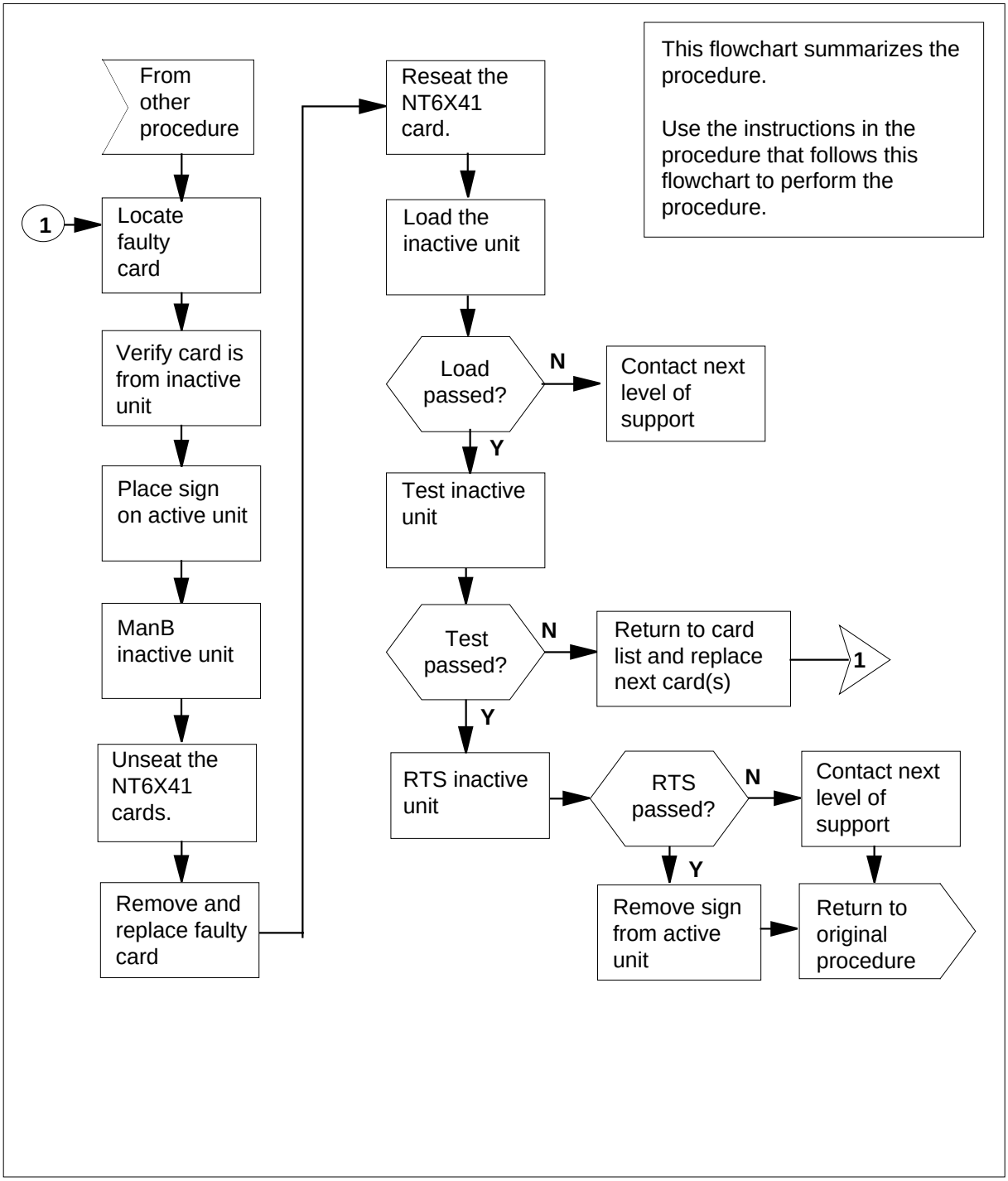
None

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NTMX77 in a TMS (continued)

Summary of replacing an NTMX77 in a TMS



NTMX77 in a TMS (continued)

Replacing an NTMX77 in a TMS

At your current location:

1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to verify or accept cards, or were directed to this procedure by your maintenance support group.

2

CAUTION
Loss of service
When replacing a card in the TMS ensure the unit where you are replacing the card is INACTIVE and the mate unit is ACTIVE.

Obtain a replacement card. Ensure the replacement card has the same product equipment code (PEC) including suffix, as the card to be removed.

At the MAP terminal:

3 Access the PM level and post the TMS by typing

`>MAPCI;MTC;PM;POST TMS tms_no`

and pressing the Enter key.

where

tms_no
is the number of the host TMS

Example of a MAP display:

```
   CM   MS   IOD     Net  PM    CCS     LNS   Trks   Ext    APPL
    .    .     .      .  1LTC    .       .      .     .       .
 TMS           SysB     ManB     OffL     CBsy     ISTb      InSv
 0 Quit      PM   0        0        2        0        2        25
 2 Post_     TMS  0        0        0        0        0         1
 3 ListSet
 4           TMS      0 ISTb  Links_OOS:  CSide  0,  PSide   0
 5 TRNSL_    Unit 0:  Inact SysB
 6 TST_      Unit 1:   Act  InSv
 7 BSY_
 8 RTS_
 9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SWACT
14 QueryPM
15
16
17 Perform
18
```

4 By observing the MAP display, be sure the card to be removed is on the inactive unit.

If the faulty card is on an	Do
ACTIVE unit	step 5
INACTIVE unit	step 9

5

CAUTION
Service disruption: calls may be dropped!
If you are prompted to confirm a cold SWACT, perform this activity only during a period of low traffic. All calls being handled by this PM, including data calls, will be dropped.

Switch the processing activity to the inactive unit by typing

>SWACT

and pressing the Enter key.

NTMX77
in a TMS (continued)

The system determines the type of SWACT it can perform, a warm SWACT or a cold SWACT, and displays a confirmation prompt for the selected SWACT.

If SWACT	Do
cannot continue at this time	step 6
can continue at this time	step 7

6 Do not switch activity of the units. Reject the switch by typing

>NO

and pressing the Enter key.

The system discontinues the switch of activity.

Return to step 5 during a period of low traffic.

7 Switch the activity of the unit by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

Note: A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

If the message is	Do
`SWACT passed`	step 9
`SWACT failed`	step 8
`SWACT refused by SWACT controller`	step 8

8 Return to the *Alarm Clearing Procedure* to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step1 of this procedure.

At the SME frame:

9 Put a sign on the active unit bearing the words *Active unit—Do not touch.*

At the MAP terminal:

10 Busy the inactive unit by typing

>BSY UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the inactive unit (0 or 1)

11 Set the inactive unit to the ROM level by typing

```
>PMRESET UNIT unit_no NORUN
```

and pressing the Enter key.

where

unit_no
is the number of the inactive unit (0 or 1)

At the SME frame:

12

DANGER
Static electricity damage
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel of the TMS. This protects the equipment against damage caused by static electricity.

DANGER
Equipment damage
Take the following precautions when removing or inserting a card:

1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

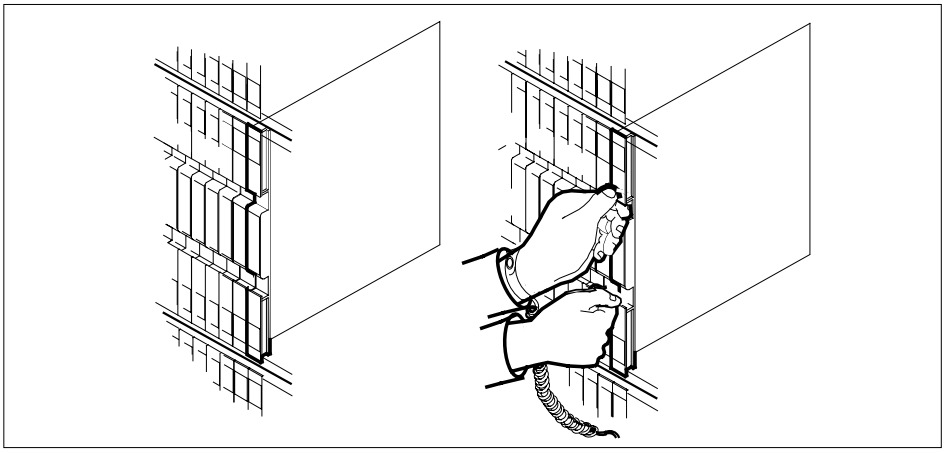
Put on a wrist strap.

13 Unseat the NT6X41 card in slot 21.

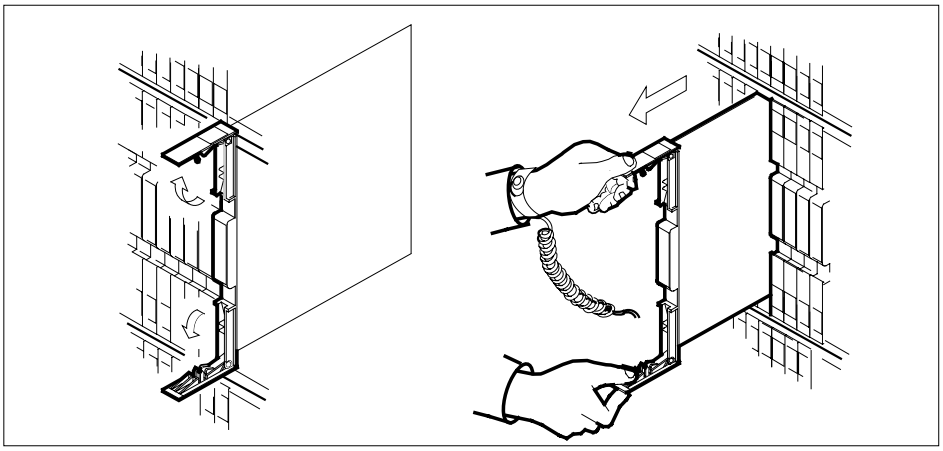
14 Remove the NTMX77 card as shown in the following figures.

a Locate the card to be removed on the appropriate shelf.

NTMX77
in a TMS (continued)



15 Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.

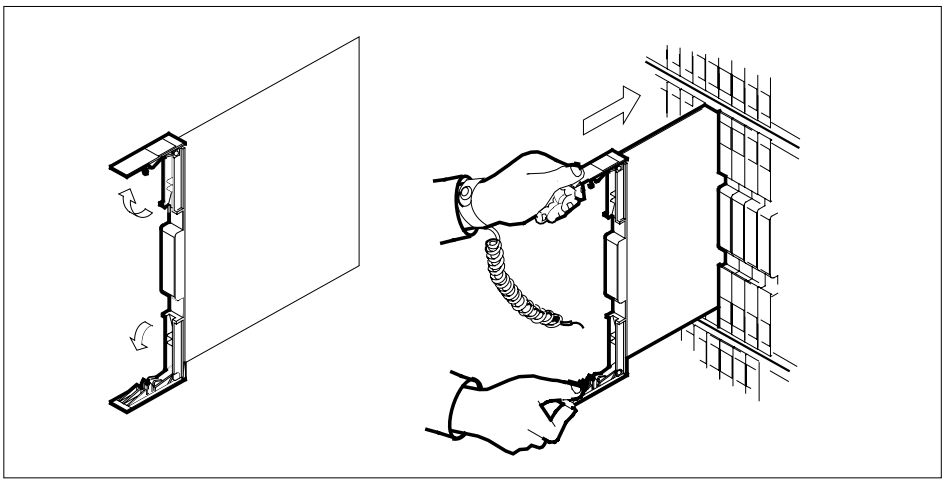


16 Ensure that the replacement card has the same PEC including suffix, as the card you just removed. Also ensure that all replacement card DIP switch settings match settings of the card just removed.

Note: If the NTMX77 has DIP switch S1, set DIP switch S1 to XPM.

17 Open the locking levers on the replacement card.

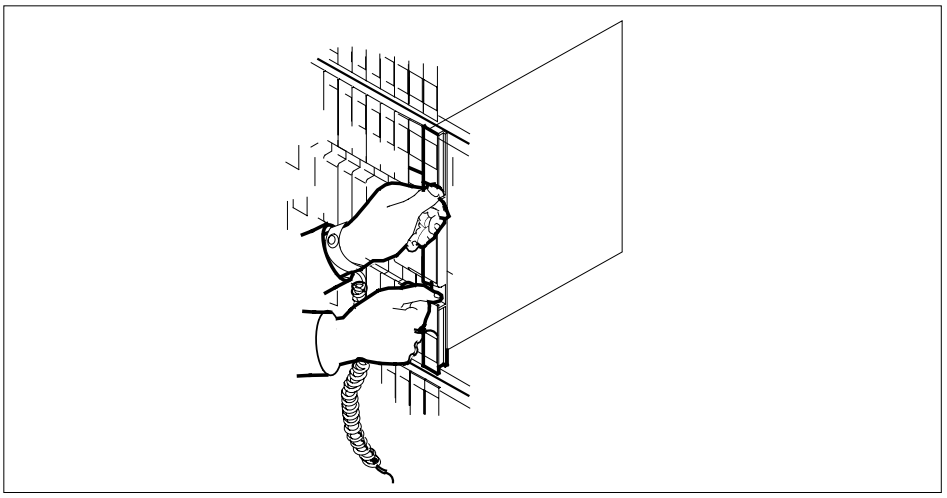
a Align the card with the slots in the shelf and gently slide the card into the shelf.



18 Seat and lock the card.

19 Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure the card is fully seated in the shelf.

20 Close the locking levers.



21 Reseat the NT6X41 card in slot 21.

22 Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
an alarm clearing procedure	step 34

NTMX77
in a TMS (continued)

If you entered this procedure from	Do
other	step 26

At the MAP terminal:

23 The peripheral loader card (NT7X05) allows local loading of the TMS data. Local data loading reduces recovery time. Determine if an NT7X05 is located in slot 12. Check if the NT7X05 card is provisioned by typing:

>QUERYPM FILES

and pressing the Enter key.

Example of a MAP display:

```
   CM   MS   IOD   Net    PM    CCS    LNS    Trks    Ext    APPL
    .    .     .    .    1TMS    .      .       .      .      .
                          *C*
 TMS            SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit     PM     2        0        2        0        2       25
 2 Post     TMS    1        0        0        0        1        1
 3 ListSet
 4          TMS      0 ISTb  Links_OOS:  CSide  0,  PSide   0
 5 TRNSL_   Unit 0:  Inact ManB
 6 TST_     Unit 1:  Inact InSv
 7 BSY_
 8 RTS_     QUERYPM files
 9 OffL          Unit 0:
10 LoadPM_          NT7X05 load File: ESU06AZ
11 Disp_            NT7X05 Image File:
12 Next_         Unit 1:
13 SwAct            NT7X05 load File: ESU06AZ
14 QueryPM          NT7X05 Image File:
15
16 IRLINK
17 Perform
18
```

If the NT7X05 card is	Do
provisioned	step 24
not provisioned	step 26

Note: If the NT7X05 card is not provisioned the MAP response is:
`Nt7X05 not datafilled,  QueryPm files invalid`

24 Load the TMS from the local image by typing

>LOADPM UNIT unit_no LOCAL IMAGE

and pressing the Enter key.

where

unit_no
is the number of the inactive TMS unit

If the load	Do
passed	step 29
failed	step 25

25

DANGER
Possible service interruption
The LOADPM command, LOCAL LOADFILE option, parameter [<file> string}], will load the file_name from the parameter. The loadfile name will not be patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the TMS from the local loadfile by typing

>LOADPM UNIT unit_no LOCAL LOADFILE

and pressing the Enter key.

where

unit_no
is the number of the inactive TMS unit

If the load	Do
passed	step 29
failed	step 26

26 After replacing the faulty card, load the inactive unit by typing

>LOADPM UNIT unit_no CC

and pressing the Enter key.

where

unit_no
is the number of the inactive unit

and pressing the Enter key.

27 Load the inactive TMS unit by typing

>LOADPM UNIT unit_no

and pressing the Enter key.

NTMX77
in a TMS (continued)

where

unit_no
is the number of the inactive unit

If the load	Do
passed	step 29
failed	step 35

28 Query the XPM countrs for the firmware load on the NTMX77 by typing:

>QUERYPM CNTRS

and pressing the Enter key.

Example of a MAP display:

```
Unsolicitited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: ESU05AW
EPRom Version: AB02
EEPRom Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
Unit 1:
Ram Load: ESU05AW
EPRom Version: AB02
EEPRom Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
```

If firmware is	Do
valid	step 30
invalid	step 29

29 Load the NTMX77 firmware by typing

>LOADPM UNIT unit_no CC FIRMWARE

and pressing the Enter key.

where

unit_no
is the number of the inactive unit

If the load	Do
passed	step 30
failed	step 35

30 Test the inactive unit by typing

>TST UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the inactive unit

If TST	Do
passed	step 31
failed	step 35

31 Return the inactive unit to service by typing

>RTS UNIT unit_no

and pressing the Enter key.

where

unit_no
is the number of the inactive unit

If the RTS	Do
passed	step 32
failed	step 35

32 Send any faulty cards for repair according to local procedure.

33 Record the following items in office records:

- date the card was replaced
- serial number of the card
- symptoms that prompted replacement of the card

Go to step 36.

34 Return to the *Alarm Clearning Procedure* or other procedure that directed you to this procedure. If necessary, go to the point where the faulty card list was produced, identify the next faulty card on the list, and go to the appropriate procedure for that card in this manual.

NTMX77 in a TMS (end)

35 Obtain further assistance in replacing this card by contacting personnel responsible for higher level of support.

36 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

5 TOPS MP card replacement procedures

This chapter provides card replacement procedures for Traffic Operator Position System multipurpose (TOPS MP) positions.

NT2X70 in a TPC

Application

Use this procedure to replace an NT2X70 card in a TPC.

PEC	Suffixes	Name
NT2X70	AE	Power Supply

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The index contains a list of cards, shelves, and frames this card replacement NTP documents.

Common procedures

This document refers to the following procedures:

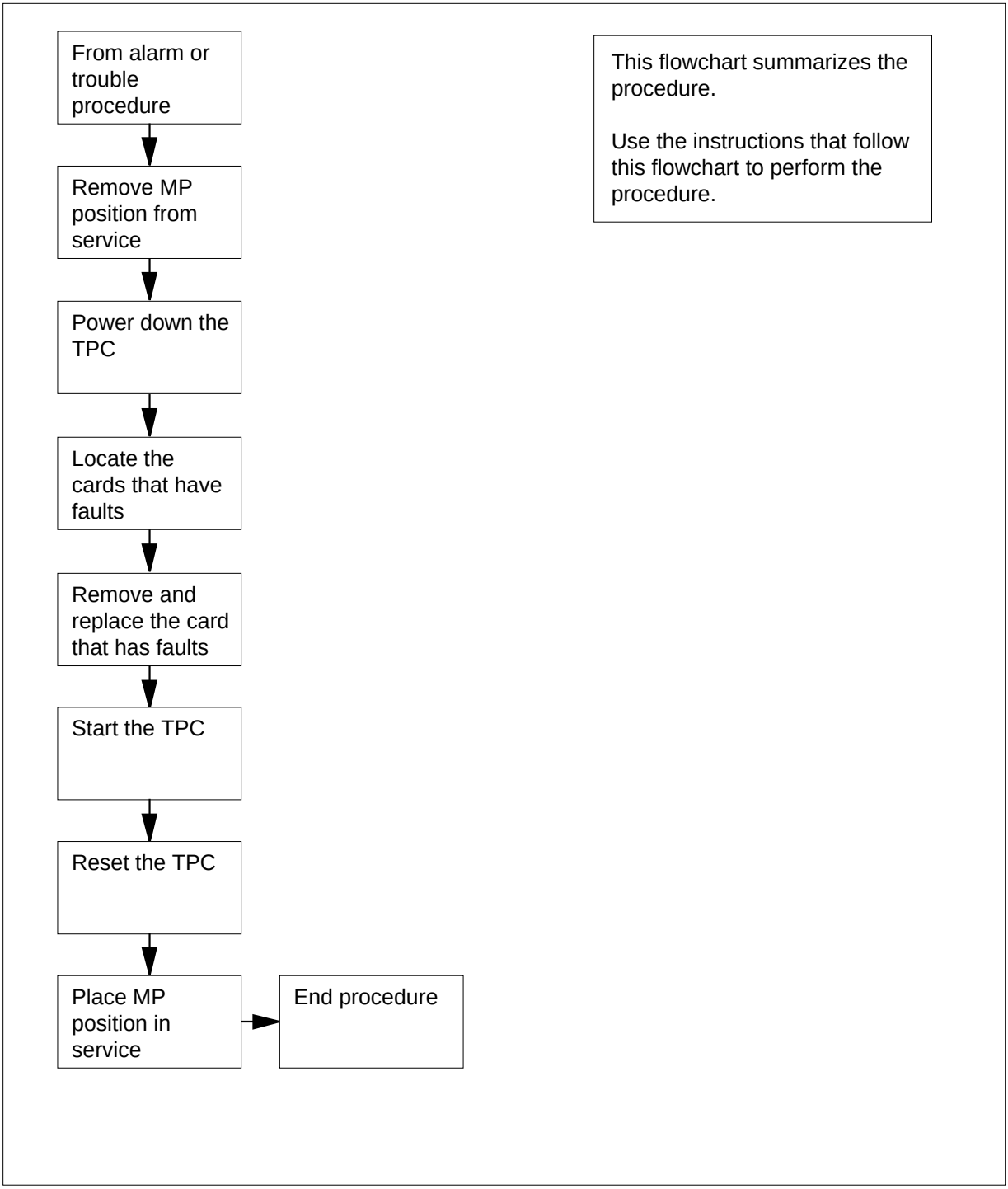
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing MP position in service (integrated)*
- *Placing MP position in service (standalone)*
- *Shelf card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT2X70 in a TPC (continued)

Summary of Replacing an NT2X70 in a TPC



NT2X70 in a TPC (continued)

Replacing an NT2X70 in a TPC

At your current location

1 Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Independent use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	Step 3
is standalone	Step 4

3 Perform common procedure *Removing MP position from service (integrated)*. Return to step 5.

Note: You must remove from service all of the MP positions associated with the TPC.

4 Perform the common procedure *Removing MP position from service (standalone).*

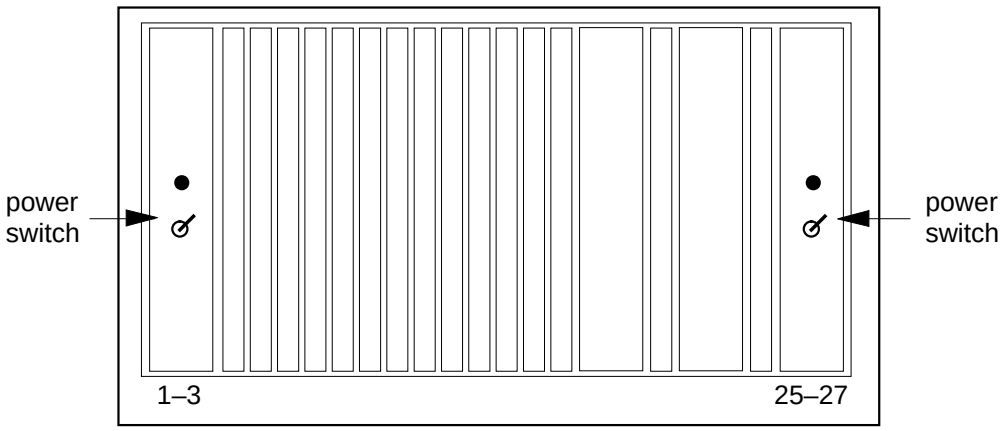
Note: You must remove from service all of the MP positions associated with the TPC.

5

DANGER
Equipment damage
Failure to turn off power to the TPC when you replace cards in the TPC can result in equipment damage.

To power down the TPC, turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

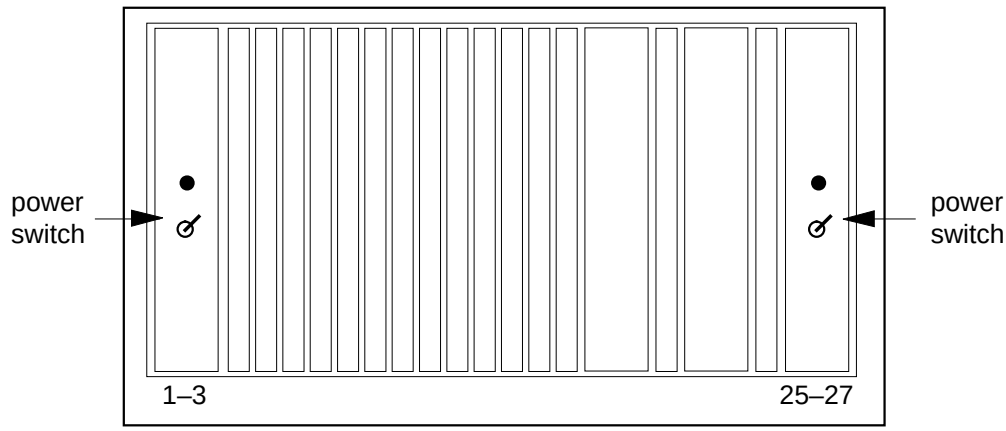
NT2X70
in a TPC (continued)



TPC packfill power converters

6 To remove and replace the NT2X70 card, refer to the *Common card removal and replacement* procedure. After you complete the removal and replacement procedure return to step 7.

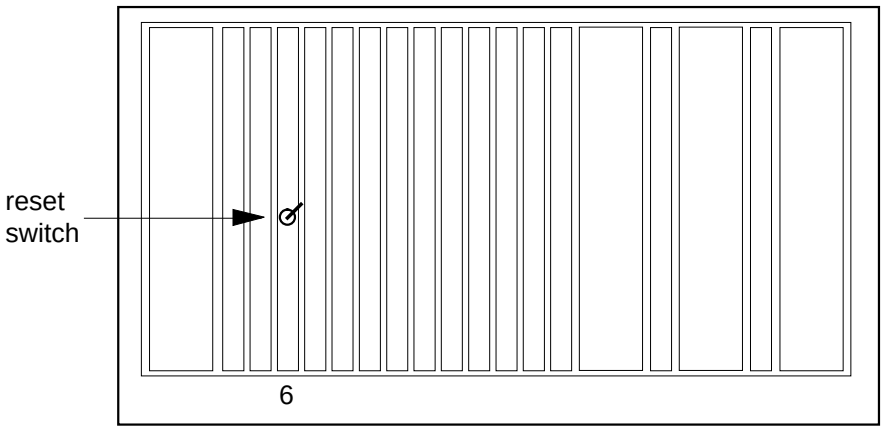
7 To start the TPC, turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.



TPC packfill power converters

8 To reset the TPC, move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.

NT2X70
in a TPC (end)



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform common procedure *Placing MP position in service (integrated).* Return to step 12.

Note: Place in service only the MP positions that you removed from service in step 3.

11 Perform common procedure *Placing MP position in service (standalone).*

Note: Place in service only the MP positions that you removed from service in step 4.

12 This procedure is complete. Return to the main procedure that sent you to this procedure. Continue as directed.

NTNX62 in a TPC

Application

Use this procedure to replace an NTNX62 card in a TOPS position controller (TPC).

PEC	Suffixes	Name
NTNX62	AB	High Speed Line Interface

The card replacement Northern Telecom Publications (NTP) contains an index for a list of cards, shelves and frames. Refer to this index when you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace.

Common procedures

This procedure references the following procedures:

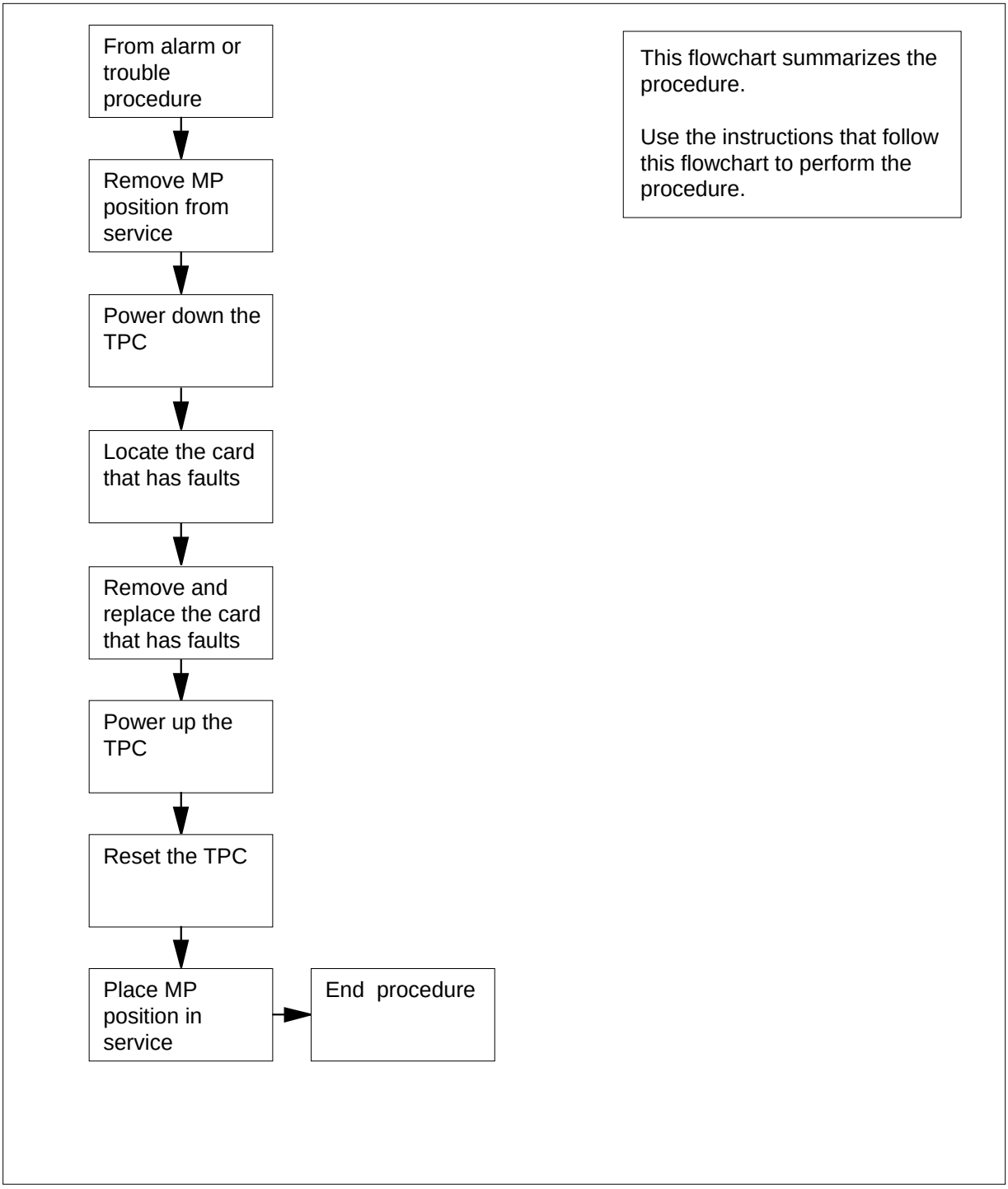
- *Removing an MP position from service (integrated)*
- *Removing an MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX62
in a TPC (continued)

Summary of Replacing an NTNX62 om a TPC



NTNX62
in a TPC (continued)

Replacing an NTNX62 in a TPC

At your current location:

1 Proceed when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing an MP position from service (integrated)*. Go to step 5.

Note: Remove from service every MP position associated with the TPC.

4 Perform the common procedure *Removing an MP position from service (standalone).*

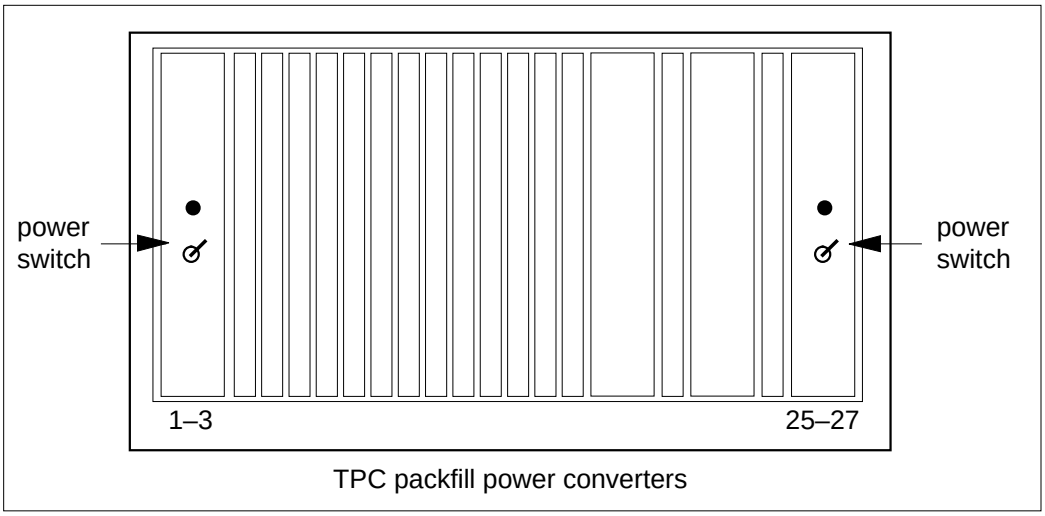
Note: Remove from service every MP position associated with the TPC.

5

DANGER
Equipment damage
Equipment damage occurs if you do not turn off power to the TPC when you replace cards in the TPC.

To power down the TPC, turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

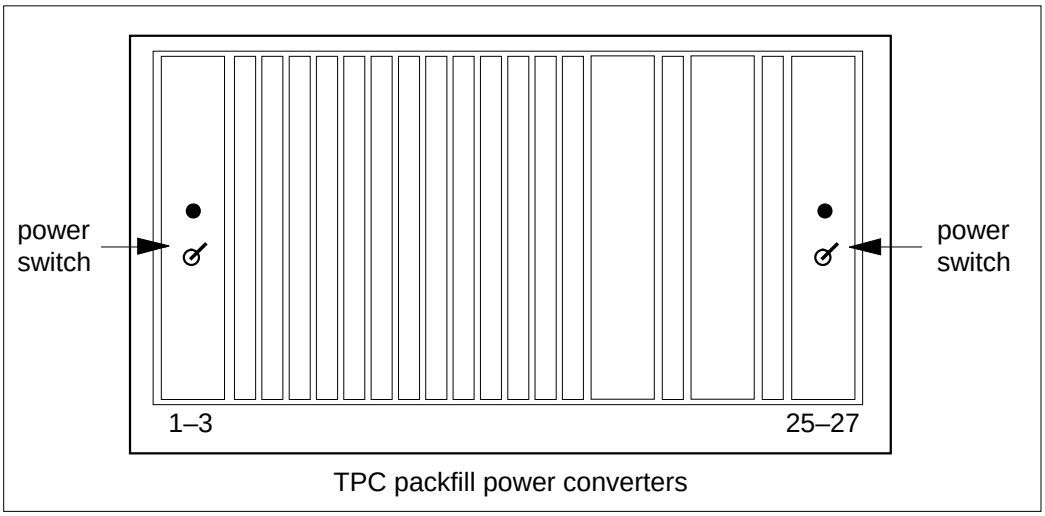
NTNX62
in a TPC (continued)



TPC packfill power converters

6 Remove and replace the NTNX62 card. See *Card removal and replacement* in this document. Go to step 7 after you complete the removal and replacement procedure.

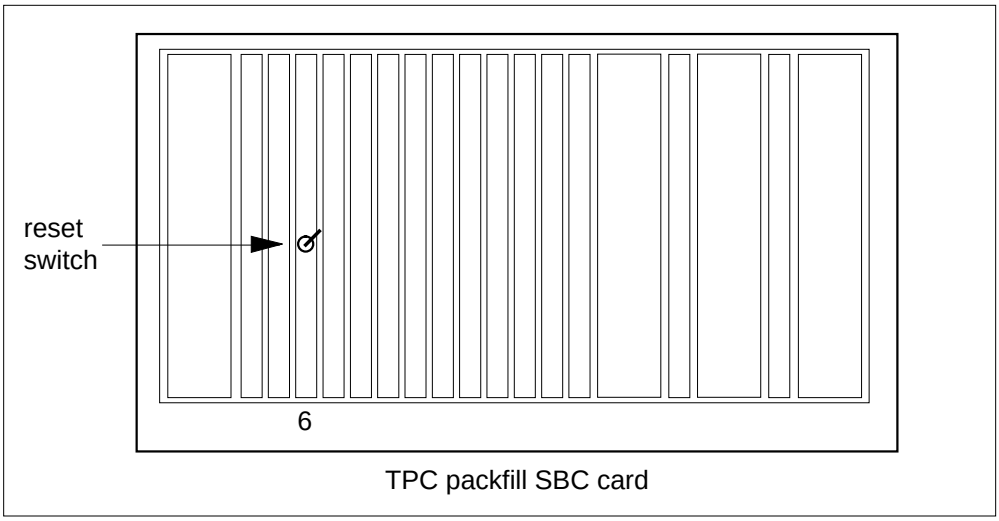
7 To power up the TPC, turn the switches on the power converters in slots 1-3 and 25-27 to the up position.



TPC packfill power converters

8 To reset the TPC, turn the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.

NTNX62 in a TPC (end)



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform the common procedure *Placing an MP position in service (integrated).* Go to step 12.

Note: Place in service the MP positions that you remove from service in step 3.

11 Perform the procedure *Placing an MP position in service (standalone).*

Note: Place in service the MP positions that you remove from service in step 4.

12 The procedure is complete. Return to the main procedure that sent you to this procedure. Continue according to procedure.

NTNX63 in a TPC

Application

Use this procedure to replace an NTNX63 card in a Traffic Operator Position System (TPC) position controller.

PEC	Suffixes	Name
NTNX63	AB	Memory

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The index contains a list of cards, shelves, and frames that this Northern Telecom publication (NTP) documents.

Common procedures

This procedure references the following procedures:

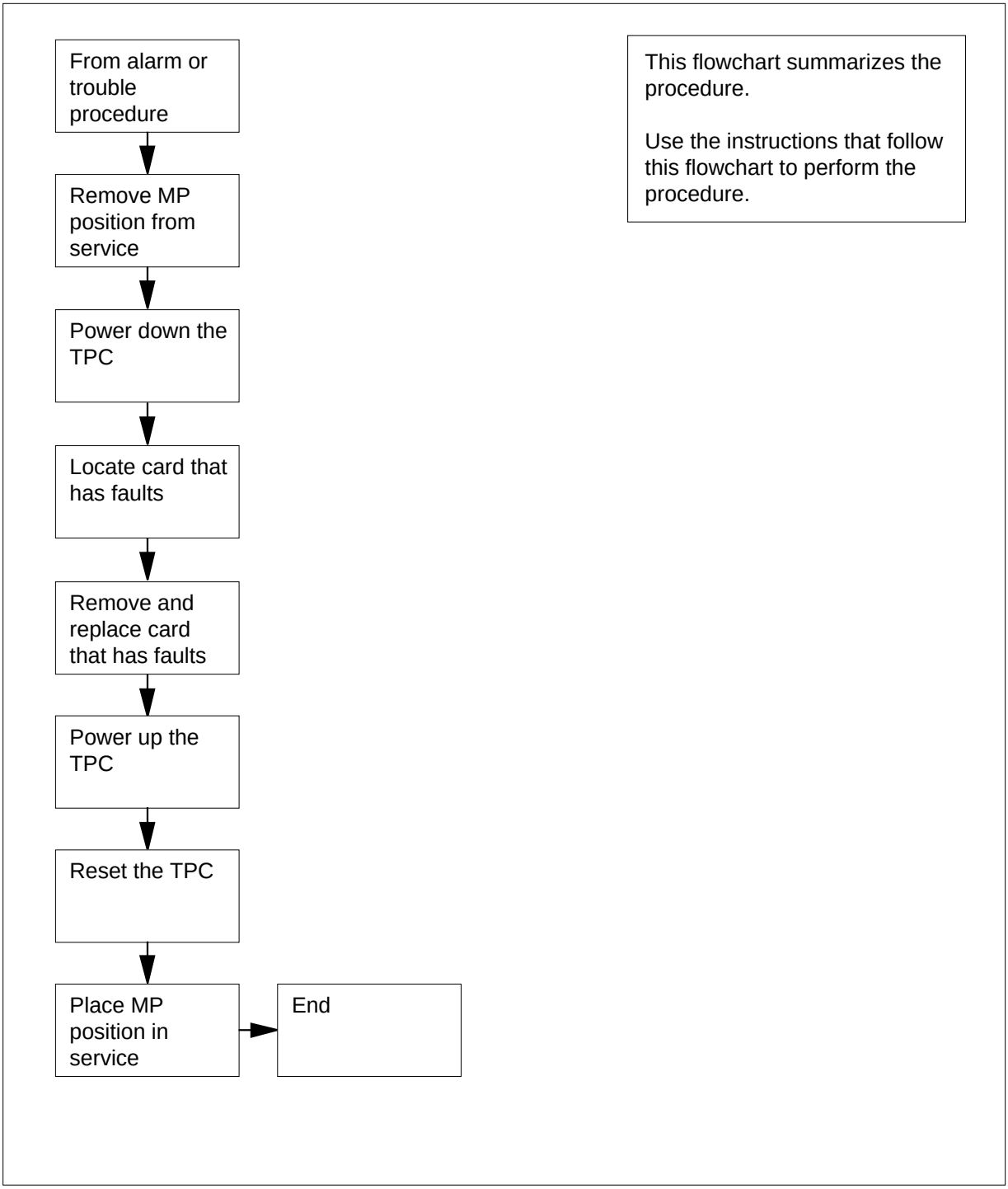
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX63
in a TPC (continued)

Summary of Replacing an NTNX63 in a TPC



NTNX63
in a TPC (continued)

Replacing an NTNX63 in a TPC

At your current location:

1 Proceed if a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the procedure *Removing MP position from service (integrated)*. Go to step 5.

Note: Remove every MP position associated with the TPC from service.

4 Perform the procedure *Removing MP position from service (standalone)*.

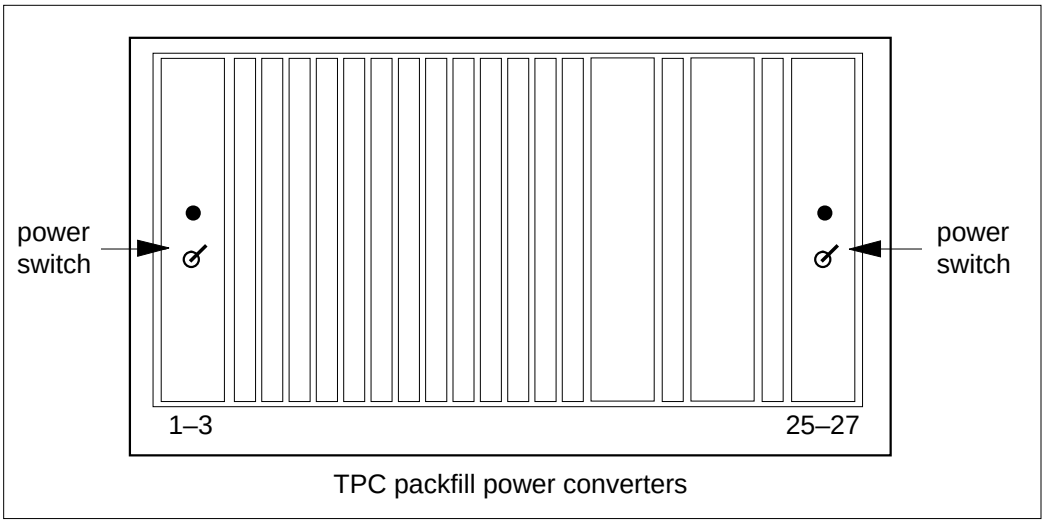
Note: Remove every MP position associated with the TPC from service.

5

WARNING
Equipment damage
Failure to turn off power to the TPC when you replace cards in the TPC can cause equipment damage.

To power down the TPC, turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

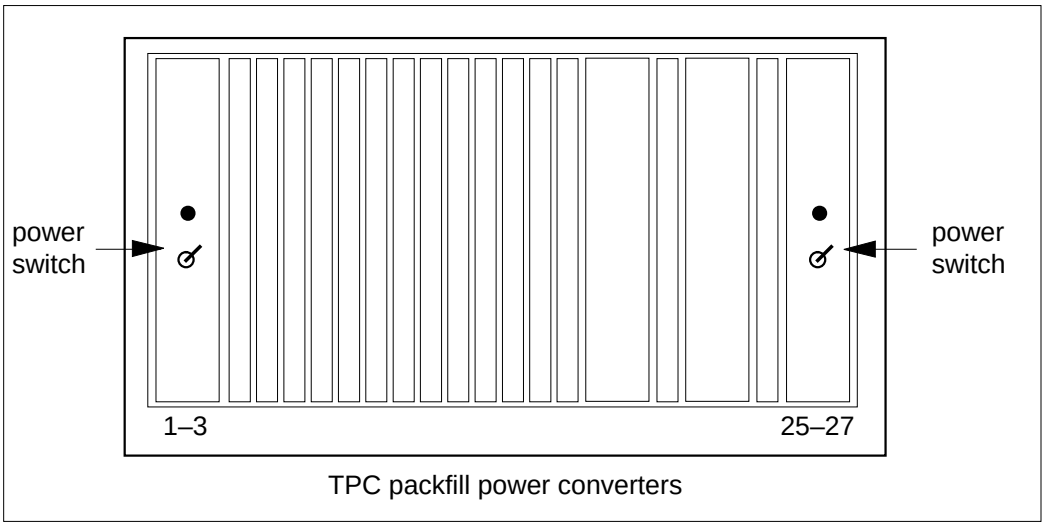
NTNX63
in a TPC (continued)



TPC packfill power converters

6 Remove and replace the NTNX63 card. See “Card removal and replacement" in this document. Go to step 7 after you complete the removal and replacement procedure.

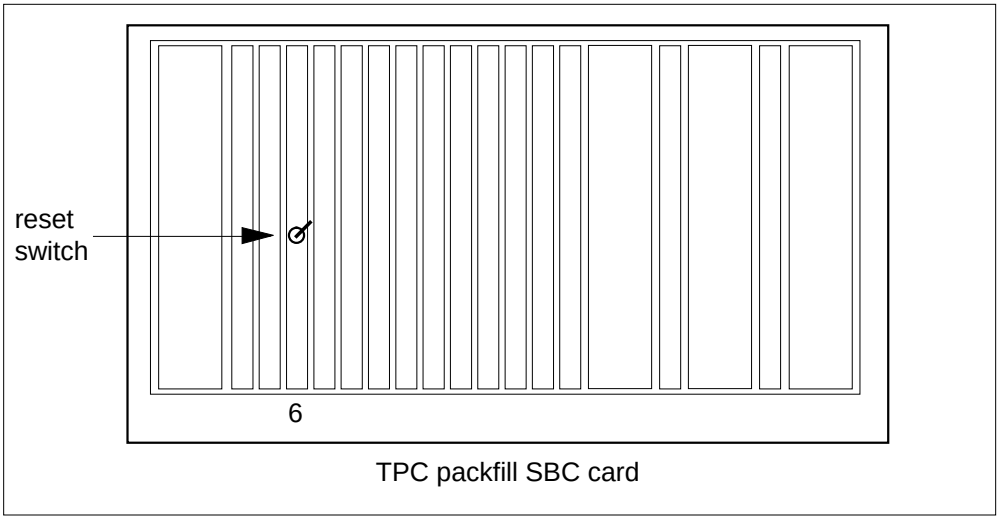
7 To power up the TPC turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.



TPC packfill power converters

8 To reset the TPC move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.

NTNX63
in a TPC (end)



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform the common procedure *Placing an MP position in service (integrated)*. Go to step 12.

Note: Place in service the MP positions you remove from service in step 3.

11 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service the MP positions you remove from service in step 4.

12 The procedure is complete. Return to the main procedure that directed you to this procedure. Continue according to procedure.

NTNX64 in a TPC

Application

Use this procedure to replace an NTNX64 card in a TOPS position controller (TPC).

PEC	Suffixes	Name
NTNX64	AB	Single Board Computer

If you cannot identify the product engineering code (PEC), suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains a list of cards, shelves, and frames that appear in this card replacement Northern Telecom publication (NTP).

Common procedures

This procedure references the following procedures:

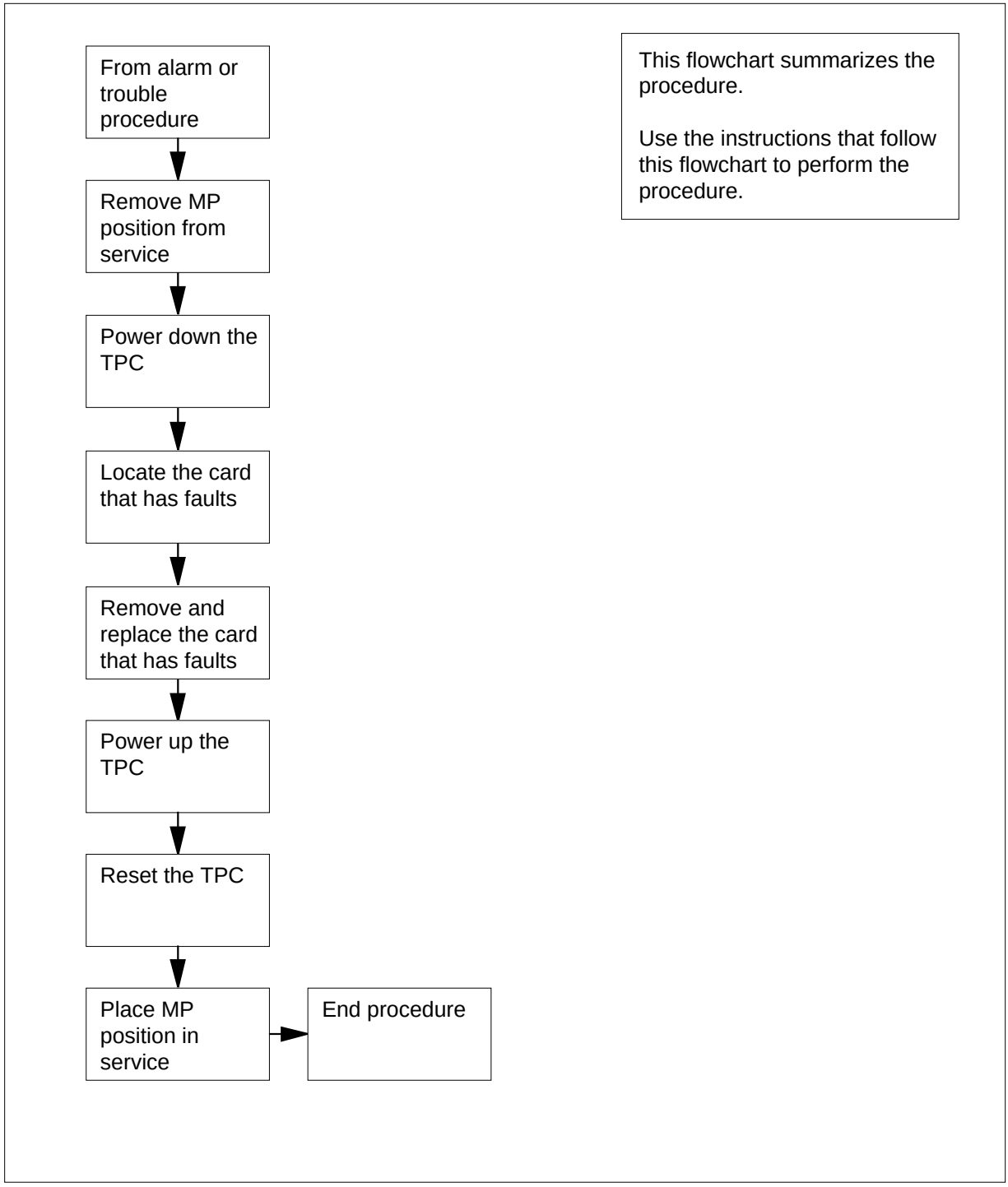
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX64
in a TPC (continued)

Summary of Replacing an NTNX65



NTNX64
in a TPC (continued)

Replacing an NTNX64 in a TPC

At your current location:

1 Proceed if a step in a maintenance procedure directs you to proceed. Separate use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
The removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated)*. Go to Step 5.

Note: Remove every MP position associated with the TPC from service.

4 Perform the common procedure *Removing MP position from service (standalone).*

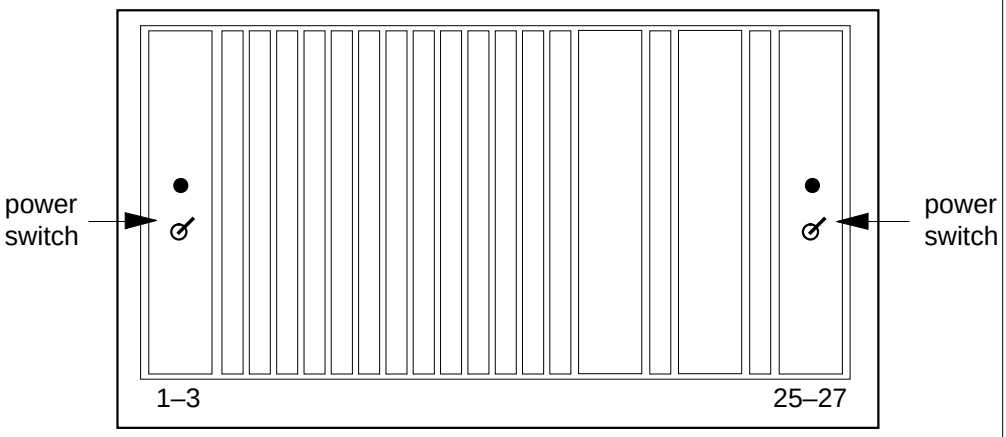
Note: Remove every MP position associated with the TPC from service.

5

DANGER
Equipment damage
Failure to turn off power to the TPC when you replace cards in the TPC can cause equipment damage.

Power down the TPC. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

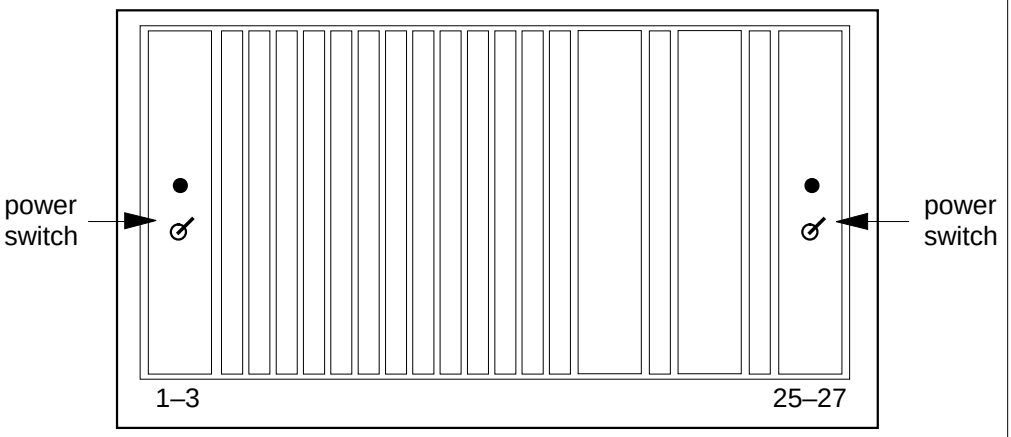
NTNX64
in a TPC (continued)



TPC packfill power converters

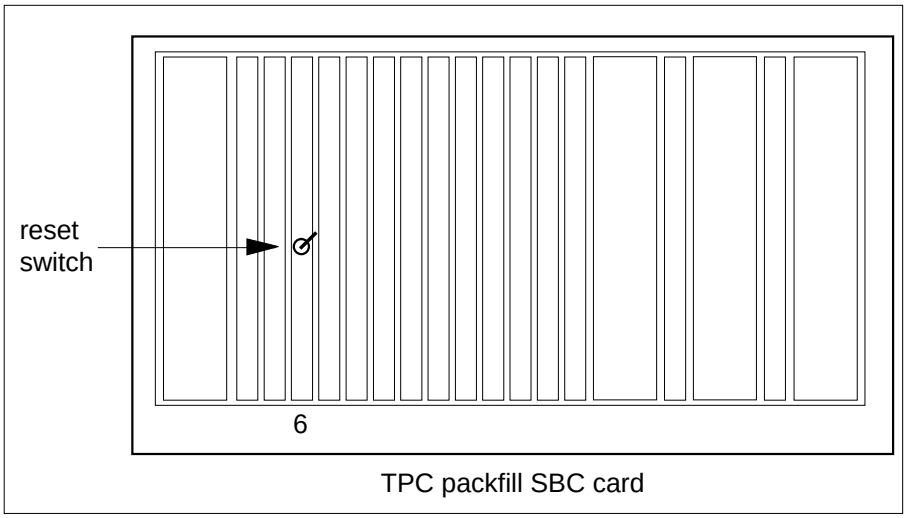
6 Remove and replace the NTNX64 card. See the common procedure *Card removal and replacement*. Go to step 7.

7 Power up the TPC. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.



TPC packfill power converters

8 To reset the TPC, move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform the common procedure *Placing an MP position in service (integrated)*. Go to Step 12.

Note: Place in service the MP positions that you remove from service in Step 3.

11 Perform the procedure *Placing an MP position in service (standalone).*

Note: Place in service the MP positions that you remove from service in Step 4.

12 The procedure is complete. Return to the main procedure that directed you to this procedure. Continue according to procedure.

NTNX65 in a TPC

Application

Use this procedure to replace an NTNX65 card in a TOPS position controller (TPC).

PEC	Suffixes	Name
NTNX65	BA	Parallel Input/Output

If you cannot identify the product engineering code (PEC), suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains a list of cards, shelves, and frames that appear in this card replacement Northern Telecom publication (NTP).

Common procedures

This procedure references the following procedures:

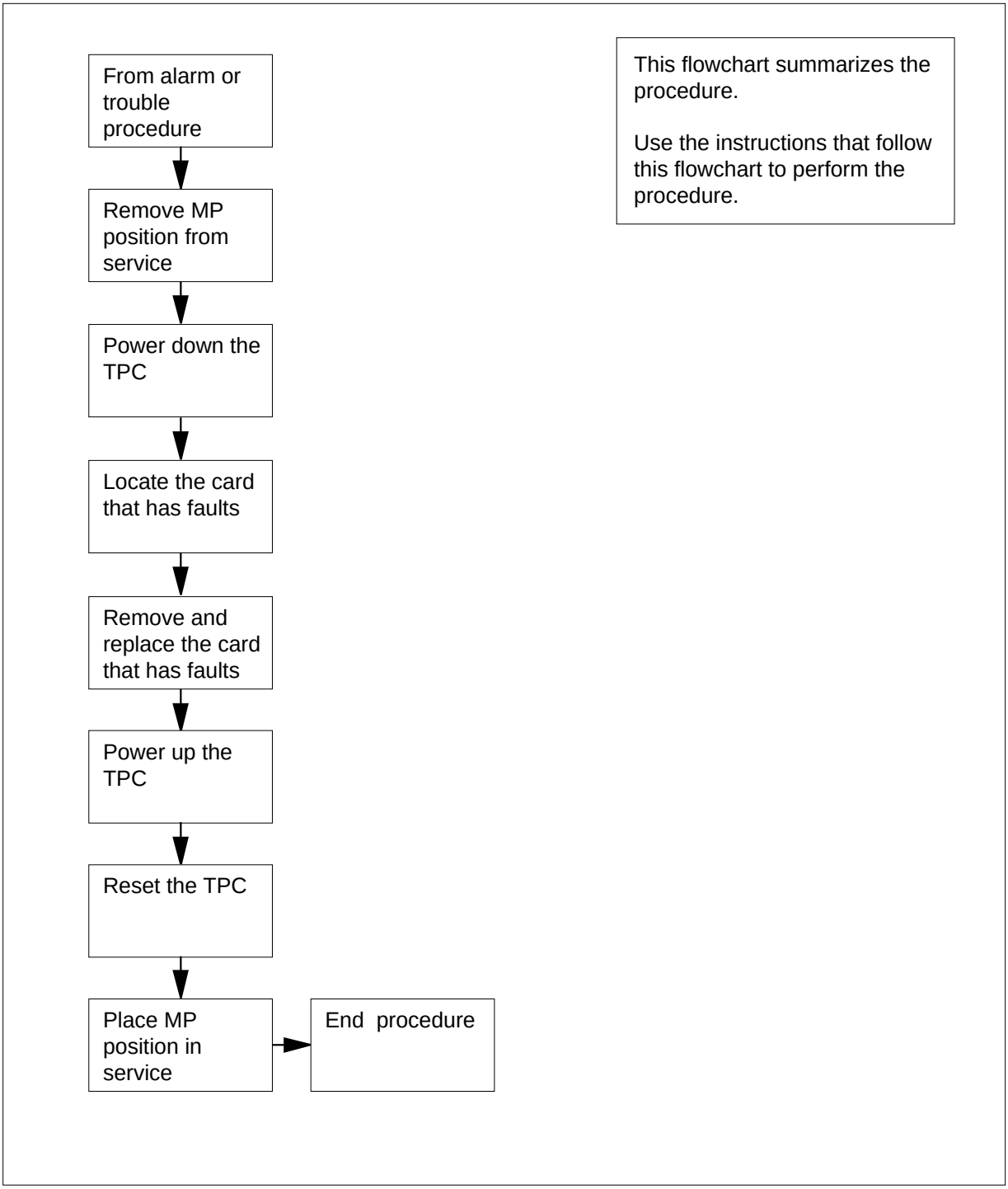
- *Removing an MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a flowchart and a summary procedure. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX65
in a TPC (continued)

Summary of Replacing an NTNX65 in a TPC



NTNX65
in a TPC (continued)

Replacing an NTNX65 in a TPC

At your current location:

1 Proceed if a maintenance procedure directs you to proceed. Separate use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated)*. Go to step 5.

Note: Remove every MP position associated with the TPC from service.

4 Perform the procedure *Removing MP position from service (standalone)*

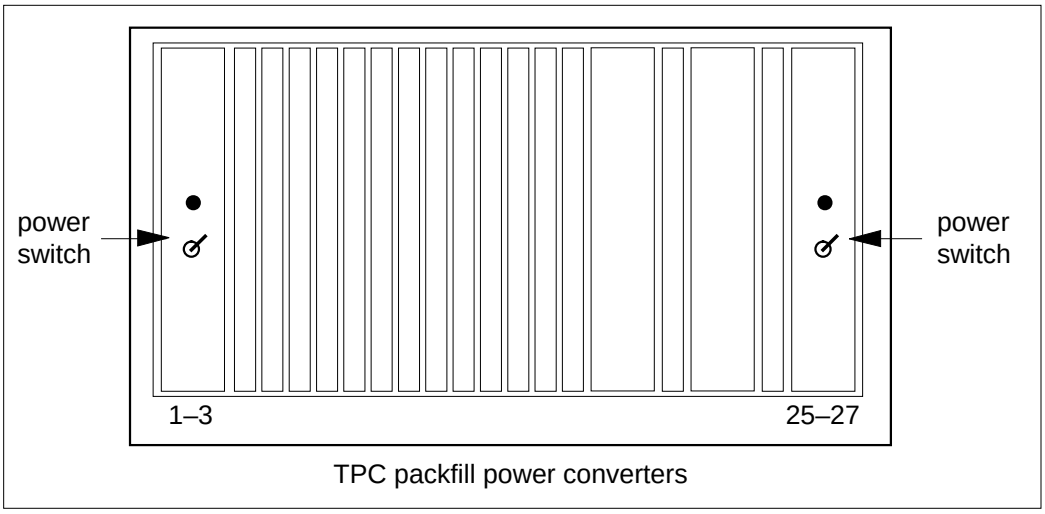
Note: Remove every MP position associated with the TPC from service.

5

DANGER
Equipment damage
Failure to turn off power to the TPC when you replace cards in the TPC can cause equipment damage.

Power down the TPC. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

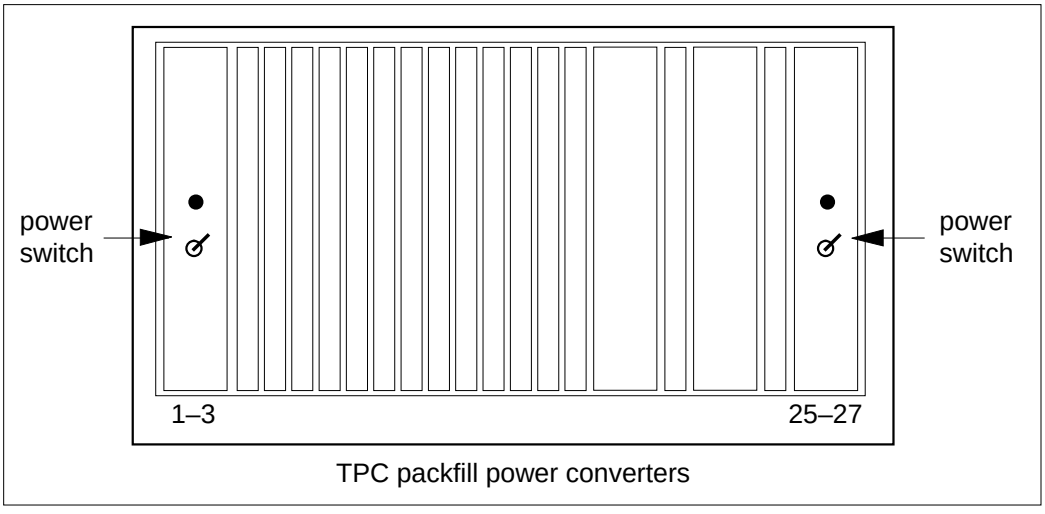
NTNX65
in a TPC (continued)



TPC packfill power converters

6 Remove and replace the NTNX65 card. See the procedure *Card removal and replacement* in this document. Go to step 7.

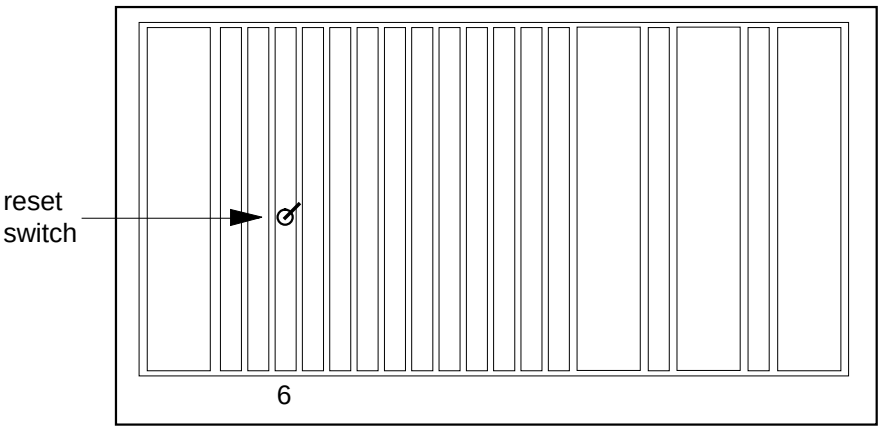
7 Power up the TPC. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.



TPC packfill power converters

8 Reset the TPC. Move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.

NTNX65
in a TPC (end)



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform the common procedure *Placing an MP position in service (integrated).* Go to step 12.

Note: Place in service the MP positions that you remove from service in step 3.

11 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service the MP positions that you remove from service in step 4.

12 The procedure is complete. Return to the main procedure that directed you to this procedure.

NTNX66 in a TPC

Application

Use this procedure to replace an NTNX66 card in a TPC.

PEC	Suffixes	Name
NTNX66	AA	High Speed Data Access

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains a list of cards, shelves, and frames in this card replacement NTP.

Common procedures

This procedure refers to the following procedures:

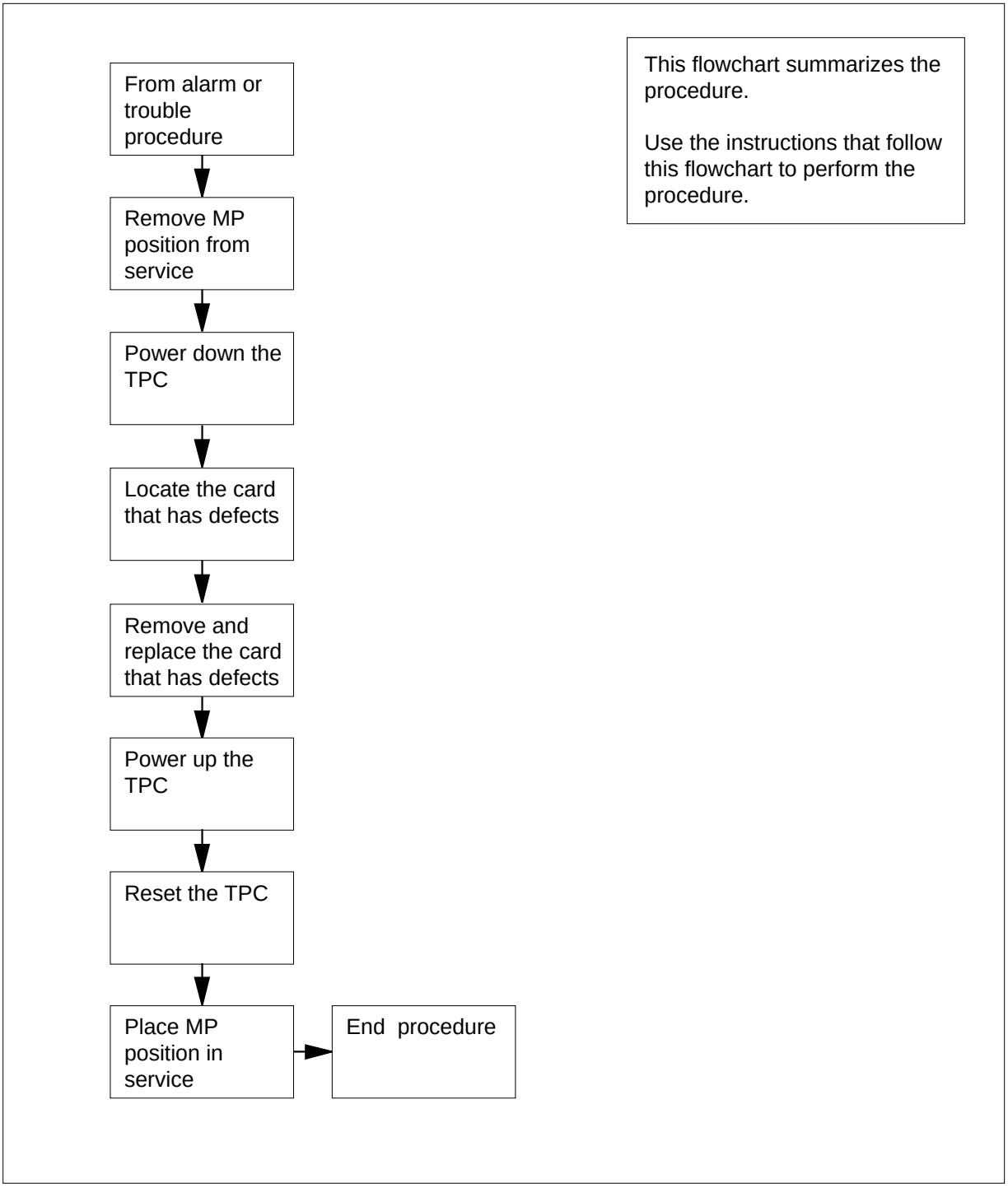
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX66 in a TPC (continued)

Summary of Replacing an NTNX66 in a TPC



NTNX66 in a TPC (continued)

Replacing an NTNX66 in a TPC

At your current location:

1 Proceed if a step in a maintenance procedure directed you to this procedure. Use of only this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated)*. When you complete this procedure, Go to step 5.

Note: Remove every MP position associated with the TPC from service.

4 Perform the common procedure *Removing MP position from service (standalone).*

Note: Remove every MP positions associated with the TPC from service.

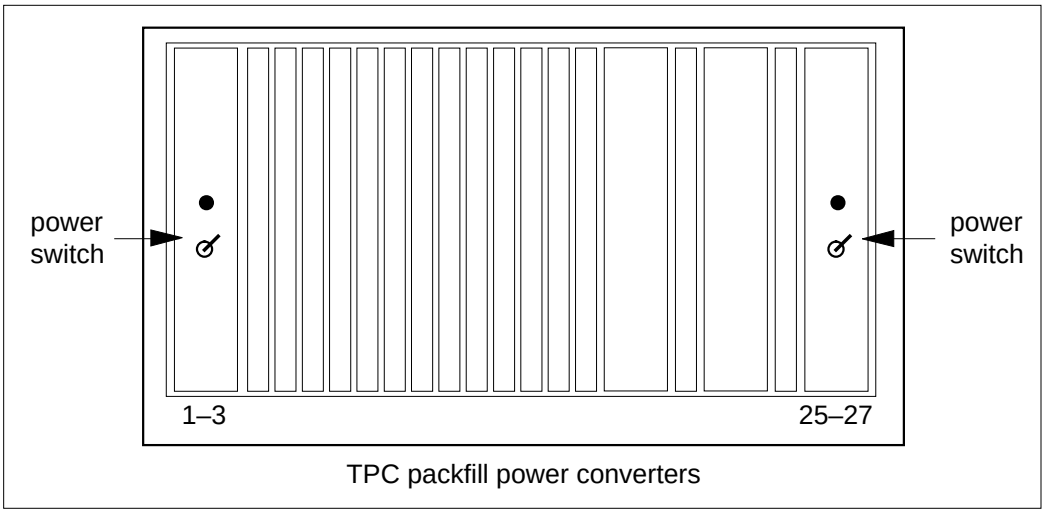
5

WARNING
Equipment damage
When you replace cards in the TPC, make sure you turn off power to the TPC. Failure to turn off the power can cause equipment damage.

To power down the TPC, turn the following switches on the power converters to the down position:

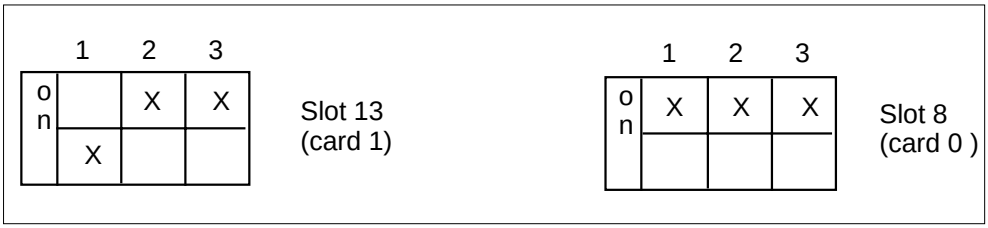
- the switches in slots 1-3
- the switches in slots 25-27

NTNX66
in a TPC (continued)



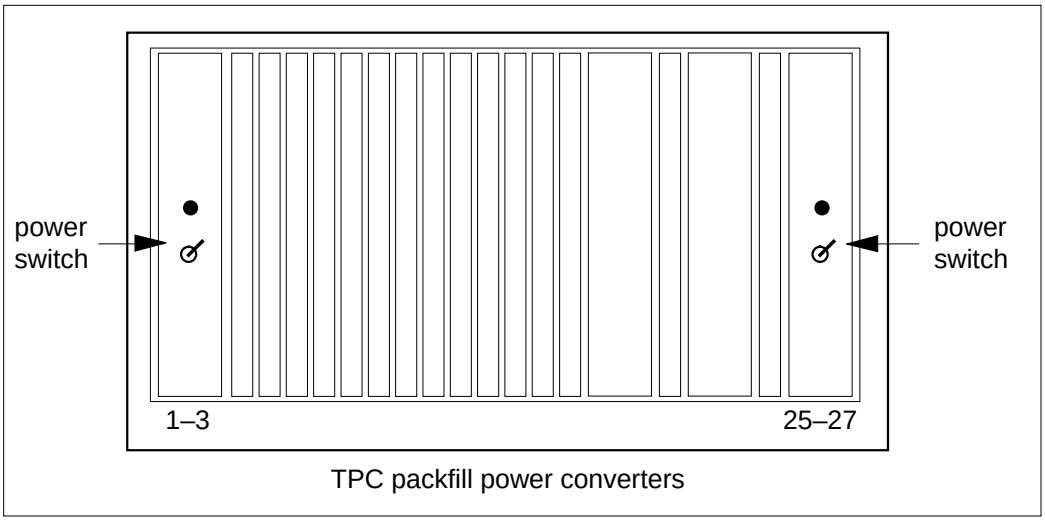
TPC packfill power converters

6 Remove and replace the NTNX66 card. Refer to the *Card removal and replacement* in this document for information on how to perform this procedure. Go to step 7 after you complete the removal and replacement procedure. Before you install the new HSDA card on the TPC shelf, set the shelf address. Use the Dual Inline Package (DIP) switch on the NTNX66 mother board to set the shelf address.



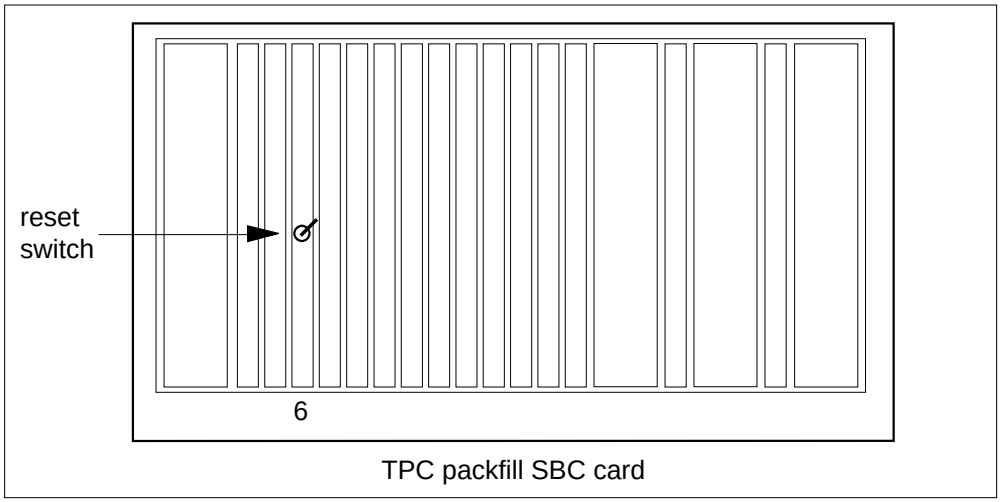
7 To power up the TPC, turn the following switches on the power converters to the up position:

- the switches in slots 1-3
- the switches in slots 25-27



TPC packfill power converters

8 To reset the TPC, move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.



TPC packfill SBC card

9 Place the MP position in service.

If TPC	Do
is integrated	step 10
is standalone	step 11

10 Perform the common procedure *Placing an MP position in service (integrated)*. After you complete this procedure, Go to step 12.

Note: Place in service the MP positions that you removed from service in step 3.

NTNX66
in a TPC (end)

11 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service the MP positions that you removed from service in step 4.

12 The procedure is complete. Return to the main procedure that directed you to this procedure. Continue as the procedure directs.

NTNX68 in a TPC

Application

Use this procedure to replace an NTNX68 card in a TPC.

PEC	Suffixes	Name
NTNX68	CA	Floppy Disk Drive and Controller
NTNX68	DA	Hard Disk Drive and Controller

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the index. Refer to the Index for a list of cards, shelves, and frames this card replacement NTP documents.

Common procedures

This procedure refers to the following procedures:

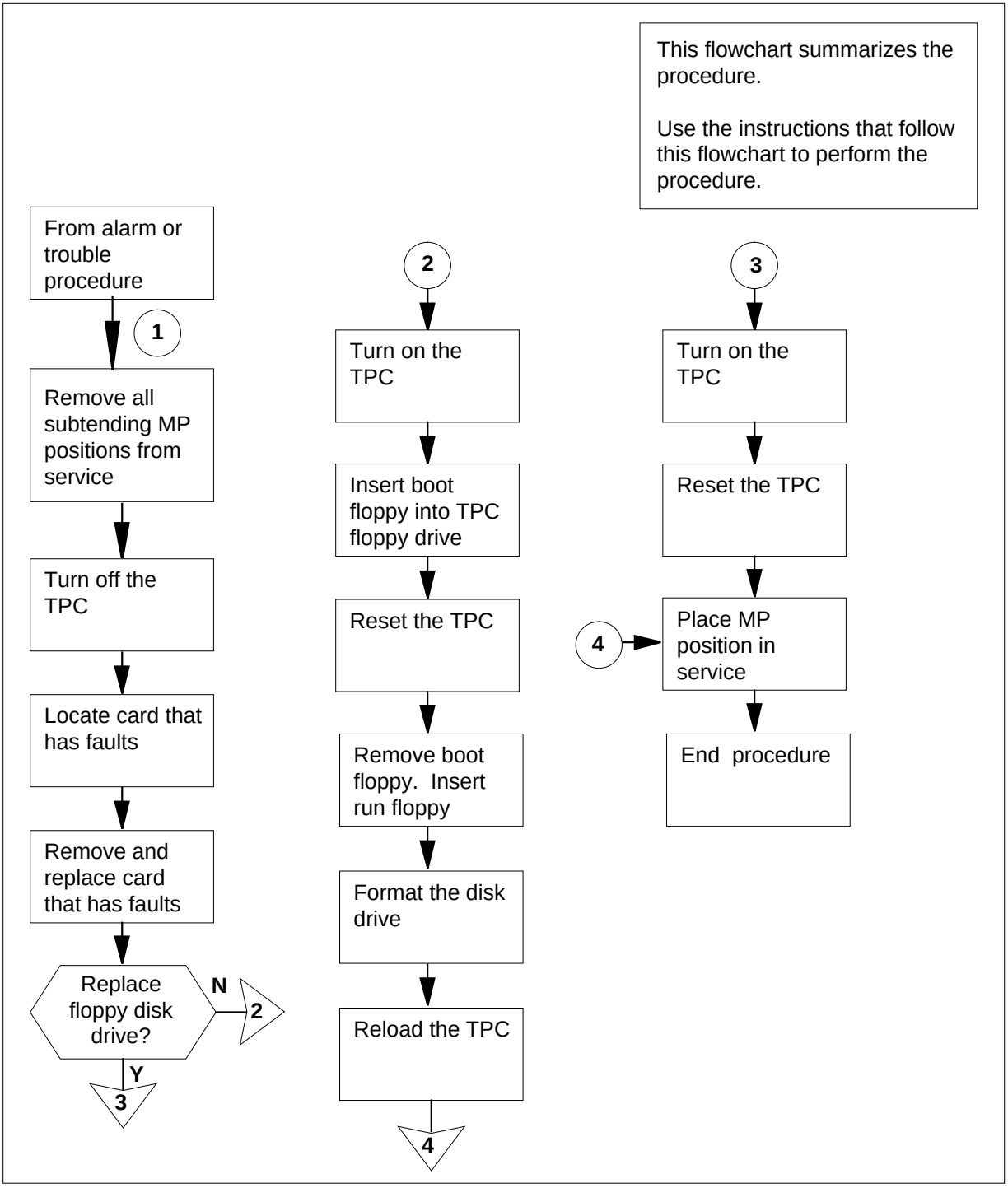
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTNX68
in a TPC (continued)

Summary of Replacing an NTNX68 om a TPC



NTNX68 in a TPC (continued)

Replacing an NTNX68 in a TPC

At your current location:

1 Proceed only if a step in a maintenance procedure directed you to this procedure. The separate use of this procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
Removal of an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated)*. Go to step 5.

Note: You must remove all MP positions associated with the TPC from service.

4 Perform the common procedure *Removing MP position from service (standalone).*

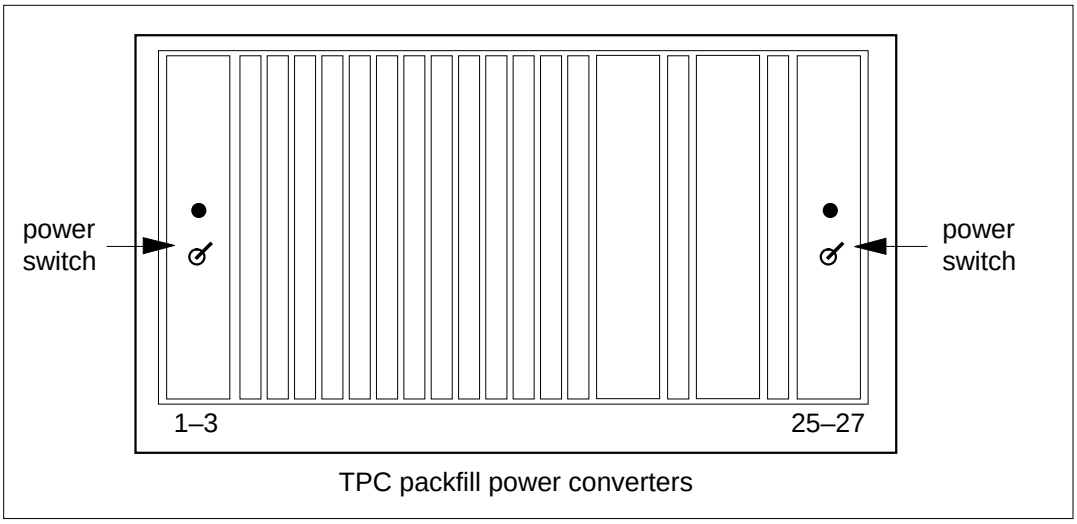
Note: You must remove all MP positions associated with the TPC from service.

5

WARNING
Equipment damage
If you do not turn off power to the TPC when you replace cards in the TPC, equipment damage can occur.

To power down the TPC, turn the switches. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the down position.

NTNX68
in a TPC (continued)

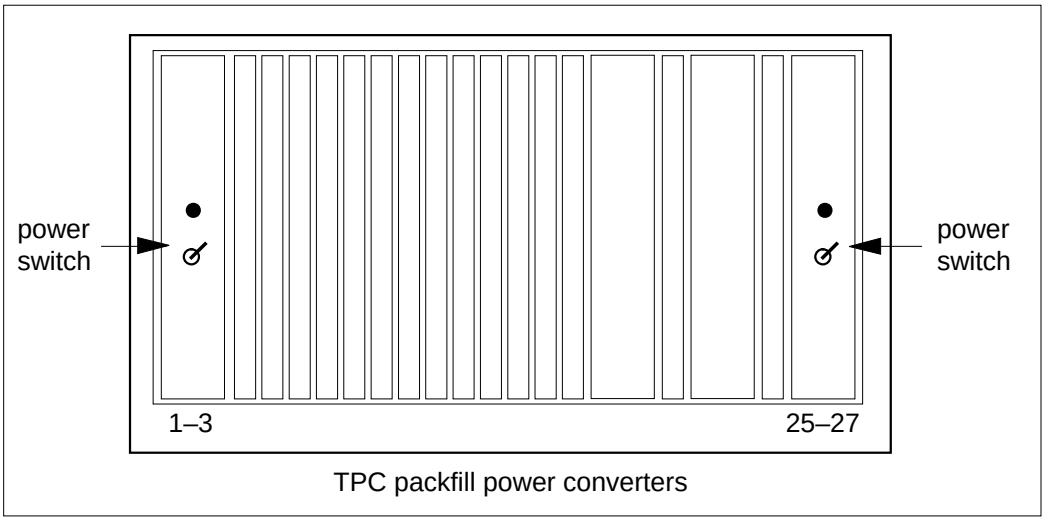


TPC packfill power converters

6 Remove and replace the NTNX68 card. To perform these actions, see the *Card removal and replacement* in this document. After you complete removal and replacement procedure, return to the following step.

If you	Do
replace a floppy disk drive	step13
replace a hard disk drive	step 7

7 To power up the TPC, turn the switches. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.



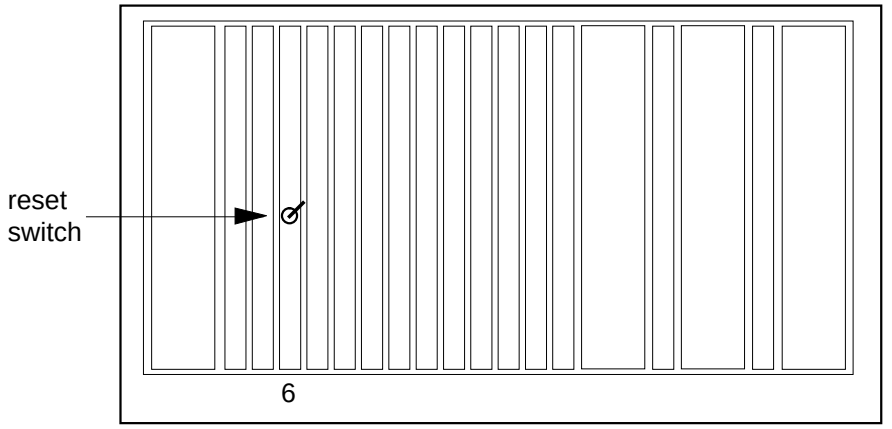
TPC packfill power converters

NTNX68
in a TPC (continued)

8 Insert the “Diagnostic Boot" floppy disk into the floppy drive of the TPC. Push the lever to lock the floppy in place.

Note: Make sure the notched edge of the floppy disk is at the top. Make sure the label faces the hard disk drive.

9 To reset the TPC, move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.



TPC packfill SBC card

10 Remove the “Diagnostic Boot" floppy. Insert the “Diagnostic Run" floppy.

11 Leave the Diagnostic Run floppy in the floppy drive until the sywstem requests you to remove the floppy. To format the hard disk drive, type

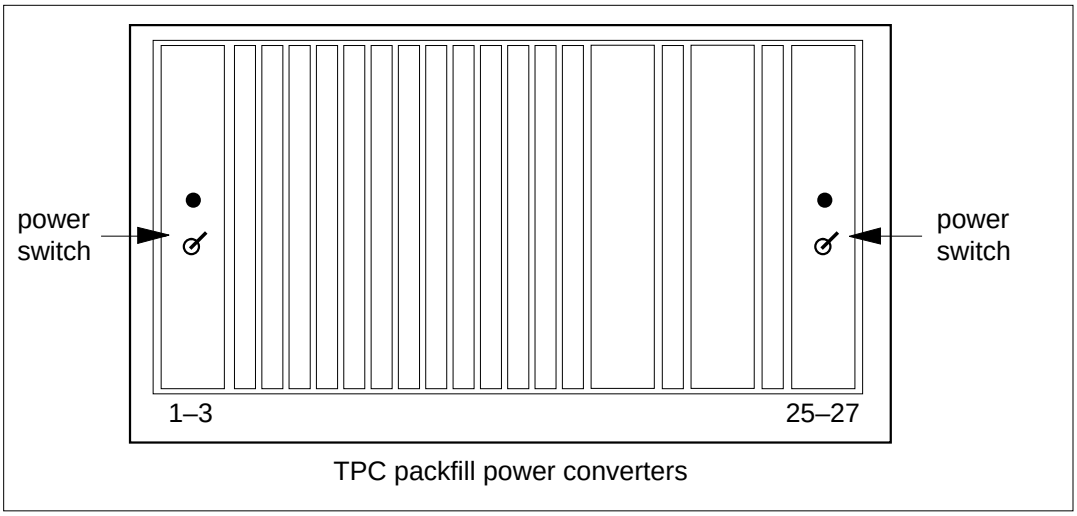
```
>HDISK FORMAT
```

and press the Enter key.

12 Reload the TPC. Refer to *TOPS MP Routine Maintenance Procecures (Updating TPC Software)*. Go to step 15.

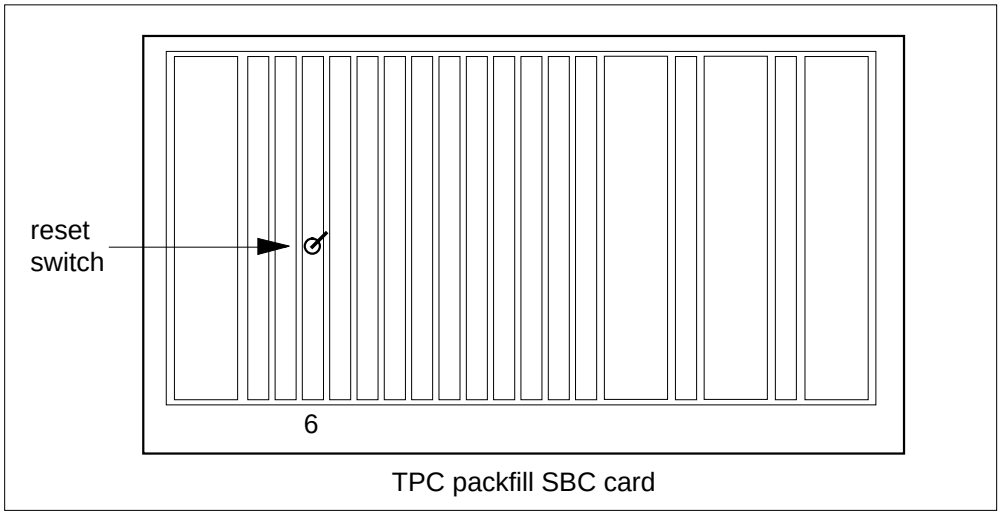
13 To power up the TPC, turn the switches. Turn the switches on the power converters in slots 1-3 and slots 25-27 to the up position.

NTNX68
in a TPC (continued)



TPC packfill power converters

14 To reset the TPC, move the switch on the SBC card in slot 6 to the down position. Return the switch to the up position.



TPC packfill SBC card

15 Place the MP position in service.

If TPC	Do
is integrated	step 16
is standalone	step 17

16 Perform the common procedure *Placing an MP position in service (integrated)*. Go to step 18.

Note: Place in service only the MP positions that you removed from service in step 3.

NTNX68 in a TPC (end)

17 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service only the MP positions that you removed from service in step 4.

18 The procedure is complete. Return to the main procedure that sent you to this procedure. Continue as directed.

NTOM36 Keyboard

Application

Use this procedure to replace the keyboard, NTOM36.

PEC	Suffixes	Name
NTOM36	AA	Keyboard
NTOM36	AE	Keyboard

When you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains a list of cards, shelves, and frames this card replacement NTP documents.

Common procedures

This procedure references the following procedures:

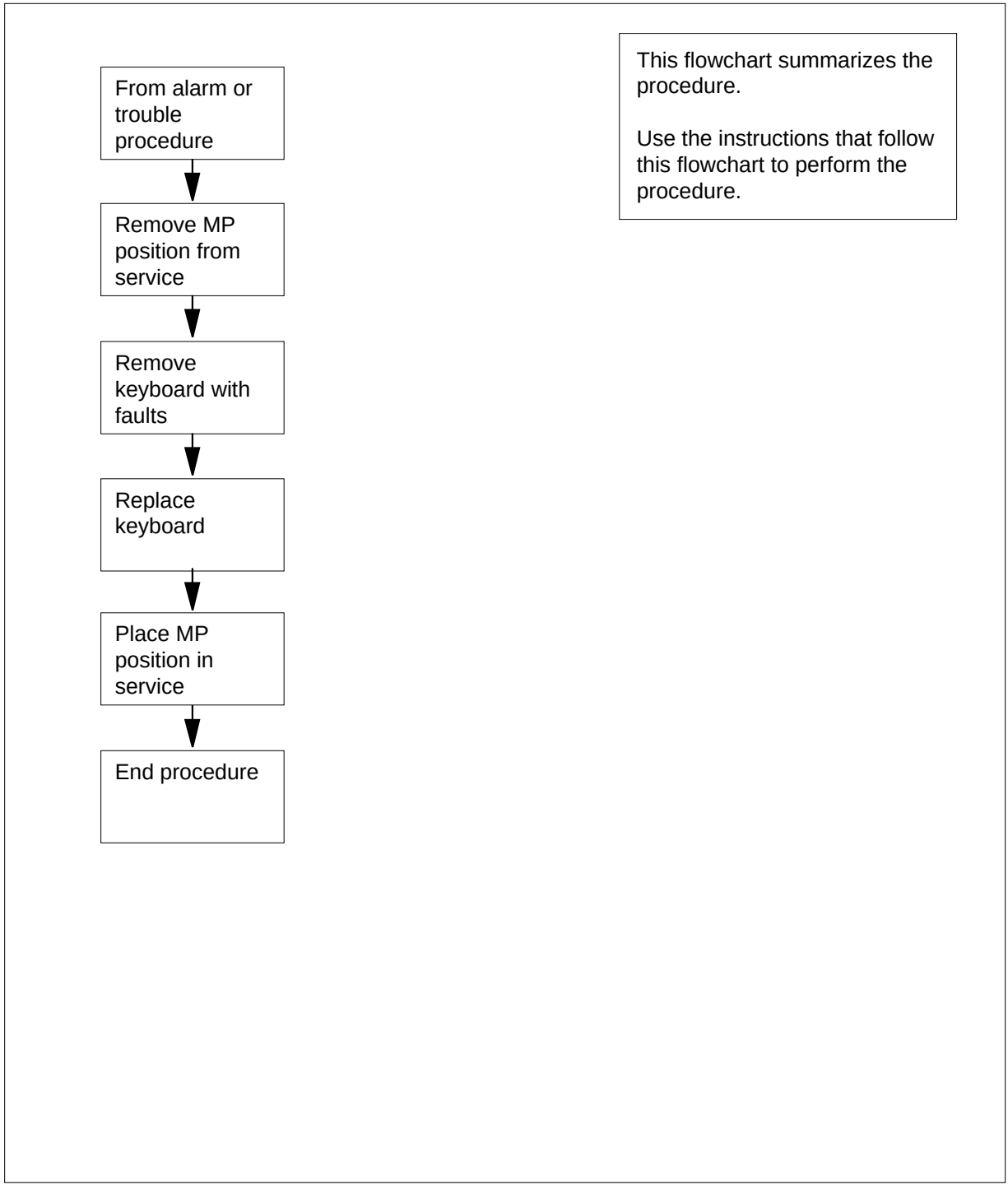
- *Placing MP position in service (integrated)*
- *Placing MP position in service (standalone)*
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure to replace the card.

NTOM36
Keyboard (continued)

Summary of Replacing an NTOM36 Keyboard



NTOM36
Keyboard (continued)

Replacing an NTOM36 Keyboard

At your current location:

1 Proceed only if a step in a maintenance procedure directed you to this procedure. To use this procedure separate from a maintenance procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
To remove an MP position from service causes service interruption.

Remove the MP position from service.

If TPC	Do
is integrated	step 3
is standalone	step 4

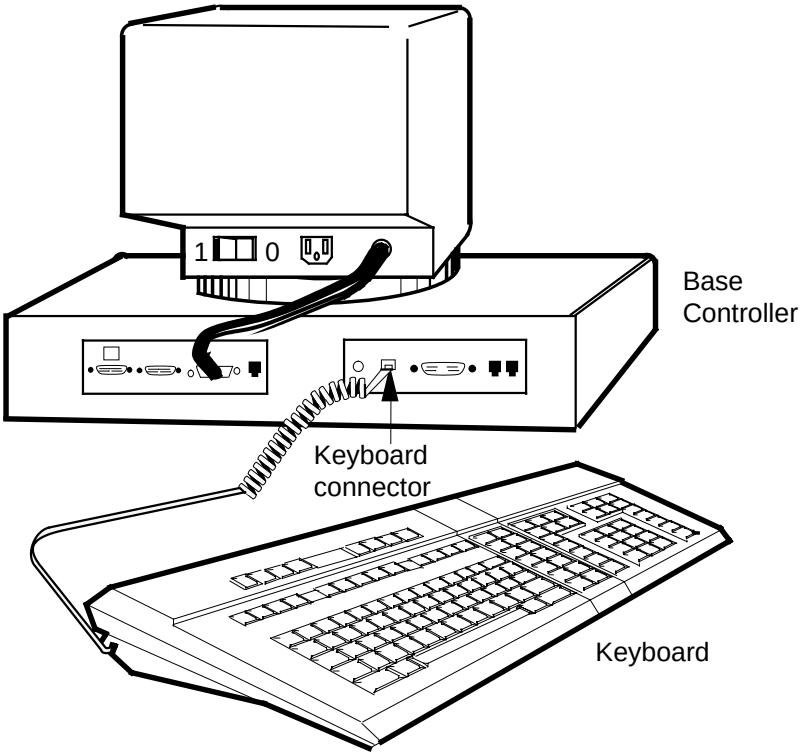
3 Perform the common procedure *Removing MP position from service (integrated)*. Proceed to step 5.

4 Perform the common procedure *Removing MP position from service (standalone).*

5 To remove the TOPS MP keyboard, disconnect the keyboard connector from the base controller.

NTOM36
Keyboard (continued)

Rear view MP position



6 To replace the TOPS MP keyboard with a new keyboard, connect the keyboard connector to the base controller.

7 Place the MP position in service.

If TPC	Do
is integrated	step 8
is standalone	step 9

8 Perform the common procedure *Placing an MP position in service (integrated)*. Proceed to step 10.

Note: Place in service only the MP positions you removed from service in step 3.

9 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service only the MP positions you removed from service in step 4.

NTOM36
Keyboard (end)

10 The procedure is complete.

NTOM90 in an MP

Application

Use this procedure to replace base, NTOM90, in an MP.

PEC	Suffixes	Name
NTOM90	SA	Base

When you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains lists of cards, shelves, and frames this card replacement NTP documents.

Common procedures

This procedure references the following procedures:

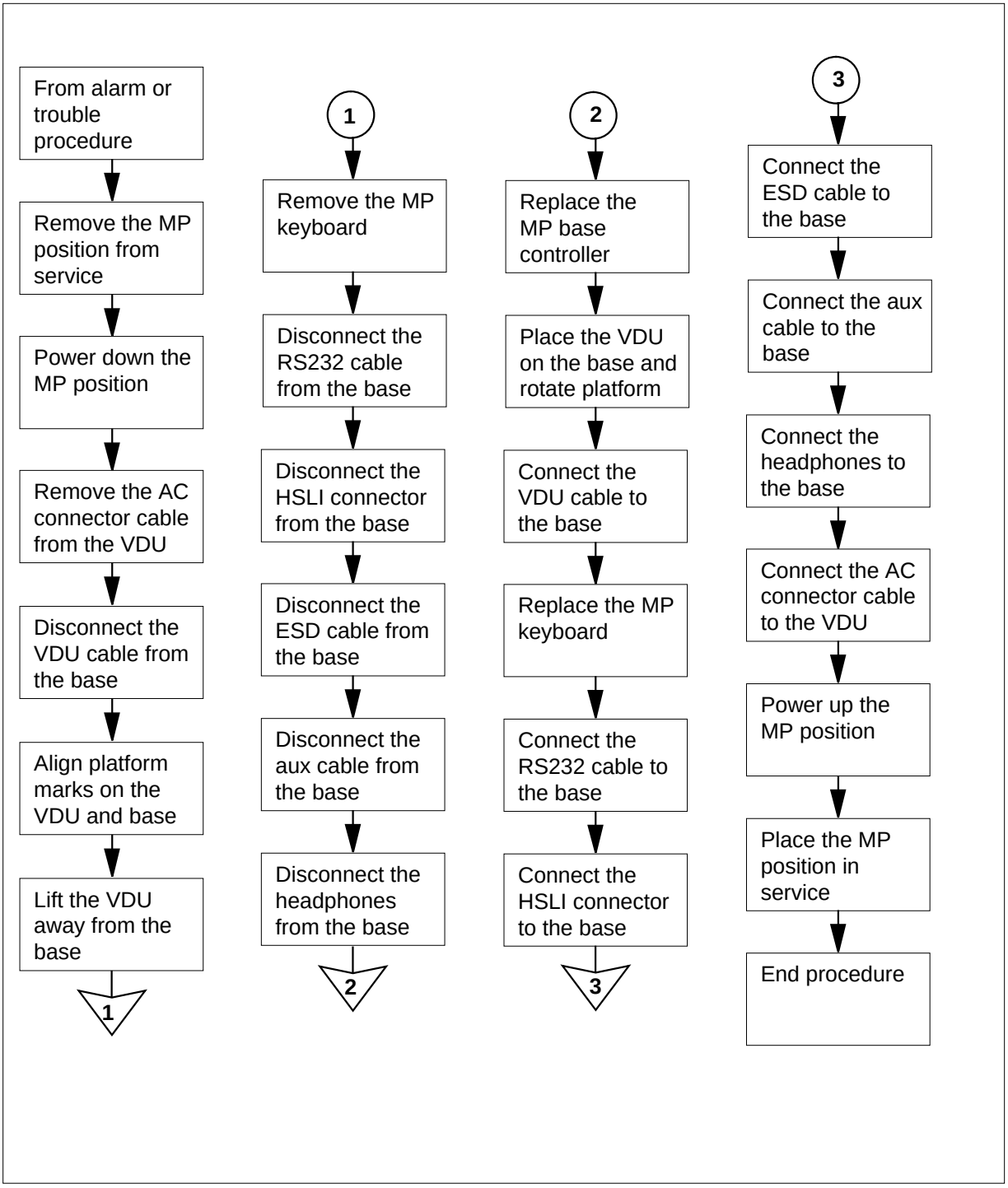
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure to replace the card.

NTOM90
in an MP (continued)

Summary of Replacing an NTOM90 in an MP



NTOM90 in an MP (continued)

Replacing an NTOM90 in an MP

At your current location:

1 Proceed only if a step in a maintenance procedure directs you to this procedure. Use of this procedure separate from a maintenance procedure can cause equipment damage or service interruption.

2

WARNING
Service interruption
The removal of an MP position from service causes service interruption.

Remove the MP position from service.

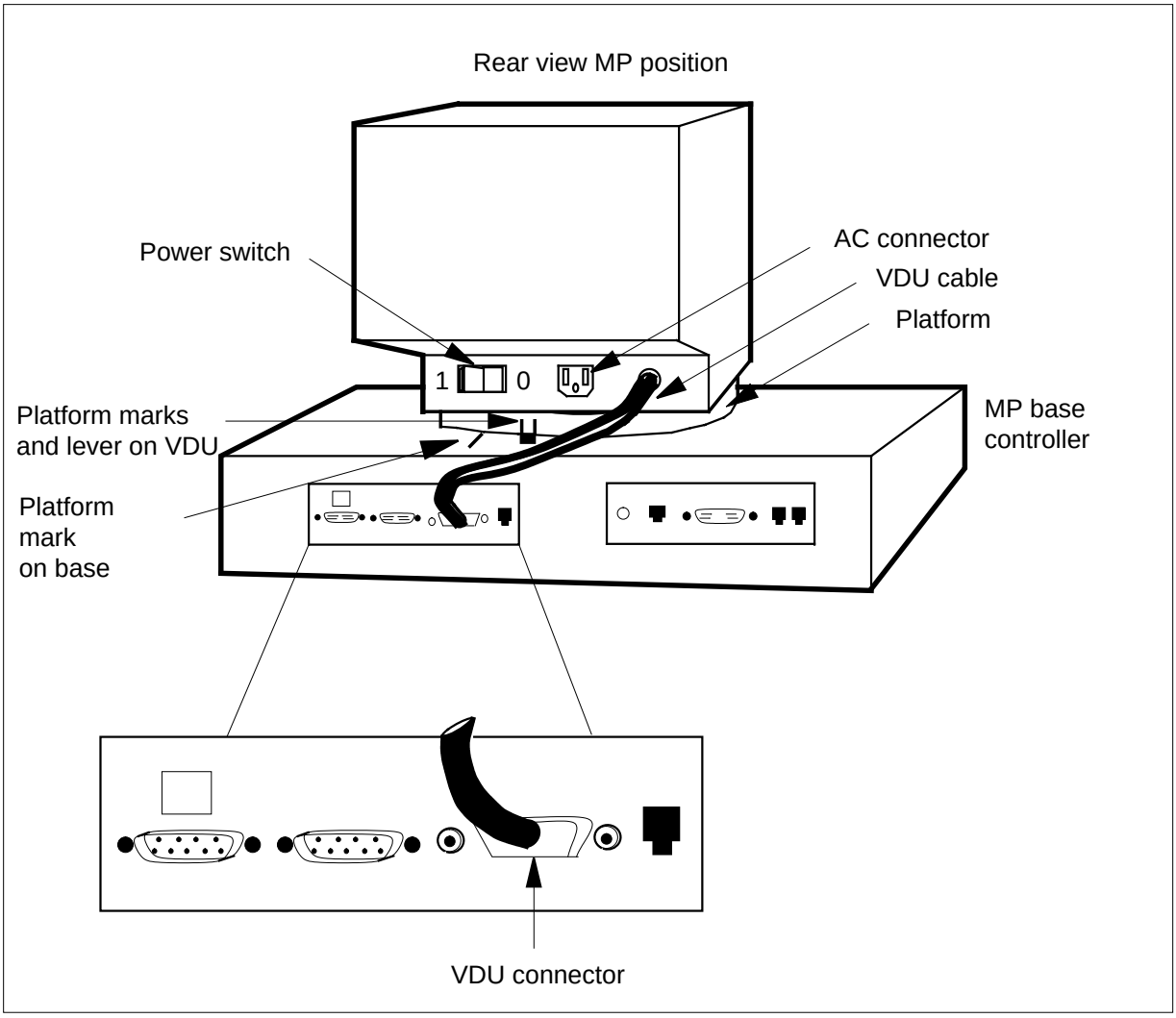
If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated)*. Return to step 5.

4 Perform the common procedure *Removing MP position from service (standalone).*

5 Power down the TOPS MP position. Position the power switch on the MP VDU to the OFF (0) position.

NTOM90
in an MP (continued)



6 To remove the AC connector cable from the MP VDU, refer to the figure in step 5.

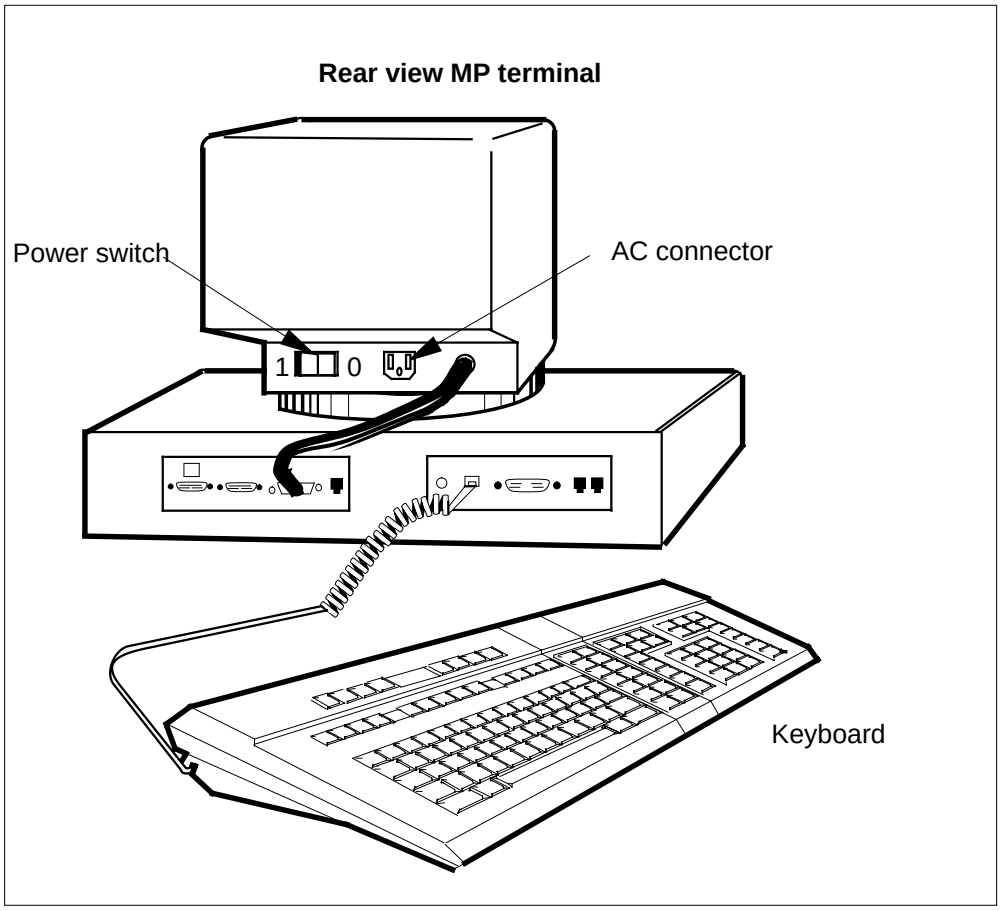
7 To disconnect the VDU cable from the MP base controller, loosen the screws of the VDU connector. Pull out the connector.

8 Press the platform lever until the lever is parallel to the top of the MP base controller. Press the platform lever and rotate the platform to the left. Rotate the platform to the left until the platform marks on the VDU align with the platform mark on the base. Rotate the platform to the left until the platform does not rotate any further. See the figure in step 5.

9 Lift the MP VDU away from the MP base controller.

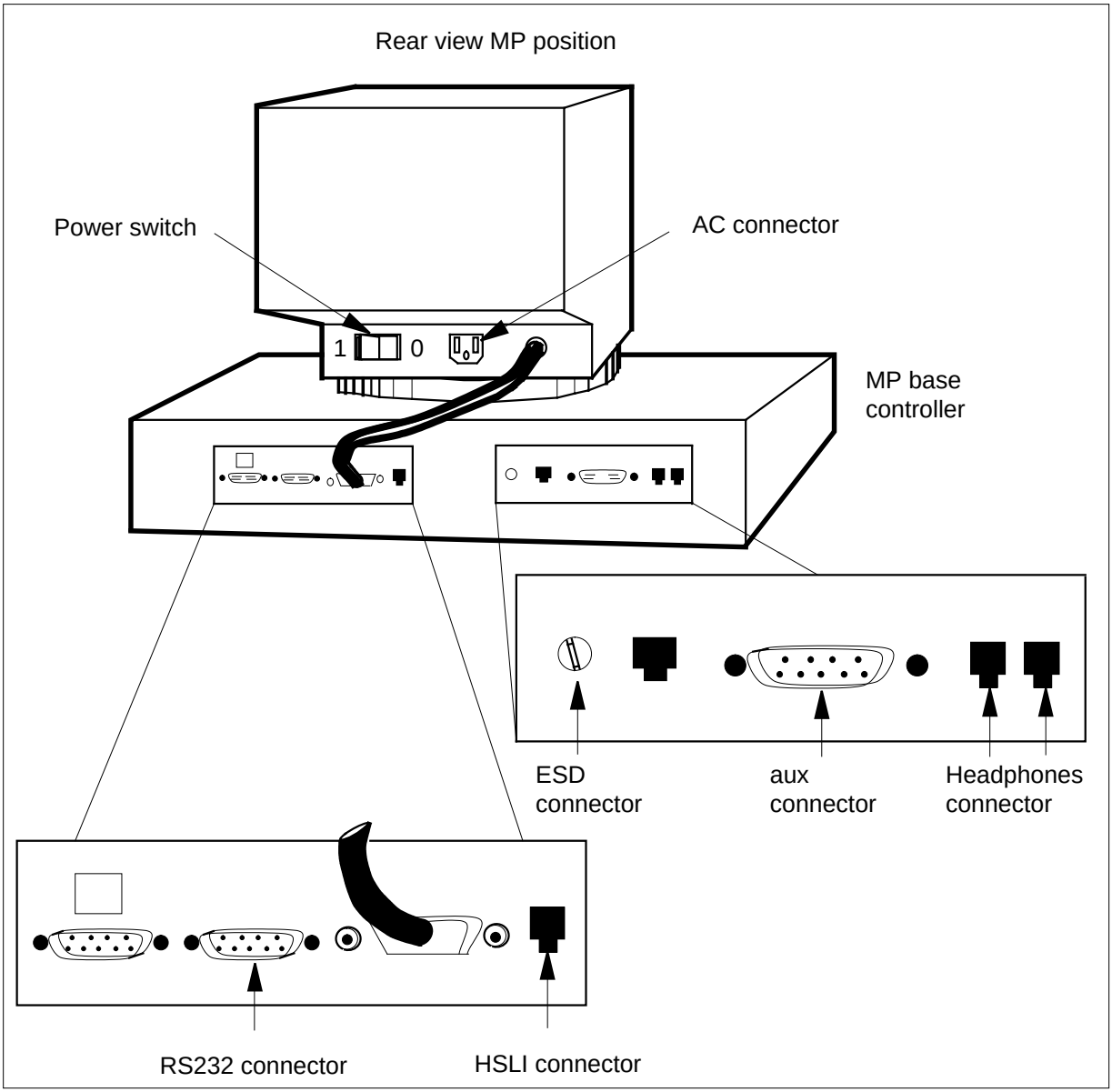
10 To remove the TOPS MP keyboard, disconnect the keyboard connector from the MP base controller.

NTOM90
in an MP (continued)



11 To disconnect the RS232 cable from the MP base controller, loosen the screws of the RS232 connector. Remove the connector.

NTOM90
in an MP (continued)



12 To remove the HSLI cable, disconnect the HSLI connector from the MP base controller. See the figure in step 11.

13 To disconnect the ESD cable from the MP base controller, loosen the screw of the ESD connector and remove the connector. See the figure in step 11.

14 To disconnect the aux cable from the MP base controller, loosen the screws of the aux connector. Pull out the connector. See the figure in step 11.

15 To remove the headphones cable, disconnect the headphones connector from the MP base controller. See the figure in step 11.

NTOM90
in an MP (end)

16 Replace the MP base controller with a new MP base controller.

17 Place the VDU you removed in step 9 on the MP base controller. The platform marks on the VDU are aligned with the platform mark on the base. See the figure in step 5.

18 Rotate the platform to the right. Listen for a click that indicates a seated VDU.

19 To connect the VDU cable removed in step 7 to the MP base controller, tighten the screws of the VDU connector. See the figure in step 5.

20 To replace the MP keyboard removed in step 10, connect the keyboard connector to the MP base controller. See the figure in step 10.

21 To connect the RS232 cable removed in step 11 to the MP base controller, tighten the screws of the RS232 connector. See the figure in step 11.

22 To replace the HSLI cable removed in step 12, connect the HSLI connector to the MP base controller. See the figure in step 11.

23 To connect the ESD cable removed in step 13 to the MP base controller, tighten the screw of the ESD connector. See the figure in step 11.

24 To replace the aux cable removed in step 14, tighten the screws of the aux connector. See the figure in step 11.

25 To replace the headphones cable removed in step 15, connect the headphones connector to the MP base controller. See the figure in step 11.

26 Connect the AC connector cable removed in step 6 to the MP VDU. See the figure in step 11.

27 To Power up the TOPS MP position, move the power switch on the MP VDU to the on (1) position. See the figure in step 11.

28 Place the MP position in service.

If TPC	Do
is integrated	step 29
is standalone	step 30

29 Perform the common procedure *Placing an MP position in service (integrated)*. Proceed to step 31.

Note: Place in service only the MP positions you removed from service in step 3.

30 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service only the MP positions you removed from service in step 4.

31 The procedure is complete.

NTOM92 in an MP

Application

Use this procedure to replace VDU, NTOM92, in an MP.

PEC	Suffixes	Name
NTOM92	FA	VDU

When you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The Index contains lists of cards, shelves, and frames this card replacement NTP documents.

Common procedures

This procedure references the following procedures:

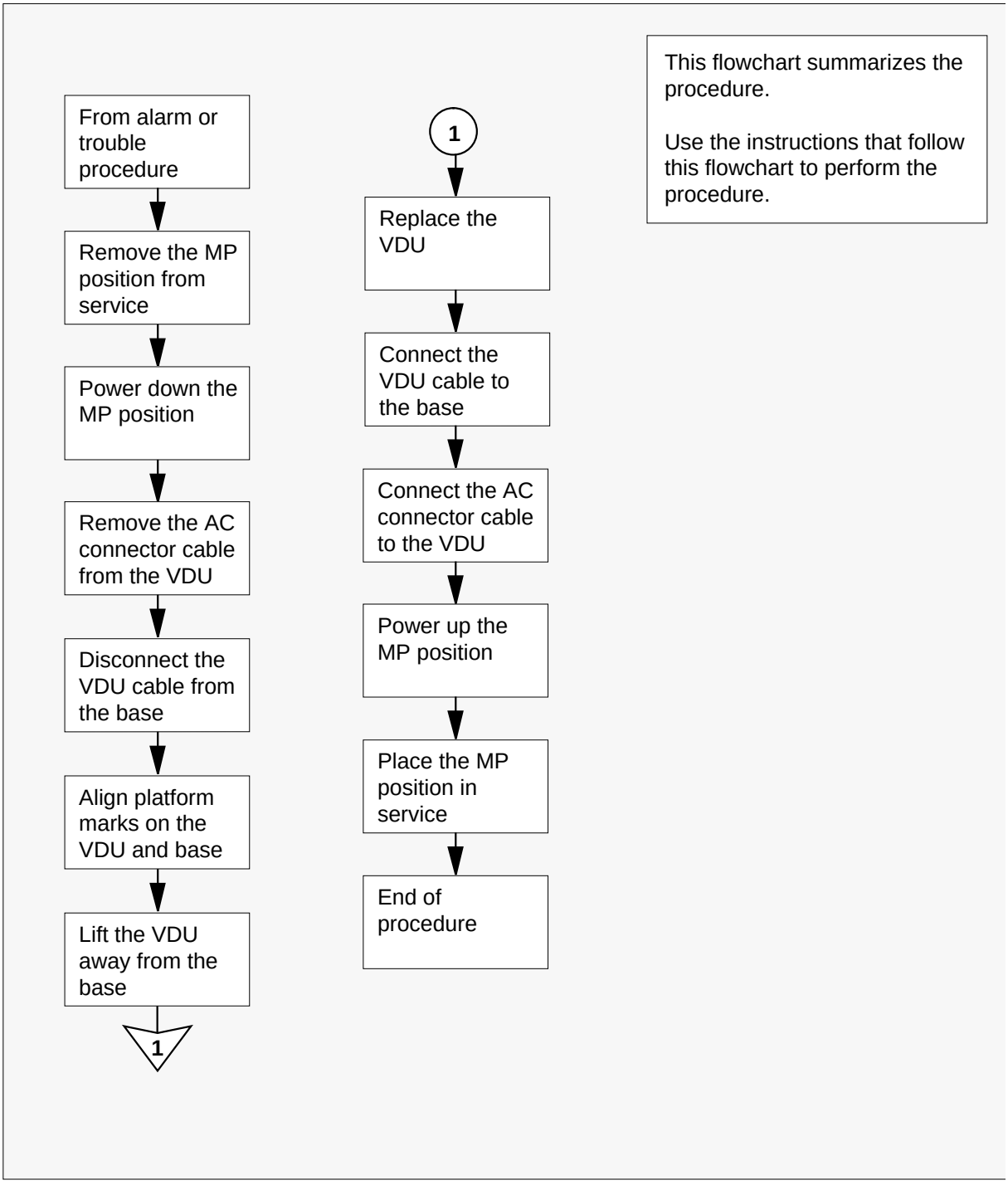
- *Placing an MP position in service (integrated)*
- *Placing an MP position in service (standalone)*
- *Removing MP position from service (integrated)*
- *Removing MP position from service (standalone)*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure to replace the card.

Summary of Replacing an NTOM92 in an MP

NTOM92
in an MP (continued)



NTOM92 in an MP (continued)

Replacing an NTOM92 in an MP

At your current location:

1 Proceed only if a step in a maintenance procedure directs you to this procedure. Use of this procedure separate from a maintenance procedure can cause equipment damage or service interruption.

2

CAUTION
Service interruption
To remove an MP position from service causes service interruption.

WARNING
Service interruption
To remove an MP position from service causes service interruption.

Remove the MP position from service.

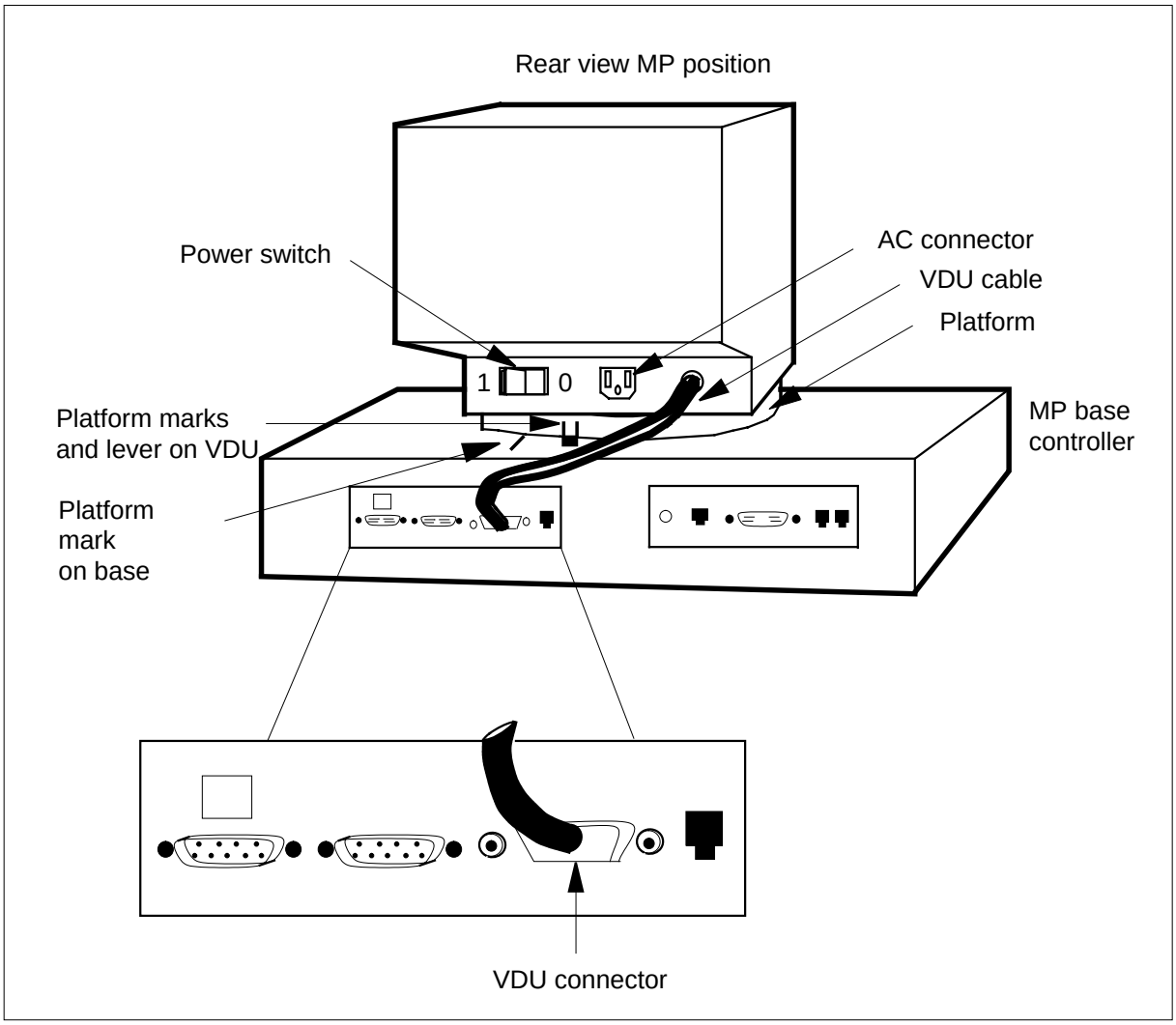
If TPC	Do
is integrated	step 3
is standalone	step 4

3 Perform the common procedure *Removing MP position from service (integrated).* Proceed to step 5.

4 Perform the common procedure *Removing MP position from service (standalone).*

5 To power down the TOPS MP position, position the power switch on the MP VDU to the OFF (0) position.

NTOM92
in an MP (continued)



6 Remove the AC connector cable from the MP VDU. See the figure in step 5.

7 To disconnect the VDU cable from the MP base controller, loosen the screws of the VDU connector and remove the connector.

8 Press the platform lever until the lever is parallel to the top of the MP base controller. Press the platform lever, and rotate the platform to the left. Rotate the platform to the left until the platform marks on the VDU align with the platform mark on the base. Rotate the platform to the left until the platform cannot rotate. See the figure in step 5.

9 Lift the MP VDU away from the MP base controller.

10 To replace the TOPS MP VDU with a new VDU, place the new VDU on the MP base controller. The base controller with the platform marks on the VDU align with the platform mark on the base. See the figure in step 5.

NTOM92 in an MP (end)

11 Rotate the platform to the right. Listen for a click that indicates the seated VDU.

12 To connect the VDU cable to the MP base controller, tighten the screws of the VDU connector. See the figure in step 5.

13 Connect the AC connector cable to the MP VDU. See the figure in step 5.

14 To power up the TOPS MP position, position the power switch on the MP VDU to the ON (1) position.

15 Place the MP position in service.

If TPC	Do
is integrated	step 16
is standalone	step 17

16 Perform the common procedure *Placing an MP position in service (integrated)*. Proceed to step 18.

Note: Place in service only the MP positions you removed from service in Step 3.

17 Perform the common procedure *Placing an MP position in service (standalone).*

Note: Place in service only the MP positions you removed from service in step 4.

18 The procedure is complete.

Placing an MP position in service (integrated)

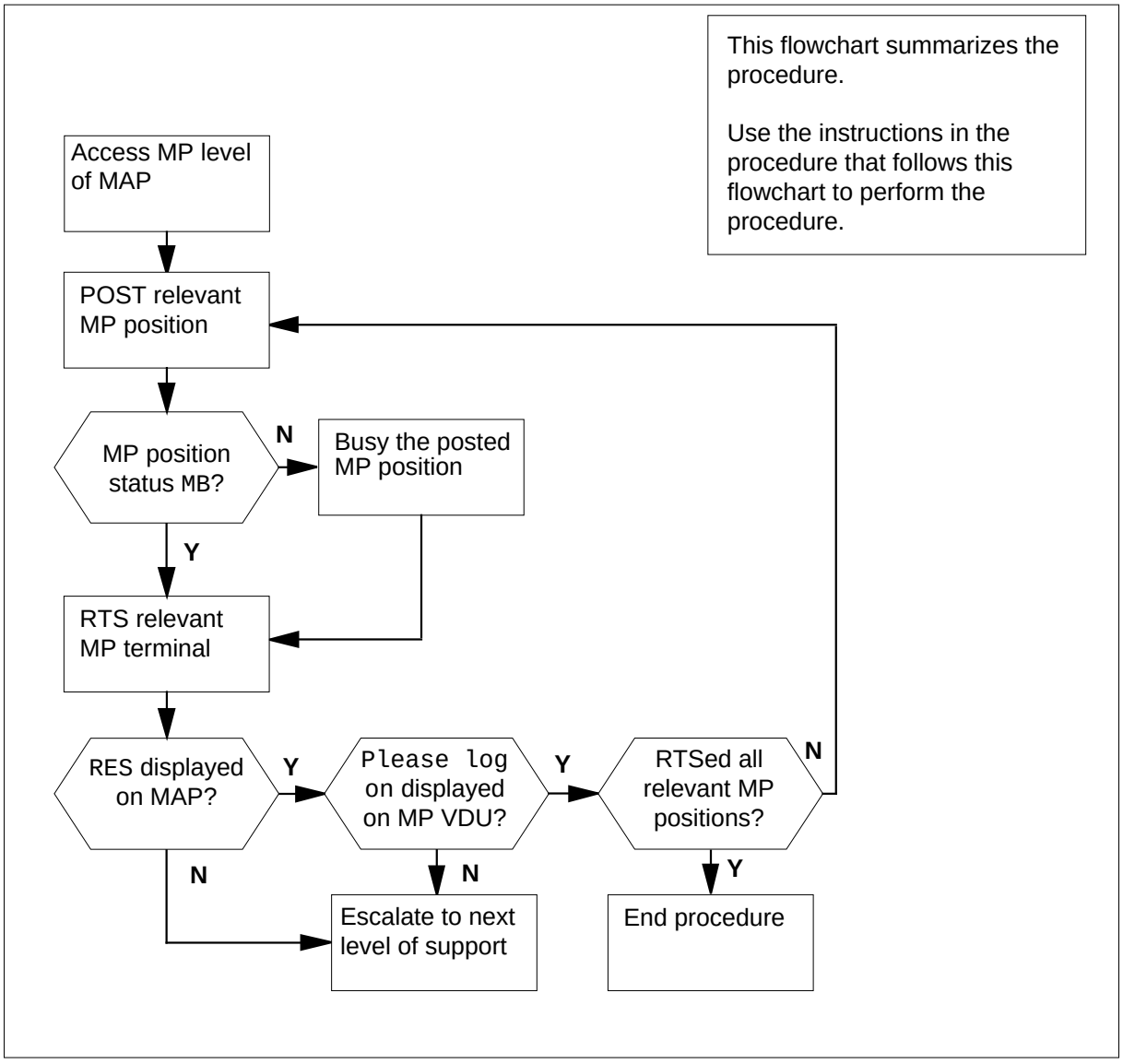
Application

Use this procedure to return integrated Traffic Operator Position System (TOPS) Multipurpose (MP) positions to service.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Summary of Placing an MP position in service (integrated)



Placing an MP position in service (integrated) (continued)

Placing an MP position in service (integrated)

CAUTION
Possible equipment damage or service interruption
Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Using this procedure independently may cause equipment damage or service interruption.

At the MAP:

1 Access the MP level by entering:

>MAPCI;MTC;PM

and pressing the Enter key.

>POST TPC x;MP

and pressing the Enter key.

where

x
is the TPC number

2 Post the relevant MP position by entering:

>POST P nnn

and pressing the Enter key.

where

nnn
is the MP position number (0, 1, 2, or 3)

Example of a MAP response:

Placing an MP position in service (integrated) (continued)

```
 CM    MS  IOD    Net    PM     CCS     LNS     Trks     Ext     EIO
 .     .    .      .      .       .       .       .       .       .

MP             SysB    ManB   OffL   CBsy  ISTb   InSv
 0  Quit     PM  0       0      10      0     0     130
 2  Post_    TPC 0       0       0      0     0       4
 3
 4               TPC 0  InSv
 5  Trnsl
 6  Tst          Status    VTB    SB    MB    PMB    RES    RTRN    INB
 7  Bsy          MP          0     0     1      0      5       0      2
 8  RTS
 9               POS   201   TPC    0   MP   1    MB
10               Size of Post set:         1
11  Disp_
12  Next
13  FRls
14  QueryMP
15
16
17
18
```

MP position number and status

If MP position status is	Do
MB	step 4
SB	step 3

3 Busy the MP position by entering:

>BSY

and pressing the Enter key.

4 Return the MP position to service by entering:

>RTS

and pressing the Enter key.

Example of a MAP response:

Placing an MP position in service (integrated) (continued)

```
CM   MS   IOD    Net   PM     CCS     LNS     Trks     Ext     EIO
 .    .    .      .     .       .       .       .       .       .

MP             SysB    ManB  OffL  CBsy   ISTb    InSv
 0  Quit     PM  0       0      10     0      0      130
 2  Post_    TPC 0       0       0     0      0        4
 3
 4               TPC 0  InSv
 5  Trnsl
 6  Tst          Status    VTB    SB    MB    PMB    RES    RTRN    INB
 7  Bsy          MP          0     0     1      0      5       0      2
 8  RTS
 9               POS   201   TPC    0   MP   1   RES
10               Size of Post set:         1
11  Disp_
12  Next
13  FRls
14  QueryMP
15
16
17
18
```

MP position number and status

If MP position	Do
returns to service with RES displayed on MAP	step 6
fails to re turn to service	step 7

5 For further assistance, contact the personnel responsible for the next level of support.

At the affected position:

6 Examine the MP VDU.

If	Do
`Please log on` is displayed	step 7
Any other message is displayed	step 5

7 Determine if all relevant MP positions have been returned to service.

If all relevant MP positions	Do
have been returned to service	step 8

Placing an MP position in service (integrated) (end)

If all relevant MP positions	Do
have not been returned to service	step 2

8 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

Removing an MP position from service (integrated)

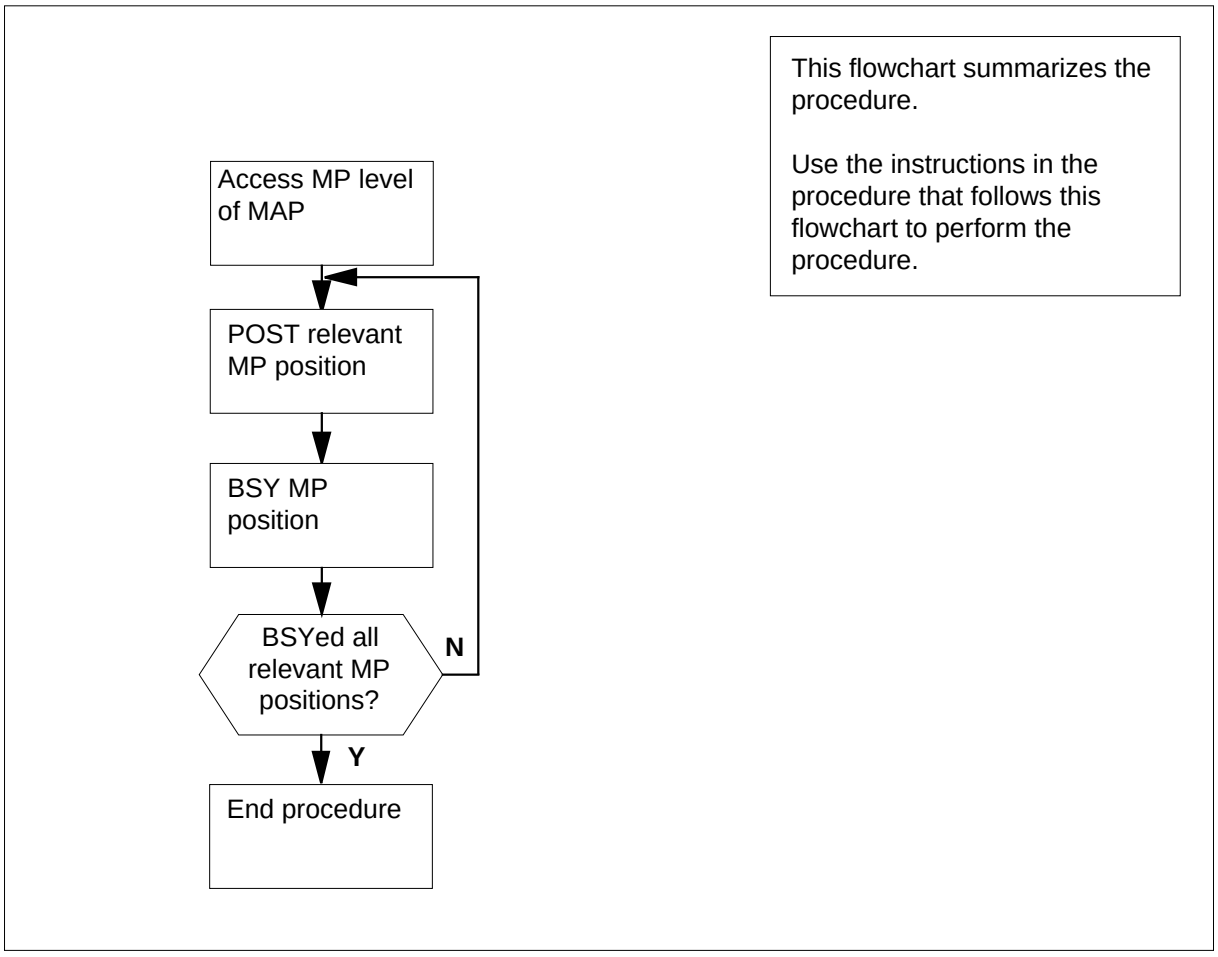
Application

Use this procedure to remove integrated Traffic Operator Position System (TOPS) Multipurpose (MP) positions from service.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Summary of Removing an MP position from service (integrated)



Removing an MP position from service (integrated) (continued)

Removing an MP position from service (integrated)

CAUTION
Possible equipment damage or service interruption
Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Using this procedure independently may cause equipment damage or service interruption.

At the MAP:

1 Access the MP level by entering:

>MAPCI;MTC;PM

and pressing the Enter key.

>POST TPC x;MP

and pressing the Enter key.

where

x
is the TPC number

2 Post the relevant MP position by entering:

>POST P nnn

and pressing the Enter key.

where

nnn
is the MP position number (0, 1, 2, or 3)

Example of a MAP response:

Removing an MP position from service (integrated) (continued)

```
CM     MS      IOD     Net     PM     CCS     LNS     Trks     Ext     EIO
 .     .        .       .       .       .       .       .       .       .

MP                SysB       ManB      OffL      CBsy      ISTb     InSv
 0  Quit     PM    0          0         10         0         0       130
 2  Post_    TPC   0          0          0         0         0         4
 3
 4              TPC 0  InSv
 5  Trnsl
 6  Tst         Status    VTB    SB    MB    PMB    RES    RTRN    INB
 7  Bsy         MP          0     0     1      0      5       0      2
 8  RTS
 9              POS   201   TPC    0   MP   1   RES
10              Size of Post set:         1
11  Disp_                                          MP position number and status
12  Next
13  FRls
14  QueryMP
15
16
17
18
```

3 Busy the MP position by entering:

>BSY

and pressing the Enter key.

Example of a MAP response:

Removing an MP position from service (integrated) (end)

```
 CM    MS   IOD    Net   PM    CCS     LNS    Trks    Ext    EIO
  .    .     .       .    .      .       .      .       .      .
MP             SysB    ManB   OffL   CBsy   ISTb     InSv
 0  Quit     PM  0       0     10      0      0       130
 2  Post_    TPC 0       0      0      0      0         4
 3
 4               TPC 0  InSv
 5  Trnsl
 6  Tst          Status    VTB    SB    MB    PMB    RES    RTRN    INB
 7  Bsy          MP          0     0     1      0      5       0       2
 8  RTS
 9               POS   201   TPC    0   MP   1    MB
10               Size of Post set:         1
11  Disp_
12  Next
13  FRls
14  QueryMP
15
16
17
18
```

4 Determine if all relevant MP positions have been removed from service.

If all relevant MP positions	Do
have been removed from service	step 5
have not been removed from service	step 2

5 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

6 Trunk module card replacement procedures

Introduction

This chapter provides card replacement procedures for the trunk module (TM). The first section in the chapter provides diagrams that show TM shelf layouts.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter “Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the TM card(s) for the replacement procedure covers.

Common procedures

This section lists common procedures that are used during the TM card replacement procedure. A common procedure is a series of steps that repeats maintenance procedures. An example of a procedure is card removal and replacement. Common procedures appear in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card you replace
- the date you replace the card
- the reason you replace the card

TM shelf layouts

Application

This procedure provides a frame layout diagram for the trunk module equipment (TME) frame. This procedure provides shelf layouts for the following:

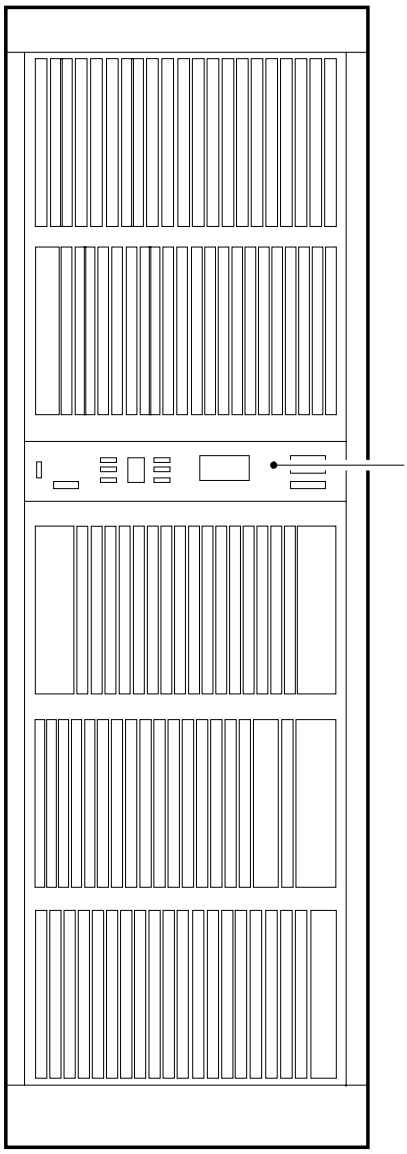
- trunk module (TM) with the NT0X70 TM processor and memory card
- TM with the NT4X65 TM group control card
- maintenance trunk module (MTM) with the NT0X70 TM processor and memory card
- MTM with the NT4X65 TM group control card
- digital-recorded announcement machine (DRAM) with the NT0X70 TM processor and memory card
- DRAM with the NT4X65 TM group control card
- service trunk module (STM)
- integrated service module (ISM) with the NTFX42 ISM controller card
- ISM with single card peripheral modules (PM)

Note 1: The frame and shelf layouts in this procedure are standard. Shelves in your office can have some difference in layout.

Note 2: Slot widths vary and depend on the PM type and the card type. Trunk, maintenance, and service cards occupy a slot that is 1 in. (2.5 cm) wide [double-slot cards are 2 in. (5.1 cm) wide]. The NT2X09 and NTFX43 power converters occupy a slot that is 2 in. wide, and NT2X06 and NT2X70 power converters occupy a slot that is 2.25 in. (5.7 cm) wide. Filler faceplates are 1 in. (2.5 cm) wide, except when the faceplates have an asterisk (*), which indicates filler faceplates are 0.75 in. (1.9 cm) wide.

TM shelf layouts (continued)

Figure Trunk module equipment frame



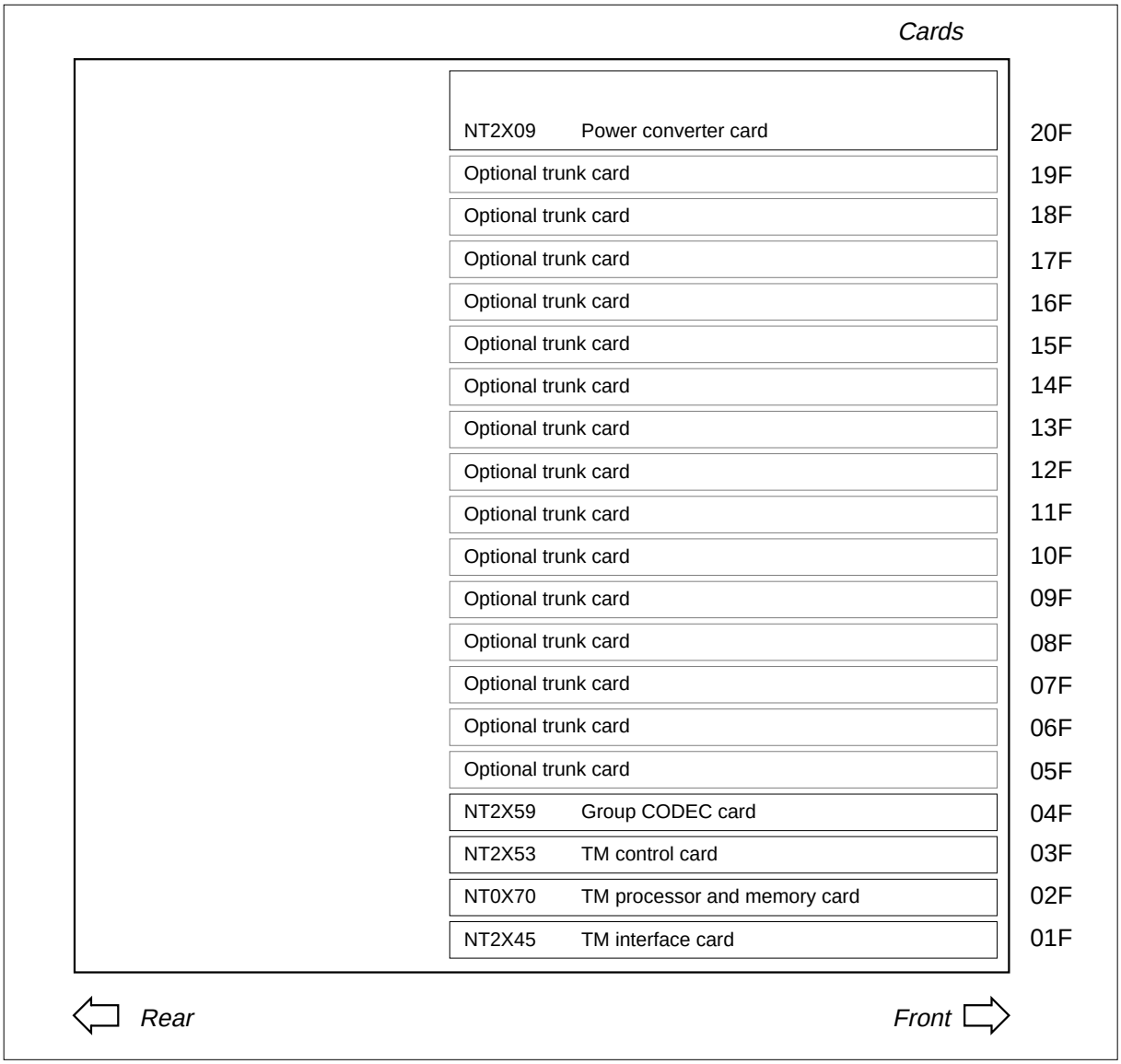
Legend:

FSP	Frame supervisory panel	STM	Service trunk module
ISM	Integrated service module	TM	Trunk module
MTM	Maintenance trunk module		

Note: This diagram shows a sample configuration.

TM shelf layouts (continued)

Figure Trunk module with NT0X70 TM processor and memory card

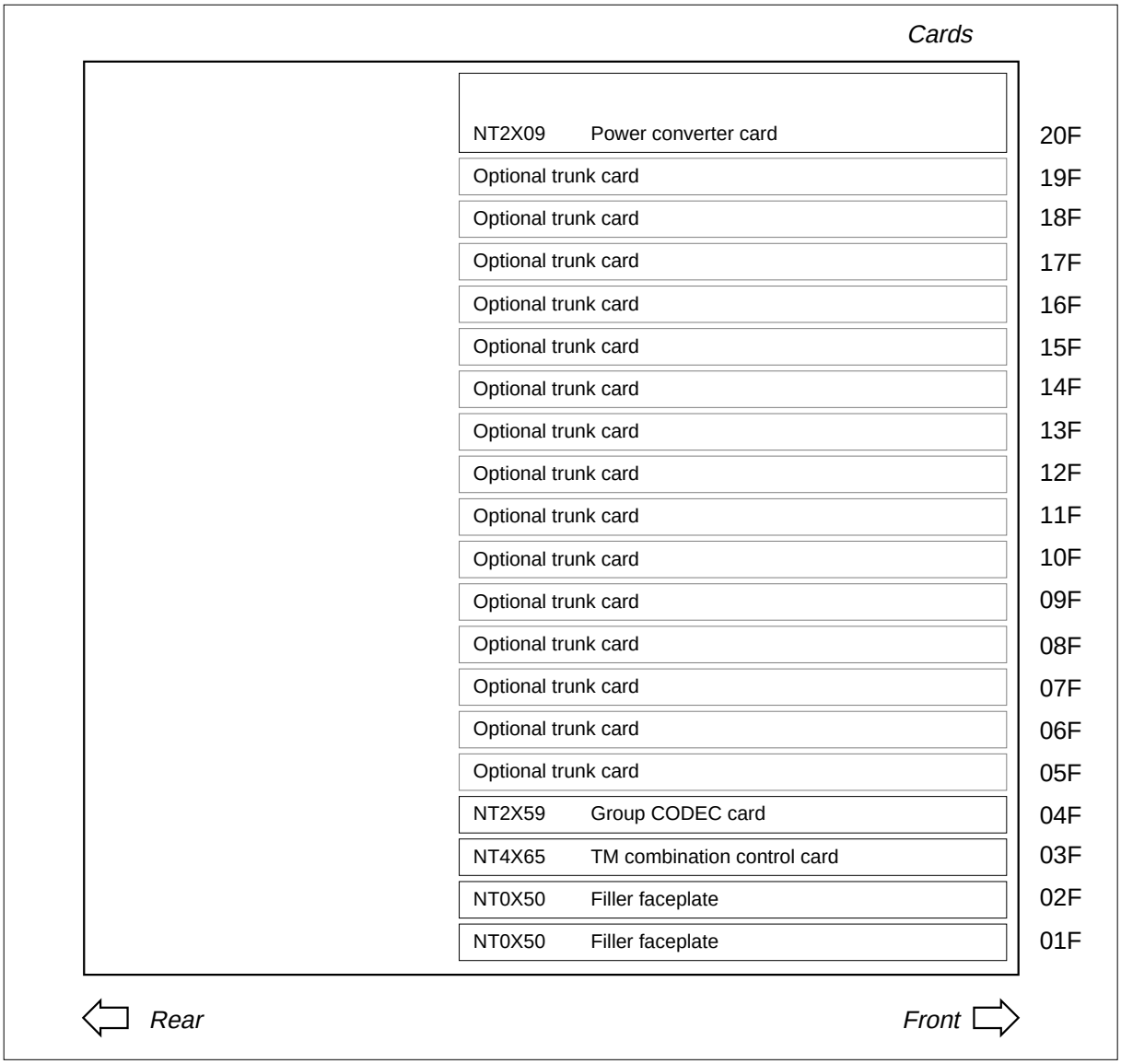


Note 1: This shelf configuration is for two-wire TM, four-wire TM, eight-wire TM, TMA, and ITM.

Note 2: Optional trunk cards for slots 05F to 19F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

Figure Trunk module with NT4X65 TM combination control card

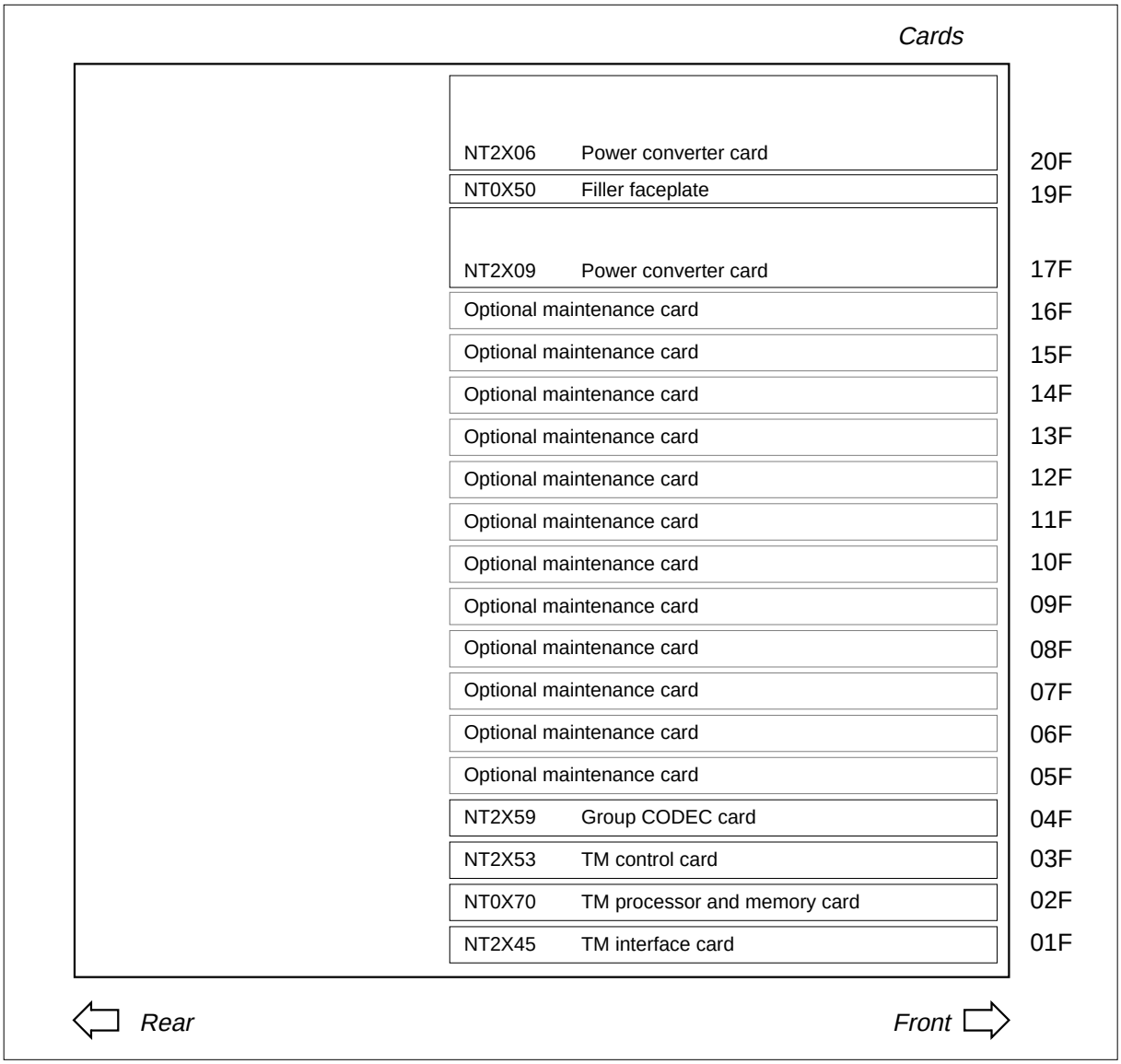


Note 1: This shelf configuration is for two-wire TM, four-wire TM, eight-wire TM, TMA, and ITM.

Note 2: Optional trunk cards for slots 05F to 19F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

Figure Maintenance trunk module with NT0X70 TM processor and memory card

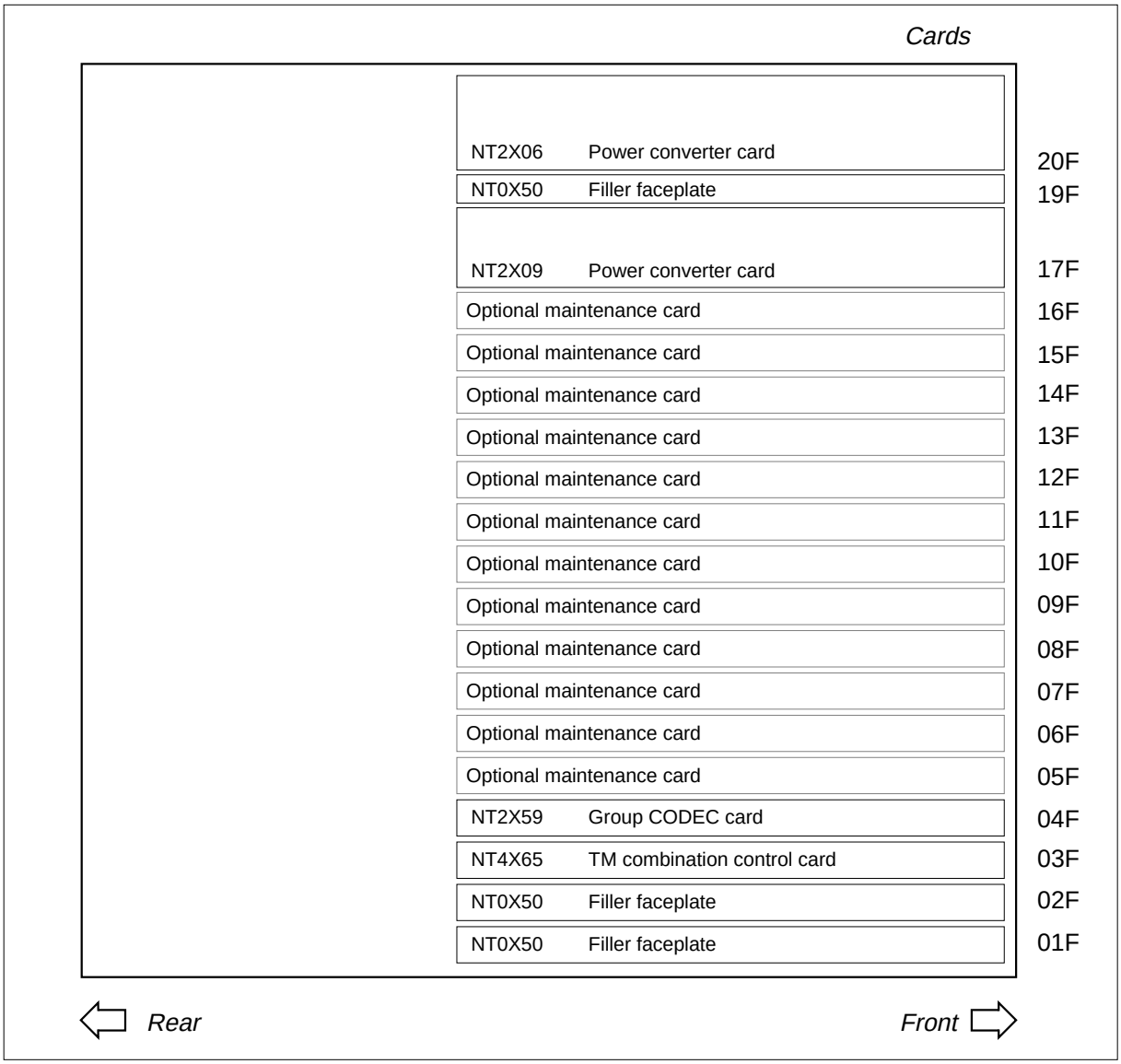


Note 1: This shelf configuration is also for international MTM (IMTM).

Note 2: Optional trunk cards for slots 05F to 16F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

Figure Maintenance trunk module with NT4X65 TM control card



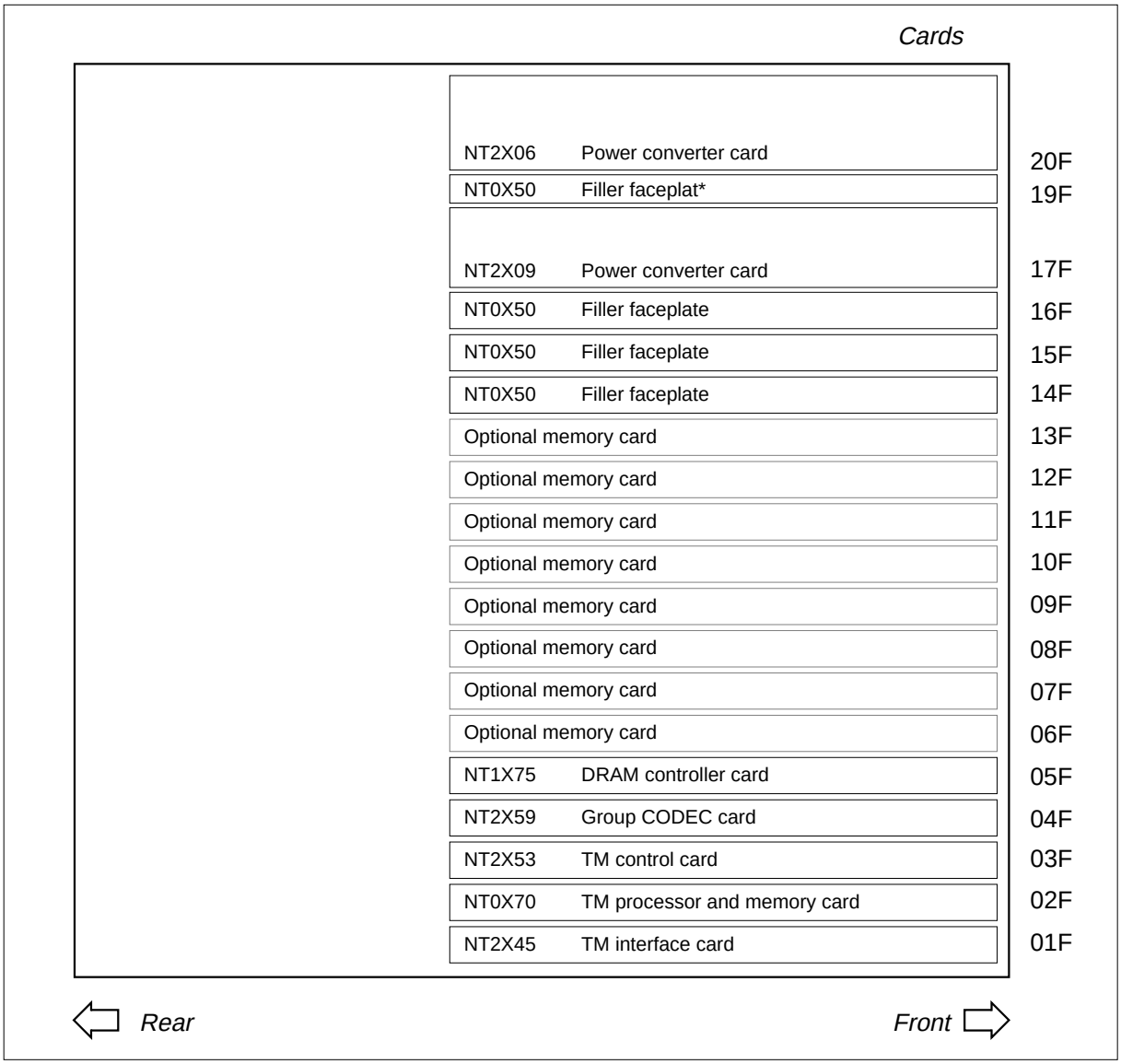
Note 1: This shelf configuration is also for IMTM.

Note 2: Optional trunk cards for slots 05F to 16F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

Note 3: When service cards are present, the packaged trunk module (PTM) is identical to the MTM with the NT4X65 TM combination control card. When service cards are not present, these PMs are not identical. On MAP displays, the system refers to PTMs as MTMs.

TM shelf layouts (continued)

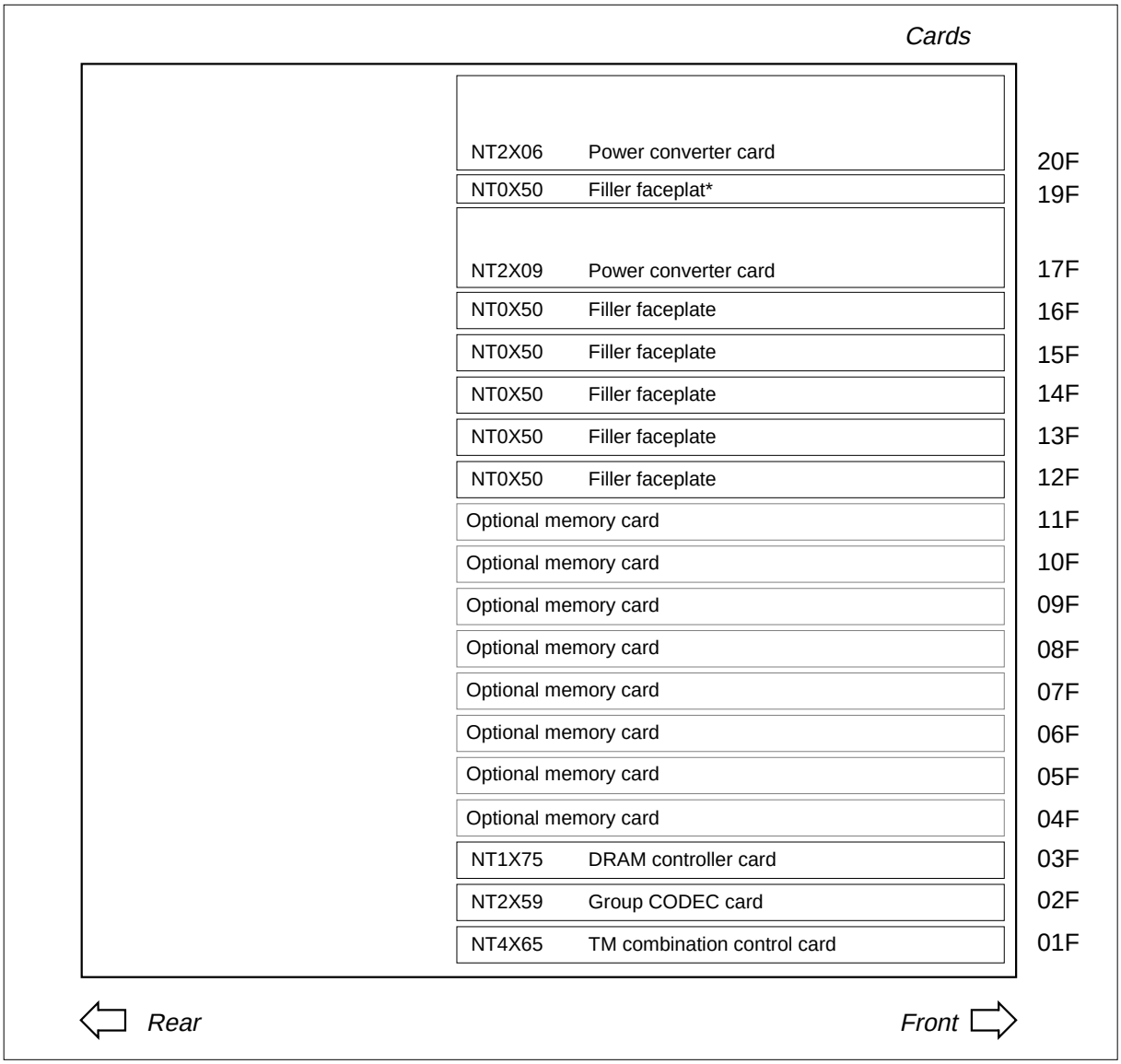
Figure Digital recorded announcement machine with NT0X70 TM processor and memory card



Note: Optional trunk cards for slots 06F to 13F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

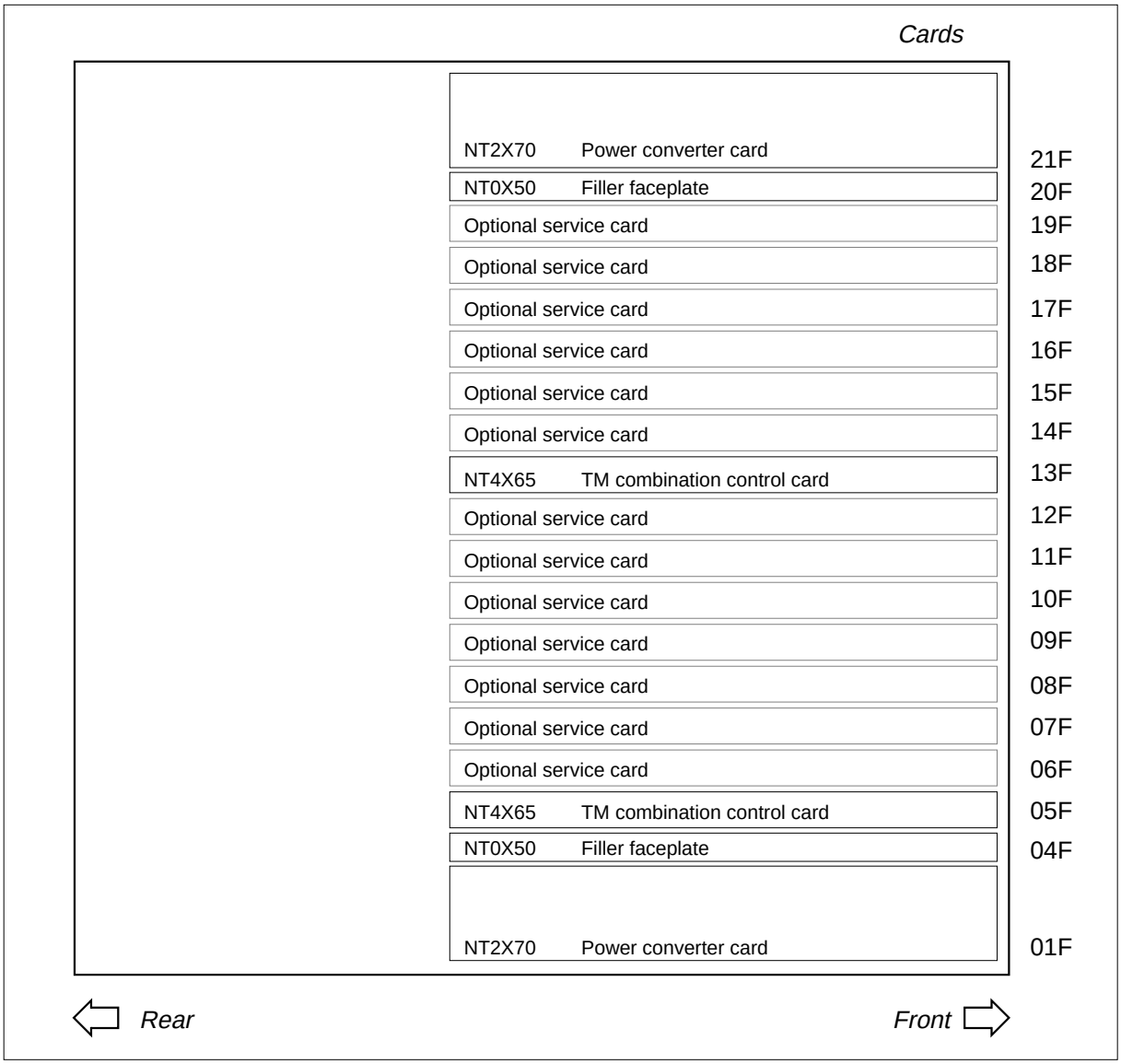
Figure Digital recorded announcement machine with NT4X65 TM control card



Note: Optional trunk cards for slots 04F to 11F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

Figure Service trunk module

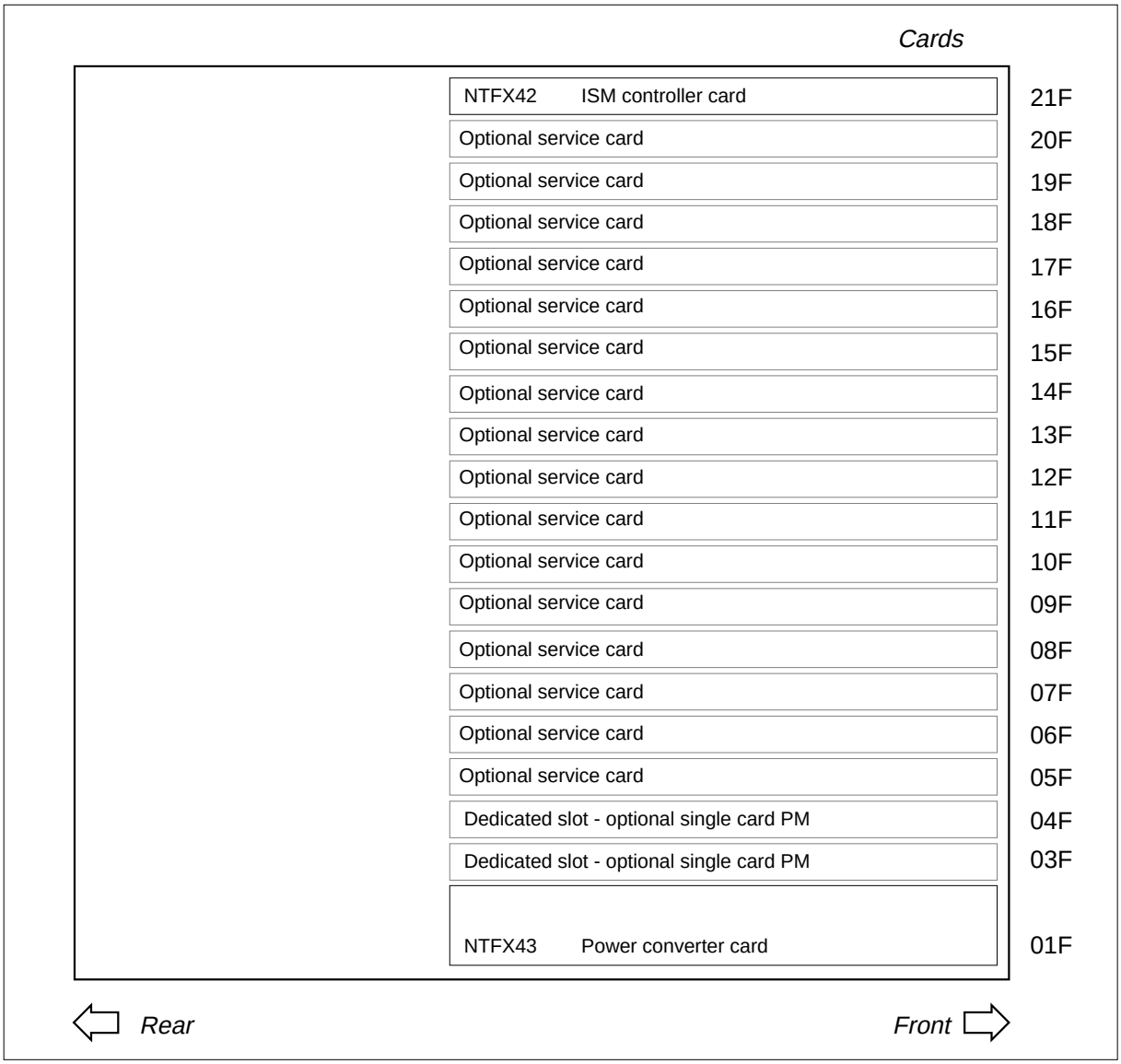


Note 1: Even-numbered STMs are in slots 01F to 12F. Odd numbered STMs are in slots 13F to 23F.

Note 2: Optional trunk cards for slots 06F to 12F and 14F to 19F are in the table “Optional cards for TM, MTM, STM, and ISM” found in this document after these figures.

TM shelf layouts (continued)

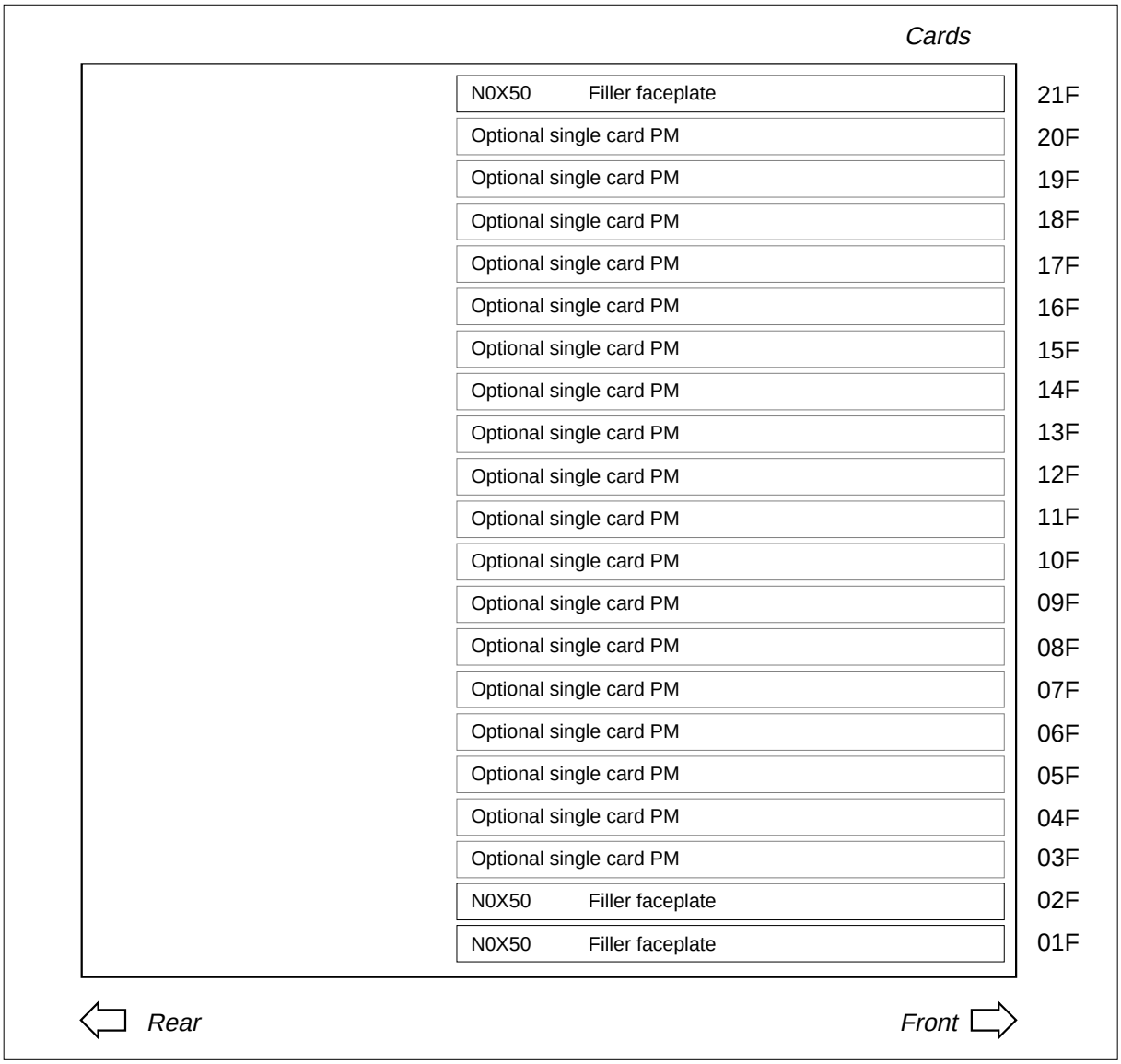
Figure Integrated service module with NTFX42 ISM controller card



Note: Optional trunk cards for slots 03F to 04F and 05F to 20F are in the table "Optional cards for TM, MTM, STM, and ISM" found in this document after these figures.

TM shelf layouts (continued)

Figure ISM with single card peripheral modules



Note: Single card PMs can be the NT1X80 Enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 six-port conference trunk module card.

TM shelf layouts (continued)

The following tables list the cards available in TM, MTM, STM, and ISM.

Control cards for TM, MTM, STM, and ISM

PEC		Card name	TM	MTM	PTM	STM	ISM
NT0X70	AA	TM processor card	X	X			
NT1X75	AA	Digital recorded announcement (DRA) processor card		X		X	
	BA	Enhanced DRA controller card		X		X	
	DA	A-law DRA processor card		X		X	
NT2X06	AB	Power converter card	X	X	X		
NT2X09	AA	Power converter card	X	X	X		
NT2X45	AB	TM interface card	X	X			
NT2X53	AA	TM control card	X	X			
NT2X59	AA	Group CODEC and tone card	X	X			
NT2X70	AA	Power converter card				X	
	AB	Power converter card				X	
	AC	Power converter card				X	
	AD	Power converter card				X	
	AE	Power converter card				X	
NT4X65	AA	TM combination control card	X	X	X	X	
NTFX42	AA	ISM controller card					X
NTFX43	AA	ISM DC converter card					X

Optional cards for TM, MTM, STM, and ISM (Sheet 1 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
NT0X10	AA	Miscellaneous scan detector card		X	X	X	X
NT1X00	AA	102 test trunk card		X	X	X	
	AB	102 test trunk card		X	X	X	X
	AC	Receiver-off-hook tone card		X	X	X	X

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 2 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	AD	Receiver off-hook tone card		X	X	X	X
	AE	International 102 test trunk card		X	X	X	X
	AF	102 terminating -10dB test line card		X	X	X	X
	AG	102 terminating -20dB test line card		X	X	X	X
	AH	102 terminating -15dB test line card		X	X	X	X
	KA	102 test trunk card (China)		X	X	X	X
NT1X31	AA	Conference circuit card		X	X	X	
NT1X54	AA	Jack ended test trunk card	X				X
NT1X76	AA	Digital recorded announcement standard announcements - English card		X	X	X	
	AB	U.S. Bell standard announcements card		X	X	X	
	AE	Digital recorded announcement (DRA) automatic coin toll service (ACTS) card		X	X	X	
	AF	Digital recorded announcement PROM AOSS - VR English card 1		X	X	X	
	AG	Digital recorded announcement PROM AOSS - VR English card 2		X	X	X	
	AH	Digital recorded announcement PROM ACCS English card		X	X	X	
	AJ	Digital recorded announcement PROM card CMS/CLASS PH I and II (1 of 23 - English announcements)		X	X	X	
	AK	Digital recorded announcement PROM card CMS/CLASS PH I and II (2 of 23 - English announcements)		X	X	X	
	AM	Digital recorded announcement PROM card CFRA English version		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 3 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	AP	Digital recorded announcement PROM card CMS/CLASS PH I and II (3 of 23 - English announcements)		X	X	X	
	AQ	Digital recorded announcement PROM card CMS/CLASS PH I and II (4 of 23 - English announcements)		X	X	X	
	AR	Digital recorded announcement PROM card CMS/CLASS PH I and II (5 of 23 - English announcements)		X	X	X	
	AS	Digital recorded announcement PROM card CMS/CLASS PH I and II (6 of 23 - English announcements)		X	X	X	
	AT	Digital recorded announcement PROM card CMS/CLASS PH I and II (7 of 23 - English announcements)		X	X	X	
	AU	Digital recorded announcement PROM card CMS/CLASS PH I and II (8 of 23 - English announcements)		X	X	X	
	AV	Digital recorded announcement PROM card CMS/CLASS PH I and II (9 of 23 - English announcements)		X	X	X	
	AW	Digital recorded announcement PROM card CMS/CLASS PH I and II (10 of 23 - English announcements)		X	X	X	
	BA	Digital recorded announcement standard announcements card - French		X	X	X	
	BF	Digital recorded announcement PROM AOSS - VR French card 1		X	X	X	
	BG	Digital recorded announcement PROM AOSS - VR French card 2		X	X	X	
	BH	Digital recorded announcement PROM ACCS French card		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 4 of 13)

PEC	Card name	TM	MTM	PTM	STM	ISM
BJ	Digital recorded announcement PROM card CMS/CLASS PH I and II (1 of 10 - French announcements)		X	X	X	
BK	Digital recorded announcement PROM card CMS/CLASS PH I and II (2 of 10 - French announcements)		X	X	X	
BP	Digital recorded announcement PROM card CMS/CLASS PH I and II (3 of 10 - French announcements)		X	X	X	
BQ	Digital recorded announcement PROM card CMS/CLASS PH I and II (4 of 10 - French announcements)		X	X	X	
BR	Digital recorded announcement PROM card CMS/CLASS PH I and II (5 of 10 - French announcements)		X	X	X	
BS	Digital recorded announcement PROM card CMS/CLASS PH I and II (6 of 10 - French announcements)		X	X	X	
BT	Digital recorded announcement PROM card CMS/CLASS PH I and II (7 of 10 - French announcements)		X	X	X	
BU	Digital recorded announcement PROM card CMS/CLASS PH I and II (8 of 10 - French announcements)		X	X	X	
BV	Digital recorded announcement PROM card CMS/CLASS PH I and II (9 of 10 - French announcements)		X	X	X	
BW	Digital recorded announcement PROM card CMS/CLASS PH I and II (10 of 10 - French announcements)		X	X	X	
CA	Mechanized calling card service standard announcement card		X	X	X	
GA	Digital recorded announcement PROM card CMS/CLASS PH I and II (11 of 23 - English announcements)		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 5 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	GB	Digital recorded announcement PROM card CMS/CLASS PH I and II (12 of 23 - English announcements)		X	X	X	
	GC	Digital recorded announcement PROM card CMS/CLASS PH I and II (13 of 23 - English announcements)		X	X	X	
	GE	Digital recorded announcement PROM card CMS/CLASS PH I and II (14 of 23 - English announcements)		X	X	X	
	GF	Digital recorded announcement PROM card CMS/CLASS PH I and II (15 of 23 - English announcements)		X	X	X	
	GG	Digital recorded announcement PROM card CMS/CLASS PH I and II (16 of 23 - English announcements)		X	X	X	
	GH	Digital recorded announcement PROM card CMS/CLASS PH I and II (17 of 23 - English announcements)		X	X	X	
	GJ	Digital recorded announcement PROM card CMS/CLASS PH I and II (18 of 23 - English announcements)		X	X	X	
	GK	Digital recorded announcement PROM card CMS/CLASS PH I and II (19 of 23 - English announcements)		X	X	X	
	GL	Digital recorded announcement PROM card CMS/CLASS PH I and II (20 of 23 - English announcements)		X	X	X	
	GM	Digital recorded announcement PROM card CMS/CLASS PH I and II (21 of 23 - English announcements)		X	X	X	
	HC	Digital recorded announcement PROM card CMS/CLASS PH I and II (22 of 23 - English announcements)		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 6 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	HD	Digital recorded announcement PROM card CMS/CLASS PH I and II (23 of 23 - English announcements)		X	X	X	
	JA	Digital recorded announcement machine card CMS/CLASS automatic recall date and time (1 of 2 - English version)		X	X	X	
	JB	Digital recorded announcement machine card CMS/CLASS automatic recall date and time (2 of 2 - English version)		X	X	X	
NT1X77	AA	Digital recorded announcement RAM card		X	X	X	
NT1X79	AA	Digital recorded announcement electrically erasable PROM card		X	X	X	
NT1X80	AA	Enhanced digital recorded announcement machine card (4-minute EDRAM card)		X	X	X	X
NT1X80	BA	16-minute EDRAM card		X	X	X	X
NT1X81	AA	six-port conference trunk module card		X	X	X	X
	BA	six-port conference trunk module card (Japan)		X	X	X	X
NT1X90	AA	Test signal generator 1 card		X	X	X	X
	BA	Test signal generator card (A-law)		X	X	X	X
NT2X01	AA	Automatic identification of outward dialing data receiver C25 card		X	X	X	X
NT2X10	AA	Line test unit analog card		X	X	X	
	AB	Line test unit analog card		X	X	X	
	AC	Line test unit analog card		X	X	X	
	BA	Multiline test unit, analog card (North American)		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 7 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
NT2X10	BB	Multiline test unit, analog card		X			X
NT2X11	AA	Line test unit digital card		X	X	X	
	AC	Line test unit digital card		X	X	X	
	AD	Line test unit digital card with battery		X	X	X	
	BA	Multiline test unit control card (North American)		X	X	X	X
NT2X43	AB	DMS-100 family switching systems office alarm circuit 3 card		X	X	X	
NT2X47	AA	Transmission test module control signal generator card		X	X	X	
	AB	Transmission test unit controller card		X	X	X	
	AC	Transmission test unit controller card		X	X	X	
	AD	Transmission test unit controller card		X	X	X	X
	BA	Transmission test unit controller (A-law) card		X	X	X	X
NT2X48	AA	Digital four-channel multifrequency receiver card		X	X	X	
	AB	Digital four-channel receiver card		X	X	X	
	BA	Digital four-channel multifrequency receiver card		X	X	X	X
	BB	Digital four-channel dual-tone multifrequency receiver card		X	X	X	X
	CA	A-law multifrequency receiver card (international—Turkey)		X	X	X	X
	CB	Digitone receiver card		X	X	X	X
	CC	A-law dual-tone multifrequency receiver card (U.K.)		X	X	X	X
NT2X50	AB	Minibar driver card		X	X	X	
NT2X55	AA	Signal distribution card, type II		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 8 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
NT2X56	AA	Transmission test module digital filter card		X	X	X	
	AB	Transmission test module digital filter card		X	X	X	X
	BA	Digital filter (A-law TTU) card		X	X	X	X
NT2X57	AA	Signal distribution card, type I		X	X	X	X
	AB	Signal distribution card with office alarm unit monitor circuit		X	X	X	X
NT2X65	AA	CAMA position signaling circuit card	X	X	X	X	X
	AB	CAMA position signaling circuit card	X	X	X	X	X
	AD	CAMA position signaling circuit card	X	X	X	X	X
NT2X66	AA	CAMA suspension and call waiting, loop, or E&M card	X	X	X	X	X
NT2X71	AA	Transmission termination trunk card		X	X	X	X
	AB	Transmission termination trunk card		X	X	X	X
NT2X72	AA	four-wire E&M (type D1) interface, 600 ohm trunk card	X				X
	AB	four-wire E&M (type D1) 600 ohm echo supervisory controller card	X				X
	AC	four-wire E&M (type D1) echo control, low-gain trunk card	X				X
	BA	four-wire trunk 600 ohm DC5A (UK) card	X				X
	BB	CA1A trunk four-wire 600 ohm (Spain project) card	X				X
NT2X75	AA	Loop around test line card		X	X	X	X
NT2X77	AA	Compromise balance network card (900 ohm)		X	X	X	X

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 9 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	AB	Compromise balance network 600 ohm card		X	X	X	X
	AC	Compromise balance network 900 ohm fixed card		X	X	X	X
	AD	Compromise balance network 600 ohm fixed card		X	X	X	X
	BA	Compromise balance network 600 ohm complex card		X	X	X	X
NT2X78	AA	Trunk four-wire single-frequency circuit card	X				X
NT2X80	AA	Precision balanced network H88 card		X	X	X	
NT2X81	AA	Trunk two-wire E&M (type D1) trunk circuit card, 900 ohm	X				X
	AB	Trunk two-wire E&M (type D1) trunk circuit card, 600 ohm	X				X
	AC	two-wire trunk circuit card, 600 ohm DC5A	X				
	BA	two-wire DCA5 tie trunk card	X				X
NT2X82	AA	two-wire incoming, loop, reverse battery trunk circuit card	X				X
NT2X83	AA	two-wire outgoing, dial pulse, reverse battery supervisory remote-make-busy 900 ohm trunk card	X				X
NT2X84	BA	Trunk two-way public switched telephone network Earth calling card	X				X
NT2X85	AA	Recording completing HI-LO, T&R, coin, trunk circuit card	X				X
NT2X86	AA	two-wire incoming loop, third wire coin, SX ring, tool switch trunk circuit card	X				X

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 10 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
NT2X87	AA	Precision balanced network D66		X	X	X	
NT2X88	AA	Trunk four-wire E&M 600 ohm circuit card	X				X
NT2X90	AA	Incoming/outgoing test trunk card	X				
	AB	Incoming/outgoing test trunk card	X				
	AC	Incoming/outgoing test trunk card	X				
	AD	Incoming/outgoing test trunk card	X				X
NT2X92	AA	Reverse battery card	X				X
NT2X95	AA	Two-wire PBX trunk DID/DOD card	X				X
	BA	Trunk four-way public switched telephone network DDI card	X				X
	BB	Two-wire DDO 600 ohm trunk		X			X
NT2X96	AA	Pulse code modulation level meter card		X	X	X	X
	BA	Test signal generator card		X	X	X	X
NT2X98	AA	two-wire incoming MF/DP RB card	X				X
	AB	two-wire incoming MF/DP RB card	X				X
NT3X02	AA	TOPS control processor card		X	X	X	
	BA	TOPS controller flash dial-up auto quote processor card		X	X	X	X
NT3X03	AA	TOPS digital signal processor card		X	X	X	X
NT3X04	AA	Incoming test trunk for AECO local test board interface card	X				X
NT3X05	AA	Digital data line card		X	X	X	
	AB	Modified digital data line card		X	X	X	
	AC	Digital data line card		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 11 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
NT3X06	AA	Outgoing trunk to 3C, 3CL, or AE31 switchboard, sleeve lead circuit card	X				X
	AB	Two-wire outgoing trunk card	X				X
NT3X07	AA	Incoming trunk to 3C, 3CL, or AE31 switchboard, sleeve lead circuit card	X				X
NT3X08	AA	Digitone transceiver card		X	X	X	
	AB	Coin detection card		X	X	X	X
NT3X09	AA	Remote metallic test access card		X	X	X	
	BA	8x8 metallic test access card		X	X	X	X
NT3X67	AA	Six-party conference circuit		X	X	X	
	BA	Six-party conference circuit card (A-law)		X	X	X	
	BB	Six-party conference circuit card with TBI tone (Turkey)		X	X	X	
NT3X68	AA	Pre-empt, permanent signal, and conference tone generator card		X	X	X	
	AB	Dual-tone multifrequency generator circuit card		X	X	X	
	AC	Call waiting tone generator card		X	X	X	
	BA	Tone generator card		X	X	X	
	BB	Multifrequency tone detector generator card (UK)		X	X	X	
	BC	Call waiting tone generator card (UK)		X	X	X	
NT3X82	AA	Office alarm unit dead system with unique audibles card		X	X	X	
	AB	Office alarm unit dead system with common audibles card		X	X	X	
	AC	Office alarm unit dead system with unique audibles card		X	X	X	

TM shelf layouts (continued)

Optional cards for TM, MTM, STM, and ISM (Sheet 12 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	AD	Office alarm unit dead system with common audibles card		X	X	X	
	AE	Office alarm unit dead system with unique audibles card		X	X	X	
	AF	Office alarm unit system with unique audibles card		X			X
	AG	Office alarm unit dead system with common audibles card		X			X
	AH	Office alarm unit dead system with unique audibles card		X			X
	AJ	Office alarm unit dead system with common audibles card		X			X
	AK	Office alarm unit dead system with unique audibles card		X			X
NT3X83	AA	Office alarm unit alarm transfer card		X	X	X	
	AB	Office alarm unit alarm transfer card		X	X	X	
	AC	Office alarm unit alarm transfer card		X			X
	AD	Office alarm unit alarm transfer card		X			X
NT3X84	AA	Office alarm unit alarm sending card		X	X	X	
	AB	Office alarm unit alarm sending card		X			X
NT3X85	AA	Office alarm unit alarm group card		X	X	X	X
	AB	Office alarm unit alarm group card		X			X
NT3X91	AA	Remote office test line circuit card	X				X
NT4X23	AA	Digital test unit card		X	X	X	X
NT4X45	AA	Enhanced digital test unit card		X			X
NT4X97	AA	Metallic test unit controller card		X	X	X	X
NT4X98	BA	Metallic test unit analog card		X	X	X	
	BB	Metallic test unit analog card		X	X	X	

TM shelf layouts (end)

Optional cards for TM, MTM, STM, and ISM (Sheet 13 of 13)

PEC		Card name	TM	MTM	PTM	STM	ISM
	BC	Metallic test unit analog card		X			X
NT5X03	AA	CCITT R1 trunk circuit card	X				X
NT5X04	AA	CCITT #5 trunk circuit card	X				X
	AB	Trunk circuit card	X				X
NT5X06	AA	CCITT #6 trunk circuit card	X				X
NT5X25	AA	One-way CO trunk circuit card	X				X
NT5X29	AA	Common channel interoffice signaling continuity checker card		X	X	X	X
	AB	Service observing circuit card		X	X	X	X
	AC	Audio, answer, detect Digitone multifrequency card		X	X	X	X
	BA	A-law circuit card		X	X	X	X
NT5X30	AA	101 communication test line circuit card	X	X	X	X	X
	BA	101 communication test line circuit card	X	X	X	X	X

Control complex cards in trunk and service modules

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves or frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT0X70	AA	TM processor card	maintenance trunk module (MTM), trunk module (TM)
NT1X75	AA	Digital recorded announcement processor	MTM with DRAM, service trunk module (STM) with DRAM
	BA	Enhanced digital recorded announcement controller	MTM with DRAM, STM with DRAM
	DA	A-law digital recorded announcement processor	MTM with DRAM, STM with DRAM
NT2X45	AB	TM interface card	MTM, TM
NT2X53	AA	TM control card	MTM, TM
NT2X59	AA	Group CODEC and tone card	MTM, TM
NT4X65	AA	TM combination control card	MTM, STM, TM
NTFX42	AA	ISM controller card	integrated service module (ISM)

Note: Shelves have the NT4X65 card or the NT0X70, NT2X45, and NT2X53 cards. The NT4X65 card combines the functionality of the NT0X70, NT2X45, and NT2X53 cards.

Control complex cards in trunk and service modules (continued)

Common procedures

This procedure refers to the following common procedures.

- *Replacing a card*
- *Load a PM*

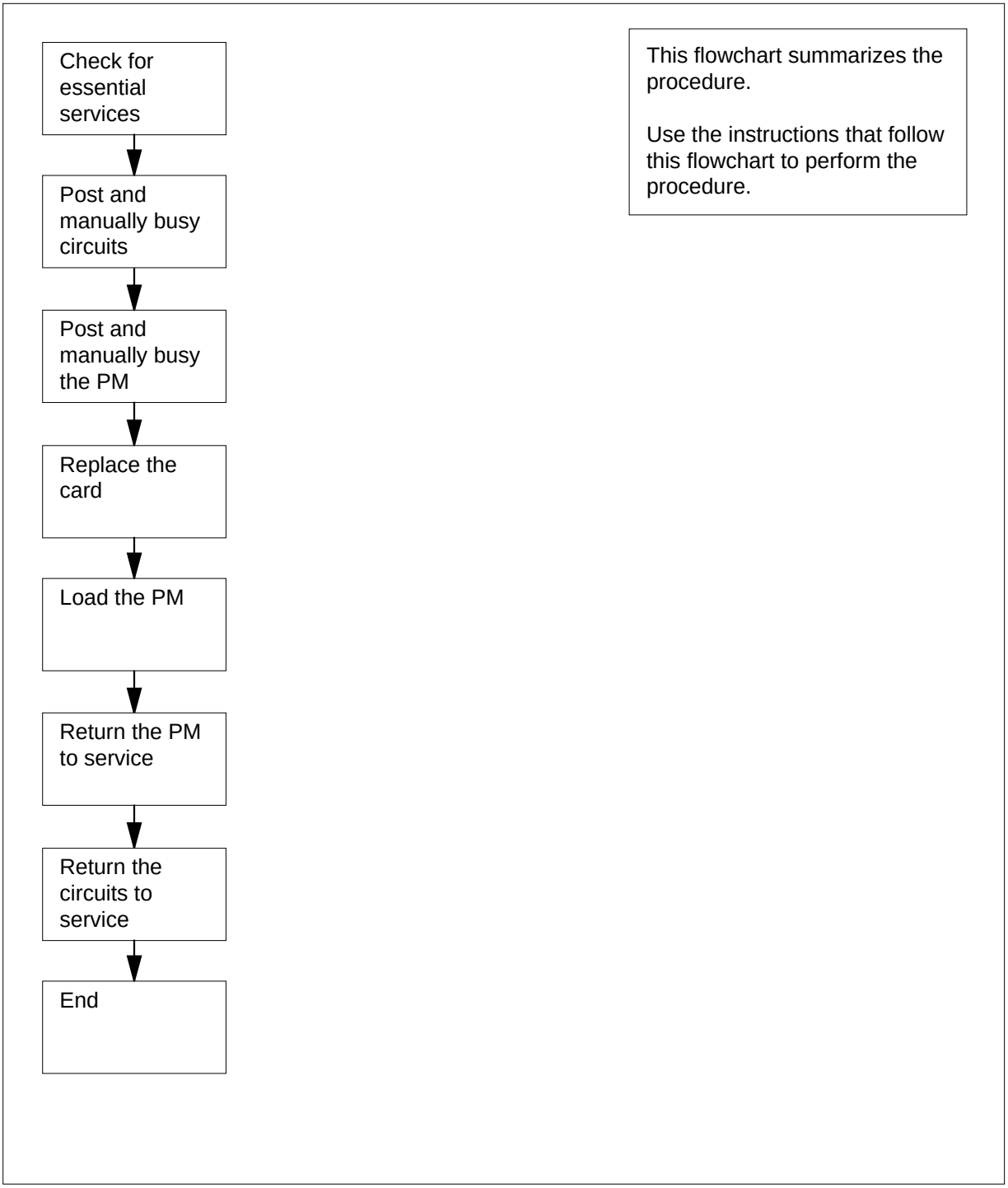
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Control complex cards in trunk and service modules (continued)

Summary of replacing Control complex cards in trunk and service modules



Control complex cards in trunk and service modules (continued)

Replacing Control complex cards in trunk and service modules

At the MAP terminal

1

WARNING
Loss of essential service
This procedure includes directions to remove an MTM, STM, TM, or ISM from service. Removal of these PM resources can degrade service. Do not perform this procedure if essential services use these PM resources.

WARNING
Loss of service
This procedure includes directions to remove an ISM, MTM, STM, or TM from service. Removal of these PM resources can degrade service. Perform this procedure only if necessary to restore out-of-service components. If you do not need to restore out-of-store components, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card you remove.

2 Contact office records or operating company personnel to verify that necessary services that do not use PM resources.

If necessary services	Do
use PM resources and the PM is in service	step 30
use PM resources and the PM is not in service	step 3
do not use PM resources	step 3

3 To access the PM level of the MAP display, type

```
>MAPCI;MTC;PM
```

and press the Enter key.

Example of a MAP display:

Control complex cards in trunk and service modules (continued)

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
 PM                    1                6                          102
```

4 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
 PM                    1        0        6        0        0      102
 MTM                   1        0        0        0        0        9

MTM      0     SysB
```

5 Determine the state of the PM.

Note: The PM state is on the right of the PM number in the MAP display. In the example display in step 10, the PM state is system busy (SysB).

If the PM	Do
is `Offl`	step 31
is other than listed here	step 6

6 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

Example of a MAP display:

```
POST         DELQ             BUSYQ         DIG
TTP  6-013
CKT TYPE      PM NO.           COM LANG      STA S R  DOT TE RESULT
```

7 To post the circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

Control complex cards in trunk and service modules (continued)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
POST    17  DELQ            BUSYQ        DIG
TTP  6-013
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
CONF6    MTM    0  0   CF6P            0  IDL


post p MTM 0
LAST CKT = 17
SHORT CLLI IS: CF6P
OK,CKT POSTED
```

8 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

Example of a MAP display:

```
POST    18  DELQ            BUSYQ  A  6  DIG
TTP  6-027
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT


BSYQ ALL IDLE

bsy all
OK,POST SET IS SET IN BSYQ
```

9 Wait until all circuits are manually busy. When you manually busy circuits you remove the circuits from the busy queue. Proceed to the next step.

Note: The digit to the right of the BUSYQ header indicates the number of circuits still in use. When a circuit becomes available, the circuit becomes manually busy and the number in the queue decreases by one. A blank field indicates that all circuits are manual busy.

10 To access the PM level of the MAP display, type

>PM

and press the Enter key.

11 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Control complex cards in trunk and service modules (continued)

12 Determine the state of the PM.

Note: The PM state appears on the right of the PM number in the MAP display. In the example display in step 10, the PM state is system busy (SysB).

If the PM	Do
is ManB	step 14
is other than listed here	step 13

13 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                 58       1       6      14      12      17
 MTM                 0       1       0       0       0       9

MTM     0    ManB
bsy
MTM 0 Bsy
OK.
```

At the shelf

14

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Make sure that the replacement card and the card that you replaced have the same switch settings.

15 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 16

Control complex cards in trunk and service modules (continued)

If a maintenance procedure	Do
did not direct you to this procedure	step 17

16 Return to the maintenance procedure that sent you to this procedure. Continue as directed.

At the MAP terminal

17 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
MTM 0 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 19
failed	step 18

18 Perform the procedure *Loading a PM* in this document to load the PM. Complete the procedure and return to this point.

19 To return the PM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
MTM 0 Rts Passed
```

If the RTS command	Do
passed, and the PM is `InSv`	step 21
passed, and the PM is `ISTb` with a card list	step 20
failed	step 32

20 Record the messages on the MAP display for future reference.

21 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

Control complex cards in trunk and service modules (continued)

22 To post the circuits for the PM, type

>POST TM pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

23 To return all circuits to service, type

>RTS ALL

and press the Enter key.

Example of a MAP response:
RTS OK

24 Determine the results of the PM RTS in step 19.

If the RTS command	Do
passed unconditionally	step 33
passed, but in-service tests failed and the system generated a card list	step 25

25 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

26 To return all circuits to service, type

>RTS ALL

and press the Enter key.

27 To access the PM level of the MAP display, type

>PM

and press the Enter key.

28 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Control complex cards in trunk and service modules (end)

29 To perform an in-service test on the PM, type

>TST

and press the Enter key.

Example of a MAP response:

```
MTM     0    ISTb           TSTFAIL

InSvce Tests Initiated
MTM 0 Tst Failed
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
 HOST  00  D06  TME  00   04  MTM : 000      04       2X59
 HOST  00  D06  TME  00   04  MTM : 000      02       0X70
Following ISTb Exist :
Test Failed
```

If the TST command	Do
passed	step 33
failed	step 32

30 Contact the next level of support to determine how to handle essential services. Continue as directed by operating company personnel.

31 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

32 For additional help, contact the next level of support.

33 The procedure is complete.

Enhanced digital test unit or digital test unit cards in trunk and service modules

Application

Use this procedure to replace the following cards in the shelves or frames identified in the following table.

PEC	Suffixes	Cardname	Shelf/frame name
NT4X23	AA	Digital test unit (DTU) card	integrated service module (ISM), maintenance trunk module (MTM), peripheral trunk module (PTM), service trunk module (STM)
NT4X45	AA	Enhanced digital test unit (EDTU) card	MTM, ISM

Common procedures

This procedure refers to the following common procedure.

- *Replacing a card*

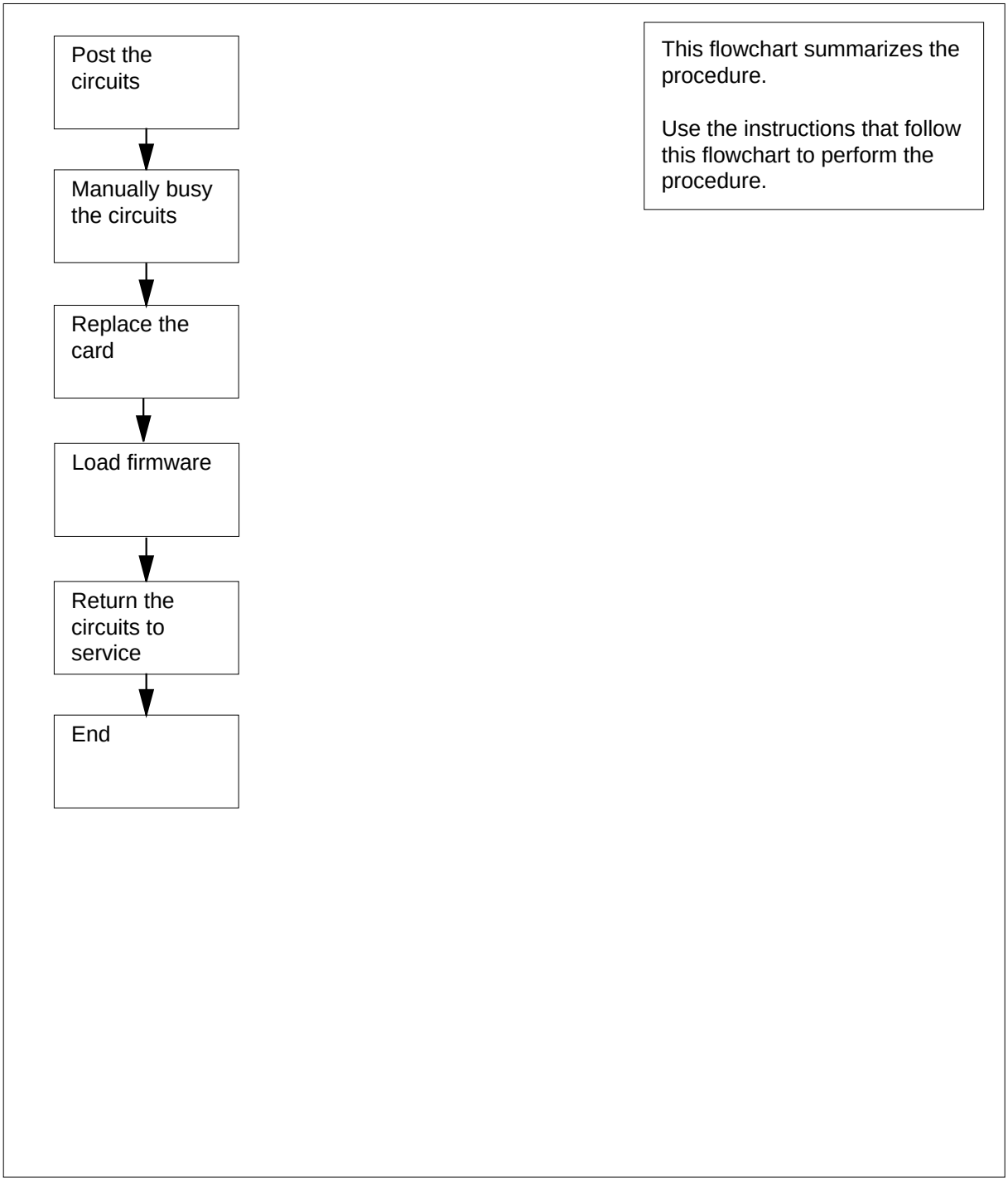
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

The procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Enhanced digital test unit or digital test unit cards in trunk and service modules (continued)

Summary of Replacing Enhanced digital test unit or digital test unit cards in trunk and service modules



Enhanced digital test unit or digital test unit cards in trunk and service modules (continued)

Replacing Enhanced digital test unit or digital test unit cards in trunk and service modules

At the MAP terminal

1

CAUTION
Loss of essential services
Do not perform this procedure if essential services use the circuits for the card that you replace.

CAUTION
Loss of service
This procedure includes directions to remove from service one or more circuits for a circuit card. Perform this procedure only when you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card you remove has the same product engineering code (PEC) and PEC suffix as the card that you remove.

2 Determine from office records or operating company personnel the shelves or frames where the card resides and the circuits associated with the card. Record the starting and ending circuit number for the card. The digital test unit card contains two circuits and the enhanced digital test unit contains four circuits.

3 To access the TTP level of the MAP display, type

`>MAPCI;MTC;TRKS;TTP`

and press the Enter key.

Example of a MAP display:

```
POST          DELQ          BUSYQ          DIG
TTP  6-013
CKT TYPE      PM NO.        COM      LANG  STA S R  DOT TE  RESULT
```

Enhanced digital test unit or digital test unit cards in trunk and service modules (continued)

4 To post all card circuits, type

>POST P pm_type pm_no ckt_no_x TO ckt_no_y

and press the Enter key.

where

pm_type
is the type of PM

pm_no
is the number of the PM

ckt_no_x
is the start circuit number of the card

ckt_no_y
is the end circuit number of the card

5 To manually busy all circuits, type

>BSY ALL

and press the Enter key.

6 To display card location information for the card in the control position, type

>CKTLOC

and press the Enter key.

Example of a MAP display:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  00  Q01           TME   0   65  MTM :   6     14       4X45AA
NO TRANSMISSION DATA, CKT       NOT A TRUNK
```

Note: If you replace an NT4X45 card, the displayed slot number can be a virtual slot number different from the physical slot number. If you replace an NT4X45, make sure that you determine the correct physical slot number before you attempt to remove the card.

Enhanced digital test unit or digital test unit cards in trunk and service modules (continued)

At the shelf

7

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Perform the procedure *Replacing a card* in this document to replace the card. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

At the MAP terminal

8 To post all circuits of the card, type

`>POST P  pm_type pm_no ckt_no_x TO ckt_no_y`

and press the Enter key.

If	Do
the card is a digital test unit card	step 9
the card is an enhanced digital test unit card	step 11

9 To seize the first circuit, type

`>BSY;SEIZE;HOLD`

and press the Enter key.

10 To seize the second circuit, type

`>BSY;SEIZE`

and press the Enter key.

Go to step 15

11 To seize the first circuit, type

`>BSY;SEIZE;HOLD`

and press the Enter key.

12 To seize the second circuit, type

`>BSY;SEIZE;HOLD`

and press the Enter key.

Enhanced digital test unit or digital test unit cards in trunk and service modules (continued)

13 To seize the third circuit, type

>BSY;SEIZE;HOLD

and press the Enter key.

14 To seize the fourth circuit, type

>BSY;SEIZE

and press the Enter key.

15 Before downloading the firmware load, determine from office records or operating company personnel that the required load name has been datafilled correctly. For the digital test unit card, table OFCVAR office parameter DTULDINFO contains the load name. For the enhanced digital test unit card, table OFCVAR office parameter EDTULDFILE contains the load name.

16 To enter the disk untility, type

>DISKUT

and press the Enter key.

17 To list the required firmware load file, type

>LISTFL volume_name

and press the Enter key.

where

volume_name
is the disk volume where the firmware load resides.

18 To exit the disk utility, type

>QUIT

and press the Enter key.

19 To load the firmware load, type

>LOADFW CC

and press the Enter key.

Note: Wait for the following MAP response:
Load Completed

If	Do
the card is a digital test unit card	step 20
the card is an enhanced digital test unit card	step 24

20 To release the first seized circuit, type

>FRLS;RTS;NEXT 1

and press the Enter key.

Enhanced digital test unit or digital test unit cards in trunk and service modules (end)

21 To release the second seized circuit, type

>FRLS;RTS

and press the Enter key.

22 To test the circuits, type

>TST

and press the Enter key.

23 Verify that the test passed.

If	Do
the test passed	step 30
the test did not pass	step 31

24 To release the first seized circuit, type

>FRLS;RTS;NEXT 1

and press the Enter key.

25 To release the second seized circuit, type

>FRLS;RTS;NEXT 2

and press the Enter key.

26 To release the third seized circuit, type

>FRLS;RTS;NEXT 3

and press the Enter key.

27 To release the fourth seized circuit, type

>FRLS;RTS

and press the Enter key.

28 To test the circuits, type

>TST

and press the Enter key.

29 Verify that the test passed.

If	Do
the test passed	step 30
the test did not pass	step 31

30 The procedure is complete.

31 Contact the next level of support.

Metallic test unit cards in trunk and service modules

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC) suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT4X97	AA	Metallic test unit (MTU) controller	integrated service module (ISM), maintenance trunk module (MTM), service trunk module (STM)
NT4X98	BA	MTU analog 600 Ω card	MTM, STM
	BB	MTU analog card	MTM, STM
	BC	MTU analog card	ISM, MTM

Common procedures

This procedure refers to the following common procedures.

- *Replacing a card*
- *Loading a PM*

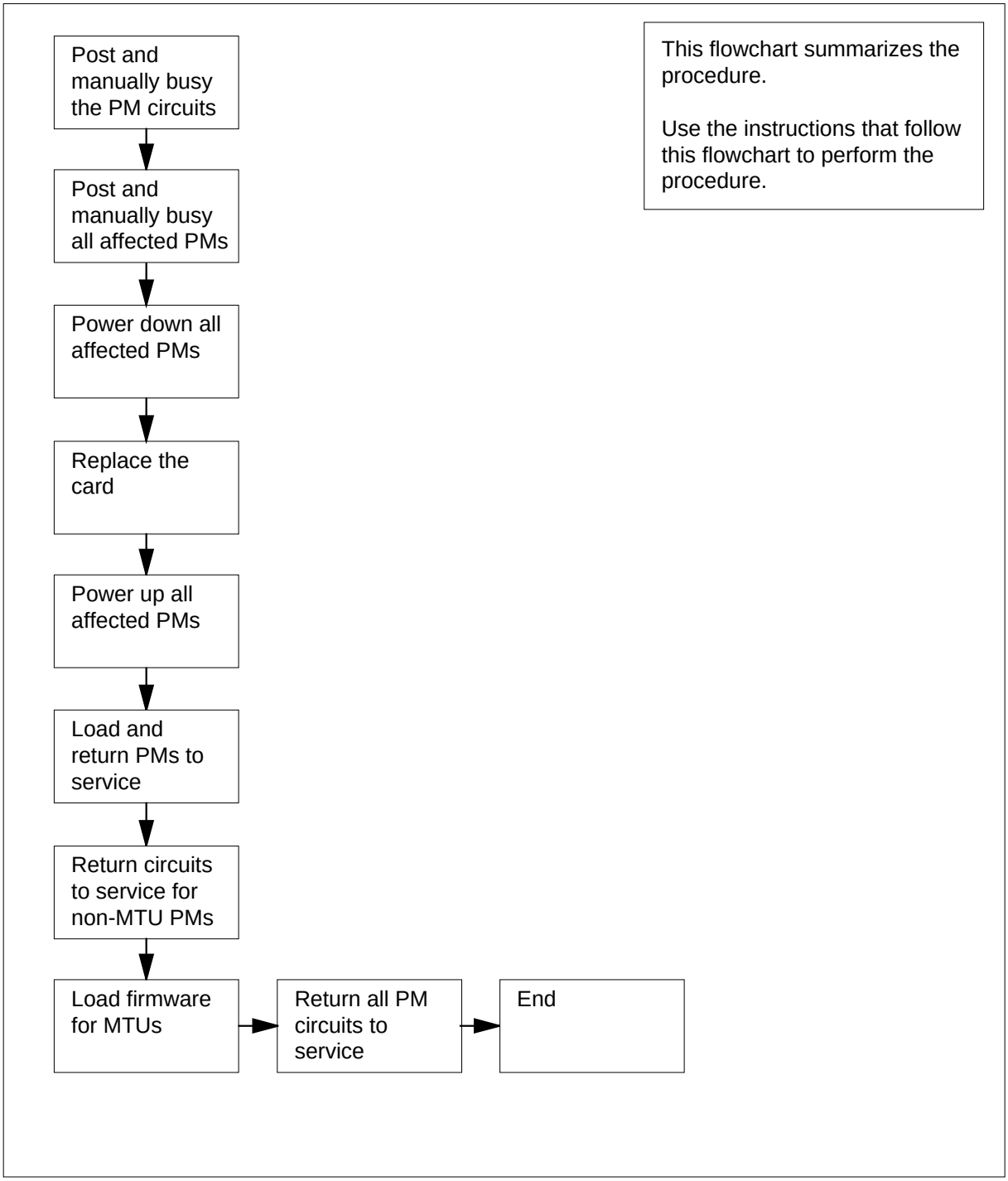
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

The procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Metallic test unit cards in trunk and service modules (continued)

Summary of Replacing Metallic test unit cards in trunk and service modules



Metallic test unit cards in trunk and service modules (continued)

Replacing Metallic test unit cards in trunk and service modules

At your current location

1

CAUTION
Loss of essential service
This procedure includes directions to remove an MTM, STM, TM, or ISM from service. Removal of these PM resources can degrade service. Do not perform this procedure if essential services are using these PM resources.

CAUTION
Loss of service
This procedure includes directions to remove an ISM, MTM, STM, or TM from service. Removal of these PM resources can degrade service. Perform this procedure only if necessary to restore out-of-service components. Perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card you remove.

2 To make a list of the PMs this procedure affects, contact office records or operating company personnel. Use this list in this procedure.

Note: Include all PMs that associate with the PM on which you replace cards. For service and trunk modules, include NT1X80 cards and NT1X81 cards (single-card PMs) on the shelf. To complete the procedure, remove these single-card PMs from service. If you replace cards on an STM, check for essential services on the STM on the other half of the shelf. Remove both STMs from service to complete the procedure.

3 To verify that necessary services do not use resources in the PMs, contact office records or operating company personnel.

If essential services	Do
use PM resources and a minimum of one PM is in service	step 87
use PM resources and all PMs are out of service	step 4
do not use PM resources	step 4

Metallic test unit cards in trunk and service modules (continued)

At the MAP terminal

4 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
     SysB    ManB    OffL    CBsy    ISTb    InSv
PM      1               6                       102
```

5 To post the PM for which you replace cards, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
        SysB    ManB    OffL    CBsy    ISTb      InSv
   PM      1       0       6       0       0       102
   MTM     1       0       0       0       0        9

MTM     0    SysB
```

6 Determine the state of the PM.

Note: The PM state appears on the right of the PM number. In the example display in step 5, the PM state is system busy (SysB).

If the PM	Do
is Offl	step 88
is other than listed here	step 7

7 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

Example of a MAP display:

```
POST        DELQ            BUSYQ        DIG
TTP  6-013
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE  RESULT
```

Metallic test unit cards in trunk and service modules (continued)

8 To post the circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
POST    17  DELQ            BUSYQ        DIG
TTP  6-013
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE   RESULT
CONF6    MTM    0  0   CF6P            0  IDL

post p MTM 0
LAST CKT = 17
SHORT CLLI IS: CF6P
OK,CKT POSTED
```

9 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

Example of a MAP display:

```
POST    18  DELQ            BUSYQ  A  6  DIG
TTP  6-027
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE  RESULT

BSYQ ALL IDLE

bsy all
OK,POST SET IS SET IN BSYQ
```

10 Wait until all circuits are manually busy. When you manually busy a circuit you remove the circuit from the busy queue. Proceed to the next step.

Note: The digit on the right of the BUSYQ header indicates the number of circuits that continue to be in use. When a circuit becomes available that circuit becomes manual busy and the number in the queue decreases by one. A blank field indicates that all circuits are manually busy.

11 The next action depends on if the shelf (ISM, MTM) or shelf side (STM) has the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf or shelf side	Do
has the NT1X80 or the NT1X81	step 12

Metallic test unit cards in trunk and service modules (continued)

If the shelf or shelf side	Do
does not have the NT1X80 or the NT1X81	step 16

12 To post the circuits for the single-card PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single-card PM (CTM, DTM)

pm_no
is the number of the PM (0 to 9999)

Note: The NT1X80 EDRAM card is a DTM on the MAP display, and the NT1X81 conference card is a CTM. Both cards are single-card PMs.

13 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

14 Wait until all circuits are manually busy and disappear from the busy queue. Proceed to the next step.

15 Repeat steps 12 to 14 for all NT1X80 and NT1X81 cards on the shelf.

16 To access the PM level of the MAP display, type

>PM

and press the Enter key.

17 To post the PM for which you replace the card, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

18 Determine the state of the PM.

If the PM	Do
is iManB	step 20
is other than listed here	step 19

Metallic test unit cards in trunk and service modules (continued)

19 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

```
          SysB    ManB    OffL    CBsy    ISTb     InSv
   PM       58       1       6      14      12       17
   MTM       0       1       0       0       0        9

MTM     0    ManB
bsy
MTM 0 Bsy
OK.
```

20 The next action depends on if the shelf (ISM, MTM) or shelf side (STM) has the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf or shelf side	Do
has the NT1X80 or the NT1X81	step 21
does not have the NT1X80 or the NT1X81	step 25

21 To post the single-card PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single-card PM (CTM, DTM)

pm_no
is the number of the PM (0 to 9999)

22 Determine the state of the PM.

If the PM	Do
is ManB	step 24
is other than listed here	step 23

23 To manually busy the PM, type

>BSY

and press the Enter key.

24 Repeat steps 21 to 23 for all NT1X80 and NT1X81 cards on the shelf or shelf side.

Metallic test unit cards in trunk and service modules (continued)

25 The next action depends on if the shelf is an STM.

If the shelf	Do
is an STM, and you manually busied one STM	step 26
is an STM, and you manually busied both STMs	step 27
is an ISM or MTM	step 27

26

WARNING
Loss of service
If you power down an STM, the mate power converter will trip in the other STM on the shelf. Manually busy and power down both STMs on a shelf.

Repeat steps 4 to 25 for the STM in the other side of the shelf.

At the shelf

27

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Pull down and set the handle of the POWER switch to the OFF position on the power conver you replace.

28 The next action depends on the type of PM in the shelf.

If the shelf	Do
has an STM (with or without DRAM)	step 29
has an MTM (with or without DRAM)	step 30
has an ISM (with or without DRAM)	step 31

29 Power off the power converter in the STM in the other half of the shelf. Pull down and set the handle of the POWER switch to the OFF position.

Metallic test unit cards in trunk and service modules (continued)

Go to step 31.

30 Pull down and set the handle of the POWER switch to the OFF position on the other power converter in the shelf.

31 Perform the procedure *Replacing a card* in this document to replace the card. Complete the procedure and return to this point.

Note: Make sure that the replacement card and the card you replace have the same switch settings.

32 The next action depends on the type of power converter and the type of supervisory panel for the shelf or shelf side.

If the power converter	Do
is an NT2X70AE card and the FSP or MSP has circuit breakers	step 33
is an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 34
is not an NT2X70AE card and the FSP or MSP has circuit breakers	step 35
is not an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 36

33 Power up the converter for the shelf or shelf side where you replace the card.

a Pull and set the handle of the POWER switch up to the RESET position and hold.

b Set the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.

c Release the handle.

d Go to step 37.

34 Power up the converter for the shelf or shelf side where you replace the card.

a Pull and set the handle of the POWER switch up to the RESET position and hold until the CONVERTER FAIL LED goes out.

b Release the handle.

c Go to step 37.

35 Power up the converter for the shelf or shelf side where you replace the card.

a Pull and set the handle of the POWER switch up to the ON position.

b Press and hold the RESET button on the power converter.

c Set the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.

d Release the RESET button.

e Go to step 37.

Metallic test unit cards in trunk and service modules (continued)

36 Power up the converter for the shelf or shelf side where you replace the card.

a Pull and set the handle of the POWER switch up to the ON position.

b Press the RESET button on the power converter until the CONVERTER FAIL LED goes out.

c Release the RESET button.

37 The next action depends on the type of PM in the shelf, and if you powered up both power converters.

If the shelf	Do
has an STM or an MTM (with or without DRAM) and you have already powered up both power converters	step 40
has an STM (with or without DRAM)	step 38
has an MTM (with or without DRAM)	step 39
has an ISM (with or without DRAM)	step 40

38 Repeat steps 32 to 37 for the power converter in the STM in the other half of the shelf.

Go to step 40.

39 Repeat steps 32 to 37 for the other power converter on the shelf.

40 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 41
did not direct you to this procedure	step 42

41 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

42 To post the PM where you replaced the card, type

```
>POST  pm_type  pm_no
```

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

Metallic test unit cards in trunk and service modules (continued)

43 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
MTM 0 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 45
failed	step 44

44 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

45 To return the PM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
MTM 0 Rts Passed
```

If the RTS command	Do
passed, and the PM service state is InSv	step 47
passed, and the PM is ISTb and the system generates a card list	step 46
failed	step 90

46 Record the messages on the MAP display for future reference.

47 The next action depends on if you manually busied a minimum of one PM through this procedure.

Note: Steps 48 to 62 affect the PMs where you did not replace a card. These steps return the PMs to service and return the associated circuits to service. Return to service last the circuits for the PM where you replaced a card.

If you	Do
manually busied more than one PM	step 48
manually busied only one PM	step 63

Metallic test unit cards in trunk and service modules (continued)

48 To post another PM from the list that you made in step 2, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (CTM, DTM, STM)

pm_no
is the number of the PM (0 to 9999)

49 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
STM 2 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 51
failed	step 50

50 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

51 To return the PM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
STM 2 Rts Passed
```

If the RTS command	Do
passed, and the PM service state is InSv	step 53
passed, and the PM is ISTb and the system generated a card list	step 52
failed	step 90

52 Record the messages on the MAP display for future reference.

53 To access the TTP level of the MAP display, type

>TRKS;TTP

Metallic test unit cards in trunk and service modules (continued)

and press the Enter key.

54 To post the circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (CTM, DTM, STM)

pm_no
is the number of the PM (0 to 9999)

55 To return all circuits to service, type

>RTS ALL

and press the Enter key.

Example of a MAP response:

```
RTS OK
```

56 The next action depends on the results of the PM RTS in step 51.

If the RTS command	Do
passed	step 62
passed, but in-service tests failed and the system generated a card list	step 57

57 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

58 To return all circuits to service, type

>RTS ALL

and press the Enter key.

59 To access the PM level of the MAP display, type

>PM

and press the Enter key.

60 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (CTM, DTM, STM)

Metallic test unit cards in trunk and service modules (continued)

pm_no
is the number of the PM (0 to 9999)

61 To perform an in-service test on the PM, type

>TST

and press the Enter key.

Example of a MAP response:

```
MTM     0    ISTb           TSTFAIL

InSvce Tests Initiated
MTM   0 Tst Failed
   Site Flr RPos  Bay_id   Shf  Description     Slot    EqPEC
   HOST  00  D06  TME  00   04  MTM : 000       04      2X59
   HOST  00  D06  TME  00   04  MTM : 000      02      0X70
Following ISTb Exist :
Test Failed
```

If the TST command	Do
passed	step 62
failed	step 90

62 Repeat steps 48 to 61 for all PMs that you removed from service in this maintenance procedure.

Go to step 63.

63 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

64 To post the MTU circuits, type

>POST G MTU

and press the Enter key.

Example of a MAP display:

Metallic test unit cards in trunk and service modules (continued)

```
POST    13  DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    0 22   MTU              0  IDL
```

```
post g  mtu
LAST CKTN = 13
POSTED CKT IDLED
SHORT CLLI IS: MTU
OK,CKT POSTED
```

If the MTU circuit for the PM in use	Do
is in the control position (displayed)	step 67
is not in the control position	step 65

Note: The number of the PM that asssociates with the circuit in the control position is under the PM NO header on the MAP display.

65 To display the next circuit in the posted set, type

>NEXT

and press the Enter key.

66 Repeat step 65 until the first MTU circuit for the PM involved is in the control position.

67 Record the MTU circuit number.

Note: The circuit number appears under and three spaces on the right of the COM LANG header on the MAP display.

68 To seize the circuit, type

>SEIZE

and press the Enter key.

Example of a MAP display:

Metallic test unit cards in trunk and service modules (continued)

```
POST     7  DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    7  2   MTU             6  SZD . .
                                          P_MB
```

```
seize
CKT SEIZED
```

69 To hold the circuit, type

>HOLD

and press the Enter key.

Note: The HOLD command puts the next circuit in the posted set in the control position. The circuit that is now in the control position is the mate MTU circuit.

Example of a MAP display:

```
POST     6  DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    7  3   MTU             7  MB

                HOLD1  MTU             6  SZD . .
```

```
hold
OK,CKT ON HOLD
SHORT CLLI IS: MTU
OK,CKT POSTED
```

70 Record the number of the mate MTU circuit.

71 To hold the mate circuit, type

>HOLD

and press the Enter key.

Note: Both MTU circuits are now in the HOLD position.

Example of a MAP display:

Metallic test unit cards in trunk and service modules (continued)

```
POST     5  DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       RMM    3 10   MTU             8  IDL

                HOLD1  MTU             6  SZD . .
                HOLD2  MTU             7  MB


hold
OK,CKT ON HOLD
SHORT CLLI IS: MTU
OK,CKT POSTED
```

72 To post the MTU circuits that you put on hold in earlier steps, type

>POST G MTU ckt_no1 TO ckt_no2

and press the Enter key.

where

ckt_no1
is the number of the first circuit (recorded in step 67)

ckt_no2
is the number of the second circuit (recorded in step 70)

Example of a MAP display:

```
POST     1  DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    7  2   MTU             6  SZD
                                           P_MB

                HOLD1  MTU             6  SZD . .
                HOLD2  MTU             7  MB

post g mtu 6 to 7
LAST CKTN = 7
POSTED CKT IDLED
SHORT CLLI IS: MTU
OK,CKT POSTED
```

73 To put the mate circuit in the control position, type

>NEXT

and press the Enter key.

74 To seize the circuit, type

>SEIZE

and press the Enter key.

Example of a MAP display:

Metallic test unit cards in trunk and service modules (continued)

```
POST        DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    7  3   MTU             7  SZD . .
                                          P_MB

               HOLD1  MTU             6  SZD . .
               HOLD2  MTU             7  SZD


seize
CKT SEIZED
```

75 To load firmware for the MTU card, type

>LOADFW CC

and press the Enter key.

Example of a MAP display:

```
POST        DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT
OG       MTM    7  3   MTU             7  SZD . .
                                          P_MB

               HOLD1  MTU             6  SZD . .
               HOLD2  MTU             7  SZD


loadfw cc
Using Loadfile with  its name in MTULDINFO ...
Loadfile found : START LOADING...
Load Completed
```

If the LOADFW command	Do
passed	step 77
failed	step 76

76 To load the MTU, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

77 To go to the next member of the posted set, type

>NEXT

and press the Enter key.

Note: If the mate MTU circuit is the last member of the posted set, the NEXT command will remove all members from the control position.

78 To discard the current TTP process and start a new process, type

>CREATE_TTP

Metallic test unit cards in trunk and service modules (continued)

and press the Enter key.

Example of a MAP display:

```
POST        DELQ            BUSYQ        DIG
TTP  6-029
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE RESULT


POS RESTARTED


create_ttp
POSITION IDLED
TTP ID IS:  6-029
NO CKT,SET IS EMPTY
```

79 To post all circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

80 To return all circuits to service, type

>RTS ALL

and press the Enter key.

Example of a MAP response:

```
  RTS OK
```

81 The next action depends on the results of the PM RTS in step 45.

If the RTS command	Do
passed with no conditions	step 91
passed, but in-service tests failed and the system generated a card list	step 82

82 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

83 To return all circuits to service, type

>RTS ALL

Metallic test unit cards in trunk and service modules (end)

and press the Enter key.

84 To access the PM level of the MAP display, type

>PM

and press the Enter key.

85 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM)

pm_no
is the number of the PM (0 to 9999)

86 To perform an in-service test on the PM, type

>TST

and press the Enter key.

Example of a MAP response:

```
MTM     0    ISTb           TSTFAIL

InSvce Tests Initiated
MTM 0 Tst Failed
  Site Flr RPos  Bay_id   Shf  Description     Slot     EqPEC
  HOST  00  D06  TME  00   04  MTM : 000       04       2X59
  HOST  00  D06  TME  00   04  MTM : 000      02        0X70
Following ISTb Exist :
Test Failed
```

If the TST command	Do
passed	step 91
failed	step 90

87 Contact the next level of support to determine how to handle essential services. Continue as directed.

88 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

89 Report the results of this maintenance activity to the next level of support. Continue as directed.

90 For additional help, contact the next level of support.

91 The procedure is complete.

NT3X08AA in an MTM

Application

Use this procedure to replace an NT3X08 card in an MTM.

PEC	Suffixes	Name
NT3X08	AA/AB	Coin detection circuit card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index. The index is for a list of cards, shelves, and frames in this card replacement NTP.

Common procedures

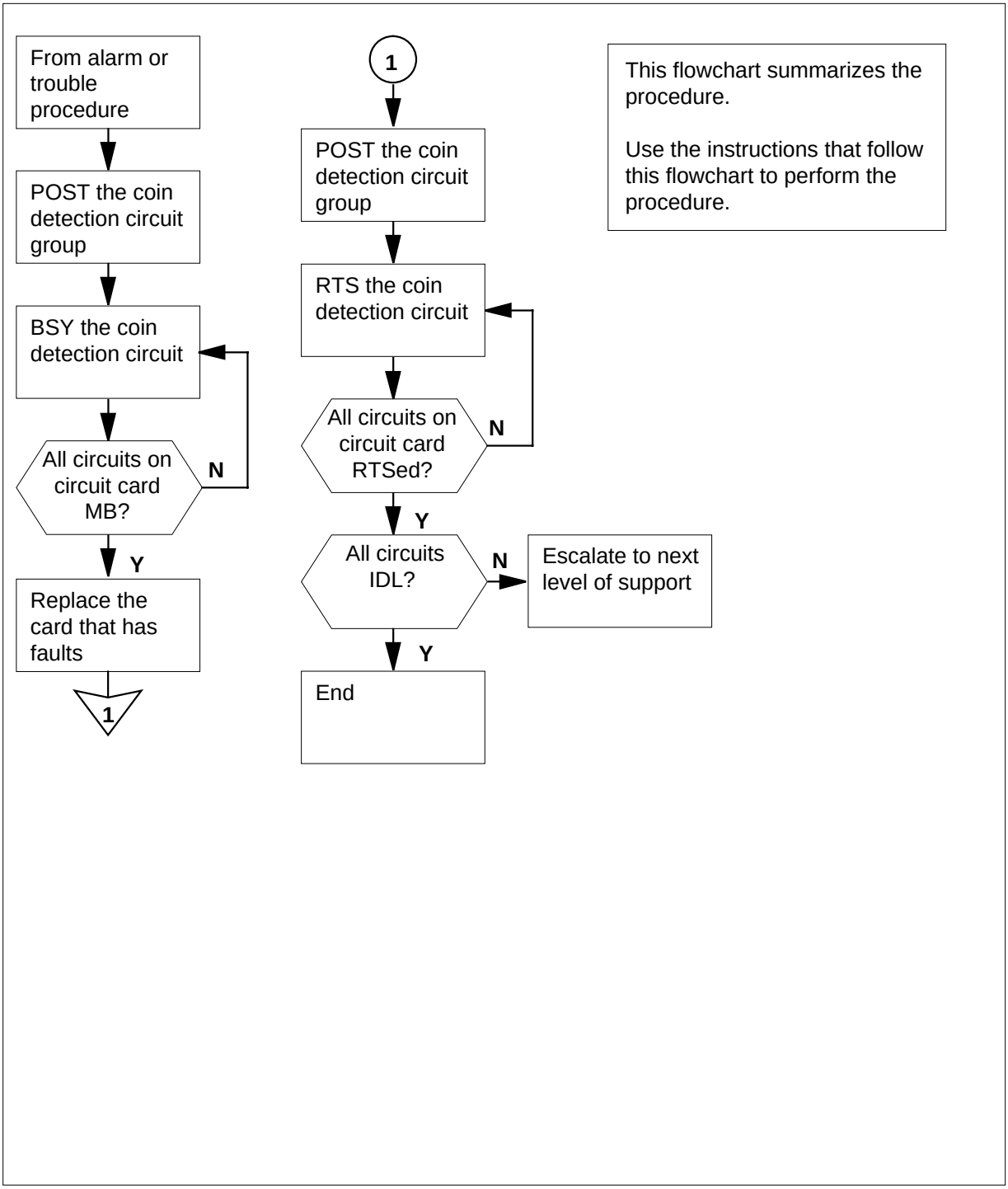
This procedure references *Shelf card removal and replacement procedure*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Use the instructions that follow this flowchart to perform the procedure.

NT3X08AA
in an MTM (continued)

Summary of Replacing an NT3X67 in an MTM



NT3X08AA
in an MTM (continued)

Replacing an NT3X08AA in an MTM

At your current location:

1 Proceed only if a step in a maintenance procedure directs you to this procedure. Independent use of this procedure can cause equipment damage or service interruption.

At the MAP:

2 To access the TTP level of the MAP and post the coin detection circuit group of the card with faults, type

`>MAPCI;MTC;TRKS;TTP;POST G RCVRCOIN n`

and press the Enter key.

where

n
is the first circuit on the coin detection circuit card

Example of a MAP display response:

```
CM      MS     IOD     Net     PM     CCS     Lns     Trks     Ext    EIO
.       .       .       .      .       .       .        .       .      .

TTP
 0  Quit_ POST      DELQ           BUSYQ         DIG
 2  Post_ TTP  6-025
 3   Seize_    CKT TYPE   PM NO.         COM LANG      STA S R DOT TE RESULT
 4             RCVR     MTM  1 2    RCVRCOIN     0      IDL
 5  Bsy_
 6  RTS_
 7  Tst_
 8
 9  CktInfo
10  CktLoc
11  Hold
12  Next_
13  Rls_
14  Ckt_
15  TrnslVf_
16  StkSdr_
17  Pads_
18  Level_
```

Coin detection circuit

3

WARNING
Service interruption
The removal of an MTM circuit from service causes service interruption.

To busy the circuit, type

>BSY

and press the Enter key.

Example of a MAP display response:

```
CM      MS     IOD     Net     PM     CCS     Lns     Trks     Ext    EIO
.       .       .       .      .       .       .        .       .      .

TTP
 0  Quit_ POST      DELQ           BUSYQ         DIG
 2  Post_ TTP  6-025
 3   Seize_    CKT TYPE   PM NO.          COM LANG      STA S R DOT TE RESULT
 4             RCVR     MTM  1 2    RCVRCOIN     0      MB
 5  Bsy_
 6  RTS_
 7  Tst_
 8
 9  CktInfo
10  CktLoc
11  Hold
12  Next_
13  Rls_
14  Ckt_
15  TrnslVf_
16  StkSdr_
17  Pads_
18  Level_
```

Coin detection circuit and status

4 To go to the next coin detection circuit on the circuit card that has faults, type

>NEXT

and press the Enter key.

Repeat steps 3 and 4 to busy each circuit on the circuit card.

At the MTM:

5 Remove and replace the NT3X08 card as *Common card removal and replacement* in this document directs. Return to step 6 after you complete the removal and replacement procedure.

Note: Make sure the dip switches on the new card are set to the same positions as the dip switches on the old card.

6 To post the coin detection circuit group, type

>POST G RCVRCOIN

and press the Enter key.

7 To return to service the circuit you busy in step 3, type

>RTS

and press the Enter key.

Example of a MAP display response:

NT3X08AA
in an MTM (end)

```
CM      MS     IOD     Net     PM     CCS     Lns     Trks     Ext    EIO
.       .       .       .      .       .       .        .       .      .

TTP
 0  Quit_ POST      DELQ           BUSYQ         DIG
 2  Post_ TTP  6-025
 3   Seize_    CKT TYPE   PM NO.         COM LANG      STA S R DOT TE RESULT
 4             RCVR     MTM  1 2    RCVRCOIN     0      IDL
 5  Bsy_
 6  RTS_
 7  Tst_
 8
 9  CktInfo
10  CktLoc
11  Hold
12  Next_
13  Rls_
14  Ckt_
15  TrnslVf_
16  StkSdr_
17  Pads_
18  Level_
```

Coin detection circuit and status

8 To go to the next coin detection circuit on the circuit card, type

>NEXT

and press the Enter key.

Repeat steps 7 and 8 to return to service each circuit that you busied in step 3.

9 Determine if all coin detection circuits return to service.

If all circuits	Do
returned to service (IDL appears at MAP)	step 11
did not return to service	step 10

10 For additional help, contact the next level of support.

11 The procedure is complete. Return to the original procedure and continue.

Power converter cards in trunk and service modules

Application

Use this procedure to replace the cards in the following table in the corresponding shelves or frames.

Note: If you cannot identify the product engineering code (PEC), PEC suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT2X06	AB	Power converter card	maintenance trunk module (MTM), trunk module (TM)
NT2X09	AA	Power converter card	MTM, TM
NT2X70	AA, AB, AC, AD, *AE, AF	Power converter card	service trunk module (STM)
NTFX43	AA	ISM DC converter card	integrated service module (ISM)

*Refer to ER bulletin 990007. Bulletin ER 990007 states a NT2X70AE must not be powered again in any XPM after power has been removed from the converter. Replace NT2X70AE with NT2X70AF.

Common procedures

This procedure refers to the following common procedures.

- *Replacing a card*
- *Loading a PM*

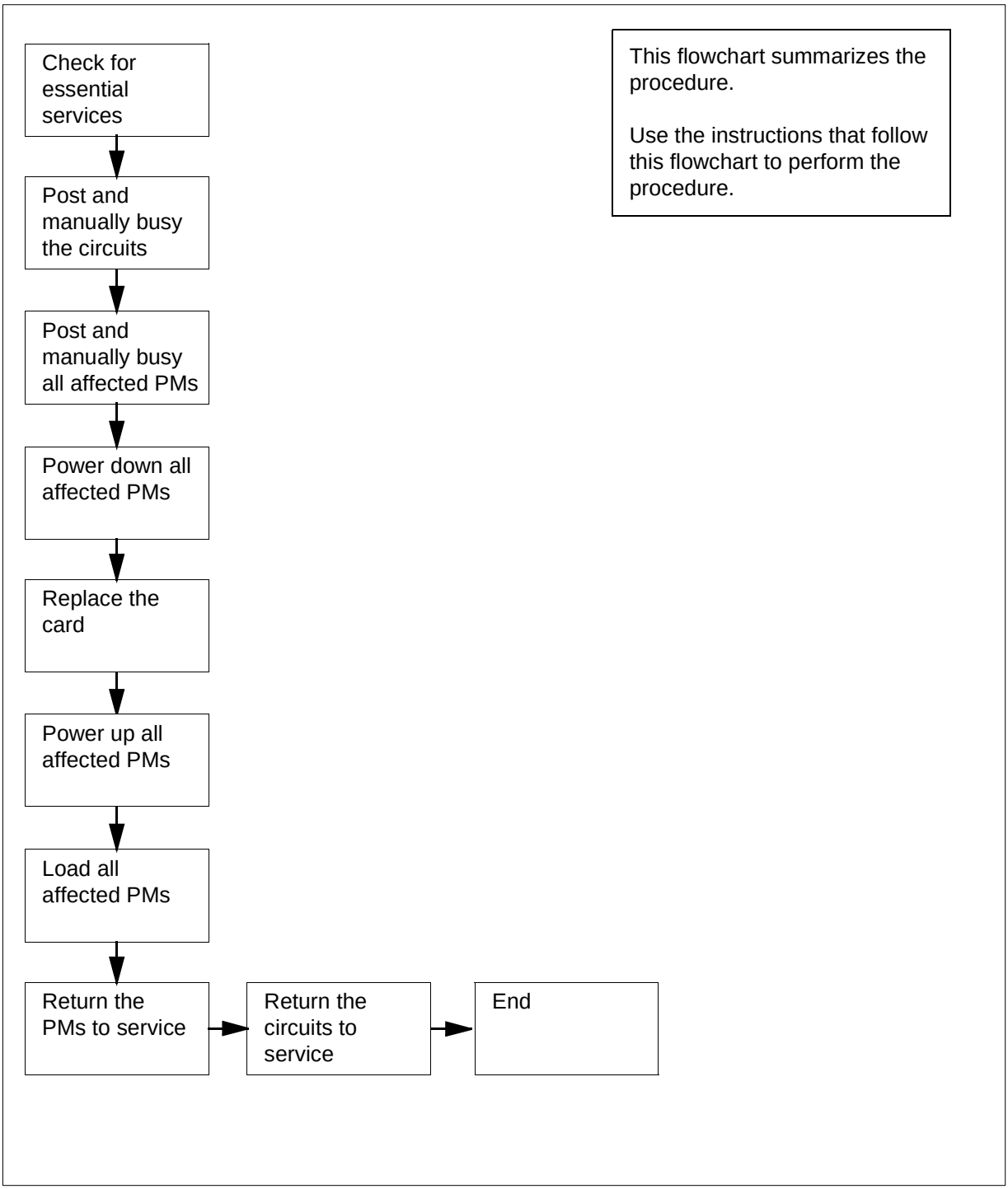
Do not go to the common procedure unless the step-action procedure directs you to proceed.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Power converter cards
SubHeading (continued)

Summary of Replacing Power converter cards in trunk and service modules



Power converter cards SubHeading (continued)

Replacing Power converter cards in trunk and service modules

At the MAP terminal

1

WARNING
Loss of essential service
This procedure includes directions to remove an MTM, STM, TM, or ISM from service. Removal of these PM resources can degrade service. Do not perform this procedure if essential services use these PM resources.

WARNING
Loss of service
This procedure includes directions to remove an ISM, MTM, STM, or TM from service. Removal of these PM resources can degrade service. Perform this procedure only if necessary to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card you remove.

Note: The PEC code changes if the NT2X70AF replaces the NT2X70AE.

2 To verify that essential services do not use resources in the PMs, contact office records or operating company personnel.

Note: When you verify resources used, include all PMs that associate with the PM on which you replace cards. For all service and trunk modules, include NT1X80 cards and NT1X81 cards (single-card PMs) on the shelf. To complete the procedure, remove these single-card PMs from service. If you replace cards on an STM, check for essential services on the STM on the other half of the shelf. To complete the procedure, remove both STMs from service.

If essential services	Do
use PM resources and a minimum of one PM is in service	step 57
use PM resources and all PMs are out of service	step 3
do not use PM resources	step 3

Power converter cards
SubHeading (continued)

3 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
            SysB    ManB    OffL    CBsy    ISTb    InSv
PM             1               6                     102
```

4 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
            SysB    ManB    OffL    CBsy    ISTb    InSv
  PM           1       0       6       0       0     102
 MTM           1       0       0       0       0       9

MTM     0   SysB
```

5 Determine the state of the PM.

Note: The PM state appears on the right of the PM number. In the example display in step 4, the PM state is system busy (SysB).

If the PM	Do
is Offl	step 58
is other than listed here	step 6

6 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

Example of a MAP display:

```
POST       DELQ     BUSYQ        DIG
TTP  6-013
CKT TYPE    PM NO.  COM LANG     STA S R  DOT TE RESULT
```

Power converter cards SubHeading (continued)

7 To post the circuits for the PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
POST    17  DELQ            BUSYQ        DIG
TTP  6-013
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE   RESULT

CONF6    MTM    0  0   CF6P            0  IDL

post p MTM 0
LAST CKT = 17
SHORT CLLI IS: CF6P
OK,CKT POSTED
```

8 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

Example of a MAP display:

```
POST    18  DELQ            BUSYQ  A  6  DIG
TTP  6-027
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE   RESULT


BSYQ ALL IDLE

bsy all
OK,POST SET IS SET IN BSYQ
```

9 Wait until all circuits are manually busy. When you manually busy a circuit you remove the circuit from the busy queue. Proceed to the next step.

Note: The digit on the right of the BUSYQ header indicates the number of circuits that continue to be in use. When a circuit becomes available, maunually busy the circuit. The number in the queue decreases by one. A blank field indicates that all circuits are manually busy.

Power converter cards
SubHeading (continued)

10 The next action depends on if the shelf has the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf	Do
has the NT1X80, NT1X81 or NTFX46	step 11
does not have the NT1X80, NT1X81 or NTFX46	step 15

11 To post the circuits for the single-card PM, type

>POST P pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single-card PM (CTM, DTM) or compact PM (AIM)

pm_no
is the number of the PM (0 to 9999)

Note: On the MAP display, the NT1X80 EDRAM card is a DTM. The NT1X81 conference card is a CTM. The NTFX46 AIM card is an AIM. The first two cards are single-card PMs. The AIM card is a compact PM.

12 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

13 Wait until all circuits are manually busy. When you manually busy a circuit you remove the circuit from the busy queue. Proceed to the next step.

14 Repeat steps 11 to 13 for all NT1X80, NT1X81, and NTFX46 cards on the shelf.

15 To access the PM level of the MAP display, type

>PM

and press the Enter key.

16 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Power converter cards SubHeading (continued)

17 Determine the state of the PM.

If the PM	Do
is ManB	step 19
is other than listed here	step 18

18 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
                                                                   17
       PM             58        1        6       14       12
       MTM             0        1        0        0        0        9
MTM      0    ManB
bsy
MTM 0 Bsy
OK.
```

19 The next action depends on if the shelf has the NT1X80 enhanced digital recorded announcement machine (EDRAM) card or the NT1X81 conference card.

If the shelf	Do
has the NT1X80, NT1X81, or NTFX46	step 20
does not have the NT1X80, NT1X81, or NTFX46	step 24

20 To post the single-card PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single-card PM (CTM, DTM) or compact PM (AIM)

pm_no
is the number of the PM (0 to 9999)

21 Determine the state of the PM.

If the PM	Do
is ManB	step 23

Power converter cards
SubHeading (continued)

If the PM	Do
is other than listed here	step 22

22 To manually busy the PM, type

>BSY

and press the Enter key.

23 Repeat steps 20 to 22 for all NT1X80, NT1X81 and NTFX46 cards on the shelf.

24 The next action depends on if the shelf is an STM.

If the shelf	Do
is an STM	step 25
is not an STM	step 26

25

WARNING
Loss of service
If you power down an STM, the mate power converter will trip in the other STM on the shelf. The other STM in the shelf and all its associated circuits need to be manually busied prior to powering down the power converter to be replaced.

Repeat steps 3 to 23 for the STM in the other half of the shelf.

At the shelf

26

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Make sure you are prepared to handle the cards. Refer to the WARNING.

Power converter cards SubHeading (continued)

27 The next action depends on the type of PM that is in the shelf.

If the shelf	Do
is an STM (with or without DRAM)	step 28
is an MTM (with or without DRAM)	step 28
is an ISM (with or without DRAM)	step 29
is a TM	step 28

28 Pull down (or push down in the case of a rocker switch) and set handle of the POWER toggle switch to the OFF position on the power converter you are going to replace.

Go to step 30.

29 Turn off the circuit breaker assigned to the NTFX43 power converter card on the affected ISM shelf. Each NTRX42xx circuit breaker module in the MSP is provisioned with designation labels to cross-reference the circuit breaker to the shelf.

If	DoTurn off
cabinetized ISM (CISM) shelf 05	circuit breaker 05
CISM shelf 19	circuit breaker 19
CISM shelf 33	circuit breaker 33
CISM shelf 47	circuit breaker 47
frame ISM (ISME) shelf 07	circuit breaker 07
ISME shelf 21	circuit breaker 21
ISME shelf 39	circuit breaker 39
ISME shelf 53	circuit breaker 53

Note: Go to step 30.

30 To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: Make sure that the handle of the PWR switch on the replacement power converter is in the OFF position.

31 Determine the next action.

If power converter card	Do
is not an NTFX43AA	step 32

Power converter cards
SubHeading (continued)

If power converter card	Do
is an NTFX43AA	step 37

32 The next action depends on the type of power converter and the type of supervisory panel.

If you	Do
replace an NT2X70 AE or AF card and the FSP or MSP has circuit breakers	step 33
replace an NT2X70 AE or AF card and the FSP has fuses	step 34
do not replace an NT2X70 AE or AF card and the FSP or MSP has circuit breakers	step 35
do not replace an NT2X70 AE or AF card and the FSP has fuses	step 36

33 Power up the converter.

a Pull up (or push up in the case of a rocker switch) and set the handle of the POWER toggle switch to the RESET position and hold.

b Set the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.

c Release the handle.

Go to step 38.

34 Power up the converter.

a Pull up (or push up in the case of a rocker switch) and set the handle of the POWER toggle switch to the RESET position and hold until the CONVERTER FAIL LED goes out.

Go to step 38.

35 Power up the converter.

a Set toggle switches on both power converters to the ON position.

b Depress and hold the RESET button on the power converter (2X06, 2X09, or 2X70) and turn on the circuit breaker for the corresponding shelf at the same time.

Go to step 38.

36 Power up the converter.

a Pull up and set the handle of the POWER toggle switch to the ON position.

Power converter cards SubHeading (continued)

b Press the RESET button on the power converter until the CONVERTER FAIL LED goes out.

c Release the RESET button.

Go to step 38.

37 Reset the circuit breaker on the MSP or the FSP to the ON position.

38 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 39
did not direct you to this procedure	step 40

39 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

40 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
MTM 0 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 42
failed	step 41

41 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

42 To return the PM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
MTM 0 Rts Passed
```

If the RTS command	Do
passed, and the PM is `InSv`	step 44
passed, and the PM is `ISTb` with the system generated card list	step 43
failed	step 60

Power converter cards
SubHeading (continued)

43 Record the messages on the MAP display for future reference.

44 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

45 To post the circuits for the PM, type

>POST TM pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

46 To return all circuits to service, type

>RTS ALL

and press the Enter key.

Example of a MAP response:

```
RTS OK
```

47 The next action depends on the results of the PM RTS in step 42.

If the RTS command	Do
passed with no conditions	step 54
passed, but in-service tests failed and the system generated card list	step 48

48 To manually busy all posted circuits, type

>BSY ALL

and press the Enter key.

49 To return all circuits to service, type

>RTS ALL

and press the Enter key.

50 To access the PM level of the MAP display, type

>PM

and press the Enter key.

51 To post the PM, type

>POST pm_type pm_no

Power converter cards SubHeading (continued)

and press the Enter key.

where

pm_type
is the type of PM (CTM, DTM, MTM, STM, TM, AIM)

pm_no
is the number of the PM (0 to 9999)

52 To perform an in-service test on the PM, type

>TST

and press the Enter key.

Example of a MAP response:

```
MTM     0    ISTb           TSTFAIL

InSvce Tests Initiated
MTM 0 Tst Failed
  Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
  HOST  00  D06  TME  00   04  MTM : 000      04       2X59
  HOST  00  D06  TME  00   04  MTM : 000      02       0X70
Following ISTb Exist :
Test Failed
```

If the TST command	Do
passed, and an STM, compact PM, or single-card PM is still out of service	step 54
passed, and you worked on all PMs this procedure affected and all PMs return to service	step 61
passed, and you worked on all PMs this procedure affected but a minimum of one PM does not successfully return to service	step 59
failed, and a single-card PM, compact PM, or an STM is present that you did not work on	step 53
failed, and you worked on all PMs this procedure affected	step 60

53 Record the messages on the MAP display for future reference.

Power converter cards
SubHeading (continued)

54 To access the PM level of the MAP display, type

```
>PM
```

and press the Enter key.

55 To post the PM, type

```
>POST  pm_type  pm_no
```

and press the Enter key.

where

pm_type
is the type of PM (MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

56 Repeat steps 40 to 52 for all PMs this procedure affected.

57 Contact the next level of support to determine how to handle essential services. Continue as directed by operating company personnel.

58 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

59 Report the results of the maintenance activity to the next level of support.

60 For additional help, contact the next level of support.

61 The procedure is complete.

Power converter cards SubHeading (end)

Single-card PMs in trunk and service modules

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), PEC suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT1X80	AA	Enhanced digital recorded announcement machine (EDRAM) card (4-min EDRAM card)	integrated service module (ISM), maintenance trunk module (MTM), service trunk module (STM)
NT1X80	BA	16-min EDRAM card	ISM, MTM, STM
NT1X81	AA	Conference trunk module card	ISM, MTM, STM
NT1X81	BA	Conference trunk module card (Japan)	ISM, MTM, STM

Note: On the MAP displays, the NT1X80 is the digital trunk module (DTM) and the NT1X81 is the conference trunk module (CTM).

Common procedures

This procedure refers to the following common procedures:

- *Replacing a card*
- *Loading a PM*

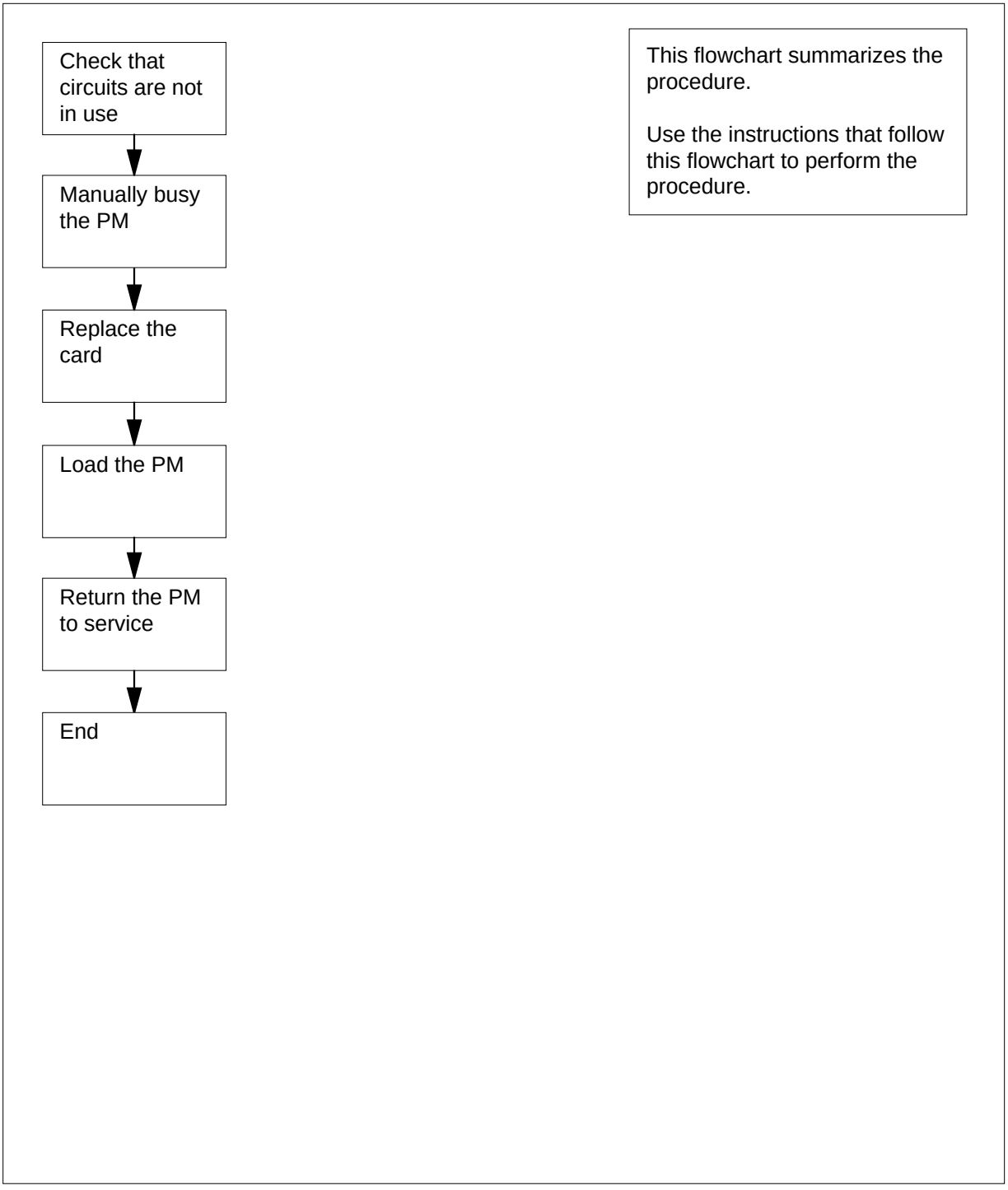
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Single-card PMs in trunk and service modules (continued)

Summary of Replacing Single-card PMs in trunk and service modules



Single-card PMs in trunk and service modules (continued)

Replacing Single-card PMs in trunk and service modules

At the MAP terminal

1

WARNING
Loss of service
This procedure includes directions to manually busy a single-card PM in an ISM, MTM, or STM shelf. Since this can cause loss of service, only perform this procedure when you want to restore out-of-service PMs. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure the replacement card has the same PEC and PEC suffix as the card that you remove.

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   1               6                       102
```

3 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (ISM, MTM, STM, TM)

pm_no
is the number of the PM (0 to 9999)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                  1       0       6       0       0     102
 MTM                 1       0       0       0       0       9

MTM     0     SysB
```

Single-card PMs in trunk and service modules (continued)

4 Determine the state of the PM.

Note: The PM state appears on the right side of the PM number. In the example MAP display in step 10, the PM state is system busy (SysB).

If the PM	Do
is `Offl`	step 27
is other than listed here	step 5

5 To access the TTP level of the MAP display, type

`>TRKS;TTP`

and press the Enter key.

Example of a MAP display:

```
POST         DELQ             BUSYQ         DIG
TTP  6-013
CKT TYPE      PM NO.           COM LANG      STA S R  DOT TE RESULT
```

6 To post the circuits for the PM, type

`>POST  TM  pm_type  pm_no`

and press the Enter key.

where

pm_type
is the type of single card PM (CTM or DTM)

pm_no
is the number of the single card PM (0 to 9999)

Example of a MAP display:

```
POST    17  DELQ             BUSYQ         DIG
TTP  6-013
CKT TYPE      PM NO.           COM LANG      STA S R  DOT TE RESULT
CONF6    CTM    0  0   CF6P             0  IDL
```

```
post p ctm 0
LAST CKT = 17
SHORT CLLI IS: CF6P
OK,CKT POSTED
```

Note: On the MAP display, the NT1X80 is the digital trunk module (DTM) and the NT1X81 is the conference trunk module (CTM).

7 To manually busy all posted circuits, type

`>BSY  ALL`

Single-card PMs in trunk and service modules (continued)

and press the Enter key.

Example of a MAP display:

```
POST    18  DELQ            BUSYQ  A  6  DIG
TTP  6-027
CKT TYPE PM NO.          COM LANG     STA S R  DOT TE  RESULT



BSYQ ALL IDLE

bsy all
OK,POST SET IS SET IN BSYQ
```

8 Wait until you manually busy all circuits. When you manually busy a circuit you remove the circuit from the busy queue. Proceed to the next step.

Note: The digit on the right side of the BUSYQ header indicates the number of circuits in use. When a circuit becomes available, that circuit becomes manual busy and the number in the queue decreases by one. When the field is blank, the field indicates that all circuits are manual busy.

9 To access the PM level of the MAP display, type

>PM

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   1               6                       102
```

10 To post the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single card PM (CTM or DTM)

pm_no
is the number of the single card PM (0 to 9999)

Example of a MAP display:

```
                SysB    ManB    OffL    CBsy    ISTb    InSv
PM                 1       0       6       0       0     102
CTM                1       0       0       0       0       1

CTM     0    SysB
```

Single-card PMs in trunk and service modules (continued)

11 Determine the state of the PM.

Note: The PM state appears on the right side of the PM number. In the example display in step 10, the PM state is system busy (SysB).

If the PM	Do
is ManB	step 13
is other than listed here	step 12

12 To manually busy the PM, type

>BSY

and press the Enter key.

Example of a MAP display:

```
                    SysB     ManB     OffL     CBsy     ISTb     InSv
 PM                   58        1        6       14       12       17
 CTM                   0        1        0        0        0        1

CTM     0    ManB
bsy
CTM 0 Bsy
OK.
```

At the shelf

13

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

To replace the card, perform the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has switches, make sure the switches on the replacement card have the same settings.

14 The next action depends on the information in the followng table.

If a maintenance procedure	Do
directed you to this procedure	step 15

Single-card PMs in trunk and service modules (continued)

If a maintenance procedure	Do
did not direct you to this procedure and the NT1X80 is involved	step 16
did not direct you to this procedure from a maintenance procedure and the NT1X81 is involved	step 21

15 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

16

WARNING
Loss of recording device services
EDRAM files from tape or disk can take up to 20 min to load. Before you use the LOADPM command, make sure the recording device that contains the EDRAM files is not required for higher priority tasks.

To load the announcements to the PM, type

>LOADPM ANN

and press the Enter key.

Example of a MAP response:

```
DTM 4 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 18
failed	step 17

17 To load the announcements perform the procedure *Loading a PM* in this document . Complete the procedure and return to this point.

18 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

Single-card PMs in trunk and service modules (continued)

```
DTM 4 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 20
failed	step 19

19 To load a PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to tis point.

20 If you need to record the announcements again, refer to *DRAM and EDRAM Guide*, 297-1001-527. Record the announcements and go to step 23.

21 To load the PM, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
CTM 0 LoadPM  Passed
```

If the LOADPM command	Do
passed	step 23
failed	step 22

22 To load the PM, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

23 To return the PM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
CTM 0 Rts Passed
```

If the RTS command	Do
passed	step 24
failed	step 28

24 To access the TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

Single-card PMs in trunk and service modules (end)

25 To post the circuits for the PM, type

>POST TM pm_type pm_no

and press the Enter key.

where

pm_type
is the type of single card PM (CTM or DTM)

pm_no
is the number of the single card PM (0 to 9999)

26 To return all circuits to service, type

>RTS ALL

and press the Enter key.

Example of a MAP response:

```
RTS OK
```

If the RTS command	Do
passed	step 29
failed	step 28

27 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

28 For further assistance, contact the next level of support.

29 The procedure is complete.

Trunk, maintenance, and service cards in trunk and service modules

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), PEC suffix, shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames documented in this card replacement book.

(Sheet 1 of 8)

PEC	Suffix	Card name	Shelf or frame name
NT0X10	AA	Miscellaneous scan detector card	integrated service module (ISM), maintenance trunk module (MTM), service trunk module (STM)
NT1X00	AA	102 test trunk card	MTM, STM
	AB	102 test trunk card	MTM, STM, ISM
	AC, AD	Receiver-off-hook tone card	MTM, STM, ISM
	AE	International 102 test trunk card	MTM, STM, ISM
	AF	102 terminating -10dB test line card	MTM, STM, ISM
	AG	102 terminating -20dB test line card	MTM, STM, ISM
	AH	102 terminating -15dB test line card	MTM, STM, ISM
	KA	102 terminating -15dB test line card - China	MTM, STM, ISM
NT1X31	AA	Conference circuit card	MTM, STM
NT1X54	AA	Jack ended test trunk card	ISM, trunk module (TM)
NT1X76	AA	Digital recorded announcement standard announcements - English card	MTM, STM
	AB	U.S. Bell standard announcements card	MTM, STM
	AE	Digital recorded announcement (DRA) automatic coin toll service (ACTS) card	MTM, STM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 2 of 8)

PEC	Suffix	Card name	Shelf or frame name
	AF, AG	Digital recorded announcement PROM AOSS - VR English card 1	MTM, STM
	AH	Digital recorded announcement PROM ACCS English card	MTM, STM
	AJ, AK, AP, AQ, AR, AS, AT, AU, AV, AW, GA, GB, GC, GE, GF, GG, GH, GJ, GK, GL, GM, HC, HD	Digital recorded announcement PROM card CMS/CLASS PH I and II (English announcements)	MTM, STM
	AM	Digital recorded announcement PROM card CFRA English version	MTM, STM
	BA	Digital recorded announcement standard announcements card - French	MTM, STM
	BF, BG	Digital recorded announcement PROM AOSS - VR French card 1	MTM, STM
	BH	Digital recorded announcement PROM ACCS French card	MTM, STM
	BJ, BK, BP, BQ, BR, BS, BT, BU, BV, BW	Digital recorded announcement PROM card CMS/CLASS PH I and II (French announcements)	MTM, STM
	CA	Mechanized calling card service standard announcement card	MTM, STM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 3 of 8)

PEC	Suffix	Card name	Shelf or frame name
	JA, JB	Digital recorded announcement machine card CMS/CLASS automatic recall date and time (English version)	MTM, STM
NT1X77	AA	Digital recorded announcement RAM card	MTM, STM
NT1X79	AA	Digital recorded announcement electrically erasable PROM card	MTM, STM
NT1X90	AA	Test signal generator card	ISM, MTM, STM
	BA	Test signal generator (A-law) card	ISM, MTM, STM
NT2X01	AA	Automatic identification of outward dialing data receiver C25 card	MTM, STM
NT2X10	AA, AB, AC, BA	Line test unit analog card	MTM, STM
	BB	Multi-line test unit, analog card (North American)	ISM, MTM, STM
NT2X11	AA, AC	Line test unit digital card	MTM, STM
	AD	Line test unit digital card with battery	MTM, STM
	BA	Multi-line test unit control card (North American)	ISM, MTM, STM
NT2X43	AB	DMS-100 family switching systems office alarm circuit 3 card	MTM, STM
NT2X47	AA	Transmission test module control signal generator card	MTM, STM
	AB, AC	Transmission test unit controller card	MTM, STM
	AD	Transmission test unit controller card	MTM, ISM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 4 of 8)

PEC	Suffix	Card name	Shelf or frame name
	BA	Transmission test unit controller (A-law) card	ISM, MTM, STM
NT2X48	AA, AB	Digital 4-channel multifrequency receiver card	MTM, STM
	BA	Digital 4-channel multifrequency receiver card	ISM, MTM, STM
	BB	Digital 4-channel dual-tone multifrequency receiver card	ISM, MTM, STM
	CA	A-law multifrequency receiver card (international - Turkey)	ISM, MTM, STM
	CB	Digitone receiver card	ISM, MTM, STM
	CC	A-law dual-tone multifrequency receiver card (U.K.)	ISM, MTM, STM
NT2X50	AB	Minibar driver card	MTM, STM
NT2X55	AA	Signal distribution card, type II	MTM, STM
NT2X56	AA, AB	Transmission test module digital filter card	ISM, MTM, STM
	BA	Digital filter (A-law TTU) card	ISM, MTM, STM
NT2X57	AA	Signal distribution card, type I	ISM, MTM, STM
	AB	Signal distribution card with office alarm unit monitor circuit	ISM, MTM, STM
NT2X65	AA, AB, AD	CAMA position signaling circuit card	ISM, MTM, STM, TM
NT2X66	AA	CAMA suspension and call waiting, loop, or E&M card	ISM, MTM, STM, TM
NT2X71	AA, AB	Transmission termination trunk card	ISM, MTM, STM
NT2X72	AA	4-wire E&M (type D1) interface, 600 ohm trunk card	TM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 5 of 8)

PEC	Suffix	Card name	Shelf or frame name
	AB	4-wire E&M (type D1) 600 ohm echo supervisory controller card	ISM, TM
	AC	4-wire E&M (type D1) echo control, low-gain trunk card	ISM, TM
	BA	4-wire trunk 600 ohm DC5A (UK) card	ISM, TM
	BB	CA1A trunk 4-wire 600 ohm (Spain project) card	ISM, TM
NT2X75	AA	Loop around test line card	ISM, MTM, STM
NT2X77	AA	Compromise balance network card (900 ohm)	ISM, MTM, STM
	AB	Compromise balance network 600 ohm card	ISM, MTM, STM
	AC	Compromise balance network 900 ohm fixed card	ISM, MTM, STM
	AD	Compromise balance network 600 ohm fixed card	ISM, MTM, STM
	BA	Compromise balance network 600 ohm complex card	ISM, MTM, STM
NT2X78	AA	Trunk 4-wire single-frequency circuit card	TM
NT2X80	AA	Precision balanced network H88 card	MTM, STM
NT2X81	AA	Trunk 2-wire E&M (type D1) trunk circuit card, 900 ohm	TM
	AB	Trunk 2-wire E&M (type D1) trunk circuit card, 600 ohm	TM
	AC	Two-wire trunk circuit card, 600 ohm DC5A	TM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 6 of 8)

PEC	Suffix	Card name	Shelf or frame name
	BA	Trunk 2-wire E&M (type D1 trunk circuit card, 600 ohm	ISM, TM
NT2X82	AA	Two-wire incoming, loop, reverse battery trunk circuit card	ISM, TM
NT2X83	AA	Two-wire outgoing, dial pulse, reverse battery supervisory remote-make-busy 900 ohm trunk card	TM
NT2X84	BA	Trunk 2-way public switched telephone network earth calling card	ISM, TM
NT2X85	AA	Recording completing HI-LO, T&R, coin, trunk circuit card	ISM, TM
NT2X86	AA	Two-wire incoming loop, third wire coin, SX ring, tool switch trunk circuit card	ISM, TM
NT2X88	AA	Trunk 4-wire E&M 600 ohm circuit card	TM
NT2X90	AA, AB, AC	Incoming/outgoing test trunk card	TM
	AD	Incoming/outgoing test trunk card	ISM, TM
NT2X92	AA	Reverse battery card	TM
NT2X95	AA	Two-wire PBX trunk DID/DOD card	TM, ISM
	BA	Trunk 2-way public switched telephone network DDI card	TM, ISM
	BB	Two-wire DDO 600 ohm trunk card	TM, ISM
NT2X96	AA	Pulse code modulation level meter card	ISM, MTM, STM
	BA	Test signal generator card	ISM, MTM, STM
NT2X98	AA	2-wire incoming MF/DP RB card	ISM, TM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 7 of 8)

PEC	Suffix	Card name	Shelf or frame name
NT3X02	AA	TOPS control processor card	MTM, STM
	BA	TOPS controller flash dial-up auto quote processor card	ISM, MTM, STM
NT3X03	AA	TOPS digital signal processor card	ISM, MTM, STM
NT3X04	AA	Incoming test trunk for AECO local test board interface card	ISM, TM
NT3X05	AA, AC	Digital data line card	MTM, STM
	AB	Modified digital data line card	MTM, STM
NT3X06	AA	Outgoing trunk to 3C, 3CL, or AE31 switchboard, sleeve lead circuit card	TM
NT3X06	AB	Outgoing trunk to 3C, 3CL, or AE31 switchboard, sleeve lead circuit card	ISM, TM
NT3X07	AA	Incoming trunk to 3C, 3CL, or AE31 switchboard, sleeve lead circuit card	ISM, TM
NT3X08	AA	Digitone transceiver card	MTM, STM
	AB	Coin detection card	ISM, MTM, STM
NT3X09	AA	Remote metallic test access card	MTM, STM
	BA	8x8 metallic test access card	ISM, MTM, STM
NT3X67	AA	Six-party conference circuit	MTM, STM
	BA	Six-party conference circuit (A-law)	MTM, STM
	BB	Six-party conference circuit with TBI tone (Turkey)	MTM, STM
NT3X68	AA	Pre-empt, permanent signal, and conference tone generator card	MTM, STM
	AB	Dual-tone multifrequency generator circuit card	MTM, STM

Trunk, maintenance, and service cards in trunk and service modules (continued)

(Sheet 8 of 8)

PEC	Suffix	Card name	Shelf or frame name
	AC	Call waiting tone generator card	MTM, STM
	BA	Pre-empt, permanent signal, and conference tone generator card	MTM, ISM
	BB	Dual-tone multifrequency generator circuit card	MTM, ISM
	BC	Call waiting tone generator card	MTM, ISM
NT3X91	AA	Remote office test line circuit card	ISM, TM
NT5X03	AA	CCITT R1 trunk circuit card	ISM, TM
NT5X04	AA	CCITT #5 trunk circuit card	ISM, TM
	AB	CCITT #5 w/ guard tone card	ISM, TM
NT5X06	AA	CCITT #6 trunk circuit card	TM
NT5X25	AA	One-way CO trunk circuit card	ISM, TM
NT5X29	AA	Common channel interoffice signaling continuity checker card	ISM, MTM, STM
	AB	Service observing circuit card	MTM, STM
	AC	Audio, answer, detect Digitone multifrequency card	ISM, MTM, STM
	BA	A-law circuit card	ISM, MTM, STM
NT5X30	AA, BA	101 communication test line circuit card	ISM, MTM, STM, TM

Common procedures

This procedure refers to the procedure *Replacing a card*.

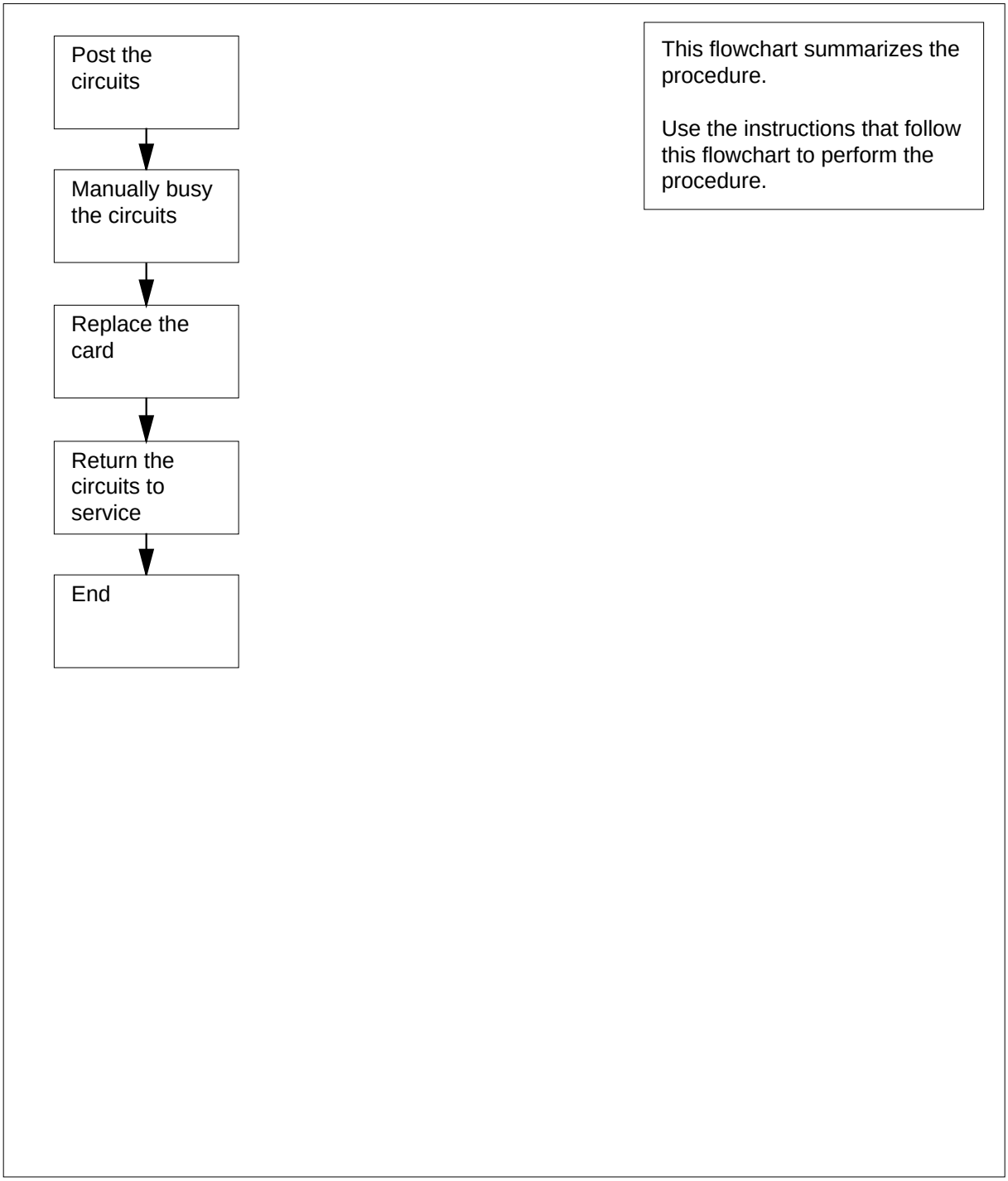
Do not go to the common procedure the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Trunk, maintenance, and service cards in trunk and service modules (continued)

Summary of Replacing Trunk, maintenance, and service cards in trunk and service modules



Trunk, maintenance, and service cards in trunk and service modules (continued)

Replacing Trunk, maintenance, and service cards in trunk and service modules

At the MAP terminal

1

CAUTION
Loss of essential services
Do not perform this procedure if essential services use the circuits for the card that you replace.

CAUTION
Loss of service
This procedure includes directions to remove from service one or more circuits for a circuit card. Perform this procedure only when you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

DANGER
Loss of DRAM recorded messages
During power down of shelves that contain NT1X77 DRAM cards, recorded messages are lost. All recordings must be recorded agian.

Obtain a replacement card. Make sure that the replacement card you remove has the same product engineering code (PEC) and PEC suffix as the card that you remove.

2 Determine from office records or operating company personnel the short common language location identifier (CLLI) for the card that you replace.

3 To access the TTP level of the MAP display, type

```
>MAPCI;MTC;TRKS;TTP
```

and press the Enter key.

Example of a MAP display:

Trunk, maintenance, and service cards in trunk and service modules (continued)

```
POST        DELQ            BUSYQ        DIG
TTP  6-013
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE  RESULT
```

4 To post circuits by short CLLI, type

>POST G short_clli

and press the Enter key.

where

short_clli
is the name of the short CLLI

Example of a MAP display:

```
POST     7  DELQ            BUSYQ        DIG
TTP  6-002
CKT TYPE     PM NO.          COM LANG     STA S R  DOT TE  RESULT
STN      MTM    0  9   CWT             1  INI



NEXT
POSTED  CKT IDLED
SHORT CLLI IS: CWT
OK,CKT POSTED
```

5 To display card location information for the card in the control position, type

>CKTLOC

and press the Enter key.

Example of a MAP display:

```
  Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
  HOST  00  D06  TME   0   04  MTM :   0      09       3X68BC
NO TRANSMISSION DATA, CKT NOT A TRUNK
```

Note: If you replace an NT4X45 card, the displayed slot number can be a virtual slot number different from the physical slot number. If you replace an NT4X45, make sure that you determine the correct physical slot number before you attempt to remove the card.

If	Do
the circuit associates with the card you want to replace and the circuit state is not manually busy (MB)	step 6
the circuit associates with the card you want to replace and the circuit state is manually busy (MB)	step 8

Trunk, maintenance, and service cards in trunk and service modules (continued)

If	Do
the circuit does not associate with the card you want to replace	step 8
you reached the end of the posted set and all circuits that associate with the card are manual busy	step 9

6 Record the CLLI circuit number.

Note: The CLLI circuit number is under and on the right of the COM LANG header on the MAP display.

7 To manually busy the circuit, type

>BSY

and press the Enter key.

8 To put the next circuit in the control position, type

>NEXT

and press the Enter key.

Go to step 5.

At the shelf

9

DANGER
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

Perform the procedure *Replacing a card* in this document to replace the card. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

10 Determine your next action based on the information in the following table.

If a maintenance procedure	Do
directed you to this procedure	step 11
did not direct you to this procedure	step 12

Trunk, maintenance, and service cards in trunk and service modules (end)

11 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

12 To post one of the circuits you manually busied, type

```
>POST  G  short_clli  ckt_no
```

and press the Enter key.

where

short_clli
is the name of the short CLLI

ckt_no
is the CLLI number of the circuit

13 To return the circuit to service, type

```
>RTS
```

and press the Enter key.

14 Repeat steps 12 and 13 for each manually busied circuit.

15 The procedure is complete.

7 Universal Edge 9000 card replacement procedures

Introduction

This chapter contains card replacement procedures for the Universal Edge 9000 (UEN) frame. The first section in the chapter provides an illustration of the UEN shelf layout.

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the UEN card(s) included in the replacement procedure.

Common procedures

This section lists common procedures for the UEN card replacement procedures. A common procedure is a series of steps that repeat in maintenance procedures. The removal and replacement of a card is an example of a common procedure. Common procedures are in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you to do so.

Action

This section contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

When you replace a card, record the following information in office records:

- the serial number of the card you replaced
- the date you replaced the card
- the reason you replaced the card

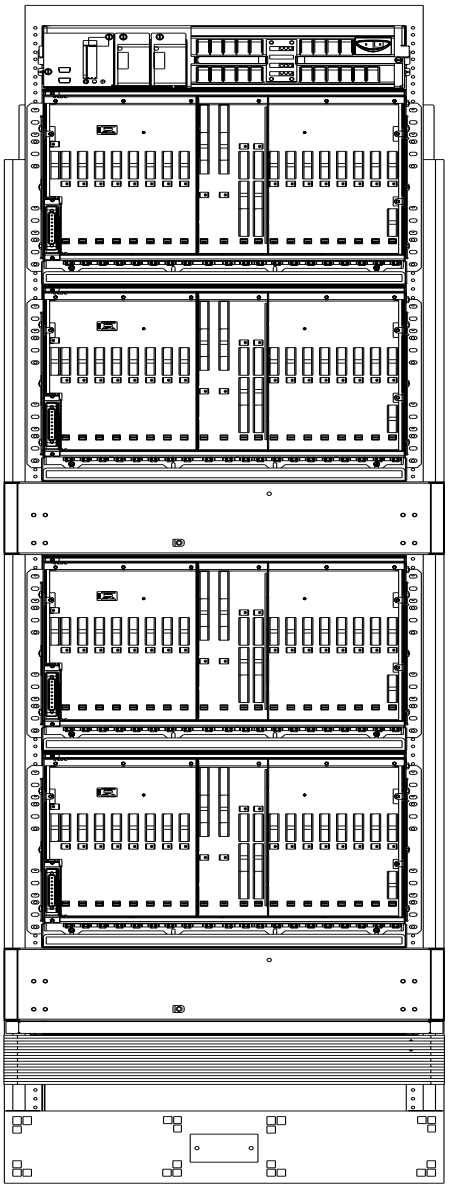
UEN shelf layout

Application

This procedure provides frame layouts for the Universal Edge 9000 DMS Bay frame (NTNY01AA).

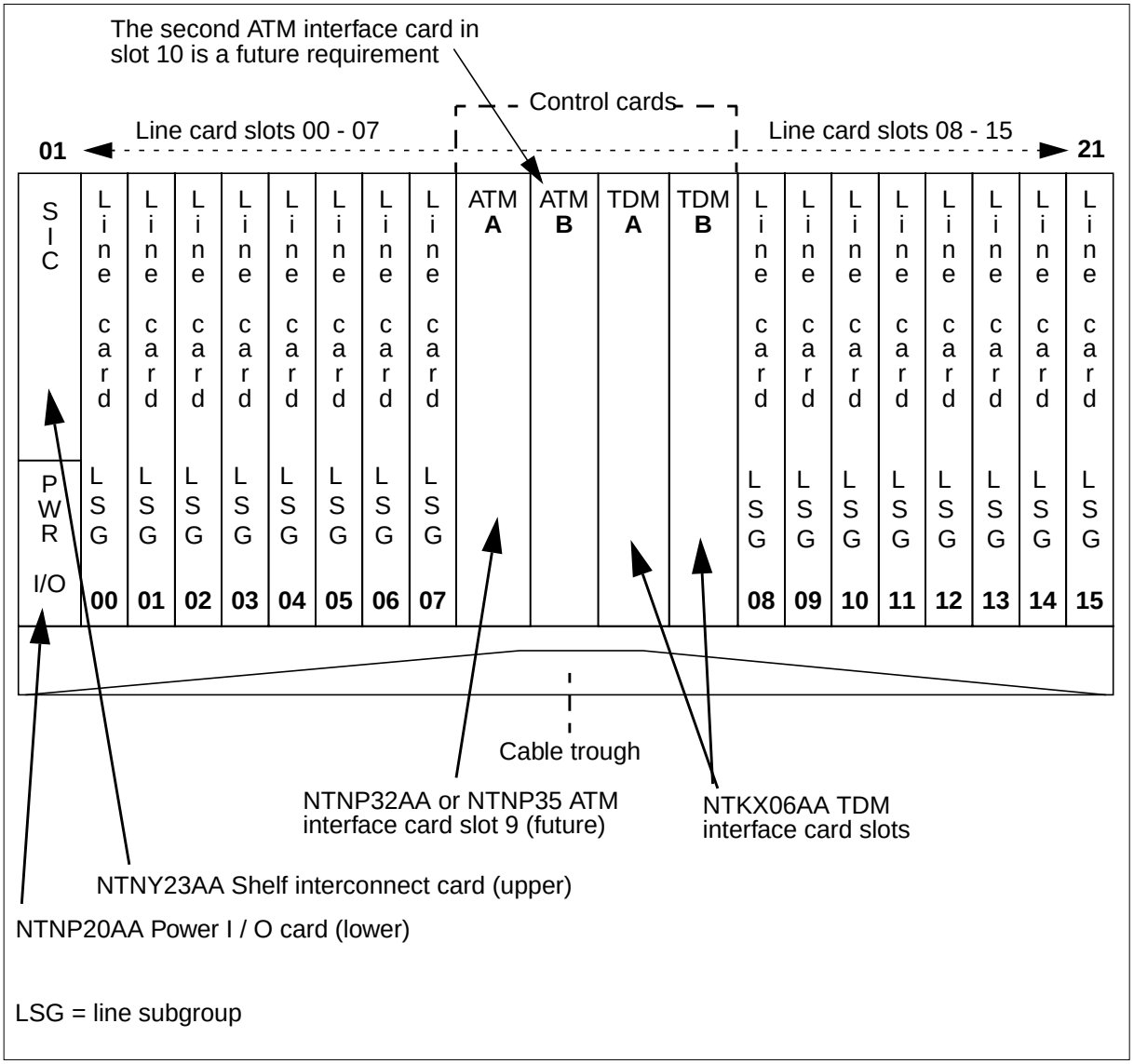
This procedure provides frame and shelf layouts for the UEN:

Frame layout of the UEN frame



UEN shelf layout (end)

UEN shelf layout



Note: Refer to the “Line cards for UEN shelf" table for a list of line cards in this shelf.

Line cards for UEN shelf

PEC		Card name
NTNP44	AA	UEN Combo 4+4 ADSL-DMT line card
NTNP50	AA	UEN POTS Multi-circuit line card

Control cards in a UEN shelf

Application

Use this procedure to replace the cards in the Universal Edge 9000 (UEN) shelf listed in the table that follows.

PEC	Suffixes	Name
NTKX06	AA	UEN TDM interface card
NTNY23	AA	Shelf interconnect card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the "Index" in this document. The index lists the cards, shelves, and frames in this card replacement NTP.

Common procedures

This procedure refers to the common procedures that follow:

- "Replacing a card"
- "Returning a card for repair or replacement"

Do not go to the common procedure unless the step-action procedure directs you to do so.

Next level of maintenance

Repeat this procedure if it is not successful when you first perform the procedure.

A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance and support can find the problem. More detail about logs appears in the *Log Report Reference Manual*.

Control cards in a UEN shelf (continued)

Card settings

The DS-30B link length timing equalization is defined on each NTKX06AA TDMIF circuit pack through six DIP switches, as indicated in the following table.

DS-30B link length equalization DIP switch settings

DIP switch settings (5-1)							
6	**5**	**4**	**3**	**2**	**1**	**Cable length in feet for frame-based equipment (Note 2)**	**Cable length in feet for cabinetized equipment (Note 3)**
Software controlled length							
Note 1	Off	Off	On	Off	Off	50	-
Note 1	Off	Off	On	Off	On	75	50
Note 1	Off	Off	On	On	Off	100	75
Note 1	Off	Off	On	On	On	125	100
Note 1	Off	On	Off	Off	Off	150	125
Note 1	Off	On	Off	Off	On	175	150
Note 1	Off	On	Off	On	Off	200	175
Note 1	Off	On	Off	On	On	225	200
Note 1	Off	On	On	Off	Off	250	225
Note 1	Off	On	On	Off	On	-	250

Note 1: DIP switch number 6 is used to select between DIP switch controlled delay and software controlled delay. If DIP switch number 6 is set to On, then delay is controlled by software.
If DIP switch number 6 is set to Off, then delay is controlled by value set on DIP switches 5-1.

Note 2: When hosted by a frame-based XPM (such as, LGC) or RCC2.

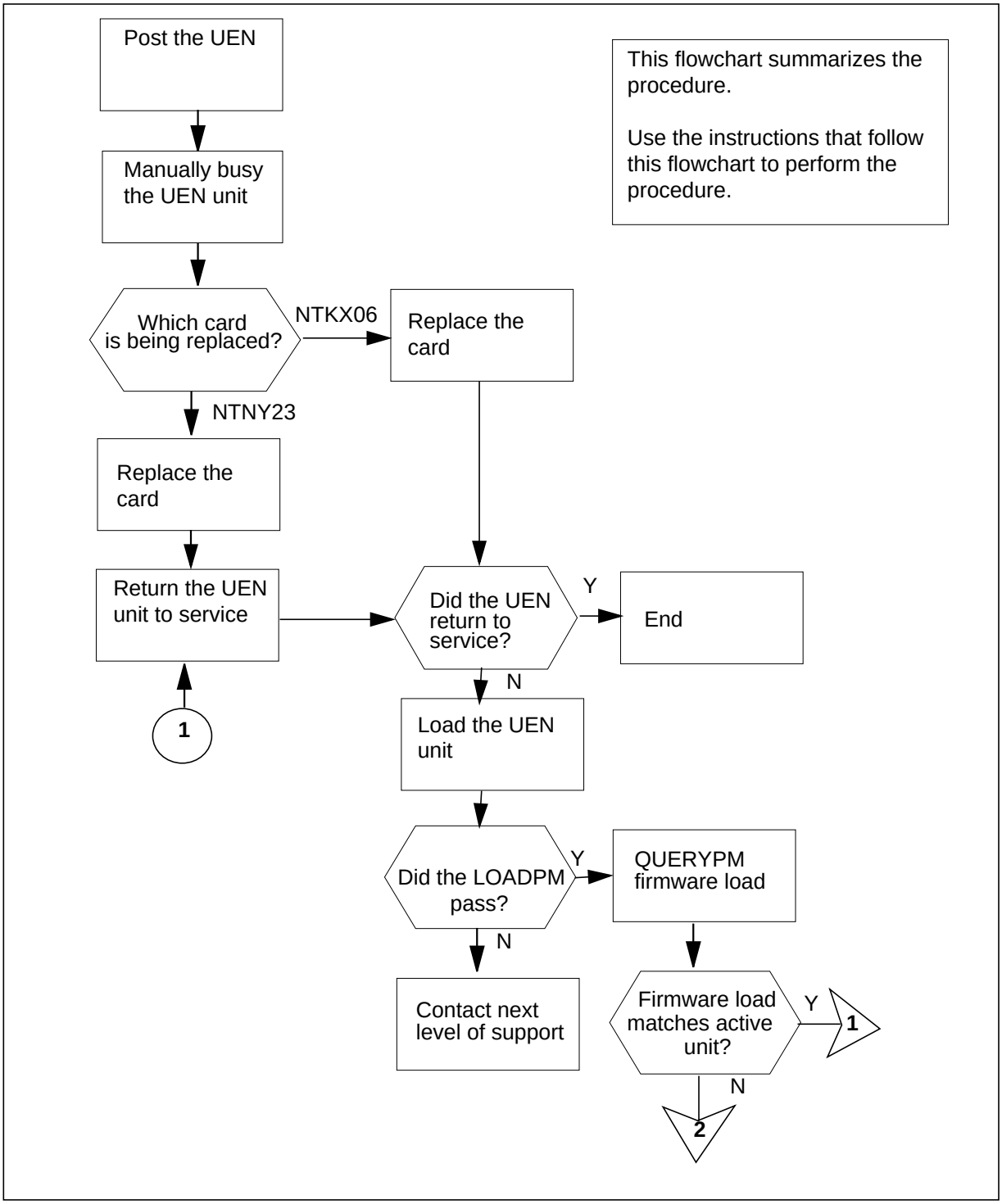
Note 3: When hosted by a cabinetized XPM (CLGE) or RCC2 in a CRSC cabinet.

Action

The flowchart that follows provides a summary of this procedure. Use the instructions in the step action procedure that follows the flowchart to replace the card.

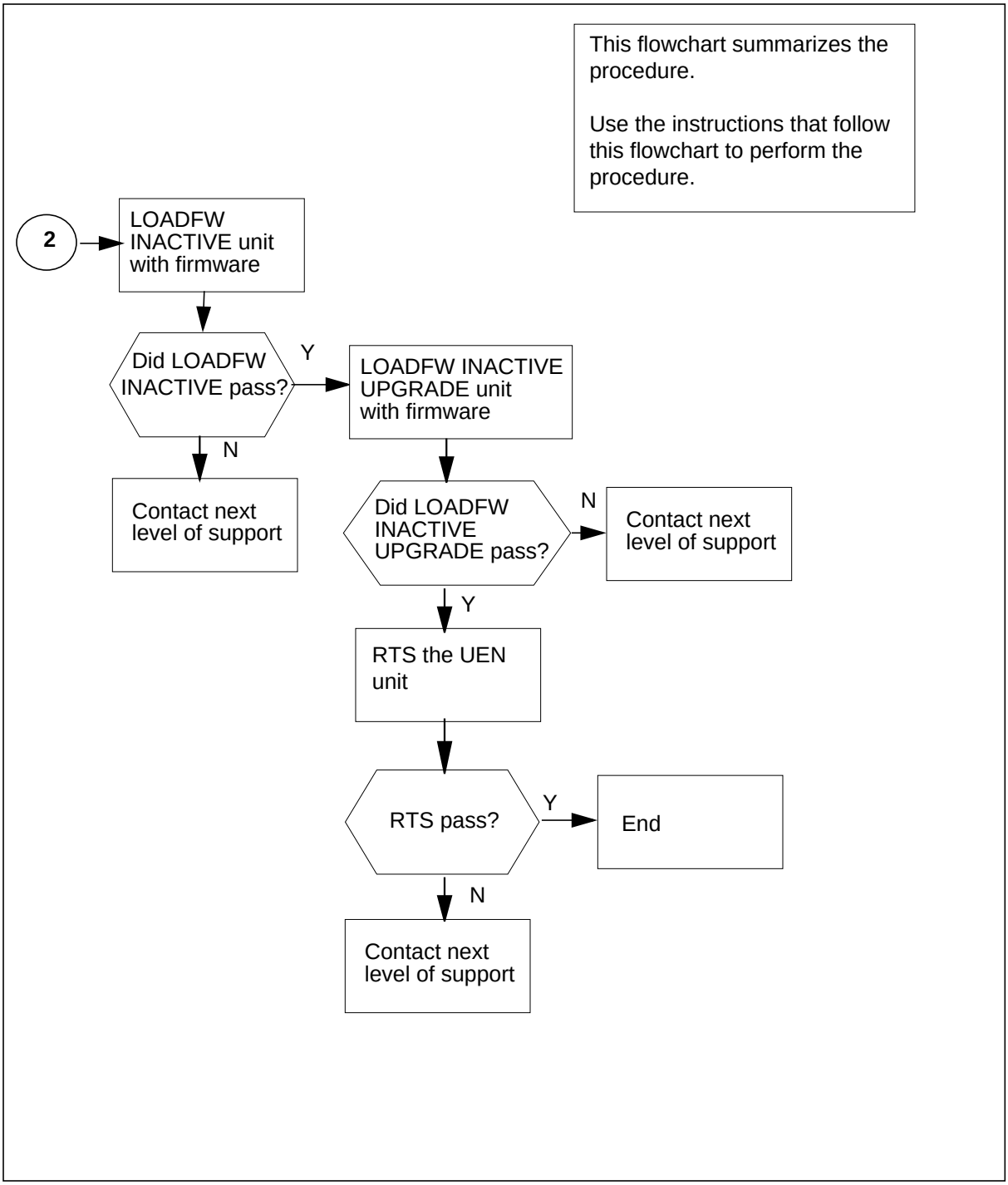
Control cards in a UEN shelf (continued)

Summary of replacing Control cards in a UEN shelf



Control cards in a UEN shelf (continued)

Summary of replacing Control cards in a UEN shelf (continued)



Control cards in a UEN shelf (continued)

Replacing Control cards in a UEN shelf

At your current location

1

WARNING
Loss of service
This procedure directs you to manually busy UEN units, which can cause service degradation. Perform this procedure if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   0       0       2       0       1      71
```

3 To post the UEN that contains the card you replace, type

`>POST UEN site frame_no shelf_no`

and press the Enter key.

where

site
is the UEN location (host or remote)

frame_no
is the frame number (00 to 99)

shelf_no
is the number of the UEN shelf (0, 1, 2, or 3) in the frame

Example of a MAP display:

```
UEN HOST 00 0 InSv Links  OOS: Cside 0 Pside 0
Unit 0: InSv
Unit 1: InSv
                              11  11  11
LSG:   01  23  45  67  89  01  23  45
       ..  --  --  --  ..  ..  --  --
```

Control cards in a UEN shelf (continued)

4 Determine the state of the UEN unit that associates with the card you replace.

If the state of the UEN unit	Do
is SysB, CBsy, ISTb, or InSv	step 5
is ManB	step 6
is Offl	step 18

5 To manually busy the UEN unit, type

>BSY UNIT unit_no

and press the Enter key.

where

unit_no
is the UEN unit number (0 or 1)

Example of a MAP display:

```
UEN HOST 00 0   ISTb   Links OOS: Cside  0 Pside  0
Unit0: ManB
Unit1: InSv        Takeover
                                11  11  11
LSG:   01  23  45  67  89  01  23  45
       ..  ..  ..  --  ..  ..  --  --
bsy unit 0
UEN HOST 00 0 Unit 0  Bsy Passed
```

If the BSY command	Do
passes	step 6
fails	step 19

At the equipment shelf

6 Remove the shelf front cover. Ensure the “Safe to Pull” LED is lit on the face of the card to be replaced. Carefully disconnect the front cable to the card and lay it out of the card’s path.

7

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

Control cards in a UEN shelf (continued)

To replace the card, perform the procedure *"Replacing a card"* in this document. Complete the procedure and return to this point.

Note: When replacing the NTKX06 TDM Interface card, make sure the DIP switch settings in the replacement card are the same as those in the card that was removed. Refer to the "DS-30B loop length equalization DIP switch settings" table in the "Card settings" section at the beginning of this procedure for more information on the correct DIP switch settings.

Carefully reconnect the front cable to the card that was replaced.

8 Replace the front cover.

9 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 10
did not direct you to this procedure	step 11

10 Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

At the MAP terminal

11 The next action depends on the type of card that was replaced.

If the card that was replaced is	Do
an NTKX06 TDM interface card	step 12
an NTNY23 SI card	step 13

12 To determine if load in the NTKX06 is correct, type

```
>QUERYPM
```

and press the Enter key.

If the load in the NTKX06 is	Do
correct	step 13
not correct	step 14

13 To return the UEN to service, type

```
>RTS UNIT unit_no
```

and press the Enter key.

where

unit_no
is the UEN unit number (0 or 1)

Example of a MAP response:

Control cards in a UEN shelf (continued)

```
UEN HOST 00 0 Unit 0  OSvce Tests Initiated
UEN HOST 00 0 Unit 0  Tst Passed
UEN HOST 00 0 Unit 0  Rts Passed
UEN HOST 00 0 Unit 0  InSvce Tests Initiated
UEN HOST 00 0 Unit 0  Tst Passed
```

If the RTS command	Do
fails	step 14
passes	step 20

14 To load the UEN unit, type

>LOADPM UNIT unit_no CC

and press the Enter key.

where

unit_no
is the UEN unit number (0 or 1)

Example of a MAP response:

```
UEN HOST 00 0 Unit 0  LoadPM Passed
```

If the LOADPM command	Do
fails	step 19
passes	step 13

15 To query the UEN unit for the firmware load, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

Control cards in a UEN shelf (end)

```
PM Type: UEN  Int. No.: 8  Status index: 7  Node_No: 83
UEN HOST 05 0  Memory Size - Unit 0: 8M , Unit 1: 8M
Loadnames (LCMINV): UEN014AC / NILLOAD  (FWLoad)
Unit0 Loads:  Act- UENMJ01        Stby- UENMJ01
     FWLoads: Act- UENFW_02     Stby- UENFW_02
Unit1 Loads:  Act- UENMJ01      Stby- UENMJ01
    FWLoads:  Act- UENFW_02     Stby- UENFW_02
UEN REX is     ON; PASSED on MON. 2001/01/29 at 01:51:11
Node Status: {OK, FALSE}
Unit 0 Status: {OK, FALSE}
Unit 1 Status: {OK, FALSE}
 Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
  HOST  01  D34  UEE  05   51  UEN  05 0               KX00AA
World Line Card Template(s) in use:
 NP44AA
Services : NEUTRAL
```

If the firmware	Do
is valid	step 13
is invalid	step 16

16 To load the firmware into the inactive UEN unit, type

>LOADFW INACTIVE

and press the Enter key

If the LOADFW	Do
passes	step 17
fails	step 19

17 To upgrade the inactive UEN unit firmware, type

>LOADFW INACTIVE UPGRADE

and press the Enter key.

If the LOADFW UPGRADE	Do
passes	step 13
fails	step 19

18 To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel.

19 For additional help, contact the next level of support.

20 Perform the “Returning a card for repair or replacement” procedure in this document and return to this step.

21 The procedure is complete.

Line cards in a UEN shelf

Application

Use this procedure to replace the cards in the Universal Edge 9000 shelf listed in the table that follows.

PEC	Suffixes	Name
NTNP44	AA	UEN Combo 4 + 4 ATM-DMT line card
NTNP50	AA	UEN POTS 32 multi-circuit line card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the "Index" in this document. The index lists the cards, shelves, and frames in this card replacement NTP.

Common procedures

This procedure refers to the common procedures that follow:

- "Replacing a card"
- "Returning a card for repair or replacement"

Do not go to the common procedure unless the step-action procedure directs you to do so.

Next level of maintenance

Repeat this procedure if it is not successful when you first perform the procedure.

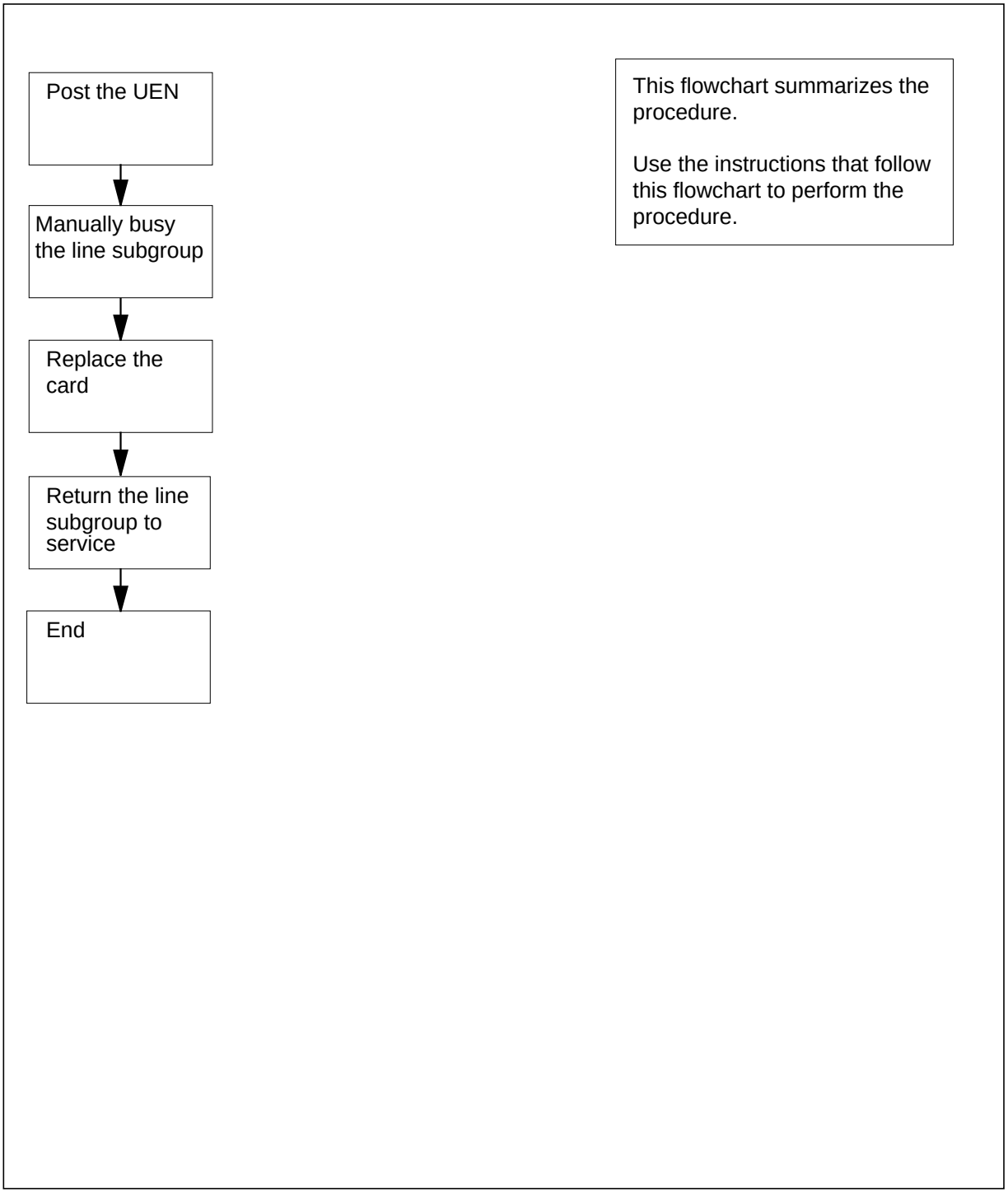
A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance and support can find the problem. More detail about logs appears in the *Log Report Reference Manual*.

Action

The flowchart that follows provides a summary of this procedure. Use the instructions in the step action procedure that follows the flowchart to replace the card.

Line cards in a UEN shelf (continued)

Summary of replacing Line cards in a UEN shelf



Line cards in a UEN shelf (continued)

Replacing Line cards in a UEN shelf

At your current location

1

CAUTION
Loss of service
This procedure directs you to manually busy a minimum of one line subgroup. Removal of a line card from service can cause the system to drop calls in progress. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                SysB    ManB    OffL    CBsy    ISTb    InSv
PM                 0       0       2       0       1      71
```

3 To post the UEN that contains the card you replace, type

`>POST UEN site frame_no shelf_no`

and press the Enter key.

where

site
is the UEN location (host or remote)

frame_no
is the frame number (00 to 99)

shelf_no
is the number of the UEN shelf (0, 1, 2, or 3) in the frame

Example of a MAP display:

```
UEN HOST 00 0 InSv Links  OOS: Cside 0 Pside 0
Unit 0: InSv
Unit 1: InSv
                              11  11  11
LSG:   01  23  45  67  89  01  23  45
       ..  --  --  --  ..  ..  --  --
```

Line cards in a UEN shelf (continued)

4 To manually busy the line subgroup (LSG) representing the card to be replaced, type

> BSY LSG lsg_no

and press the Enter key.

where

lsg
is the line subgroup number (0-15)

Example of a MAP response

```
UEN HOST 01 1 LSG 0 will be taken out of service. Please
confirm (“YES”. “Y”, “NO”, or “n”):
```

At the shelf

5 Remove the shelf front cover. Ensure the “Safe to Pull” LED is lit on the face of the card to be replaced. Carefully disconnect the front cable to the card and lay it out of the card’s path.

6

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle cards. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

Replace the card. Carefully reconnect the front cable to the card that was replaced.

7 Replace the front cover.

At the MAP terminal

8 To return the line subgroup to service, type

>RTS LSG lsg_no

and press the Enter key.

where

lsg
is the line subgroup number (0-15)

If RTS command	Do
passed	step 9
failed	step 11

Line cards in a UEN shelf (end)

9 The next action depends on the reason that you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 10
did not direct you to this procedure	step 12

10 Return to the maintenance procedure that directed you to this procedure Continue as directed by the maintenance procedure.

11 For additional help, contact the next level of support.

12 Perform the “Returning a card for repair or replacement” procedure in this document and return to this step.

13 The procedure is complete.

NTNP20 in a UEN shelf

Application

Use this procedure to replace the NTNP20 Power Input / Output (I/O) card in the Universal Edge 9000 (UEN) identified in the table that follows.

PEC	Suffixes	Name
NTNP20	AA	Power I/O card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the "Index" in this document. The index lists the cards, shelves, and frames in this card replacement NTP.

Common procedures

This procedure refers to the common procedures that follow:

- "Replacing a card"
- "Returning a card for repair or replacement"

Do not go to the common procedure unless the step-action procedure directs you to do so.

Next level of maintenance

Repeat this procedure if it is not successful when you first perform the procedure.

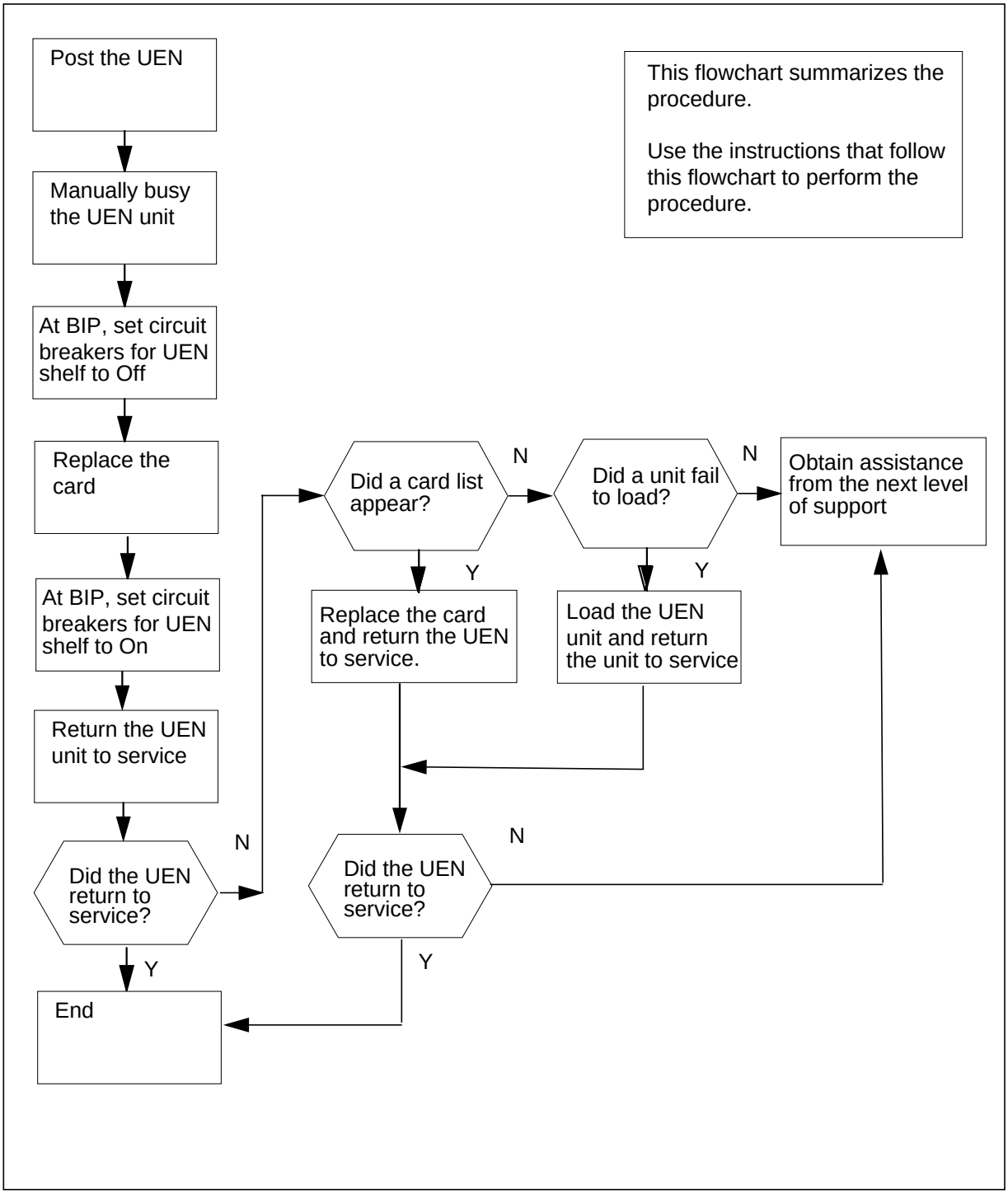
A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance and support can find the problem. More detail about logs appears in the *Log Report Reference Manual*.

Action

The flowchart that follows provides a summary of this procedure. Use the instructions in the step action procedure that follows the flowchart to replace the card.

NTNP20
in a UEN shelf (continued)

Summary of replacing NTNP20 in a UEN shelf



NTNP20
in a UEN shelf (continued)

Replacing NTNP20 in a UEN shelf

At your current location

1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.

2

WARNING
Loss of service
This procedure directs you to manually busy UEN units, which will cause service outage. Perform this procedure if you need to restore out-of-service components. If you do not need to restore out-of-service components, perform this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card and the card that you remove have the same PEC and PEC suffix.

At the MAP terminal

3 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   0       0       2       0       1      71
```

4 To post the UEN that contains the card you replace, type

`>POST UEN site frame_no shelf_no`

and press the Enter key.

where

site
is the UEN location (host or remote)

frame_no
is the frame number (00 to 99)

shelf_no
is the number of the UEN shelf (0, 1, 2, or 3) in the frame

Example of a MAP display:

NTNP20
in a UEN shelf (continued)

```
UEN HOST 00 0 ISTb Links  OOS: Cside 0 Pside 0
Unit 0: ISTb
Unit 1: ISTb
                              11  11  11
LSG:   01  23  45  67  89  01  23  45
       ..  --  --  --  ..  ..  --  --
```

5 Determine the state of the UEN unit that associates with the card you replace.

If the state of the UEN unit	Do
is SysB, CBsy, ISTb, or InSv	step 6
is ManB	step 9
is Offl	step 16

6

CAUTION
Loss of service
This procedure directs you to remove the NTNP20 Power I/O card. This card filters the power coming into the shelf and when removed, will remove power from the shelf. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

To manually busy the UEN, type

>BSY PM

and press the Enter key.

Example of a MAP display:

```
UEN HOST 00 0   ISTb   Links OOS: Cside  0 Pside  0
Unit0: ManB
Unit1: ManB
                              11  11  11
LSG:   01  23  45  67  89  01  23  45
       ..  ..  ..  --  ..  ..  --  --
bsy pm
UEN HOST 00 0 Bsy Passed
```

If the BSY command	Do
passed	step 7
failed	step 16

NTNP20
in a UEN shelf (continued)

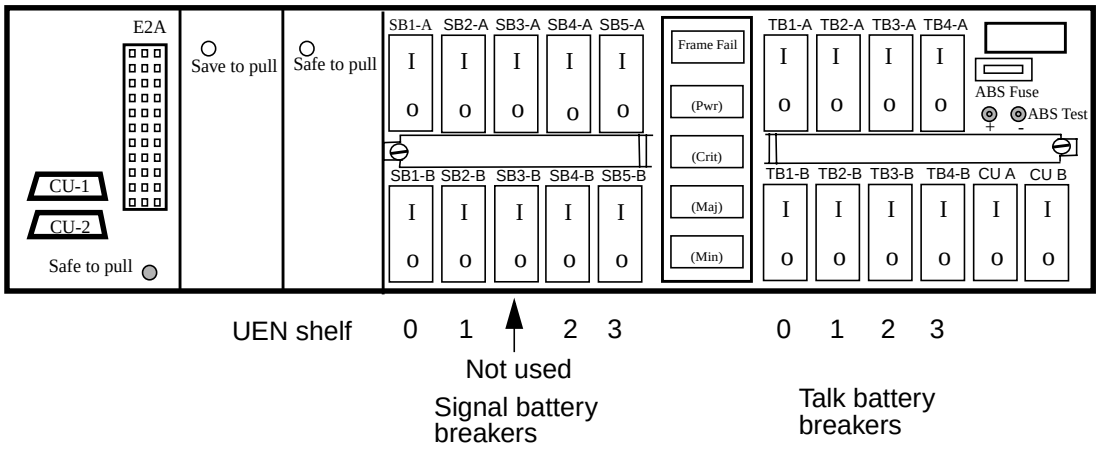
At the equipment frame

7 Set the signal battery and talk battery breakers for the UEN impacted by this card replacement procedure to the Off position. Choose the correct set of breakers from the following list.

- SB1-A and SB1-B control UEN 0 signal battery feed and TB1-A and TB1-B control UEN 0 talk battery
- SB2-A and SB2-B control UEN 1 signal battery feed and TB2-A and TB2-B control UEN 1 talk battery
- SB4-A and SB4-B control UEN 2 signal battery feed and TB3-A and TB3-B control UEN 2 talk battery
- SB5-A and SB5-B control UEN 3 signal battery feed and TB4-A and TB4-B control UEN 3 talk battery

Refer to the following figure to determine the correct breakers to power off.

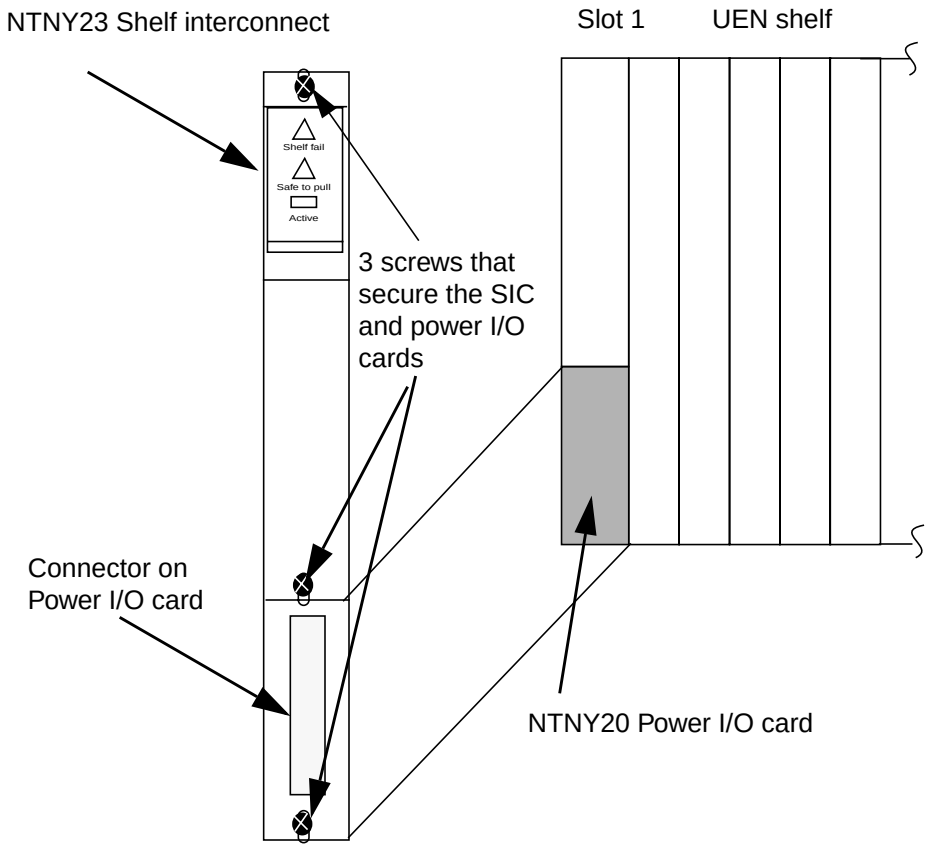
Breaker interface panel



8 Remove the front cover. Disconnect the cables on the front of the Power I/O card and the NTNY23 Shelf interconnect cards. Using a Phillips head screwdriver, remove the two screws that secure the NTNY23 Shelf interconnect card in slot 1. Then remove the screw that secures the PowerI/O card in slot 1. Use the following figure to assist in locating the screws.

NTNP20
in a UEN shelf (continued)

NTNP20 Power I/O card in slot 1



9

> **WARNING**
> **Static electricity damage**
> Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on the local craft access panel (LCAP). The wrist strap protects the cards against static electricity damage.

Remove the NTNY23 card and place in a an electrostatic discharte (ESD) protective bag. Remove and replace the NTNP20 Power I/O card with one of the same PEC and suffix. Replace the NTNY23 SI card.

10 Reconnect the cables on the front of the Power I/O and SI cards. Using a Phillips head screwdriver,secure the cards in the slot using the three screws that were removed in step 8.

NTNP20
in a UEN shelf (continued)

11 Set the signal battery and talk battery breakers that were turned Off in step 7 to the On position. Rreplace the front cover.

At the MAP terminal

12 To return the UEN to service, type

>RTS PM

and press the Enter key.

If the RTS	Do
passes	step 17
fails because a unit failed to load	step 13
fails and the system generates a card list	step 14

13 To load the UEN , type

>LOADPM PM CC

and press the Enter key.

If the load	Do
fails, and the system generates a card list	step 14
fails, and the system does not generate a card list	step 16
passes	step 17

At the equipment shelf

14 Replace the first or next card on the list. Refer to the correct card replacement procedure in this document. Complete the procedure and go to step 15.

At the MAP terminal

15 To return the UEN to service, type

>RTS PM

and press the Enter key.

If the RTS	Do
passes	step 17
fails and the system does not generate a card list	step 16
fails and the system generates a card list	step 14

NTNP20
in a UEN shelf (end)

16 For additional help, contact the next level of support.

17 Perform the “Returning a card for repair or replacement” procedure in this document and return to this step.

18 The procedure is complete.

8 XPM card replacement procedures

Introduction

This chapter contains card replacement procedures for the extended multiprocessor system (XMS) based peripheral module (XPM). The first section in the chapter provides illustrations that show XPM shelf layouts.

Card replacement procedures for the frame supervisory panel (FSP) and modular supervisory panel (MSP) are in the chapter “Frame supervisory panel and maintenance supervisory panel card replacement procedures".

Each procedure contains the following sections:

- Application
- Common procedures
- Action

Application

This section identifies the correct XPM card(s) covered by the replacement procedure.

Common procedures

This section lists common procedures that are used during the XPM card replacement procedure. A common procedure is a series of steps that you repeat within maintenance procedures. An example of a common procedure is the removal and replacement of a card. Common procedures are found in the common procedures chapter in this NTP.

Do not use common procedures unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Recording card replacement activities

Record the following information in office records when you replace a card:

- the serial number of the card you replace
- the date you replace the card
- the reason you replace the card

XPM shelf layouts

Application

The following layouts are for the common peripheral controller equipment (CPCE) frame. The CPCE frame is used for all common host XPMs.

The following shelf layouts are for the following XPMs:

- DTC with the unified processor (XPM plus)
- LGC with the unified processor (XPM plus)
- LTC with the unified processor (XPM plus)
- two-processor DTC
- two-processor LGC
- two-processor LTC
- ISDN XPMs (DTCI, LGCI, and LTCI) with unified processor
- two-processor ISDN XPMs (DTCI, LGCI, and LTCI)
- international XPMs (IDTC, ILGC, and ILTC) with unified processor (XPM plus)
- international two-processor XPMs (IDTC, ILGC, and ILTC)
- international three-processor XPMs (IDTC, ILGC, and ILTC)
- PCM30 XPMs (PDTC, PLGC, and PLTC) with unified processor
- two-processor PCM30 XPMs (PDTC, PLGC, and PLTC)

Note 1: The frame and shelf layouts on the pages that follow are standard. There can be some differences in the shelves in your office.

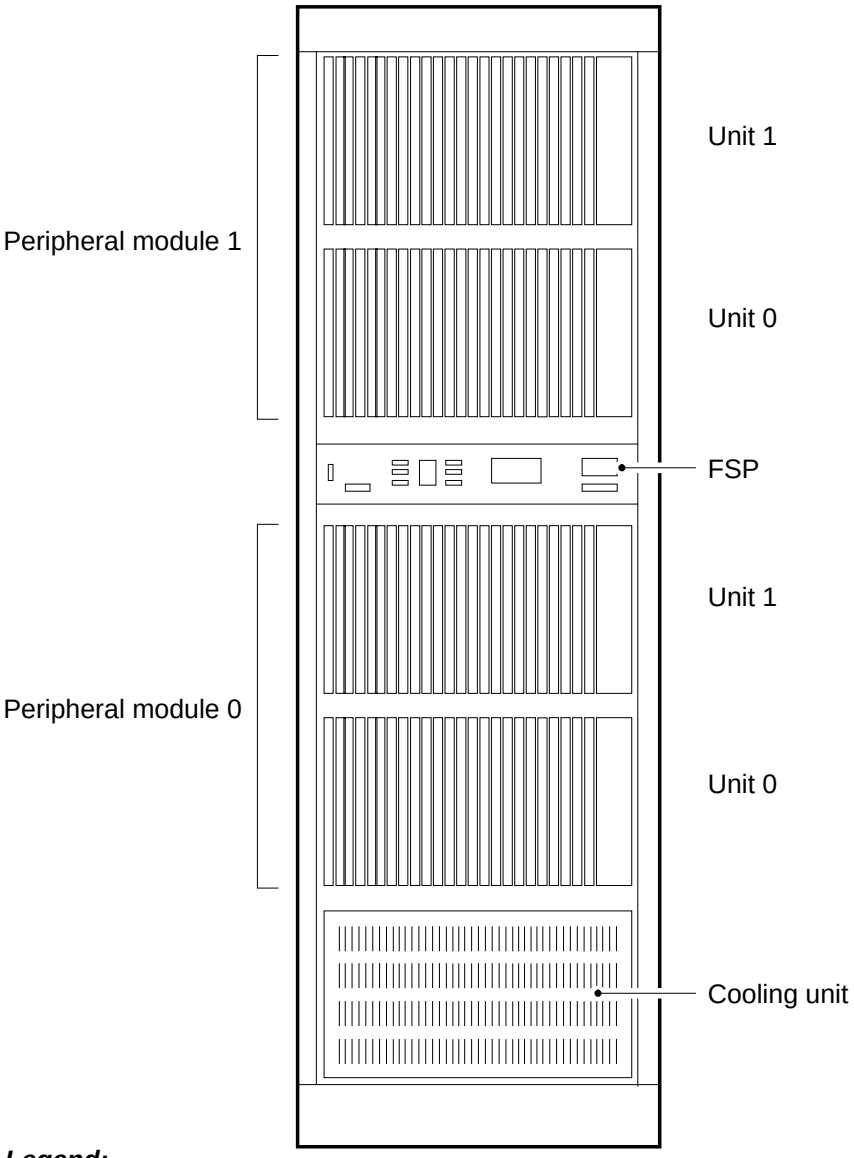
Note 2: PCM30 variants are also known as “offshore" and designated by the suffix “O" (DTCO, LGCO, and LTCO).

Note 3: PCM30 XPM configurations support ISDN.

Note 4: In the shelf design diagrams, slots marked with * are sometimes not occupied and have an NT0X50 filler faceplate.

XPM shelf layouts (continued)

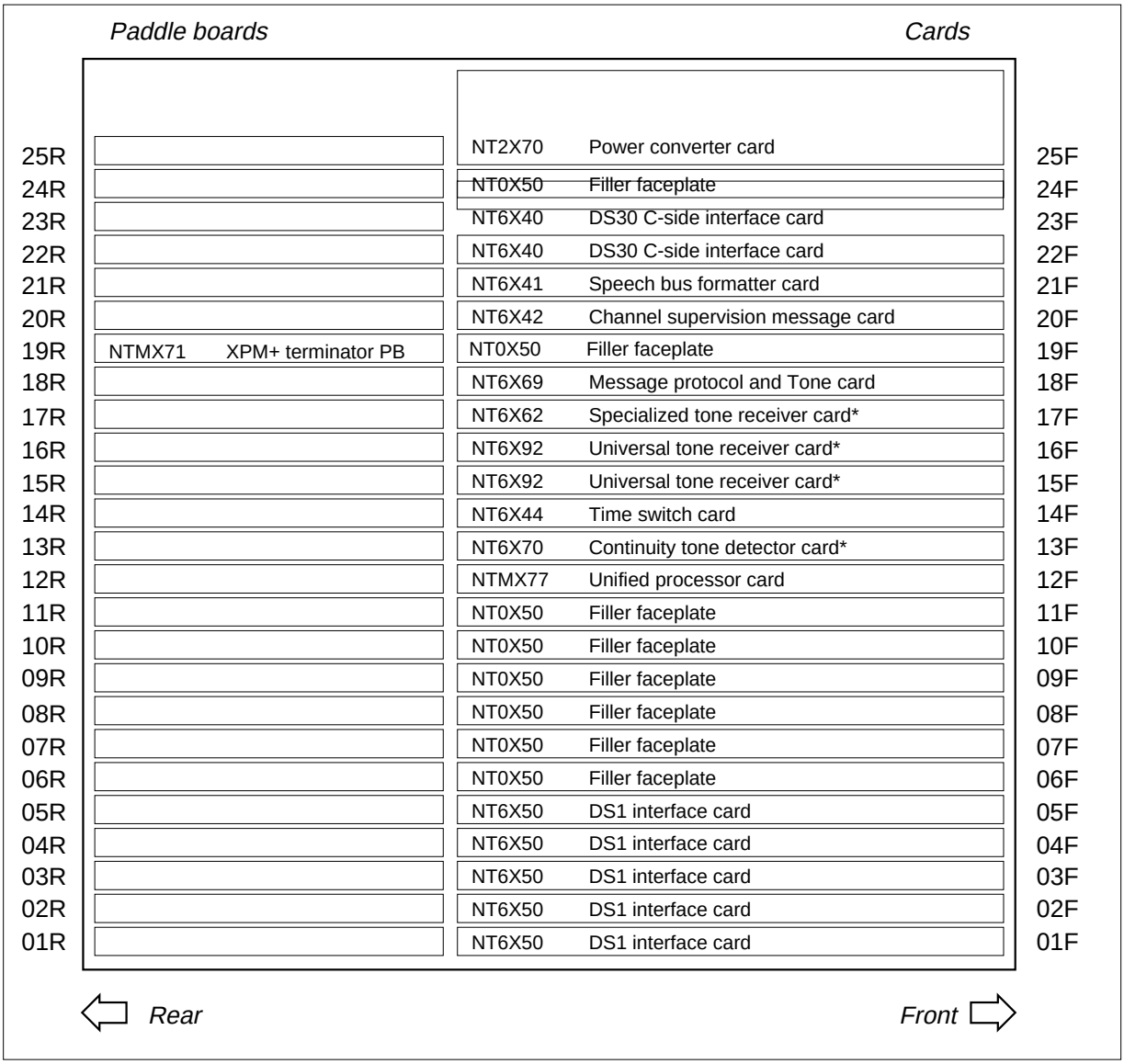
Frame layout for common peripheral controller equipment frame



Legend:
FSP Frame supervisory panel

XPM shelf layouts (continued)

Shelf layout for DTC with the unified processor (XPM plus)



Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are provisioned are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

Shelf layout for LGC with the unified processor (XPM plus)

	Paddle boards	*Cards*		
25R		NT2X70	Power converter card	25F
24R		NT0X50	Filler faceplate	24F
23R		NT6X40	DS30 C-side interface card	23F
22R		NT6X40	DS30 C-side interface card	22F
21R		NT6X41	Speech bus formatter card	21F
20R		NT6X42	Channel supervision message card	20F
19R	NTMX71 XPM+ terminator PB	NT0X50	Filler faceplate	19F
18R		NT6X69	Message Protocol and Tone card	18F
17R		NT0X50	Filler faceplate	17F
16R		NT0X50	Filler faceplate	16F
15R		NT6X92	Universal tone receiver card	15F
14R		NT6X44	Time switch card	14F
13R		NT6X78	CLASS modem resource card*	13F
12R		NTMX77	Unified processor card	12F
11R		NT0X50	Filler faceplate	11F
10R		NT0X50	Filler faceplate	10F
09R		NT0X50	Filler faceplate	09F
08R		NT0X50	Filler faceplate	08F
07R		NT6X48	DS30A peripheral interface card*	07F
06R		NT6X48	DS30A peripheral interface card*	06F
05R		NT6X50	DS1 interface card*	05F
04R		NT6X50	DS1 interface card*	04F
03R		NT6X50	DS1 interface card*	03F
02R		NT6X50	DS1 interface card*	02F
01R		NT6X50	DS1 interface card*	01F

Rear *Front*

Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

Shelf layout for LTC with the unified processor (XPM plus)

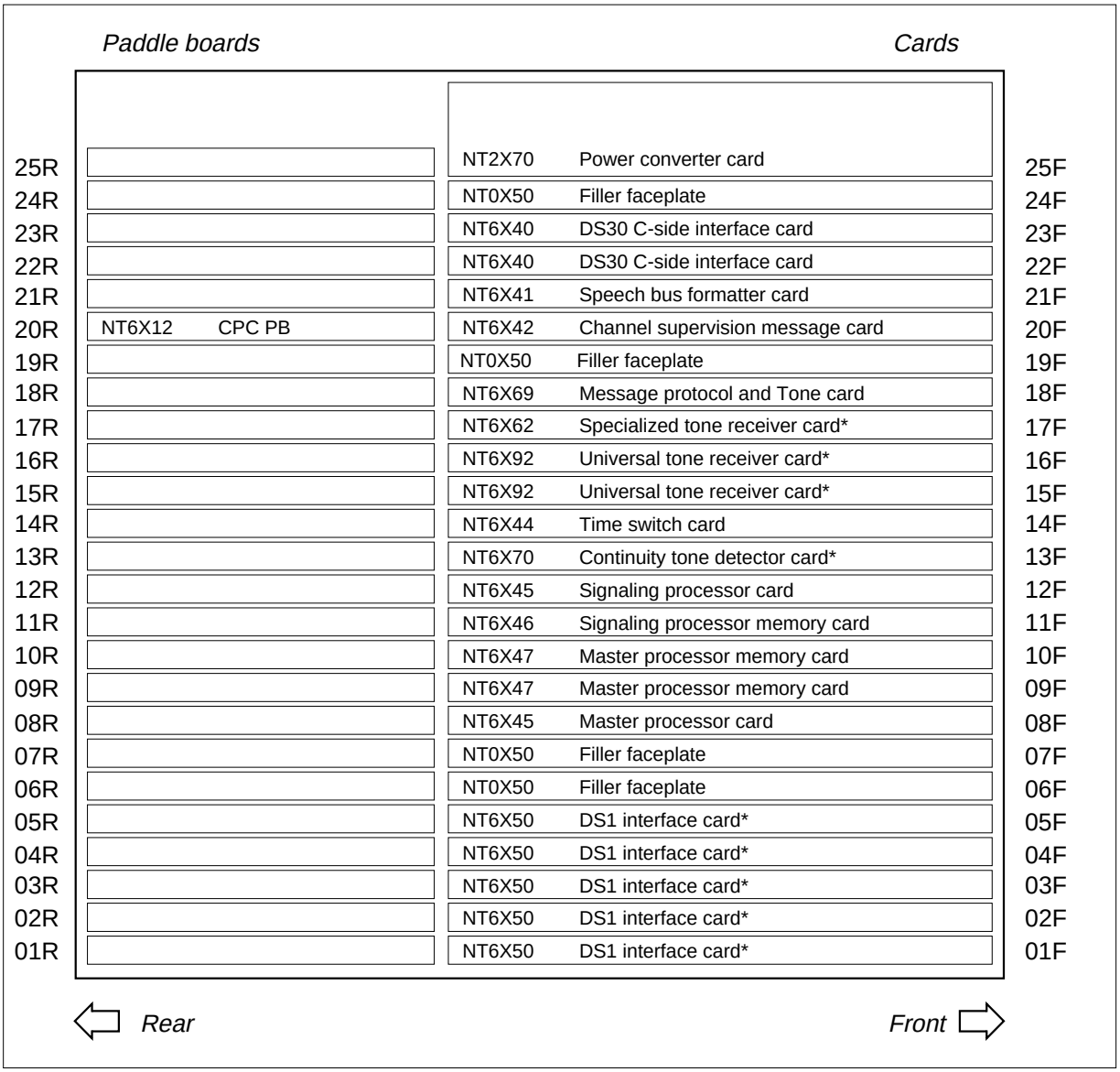
	Paddle boards	*Cards*		
25R		NT2X70	Power converter	25F
24R		NT0X50	Filler faceplate	24F
23R		NT6X40	DS30 C-side interface card	23F
22R		NT6X40	DS30 C-side interface card	22F
21R		NT6X41	Speech bus formatter card	21F
20R		NT6X42	Channel supervision message card	20F
19R	NTMX71 XPM+ terminator PB	NT0X50	Filler faceplate	19F
18R		NT6X69	Message protocol card	18F
17R		NT0X50	Filler faceplate	17F
16R		NT6X92	Universal tone receiver card*	16F
15R		NT6X92	Universal tone receiver card*	15F
14R		NT6X44	Time switch card	14F
13R		NT6X78	CLASS modem resource card*	13F
12R		NTMX77	Unified processor card	12F
11R		NT0X50	Filler faceplate	11F
10R		NT0X50	Filler faceplate	10F
09R		NT0X50	Filler faceplate	09F
08R		NT0X50	Filler faceplate	08F
07R		NT6X48	DS30A peripheral interface card*	07F
06R		NT6X48	DS30A peripheral interface card*	06F
05R		NT6X50	DS1 interface card*	05F
04R		NT6X50	DS1 interface card*	04F
03R		NT6X50	DS1 interface card*	03F
02R		NT6X50	DS1 interface card*	02F
01R		NT6X50	DS1 interface card*	01F

Rear *Front*

Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

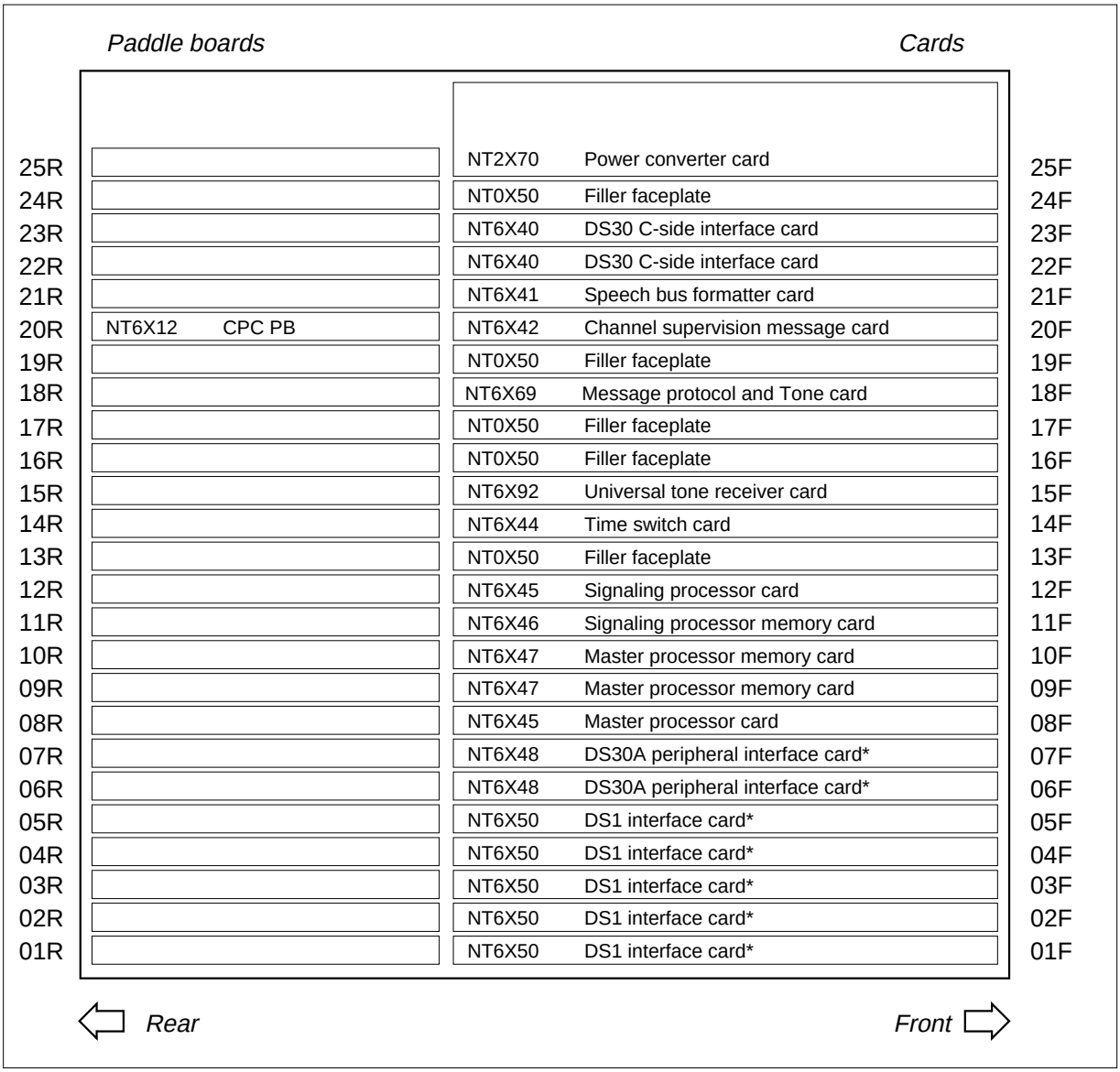
Shelf layout for two-processor DTC



Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

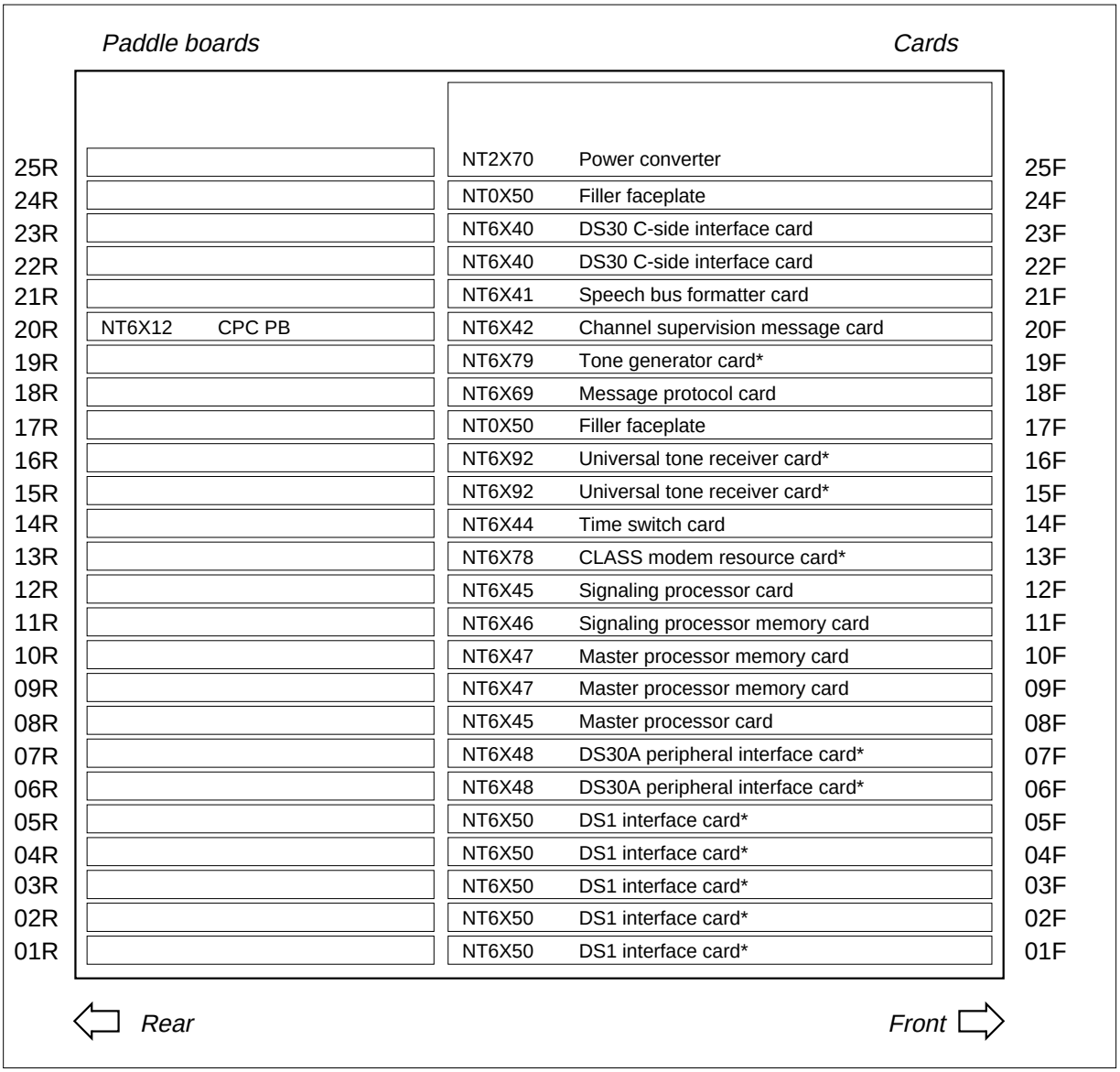
Shelf layout for two-processor LGC



Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

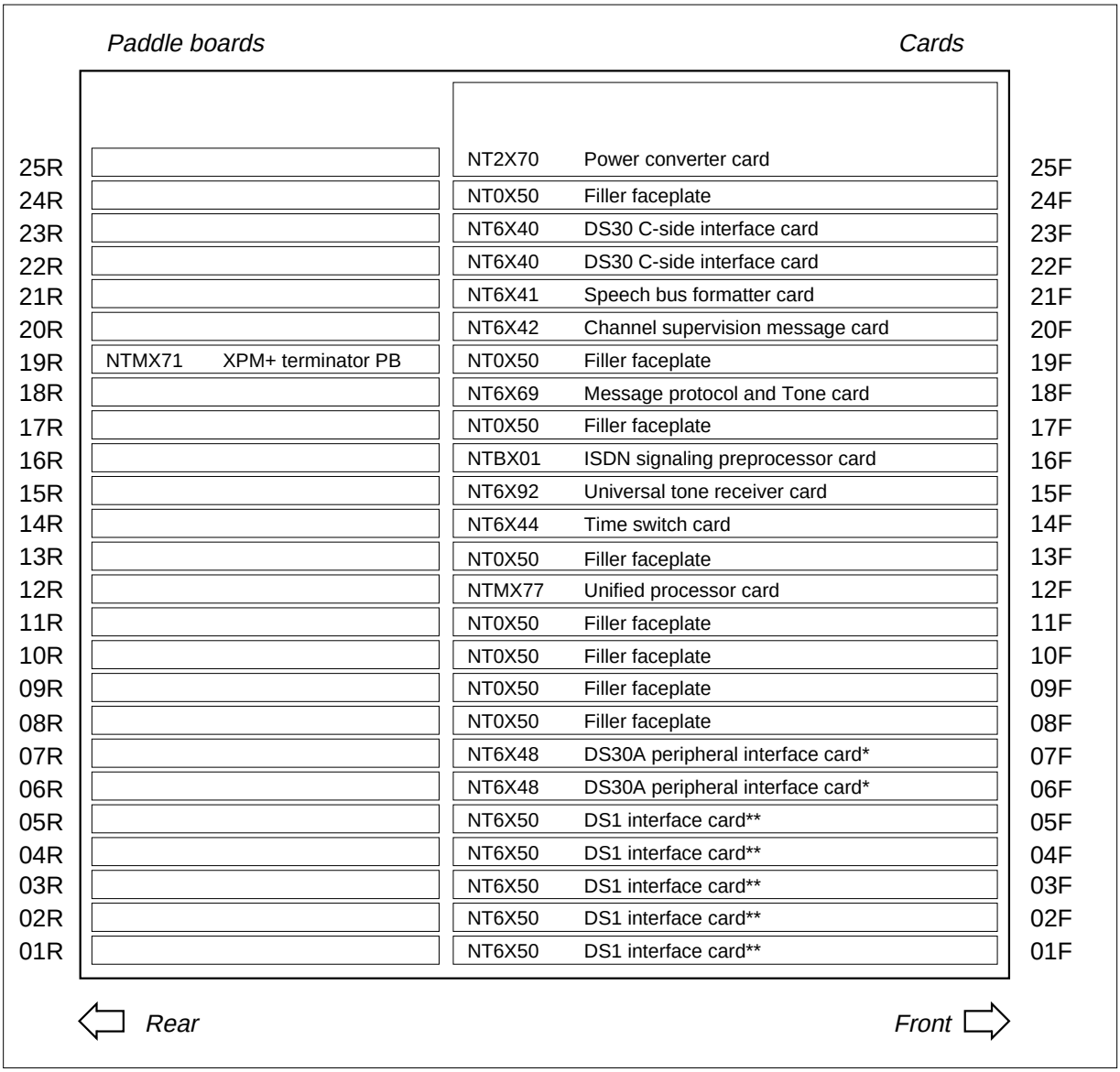
Shelf layout for two-processor LTC



Note: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

XPM shelf layouts (continued)

Shelf layout for ISDN XPMs (DTCI, LGCI, and LTCI) with unified processor

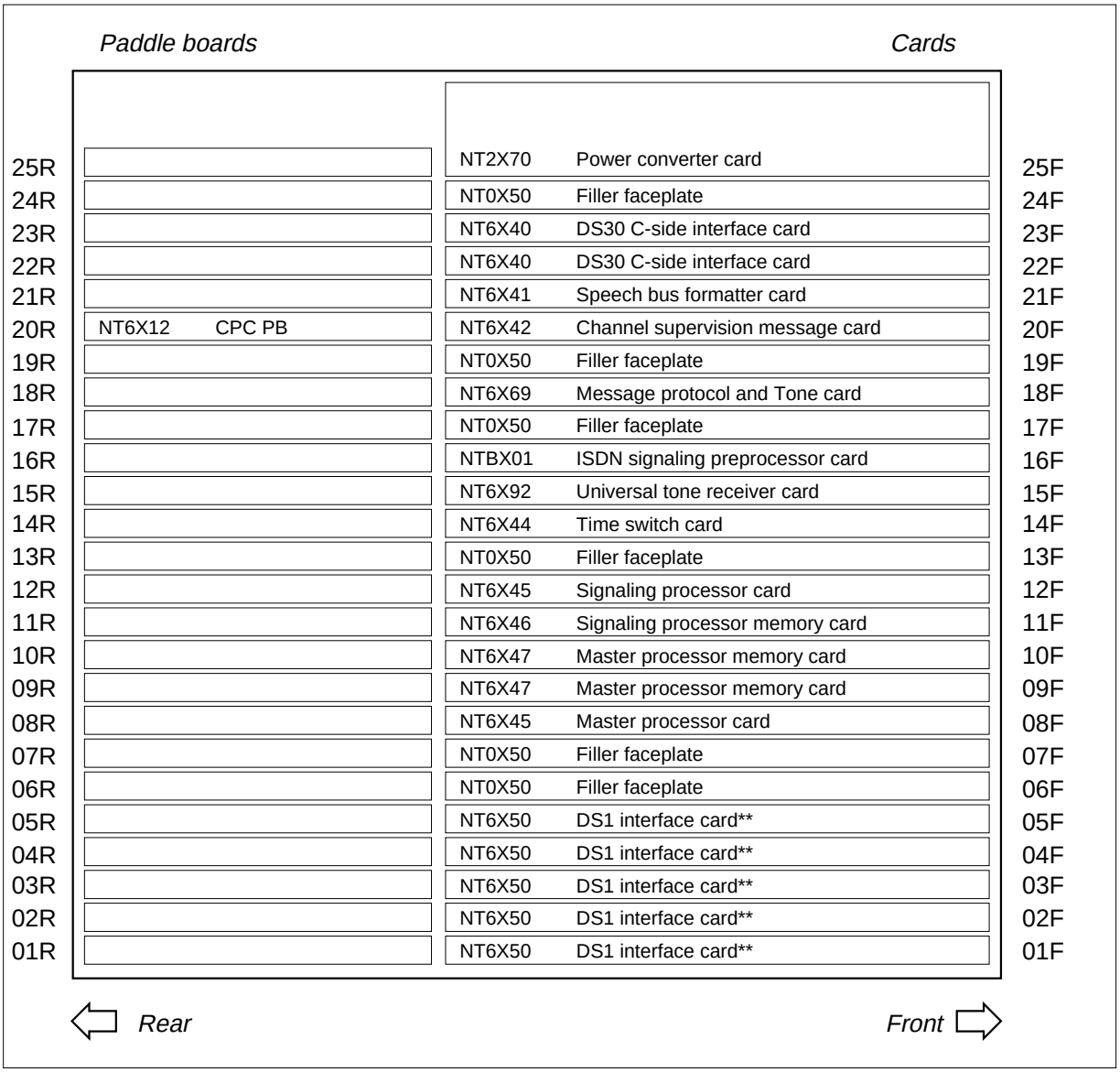


Note 1: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

Note 2: Slots marked with ** can also have NTBX02 D-channel handler or enhanced D-channel handler cards. They can also have an NT0X50 Filler faceplate.

XPM shelf layouts (continued)

Shelf layout for two-processor ISDN XPMs (DTCI, LGCI, and LTCI)

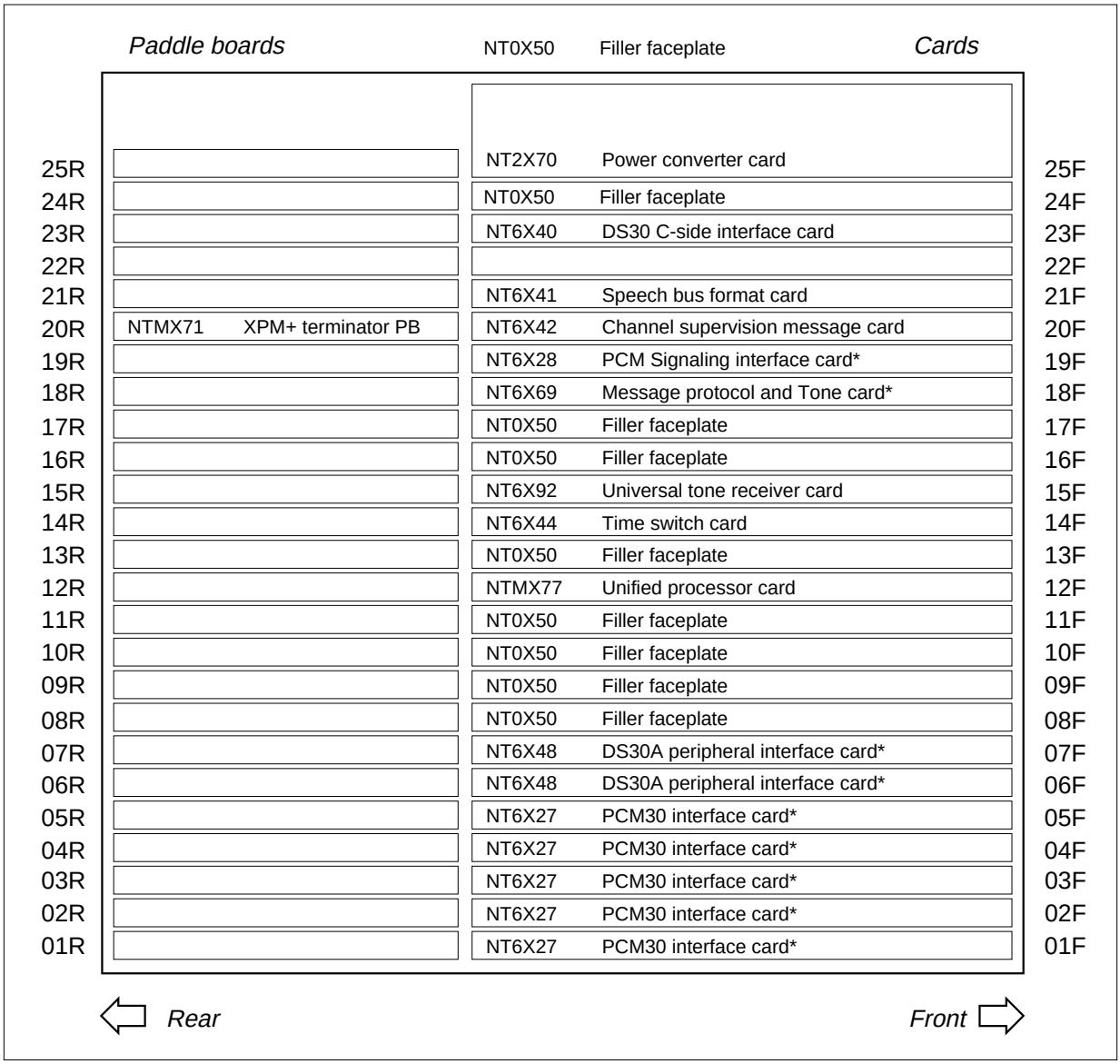


Note 1: The NT6X40AA is in slots 22F and 23F for the “AA" version only. Subsequent versions are in slot 22F. Fiberized versions are present as paddle boards in slot 22R in addition to the front plane card.

Note 2: Slots marked with ** can also have NTBX02 D-channel handler or enhanced D-channel handler cards. They can also have an NT0X50 Filler faceplate.

XPM shelf layouts (continued)

Shelf layout for international XPMs (IDTC, ILGC, and ILTC) with unified processor (XPM plus)



Note 1: Fiberized versions of the NT6X40 are present as a paddle board in addition to the front plane card.

Note 2: This XPM configuration does not support ISDN. For international two-processor ISDN XPM, refer to figure “Shelf layout for PCM30 two-processor XPMs (PDTC, PLGC and PLTC)”.

XPM shelf layouts (continued)

Shelf layout for international two-processor XPMs (IDTC, ILGC, and ILTC)

	Paddle boards	*Cards*		
25R		NT2X70	Power converter card	25F
24R		NT0X50	Filler faceplate	24F
23R		NT0X50	Filler faceplate	23F
22R		NT6X40	DS30 C-side interface card	22F
21R		NT6X41	Speech bus format card	21F
20R	NT6X12 CPC PB	NT6X42	Channel supervision message card	20F
19R		NT6X28	PCM Signaling interface card*	19F
18R		NT6X69	Message protocol and Tone card*	18F
17R		NT0X50	Filler faceplate	17F
16R		NT0X50	Filler faceplate	16F
15R		NT6X92	Universal tone receiver card	15F
14R		NT6X44	Time switch card	14F
13R		NT0X50	Filler faceplate	13F
12R		NT6X45	Signaling processor card	12F
11R		NT6X46	Signaling processor memory card	11F
10R		NT6X47	Master processor memory card	10F
09R		NT6X47	Master processor memory card	09F
08R		NT6X45	Master processor card	08F
07R		NT6X48	DS30A peripheral interface card*	07F
06R		NT6X48	DS30A peripheral interface card*	06F
05R		NT6X27	PCM30 interface card*	05F
04R		NT6X27	PCM30 interface card*	04F
03R		NT6X27	PCM30 interface card*	03F
02R		NT6X27	PCM30 interface card*	02F
01R		NT6X27	PCM30 interface card*	01F

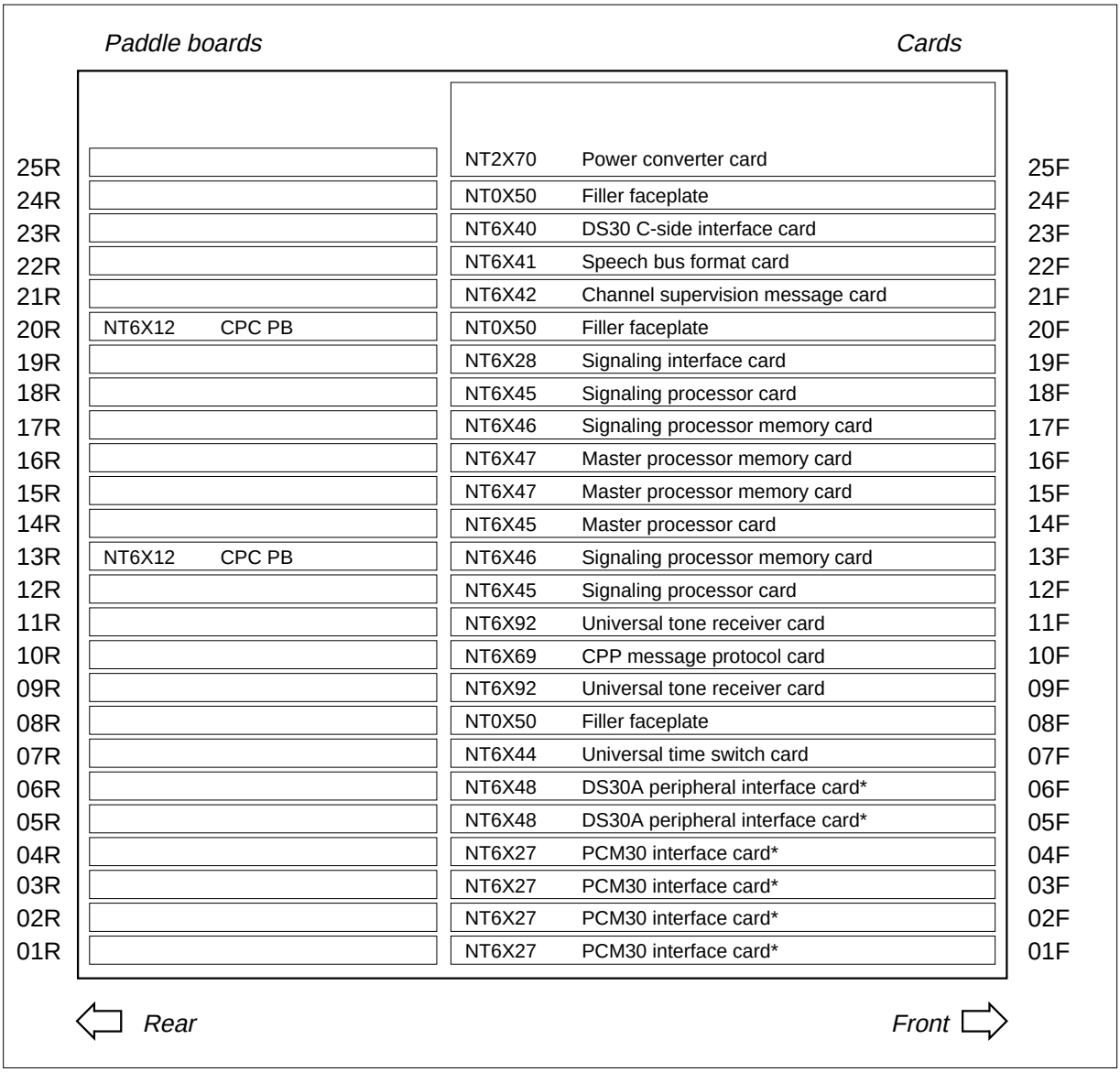
Rear *Front*

Note 1: Fiberized versions of the NT6X40 are present as a paddle board in addition to the front plane card.

Note 2: This XPM configuration does not support ISDN. For international two-processor ISDN XPM, refer to figure “Shelf layout for PCM30 two-processor XPMs (PDTC, PLGC and PLTC)”.

XPM shelf layouts (continued)

Shelf layout for international three-processor XPMs (IDTC, ILGC, and ILTC)

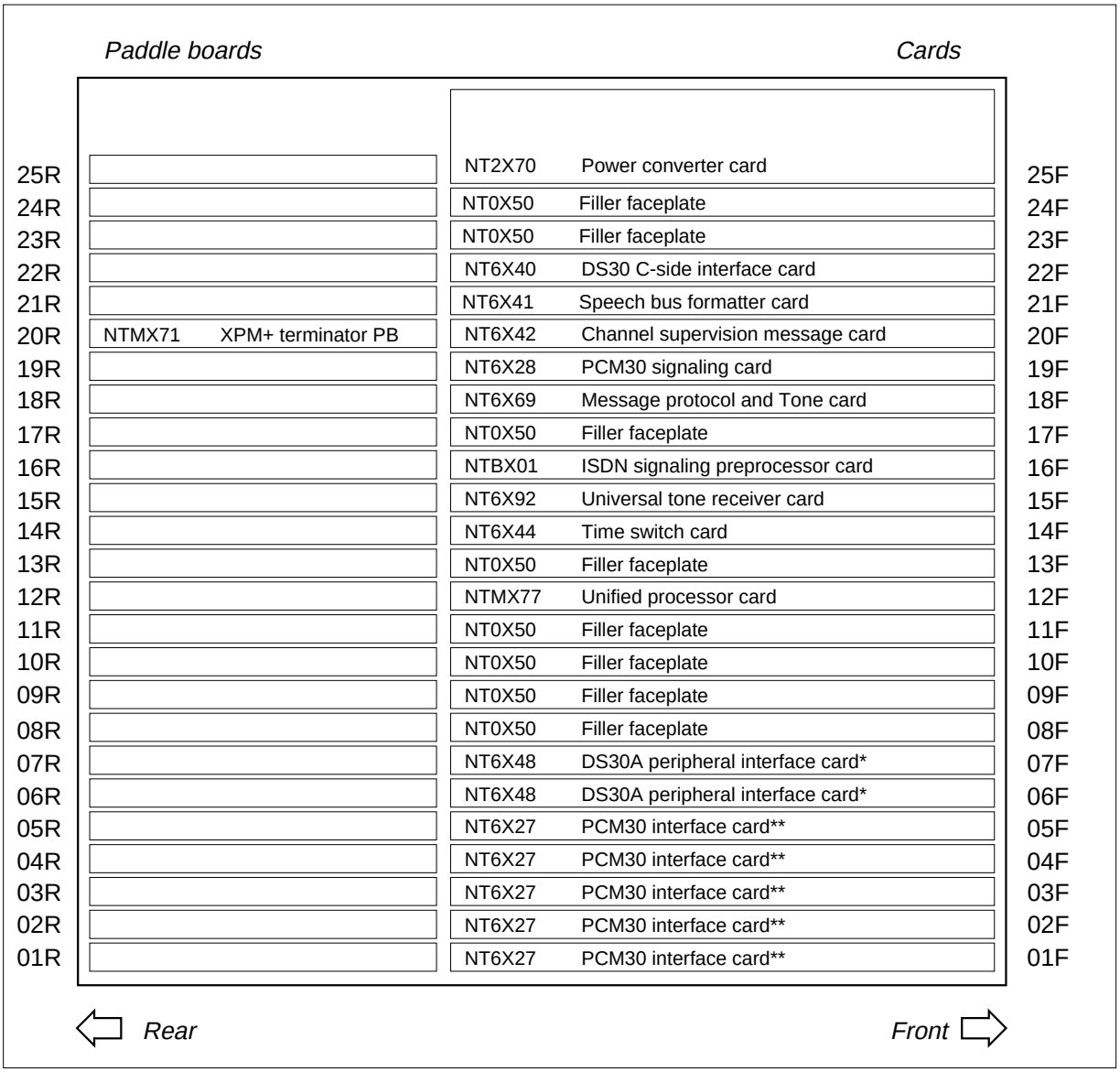


Note 1: Fiberized versions of the NT6X40 are present as a paddle board in addition to the front plane card.

Note 2: This XPM configuration does not support ISDN. For international two-processor ISDN XPM, refer to figure “Shelf layout for PCM30 two-processor XPMs (PDTC, PLGC and PLTC)”

XPM shelf layouts (continued)

Shelf layout for PCM30 XPMs (PDTC, PLGC, and PLTC) with unified processor

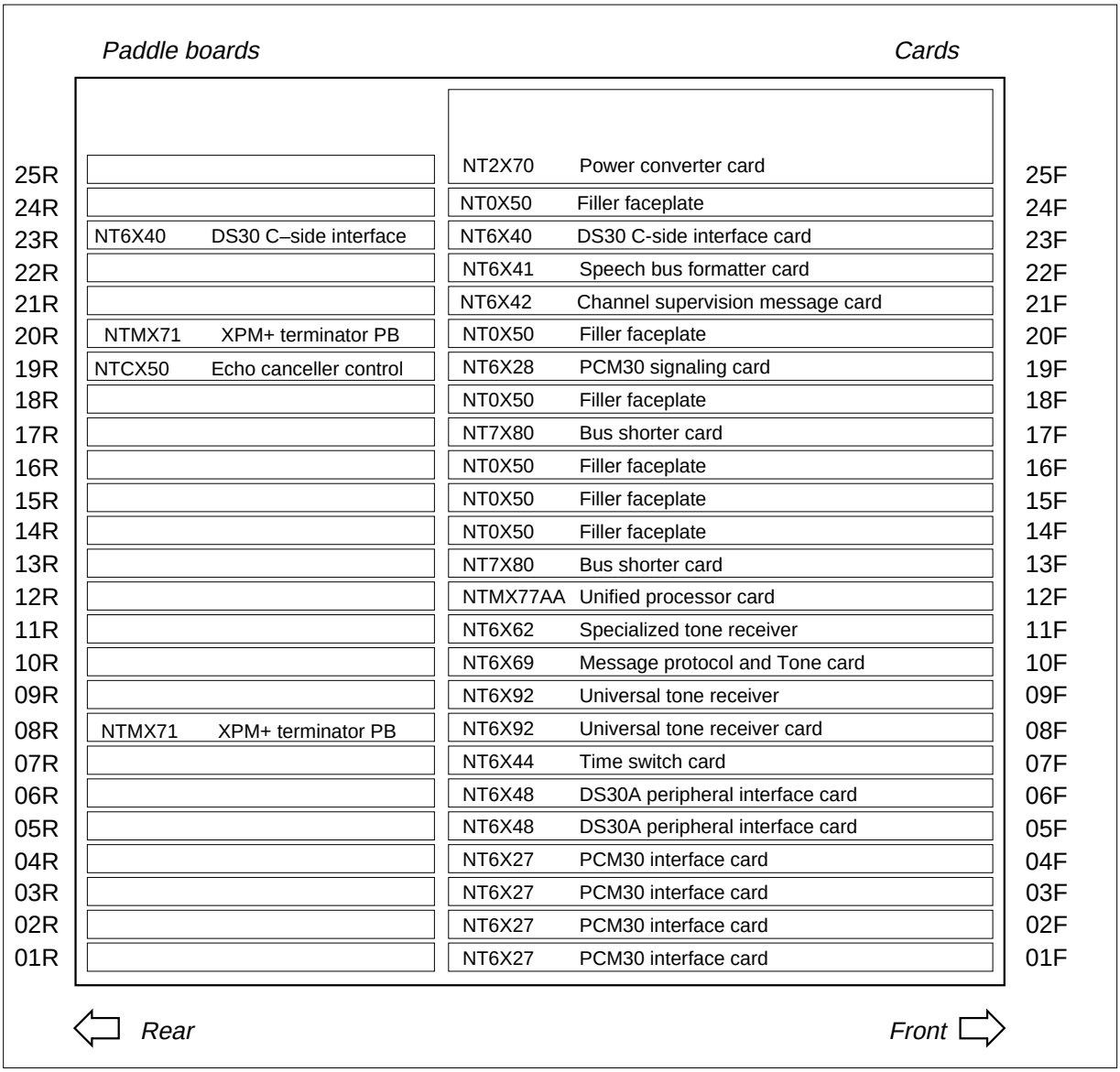


Note 1: Fiberized versions of the NT6X40 are present as paddle boards in addition to the front plane card.

Note 2: Slots marked with ** can also have NTBX02 D-channel handler or enhanced D-channel handler cards. They can also have an NT0X50 Filler faceplate.

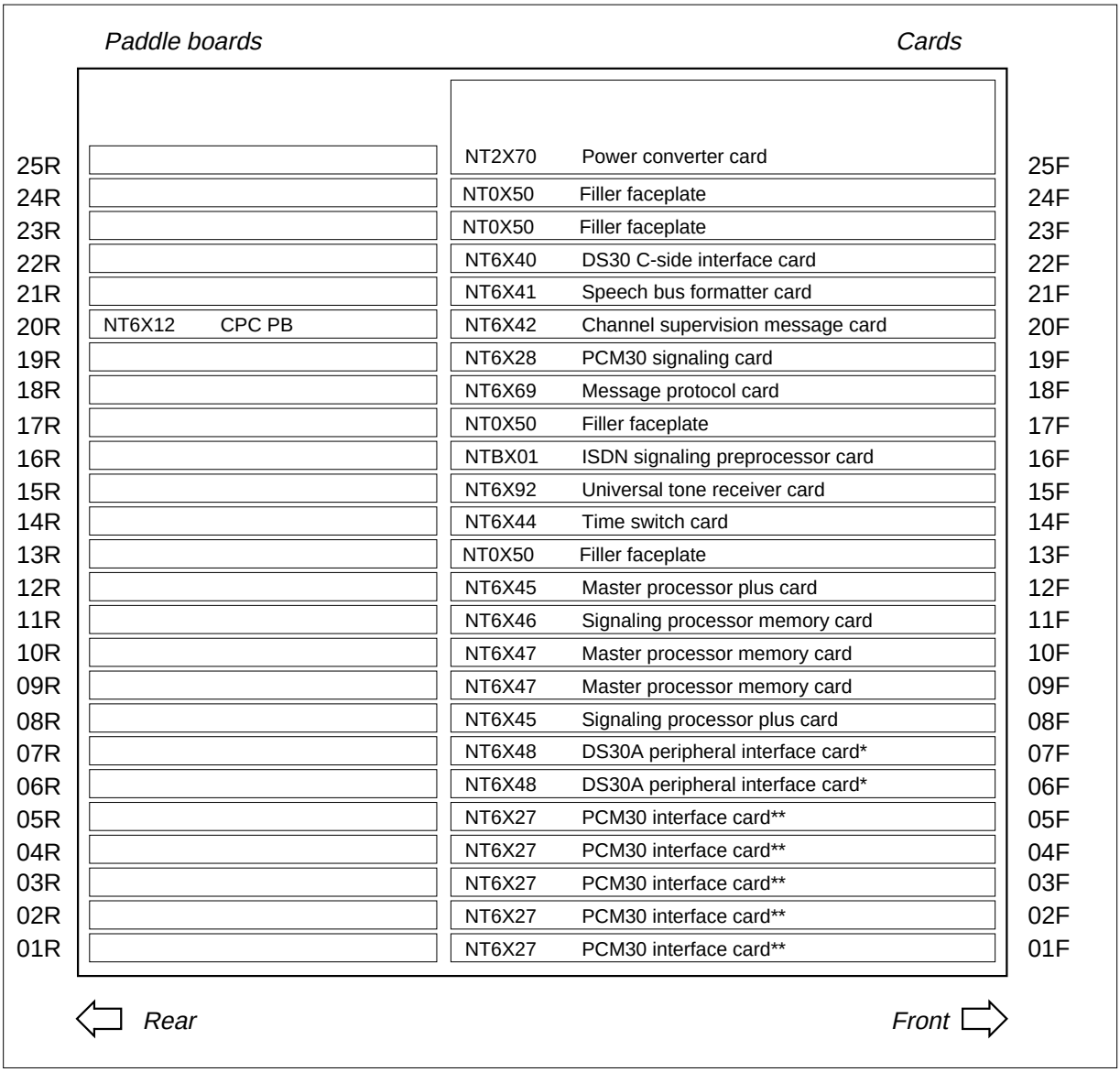
XPM shelf layouts (continued)

DMS-300 Shelf layout for PCM30 XPMs (PDTC, PLGC) with unified processor (XPM+)



XPM shelf layouts (end)

Shelf layout for PCM30 two-processor XPMs (PDTC, PLGC, and PLTC)



Note 1: Fiberized versions of the NT6X40 are present as a paddle board in addition to the front plane card.

Note 2: Slots marked with ** can also have NTBX02 D-channel handler or enhanced D-channel handler cards. They can also have an NT0X50 Filler faceplate.

Back plane cards in an XPM

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT6X12	05	Backplane terminator paddle board	digital trunk controller (DTC), international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), line group controller (LGC), line trunk controller (LTC), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC)
NTCX50	AA, AB	Echo canceller control paddle board	PDTC
NTCX50	BA	External echo canceller	DTCO2
NTMX71	AA	Bus terminator paddle board	DTC, ISDN DTC (DTCI), IDTC, ILGC, ILTC,LGC, ISDN LGC (LGCI), LTC, ISDN LTC (LTCI), PDTC, PLGC, PLTC
NTMX7015	AA	Backplane paddle board	DTC, ISDN DTC (DTCI), IDTC, ILGC, ILTC,LGC, ISDN LGC (LGCI), LTC, ISDN LTC (LTCI), PDTC, PLGC, PLTC
NTMX7016	AA	Backboard paddle board	DTC, ISDN DTC (DTCI), IDTC, ILGC, ILTC,LGC, ISDN LGC (LGCI), LTC, ISDN LTC (LTCI), PDTC, PLGC, PLTC

Back plane cards in an XPM (continued)

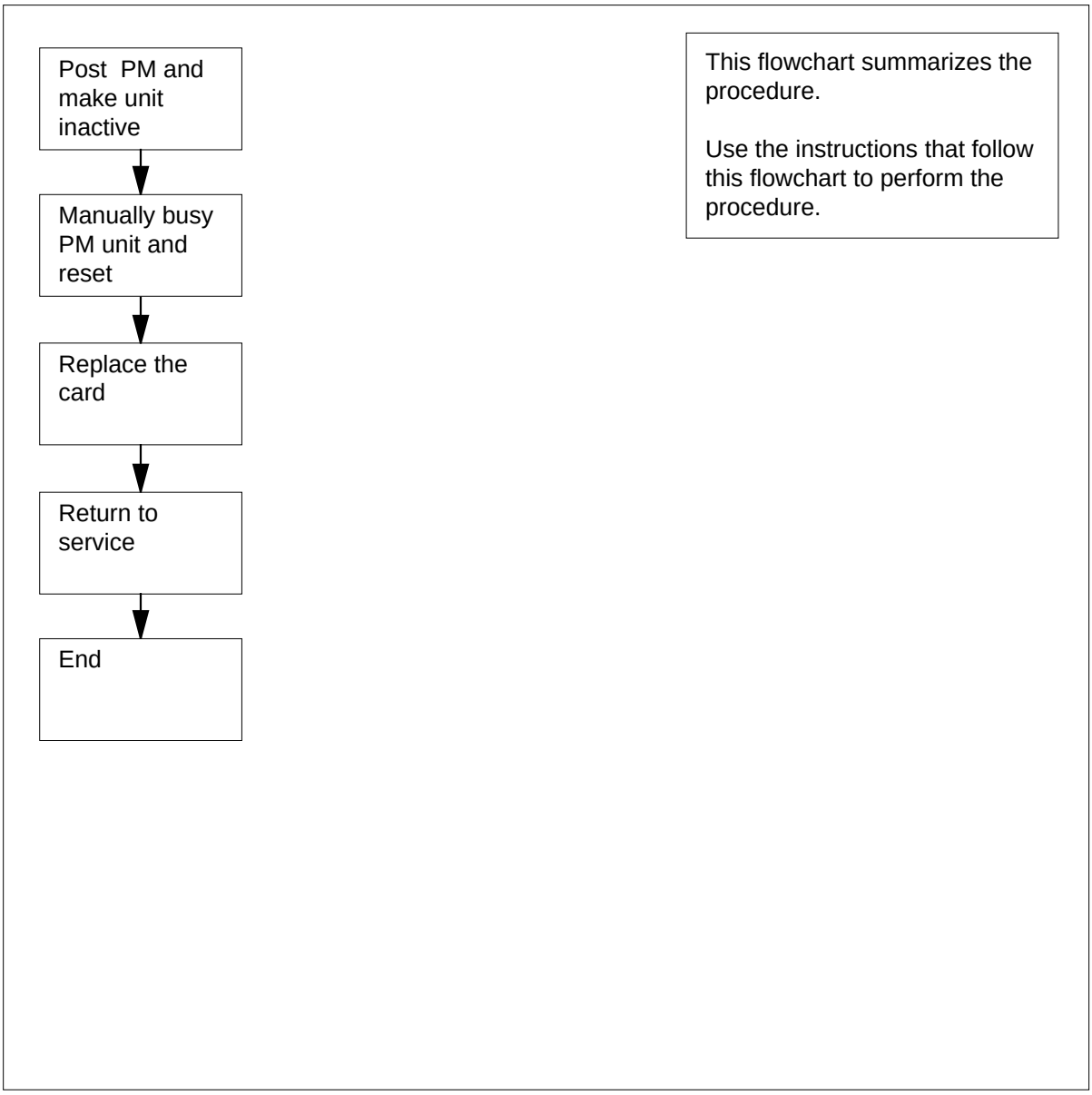
Common procedures

There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Replacing Back plane cards in an XPM



Back plane cards in an XPM (continued)

Replacing Back plane cards in an XPM

At your current location

1

WARNING
Loss of service
During this procedure, you manually busy a minimum of one peripheral module (PM) units. When you manually busy a PM unit, you can cause service degradation. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during low traffic periods only.

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

>MAPCI;MTC;PM

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   0       0       0       0       3      39
```

3 To post the PM associated with the card you must replace, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the PM type (DTC, ILGC, LTCI, PDTC)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                  0       0       0       0       3      39
 DTC                 0       0       0       0       0       4

DTC     0 InSv  Links_OOS: CSide  0 , PSide
Unit0:   Act   InSv
Unit1:   Inact InSv
```

Back plane cards in an XPM (continued)

4 Determine the state of the PM unit that associates with the card you must replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy, and active	step 5
is ISTb, InSv, SysB, or CBsy, and inactive	step 9
is ManB	step 10
is OffL	step 39

5 Determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 6
is other than listed here	step 41

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

If the map response	Do
indicates a warm switch of activity (SWACT) will be performed	step 7
indicates other than a warm SWACT	step 40

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:   Inact SysB  Mtce
Unit1:   Act   ISTb

DTC 0     SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 8
is other than listed here	step 40

8 A maintenance flag (Mtce) can appear. This flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before you proceed to the next step.

9 To manually busy the inactive unit, type

>BSY INACTIVE

and press the Enter key.

Example of a MAP response:

```
DTC     0 ISTb  Links_OOS: CSide  0 , PSide  1
Unit0:   Inact ManB
Unit1:   Act   ISTb
bsy unit 0
DTC 0 Unit 0    Bsy Passed
```

If the BSY command	Do
passed	step 10
failed	step 41

10 To reset the inactive PM unit, type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

11 Determine which card to replace.

If	Do
card NTMX7015, NTMX7016 or NTMX71	step 12
other	step 25

Back plane cards in an XPM (continued)

At the front of the shelf

12

DANGER
Risk of electrocution
Voltage is present on the back plane. Remove all jewelry before you continue this procedure. Do not touch pins or terminals except as instructed by this step-action procedure.

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

13 Unseat the following packs from the inactive unit, in the following order:

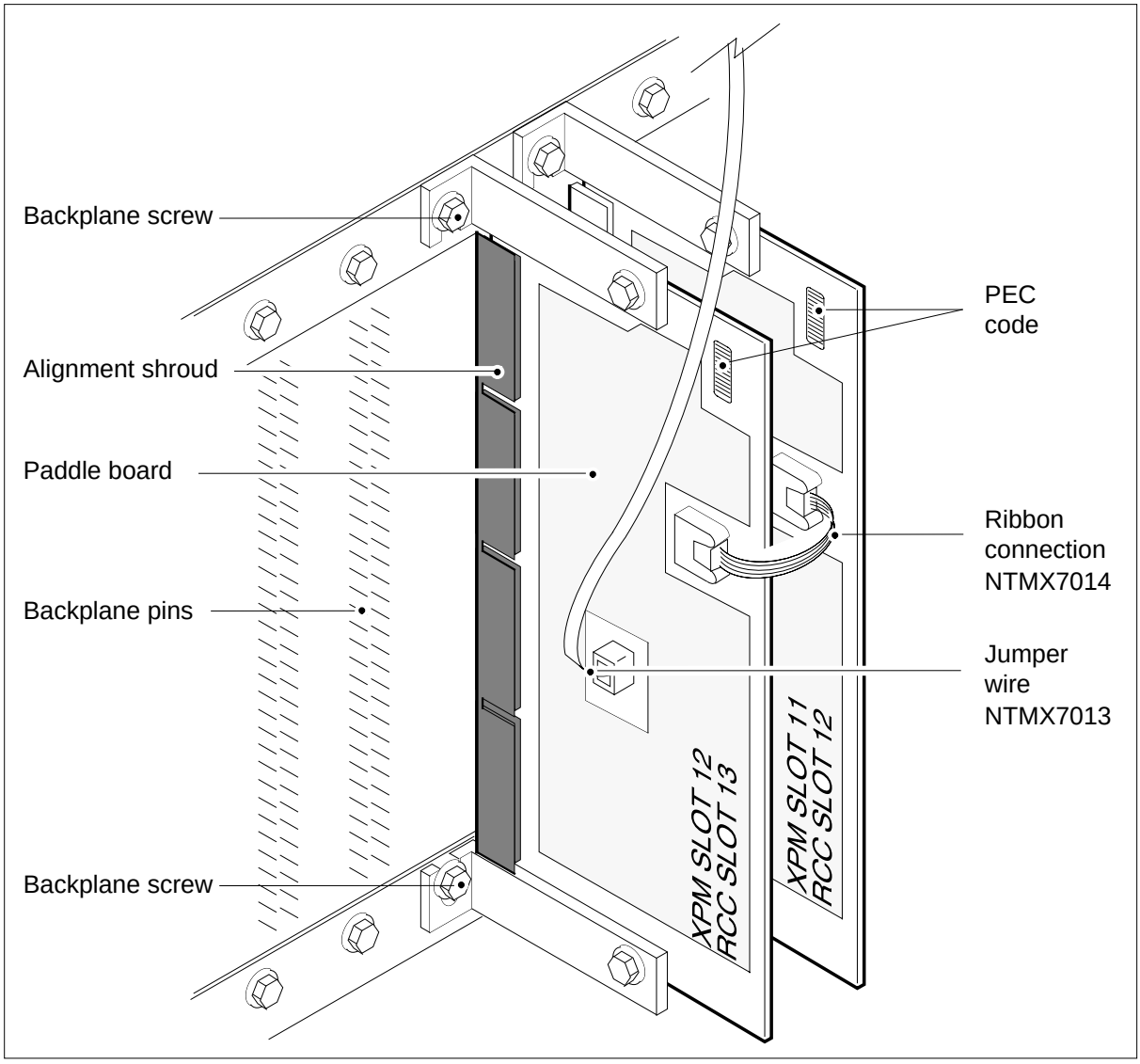
- NT6X48s in slots 6 and 7 (if provisioned)
- NT6X41 in slot 20 or 21
- NTMX77 in slot 12

At the back plane of the shelf

14 Locate the card on the back plane. Label any connectors to the card. Disconnect ribbon cable and jumper wires.

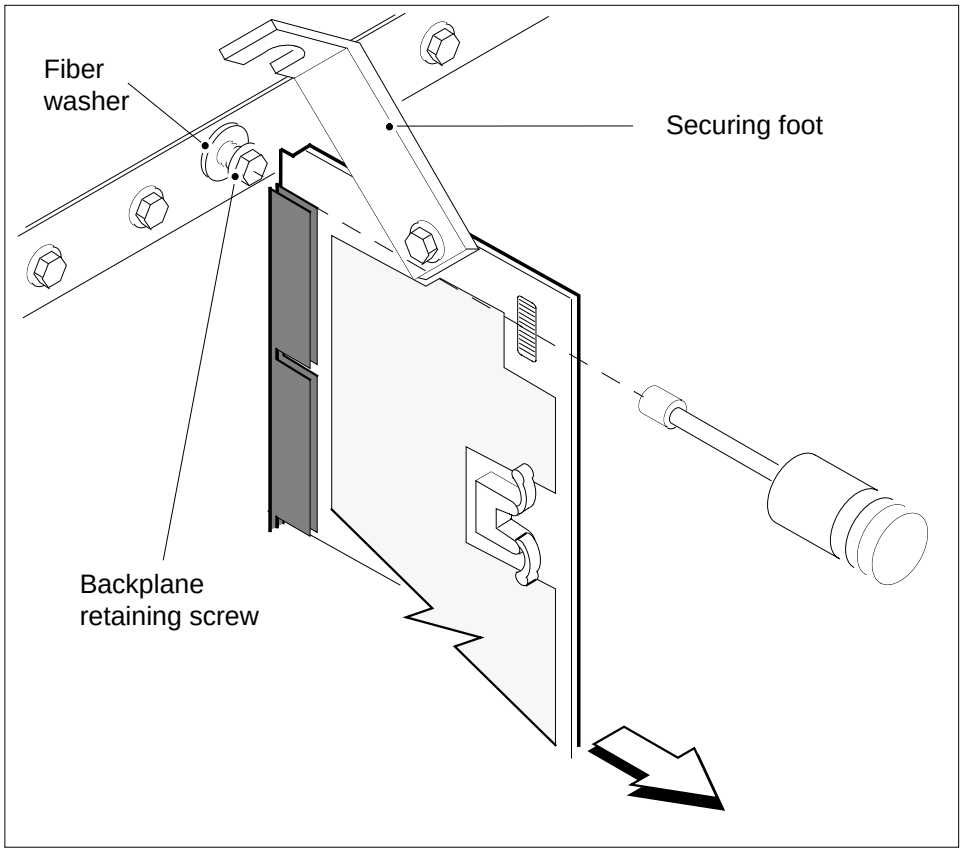
Note: The figure shows the position of NTMX7015 and NTMX7016 paddle boards.

Back plane cards in an XPM (continued)



15 Loosen (but do not remove) the 3/16" backplane screws that are located above and below the paddleboard that secures the card to the backplane.

Back plane cards in an XPM (continued)



16 Swing securing feet clear of backplane retaining screws located at the top and the bottom of the paddleboard.

17 Remove paddleboard from alignment shroud by pulling until the connector pin socket on the card clears the connector pins on the backplane.

18 Place the removed card in an electrostatic discharge protective container.

19 Replace the removed card with one of the same PEC.

20 Fasten the paddleboard to the backplane by swinging the securing feet located at the top and the bottom of the paddleboard onto the backplane retaining screws.

Note: When tightening the backplane retaining screws, locate the fiber washer between the backplane and the paddleboard securing foot.

21 Reseat any connectors to the card.

22 Reseat the following packs from the inactive unit, in the following order:

- NTMX77 in slot 12
- NT6X41 in slot 21 or 22
- NT6X48s in slots 6 and 7 (if provisioned)

Back plane cards in an XPM (continued)

At the MAP terminal

23 Load the PM by typing

`>LOADPM Inactive`

and press the Enter key.

where

Example of a MAP response:

```
LCM HOST 00 0 Unit 0  LoadPM Passed
```

If the LOADPM command	Do
failed	step 41
passed	step 24

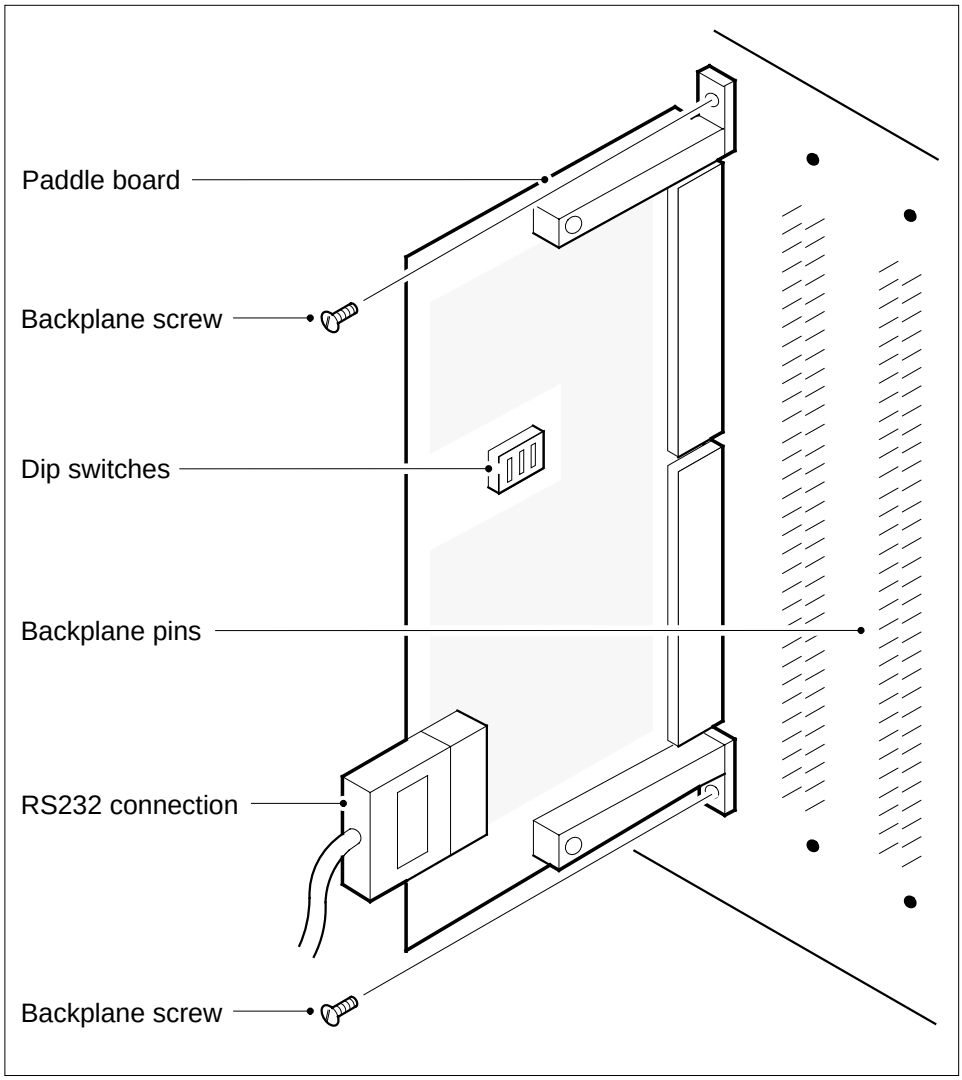
24 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 37
did not direct you to this procedure	step 38

25 Label any connectors to the card.

Note: The figure shows a paddle board that you must change during the procedure.

Back plane cards in an XPM (continued)



26 Remove connectors from the card.

27

DANGER
Protect back plane pins
Do not allow screws to drop on or touch the back plane pins. When you remove and replace the screws for the card, protect back plane pins to prevent a short circuit. The back plane pins are above and below the screws. You can use a magnetic screw or nut driver.

Back plane cards in an XPM (continued)

To protect exposed back plane pins, do one of the following:

- Wrap electrical tape around a group of pins. Do not bend the pins.
- Cover the pins with NOMEX paper.

28 Use a hex screwdriver or a slot screw driver to remove the screws from the two brackets that secure the card to the backplane. Keep the screws.

29 To remove the card pull until the connector pin socket on the card clears the connector pins on the backplane.

30 Place the removed card in an electrostatic discharge protective container.

31 Make sure that switches on the replacement card have the same settings as switches on the replaced card.

32 Align the holes on the brackets of the replacement card with the holes on the backplane.

33 Press the connector pin socket on the card on to the connector pins on the backplane.

34 Secure the card to the backplane with the screws that you removed in step 27.

35 Reseat any connectors to the card.

36 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 37
did not direct you to this procedure	step 38

37 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

38 To return to service the inactive unit to service, type

```
>RTS  INACTIVE
```

and press the Enter key.

If the RTS command	Do
passed	step 42
failed	step 41

39 Contact operating company personnel to determine why the component is offline and continue as directed.

Back plane cards in an XPM (end)

40 For additional help with switch of activity, contact the next level of support.

Note: If the system recommends use of the SWACT command with the FORCE option, contact operating company personnel to determine if you must use the FORCE option.

41 For additional help, contact the next level of support.

42 The procedure is complete.

Control complex cards in an XPM

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), PEC suffix or shelf or frame for the card to replace, refer to the “Index” found in this document. The Index provides a list of the cards, shelves, and frames in this card replacement NTP.

ATTENTION

DO NOT install the universal tone receiver (UTR) and global tone receiver (GTR) in the same XPM/CPM. You cannot determine which receiver interprets tone samples. Some call processing tones can degrade if the tones are designed for use with a GTR but are interpreted by a UTR.

ATTENTION

DO NOT use the NTAX78BA card as a replacement (spare) for the NT6X44AA card.

Control complex cards in an XPM (continued)

The following table lists the control complex cards.

List of control complex cards (Sheet 1 of 3)

PEC	Suffix	Card name	Shelf or frame name
NT6X28	AA, AB, AC	PCM30 signaling interface card	international digital trunk controller (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), digital trunk controller offshore (DTCO), line group controller offshore (LGCO), line trunk controller offshore (LTCO), ISDN digital trunk controller offshore (DTCOI), ISDN line group controller offshore (LGCOI), ISDN line trunk controller offshore (LTCOI), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC)
NT6X41	AA, AB, AC	Speech bus formatter card (The NT6X41AB is reserved for international applications.)	digital trunk controller (DTC), IDTC, ISDN DTC (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), line trunk controller (LTC), ILGC, ILTC, DTCO, DTCOI,LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X42	AA, AB, DA	channel message supervision (CSM) card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X42	CA	CSM and CCITT N5 splitter card	IDTC, ILGC, ILTC, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X43	AA, BA, CA, GA	message interface card	DTC, LGC, LTC
NT6X44	AA, AB	Time switch card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC

Control complex cards in an XPM (continued)

List of control complex cards (Sheet 2 of 3)

PEC	Suffix	Card name	Shelf or frame name
NT6X44	BA, EA	Universal time switch card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X62	AA	Specialized tone receiver card	DTC, PDTC, PLGC
NT6X62	CA	Specialized tone receiver card	IDTC, ILGC
NT6X62	DA	CCITT N5 version specialized tone receiver card	DTCO2, DTCOI, LGCO, LGCOI, PDTC, PLGC
NT6X62	EA	Enhanced specialized tone receiver card	DTC, PDTC, PLGC, DTCO2, DTCO2i
NT6X69 (see note)	AA	CPP message protocol circuit card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X69	AB, AC, AD, BB, DA, FA, KA, MA	CPP message protocol and tone circuit card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC ***Note:*** Tuple NORTHXX in table LTCINV must correspond to the version of NT6X69 card. For example, NORTHAA corresponds to NT6X69AD.
NT6X69	LA, LB, QA	CPP message protocol and downloadable tones circuit card	IDTC, ILGC, ILTC, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X70	AA,	Continuity tone detector card	LGC, LGCI, LTC, LTCI, PDTC
NT6X70	CA	Continuity tone detector card	DTCO2
NT6X79	AA	CPCE tone generator circuit card	DTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, PDTC
NT6X79	AB	Tone generator circuit card	DTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, PDTC

Control complex cards in an XPM (continued)

List of control complex cards (Sheet 3 of 3)

PEC	Suffix	Card name	Shelf or frame name
NT6X92	AA	Universal tone receiver (UTR) card	DTC, IDTC, LGC, LTC
NT6X92	BA, BB	Domestic UTR card	DTC, LGC, LTC
NT6X92	BC	Universal UTR card	DTC, DTCI, LGC, LGCI, LTC,
NT6X92	CA	International UTR tone detection card	IDTC, ILGC, ILTC, DTCO, DTCOI, DTCO2, DTCO2i, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT6X92	EA	Global tone receiver (GTR)	DTC, DTCI, LGC, LGCI, LTC, LTCI, IDTC, ILGC, ILTC, DTCO, DTCOI, DTCO2, DTCO2i, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC
NT7X05	AA	Peripheral remote loader	DTC, DTCI, LGC, LGCI, LTC, LTCI,
NTAX78	AA, AB	Digital cellular time switch card	DTCI, ICP, SMA
NTAX78	BA	Enhanced Time Switch	LGCI, LTCI ***Note:*** DO NOT use the NTAX78BA as a replacement (spare) for the NT6X44AA. However, ISDN LTCs and ISDN LGCs that currently have an NT6X44AA installed can UPGRADE to an NTAX78BA card. This UPGRADE provides ISDN Capacity Enhancements. Refer to Installation Method manual IM 65-0261.
NTMX76	AA, BA	HDLC/DMSX Message and Tone Card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, DTCO, DTCOI, LGCO, LGCOI, LTCO, LTCOI, PDTC, PLGC, PLTC

Common procedures

This procedure refers to *Replacing a card*.

Control complex cards in an XPM (continued)

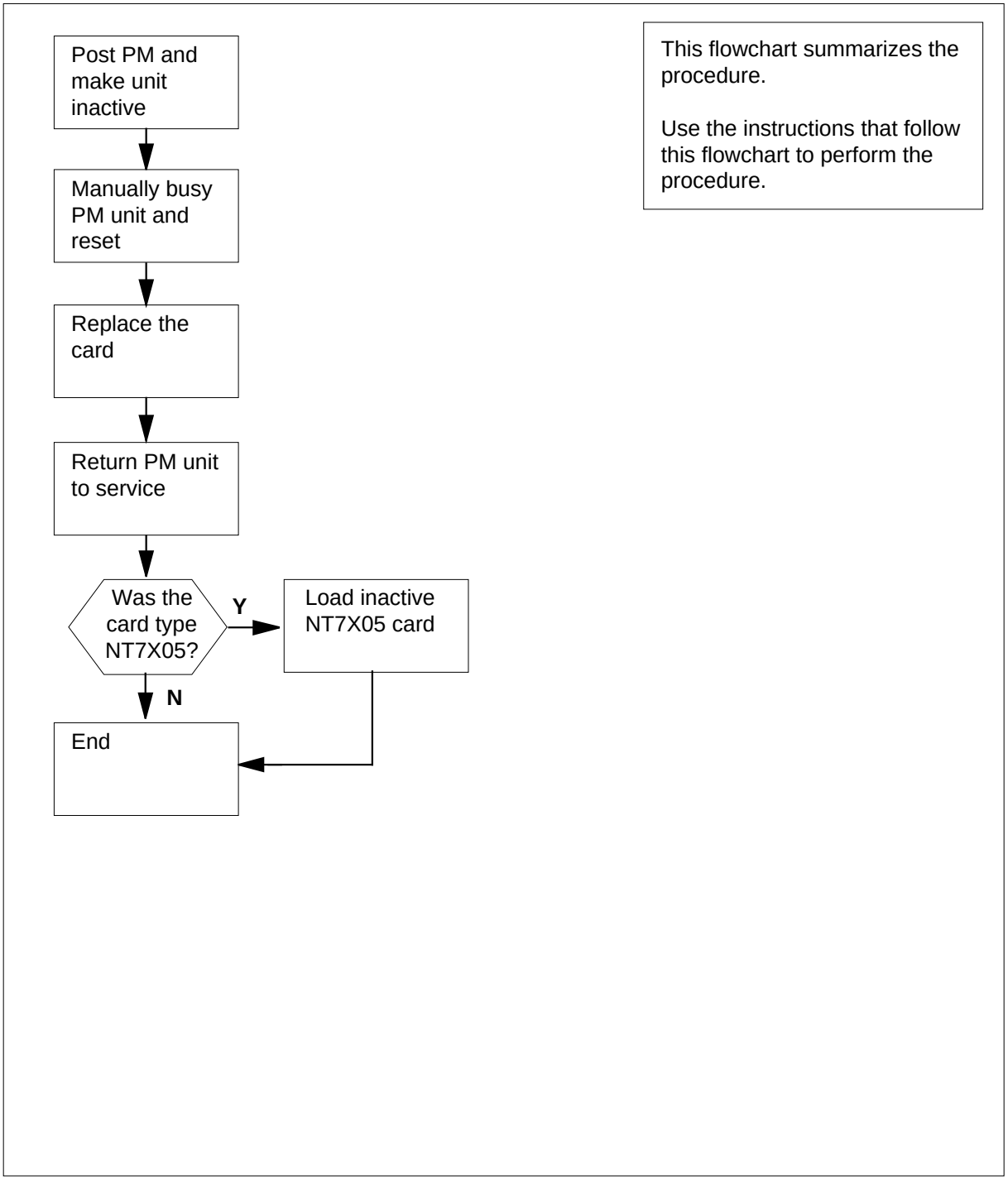
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Control complex cards in an XPM (continued)

Summary of Replacing control complex cards in an XPM



Control complex cards in an XPM (continued)

Replacing control complex cards in an XPM

At your current location

1

CAUTION
Loss of service
This procedure manually busies a minimum of one peripheral module (PM) unit. Since manually busying a PM unit can cause service degradation, only perform this procedure when you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card and the card you replace have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                SysB   ManB   OffL   CBsy   ISTb   InSv
PM                 0      0      0      0      3     39
```

3 To post the PM that associates with the card that you replace, type

`>POST  pm_type  pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example LTC, DTC, LGC, ILGC, LTCI)

pm_no
is the PM number (0 to 255)

Example of a MAP display:

Control complex cards in an XPM (continued)

```
        SysB  ManB  Offl  CBsy  ISTb  InSv
PM   0        0      0     0      2    13
LTC   0        0      0     0      1     7

LTC 0 ISTb  Links_OOS:  CSide 0, PSide 0
Unit0:  Act   InSv
Unit1:  Inact SysB
```

4 Determine the state of the PM unit that associates with the card you want to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy, and active	step 5
is ISTb, InSv, SysB, or CBsy, and inactive	step 8
is ManB	step 10
is OffL	step 17

5 Determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 6
is other than listed here	step 19

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
LTC 0     A Warm SwAct will be performed after
            data sync of active  terminals.

Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 7
the system rejects the SWACT	step 18

Control complex cards in an XPM (continued)

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:  Inact SysB  Mtce
Unit1:  Act   ISTb

LTC 0    SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 8
is other than listed here	step 18

8 A maintenance flag (Mtce) can appear. The flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before you proceed to the next step.

9 To manually busy the inactive unit, type

>BSY INACTIVE

and press the Enter key.

Example of a MAP response:

```
LTC    0 ISTb  Links_OOS: CSide  0 , PSide  1
Unit0:  Act    InSv
Unit1:  Inact  ManB
bsy unit 1
LTC 0 Unit 1    Bsy Passed
```

If the BSY command	Do
passed	step 10
failed	step 19

10 To reset the inactive unit, type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the inactive unit number (0 or 1)

Control complex cards in an XPM (continued)

At the shelf

11

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

To replace the card, perform *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card that you replace has dual in-line package (DIP) switches, make sure that the DIP switches on the replacement card have the same settings.

12 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 13
did not direct you to this procedure	step 14

13 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

14 To return the inactive unit to service, type

```
>RTS  INACTIVE
```

and press the Enter key.

If the RTS command	Do
passed	step 15
failed	step 19

15 Determine if the replaced card is an NT7X05.

If card type	Do
is NT7X05	step 16
is other than listed here	step 20

Control complex cards in an XPM (end)

16 To load the inactive NT7X05 card, type

`>XPMSTOR INACTIVE CC load_file _name`

and press the Enter key.

where

load_file_name
is the name of the file entered in field LOAD of the inventory table. The default load_file_name is the currently entered file.

To obtain additional help to replace this card, contact the next level of support.

If load	Do
passed	step 20
failed	step 19

17 Contact operating company personnel to determine why the component is offline. Continue as directed.

18 For additional help with switch of activity, contact the next level of support.

Note: If the system recommends that you use the SWACT command with the FORCE option, contact operating company personnel to determine if you must use the FORCE option.

19 For additional help, contact the next level of support.

20 This procedure is complete.

NT2X70 in an XPM

Application

Use this procedure to replace the following cards in the shelves or frames listed.

When you cannot identify the product engineering code (PEC), suffix, shelf or frame for the card to replace, refer to the index. The index provides a list of the cards, shelves, and frames in this card replacement book.

PEC	Suffix	Card name	Shelf or frame name
NT2X70	AA, AB, AC, AD	Power converter card	digital trunk controller (DTC), international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), ISDN DTC (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), line trunk controller (LTC), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC)
NT2X70	AE	-48 V power converter card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, PDTC, PLGC, PLTC
NT2X70	AF	Power converter card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, PDTC, PLGC, PLTC
NT2X70	KA	-60 V power converter card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, PDTC, PLGC, PLTC

Note 1: Use this procedure to replace the NT2X70 power converter in XPM plus (NTMX77-based), 2-processor XPMs (NT6X45-based), and 3-processor XPMs (NT6X45-based).

Note 2: Do not test in an XPM+ shelf if the NT2X70 is to be spare tested.

NT2X70 in an XPM (continued)

Common procedures

The following common procedures are referenced:

- "Loading a PM"
- "Manually busying Series II PM C-side links"

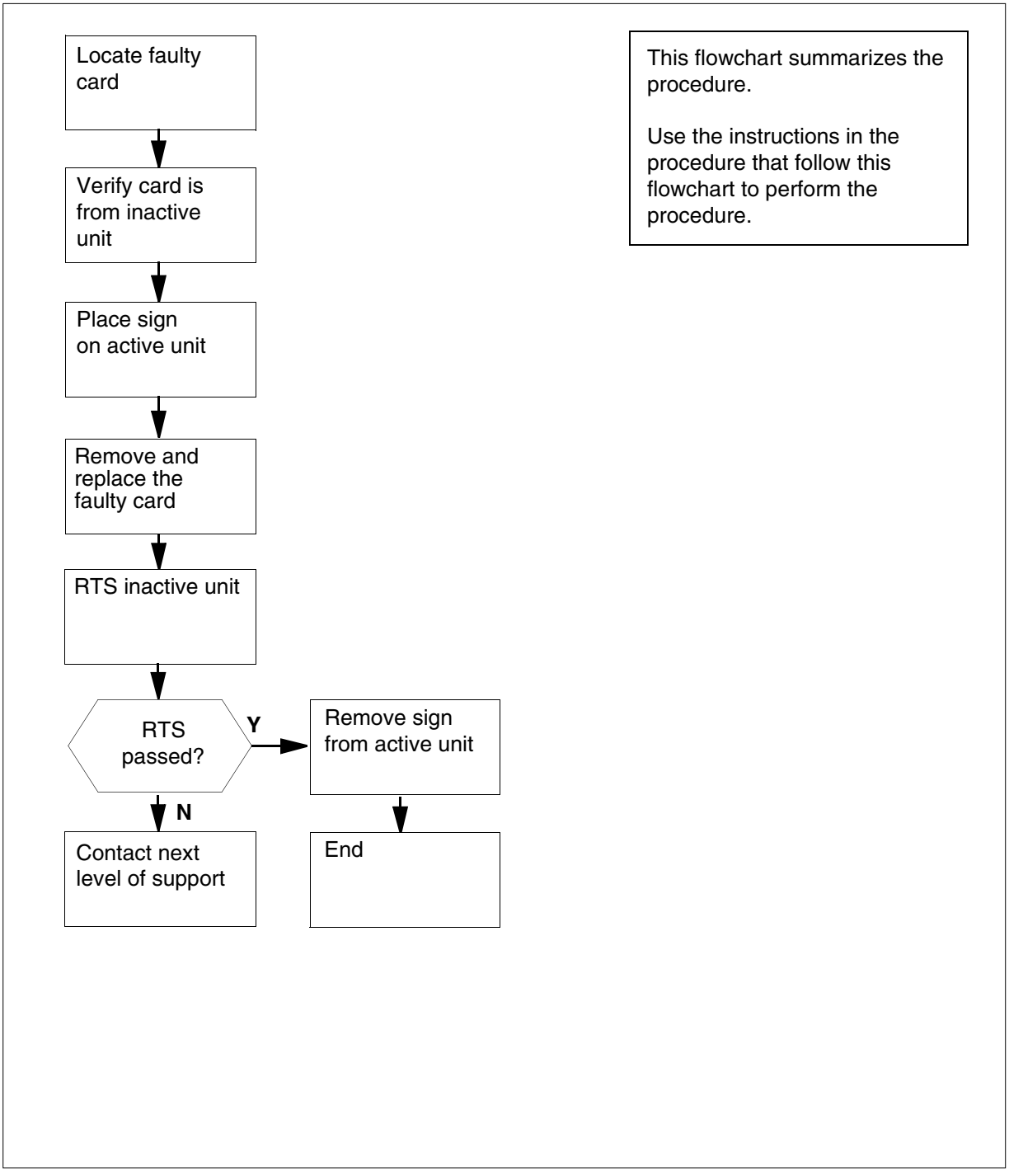
Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NT2X70 in an XPM (continued)

Summary of Replacing an NT2X70 in an XPM



NT2X70 in an XPM (continued)

Replacing an NT2X70 card in an XPM

At your current location

1

CAUTION
Loss of service
This procedure includes directions to manually busy one or more peripheral module (PM) units. Since manually busying a PM unit can cause service degradation, perform this procedure only if necessary to restore out-of-service components. Otherwise, carry out this procedure during periods of low traffic.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you remove.

At the MAP display

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                0       0       0       0       3      39
```

3 To post the PM for the card that you replace, type

`>POST pm_type pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                0       0       0       0       3      39
   DTC               0       0       0       0       0       4

DTC     0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:   Act   InSv
Unit1:   Inact InSv
```

4 Determine the state of the PM unit for the card you want to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy, and active	step 5
is ISTb, InSv, SysB, or CBsy, and inactive	step 8
is ManB	step 12
is OffL	step 43

5 Determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 6
is other than listed here	step 44

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 7
the system rejects the SWACT	step 44

NT2X70 in an XPM (continued)

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0: Inact SysB Mtce
Unit1:   Act   ISTb

DTC 0 SwAct Passed
```

If the MAP response is	Do
SWACT passed	step 8
other than listed here	step 44

8 A maintenance flag (Mtce) indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before you proceed to the next step.

9 To manually busy the inactive XPM unit, type

>BSY INACTIVE

and press the Enter key.

Example of a MAP response:

```
DTC 0 ISTb Links_OOS: CSide 0 , PSide 1
Unit0: Inact ManB
Unit1: Act ISTb
bsy unit 0
DTC 0 Unit 0 Bsy Passed
```

If the BSY command	Do
passed	step 12
failed	step 44

10 Is there an FSP alarm due to a blown fuse?

If	Do
yes	step 11
no	step 12

11 Replace the blown fuse.

Go to step 13.

12 To reset the inactive PM unit, tye

```
>PMRESET UNIT unit_no NORUN
```

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

Example of a MAP response:

```
DTC 0 Unit 0    PMReset Passed
```

13 If the card to be replaced is on the unit 0 shelf, manually busy the plane 0 C-side links associated with the PM. Perform the procedure “Manually busying Series II PM C-side links” in this document. Complete the procedure and return to this point.

If the card to be replaced is on the unit 1shelf, manually busy the plane 1 C-side links associated with the PM. Perform the procedure “Manually busying Series II PM C-side links” in this document. Complete the procedure and return to this point.

At the XPM frame

14

DANGER
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Put on a wrist strap.

15 Determine if you need to unseat the NT6X48 cards.

If	Do
the NT6X48 cards in slots 6 and 7 are equipped	step 16
the NT6X48 cards in slots 6 and 7 are unequipped	step 19

NT2X70
in an XPM (continued)

16 Determine the type of processor you are working on.

If you work on	Do
any XPM with the NTMX77 unified processor (XPM plus)	step 19
work on any 2-processor XPM (NT6X45-based)	step 17
an international 3-processor XPM (NT6X45-based)	step 18

17 Unseat control complex cards (2-processor XPMs). For each sub-step below, use the procedure "Unseating cards in equipment shelves" in this document.

a Unseat either the NT6X43 message interface card or the NT6X69 message protocol card in slot 18.

b Unseat the NT6X45 signaling processor card in slot 12.

c Unseat the NT6X45 master processor card in slot 8.

Go to step 19.

18 Unseat control complex cards (international 3-processor XPMs). For each sub-step below, use the procedure "Unseating cards in equipment shelves" in this document.

a Unseat either the NT6X43 message interface card or the NT6X69 message protocol card in slot 10.

b Unseat the NT6X45 signaling processor card in slot 12.

c Unseat the NT6X45 PCM30 signaling processor card in slot 18.

d Unseat the NT6X45 master processor card in slot 14.

19 Pull and set the handle of the power converter POWER switch down to the OFF position. The converter FAIL LED and FRAME FAIL lamp on the frame supervisory panel (FSP) will be ON. An audible alarm may sound. To silence the alarm, type

```
>SIL
```

and press the Enter key.

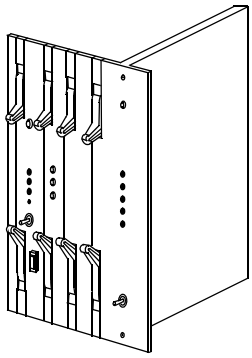
NT2X70
in an XPM (continued)

20

DANGER
Equipment damage
When you remove or insert a card, do not apply direct pressure to the components. Do not force the cards into the slots.

Remove the NT2X70 power converter card as shown in the following figures.

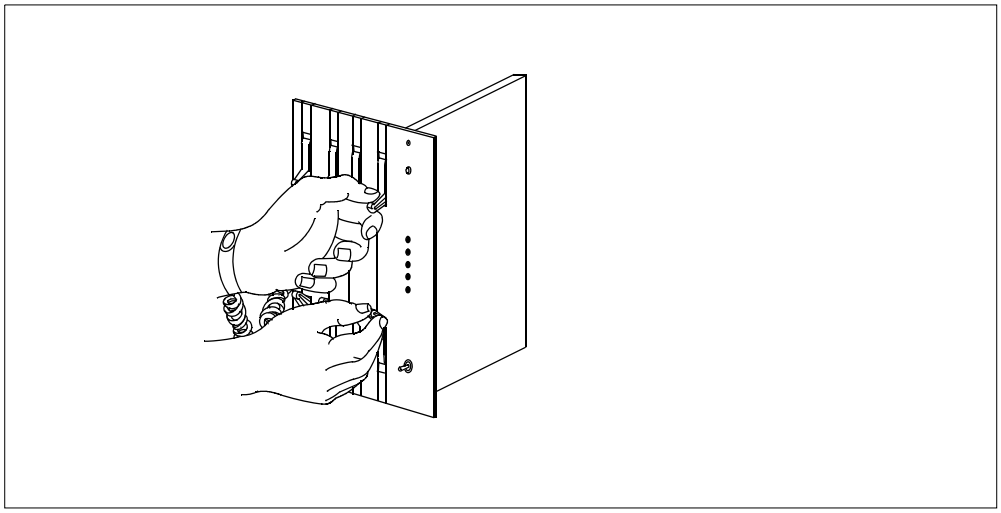
a Locate the card to be removed on the appropriate shelf.



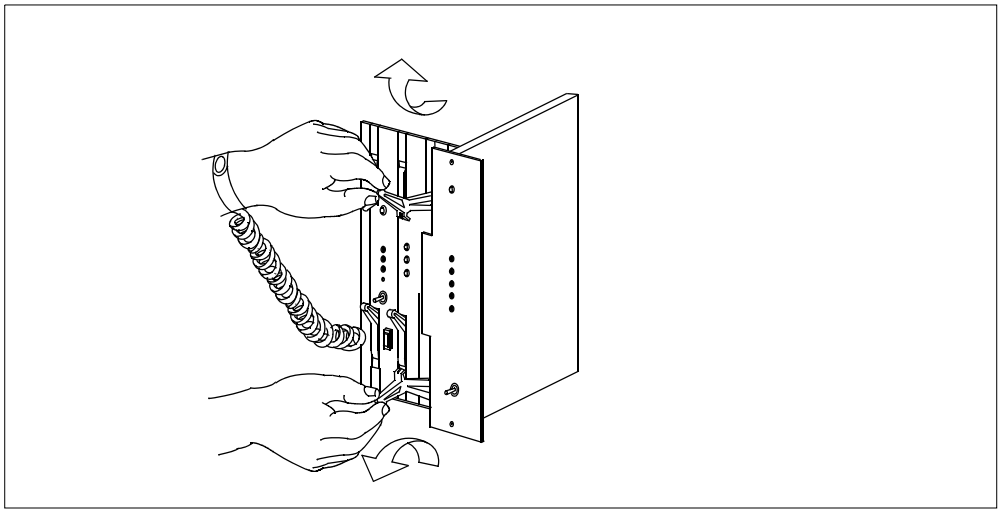
b If the card has an ENBL/DSBL switch, operate the switch to the DSBL position.

NT2X70
in an XPM (continued)

c Grasp the top and the bottom latch assemblies.

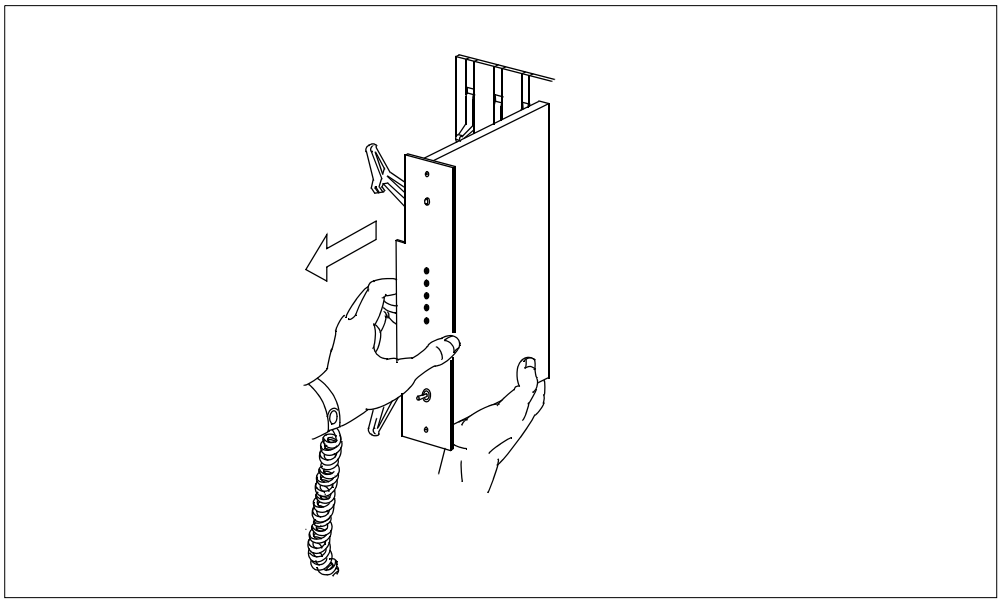


d Rotate the top latch up and the bottom latch down until the latches are in the horizontal position at the same time. This action will move the card 1/2 inch from the shelf backplane.



NT2X70
in an XPM (continued)

e While holding the card by the face plate, slide the card along the guides until the card is free from the shelf.



f Immediately place the card into an approved electro-static discharge (ESD) protective container.

21

DANGER
Equipment damage
When you remove or insert a card, do not apply direct pressure to the components. Do not force the card into the slots.

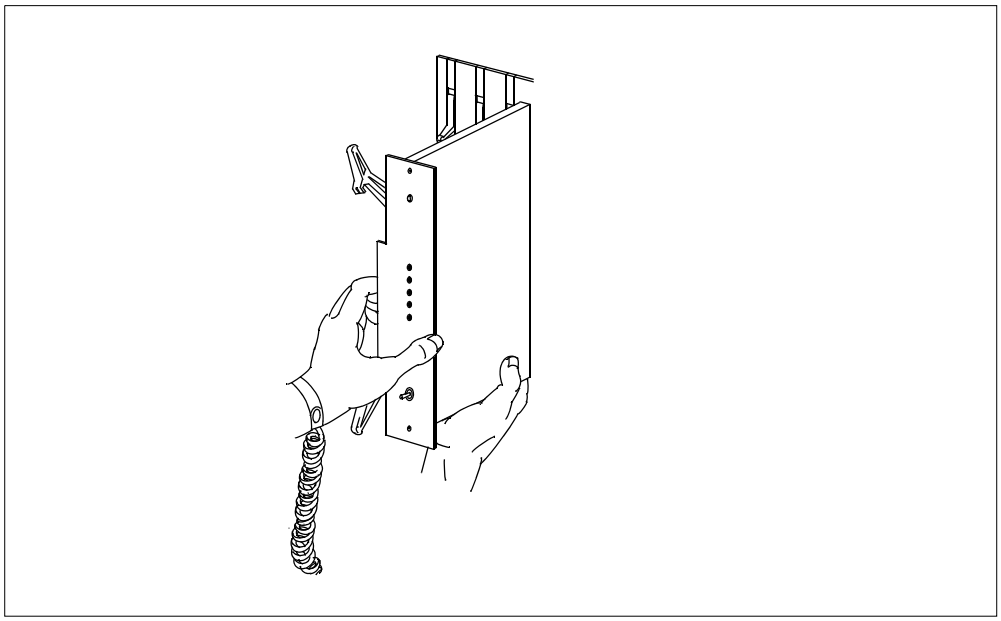
Insert the NT2X70 power converter replacement card as shown in the following figures.

a Hold the card by the face plate with the components visible on the right-hand side.

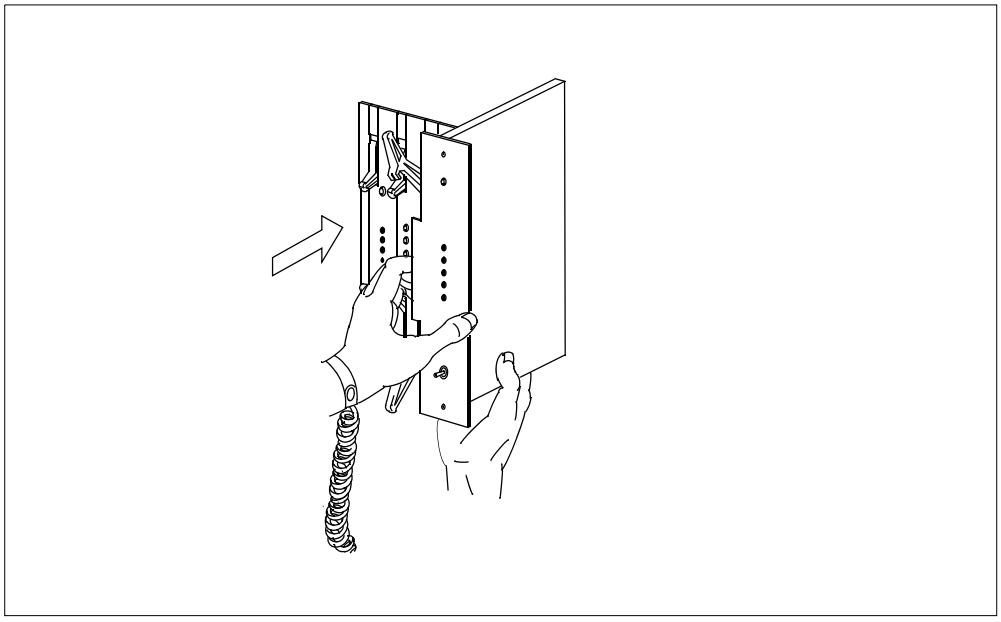
b If the card has an ENBL/DSBL switch, operate the switch to the DSBL position.

NT2X70
in an XPM (continued)

c Place the back edge of the card into the upper and lower guides of the desired slot position on the shelf.



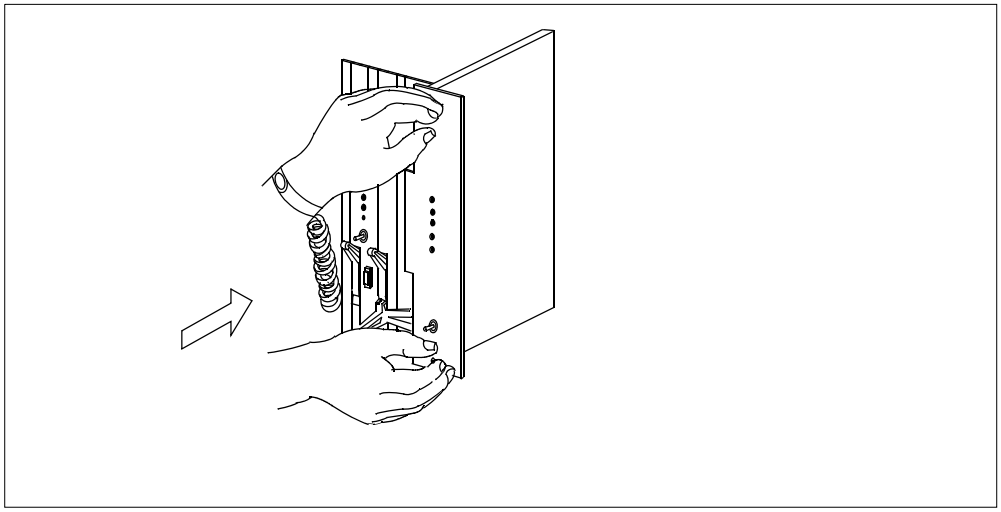
d Gently slide the card into the shelf.



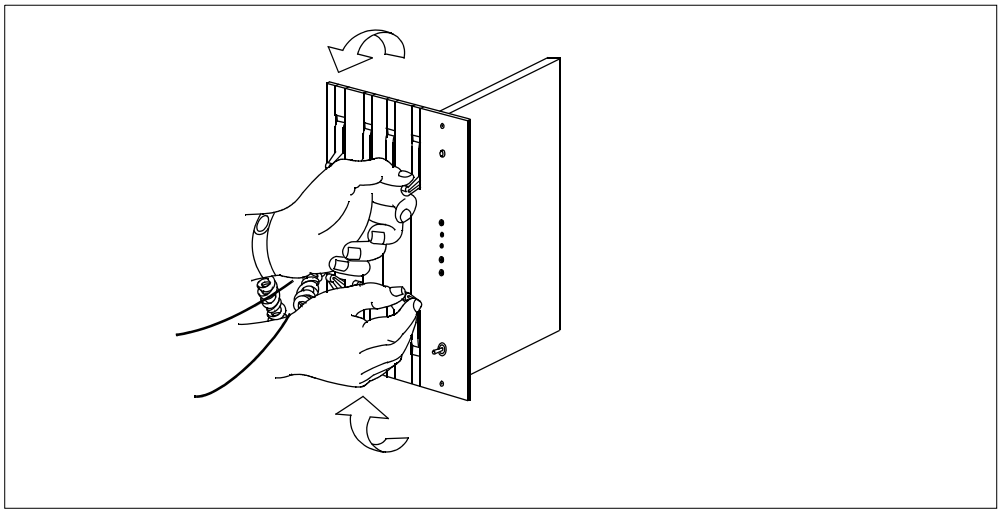
NT2X70
in an XPM (continued)

22 Seat and lock the card.

a Push the card into the shelf. The pack will stop about 1/2 inch from its final position.



b Rotate the top latch down and the bottom latch up at the same time. The card will lock into position when the lock-latches are flush with the face plate of the card.



c If the card has an ENBL/DSBL switch, operate the switch to the ENBL position.

NT2X70 in an XPM (continued)

23 Your next action depends on the power converter version and the type of supervisor panel.

If you	Do
replace an NT2X70AE card and the FSP or MSP has circuit breakers	step 24
replace an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 25
replace an NT2X70AE card and the FSP or MSP has circuit breakers	step 26
do not replace an NT2X70AE card and the FSP or MSP does not have circuit breakers	step 27

24 Power up the converter, as follows:

a Pull and set the handle of the POWER switch up to the RESET position and hold.

b Set the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.

c Release the handle of the POWER switch.

Go to step 28.

25 Power up the converter, as follows:

a Pull and set the handle of the POWER switch up to the RESET position and hold until the CONVERTER FAIL LED goes off.

b Release the handle of the POWER switch.

Go to step 28.

26 Power up the converter, as follows:

a Pull and set the handle of the POWER switch up to the ON position.

b Press and hold the RESET button on the power converter.

c Set the handle of the converter circuit breaker on the FSP or MSP up until the handle clicks into place.

d Release the RESET button.

Go to step 28.

NT2X70
in an XPM (continued)

27 Power up the converter, as follows:

a Pull and set the handle of the POWER switch up to the ON position.

b Press and hold the RESET button on the power converter until the CONVERTER FAIL LED goes off.

c Release the RESET button.

28 Determine the processor configuration of the PM on which you work.

If you	Do
work on any XPM with the NTMX77 unified processor (XPM plus)	step 32
work on any 2-processor XPM (NT6X45-based)	step 29
work on an international 3-processor XPM (NT6X45-based)	step 30

29 Reseat control complex cards (2-processor XPMs). Perform the procedure “Reseating cards in equipment shelves" in this document.

a Reseat the NT6X45 master processor card in slot 8.

b Reseat the NT6X45 signaling processor card in slot 12.

c Reseat the NT6X43 message interface card or the NT6X69 message protocol card in slot 18, depending on the configuration of your unit.

Go to step 32.

30 Reseat control complex cards (3-processor international XPMs). For each substep below, perform the procedure “Reseating cards in equipment shelves" in this document.

a Reseat the NT6X45 master processor card in slot 14.

b Reseat the NT6X45 PCM30 signaling processor card in slot 18.

c Reseat the NT6X45 signaling processor card in slot 12.

d Reseat the NT6X43 message interface card or the NT6X69 message protocol card in slot 10, depending on the configuration of the unit.

NT2X70 in an XPM (continued)

31 Check if you unseated the NT6X48 cards.

If	Do
you unseated the NT6X48 cards in slots 6 and 7	step 32
you did not unseat the NT6X48 cards	step 33

32 If NT6X48 DS30A interface cards are present in slots 6 and 7, reseat the cards.

At the MAP terminal

33 Determine the type of network in the office.

If the type of network in the office	Do
is JNET	step 34
is ENET	step 36

34 To return to service one of the network links associated with the PM unit on which you work, type

```
>RTS plane_no link_no
```

and press the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 63)

If the link	Do
returned to service and more manual-busy links are present	step 35
returned to service and more manual-busy links are not present	step 37
did not return to service	step 44

35 Repeat step 34 for all C-side links to the shelf on whch you work.

36 To return the link to service, type

```
>RTS plane_no LINK link_no
```

and press the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 18 for DS512) or (0 to 15 for DS30)

Example of a MAP response:

```
Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.
Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.
```

If the link	Do
returned to service	step 37
did not return to service	step 44

37 To post the XPM in use, type

```
>PM;POST pm_type pm_no
```

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

38 Determine if the maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 39
not directed to this procedure	step 40

39 Return to the maintenance procedure that sent you to this procedure and continue as directed.

NT2X70 in an XPM (end)

40 To load the inactive unit, type

```
>LOADPM INACTIVE
```

and press the Enter key.

If the LOADPM command	Do
passed	step 42
failed	step 41

41 To load the PM unit, perform the procedure “Loading a PM" in this document. Complete the procedure and return to this point.

42 To return the inactive unit to service, type

```
>RTS INACTIVE
```

and press the Enter key.

If the RTS command	Do
passed	step 45
failed	step 44

43 Contact operating company personnel to determine why the component is offline. Continue as directed.

44 For additional help, contact the next level of support.

45 The procedure is complete.

Procedure history

SN07 (DMS)

Procedure corrected according to CR Q00789040.

Procedure history section added.

NT6X40 in an XPM

Application

Use this procedure to replace an NT6X40 in the shelves or frames listed in the following table.

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames in this card replacement book.

ATTENTION

Replacement restrictions apply to fixed versions of the NT6X40 card. Carefully read the warnings and notes that follow the equipment chart before you remove or install any cards.

(Sheet 1 of 2)

PEC	Suffix	Card name	Shelf or frame name
NT6X40	AA, AB, AC, AD, BA,	DS-30 C-side interface card	digital trunk controller (DTC), international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), ISDN DTC (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), line trunk controller (LTC), digital trunk controller offshore (DTCO), line group controller offshore (LGCO), line trunk controller offshore (LTCO), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC), global peripheral platform (GPP)

NT6X40
in an XPM (continued)

(Sheet 2 of 2)

PEC	Suffix	Card name	Shelf or frame name
NT6X40	FA, FB, FC	XPM DS-512 link control card	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, PDTC, PLGC, PLTC, GPP
NT6X40	DA, GA	DS-512 link paddle board	DTC, DTCI, IDTC, ILGC, ILTC, LGC, LGCI, LTC, LTCI, PDTC, PLGC, PLTC, GPP

Note 1: The NT6X40AD, NT6X40FB, and NT6X40FC cards provide enhanced diagnostic capabilities. If entries in table LTCINV are set to the NT6X40AC or NT6X40FA version of the card, cards not matched, but the new diagnostics capabilities will not be initiated. The CM treats the interface as NT6X40AC/NT6X40FA regardless of the card installed. For more information, refer to the section on how to datafill table LTCINV in the data schema section of the *Translations Guide.*

Note 2: Do not use this procedure to change the NT6X40EA FXPM DS-30 cutover paddle board. Do not use this procedure to change the NT6X40DA DS-512 link paddle board mated with the NT6X40EA during an installation upgrade. If your installation has the NT6X40EA and the system indicates card replacement, contact your next level of support.

Common procedures

This procedures refers to the following common procedures:

- *Manually busying Series II PM or CPM C-side links*
- *Replacing a card*

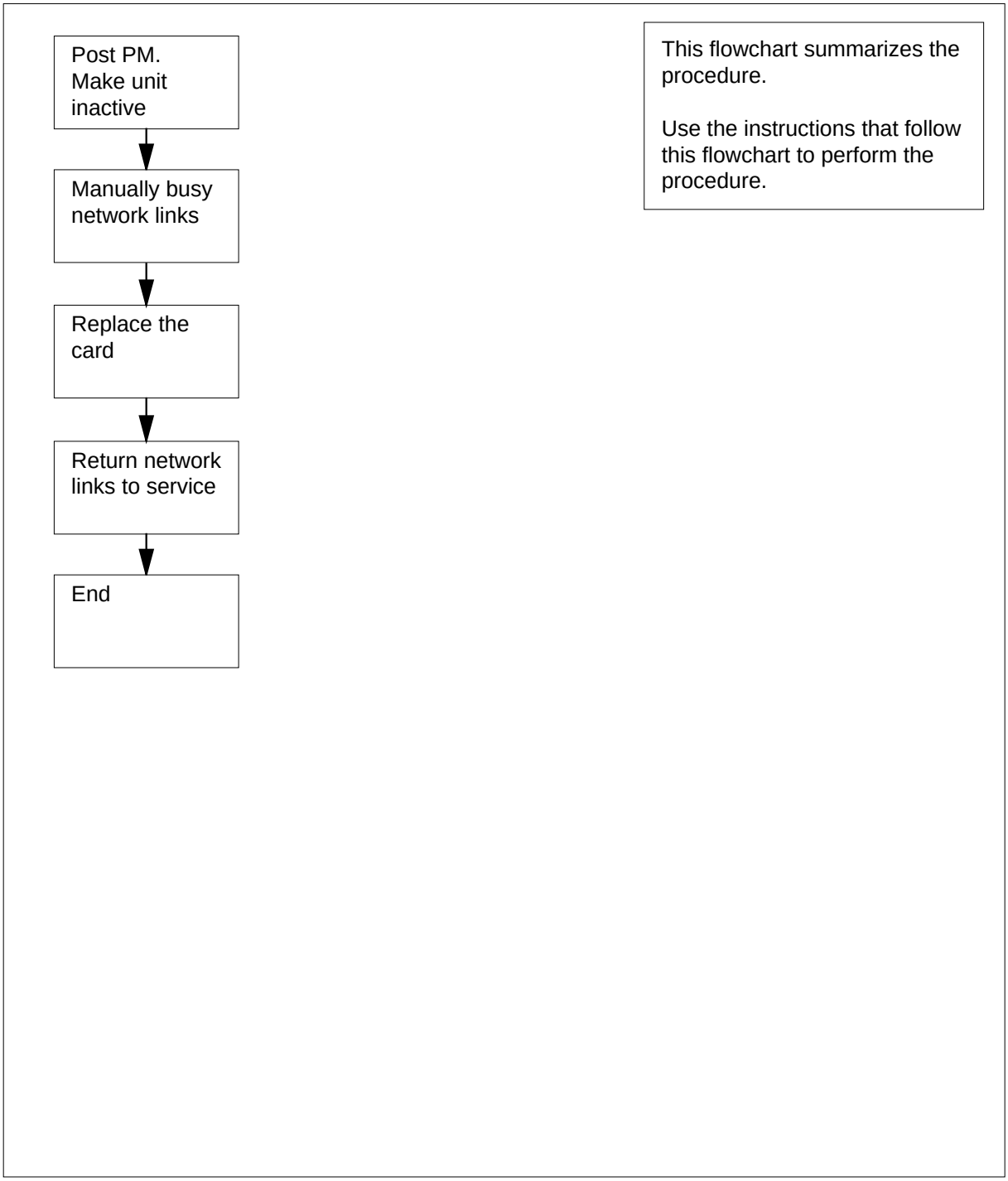
Do not go to a common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT6X40 in an XPM (continued)

Summary of replacing an NT6X40 in an XPM



NT6X40
in an XPM (continued)

Replacing an NT6X40 in an XPM

DANGER

Possible service interruption or loss of test functionality when you install or replace NT6X40 cards versions AD, FB, or FC

The table LTCINV can contain interface card types of NT6X40AD, NTX6X40FB, or NTX6X40FC. If table LTCINV contains these card types, do not match NT6X40AD, FB, or FC cards with other versions between two units of an XPM. A PM777 log generates that cites the match and the XPM becomesis ISTb. For example, you cannot have an AC version in unit 0 and an AD version in unit 1. For more information, refer to the following notes.

At your current location

1 Proceed only if:

- A step in a maintenance procedure directed you to this card replacement procedure.
- You use the procedure to verify or accept cards.
- Your maintenance support group directed you to this procedure.

2

WARNING

Loss of service

When you replace a card in the XPM, make sure the unit in which you replace the card is *inactive* and the mate unit is *active*.

Obtain a replacement card. Make sure that the replacement card and the card you replace have the same PEC and PEC suffix.

At the MAP terminal

3 To access the PM level of the MAP display, type

```
>MAPCI;MTC;PM
```

and press the Enter key.

Example of a MAP display:

```
          SysB   ManB   OffL   Cbsy   ISTb   InSv
PM           0      0      5      0      1     27
```

4 To post the XPM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
the PM type (DTC, ILGC, LTCI, PDTC, GPP)

pm_no
is the PM number (0 to 255)

Example of a MAP display:

```
          SysB   ManB   OffL   Cbsy   ISTb   InSv
PM           0      0      5      0      1     27
LTC          0      0      0      0      0      1

LTC    0  InSv  Links_OOS: CSide  0 , PSide  0
Unit0:  Inact InSv
Unit1:  Act   InSv
```

5 Determine the location of the XPM that contains the NT6X40 circuit card to replace. To determine the location of the XPM, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

```
PM Type: LTC  PM No.: 0  PM Int. No.: 8  Node_No.: 189
PMs Equipped: 139  Loadname:ELI07BF EEPRom Load: MX77NI05
WARM SWACT is supported and available.
LTC 0 is included in the REX schedule.
REX on LTC 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Inact, Status: {OK, FALSE}
Unit 1   Act, Status: {OK, FALSE}
Site Flr RPos  Bay_id  Shf  Description   Slot     EqPEC
HOST  01  E32  LTE  00  18  LTC : 000            6X02NA
```

6 Determine the state and activity of the PM unit that contains the card to replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or Cb-sy, and active	step 7

NT6X40
in an XPM (continued)

If the state of the PM unit	Do
is ISTb, InSv, SysB, or Cb-sy, and inactive	step 10
Text CharFormat="Mono">is ManBText>	step 10
Text CharFormat="Mono">is OffLText>	step 35

7 From the MAP display, determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 8
is other than listed here	step 37

8 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
            data sync of active terminals.

Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 9
the system rejects the SWACT	step 36

9 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:  Inact SysB  Mtce
Unit1:  Act   ISTb
DTC 0    SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 10
is a response other than listed here	step 36

10 A maintenance flag (Mtce) can appear. The flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units. Proceed to the next step.

11 To manually busy all C-side links associated with the inactive PM unit, perform the procedure *Manually busying Series II PM and CPM C-side links* in this document. Complete the procedure and return to this point.

At the frame

12 Place a sign on the active unit. The sign must bear the words *Active unit-Do not touch.* Do not use magnets or tape to attach this sign.

13

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

The next action depends on the type of NT6X40 you replace.

If you	Do
replace an NT6X40 DA or GA	step 14
replace an NT6X40 AA, AB, AC, FA, FB, or FC	step 26

At the front of the shelf

14 Remove the NT6X40 card in slot 22.

NT6X40
in an XPM (continued)

At the backplane of the shelf

15

DANGER
Risk of electrocution
Voltage is present on the backplane. Remove all jewelry before you continue the procedure. Do not touch pins or terminals except as instructed.

Locate the card on the backplane.

16 Label each connector to the card.

17

DANGER
Avoid corruption on the fiber tip surface
Do not touch the tip of the fiber. Dirt or oil from the skin can transfer to the fiber tip surface and degrade fiber performance.

DANGER
Fiber cable may become damaged
Use caution when you handle fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

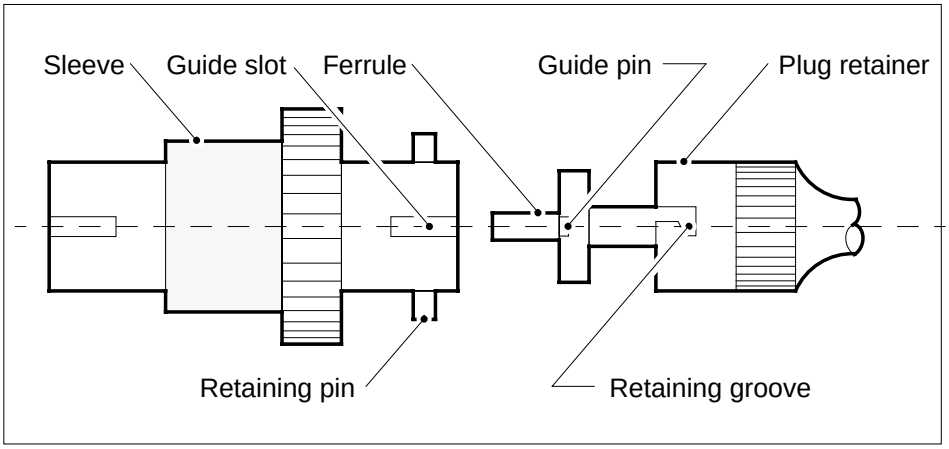
Disconnect the fiber optic cables, as follows:

a Twist the plug retainer to unlock the retaining pin from the retaining groove.

b Rotate the plug retainer so that the retaining pin enters the guide slot.

c Carefully pull on the plug retainers. Move the guide pin along the slot to remove the ferrule from the sleeve.

d Fit dust caps to the open ends of the fiber links.



18

DANGER
Protect backplane pins
Do not allow screws to drop on or touch the backplane pins. Protect the backplane pins above and below to prevent a short. Use a magnetic screw or nut driver.

Protect exposed backplane pins, as follows:

- Wrap electrical tape around a group of pins. Do not bend the pins.
- Cover the pins with NOMEX paper.

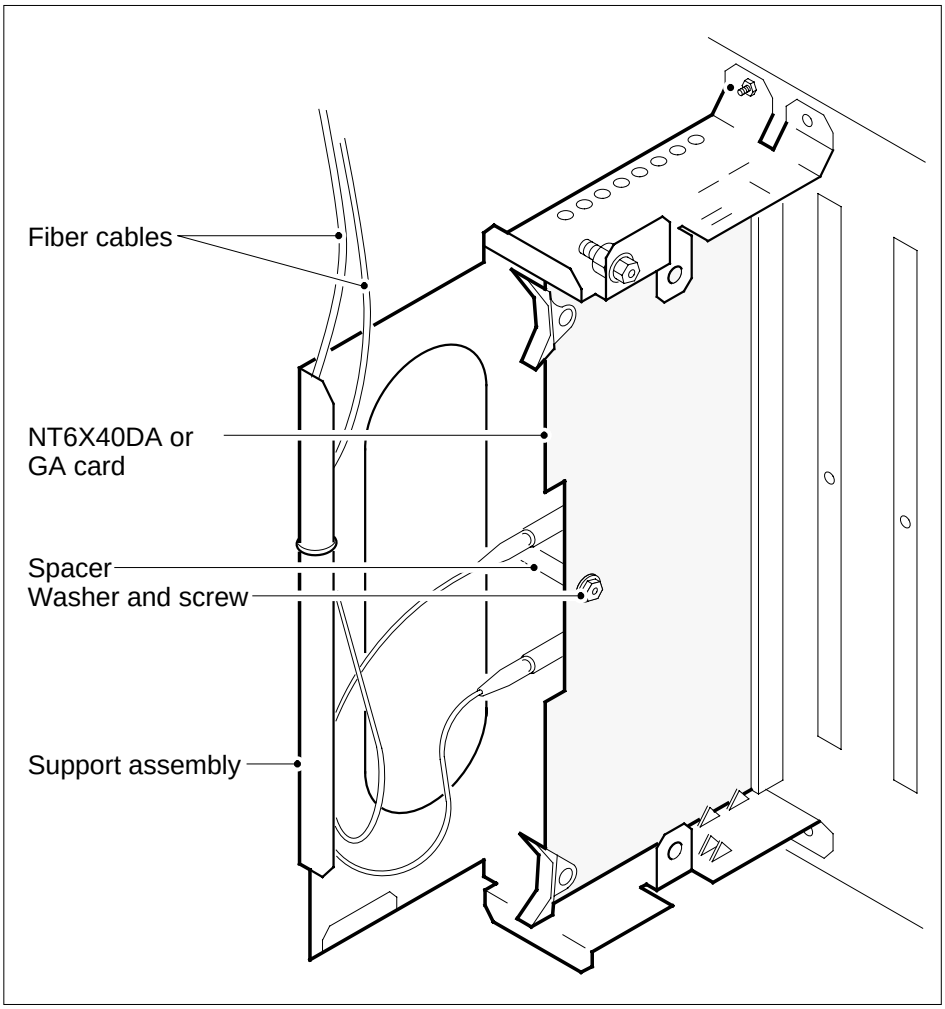
19 Remove the screw that holds the card to the support assembly, as follows:

a Locate the screw half-way down the outer edge of the card.

b Remove the washer that holds the screw in place.

c Remove the screw and the spacer between the card and the support assembly. Keep the screw and spacer.

NT6X40
in an XPM (continued)



20 Open the ejection levers on the NT6X40 circuit card. To remove the card pull the card until the connector pin socket on the card clears the connector pins on the backplane.

21 Place the card you just removed in an electrostatic discharge protective container.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

22 Press the connector pin socket on the card to the connector pins on the backplane. Use the levers at the top and bottom of the NT6X40 circuit card.

23 Secure the card to the support assembly, as follows:

a Locate the screw hole half-way down the outer edge of the card.

b Position the spacer at the screw hole between the card and the support assembly.

c To insert the screw, move the screw in the direction of the support assembly through the spacer.

d Fasten the washer to hold the screw in place.

24 Connect the fiber optic cables again, as follows:

a Remove the dust caps from the ends of the fiber links.

b Carefully insert the ferrule into the sleeve so that the guide pin enters the guide slot.

c Rotate the plug retainer so that the retaining pin enters the retaining groove.

d Push the connectors together and twist the plug retainer to lock the retaining pin into the retaining groove.

At the front of the shelf

25 Reseat the NT6X40 card that you unseated in step 14. Go to step 27.

26 To replace the card, use the procedure *Replacing a card* in this section. Complete the procedure and return to this point.

At the MAP terminal

27 The next action depends on the type of network in the office.

If you	Do
work on JNET	step 28
work on ENET	step 30

28 To return to service one of the network links, type

```
>RTS  plane_no  link_no
```

and press the Enter key.

where

plane_no
is the number of the surface (0 or 1) for the link

link_no
is the link number (0 to 63)

If the link	Do
returned to service and there are more manual-busy links	step 29
returned to service and there are no more manual-busy links	step 31
did not return to service	step 37

NT6X40
in an XPM (continued)

29 Repeat step 28 for each manually busy C-side link. Return all C-side links to service, and go to step 31.

30 To return the network link to service, type

`>RTS plane_no LINK link_no`

and press the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 3)

Example of a MAP response:

```
Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.
Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.
```

If the link	Do
returned to service	step 31
did not return to service	step 37

31 To post the XPM, type

`>PM;POST pm_type pm_no`

and press the Enter key.

where

pm_type
the PM type (DTC, ILGC, LTCI, PDTC,.)

pm_no
is the PM number (0 to 255)

32 To determine the status of the XPM unit that contains the NT6X40 circuit card you replace, type

`>QUERYPM`

and press the Enter key.

Example of a MAP response:

```
PM Type: LTC  PM No.: 0  PM Int. No.: 8  Node_No.: 189
 PMs Equipped: 139  Loadname:ELI07BF EEPRom Load: MX77NI05
 WARM SWACT is supported and available.
 LTC 0 is included in the REX schedule.
 REX on LTC 0 has not been performed.
 Node Status: {OK, FALSE}
 Unit 0 Inact, Status: {OK, FALSE}
 Unit 1   Act, Status: {OK, FALSE}
 Site Flr RPos  Bay_id  Shf  Description   Slot     EqPEC
 HOST  01  E32  LTE  00  18  LTC : 000             6X02NA
```

If the inactive unit status	Do
is InSv	step 33
is other than listed here	step 37

33 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 34
did not direct you to this procedure	step 38

34 Return to the maintenance procedure that sent you to this procedure and continue as directed.

35 Consult operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.

36 For additional help with switch of activity, contact the next level of support.

Note: The system can recommend use of the SWACT command with the FORCE option. Contact operating company personnel to determine if you must use the FORCE option.

37 For additional help, contact the next level of support.

38 To return the card for repair or replacement, perform the appropriate procedure in Trouble Locating and Clearing Procedures.

39 The procedure is complete.

NT6X48 in LGC, PLGC, LTC, PLTC

Application

Use this procedure to replace the following card in an LGC, LTC, PLGC or PLTC.

PEC	Suffixes	Name
NT6X48	AA	DS-30A interface card

Common Procedures

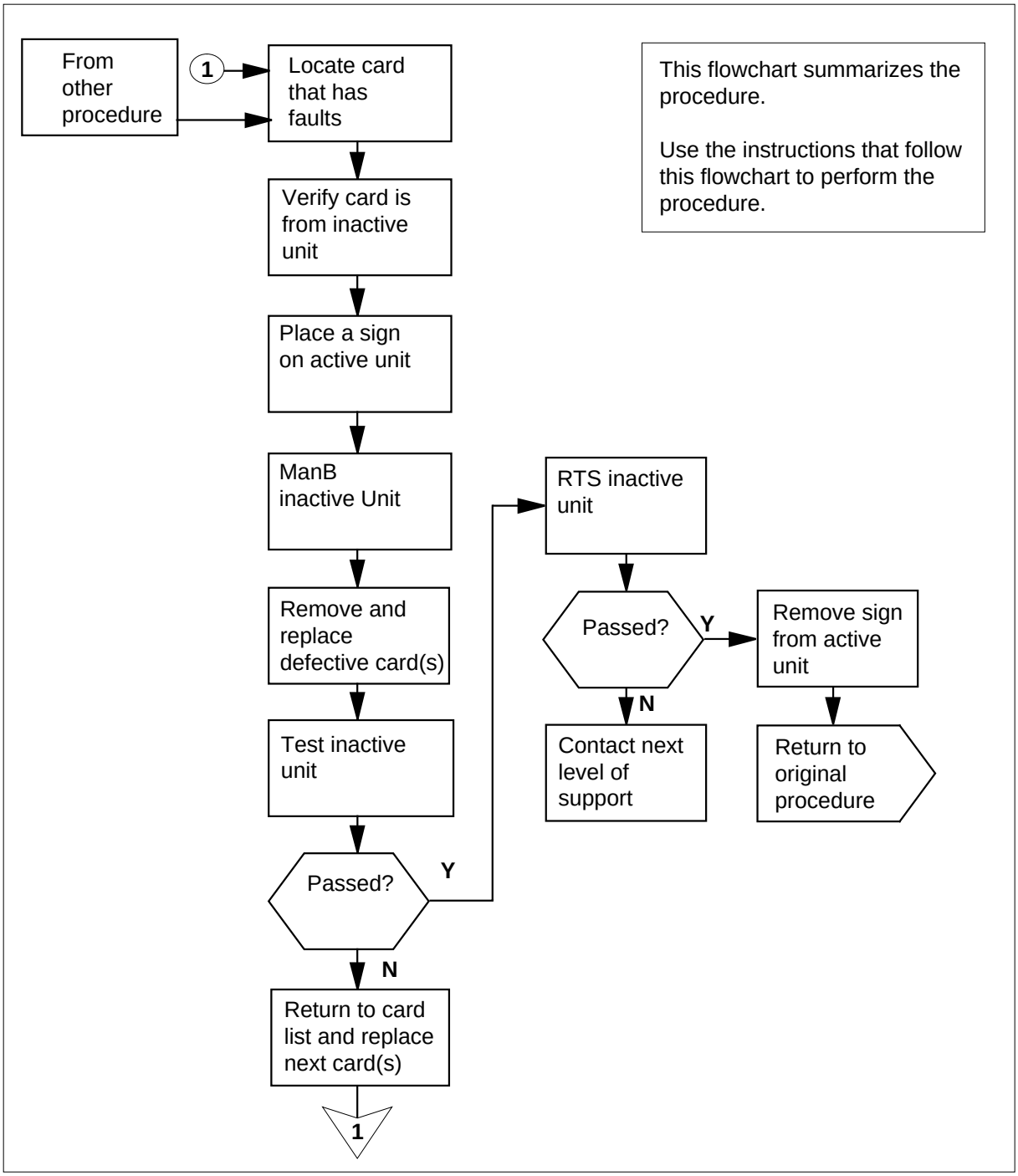
There are no common procedures.

Action

This procedure contains a flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT6X48
in LGC, PLGC, LTC, PLTC (continued)

Summary of Replacing an NT6X48 card in an LGC, LTC, PLGC, PLTC



NT6X48
in LGC, PLGC, LTC, PLTC (continued)

Replacing an NT6X48 card in an LGC, LTC, PLGC, PLTC

At the current location

1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, use the procedure to verify or accept cards, or are directed to this procedure by your maintenance support group.

2

WARNING
Loss of service
When you replace a card in the host XPM make sure the unit where you replace the card is INACTIVE and that the mate unit is ACTIVE.

Obtain a replacement card. Make sure that the replacement card and the card you replace have the same product equipment code (PEC) and PEC suffix.

At the MAP display

3 To access the PM level and post the host XPM, type

`>MAPCI;MTC;PM;POST host_xpm xpm_no`

and press the Enter key.

where

host_xpm
is the type of XPM (LGC. PLGC, LTC. PLTC)

xpm_no
is the number of the XPM

Example of a MAP display:

NT6X48
in LGC, PLGC, LTC, PLTC (continued)

```
   CM    MS    IOD    Net    PM    CCS    LNS    Trks    Ext    APPL
   .     .      .      .    1LGC    .      .       .      .      .
LGC              SysB     ManB     OffL     Cbsy     ISTb      InSv
 0 Quit    PM       0        0        2        0        2        25
 2 Post_   LGC      0        0        0        0        1         1
 3 ListSet
 4         LGC      0 ISTb  Links_OOS:  CSide  0, PSide   1
 5 TRNSL   Unit0:   Inact InSv
 6 TST     Unit1:   Act   InSv
 7 BSY
 8 RTS
 9 OffL
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17 Perform
18
```

4 To translate the P-side links to determine the faulty link, type

>TRNSL P

and press the Enter key.

Note the link number of the P-side link that is SYSB.

Example of a faulty link MAP display:

```
LINK 0:   LGC  1    0;CAP MS;STATUS:OK,;MSGCOND:OPN,Restricted
LINK 1:   LGC  1    1;CAP  S;STATUS:OK
LINK 2:   LGC  1    2;CAP MS;STATUS:OK,;MSGCOND:OPN,Unrestricted
LINK 3:   LGC  1    3;CAP  S;STATUS:SYSB
LINK 4:   LGC  1    4;CAP  S;STATUS:OK
LINK 6:   LGC  1    5;CAP  S;STATUS:OK
LINK 6:   LGC  1    6;CAP  S;STATUS:OK
```

5 To busy the P-side link that you noted was SYSB, type

>BSY link_no

and pressing the Enter key.

6 To test the P-side link that you noted was SYSB, type

>TST link_no

and press the Enter key.

7 To return the P-side link that was SYSB to service, type

>RTS link_no

NT6X48
in LGC, PLGC, LTC, PLTC (continued)

and press the Enter key.

If RTS command	Do
passed	step 23
failed	step 8

8 Check the MAP display, to make sure the card you remove is on the INACTIVE unit.

At the CPCE frame

9 Put a sign on the ACTIVE unit. The sign must bear the words *Active unit—Do not touch*.

At the MAP display

10 To busy the inactive host XPM unit, type

```
>BSY INACTIVE
```

and press the Enter key.

11 To reset the inactive host XPM unit to the ROM level, type

```
>PMRESET  UNIT  unit_no  NORUN
```

and press the Enter key.

where

unit_no
is the inactive host XPM unit number (0 or 1)

Example of a MAP response:

```
LGC  0 Unit 0    PMReset Passed
```

At the CPCE frame

12

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) of the host XPM. The wrist strap protects the equipment against static electricity damage.

Put on a wrist strap.

NT6X48
in LGC, PLGC, LTC, PLTC (continued)

13

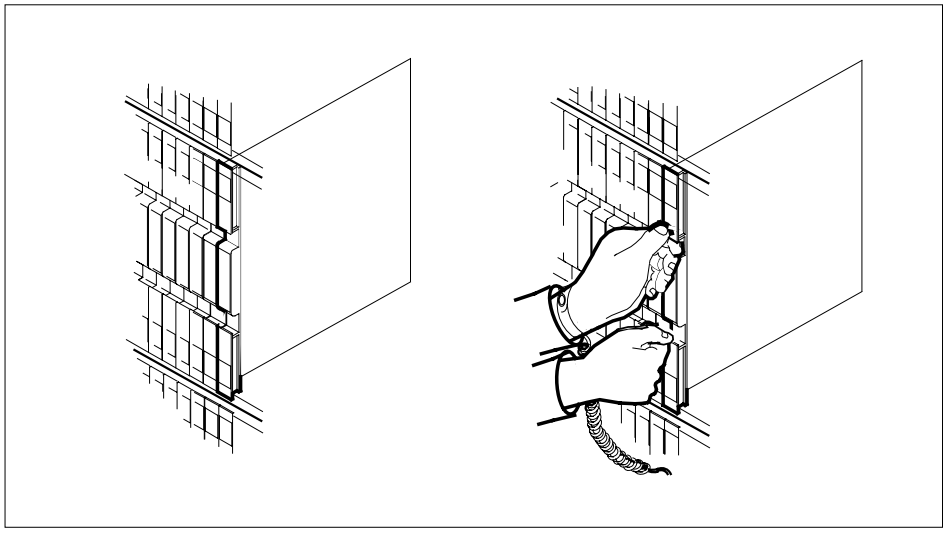
DANGER
Equipment damage
Take the following precautions when you remove or insert a card:

1. Do not apply direct pressure to the components.

2. Do not force the card into its slot.

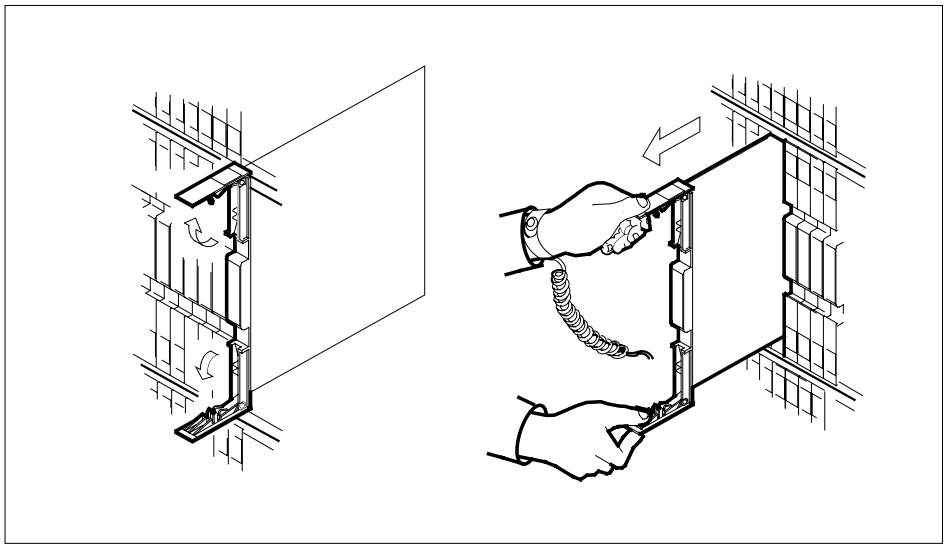
Refer to the following figures to replace the NT6X48 card.

a Locate the card to remove on the correct shelf.



b Open the locking levers on the card you remove. Carefully pull the card toward you until the card clears the shelf.

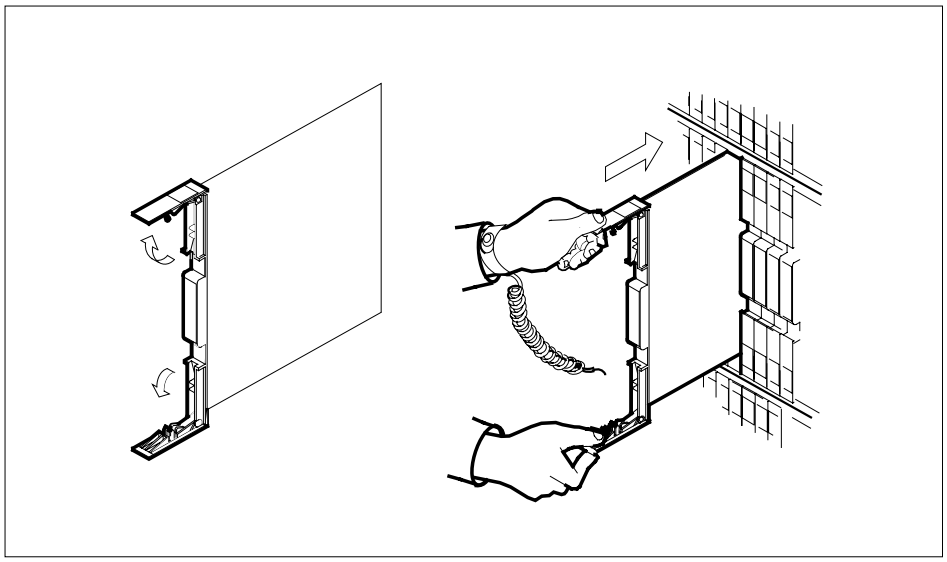
NT6X48
in LGC, PLGC, LTC, PLTC (continued)



c Make sure the replacement card and the card you replace have the same PEC and PEC suffix.

d Open the locking levers on the replacement card.

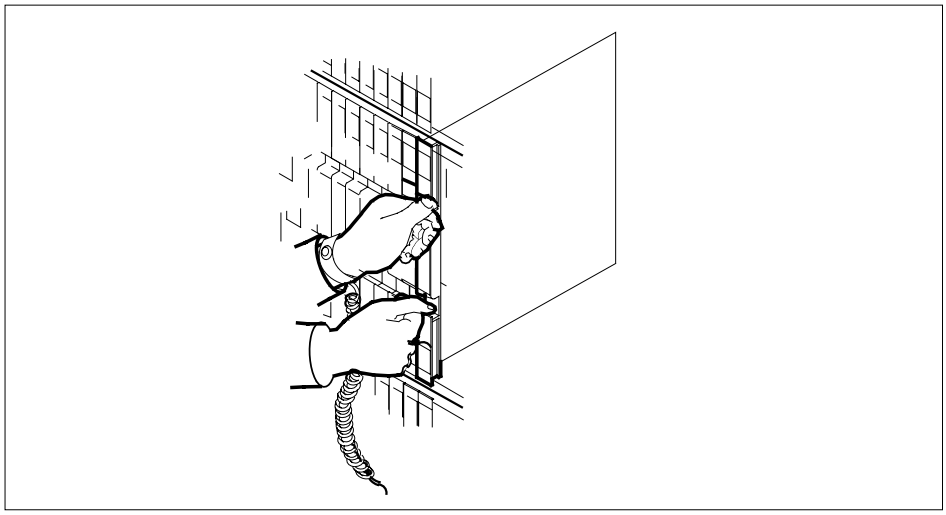
e Align the card with the slots in the shelf. Carefully slide the card into the shelf.



14 Seat and lock the card, as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.

b Close the locking levers.



At the MAP display

15 Determine if you entered this procedure from an alarm clearing procedure.

If you	Do
entered this procedure from an alarm clearing procedure	step 23
entered this procedure from a procedure other than listed here	step 16

16 To reset the inactive XPM unit, type

`>PMRESET UNIT unit_no`

and press the Enter key.

where

unit_no
is the inactive XPM unit number (0 or 1)

Example of a MAP response:
0 Unit 0 PMReset Passed

If PMRESET command	Do
passed	step 17
failed	step 24

NT6X48
in LGC, PLGC, LTC, PLTC (continued)

17 Return the inactive XPM unit to service, type

>RTS UNIT unit_no

and press the Enter key.

where

unit_no
is the number of the inactive XPM unit that you use in step 10

If RTS command	Do
passed	step 21
failed	step 24

18 To test the P-side link that you noted was SYSB (in step 4), type

>TST link_no

and press the Enter key.

19 To return the P-side link that was SYSB to service, type

>RTS link_no

and press the Enter key.

20 To check the status of the links, type

>TRNSL P

and press the Enter key.

Example of a good links MAP display:

```
LINK 0:   LGC  1    0;CAP MS;STATUS:OK,;MSGCOND:OPN,Restricted
LINK 1:   LGC  1    1;CAP  S;STATUS:OK
LINK 2:   LGC  1    2;CAP MS;STATUS:OK,;MSGCOND:OPN,Unrestricted
LINK 3:   LGC  1    3;CAP  S;STATUS:OK
LINK 4:   LGC  1    4;CAP  S;STATUS:OK
LINK 5:   LGC  1    5;CAP  S;STATUS:OK
LINK 6:   LGC  1    6;CAP  S;STATUS:OK
```

If	Do
each link shows OK status	step 21
any link does not show OK status	step 4

21 Send any defective cards for repair according to local procedure.

22 Record the items that follow in office records:

- date you replace the card
- serial number of the card
- problems that prompted replacement of the card

NT6X48
in LGC, PLGC, LTC, PLTC (end)

Go to step 25.

23 Return to the *Alarm Clearing Procedure* that directed you to this card replacement procedure. If necessary, go to the point where the system produced a defective card list. Identify the next damaged card on the list. Go to the appropriate replacement procedure in this manual for that card.

24 To obtain additional help when you replace this card, contact the next level of support. Perform this procedure if this card is the last card in the card list.

25 The procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.

NT6X48 in MSB7

Application

Use this procedure to replace the following card in an MSB7.

PEC	Suffixes	Name
NT6X48	AA	DS-30A interface card

Common Procedures

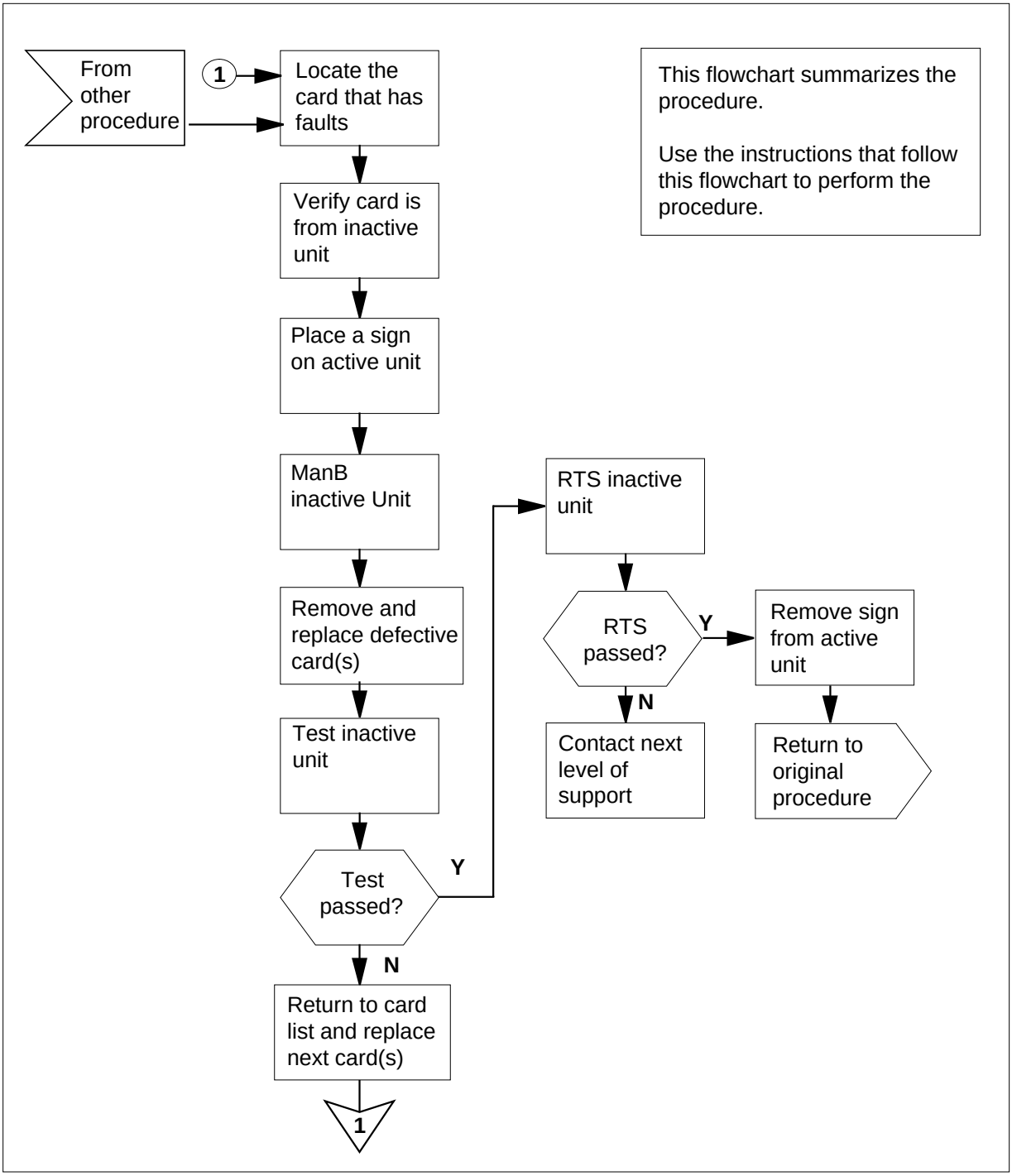
There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT6X48
in MSB7 (continued)

Replacing an NT6X48 in MSB7



NT6X48
in MSB7 (continued)

Replacing an NT6X48 card in an MSB7

At the current location

1 Proceed only if a step in a maintenance procedure directed you to this card replacement procedure, to verify or accept cards, or if your maintenance support group directed you here.

2

WARNING
Loss of service
To replace a card in the MSB7 make sure the unit where you replace the card is INACTIVE. Make sure that the mate unit is ACTIVE.

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same product equipment code (PEC) and PEC suffix.

At the MAP display

3 To access the PM level and post the MSB7, type

```
>MAPCI;MTC;PM;POST MSB7 unit_no
```

and press the Enter key.

where

unit_no
is the number of the MSB7 unit you must busy (0 or 1)

Example of a MAP display:

```
   CM    MS    IOD    Net    PM    CCS    LNS    Trks    Ext    APPL
   .     .      .      .    1MSB7   .      .       .      .      .
MSB7              SysB     ManB     OffL     Cbsy     ISTb      InSv
 0 Quit    PM       0        0        2        0        2        25
 2 Post_   MSB7     0        0        0        0        1         1
 3 ListSet
 4         MSB7     0 ISTb  Links_OOS:  CSide  0, PSide   1
 5 TRNSL   Unit0:   Inact InSv
 6 TST     Unit1:   Act   InSv
 7 BSY
 8 RTS
 9 OffL
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17 Perform
18
```

4 Observe the MAP display to make sure the card you remove is on the INACTIVE unit.

At the CPCE frame

5 Put a sign on the ACTIVE unit that bears the words *Active unit—Do not touch*.

At the MAP display

6 To busy the inactive MSB7 unit, type

>BSY INACTIVE

and press the Enter key.

7 To reset the inactive MSB7 unit to the ROM level, type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the inactive MSB7 unit number (0 or 1)

Example of a MAP response:

```
MSB7 0 Unit 0       PMReset Passed
```

NT6X48
in MSB7 (continued)

At the LGE frame

8

DANGER
Static electricity damage
Wear a wrist strap and connect it to the wrist-strap grounding point on the left side of the frame supervisory panel of the MSB7. The wrist strap protects the equipment against damage caused by static electricity.

Put on a wrist strap.

9

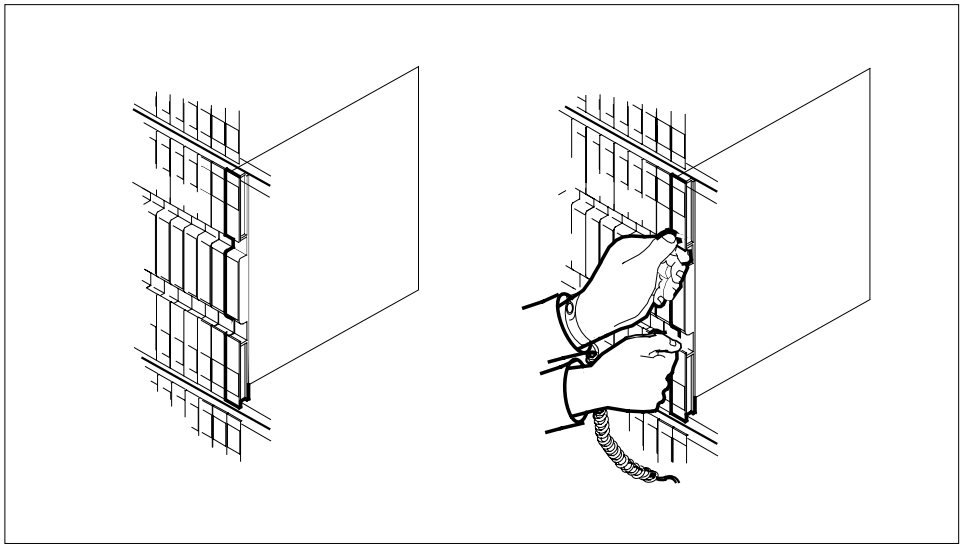
DANGER
Equipment damage
Take these precautions when you remove or insert a card:

1. Do not apply direct pressure to the components.

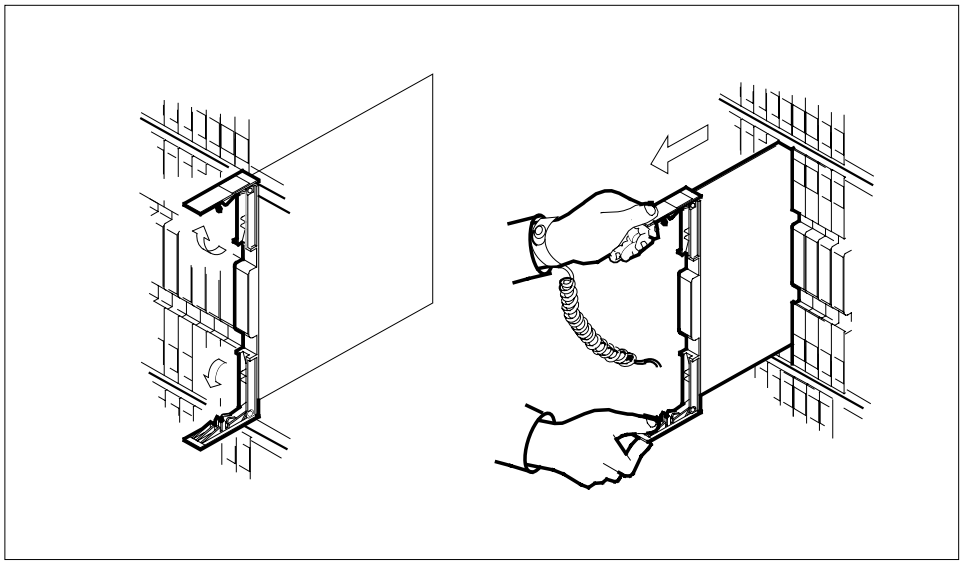
2. Do not force the cards into the slots.

Replace the NT6X48 card according to the following figures.

a Locate the card that you remove on the appropriate shelf.



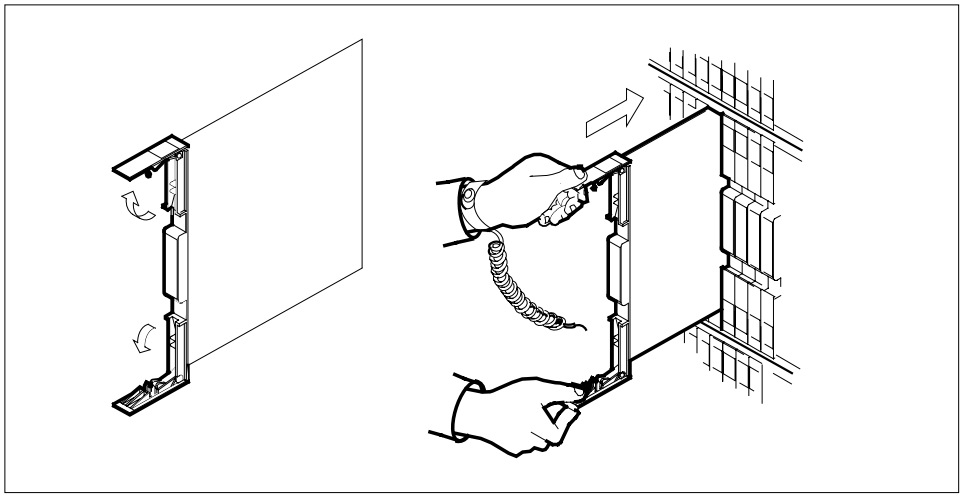
b Open the locking levers on the card you replace. Carefully pull the card toward you until the card clears the shelf.



c Make sure the replacement card and the card you remove have the same PEC and PEC suffix.

d Open the locking levers on the replacement card.

e Align the card with the slots in the shelf and carefully slide the card into the shelf.

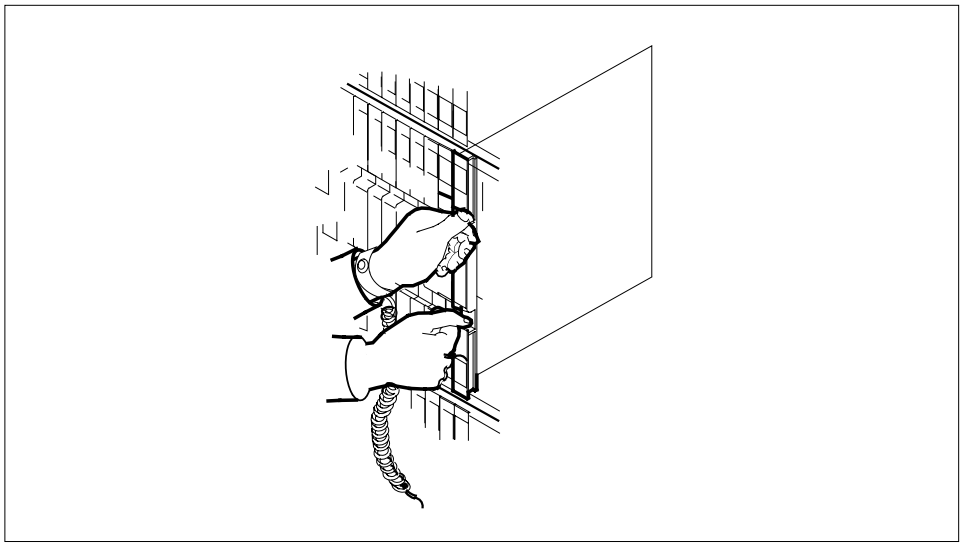


10 Seat and lock the card, as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.

b Close the locking levers.

NT6X48
in MSB7 (continued)



At the MAP display

11 Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
an alarm clearing procedure	step 16
a procedure other than listed here	step 12

12 To reset the inactive MSB7 unit, type

`>PMRESET UNIT unit_no`

and press the Enter key.

where

unit_no
is the inactive MSB7 unit number (0 or 1)

Example of a MAP response:

```
0 Unit 0    PMReset Passed
```

If PMRESET command	Do
passed	step 13
failed	step 17

13 To return the inactive MSB7 unit to service, type

`>RTS UNIT unit_no`

and press the Enter key.

where

unit_no
is the number of the inactive MSB7 unit that you busied in step 6

If RTS command	Do
passed	step 14
failed	step 17

14 Send any defective cards for repair according to local procedure.

15 Record the following items in office records:

- the date you replaced the card
- the serial number of the card
- the reason you replaced the card

Go to step 18.

16 Return to the *Alarm Clearing Procedure* that directed you to this card replacement procedure. If you must, go to the point where the system produced the defective card list. Identify the next defective card on the list, and go to the appropriate replacement procedure in this manual for that card.

17 For additional help, contact the next level of support. Obtain additional help only if this card is the last card in the card list.

18 The procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed by the maintenance procedure.

NT6X78 in an XPM

Application

Use this procedure to replace an NT6X78 in the shelves or frames identified in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT6X78	AA, AB, BA	CLASS modem resource (CMR) card	line group controller (LGC), line trunk controller (LTC), international line group controller (ILGC), international line trunk controller (ILTC), line group controller offshore (LGCO), line trunk controller offshore (LTCO), ISDN line group controller offshore (LGCOI), ISDN line trunk controller offshore (LTCOI), PCM30 LGC (PLGC), PCM30 LTC (PLTC)

If you cannot identify the project engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of cards, shelves, and frames in this card replacement NTP.

Common procedures

This procedure refers to the following procedures:

- *Loading a PM*
- *Replacing a card*

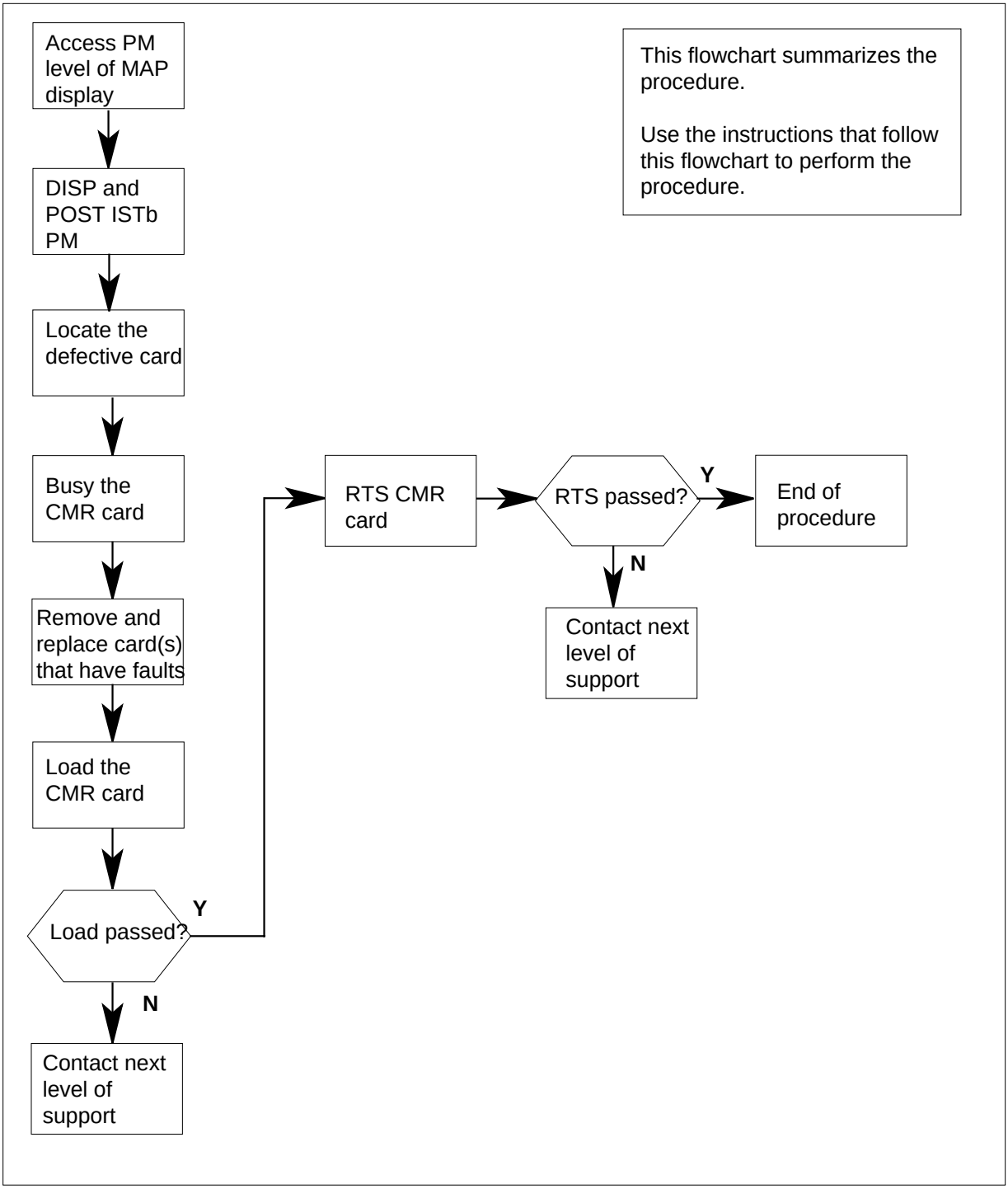
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NT6X78 in an XPM (continued)

Summary of replacing an NT6X78 in an XPM



NT6X78
in an XPM (continued)

Replacing an NT6X78 in an XPM

At your current location

1

WARNING
Loss of service
This procedure manually busies a minimum of one peripheral module (PM) unit. This can degrade service. Perform this procedure only if you must restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                SysB    ManB    OffL    CBsy    ISTb    InSv
PM                 0       0       0       0      11      42
```

3 To post the PM associated with the card you want to replace, type

`>POST pm_type pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

```
          SysB  ManB  OffL  Cbsy  ISTb  InSv
PM           0     0     0     0    11    42
LTC          0     0     0     0     0     3

LTC    1 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:  Act  InSv
Unit1:  Inact InSv
```

4 Determine the state of the PM unit for the card you replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or Cbsy, and active	step 5
is ISTb, InSv, SysB, or Cbsy, is inactive	step 8
is ManB	step 10
is OffL	step 16

5 Determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 6
is other than listed here	step 18

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
LTC 1     A Warm SwAct will be performed after
          data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 7
the system rejects the SWACT	step 17

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

NT6X78
in an XPM (continued)

```
Unit0:   Inact SysB  Mtce
Unit1:   Act   InSv

LTC 1     SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 8
is other than listed here	step 17

8 A maintenance flag (Mtce) indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before you proceed to the next step.

9 To manually busy the CMR card for the inactive unit, type

>BSY UNIT unit_no CMR

and press the Enter key.

where

unit_no
is the number of the unit that contains the CMR card that has faults.

If the BSY command	Do
passed	step 10
failed	step 18

At the shelf

10

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist-strap protects the cards against static electricity damage.

If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

11 Your next action depends on the reason you perform this procedure.

If an Alarm Clearing Procedure	Do
directed you to this procedure	step 12
did not direct to this procedure	step 13

12 Return to the *Alarm Clearing Procedures* that sent you to this procedure and continue as directed.

At the MAP terminal

13 To load the CMR card, type

`>LOADPM INACTIVE CC CMR`

and press the Enter key.

Example of a MAP response:

```
LTC 1 Unit 0    LoadPM Passed
```

If the LOADPM command	Do
failed	step 14
passed	step 15

14 Perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

15 To return the inactive unit to service, type

`>RTS INACTIVE`

and press the Enter key.

Example of a MAP response:

```
LTC 1 Unit 1    Rts Passed
```

If the RTS command	Do
passed	step 19
failed	step 18

16 Contact operating company personnel to determine why the component is offline. Continue as operating company personnel direct.

17 For additional help with switch of activity, contact the next level of support.

Note: The system can recommend the use the SWACT command with the FORCE option. Consult office personnel to determine if you must use the FORCE option.

NT6X78 in an XPM (end)

18 For additional help, contact the next level of support.

19 The procedure is complete.

NT7X03 in an XPM

Application

Use this procedure to replace an NT7X03 in the shelves or frames identified in the following table.

PEC	Suffixes	Cardname	Shelf/frame name
NT7X03	AA	Power Manager	digital trunk controller (DTC), international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), ISDN DTC (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), line trunk controller (LTC), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC)

Note: Use this procedure to replace the NT7X03 power manager in XPM plus (NTMX77-based).

Common procedures

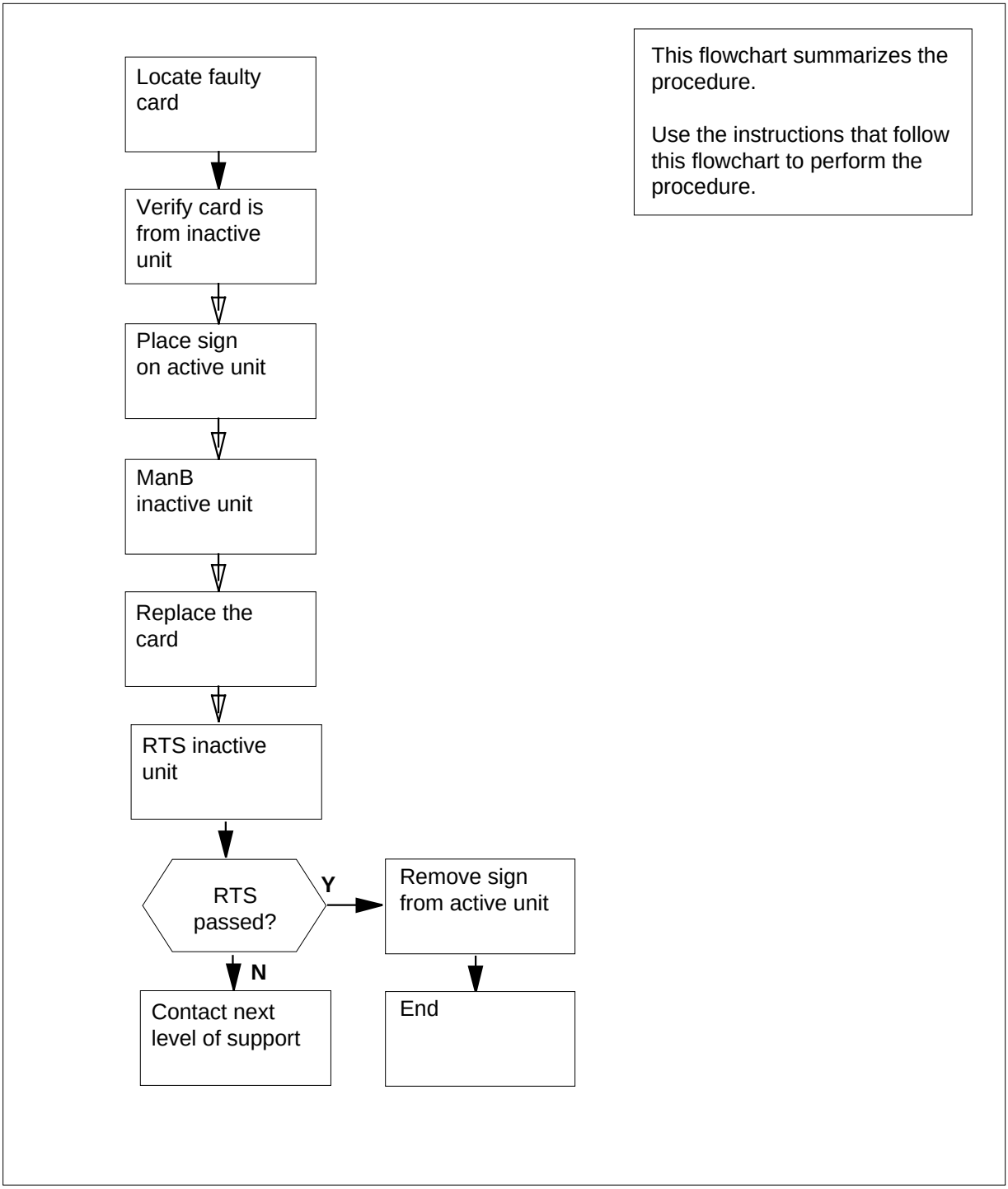
None.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

NT7X03 in an XPM (continued)

Summary of replacing NT7X03 in an XPM



NT7X03 in an XPM (continued)

Replacing an NT7X03 in an XPM

At your current location

1

WARNING
Loss of service
During this procedure, you manually busy a minimum of one peripheral module (PM) unit. When you manually busy a PM unit, you can cause service degradation. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during low traffic periods only.

Obtain a replacement card. Make sure that the replacement card has the same PEC and PEC suffix as the card that you remove.

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   0       0       0       0       3      39
```

3 To post the PM for the faulty NT7X03 card, type

`>POST  pm_type  pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC.)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
 PM                  0       0       0       0       3      39
 DTC                 0       0       0       0       0       4

DTC     0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:   Act   InSv
Unit1:   Inact InSv
```

NT7X03
in an XPM (continued)

4 Determine the state of the PM unit containing the faulty NT7X03 card you want to replace.

If the state of the PM unit is	Do
ISTb, InSv, SysB, or CBsy, and active	step 5
ISTb, InSv, SysB, or CBsy, and inactive	step 8
ManB	step 10
OffL>	step 21

5 Determine the state of the mate PM unit.

If the state of the mate PM unit is	Do
ISTb or InSv	step 6
other	step 24

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
          data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 7
the system rejects the SWACT	step 22

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:   Inact SysB  Mtce
Unit1:   Act   ISTb

DTC 0     SwAct Passed
```

If the MAP response is	Do
SWACT passed	step 8
SWACT failed	step 22

8 A maintenance flag (Mtce) indicates that system-initiated maintenance tasks are in progress. To abort the system-initiated maintenance task, type

>ABTK

and press the Enter key.

9 To manually busy the inactive unit, type

>BSY INACTIVE

and press the Enter key.

Example of a MAP response:

```
DTC     0 ISTb  Links_OOS: CSide  0 , PSide  1
Unit0:   Inact ManB
Unit1:   Act   ISTb
bsy unit 0
DTC 0 Unit 0    Bsy Passed
```

If the BSY command	Do
passed	step 10
failed	step 23

10 To reset the inactive PM unit, type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

Example of a MAP response:

```
DTC 0 Unit 0    PMReset Passed
```

NT7X03
in an XPM (continued)

At the shelf

11

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage.

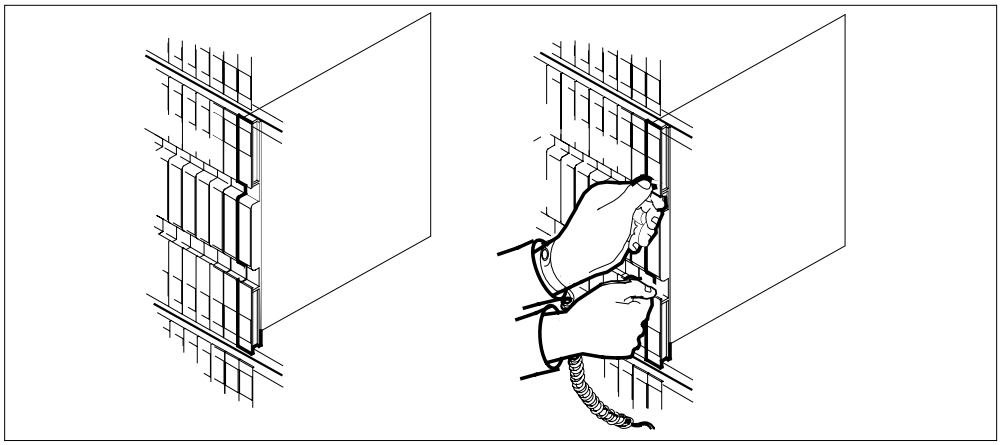
Put on a wrist strap.

12 Remove the NT7X03 power manager card as shown in the following figures.

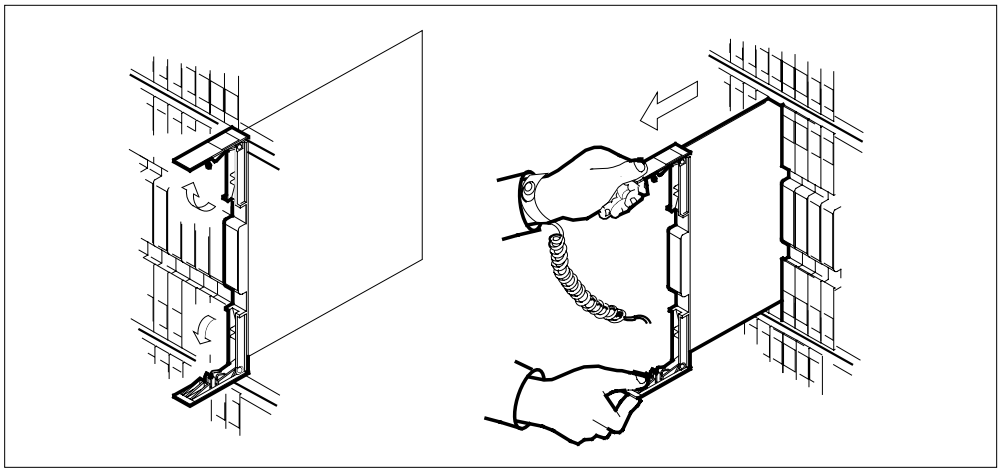
Note 1: When installing the replacement NT7X03 in the inactive unit of the XPM, the LED on the faceplate should illuminate momentarily as the pack is inserted or removed from the XPM shelf. This feature indicates that the NT7X03 is working properly.

Note 2: If the LED does not illuminate, the card is defective and a new NT7X03 should be installed following normal pack procedures.

a Locate the card to be removed on the appropriate shelf.



b Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.



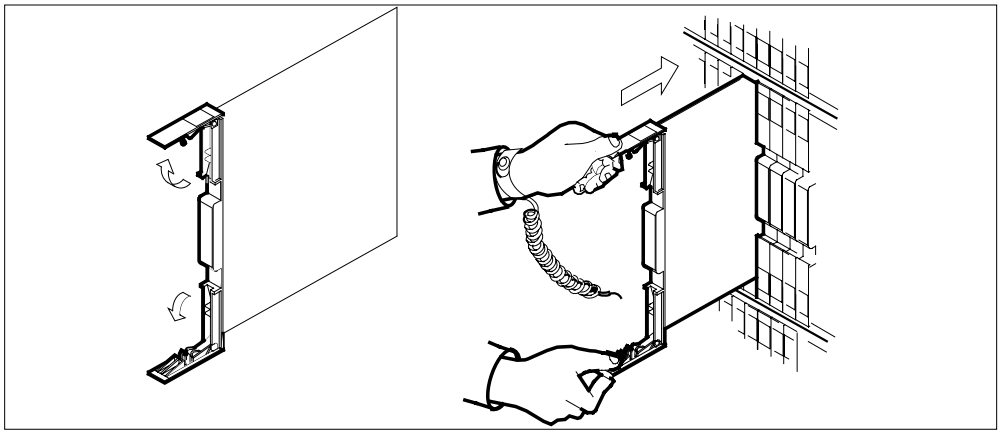
c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.

13

WARNING
Equipment damage
Take the following precautions when you remove or insert a card:
1. Do not apply direct pressure to the components.
2. Do not force the cards in the slots.

Open the locking levers on the replacement card.

Align the card with the slots in the shelf and gently slide the card into the shelf.

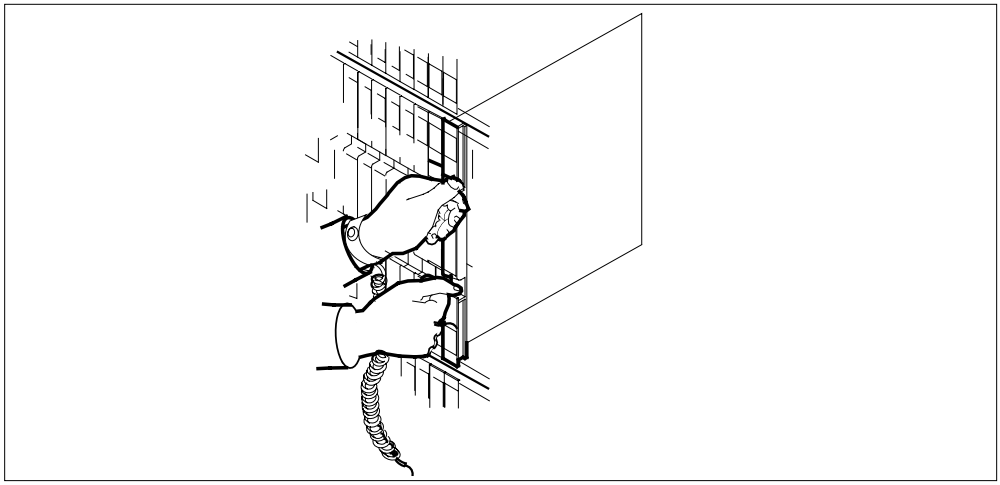


14 Seat and lock the card.

NT7X03
in an XPM (continued)

a Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure the card is fully seated in the shelf.

b Close the locking levers.



If	Do
LED remains illuminated with a shelf converter alarm	step 15
LED remains illuminated with no shelf converter alarm	step 18

15 Replace NT7X03 with a new card.

If	Do
condition still exists	step 16
does not exist	step 24

16 Reseat card.

If	Do
condition still exists	step 19
does not exist	step 20

17 Go to step 19.

18 Replace NT7X03 with a new card.

If	Do
condition still exists	step 23
does not exist	step 23

19 The next step depends on conditions associated with the card you want to replace.

If	Do
backplane pins are bent or missing	step 24
backplane pins are shorted	step 23

At the MAP terminal

20 Return the inactive unit to service by typing

```
>RTS  INACTIVE
```

and pressing the Enter key.

If the RTS command	Do
passed	step 24
failed	step 23

21 Consult office personnel to determine why the component is offline. Continue as directed by office personnel.

22 For further assistance with switch of activity, contact the personnel responsible for the next level of support.

Note: If the system recommends using the SWACT command with the FORCE option, consult office personnel to determine if use of the FORCE option is advisable.

23 For further assistance, contact the personnel responsible for the next level of support.

24 You have successfully completed this procedure.

NT7X07AA in an LTCI

Application

Use this procedure to replace an NT7X07AA in a line trunk controller with ISDN (LTCI).

Common procedures

This procedure does not refer to any common procedures.

Next level of maintenance

Repeat this procedure if it is not successful when you first perform the procedure.

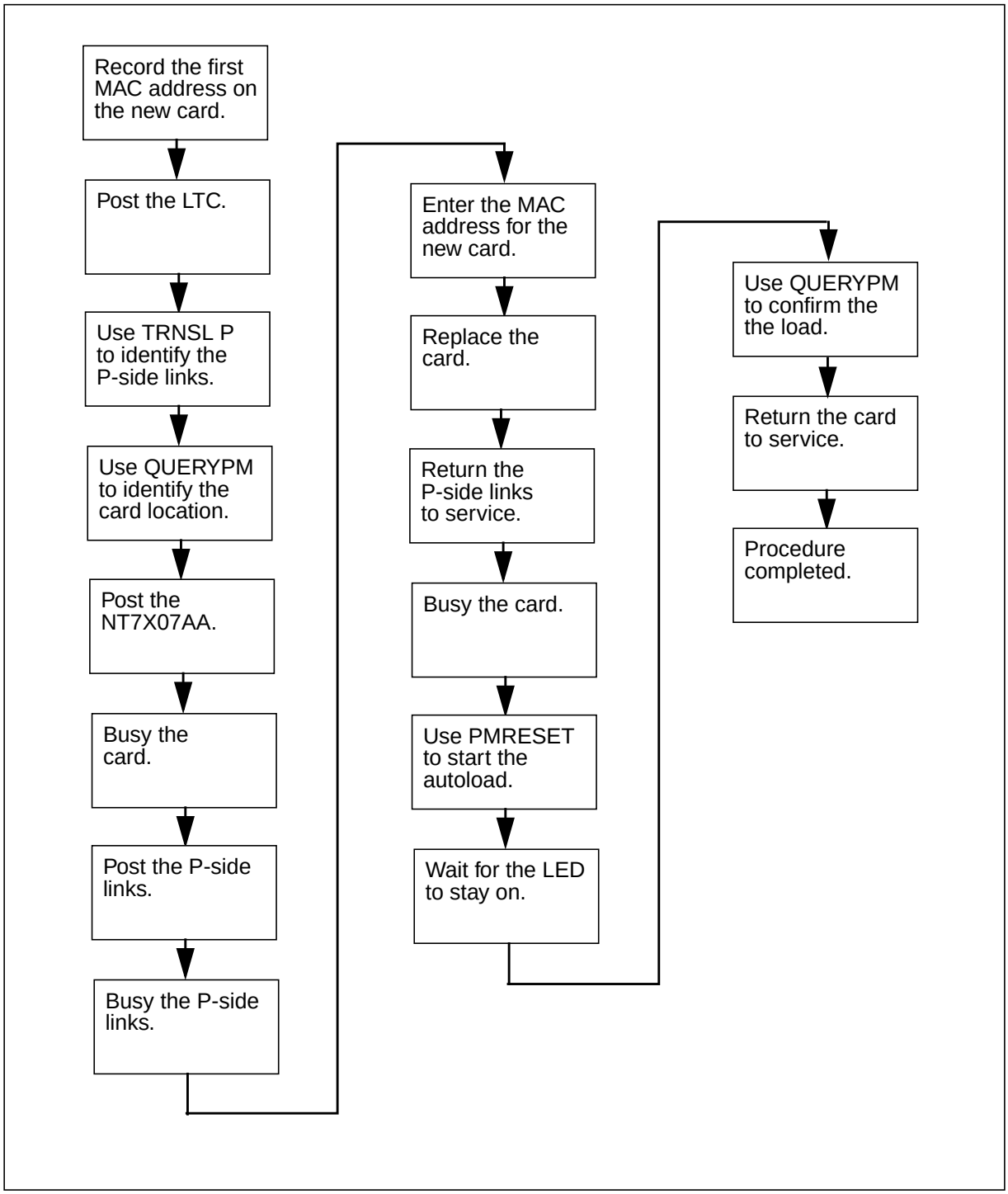
A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance and support can find the problem. More detail about logs appears in the *Log Report Reference Manual*.

Action

The flowchart that follows provides a summary of this procedure. Use the instructions in the step action procedure that follows the flowchart to replace the card.

NT7X07AA in an LTCI (continued)

Summary of replacing an NT7X07AA in an LTCI



NT7X07AA in an LTCI (continued)

Replacing an NT7X07AA in an LTCI

At your current location

1 Get a new card. Make sure that the new card and the card you will replace have the same PEC and PEC suffix.

2 Find the two media access control (MAC) addresses on the faceplate of the new card. Record the first address.

At the MAP terminal

3 Go to the PM level of the MAP display and post the LTCI with the card you will replace. Type

`>MAPCI;MTC;PM;POST LTC ltc_no`

and press the Enter key.

where

ltc_no is the number of the LTCI.

Example of command

`>MAPCI;MTC;PM;POST LTC 0`

4 Display the P-side links for the LTCI. Type

`>TRNSL P`

and press the Enter key.

Example of MAP response

```
LINK 10: IPGW GWIP 10 0     0:Cap MS;Status:O      , P;MsgCond:MTC
LINK 11: IPGW GWIP 10 0     1:Cap  S;Status:O      , P
LINK 12: IPGW GWIP 12 0     0:Cap MS;Status:O      , P;MsgCond:MTC
LINK 13: IPGW GWIP 12 0     1:Cap  S;Status:O      , P
```

5 Record the numbers of the P-side links for the NT7X07AA card that you will replace.

6 Query the PM to determine the location of the card. Type

>QUERYPM

and press the Enter key.

Example of MAP response

```
PM Type: LTC  PM No.: 0  PM Int. No.: 1  Node_No.: 71
PMs Equipped: 25  Loadname: ELI11BD  EEPRom Load: UPFWQG04
 Warning! Unit 0 is missing patches
 Warning! Unit 1 is missing patches
WARM SWACT is supported but not possible: node redundancy lost.
 LTC 0 is included in the REX schedule.
REX on LTC 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0   Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {MAN_BUSY, FALSE}
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
   TEAM02      HOST  01 AA18  LTEI 001  18  LTC : 000       6X02NA
```

7 Go to the PM level and post the NT7X07AA. Type

>POST IPGW site_name frame_no unit_no

and press the Enter key.

where

site_name is the name of the site of the LTCI.

frame_no is the number of the LTCI.

unit_no is the even port number assigned to the NT7X07 divided by 2.

Example of command

>POST IPGW GWIP 10 0

NT7X07AA
in an LTCI (continued)

Example of a MAP display

```
CM   MS   IOD   Net  PM  CCS  Lns  Trks   Ext   APPL
 .    .     .      .  1RCC  .    .    .      .     .

IPGW              SysB   ManB  OffL   CBsy  ISTb  InSv
0 Quit     PM       0      5    1       0   11    22
2 Post_    IPGW     0      3    1       0    2     9
3
4        IPGW GWIP 0 2 Offl  Links_OOS: CSide 0 PRIMARY FOR
5 Trnsl_                                    IPGW GWIP 0 2
6 Tst_
7 Bsy_
8 RTS_
9 OffL
10 LoadPMQ
11
12 Next
13
14 QueryPM
15 PMReset
16 Spares
17
18
```

Note: The command **LoadPMQ** is available in offices at NA012 or higher. If the office is at NA011, the command **Ld_PMQ** provides this functionality.

8 Busy the NT7X07AA. Type

>BSY

and press the Enter key.

9 Quit the IPGW level. Type

>QUIT

and press the Enter key.

10 Post the LTCI.

>POST LTC ltc_no

and press the Enter key.

where

ltc_no is the number of the LTCI.

Example of command

>POST LTC 0

11 Busy one P-side link for the card you will replace. Type

>BSY LINK link_no

and press the Enter key.

where

link_no is the number of the P-side link.

Example of command

>BSY LINK 4

12 At the prompt, confirm the action. Type

>Y

and press the Enter key.

13 Repeat step 11 for each P-side link of the card you will replace.

At NetID

14 Record the MAC address for the new card.

a Expand the IP Address object three levels.

b Expand the network object of the subnet with the NT7X07 card.

c In the tree area, click on the NT7X07 card that you want to update. NetID identifies the NT7X07 card as a host.

d Select **Options -> Update Host**.

e Enter the MAC address that you recorded in step 2 in the Mac Address field.

f Click OK.

At the LTC frame

15

DANGER
Static electricity damage
Before you remove any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel of the XPM. This strap protects the equipment from damage caused by static electricity.

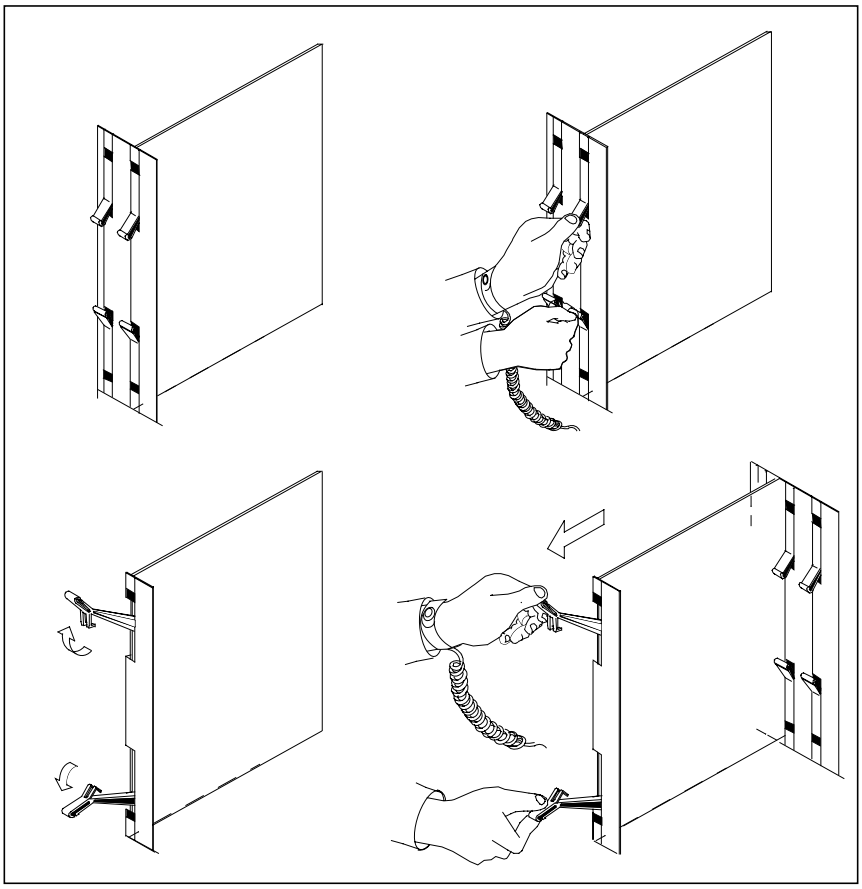
Put on a wrist strap.

NT7X07AA
in an LTCI (continued)

16 Replace the NT7X07 card.

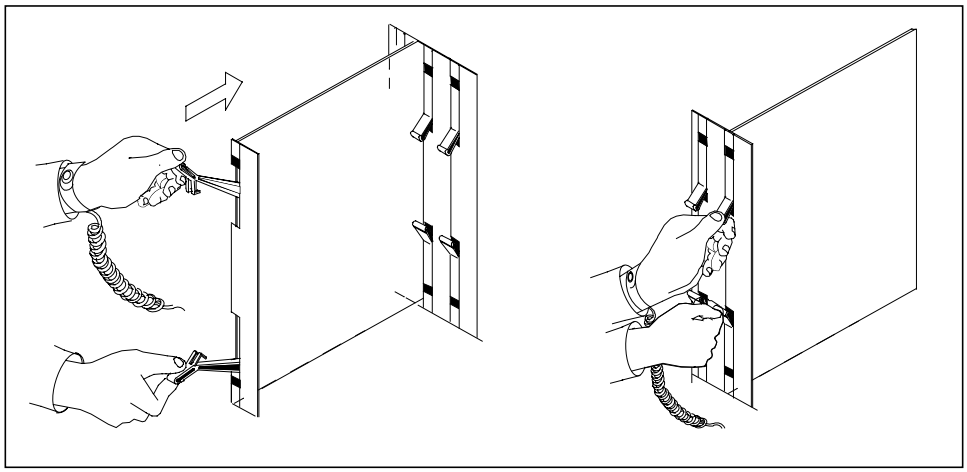
a Locate the NT7X07 card to be removed.

b Open the locking levers on the card and gently pull the card towards you until the card clears the shelf.



c Remove the card from the slot and shelf.

d Push the new card into the slot and close the locking levers.



At the MAP terminal

17

ATTENTION

If you have not changed the MAP display since step 11, the MAP display is at the PM level and the LTCI with the NT7X07 card is posted. If you have changed the MAP display, return to the PM level and post the LTCI with the NT7X07 card.

Return one P-side link to service. Type

>RTS LINK link_no

and press the Enter key.

where

link_no is the number of the P-side link.

Example of command

>RTS LINK 4

18 Repeat steps 16 and 17 for each P-side link.

19 Go to the PM level and post the NT7X07AA. Type

>POST IPGW GWIP 10 0

and press the Enter key.

20 Load the card.

a Start the autoload of the NT7X07 card. Type

>PMRESET

NT7X07AA
in an LTCI (end)

and press the Enter key.

b Watch the processor LED on the card. Wait for the LED to stay on.

c Confirm the new card has the correct load. Type

>QUERYPM

and press the Enter key.

Example of MAP response

```
QueryPM
PM Type: IPGW  PM Int. No.: 6  Node_No: 84
IPGW Card Location Information:
   Site Flr RPos  Bay_id   Shf  Description  Slot  EqPEC
   HOST  01 AA18  LTEI 001  32  LTC : 100     05   7X07

   LOAD STATUS:
   IPGW CONTAINS A VALID LOAD.
```

21 Return the NT7X07AA to service. Type

>RTS

and press the Enter key.

22 You have completed this procedure.

NTBX02 in an XPM

Application

Use this procedure to replace an NTBX02 in the shelves or frames in the following table.

PEC	Suffix	Card name	Shelf or frame name
NTBX02	AA	ISDN D-channel handler (DCH) card	ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), PCM30 line group controller (PLGC), PCM30 line trunk controller (PLTC)
NTBX02	BA	Enhanced ISDN DCH card	LGCI, LTCI, PLGC, PLTC

If you cannot identify the product engineering code (PEC), PEC suffix, or shelf or frame for the card to replace, refer to the Index. The Index provides a list of the cards, shelves, and frames in this card replacement book.

Common procedures

This procedure refers to the following common procedures:

- *Loading a PM*
- *Replacing a card*

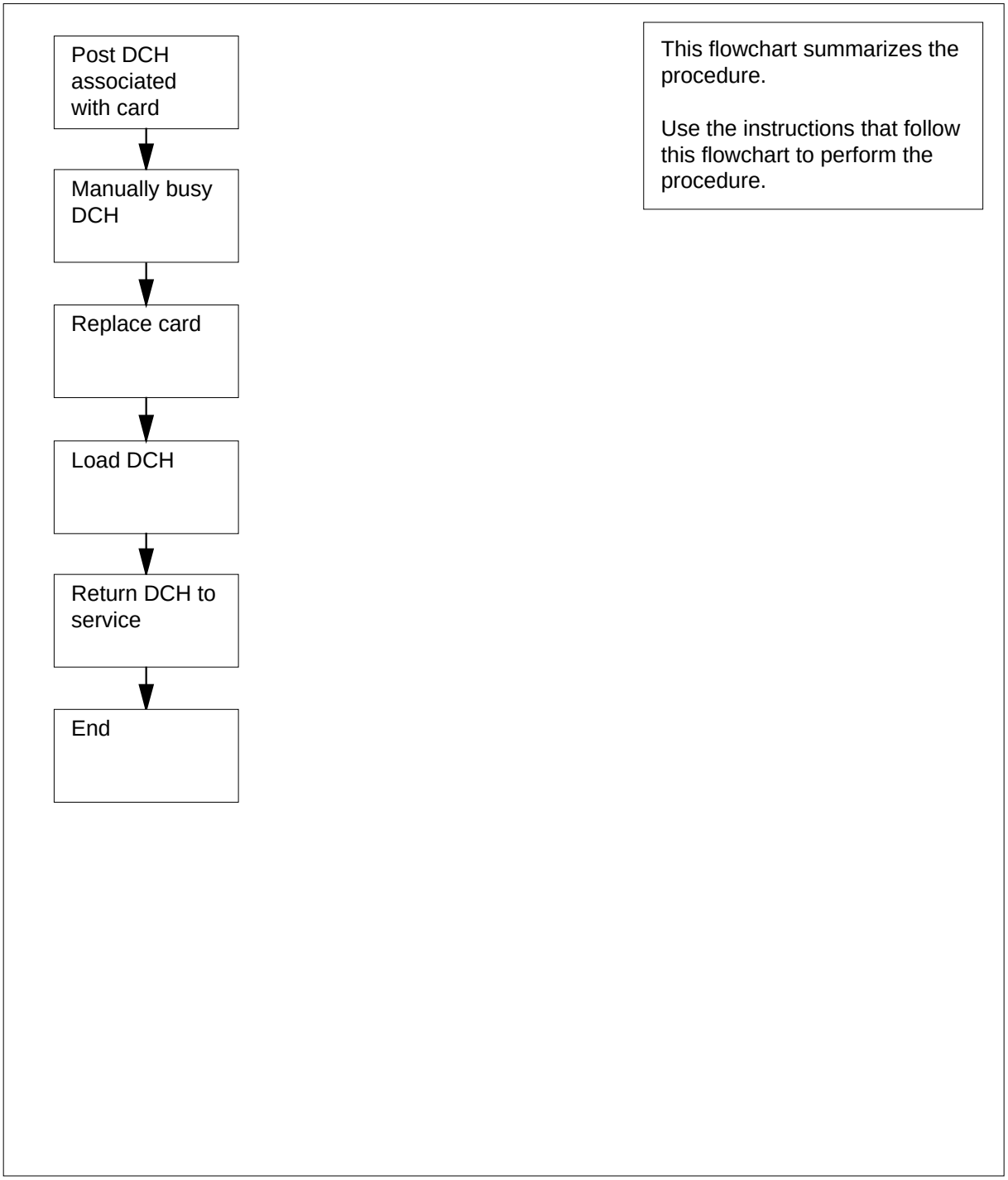
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

NTBX02 in an XPM (continued)

Summary of replacing an NTBX02 in an XPM



Replacing an NTBX02 in an XPM

At your current location

1

CAUTION
Loss of service
This procedure includes directions to manually busy a D-channel handler (DCH). This procedure can cause service degradation. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card and the card you replace have the same PEC and PEC suffix.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
          SysB   ManB   OffL   Cbsy   ISTb   InSv
PM          55     1              6     13     15     15
```

3 To post the PM for the card you replace, type

`>POST  pm_type  pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

NTBX02
in an XPM (continued)

```
                SysB   ManB   OffL   Cbsy   ISTb   InSv
PM              55       1      6     13     15     15
LTC              0       0      0      0      0      7

LTC     0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:  Inact InSv
Unit1:  Act   InSv
```

4 To access the DCH level of the MAP display, type

>DCH

and press the Enter key.

Example of a MAP display:

```
                SysB   ManB   OffL   Cbsy   ISTb   InSv
PM              55       1      6     13     15     15
LTC              0       0      0      0      0      7

LTC     0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:  Inact InSv
Unit1:  Act   InSv

DCH             0      0      0      0      0      4
```

If you	Do
know the DCH number but not the shelf location	step 5
know the shelf location but not the DCH number	step 7

5 To post the DCH, type

>POST dch_no

and press the Enter key.

where

dch_no
is the DCH number (0 to 255)

Example of a MAP display:

NTBX02
in an XPM (continued)

```
                     SysB    ManB    OffL    Cbsy    ISTb    InSv
          PM          55              1       6       13      15      15
          LTC          0              0       0        0       0       7
LTC      0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:   Inact InSv
Unit1:   Act   InSv

         DCH           0       0       0       0       0       4

DCH  53 ISG 201 InSv LTC    0 port  3
```

6 To display DCH location information, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

```
DCH  53 ISG 201 InSv LTC    0 port  3

      Site Flr RPos  Bay_id   Shf  Description         Slot     EqPEC
      HOST  01  B02  LTEI 00   65  LTC : 001      02        BX02
Loadnames : DCHINV - DCH36A , DCH - DCH02D   ; INTL INDEX : 17
```

Go to step 10.

7 To post all DCHs for the XPM, type

>POST   ALL

and press the Enter key.

Example of a MAP display:

```
                     SysB    ManB    OffL    Cbsy    ISTb    InSv
          PM          55              1       6       13      15      15
          LTC          0              0       0        0       0       7
LTC      0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:   Inact InSv
Unit1:   Act   InSv

         DCH           0       0       0       0       0       4

DCH  53 ISG 201 InSv LTC    0 port  3
```

8 To display DCH location information, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

NTBX02
in an XPM (continued)

```
DCH  53 ISG 201 InSv LTC    0 port  3

     Site Flr RPos  Bay_id   Shf  Description          Slot EqPEC
   HOST  01  B02  LTEI 00    65  LTC : 001      02     BX02

Loadnames : DCHINV - DCH36A , DCH - DCH02D   ; INTL INDEX : 17
```

If the DCH	Do
corresponds to the known shelf location	step 10
does not correspond to the known shelf location	step 7

9 Repeat steps 7 and 8 until you find the DCH that corresponds to the shelf location. Identify the DCH and continue this procedure.

10 Determine the state of the DCH.

If the state of the DCH	Do
is ISTb, InSv, or SysB	step 11
is ManB	step 13
is OffL	step 20

11

CAUTION
Loss of service
When you manually busy the DCH, the system transfers the service group to a spare DCH, to maintain service for the group. If a spare in-service DCH is not available, the system will request confirmation of the BSY command. If you confirm, all calls in progress are dropped.

To manually busy the DCH, type

>BSY

and press the Enter key.

Example of a MAP response:

DCH Takeover will be attempted
Services may be affected
Please confirm ("YES", "Y", "NO", or "N"):

If	Do
you must confirm the command and the message `DCH takeover will be attempted` is displayed	step 12
you must confirm the command and the message `DCH takeover will be attempted` is not displayed	step 19
the command passes	step 13

12 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

DCH 53 Bsy Passed

If the BSY command	Do
passed	step 13
failed	step 21

NTBX02
in an XPM (continued)

At the shelf

13

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. This protects the cards against static electricity damage.

To replace the card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

Note: If the card you replace has switches, make sure that the switches on the replacement card have the same settings.

14 The next action depends on the reason you perform this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 15
did not direct you to this procedure	step 16

15 Return to the maintenance procedure that sent you to this procedure and continue as directed.

At the MAP terminal

16 To load the DCH, type

`>LOADPM`

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

If the LOADPM command	Do
failed	step 17
passed	step 18

17 To load the PM unit, perform the procedure *Loading a PM* in this document. Complete the procedure and return to this point.

18 To return the DCH service, type

`>RTS`

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

Example of a MAP response:

```
DCH 53   Out-of-service test initiated
DCH 53 Tst Passed
DCH 53 Rts Passed
```

If the RTS command	Do
failed	step 21
passed	step 22

19 There is no spare in-service DCH to which you can switch the service group. Contact operating company personnel to determine if you must busy the DCH at this time. Continue as operating company personnel direct.

20 Contact office personnel to determine why the component is offline. Continue as operating company personnel direct.

21 For additional help, contact the next level of support.

22 The procedure is complete.

P-side interface cards in an XPM

Application

Use this procedure to replace the cards in the shelves or frames, as listed in the following table.

PEC	Suffix	Card name	Shelf or frame name
NT6X27	AA, AB, AC	PCM30 trunk interface card	international digital trunk controller (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), PCM30 digital trunk controlled (PDTC), PCM30 line group controller (PLGC), PCM30 line trunk controller (PLTC)
NT6X27	BB	Enhanced PCM30 interface card	IDTC, ILGC, ILTC, PDTC, PLGC, PLTC
NT6X27	BD	Enhanced PCM30 interface card	ISDN digital trunk controller offshore (DTCOI)
NT6X27	JA	M20 interface card	IDTC, ILGC, ILTC, PDTC, PLGC, PLTC
NT6X48	AA	DS30A peripheral interface card	LGC with the unified processor, LTC with the unified processor, two-processor LGC, two-processor LTC, ISDN XPMs (DTCI LGCI and LTCI)) with the unified processor, international XPMs (IDTC ILGC ILTC) with unified processor, international two-processor XPMs (IDTC ILGC and ILTC), international three-processor XPMs (IDTC ILGC ILTC), two-processor PCM30 XPMs (PDTC, PLGC, PLTC)

P-side interface cards in an XPM (continued)

PEC	Suffix	Card name	Shelf or frame name
NT6X50	AA	DS-1 interface card	digital trunk controller (DTC), ISDN digital trunk controller (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), line group controller (LGC), or line trunk controller (LTC), digital trunk controller offshore (DTCO), line group controller offshore (LGCO), line trunk controller offshore (LTCO), IDTC, ILGC, ILTC
NT6X50	AB	DS-1 extended frame format card	DTC, DTCI, IDTC, ILGC, ILTC, LGCI, LTCI, DTCO, LGCO, LTCO, LGC, LTC
NT6X50	EC	Integrated echo canceller card	DTC, DTCI, IDTC, ILGC, ILTC, LGCI, LTCI, DTCO, LGCO, LTCO, LGC, LTC
NT6X55	AA, AB, BB	DS-0 interface card	DTC, LGC, LTC
NT6X55	BA	64-Kbit access card	DTCO, LGCO, LTCO, PDTC, PLGC, PLTC
NT6X55	CA	8-port 64-Kbit interface card	IDTC, ILGC, ILTC, DTCO, LGCO, LTCO, PDTC, PLGC, PLTC
NT6X55	JA	DTC C11/CMI interface card (Japan)	DTC
NT6X85	AB, AC	DS-1 interface card for SLC-96	SMS, SMS-R, SMU

Refer to the Index if you cannot identify the following for the card you want to replace:

- product engineering code (PEC)
- PEC suffix
- provisioned shelf
- provisioned frame

The Index contains a list of the cards, shelves, and frames documented in this card replacement book.

Common Procedures

This procedure refers to *Replacing a card*.

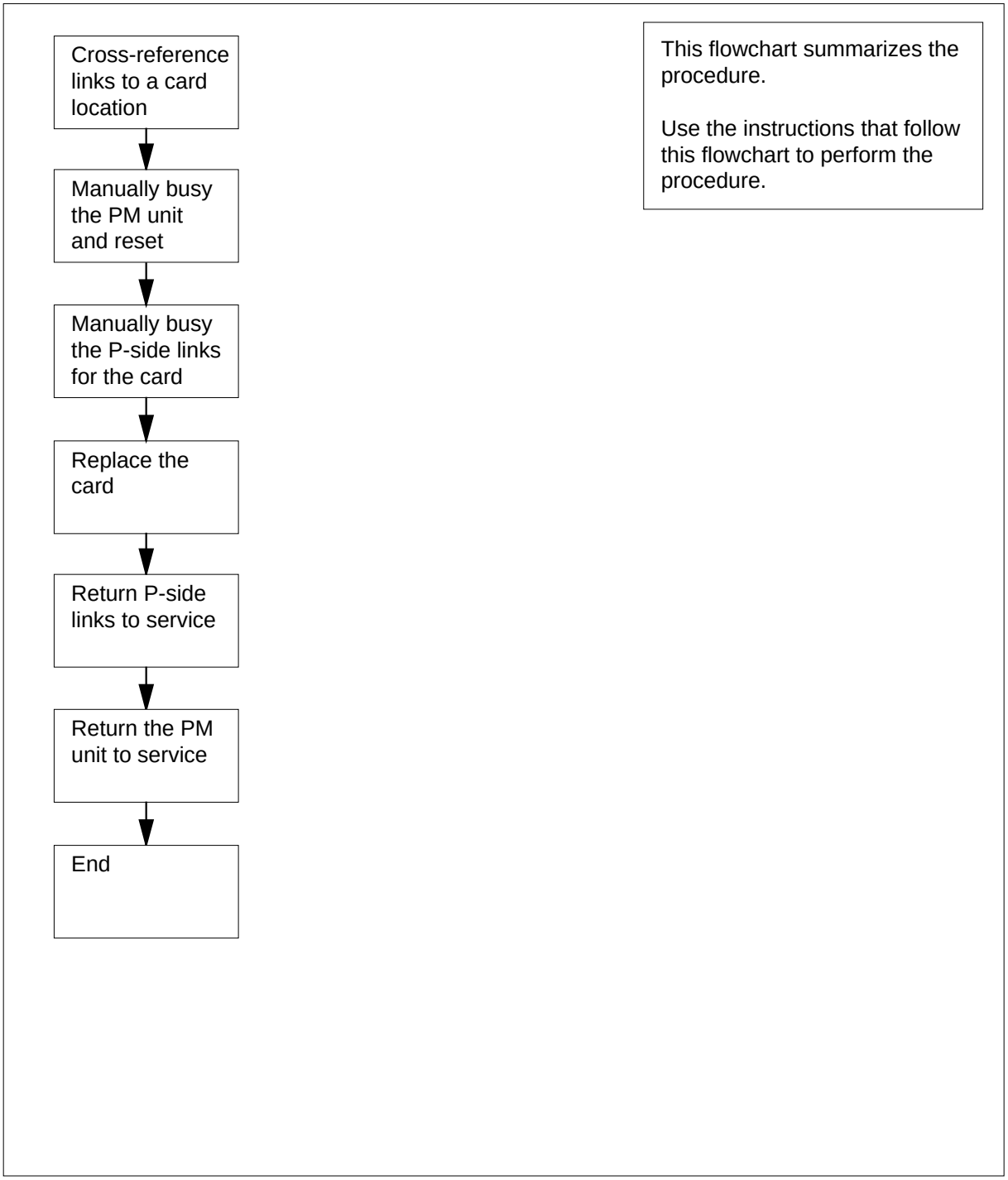
Do not go to the common procedure unless the step-action procedure directs you to go.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

P-side interface cards in an XPM (continued)

P-side interface cards



Replacing P-side interface cards in an XPM

At your current location

1

CAUTION
Loss of service
This procedure manually busies a minimum of one peripheral module (PM) units, which can cause service degradation. Perform this procedure only if you need to restore out-of-service components. Unless it is urgent, perform this procedure during periods of low traffic only.

Obtain a replacement card. Make sure that the replacement card and the card you remove have the same PEC and PEC suffix.

2 Use the table below to cross-reference the peripheral-side (P-side) links to a card slot location on the PM. Record the PM unit number, the card slot number, and the P-side links.

PM unit number	Slot	P-side links connected to the card
0 (lower unit)	01	links 16 and 17
	02	links 12 and 13
	03	links 8 and 9
	04	links 4 and 5
	05	links 0 and 1
1 (upper unit)	01	links 18 and 19
	02	links 14 and 15
	03	links 10 and 11
	04	links 6 and 7
	05	links 2 and 3

Note: If you must replace a card, use the table to identify links you must manually busy. If you identify a link affected by defective hardware, use the table to identify the location of the card you must replace.

P-side interface cards in an XPM (continued)

At the MAP terminal

3 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
           SysB   ManB   OffL   CBsy   ISTb   InSv
PM            0      0      0      0      5     37
```

4 To post the PM, type

`>POST  pm_type  pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example, DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

```
           SysB   ManB   OffL   CBsy   ISTb   InSv
PM            0      0      0      0      5     37
LTC           0      0      0      0      1      1

LTC 1 ISTb  Links_OOS: CSide  2 , PSide  0
Unit0:   Inact InSv
Unit1:   Act   InSv
```

5 Determine the state of the PM unit on the same shelf as the card you replace.

If the state of the PM unit	Do
is ISTb, InSv, SysB, or CBsy, and active	step 6
is ISTb, InSv, SysB, or CBsy, and inactive	step 9
is ManB	step 11
is OffL	step 63

6 Determine the state of the mate PM unit.

If the state of the mate PM unit	Do
is ISTb or InSv	step 7
is other than listed here	step 66

7 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
          data sync of active  terminals
Confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 8
the system rejects the SWACT	step 64

8 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:   Inact SysB  Mtce
Unit1:   Act   ISTbDTC 0

SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 9
is other than listed here	step 64

9 A maintenance flag (Mtce) may appear. A maintenance flag indicates that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before you continue to the next step.

10 To manually busy the unit, type

>BSY INACTIVE

P-side interface cards in an XPM (continued)

and press the Enter key.

If the BSY command	Do
passed	step 11
failed	step 66

11 To reset the inactive PM unit, type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

Example of a MAP response:

```
DTC 1 Unit 0    PMReset Passed
```

12 If the card being replaced is NT6X48 go to step 43 .

13 To display the P-side links to the PM, type

>TRNSL P

and press the Enter key.

Example of a MAP response:

```
Link 12: LCM HOST 02 1    0;Cap MS;Status:OK      ;MsgCond:OPN
Link 13: LCM HOST 02 1    2;Cap  S;Status:OK
Link 14: Carrier of Class - Trunk  ;Status:OK
Link 15: Carrier of Class - Trunk ;Status:OK
Link 16: LCM HOST 02 1    1;Cap MS;Status:OK      ;MsgCond:OPN
Link 17: LCM HOST 02 1 3;Cap  S;Status:OK
Link 18: Carrier of Class - Trunk ;Status:OK
Link 19: Carrier of Class - Timing ;Status:OK
```

Note: In the following steps, you must manually busy the links associated with the card you want to replace. In some configurations, only one link associates with the card. A card can have links of different types. If the card has two links, you must complete steps 13 to 41 for both links.

14 From the response that you obtain in step 13, select a link that associates with the card you replace.

If the link	Do
is to a P-side node	step 15
is a carrier	step 18

15

DANGER
Loss of service
If you manually busy messaging links you will drop calls in progress. Proceed with this procedure only if you need to replace a card to restore out of service links. Unless it is urgent, perform this procedure during a period of low traffic only.

To manually busy the link, type

>BSY LINK link_no

and press the Enter key.

where

link_no
is the link number (0 to 19)

Example of a MAP response:

```
There are no calls active on the linkLTC 1     Link 13 Bsy Passed
```

If	Do
you must confirm the command	step 16
the BSY command passed	step 42
the BSY command failed	step 66

16 Contact operating company personnel or the next level of support to make sure that you can busy the link safely. When you have permission, continue the procedure.

17 To confirm the command, type

>YES

and press the Enter key.

If the BSY command	Do
passed	step 42
failed	step 66

P-side interface cards in an XPM (continued)

18 Record the class of carrier for the links associated with the card you replace.

If the class of carrier	Do
is timing	step 19
is trunk or DS0LINK	step 32
is other than listed here	step 35

19 To access the CARRIER level of the MAP display, type

>TRKS;CARRIER

and press the Enter key.

Example of a MAP display:

```
CLASS   ML  OS  ALARM SYSB MANB  UNEQ OFFL  CBSY PBSY  INSV
TRUNKS   4   0      4    0    0     0    3     0    0   186
REMOTE   0   0      1    0    1     0    0     0    2     6
TIMING   0   0      0    0    0     0    0     0    0     2

CARRIER:
```

20 To post the timing carriers, type

>POST TIMING

and press the Enter key.

Example of a MAP display:

```
CLASS   ML  OS  ALARM SYSB MANB  UNEQ OFFL  CBSY PBSY  INSV
TRUNKS   4   0      4    0    0     0    3     0    0   186
REMOTE   0   0      1    0    1     0    0     0    2     6
TIMING   0   0      0    0    0     0    0     0    0     2

NO  CLASS  SITE   PM     CKT D  ALARM SLIP  STATE   TLINK MODE
0   TIMING HOST  DCM  0  0 C              0  INSV    0     ACTIVE
1   TIMING HOST  DCM  0  1 C              0  INSV    1     STANDBY

POSTED BY CONDITION : TIMING

CARRIER:
POST:
```

21 Determine if the carrier that associates with the card is the active or the standby link. Determine the service state of both links.

Note: The PM type in column 4, the PM number on column 5, and the circuit number in column 6 identify the link. In the example in step 20, link

0 for DCM 0 is the active time link. The service state appears under the STATE header on the MAP display.

If the carrier	Do
supports the active link, and the standby link is in service (INSV or ISTB)	step 22
supports the active link, and the standby link is not in service	step 65
supports the standby link (one or both links are standby)	step 30

22 To access the CLOCK level of the MAP display, type

>MS;CLOCK

and press the Enter key.

Example of a MAP display:

```
Message Switch   Clock   Shelf  0      Inter-MS Link 0 1
MS 0      .      Master   .               . .
MS 1      .      Slave      .             . .

Shelf 0            1       1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . - - - - - - - - - . . . . . . . . . . . .
MS 1  . . . . . - - - - - - - - - - . . . . . . . . . . .

Card 02 Alm Stat %Adj Src | Car Stat Sp PM     CCT
MS 0  . .  Syn +11.3 Lk0 | Lk0 Lck       0 DTC 000 00
MS 1  . .  Syn -11.9 Ms0 | Lk1 Smp       0 DTC 001 00
Links Slipping:     6 out of   200
MS:
CLOCK:
```

23 Determine if there is a CLOCK alarm appears under the MS alarm banner.

If	Do
a CLOCK alarm appears	step 24
a CLOCK alarm does not appear	step 25

24 To synchronize the office, type

>SYNC

and press the Enter key.

Example of a MAP response:

P-side interface cards in an XPM (continued)

```
Request to TEST INSV MS: 0 shelf: 0 card: 2  submitted.
Request to TESTINSV MS: 0 shelf: 0 card: 2  passed.
Request to TEST INSV MS: 1 shelf: 0 card: 2  submitted.
Request to TEST INSV MS: 1 shelf: 0 card: 2   passed.
Request to Synchronize Clock 0: Submitted
Request to SynchronizeClock 0: Passed
Clock synchronization started ...
```

25 To switch the timing carrier, type

>SWCARR

and press the Enter key.

Example of a MAP response:

```
Inactive link is not in SYNC and may cause carrier slips
Do you wish to continue ?
Please confirm ("YES", "Y", "NO", or "N"):
```

26 Contact operating company personnel or the next level of support to make sure that you can safely switch active timing carriers. When you have permission, continue with this procedure.

27 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Request to Switch Timing Links: Submitted
Request to Switch Timing Links: Passed
```

28 To access the CARRIER level of the MAP display, type

>TRKS;CARRIER

and press the Enter key.

29 To post the timing carriers, type

>POST TIMING

and press the Enter key.

30 To manually busy the carrier associated with the card you replace, type

>BSY list_no

and press the Enter key.

where

list_no
is the list number (0 to 4) for the link

Example of a MAP response:

```
DCM  1 CCT 0 is a TIMING link.
Do you want to busy this carrier ?
Confirm     ("YES", "Y", "NO", or "N"):
```

31 To confirm the command, type

>YES

and press the Enter key.

Note: For all maintenance commands at the CARRIER level refers to the links by the list number in the top left column under the N header.

If the BSY command	Do
passed	step 42
failed	step 66

32 To access the TRKS;TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

33 To post the link associated with the card you replace, type

>POST D pm_type pm_no link_no

and press the Enter key.

where

pm_type
is the PM type (for example, DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

link_no
is the number of the link (0 to 19) associated with the card youreplace

If	Do
a set of circuits is posted	step 34
the MAP response is `NO CKT, SET IS EMPTY`	step 35

34 To manually busy all circuits on the link, type

>BSY ALL

and press the Enter key.

Note: Make sure that all circuits are manually busy before you proceed.

35 To access the TRKS;CARRIER level of the MAP display, type

>TRKS;CARRIER

P-side interface cards in an XPM (continued)

and press the Enter key.

Example of a MAP display:

```
CLASS    ML  OS  ALARM SYSB MANB  UNEQ OFFL  CBSY PBSY  INSV
TRUNKS   4    2        9     2     28       0     0      15      0     41
REMOTE   0    0        0     0     12       0     0       2      0      3
TIMING   0    1        1     0      1       0     0       0      0      1

CARRIER:
```

36 To post the links for the PM you are working on, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the PM type (DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

```
CLASS   ML  OS  ALARM SYSB MANB  UNEQ OFFL  CBSY PBSY     INSV
TRUNKS   4    2        9     2     28       0     0      15      0     41
REMOTE   0    0        0     0     12       0     0       2      0      3
TIMING   0    1        1     0      1       0     0       0      0      1
DS1
N CLASS   SITE LTC  CK D ALRM SLIP FRME  BER       ES  SES STATE
0 TRUNKS HOST   1    0  C             0        0  1000000  0     0  INSV
1 TRUNKS HOST   1    1  C             0        0  1000000  0     0  INSV
2 TRUNKS HOST   1    2  C  SLIP  ML     14   1000000  92     0  INSV
3 TRUNKS HOST   1    3  C  LCGA  0       0  100          0     0  MANB
4 TRUNKS HOST   1    4  C  SLIP  ML      0  1000000  70     0  INSV
SIZE OF POSTED SET :  9                 MORE...
```

37 In the list on the MAP display, look for a link associated with the card you want to replace.

Note: You can identify link numbers under the CK header on the MAP display. In the example MAP display in step 36, links 0, 1, 2, 3, and 4 appear from top to bottom. In this example, nine links are present for the posted set.

If	Do
the MAP display does not list any of the links recorded in step 2	step 38

If	Do
the MAP display lists one or both of the links recorded in step 2, and you did not manually busy one or both of these links	step 40

38 To display the next five links in the posted set, type

>NEXT

and press the Enter key.

If	Do
the MAP display does not list any of the links recorded in step 2	step 39
the MAP display lists one or more of the links recorded in step 2	step 40

39 Repeat step 38.

40 Determine the state of the link.

If the link	Do
is INSV, ISTB, or SYSB	step 41
is MANB	step 42
is OFFL	step 63

41 To manually busy the link, type

>BSY list_no

and press the Enter key.

where

list_no
is the list number (0 to 4) for the link

Note: For all maintenance commands at the CARRIER level, refer to the links by the list number. The list number is located in the left-most column under the N header.

If the BSY command	Do
passed	step 42
failed	step 66

P-side interface cards in an XPM (continued)

42 The next action depends on the number of links the card supports.

If the card	Do
supports one or two links, which you manually busied	step 43
supports two links, and you manually busied only one of those links	step 14

At the shelf

43

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

CAUTION
DIP SWITCHES
Dip switches on replacement packs must be set to the correct setting. Dip switches are release and version dependent. Tables for proper settings are at the end of this procedure.

To replace a card, use the procedure *Replacing a card* in this document. Complete the procedure and return to this point.

At the MAP terminal

44 Select one of the links that associate with the card you replace.

Note: In the following steps, you must return to service the links for the card you want to replace. If the card has two links, you must complete steps 44 to 57. You must complete the procedure for both links.

If the link	Do
is to remote PM (RCC or RLCM)	step 45
is a carrier	step 47

45 To access the PM level of the MAP display, type

```
>PM
```

and press the Enter key.

46 To return the link to service, type

>RTS LINK link_no

and press the Enter key.

where

link_no
is the link number (0 to 19)

If the RTS command	Do
passed	step 57
failed	step 66

47 To access to the TRKS;CARRIER level of the MAP display, type

>TRKS;CARRIER

and press the Enter key.

48 To post the links for the PM, type

>POST pm_type pm_no

and press the Enter key.

where

pm_type
is the PM type (DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

49 In the list on the MAP display, look for a link that associates with the card you want to replace.

If	Do
the MAP display does not list any of the links recorded in step 2	step 50
the MAP display lists a minimum of one link recorded in step 2 and you did not manually busy that link	step 52

50 To display the next five links in the posted set, type

>NEXT

and press the Enter key.

If	Do
the MAP display does not list any of the links recorded in step 2	step 51

P-side interface cards in an XPM (continued)

If	Do
the MAP display lists at least one link recorded in step 2	step 52

51 Repeat step 50.

52 To return the link to service, type

>RTS list_no

and press the Enter key.

where

list_no
is the list number (0 to 4) for the link

If the RTS command	Do
passed, and this is a carrier of class - timing	step 57
passed, and this is a carrier of class - trunk or of class - DS0LINK with circuits present	step 53
passed, and this is a carrier of class - trunk or of class - DS0LINK with no circuits present	step 57

53 Record the link number.

54 To access the TRKS;TTP level of the MAP display, type

>TRKS;TTP

and press the Enter key.

55 To post the link, type

>POST D pm_type pm_no link_no

and press the Enter key.

where

pm_type
is the PM type (DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

link_no
is the link number (0 to 19) recorded in step 2

56 To return all circuits on the link to service, type

>RTS ALL

and press the Enter key.

If	Do
all circuits returned to service	step 57
a minimum of one circuit did not return to service	step 66

57 The next action depends on the number of links that the card supports.

If the card	Do
supports one or two links, which you returned to service	step 58
supports two links, and you returned only one of those links to service	step 44

58 To access the PM level of the MAP display, type

```
>PM
```

and press the Enter key.

59 To post the PM, type

```
>PM;POST  pm_type  pm_no
```

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

60 To return the inactive unit to service, type

```
>RTS  INACTIVE
```

and press the Enter key.

If the RTS command	Do
passed	step 61
failed	step 66

61 Determine if a maintenance procedure directed you to this procedure.

If a maintenance procedure	Do
directed you to this procedure	step 62

If a maintenance procedure	Do
did not direct you to this procedure	step 67

62 Return to the maintenance procedure that directed you to this procedure. Continue as directed.

63 Contact operating company personnel to determine why the component is offline. Continue as directed.

64 For additional help with switch of activity, contact the next level of support.

Note: The system can recommend that you use the SWACT command with the FORCE option. Contact office personnel to determine if you must use the FORCE option.

65 Contact the next level of support to determine if you can remove the active timing link from service safely. Continue as directed.

66 For additional help, contact the personnel responsible for the next level of support.

67 The procedure is complete.

Card settings

The following tables specify switch settings for the NT6X50 card.

Switch settings for NT6X50AA

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X50AA, all releases of the card	
0 m to 91 m (0 ft to 299 ft)	SW2 SW4
91 m to 137 m (299 ft to 449 ft)	SW3 SW6 SW8
137 m to 200 m (449 ft to 655 ft)	SW1 SW5 SW7

Switch settings for NT6X50AB for 24 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X50AB, release number 39 or lower	
0 m to 91 m (0 ft to 299 ft)	SW1
91 m to 137 m (299 ft to 449 ft)	SW2 SW5 SW7
137 m to 200 m (449 ft to 655 ft)	SW3 SW6 SW8

Switch settings for NT6X50AB for 24 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X50AB, release numbers 40 to 59	
0 m to 91 m (0 ft to 299 ft)	SW4
91 m to 137 m (299 ft to 449 ft)	SW3 SW6 SW8
137 m to 200 m (449 ft to 655 ft)	SW1 SW5 SW7
NT6X50AB, release numbers 60 or higher	
0 m to 41 m (0 ft to 133 ft)	SW1
41 m to 81 m (133 ft to 266 ft)	SW2 SW3
81 m to 122 m (266 ft to 399 ft)	SW2
122 m to 163 m (399 ft to 533 ft)	SW3
163 m to 200 m (533 ft to 655 ft)	None, all contacts are OFF

Switch settings for NT6X50AB for 22 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X50AB, release number 39 or lower	
0 m to 91 m (0 ft to 299 ft)	SW1
91 m to 137 m (299 ft to 449 ft)	SW2 SW5 SW7
137 m to 200 m (449 ft to 655 ft)	SW3 SW6 SW8
NT6X50AB, release numbers 40 to 59	
0 m to 91 m (0 ft to 299 ft)	SW4
91 m to 137 m (299 ft to 449 ft)	SW3 SW6 SW8
137 m to 200 m (449 ft to 655 ft)	SW1 SW5 SW7
NT6X50AB, release numbers 60 or higher	
0 m to 27 m (0 to 88.6 ft)	SW1

P-side interface cards in an XPM (continued)

Switch settings for NT6X50AB for 22 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
27 to 55 m (88.6 to 180.5 ft)	SW2 SW3
55 to 82 m (180.5 to 269 ft)	SW2
82 to 110 m (269 to 361 ft)	SW3
110 to 137 m (361 to 449.5 ft)	None, all contacts are OFF

Switch settings for NT6X50EC

Card release and length of cables	Switches SW2 and SW3:		
	pos3	**pos2**	**pos1**
NT6X50EC, all releases			
0 m to 33.53 m (0 ft to 110 ft)	off	off	off
33.53 m to 67.06 m (110 ft to 220 ft)	off	off	on
67.06 m to 100.58 m (220 ft to 330 ft)	off	on	off
100.58 m to 134.11 m (330 ft to 440 ft)	off	on	on
134.11 m to 167.64 m(440 ft to 550 ft)	on	off	off
167.64 m to 198.12 m (550 ft to 650 ft)	on	off	on
Note: Both SW2 and SW3 have three 2-position switches. SW2 corresponds to port 0 and SW3 corresponds to port 1.			

Tone disable switch settings for NT6X50EC

Ports	Switch SW1:	pos2	pos1
Ports 1 and 2, G.165		on	on
Ports 1 and 2, G.164		off	off
Note: SW1 has two 2-position switches.			

Switch settings for NT6X85AB and NT6X85AC with 8 dip switches

Distance	Leave the switch contacts ON and leave all others OFF
0 m to 91 m (0 ft to 300 ft)	SW2 SW4
92 m to 137 m (301 ft to 452 ft)	SW3 SW6 SW8
138 m to 200 m (453 ft to 655 ft)	SW1 SW5 SW7

Switch settings for NT6X85AC with 3 dip switches for 24 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X85AC, release 4 version 1	
0 m to 27 m (0 ft to 86 ft)	SW1
27 m to 55 m (86 ft to 180 ft)	SW2 SW3
55 m to 82 m (180 ft to 269 ft)	SW2
82 m to 110 m (269 ft to 361 ft)	SW3
110 m to 116 m (361 ft to 380 ft)	None, all contacts are to be open

Switch settings for NT6X85AC with 3 dip switches for 22 AWG DS-1 cable

Card release and length of cables	Leave the switch contacts ON and leave all others OFF
NT6X85AC, release 4 version 1	
0 m to 41 m (0 ft to 133 ft)	SW1
41 m to 81 m (133 ft to 266 ft)	SW2 SW3
81 m to 122 m (266 ft to 399 ft)	SW2
122 m to 163 m (339 ft to 533 ft)	SW3
163 m to 200 m (533 ft to 655 ft)	None, all contacts are to be open

Processor and memory cards in an XPM

Application

Use this procedure to replace the following cards in the shelves or frames listed.

If you cannot identify the product engineering code (PEC), suffix, or provisioned shelf or frame for the card you want to replace, refer to the Index for a list of the cards, shelves, and frames documented in this card replacement NTP.

(Sheet 1 of 2)

PEC	Suffix	Card name	Shelf or frame name
NTBX01	AA	integrated services digital network (ISDN) signaling preprocessor card	ISDN digital trunk controller (DTC) (DTCI), ISDN line group controller (LGCI), ISDN line trunk controller (LTCI), digital trunk controller offshore (DTCO), line group controller offshore (LGCO), line trunk controller offshore (LTCO), PCM30 DTC (PDTC), PCM30 LGC (PLGC), PCM30 LTC (PLTC)
NTBX01	AB	Enhanced ISDN signaling preprocessor card	DTCI, LGCI, LTCI, DTCO, LGCO, LTCO, PDTC, PLGC, PLTC
NTBX01	AB, BA, CA	Enhanced ISDN signaling preprocessor	DTCO2i
NTMX77	AA	Unified processor card	digital trunk controller (DTC), DTCI, international DTC (IDTC), international line group controller (ILGC), international line trunk controller (ILTC), line group controller (LGC), LGCI, line trunk controller (LTC), LTCI, DTCO, LGCO, LTCO, PLGC, PLTC
NTAX74	AA	Cellular access processor	DTCI in MCI-ACD applications beginning with MIP08/XPM08 Two-processor PDTC for MTX cellular applications beginning with MTX06/XPM08

Processor and memory cards in an XPM (continued)

(Sheet 2 of 2)

PEC	Suffix	Card name	Shelf or frame name
NTSX05	AA	Processor	DTC02 with QCI load, DTCI for Japan with QLI load, DTCO with QDT load, and GPP with QPO load in MMP/XPM12, LGC, LTC, DTC, LGCI, and LTCI with a QLI load in NA011/XPM11
NTSX06	AA	Filler packlet for NTSX06	Located in the NTSX05AA processor card in both units of the XPM. If no BA or CA is installed, an AA card is required in both slots.
	BA	60-Mbyte peripheral remote loader (PRL) packlet	
		120- Mbyte PRL packlet	
	CA		

Common procedures

The following common procedures are referenced:

- *Loading a PM*
- *Replacing a card*

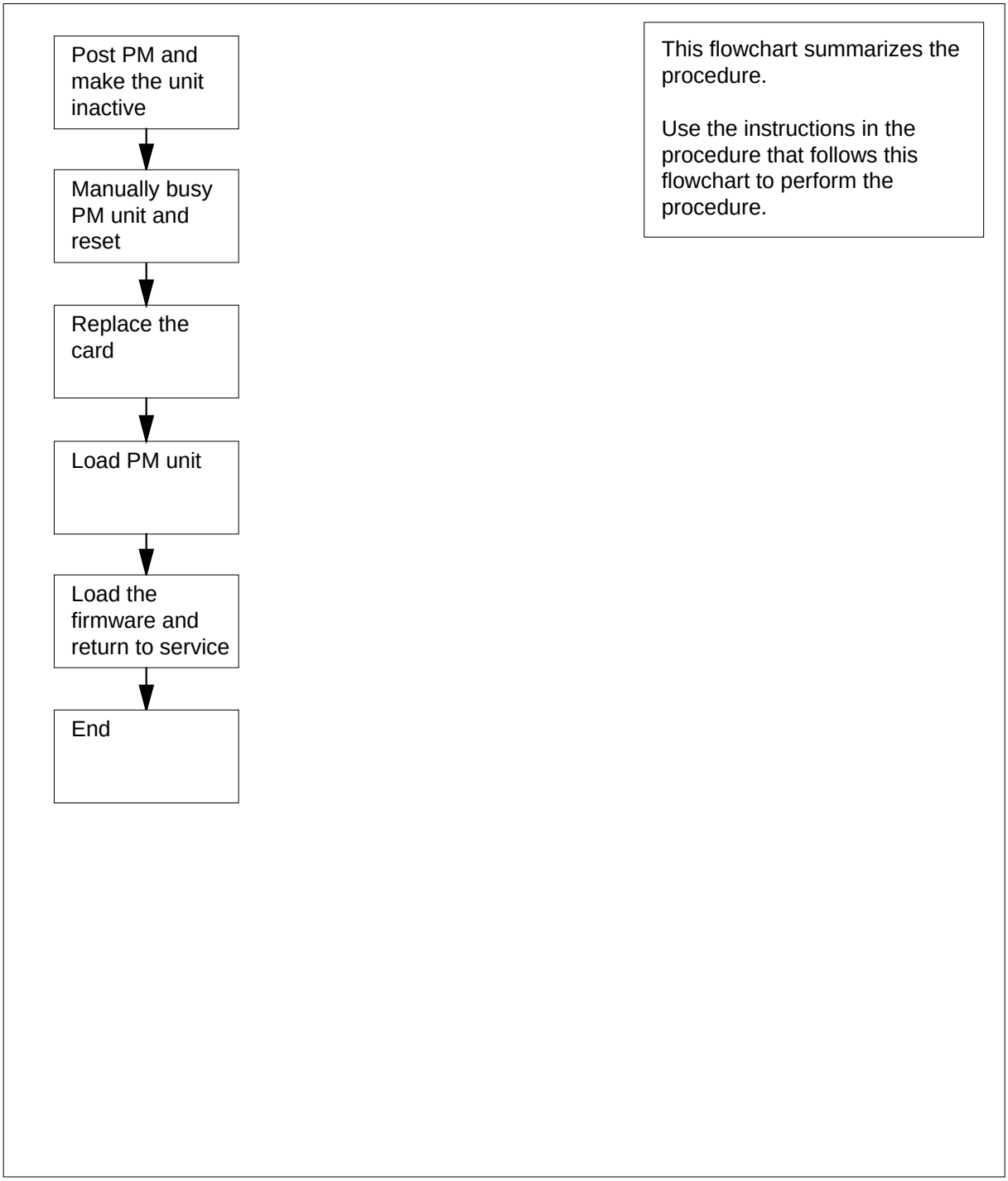
Do not go to the common procedure unless directed to do so in the step-action procedure.

Action

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

Processor and memory cards in an XPM (continued)

Summary of Replacing Processor and memory cards in an XPM



Processor and memory cards in an XPM (continued)

Replacing Processor and memory cards in an XPM

At your current location

1

CAUTION
Loss of service
This procedure includes directions to manually busy one or more peripheral module (PM) units. Because manually busying a PM unit can cause service degradation, perform this procedure only if necessary to restore out-of-service components. Otherwise, carry out this procedure during periods of low traffic.

Obtain a replacement card. Ensure that the replacement card has the same PEC, including suffix, as the card being removed.

At the MAP terminal

2 To access the PM level of the MAP display, type

`>MAPCI;MTC;PM`

and press the Enter key.

Example of a MAP display:

```
           SysB    ManB   OffL   CBsy   ISTb   InSv
PM            0       0      0      0      3     39
```

3 To post the PM associated with the card to be replaced, type

`>POST pm_type pm_no`

and press the Enter key.

where

pm_type
is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)

pm_no
is the PM number (0 to 999)

Example of a MAP display:

Processor and memory cards in an XPM (continued)

```
            SysB   ManB   OffL   CBsy   ISTb   InSv
PM             0      0      0      0      3     39
DTC            0      0      0      0      0      4

DTC   0 InSv  Links_OOS: CSide  0 , PSide  0
Unit0:   Act   InSv
Unit1:   Inact InSv
```

4 Determine the state of the PM unit associated with the card you want to replace.

If the state of the PM unit is	Do
ISTb, InSv, SysB, or CBsy, and active	step 5
ISTb, InSv, SysB, or CBsy, and inactive	step 8
ManB	step 10
OffL	step 44

5 Determine the state of the mate PM unit.

If the state of the mate PM unit is	Do
ISTb or InSv	step 6
any other state	step 47

6 Switch activity by typing

>SWACT

and pressing the Enter key.

Example of a MAP response:

```
DTC 0     A Warm SwAct will be performed after
          data sync of active  terminals.

Please confirm ("YES", "Y", "NO", or "N"):
```

If	Do
you must confirm the command	step 7
the system rejects the SWACT	step 46

Processor and memory cards in an XPM (continued)

7 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Unit0:  Inact SysB  Mtce
Unit1:  Act   ISTb

DTC 0    SwAct Passed
```

If the response is	Do
`SWACT passed`	step 8
any other response	step 46

8 A maintenance flag (Mtce) may appear, indicating that system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both PM units before proceeding to the next step.

If the response is	Do

`Flash fault detect`
or
`Unusable or missing load file(s) on Flash`
(indicates an NTSX06 packlet failure)
	step 30

any other response	step 9

9 To manually busy the inactive unit, type

>BSY INACTIVE

and pressing the Enter key.

Example of a MAP response:

```
DTC    0 ISTb  Links_OOS: CSide  0 , PSide  1
Unit0:  Inact ManB
Unit1:  Act     ISTb
bsy unit 0
DTC 0 Unit 0    Bsy Passed
```

If the BSY command	Do
passes	step 10
fails	step 47

10 To reset the inactive PM unit. type

>PMRESET UNIT unit_no NORUN

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1) of the newly inactive unit

At the shelf

11

WARNING
Static electricity damage
Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

DANGER
Possible loss of P-side nodes
When installing the replacement NTMX77, NTAX74, or NTSX05, monitor the LEDs on the faceplate of the NTMX77, NTAX74, NTSX05 for the following:
1. If you are replacing an NTMX77, the INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds. If you are replacing an NTAX74, the INSV and ESA LEDs will come ON and remain ON until loading begins.
2. The ACT LED may come ON and light for less than 1 second. If the ACT LED remains ON for more than 1 second, immediately remove the NTMX77, NTAX74, or NTSX05 circuit card and return to this step. If the NTMX77, NTAX74, or NTSX05 circuit card is allowed to remain with both units having an active processor, a condition of dual activity exists, which results in the loss of P-side nodes.

12 The next action depends on the reason for performing this procedure.

If you	Do
are replacing an NTMX77 or NTSX05	step 13
are replacing an NTAX74 or NTBX01	step 14

Processor and memory cards in an XPM (continued)

13 Unseat the NTBX01 card, if equipped.

14 Replace the card using the procedure *Removing and replacing a card* in this document.

Note 1: If the card to be replaced has switches, make sure that the switches on the replacement card have the same settings. When replacing the NTMX77, make sure the XPM/CPM switch on the circuit card is set to the correct position. If the NTMX77 you are replacing is in a CPM shelf (both units are on one shelf), set the switch to the CPM position. Otherwise, set the switch to the XPM position. If the replacement card does not have a switch, this instruction does not apply.

Note 2: If you are replacing the NTSX05 processor, remove the NTSX05 from the inactive unit, remove the NTSX06 packlets and install the NTSX06 packlets in the replacement NTSX05 processor card before installing it in the PM.

When you have completed the procedure, return to this point.

15 The next action depends on the reason for performing this procedure.

If you	Do
replaced an NTMX77 or NTSX05	step 16
replaced an NTAX74 or NTBX01	step 17

16 Reseat the NTBX01 card, if equipped, that was unseated in step 13.

At the MAP terminal

17 The next action depends on whether the PM is equipped with peripheral remote loader (PRL) capability

If the PM	Do
has PRL capability	step 18
does not have PRL capability	step 21

18 Determine if the PM is equipped with ISDN capability.

If the PM	Do
supports ISDN	step 19
does not support ISDN	step 20

19 To load the ISDN PM from the local loadfile, type

```
>LOADPM UNIT unit_no LOCAL LOADFILE
```

and press the Enter key.

Processor and memory cards in an XPM (continued)

unit_no
is the PM unit number (0 or 1)

If the load	Do
passes	step 25
fails	step 21

20 To load the non-ISDN PM from the local image, type

>LOADPM UNIT unit_no LOCAL IMAGE

and press the Enter key.

unit_no
is the PM unit number (0 or 1)

If the load	Do
passes	step 25
fails	step 21

21 To load the inactive unit, type

>LOADPM INACTIVE

and press the Enter key.

If the LOADPM command	Do
fails	step 22
passes	step 25

22 Perform the procedure *Loading a PM* in this document. When you have completed the procedure, return to this point.

23 The next action depends on your reason for performing this procedure.

If you were	Do
directed to this procedure from a maintenance procedure	step 24
not directed to this procedure from a maintenance procedure	step 25

24 Return to the maintenance procedure that sent you to this procedure and continue as directed.

The next action depends on the processor configuration of the PM you are working on.

Processor and memory cards in an XPM (continued)

25 Determine if you need to load firmware.

If you replaced	Do
an NTMX77, NTAX74, or NTSX05	step 26
an NTBX01	step 29

26 To query the LTC counters for the firmware load on the NTMX77 or NTSX05, type

>QUERYPM CNTRS

and press the Enter key.

Example of a MAP display for an LTC equipped with an NTMX77:

```
Unsolicitited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: ECL07BI
EPRom Version: AB02
EEPRom Load: Loadable: MX77NG03, Executable: MX77NG03
UP:MX77AA
Unit 1:
Ram Load: ECL07BI
EPRom Version: AB02
EEPRom Load: Loadable: MX77NG03, Executable: MX77NG03,
UP:MX77AA
```

NTMX77 Firmware loadname

Example of a MAP display for an LTC equipped with an NTSX05:

Processor and memory cards in an XPM (continued)

```
Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
QueryPM CNTRS command may take up to 2 minutes
Unit at ROM level
EEPRom Load: Loadable: SA01, Executable: SA01
UP:SX05AA
IP:BX01
Unit 1:
Ram Load: QLI10BG
EPRom Version: AC01
EEPRom Load: Loadable: SA01, Executable: SA01
UP:SX05AA
IP:BX01
```

NTSX05 Firmware loadname version

If the firmware	Do
loadnames do not match and firmware needs to be loaded	step 27
does not need to be loaded	step 29

27 To load the NTMX77, NTAX74, NTSX05 firmware, type

>LOADFW INACTIVE

and press the Enter key.

Note: If the firmware load is not specified with the LOADFW command, the command applies the firmware file datafilled in the appropriate inventory table.

If LOADFW command	Do
passes	step 28
fails	step 47

28 To upgrade the firmware on the inactive unit, type

>LOADFW INACTIVE UPGRADE

and press the Enter key.

If LOADFW UPGRADE command	Do
passes	step 29
fails	step 47

29 To return the inactive unit to service, type

>RTS INACTIVE

Processor and memory cards in an XPM (continued)

and press the Enter key.

If the RTS command	Do
passes	step 49
fails	step 47

30 To manually busy the inactive unit, type

>BSY INACTIVE

and press the Enter key.

31 To determine the location of the packlet, type

>QUERYPM CONFIG

and press the Enter key.

Example of a MAP response

```
UNIT 0    Slot 12: SX05AA
  PCMCIA Slotlet 0: SX06CA
  PCMCIA Slotlet 1: No packlet
UNIT 1    Slot 12: SX05AA
  PCMCIA Slotlet 0: SX06CA
  PCMCIA Slotlet 1: No packlet
```

In the this example, the MAP response indicates that there is no packlet in slotlet 1 of each unit. However, the “empty” slotlet contains an NTSX06AA filler packlet

32 To access table LTCINV, type

>TABLE LTCINV

and press the Enter key.

Note 1: When replacing the NTSX06 packlet, the NTSX06 must be removed from datafill before removal to make sure the XPMSTOR command or an imaging operation will not be writing to the NTSX06 when it is removed.

Note 2: When removing PRL from datafill, make sure you are working on the inactive unit and the PRL that you remove from datafill is from the same unit. In table LTCINV, field PROCPEC, the processor and PRL cards are datafilled according to unit. Unit 0 is entered first followed by unit 1. The entry for each unit must be ended with a $. The following figure shows an LTC with an SX05AA processor and PRL in unit 0 and unit 1 and both entries ending in $.

Processor and memory cards in an XPM (continued)

```
LTC  0
     1002  LTE  0  18  0  B  6 6X02AA  QLI12BC
          (POTS POTSEX)(KEYSET KSETEX) (ABTRK DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51) $
    (UTR15)(TONE6X79)(MSG6X69)(CMR5 CMR10A)$
NORTHAM        SX05AA PRL $  SX05AA PRL $
                    SXFWAE08
6X40AA                                $
```

PROCPEC value for Unit 0: SX05AA processor with PRL entry ending with $

PROCPEC value for Unit 1: SX05AA processor with PRL entry ending with $

Note: In this example from table LTCINV, the SX06 is datafilled as PRL in the PROCPEC field.

33 To position on the tuple for the posted PM, type

>POS pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (such as DTC, LGC, or LTC)

pm_no
is the number of the PM (0 to 2047)

Example of a MAP response:

```
LTC  0
     1002  LTE  0  18  0  B  6 6X02AA  QLI12BC
          (POTS POTSEX)(KEYSET KSETEX) (ABTRK DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51) $
    (UTR15)(TONE6X79)(MSG6X69)(CMR5 CMR10A)$
NORTHAM        SX05AA PRL $  SX05AA PRL $
                    SXFWAE08
6X40AA                                $
```

34 To remove the PRL (SX06) from datafill in the inactive unit, type

>CHA PROCPEC

and press the Enter key.

Example of a MAP response:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

Enter Y to continue processing the change request and press the Enter key.

Example of a MAP response:

Processor and memory cards in an XPM (continued)

PROCPEC: SX05AA PRL SX05AA PRL

Determine the correct entry based on the following

- If the PRL to be removed from datafill is in unit 0, enter

  >SX05AA $ SX05AA PRL $

  and press the Enter key.
- If the PRL to be removed from datafill is in unit 1, enter

  >SX05AA PRL $ SX05AA $

  and press the Enter key.

In the following MAP example, unit 0 is the inactive unit that had PRL removed from datafill.

Example of a MAP response:

```
LTC  0
1002  LTE  0  18  0  B  6 6X02AA  QLI12BC
   (POTS POTSEX)(KEYSET KSETEX) (ABTRK DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51)       $
       (UTR15)(TONE6X79)(MSG6X69)(CMR5 CMR10A)$

NORTHAM              SX05AA    $   SX05AA   PRL $
                   SXFWAE08
6X40AA$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
```

Enter Y to confirm the tuple change request and press the Enter key.

35 To exit table LTCINV, type

>QUIT

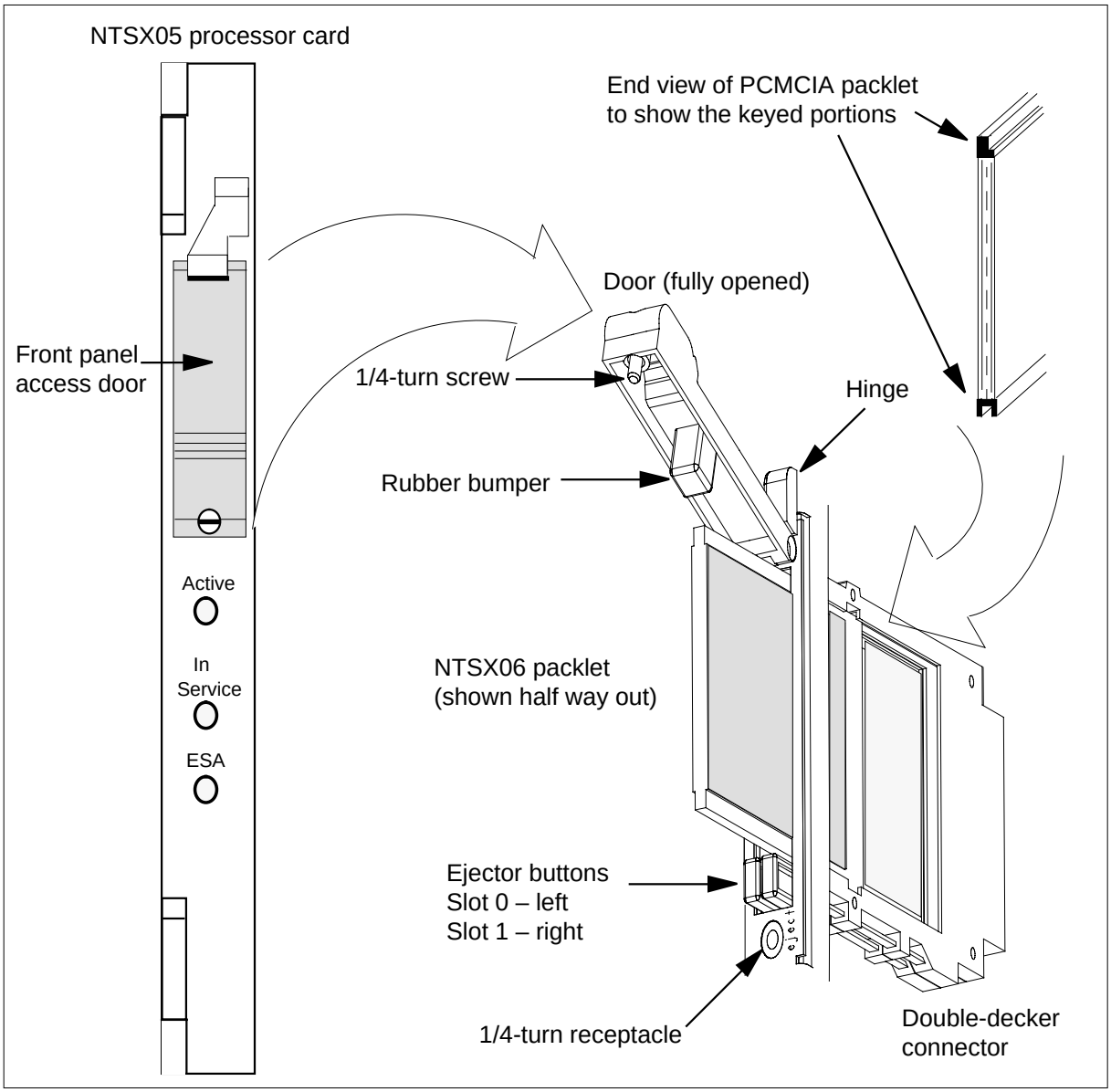
and press the Enter key.

36

> **WARNING**
> **Static electricity damage**
> Wear a wrist strap connected to the wrist strap grounding point of a frame supervisory panel (FSP) or a modular supervisory panel (MSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Obtain a replacement NTSX06 packlet of the same PEC as the NTSX06 being replaced. Use the following diagram to assist you in locating the items identified in the procedure that follows the diagram.

Processor and memory cards in an XPM (continued)



Replace the NTSX06 using the following steps.

a At the NTSX05 card, use a slot screwdriver and turn the 1/4-turn screw lock mechanism in the front-panel access door on the faceplate of the NTSX05 processor card in the inactive unit.

b Swing the front-panel access door up to expose the packlets and the ejector buttons.

Processor and memory cards in an XPM (continued)

c Identify the packlet to be replaced as noted in step 31 and is the PRL that was removed from datafill in step 34. Press the ejector button below the NTSX06 packlet to eject the packlet from the slotlet.

d Remove the faulty NTSX06 packlet. Place the faulty packlet in an electrostatic discharge (ESD) container and replace it with one of the same PEC.

e Install the new NTSX06 packlet and press it into the slotlet until the ejector button fully extends. The NTSX06 packlet is keyed so that it can only be inserted one way. Forcing the NTSX06 into the slot improperly can damage the connector.

f Close the front access panel door and turn the 1/4-turn screw lock mechanism to secure the front access panel door in place.

37 To access table LTCINV, type

>TABLE LTCINV

and press the Enter key.

38 To position on the tuple for the posted PM, type

>POS pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (such as DTC, LGC, or LTC)

pm_no
is the number of the PM (0 to 2047)

Example of a MAP response:

```
LTC  0
     1002  LTE  0  18  0  B  6 6X02AA  QLI12BC
          (POTS POTSEX)(KEYSET KSETEX) (ABTRK DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51) $
   (UTR15)(TONE6X79)(MSG6X69)(CMR5 CMR10A)$
NORTHAM       SX05AA $ SX05AA PRL $
                       SXFWAE08
6X40AA                                $
```

The PRL card needs to be added to datafill for unit 0.

39 To add the PRL (SX06) to datafill, type

>CHA PROCPEC

and press the Enter key.

Example of a MAP response:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

Enter Y to continue processing the change request and press the Enter key.

Example of a MAP response:

```
PROCPEC: SX05AA $ SX05AA PRL $
```

Enter SX05AA PRL $ SX05AA PRL $ and press the Enter key.

See the following MAP response.

Example of a MAP response:

```
LTC  0
     1002  LTE  0  18  0  B  6 6X02AA  QLI12BC
          (POTS POTSEX)(KEYSET KSETEX) (ABTRK DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51) $
    (UTR15)(TONE6X79)(MSG6X69)(CMR5 CMR10A)$
NORTHAM       SX05AA PRL $ SX05AA PRL $
                                SXFWAE08
6X40AA                                  $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
```

The PRL card was successfully added to datafill for unit 0.

Enter Y to confirm the tuple change request and press the Enter key.

40 To exit table LTCINV, type

>QUIT

and press the Enter key.

41 To make sure the new NTSX06 packlet is recognized, type

>QUERYPM CONFIG

and press the Enter key.

Example of a MAP response

```
UNIT 0    Slot 12: SX05AA
  PCMCIA Slotlet 0: SX06CA
  PCMCIA Slotlet 1: No packlet
UNIT 1    Slot 12: SX05AA
  PCMCIA Slotlet 0: SX06CA
  PCMCIA Slotlet 1: No packlet
```

42 To check if there are any files stored on the packlet that was just installed, type

>QUERYPM FILES

and press the Enter key.

43 To return the inactive unit to service, type

>RTS INACTIVE

Processor and memory cards in an XPM (end)

and press the Enter key.

If the RTS command	Do
passes	step 44
fails	step 47

44 To load the NTSX06 packlet in the inactive unit with the correct PM load file name, type

>XPMSTOR INACTIVE load_file_name

and press the Enter key

where

load_file_name
is the name of the file datafilled in field LOAD of the inventory table. The default load_file_name is the file currently datafilled.

If load	Do
passes	step 48
fails	step 47

45 Consult office personnel to determine why the component is offline. Continue as directed by office personnel.

46 For further assistance with switch of activity, contact the personnel responsible for the next level of support.

Note: If the system recommends using the SWACT command with the FORCE option, consult office personnel to determine if use of the FORCE option is advisable.

47 For further assistance, contact the personnel responsible for the next level of support.

48 Perform the procedure “Returning a card for repair or replacement” and return to this point when complete.

49 You have completed this procedure.

9 Card replacement common procedures

Introduction

This chapter provides common procedures for card replacement. A common procedure is a series of steps that you repeat in maintenance procedures. These steps are like the common procedures for the removal and replacement of a card.

Each common procedure contains the following sections:

- Application
- Action

Application

This section describes the purpose of the common procedure.

Action

This section contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Note: Do not use common procedures unless the step-action procedure directs you.

Activating CCS7 links

Application

Use this procedure to return CCS7 links to service for CCS7 link interface units (LIU7) or high-speed link interface units (HLIU) and high-speed link routers (HSLR) provisioned on the following shelves.

- link peripheral processor (LPP) link interface shelf (LIS)
- SuperNode combined core (SCC) enhanced network and interface shelf (ENI)
- SCC LIS
- single-shelf LPP (SSLPP) or fiberized link interface shelf.
- enhanced LPP (ELPP) LIS
- fiberized LPP (FLPP) LIS

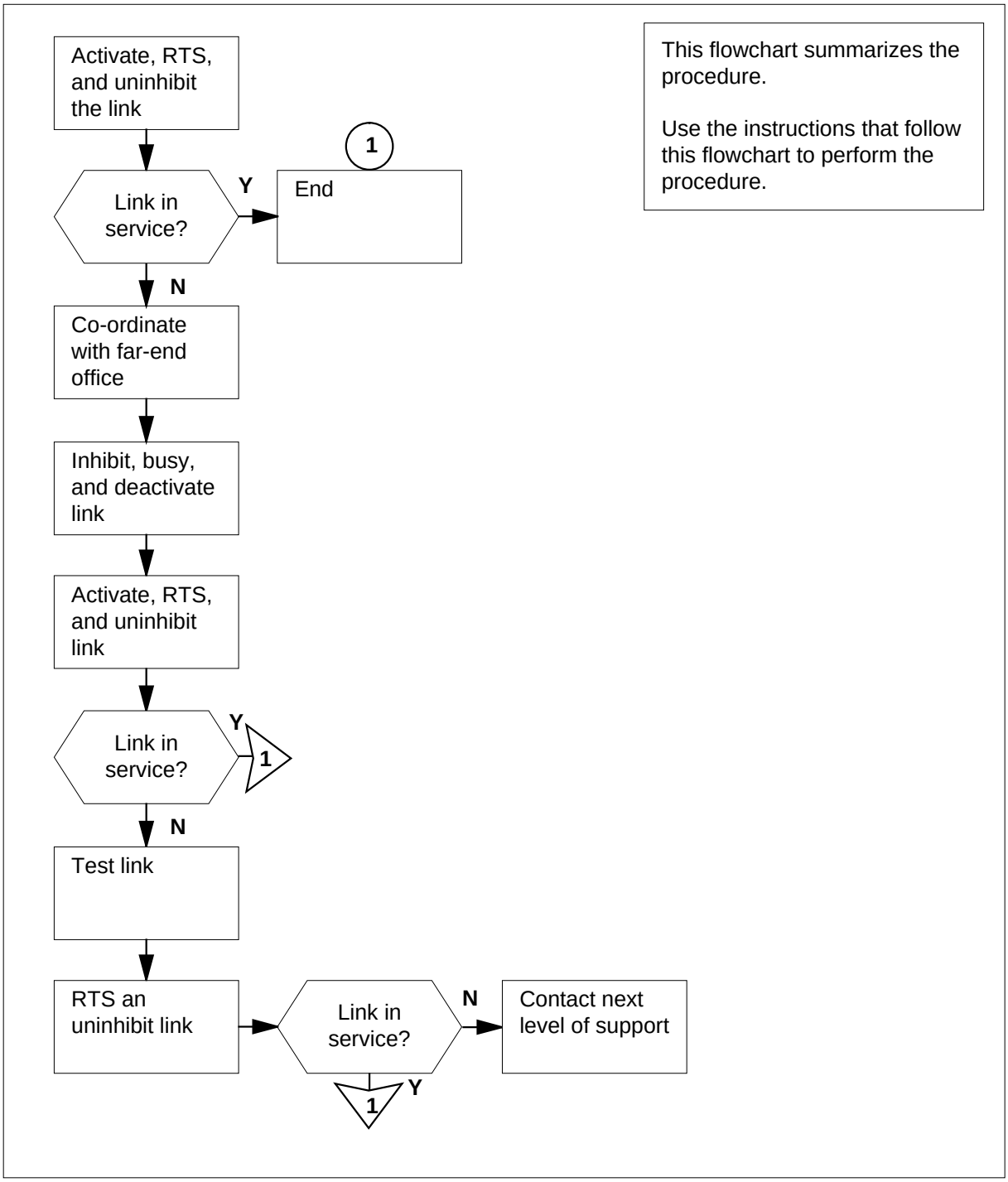
To perform this procedure, you must manually busy the link traffic and synchronization states. The LIU7 or HLIU and HSLR must be in service.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Activating CCS7 links (continued)

Summary of Activating CCS7 links



Activating CCS7 links (continued)

Activating CCS7 links

At the MAP terminal

1

CAUTION
Loss of service
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure alone, a loss of service can occur on signaling links.

WARNING
Loss of service
Do not activate a CCS7 link for an LIU7, HLIU, or HSLR that is not in service. For additional help, contact the next level of support.

To access the C7LKSET level of the MAP display, type

>CCS;CCS7;C7LKSET

and press the Enter key.

Example of a MAP display:

```
CCS7
Linkset
    Traf Sync                                              Link
 LK Stat Stat Resource  Stat Physical Access    Stat   Action
```

2 To post the linkset associated with the LIU7, HLIU, or HSLR, type

>POST C lkset_name

and press the Enter key.

where

lkset_name
is the name of the linkset

Example of a MAP display:

Activating CCS7 links (continued)

```
   CCS7     SCP     .       .

Linkset  SSP208_LS        InSv
   Traf Sync                                              Link
LK Stat Stat Resource  Stat Physical Access    Stat Action
0  InSv Sync LIU7 208  InSv DS0A
1  InSv Sync DLIU 109  InSv  DS1 InSv


Size of Posted Set = 2
```

Note: A dual-link interface unit (DLIU) is a virtual node that consists of an HLIU and an HSLR.

If the LIU7, HLIU, or HSLR is	Do
InSv or ISTb	step 3
any other state	step 21

3 Record the number of the link associated with the LIU7, HLIU, or HSLR.

Note: The link number appears under the LK header of the response. If the link for the LIU7, HLIU, or HSLR does not appear, use the NEXT command to display the next set of four links for the posted linkset.

For LIU7, go to step 4.

For HLIU or HSLR, perform step 5, then step 4, then continue with step 6.

4 To activate the link, type

>ACT link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

5 To return the link to service, type

>RTS link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

6 To uninhibit the link, type

>UINH link_no

and press the Enter key.

Activating CCS7 links (continued)

where

link_no
is the number of the link (0 to 15)

If the RTS command	Do
passed, and the link synchronization state is Sync or Alnd	step 22
passed, and the link synchronization state is not Sync or Alnd	step 7
failed	step 21

7 Wait 8 min to determine if the link synchronizes and returns to service.

If	Do
the traffic state is InSv and the synchronization state is Sync or Alnd	step 22
the traffic state is not InSv and the synchronization state is not Sync or Alnd	step 8
the traffic state is not InSv and the synchronization state is not Sync or Alnd	step 9

8 To inhibit the link, type

>INH link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 15)

9 To manually busy the link, type

>BSY link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

If you have busied an	Do
LIU7	step 10
HLIU or HSLR	step 11

Activating CCS7 links (continued)

Note: HLIU or HSLR are deactivated automatically.

10 To deactivate the link, type

>DEACT link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

11 Contact the far-end office. Tell operating company personnel at the far-end office:

- to inhibit, manually busy, and deactivate the link at the far-end office
- you will activate, return to service, and uninhibit the link from your end
- at the same time, operating company personnel must activate, return to service, and uninhibit the link from the far-end office.

For LIU7, go to step 12.

For HLIU or HSLR, perform step 13, then step 12, then continue with step 14.

12

ATTENTION
Do not proceed until the far-end office inhibits, manually busies, and deactivates the link.

Tell operating company personnel at the far-end office to activate the link.

To activate the link at your end at the same time, type

>ACT link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

13 Tell operating company personnel at the far-end office to return the link to service. To return the link to service at the same time, type

>RTS link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

Activating CCS7 links (continued)

link_no
is the number of the link (0 to 15)

14 Tell operating company personnel at the far-end office to uninhibit the link. To uninhibit the link at the same time, type

>UINH link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 15)

If the RTS command	Do
passed, and the link synchronization state is Sync or Alnd	step 22
failed	step 15
failed	step 16

15 To inhibit the link, type

>INH link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 15)

16 To manually busy the link, type

>BSY link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

17 To test the link, type

>TST link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

Activating CCS7 links (continued)

link_no
is the number of the link (0 to 15)

If the TST command	Do
passed	step 18
failed	step 21

18 To return the link to service, type

>RTS link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

If the RTS command	Do
passed	step 22
passed, and the link is LInh	step 20
failed, and this is the first time you tried the RTS command at this point	step 19
failed, and this is the second time you tried the RTS command at this point	step 21

19 Wait 10 min.

Go to step 18.

20 To uninhibit the link, type

>UINH link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 15)

If the UINH command	Do
passed, and the link is InSv	step 22
passed, and the link is not InSv	step 21
failed	step 21

21 For additional help, contact the next level of support.

Activating CCS7 links (end)

22 The procedure is complete. Return to the maintenance procedure that sent you to this procedure. Continue as directed by the maintenance procedure.

Activity switch with memory match

Application

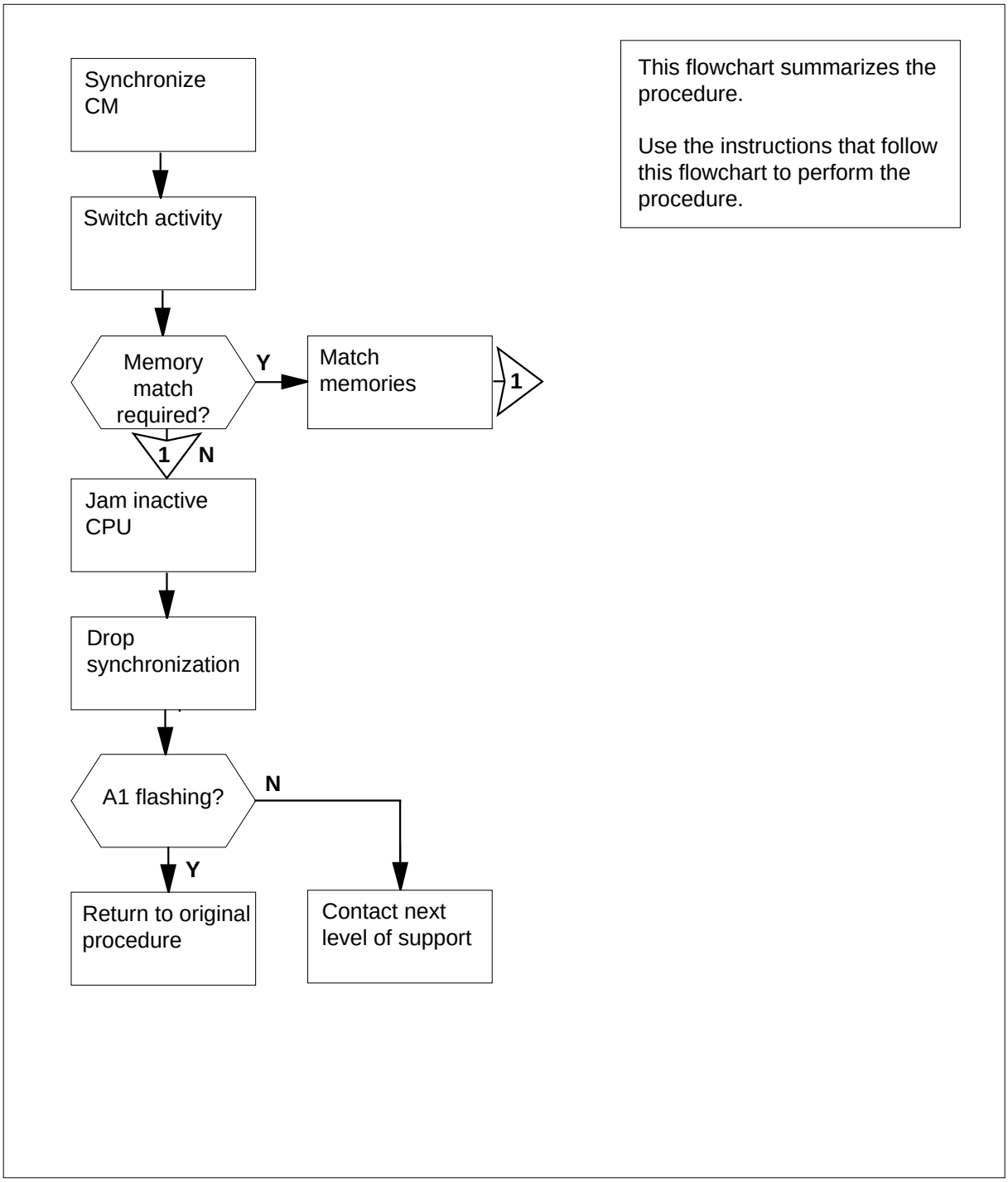
Use this procedure to switch activity between the active and inactive CPU. You must make sure that the switch is in sync and that neither CPU is jammed. The SLM assumes the active data.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Activity switch with memory match (continued)

Summary of Activity switch with memory match



Activity switch with memory match (continued)

Activity switch with memory match

At the MAP terminal

1

DANGER
Possible equipment damage or loss of service
Proceed only when a step in a maintenance procedure directs you. If you do not have permission to proceed, you can cause equipment damage or a loss of service.

To make sure that you are at the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

```
CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC
 0   no  cpu 1  .     .  yes    .     .     .   .
```

2 Determine if the inactive CPU is jammed.

Note: The word yes under the Jam header indicates that the CPU is jammed. This area appears blank if the CPU is not jammed.

If the inactive CPU	Do
is jammed	step 3
is not jammed	step 4

At the CM reset terminal for the inactive CPU

3 Before you proceed, determine from office records or from operating company personnel why the inactive CPU is jammed. When you have permission, release the jam on the inactive CPU. To release the jam, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

```
JAM RELEASE DONE
```

Activity switch with memory match (continued)

At the MAP terminal

4 Determine if the computing module (CM) is in sync.

Note: A dot (.) or EccOn under the Sync header means that the CM is in sync. The word no means that the CM is not in sync.

If the CM	Do
is in sync	step 6
is not in sync	step 5

5 Before you proceed, determine from office records or from operating company personnel why synchronization dropped. When you have permission, synchronize the CM. To synchronize the CM, type

>SYNC

and press the Enter key.

If the response	Do
indicates the SYNC command was successful	step 6
is other than listed here	step 23

6 To switch activity, type

>SWACT

and press the Enter key.

Example of a MAP response:

```
Switch of activity will cause the CM to be running on
the inactive CPU's processor clock. System will drop
SYNC and then re–SYNC in order to switch to the
active CPU's clock. Do you wish to continue?
Please confirm (″YES″, ″Y″, ″NO″, or ″N″):
```

7 To confirm the command, type

>YES

and press the Enter key.

Activity switch with memory match (continued)

8 Determine if the switch of activity was successful.

If the response	Do

was
`Maintenance action submitted.`
`Switch of Activity successful.`
`Drop Synchronization in progress...`
`Running in simplex mode with active CPU`
`1. Synchronization in progress...`
`Synchronization successful.`
	step 9

was other than listed here	step 23

9 Your next step depends on the requirement of a memory match between CPUs.

If you	Do
replace cards in the CM	step 10
clear a LowMem alarm	step 10
clear a CM Flt alarm	step 10
perform any other procedure	step 17

10 To access the Memory level of the MAP display, type

`>MEMORY`

and press the Enter key.

Example of a MAP display for SuperNode:

```
CM 0
     Card  123456789
   Plane 0 .........
   Plane 1 .........
```

Example of a MAP display for SuperNode SE:

```
CM 0
     Card  12345
   Plane 0 .....
   Plane 1 .....
```

11 To match the memories of the CPUs, type

`>MATCH  ALL`

and press the Enter key.

Example of a MAP response:

Activity switch with memory match (continued)

```
Matching memory between CPUs in SYNC.
Match ok.
```

If the response	Do
is `Match ok`	step 12
is other than listed here	step 23

12 To access the CI level of the MAP display, type

>QUIT ALL

and press the Enter key.

13 To access the log utility, type

>LOGUTIL

and press the Enter key.

14 To determine if the memory match generated an MM100 log report, type

>OPEN MM 100

and press the Enter key.

Note: If the memory match did not generate a report, the response is Log empty.

If the response	Do
is `Log empty`	step 15
is other than listed here	step 23

15 To determine if the memory match generated an MM101 log report, type

>OPEN MM 101

and press the Enter key.

If the response	Do
is Log empty	step 16
is other than listed here	step 23

16 To quit the log utility, type

>QUIT

and press the Enter key.

Activity switch with memory match (continued)

At the CM reset terminal for the inactive CPU

17

WARNING
Loss of service
Do not jam the active CPU. A cold restart occurs if you jam the active CPU while the CM is out of sync. The word Active on the top banner of the display indicates the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
PLEASE CONFIRM: (YES/NO)
```

18 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

At the MAP terminal

19 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

20 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response	Do
is `About to drop sync with CPU n active. The inactive CPU is JAMMED. Do you want to continue. Please confirm ("YES", "Y", "NO", or "N"):`	step 21
is other than listed here	step 23

21 To confirm the command, type

>YES

Activity switch with memory match (end)

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU n.
```

At the CM reset terminal for the inactive CPU

22 Wait until A1 flashes on the CM reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to flash.

If A1	Do
flashes	step 24
does not flash	step 23

23 For additional help, contact the next level of maintenance support.

24 Return to the maintenance procedure that sent you to this procedure and continue as directed.

Card removal and replacement process

Application

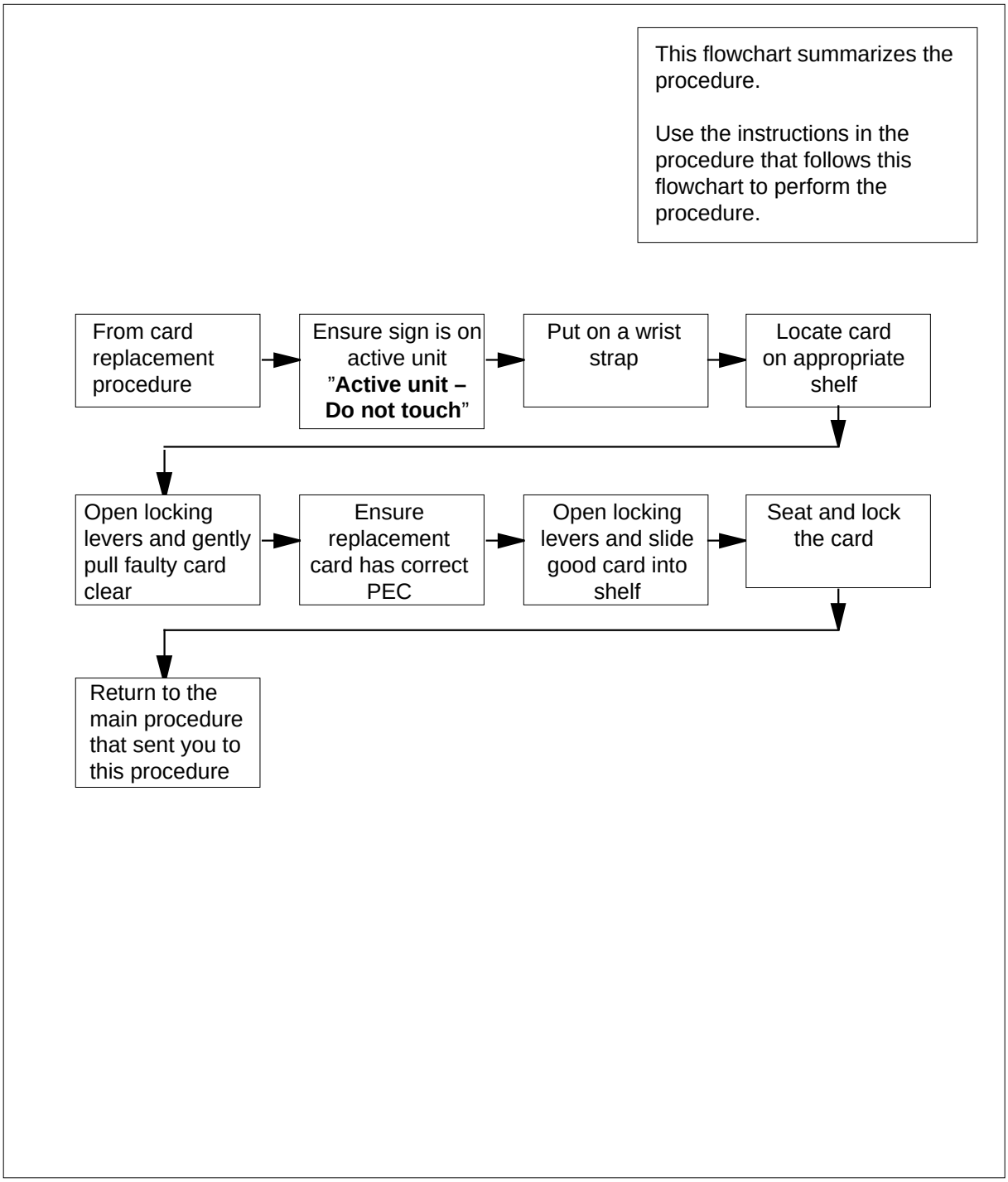
Use this procedure to prevent personal injury and/or damage to equipment when replacing cards in a shelf.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Card removal and replacement process (continued)

Summary of Card removal and replacement process



Card removal and replacement process (continued)

Card removal and replacement process

At the frame:

1

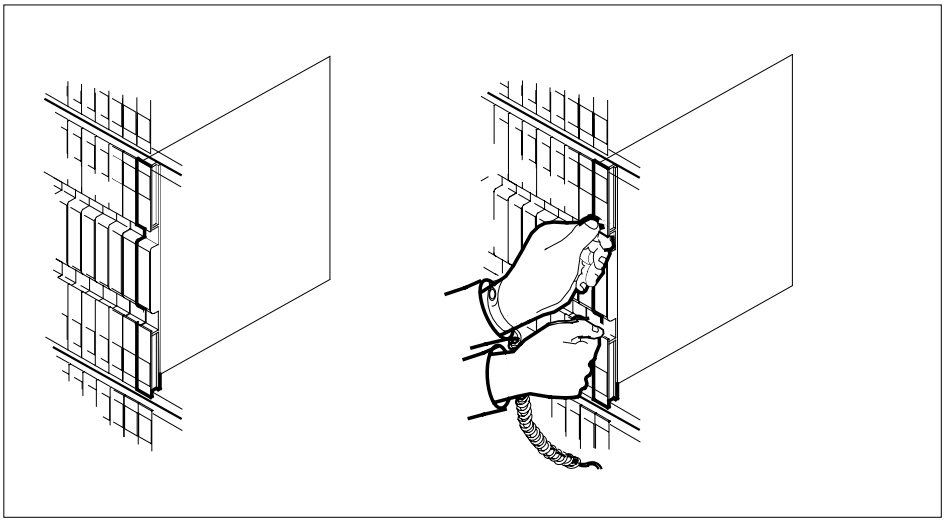
CAUTION

Proceed only if you have been directed to this procedure from a step in a card replacement procedure. Using this procedure independently may cause equipment damage or service interruption.

DANGER
Static electricity damage
Wear a wrist strap connected to the wrist strap grounding point on the frame supervisory panel (FSP) while handling cards. This precaution protects the cards against damage caused by static electricity.

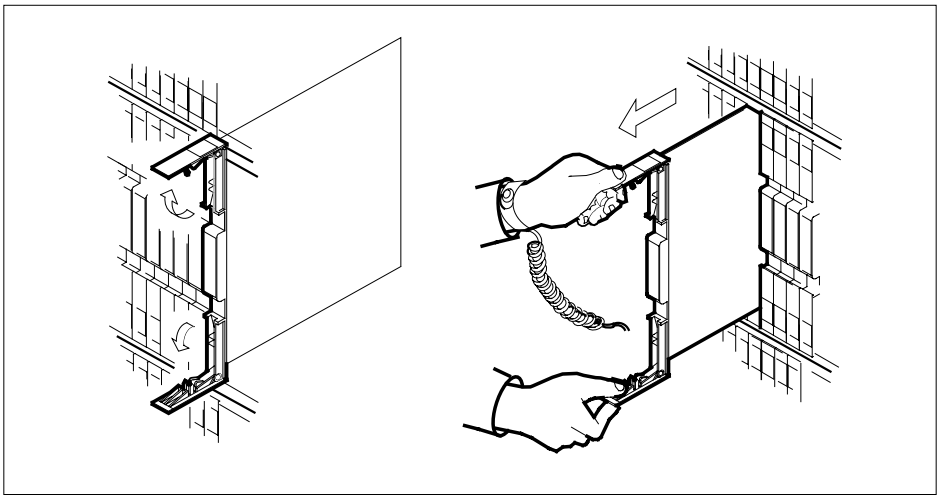
Remove any cables from the faceplate of the card to be replaced and note the connector numbers.

2 Using common procedure TMS shelf card location, locate the card to be removed on the appropriate shelf.



3 Gently pull the card towards you until it clears the shelf.

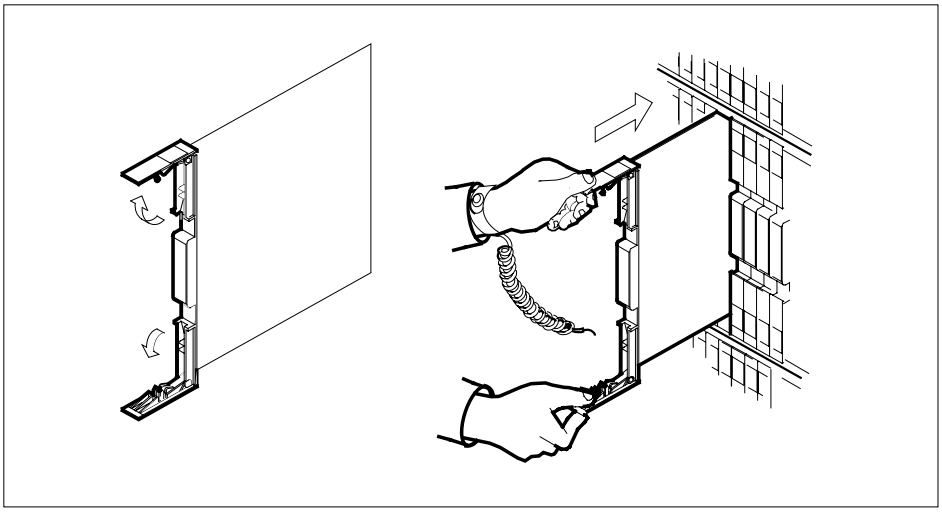
Card removal and replacement process (continued)



4 Place the card you have removed in an electrostatic discharge (ESD) protective container.

5 Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

6 Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.

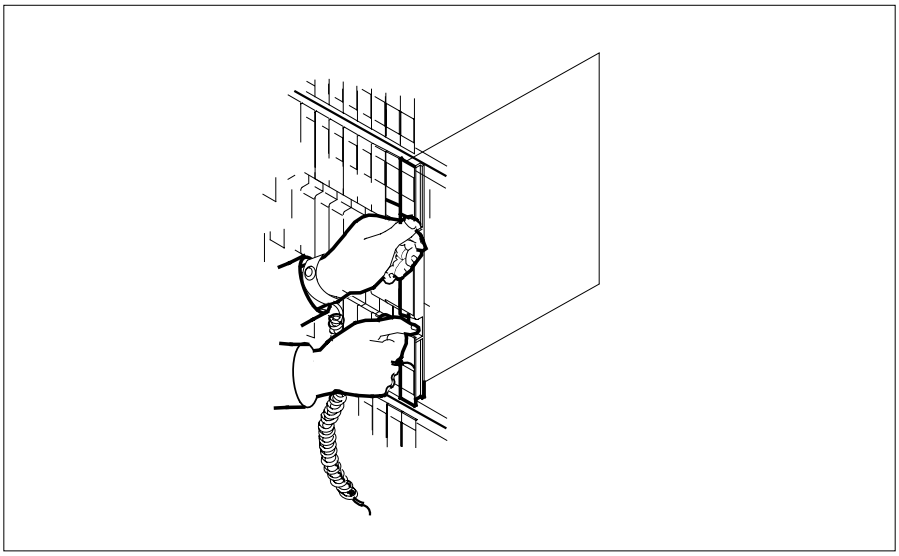


7 Seat and lock the card.

a Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

b Close the locking levers.

Card removal and replacement process (end)



8 Reconnect any previously removed cables to the faceplate of the replacement card.

9 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

Cleaning fiber-optic components and assemblies

Application

Use this procedure to clean and inspect fiber-optic components and assemblies. Perform this procedure when another procedure instructs you. Perform this procedure before every mating of connectors to prevent ferrule end-face damage by contaminants.

Escalating to the next level of maintenance

Repeat this procedure if it is not successful the first time.

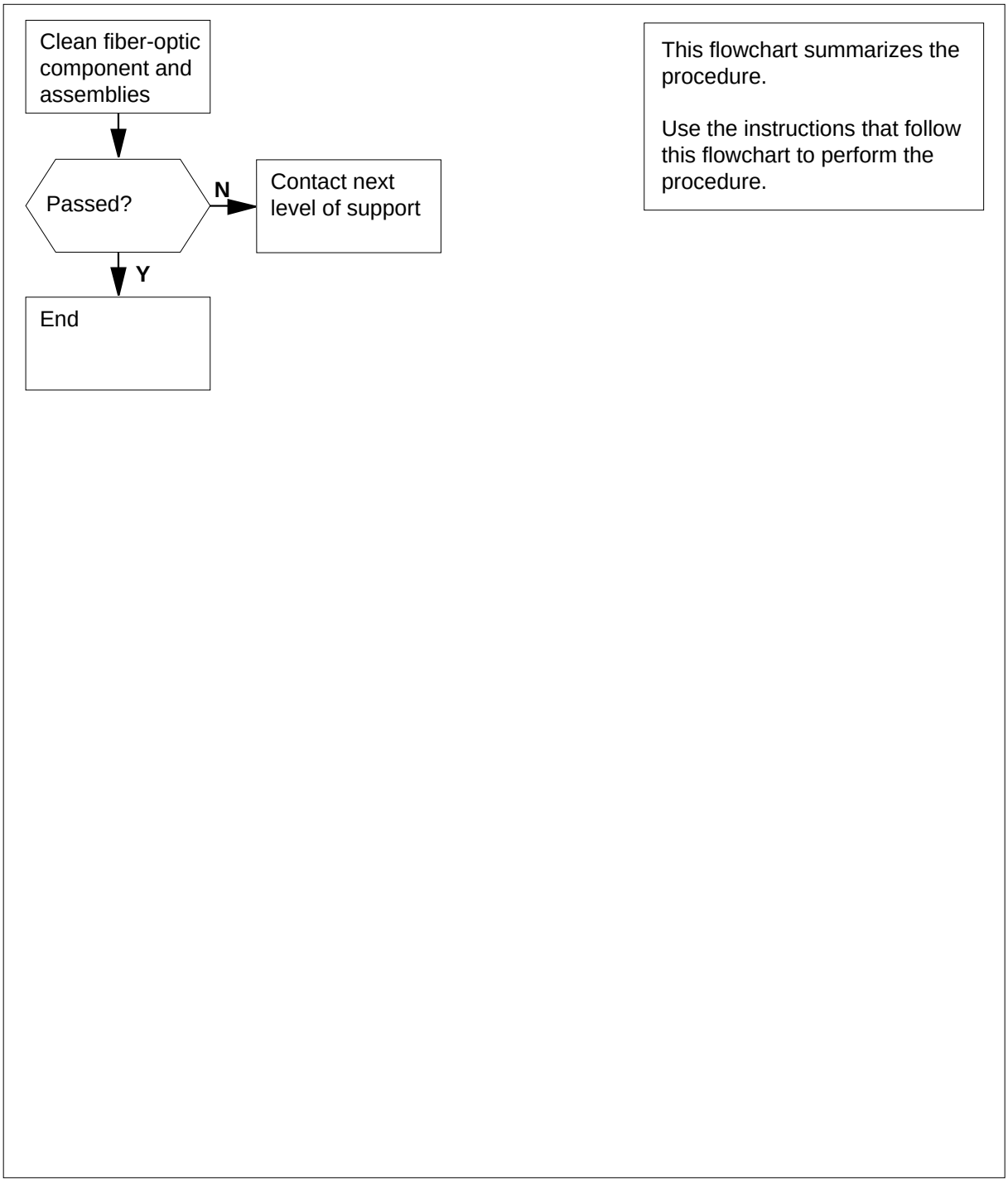
A problem can occur that requires the assistance of the local maintenance support group. Gather all relevant logs, reports, and system information (that is, product type and current software load) for analysis. That information can help make sure that the next level of maintenance support can quickly isolate the problem. Detailed information about the logs appears in the *Log Report Reference Manual*.

Action

The following flowchart summarizes the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Cleaning fiber-optic components and assemblies (continued)

Summary of Cleaning fiber-optic components and assemblies



Cleaning fiber-optic components and assemblies (continued)

Cleaning fiber-optic components and assemblies

DANGER

Risk of Eye InjuryRisk of Skin InjuryRisk of Breathing Difficulty

At all times when handling optical fibers, follow the safety procedures recommended by your company.

Never look into an active fiber or a fiber-optic connector. Never look into the connector opening of a powered transmit laser module or a fiber-optic amplifier. Invisible light that can blind is present. Keep all optical connectors capped.

Small bits of glass can cut eyes and skin. Wash your hands after handling fiber.

When using isopropyl alcohol (propan-2ol), wear rubber gloves to avoid skin contact. Use in small amounts and work in a well ventilated area. Do not breathe the vapors.

ATTENTION

Before starting this procedure, remove all traffic from the optical interface of an in-service system. Handle fibers and cables with clean hands and tools. Make sure that all fiber-optic connectors have clean protective dust caps.

Clean the housing and sleeve

1 Remove the protective caps from the adapter housing and store them in a clean electrostatic discharge (ESD) plastic bag.

2 Wet a new, clean, alignment sleeve cleaner (such as part number ACT-01 from Alcoa Fujikura) with isopropyl alcohol. With the wet cleaner, scrub the alignment sleeve, with combined in and out and rotating movements.

3 Put a clean dust cap on or insert a clean connector into the adapter.

Cleaning fiber-optic components and assemblies (continued)

ATTENTION

When Method 1 or Method 2 cannot be effectively performed, perform Method 3.

Method 1: Clean the ferrule with a lint-free cloth

1 Remove the protective caps from the ferrule or connector housing. Store the caps in a clean ESD plastic bag. Do not touch the end-face of the connector ferrule.

2 Wet one corner of a new lint-free cloth (part number R0118382) with isopropyl alcohol. Wipe the sides of the ferrule, then wipe across the surface of the ferrule.

3 With the dry section of the lint-free cloth, firmly wipe the ferrule end-face and horizontal surface.

4 Discard the lint-free cloth after each use.

5 Use a fiberscope (part number A0724141) or a video inspection station to inspect the ferrule end-face for cleanliness and defects. The inspection requirements are specified in the supplementary information section of this procedure. The video inspection station must be capbable of 200X and 400X magnification such as the Connect-Chek product from Norland Products Inc.

If the fiber is	Do
free of contaminants and defects	step 7
not free of contaminants and defects	repeat steps 1 to 5
is still not free of contaminants and defects after repeating steps 1 to 5	step 6

6 If several attempts to clean the connector are not successful, repolishing the connector can be necessary. For additional help, contact your next level of support.

7 Place the connector in a clean adapter housing to prevent contamination of the ferrule end-face.

8 You have completed this procedure.

Cleaning fiber-optic components and assemblies (continued)

Method 2: Clean the ferrule with a swab

1 Remove the protective caps from the ferrule or connector housing. Store the caps in a clean ESD plastic bag. Do not touch the end-face of the connector ferrule.

2 Wet one end of a new cotton swab with isopropyl alcohol. The swab must be clean-room certified (such as part number 63200 from Smith and Nephew). Carefully rub the end-face of the ferrule, then wipe around the ferrule.

3 Take the dry end of the swab and wipe the ferrule end-face and around the ferrule.

4 Discard the swab after each use.

5 Use a fiberscope (part number A0724141) or a video inspection station to inspect the ferrule end-face for cleanliness and defects. The inspection requirements are specified in the supplementary information section of this procedure. The video inspection station must be capbable of 200X and 400X magnification such as the Connect-Chek product from Norland Products Inc.

If the fiber is	Do
free of contaminants and defects	step 7
not free of contaminants and defects	repeat steps 1 to 5
is still not free of contaminants and defects after repeating steps 1 to 5	step 6

6 If several attempts to clean the connector are not successful, repolishing the connector can be necessary. For additional help, contact your next level of support.

7 Place the connector in a clean adapter housing to prevent contamination of the ferrule end-face.

8 You have completed this procedure.

ATTENTION

Clean one fiber connector end at a time.

Cleaning fiber-optic components and assemblies (continued)

Method 3: Alternate ferrule cleaning (end-face only)

1 Remove the protective caps from the ferrule or connector housing. Store the caps in a clean ESD plastic bag. Do not touch the end-face of the connector ferrule.

2 Clean the end-face of the connector ferrule with the cartridge connector cleaner (part number A0724059) as follows:

a Advance the tape belt and expose a clean film section through the two slots in the top of the cartridge connector cleaner.

b While holding the connector in one hand, insert the ferrule tip into the first ferrule guide hole. Rotate the ferrule tip and wipe only in the direction shown on the instruction label.

Note: Do not wipe the connector backward and forward in the guide.

c Repeat steps i.a and ii.b for the second guide hole.

d When the tape belt has been completely used, replace the wheel and wiper belt with part number A0724061.

3 Use a fiberscope (part number A0724141) or a video inspection station to inspect the ferrule end-face for cleanliness and defects. The inspection requirements are specified in the supplementary information section of this procedure. The video inspection station must be capbable of 200X and 400X magnification such as the Connect-Chek product from Norland Products Inc.

If the fiber is	Do
free of contaminants and defects	step 5
not free of contaminants and defects	repeat steps 1 to 3
is still not free of contaminants and defects after repeating steps 1 to 3	step 4

4 If several attempts to clean the connector are not successful, repolishing the connector can be necessary. For additional help, contact your next level of support.

5 Place the connector in a clean adapter housing to prevent contamination of the ferrule end-face.

6 You have completed this procedure.

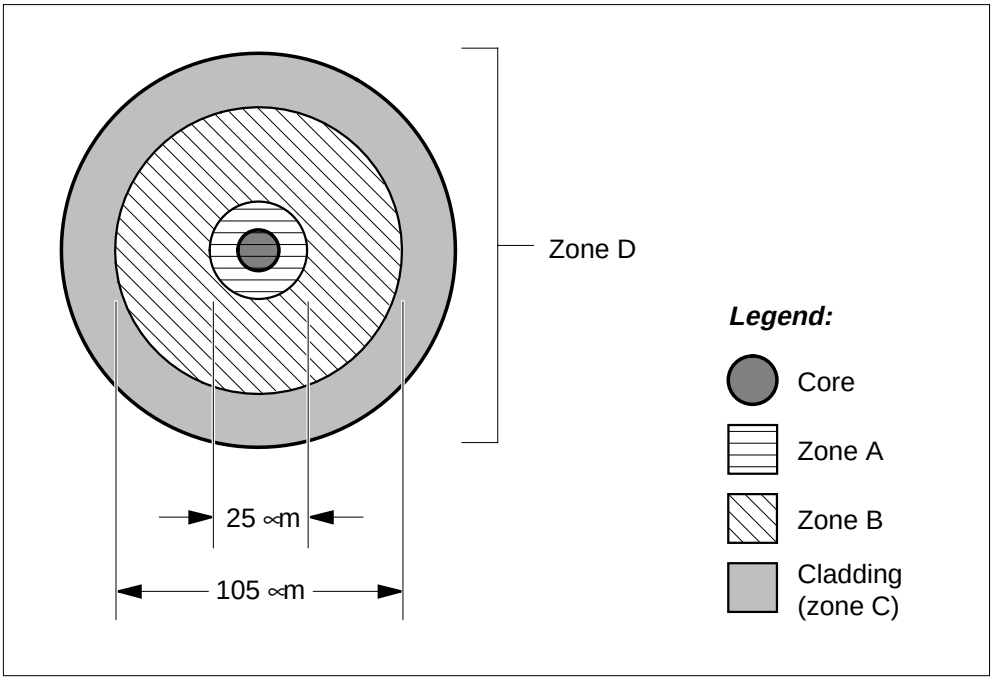
Supplementary information

End-face criteria

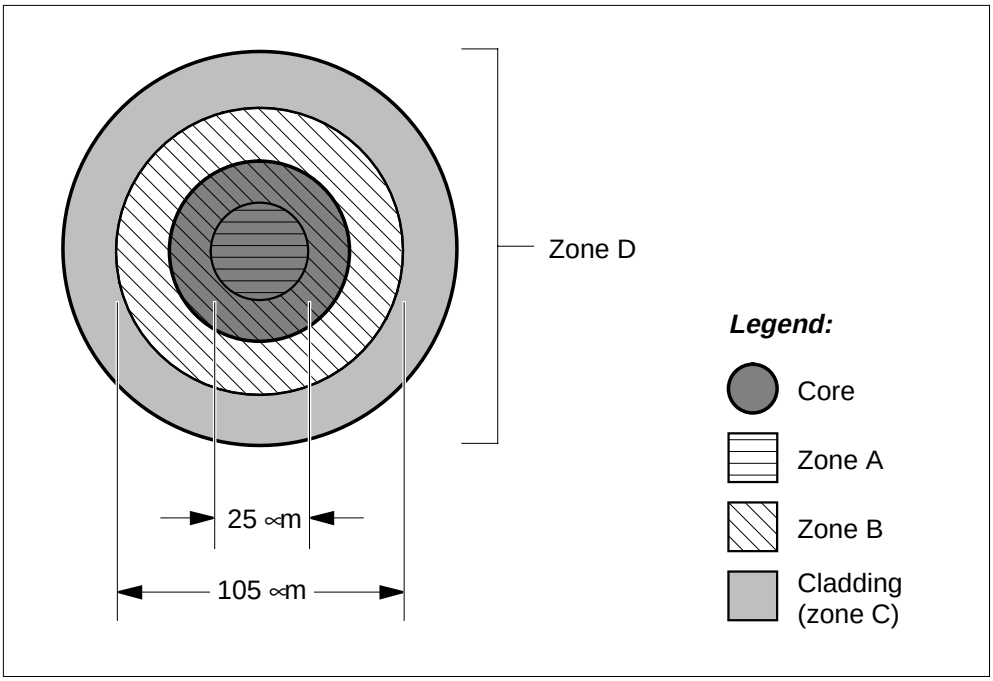
Inspection of the surface finish must show that the end-face meets the criteria outlined in the following section. Prior to visual inspection, the ferrule end-face must be cleaned in accordance with the preceding procedures. Always inspect the end-face prior to testing, mating, or installation.

Cleaning fiber-optic components and assemblies (continued)

Single-mode ferrule end-face



Multi-mode ferrule end-face



Cleaning fiber-optic components and assemblies (end)

Zone A is defined in the preceding figures. Under 200X magnification, no defects can be visible. If defects are found under 200X magnification, the end-face must be examined at a minimum of 400X magnification. The following features are allowed:

- Scratches: less than 0.75 microns wide
- Pitting: less than1.5 microns in diameter
- Contamination: None

Zone B is defined as the remaining area of the fiber out to 10 microns from the outer edge of the cladding. This is shown in the preceding figures. The following features are allowed:

- Scratches: less than 2.0 microns wide
- Pitting: less than 5 microns in diameter
- Contamination: None

Zone C is defined as the outer edge of the cladding, 10 microns wide. This is shown in the preceding figures. The following features are allowed:

- Any features entirely contained within the zone are acceptable.
- Any feature that extends into another zone must be evaluated according to the requirements of that zone.
- Contamination: None

Zone D is defined as the entire ferrule. The following features are allowed:

- Scratches: less than 10 microns wide
- Any other feature: less than 30 microns in diameter
- Contamination: less than 30 microns in diameter, ingrained only

> ***Note:*** The *Nortel Corporate Standard 184.00* includes additional details on the cleaning, handling, inspection, and storage of fiber-optic components and assemblies. The document is available from Nortel Networks on request.

Correcting a load mismatch

Application

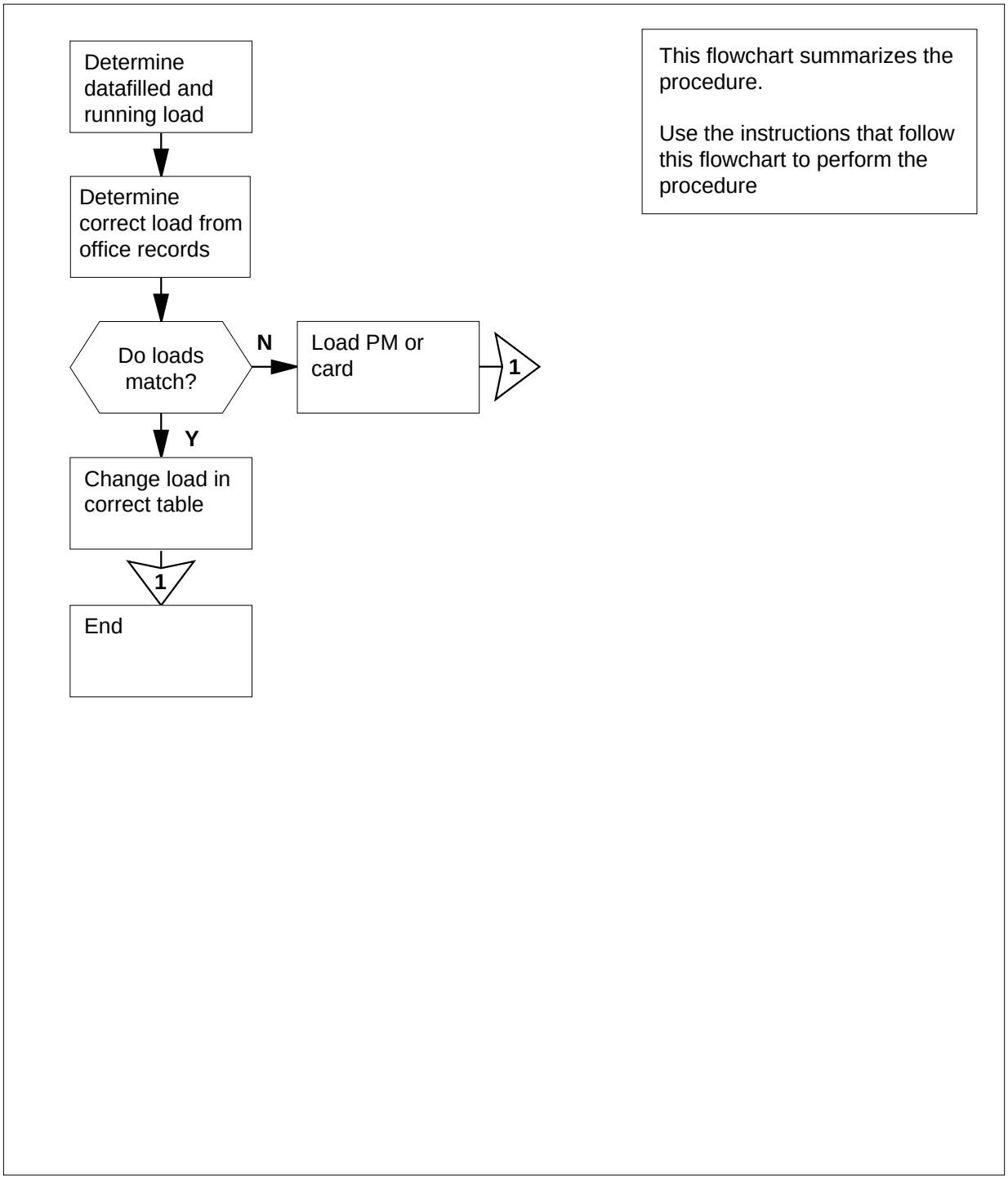
Use this procedure to match the software load to the specified datafilled load. This load runs on a PM, a signaling terminal controller (STC), or a CLASS modem resource (CMR) card.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Correcting a load mismatch (continued)

Summary of Correcting a load mismatch



Correcting a load mismatch (continued)

Correcting a load mismatch

At your current location

1

WARNING
Possible equipment damage or loss of service
Proceed only when a step in a maintenance procedure directs you. If you do not have permission to proceed, you can cause equipment damage or a loss of service.

Follow the correct procedure. The procedure you must follow depends on the type of load mismatch.

If the load mismatch	Do
is a PM or a CMR card load	step 2
is an STC load	step 42

2 Determine the state of the PM unit in the procedure that directed you to this step.

If the PM unit state	Do
was ISTb or InSv	step 8
was other than listed here	step 3

3 To access the correct PM inventory table, type

`>TABLE xxxINV`

and press the Enter key.

where

xxx
is the PM node type (for example, LTC, MSB)

Note: Table LTCINV also applies to PM types LGC, DTC, and PDTC. Table MSBINV applies to the MSB6 and the MSB7, and STCs. Table STCINV also applies to STC.

4 To position on the datafill tuple for the posted PM, type

`>POSITION pm_type pm_no`

and press the Enter key.

where

pm_type
is the type of PM (for example, DTC, LGC, MSB6, or PDTC)

pm_no
is the number of the PM (0 to 2047)

Correcting a load mismatch (continued)

Example of a MAP response:

```
DTC  0
     1002  DTE  0  18  0  B  6 6X02AA  NDT34AB
                                (  ABTRK  DTCEX)$
(2 0)(2 16)(2 32)(2 48)(2 17)(2 49)(2 1)(2 33)(2 2)(2 50)(2 34)
(2 18)(2 35)(2 19)(2 3)(2 51) $
    (CONTINUITY)(UTR16)(TONE6X79)(MSG6X69)(CMR13 CMRAG03)$
NORTHAM        6X45BA  6X45BA
                    XPMRGA02
6X40AA                                  (CCS7)$
```

Note: In this example from table LTCINV, the software load name in field LOAD is NDT34AB. The optional CMR card in field OPTCARD is CMR13 and the load name of this card in field CMRLOAD is CMRAG03. The card PEC in field PECS6X45 is 6X45BA. The firmware load name in field E2LOAD is XPMRGA02.

5 Record the load name in field LOAD. If the PEC in field PEC6X45 is MX77, record the firmware loadname in field E2LOAD.

6 To exit the inventory table, type

>QUIT

and press the Enter key.

7 Go to step 10.

8 To determine the load that runs on the PM or the CMR card, type

>QUERYPM CNTRS

and press the Enter key.

Example of a MAP response:

```
Unsolicited MSG limit = 250, Unit 0 = 2, Unit 1 = 0
Unit 0:
Ram Load: NDT34AB
Rom Load: XPMRGA02
CMRLOAD: CMRAG03
Unit 1:
Ram Load: NDT34AB
Rom Load: XPMRGA02
CMRLOAD: CMRAG03
```

Note: In the preceding example for an LGC, the load that runs on each of the LGC units appears next to the Ram Load header. The running load is NDT34AB. The firmware load that runs on each of the LGC units appears next to the Rom Load header. The running firmware load is XPMRGA02. The load that runs on the CMR card in each unit appears next to the CMRLOAD header. The load on the CMR is CMRAG03.

9 Record the software and firmware loads that run on the PM or the CMR card.

Correcting a load mismatch (continued)

10 Determine from office records the correct loadname.

If the loadname from office records	Do
match the load datafilled for the PM or the CMR card	step 11
match the load that runs on the PM or the CMR card	step 16

11 Follow the correct procedure. The procedure you must follow depends on if you work on a PM or CMR card.

If you	Do
work on a PM	step 12
work on a CMR card	step 14

12 To load the PM unit, type

`>LOADPM UNIT unit_no`

and press the Enter key.

where

unit_no
is the PM unit (0 or 1)

If the LOADPM command	Do
passed	step 13
failed	step 15

13 To return the PM unit to service, type

`>RTS UNIT unit_no`

and press the Enter key.

where

unit_no
is the PM unit (0 or 1)

If the RTS command	Do
passed	step 64
failed	step 63

14 To load the CMR card, type

`>LOADPM UNIT unit_no CMR`

and press the Enter key.

Correcting a load mismatch (continued)

where

unit_no
is the PM unit (0 or 1)

If the LOADPM command	Do
passed	step 64
failed	step 15

15 Perform the procedure *Loading a PM*. Complete the procedure and return to this point.

16 To access the correct PM inventory table, type

>TABLE xxxINV

and press the Enter key.

where

xxx
is the PM node type (for example, LTC, MSB)

Note: Table LTCINV also applies to PM types LGC, DTC, and PDTC. Table MSBINV applies to both the MSB6 and the MSB7, and to STCs. Table STCINV also applies to STC.

17 To position on the datafill tuple for the posted PM, type

>POSITION pm_type pm_no

and press the Enter key.

where

pm_type
is the type of PM (for example, DTC, LGC, MSB6, or PDTC)

pm_no
is the number of the PM (0 to 2047)

If the load you want to change	Do
is for the CMR card	step 18
is for the PM	step 21

18 To change the load that you entered so that the card datafill match the loadname that runs on the card, type

>CHANGE OPTCARD

and press the Enter key.

Example of a MAP response:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

19 To confirm the command, type

>Y

Correcting a load mismatch (continued)

and press the Enter key.

Example of a MAP response:

```
CMRLOAD: CMRAG02
```

Note: To change the load of the CMR card, press the Enter key until field CMRLOAD appears.

20 Go to step 23 to enter the correct loadname for the CMR card.

21 To change the load you datafilled to make sure the PM entries match the loadname that runs on the PM, type

>CHANGE LOAD

and press the Enter key.

Example of a MAP response:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

22 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
LOAD: NDT33CA
```

23 To enter the correct load name, type

>load_name

and press the Enter key.

where

load_name
is the name of the load that runs on the PM or CMR card, that you recorded in step 5 or step 9

Example input:

>NDT34AB

and press the Enter key.

Example of a MAP response:

```
TUPLE TO BE CHANGED:
LGC 0
   LGE 0 18 0 B 1 6X02AA NDT34AB

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

Note: The preceding example does not display the MAP prompt.

24 To confirm the command, type

>Y

and press the Enter key.

If the MAP response	Do
`is TUPLE CHANGED`	step 64
`is Field_name file is not datafilled in table PMLOADS`	step 25

25 To reject the entry change, type

`>N`

and press the Enter key.

26 To exit the PM inventory table, type

`>QUIT`

and press the Enter key.

27 To access the disk utility, type

`>DISKUT`

and press the Enter key.

Note: The command DISKUT applies to a SuperNode front end. For an NT40 front end, the command is DSKUT.

28 To confirm that the load file you recorded in step 10 is in the user directory, type

`>LISTFL file_name`

and press the Enter key.

where

file_name
is the name of the storage device from office records

Note: The command LISTFL file_name applies to a SuperNode front end. For an NT40 front end, the command is LISTVOL vol_name.

29 To exit the disk utility, type

`>QUIT`

and press the Enter key.

30 Determine if the device specified for the PM load file matches the office records from step 10.

If the device name	Do
does not match	step 63
matches	step 31

31 To access table PMLOADS, type

`>TABLE PMLOADS`

and press the Enter key.

Correcting a load mismatch (continued)

32 To add the new file name to table PMLOADS, type

>ADD new_file_name

and press the Enter key.

where

new_file_name
is the file name

Example input:

>ADD ARC37CJ

and press the Enter key.

Note: The file name must begin with a letter.

Example of a MAP prompt:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

33 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
ACTFILE:
```

34 To enter the name of the loadfile, type

>actfile

and press the Enter key.

where

actfile
is the name of the loadfile.

Example input:

>ARC37CJ

and press the Enter key.

Example of a MAP response:

```
ACTVOL:
```

35 To enter the name of the storage device that contains the loadfile from step 28, type

>actvol

and press the Enter key.

where

actvol
is the name of the storage device

Correcting a load mismatch (continued)

Example input:

>S00DVOL1

and press the Enter key.

Example of a MAP response:

```
BKPFILE:
```

36 To enter the name of the backup loadfile, type

>bkpfile

and press the Enter key.

where

bkpfile
is the name of the backup loadfile and must be identical to the name you entered in step 34.

Example input:

>ARC37CJ

and press the Enter key.

Example of a MAP response:

```
BKPVOL:
```

37 To enter the name of the storage device that contains the backup loadfile, type

>bkpvol

and press the Enter key.

where

bkpvol
is the name of the storage device

Example input:

>S00DVOL1

Example of a MAP response:

```
UPDACT:
```

38 To enter the update confirmation for the automatic loadfile name, type

>updact

and press the Enter key.

where

updact
is if the system must update the loadfile name automatically (Y or N)

Example input:

>Y

Correcting a load mismatch (continued)

Example of a MAP response:

```
TUPLE TO BE ADDED:
          ARC37CJ
          ARC37CJ            S00DVOL1
          ARC37CJ            S00DVOL1         Y

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

39 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
 TUPLE ADDED
```

40 To exit table PMLOADS, type

>QUIT

and press the Enter key.

41 Repeat steps 16 to 24. Complete the procedure and return to this point.

42 To determine the load that you datafilled for the STC, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

```
PM Type: MSB7 PM No.: 0 PM Int. No.: 0 Node_No.: 59
PMs Equipped: 56 Loadname: MC7XB01
STCLOADS in MSBINV table: M7CQA01
```

Note: The load you datafilled for the STC appears next to STCLOADS. In the preceding example, the load is M7CQA01.

43 Determine from office records the correct STC load.

If the loadname from office records	Do
matches the datafilled load	step 59
does not match the datafilled load	step 44

44 To access table MSBINV, type

>TABLE MSBINV

and press the Enter key.

45 To position on the entry tuple for the MSB, type

>POSITION MSBx msb_no

Correcting a load mismatch (continued)

and press the Enter key.

where

x
is the type of MSB (6 or 7)

msb_no
is the number of the MSB (0 to 2049)

Example input:

>POSITION MSB7 0

Example of a MAP response:

```
MSB7 0
  MS7E 0 18 0 C 2 6X32AA MC734CA
             (1 0) 1 8) 1 16) 1 24)$
                              (C7)$
         (M7CLA01)$
                           (MSG6X69)$
      6X45AE 6X45AE
```

46 To change the load you datafilled for the STC to match the load you obtained from office records, type

>CHANGE STCLOADS

and press the Enter key.

Example of a MAP response:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

47 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
STCLOAD: M7CLA01
```

48 To enter the correct load name, type

>stc_loadname

and press the Enter key.

where

stc_loadname
is the name of the STC load from office records

Example input:

>M7CQA01

Example of a MAP prompt:

```
STCLOADS:
```

Correcting a load mismatch (continued)

49 To close the STCLOADS field, type

> $

and press the Enter key.

Note: Enter a space before the $ character.

Example of a MAP response:

```
TUPLE TO BE CHANGED:
MSB7 0
  MS7E 0 18 0 C 2 6X32AA MC734CA
             (1 0) 1 8) 1 16) 1 24)$
                           (C7)$
        (M7CQA01)$
                          (MSG6X69)$
     6X45AE 6X45AE

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

50 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
TUPLE CHANGED
```

51 To exit table MSBINV, type

>QUIT

and press the Enter key.

52 To access table STINV, type

>TABLE STINV

and press the Enter key.

53 To position on the entry tuple for the ST, type

>POSITION st_no

and press the Enter key.

where

st_no
is the number of the MSB (0 to 1023)

Example input:

>POSITION 100

54 To change the load you datafilled for the STC to match the load you obtained from office records, type

>CHANGE LOAD

and press the Enter key.

Correcting a load mismatch (continued)

Example of a MAP prompt:

```
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
```

55 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
LOAD: M7CJA01
```

56 To enter the correct load name, type

>stc_loadname

and press the Enter key.

where

stc_loadname
is the name of the STC load from office records

Example of a MAP response:

```
TUPLE TO BE CHANGED:
 100    MSB7    0    0     0 6X66AA  M7CQA01  C7   4
             MSB  0  1 56K

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

57 To confirm the command, type

>Y

and press the Enter key.

Example of a MAP response:

```
TUPLE CHANGED
```

58 To exit table STINV, type

>QUIT

and press the Enter key.

59 To determine if the MSB units contain any STC loads, type

>STCLOAD UNIT unit_no QUERY

and press the Enter key.

where

Correcting a load mismatch (end)

unit_no
is the number of the MSB unit (0 or 1)

If the response	Do
is MSBx msb_no unit_no does not contain any STC Loads	step 60
is MSBx msb_no unit_no contains STC Loads: stc_loadname OK	step 64

60 To add the STC load you determined in step 43 to the MSB unit, type

`>STCLOAD UNIT unit_no A stc_loadname`

and press the Enter key.

where

unit_no
is the number of the MSB unit (0 or 1)

stc_loadname
is the name of the STC load

If the response	Do
is STC load load_name added to MSBx msb_no unit unit_no	step 64
is Load File Not In Directory	step 61

61 Perform the procedure *Loading a PM*. Complete the procedure and return to this point.

62 Go to step 60.

63 For additional help, contact the next level of support.

64 The procedure is complete. Return to the main procedure that sent you to to this procedure and continue as directed.

Deactivating CCS7 links

Application

Use this procedure to deactivate in-service CCS links for CCS7 link interface units (LIU7), multiple link interface units (MLIU) or dual link interface units (DLIU) provisioned on the following shelves:

- link peripheral processor (LPP) link interface shelf (LIS)
- SuperNode combined core (SCC) enhanced network interface (ENI) shelf
- SCC LIS
- single-shelf LPP (SSLPP)
- enhanced LPP (ELPP)
- fiberized LPP (FLPP)

A DLIU is a virtual node that consists of a high-speed link interface unit (HLIU) and a high-speed link router (HSLR).

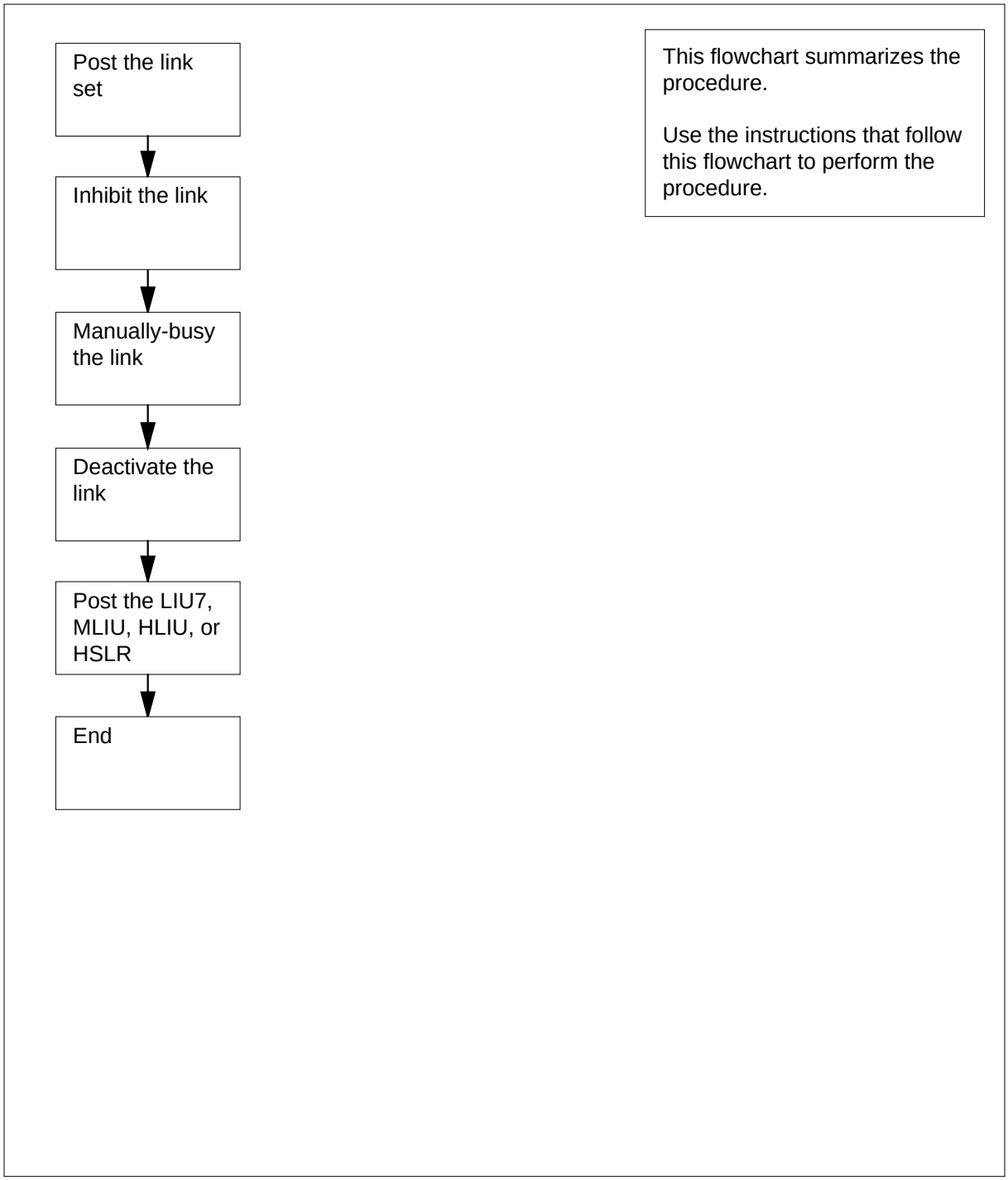
Operating company personnel must post the LIU7, MLIU or HLIU and HSLR before using this procedure.

Action

This procedure contains a summary flowchart and a list of steps. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Deactivating CCS7 links (continued)

Summary of Deactivating CCS7 links



Deactivating CCS7 links (continued)

Deactivating CCS7 links

At the MAP terminal

1

CAUTION
Loss of service
Proceed only if you have been directed here from a step in a maintenance procedure. Independent use of this procedure can cause loss of service on signaling links.

To display information for the current LIU7, MLIU, HLIU, or HSLR, type

>QUERYPM

and press the Enter key.

Note: Where the link interface unit is an MLIU, MLIU is shown in the MAP display in place of LIU7.

Example #1 of a MAP display:

```
PM type: LIU7    PM No.: 208    Status: InSv
LIM: 2  Shelf: 2  Slot: 8      LIU FTA:  4247 1000
Default Load: LCC03BD
Running Load: LCC03BD
LMS States  :  ISTb          ISTb
Auditing    :  Yes           Yes
Msg Channels:  Acc           Acc
TAP 8       :  .             .
Reserved LIU7 forms part of CCS7 Linkset: SSP208_LS SLC:0
LIU is allocated
```

Note: In the example response above, the LIU7, MLIU, HLIU, or HSLR number follows the words PM No. in the first line of the MAP response. The LIM number follows the word LIM on the second line. The linkset name follows the word Linkset on the second-last line. In this example, the LIU7 number is 208, the LIM number is 2, and the linkset name is SSP208_LS.

Example #2 of a MAP response:

Deactivating CCS7 links (continued)

```
PM type: LIU7    PM No.: 103    Status: InSv
(F)LIS  Shelf: 1  Slot: 12      LIU FTA:  4261 1000
Default Load: LRS03BD
Running Load: LRS03BD
MS States   :  InSv          InSv
Auditing    :  No            No
Msg Channels:  Acc           Acc
TAP 2       :  .             .
Reserved LIU7 forms part of CCS7 Linkset: SSP103_LS SLC:0
LIU is allocated
```

Note: In the example above, the LIU7 number follows the words PM No on line 1 of the MAP response. The linkset name follows the word Linkset on the second-last line. In this example, the LIU7 number is 103 and the linkset name is SSP103_LS.

The next action depends on the position of the LIU or MLIU.

If the LIU	Do
is available on an LPP LIS shelf	step 2
is available on an ELPP or FLPP shelf	step 2
is available on an SCC LIS or ENI shelf	step 3
is available on an SSLPP shelf	step 3

Note: An HLIU or HSLR are only available on an ELPP or FLPP.

2 Record the LIU7, MLIU, HLIU, or HSLR number, the link interface module (LIM) number, and the linkset name.

Go to step 4.

3 Record the LIU7 or MLIU number and the linkset name.

4 To access the C7LKSET level of the MAP display, type

`>CCS;CCS7;C7LKSET`

and press the Enter key.

Example of a MAP display:

```
 CCS7

Linkset
   Traf Sync                                          Link
LK Stat Stat Resource  Stat Physical Access   Stat Action
```

To post the linkset associated with the LIU7, MLIU, or DLIU, type

`>POST  C  lkset_name`

and press the Enter key.

Deactivating CCS7 links (continued)

where

lkset_name
is the name of the linkset

Example of a MAP display:

```
  CCS7     SCP
    .       .
Linkset  SSP208_LS        InSv
   Traf Sync                                          Link
LK Stat Stat Resource  Stat Physical Access   Stat Action
0  InSv Sync LIU7 208  InSv DS0A
1  InSV Sync DLIU 109  InSv DS1


Size of Posted Set = 2
```

Note: Where the link interface unit is an MLIU, MLIU is shown in the MAP display in place of LIU7.

5 Record the link number, traffic state, and sync state of the link associated with the LIU7, MLIU or DLIU.

Note: The link number appears under the LK header of the response. If the link for the LIU7, MLIU or DLIU does not appear, use the NEXT command. The NEXT command displays the next set of four links for the posted linkset.

If traffic state	Do
for an LIU7 or MLIU is `ManB`, and the synchronization state is `Alnd`	step 9
for an LIU7, MLIU or DLIU is `ManB`, and the synchronization state is `Dact`	step 10
for an LIU7, MLIU or DLIU is any other state, and the synchronization state is any other state	step 6
for an LIU7, MLIU or DLIU is any other state, and the synchronization state is any other state	step 7

6 To inhibit the link, type

`>INH  link_no`

and press the Enter key.

where

link_no
is the number of the link (0 to 15) that you recorded in step 5.

Example of a MAP response:

Deactivating CCS7 links (continued)

```
Link  0: Failed, this is last available link in routeset
```

If the INH command	Do
passes	step 7
fails because this link is the last available link in the linkset	step 7
fails for any other reason	step 14

7 To manually busy the link associated with the LIU7, MLIU or DLIU, type

>BSY link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

Example of a MAP response:

```
Link  0: Bsy passed
```

Example of a MAP response:

```
Link  0: Traffic is running on that link
Please confirm ("YES", "Y", "NO", or "N"):
```

Note: A DLIU is automatically deactivated when busied.

8 To confirm the command, type

>YES

and press the Enter key.

Note: A manual-busy link continues to transmit maintenance and test messages. The far end continues to use the link normally and send all types of messages.

If the BSY command	Do
passes and the link associates with the LIU7 or MLIU	step 9
passes and the link associates with the DLIU	step 10
fails	step 14

9 To deactivate the link, type

>DEACT link_no

and press the Enter key.

where

link_no
is the number of the link (0 to 7)

link_no
is the number of the link (0 to 15)

Example of a MAP response:

```
Link  0: Passed
```

If the DEACT command	Do
passes	step 10
fails	step 14

10 To access the PM level of the MAP display, type

>PM

and press the Enter key.

Example of MAP display

```
                SysB     ManB     OffL     CBsy     ISTb     InSv
PM                 1        0        2        0        3        6
```

If the current unit	Do
is an LIU7 or MLIU	step 11
is an DLIU	step 12

11 To post the LIU7 or MLIU, type

>POST LIU7 liu_no

or

>POST MLIU mliu_no

and press the Enter key.

where

liu_no or mliu_no
is the number of the LIU7 or MLIU (0 to 511)

Go to step 15.

12 To post the HLIU, type

>POST HLIU liu_no

and press the Enter key.

where

Deactivating CCS7 links (end)

liu_no
is the number of the DLIU (0 to 511)

13 To post the HSLR, type

>POST HSLR liu_no

and press the Enter key.

where

liu_no
is the number of the DLIU (0 to 511)

Go to step 15.

14 For additional help, contact the personnel responsible for the next level of support.

15 This procedure is complete. Return to the main procedure and continue as directed.

Failure to switch clock mastership

Application

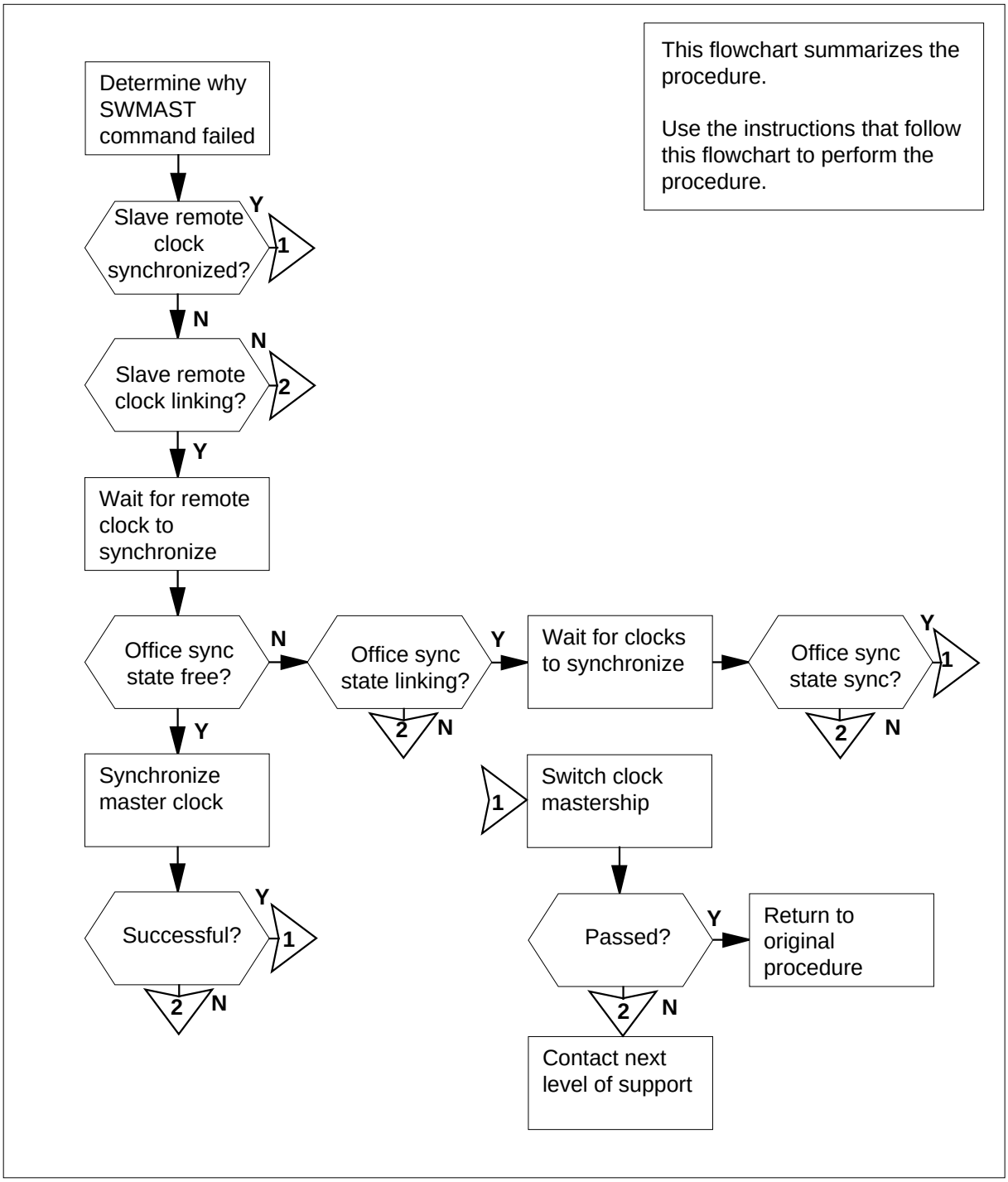
Use this procedure to clear a failure to switch clock mastership.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Failure to switch clock mastership (continued)

Summary of Failure to switch clock mastership



Failure to switch clock mastership

DANGER
Possible equipment damage
Proceed only when a step in a maintenance procedure directs you. If you do not have permission to proceed, you can cause equipment damage or a service interruption.

At the MAP Terminal

1 Determine why the switch of mastership failed.

If the error response	Do
is `SWMAST not allowed, slave MS remote not SYNCed`	step 2
is `SWMAST not allowed, slave MS has serious clock faults`	step 22
is `SWMAST not allowed, mate MS is OOS`	step 23
is other than listed here	step 24

2 To access the MS level of the MAP display, type

`>MAPCI;MTC;MS`

and press the Enter key.

Example of a MAP display:

```
Message Switch   Clock  Shelf 0  Inter-MS Link 0 1
MS 0        .          M Free     .            . .
MS 1        .          Slave      .            . .
```

3 Determine which MS is the slave MS.

Note: In the example in step 2, the slave MS is MS 1.

4 To access the Clock level of the MAP display, type

`>CLOCK`

and press the Enter key.

Example of a MAP display:

```
Card 02 Alm Int  %Adj Src Rem  %Adj Src | Car Stat Sp PM     CCT
MS 0  .  .  Syn +00.7 Rm0 Fr  +03.1 Lk0 | Lk0 Lck   0 DTC 002 02
MS 1  .  .  Syn +01.3 In0 Syn –02.7 In0 | Lk0 Smp   0 DTC 001 02
Links slipping:      4 out of 10276
```

Failure to switch clock mastership (continued)

5 Determine the state of the slave remote clock.

Note: The state of the slave remote clock appears on the right of the slave MS under Rem header. In the example in step 4, the state of the slave remote clock is Syn.

If the slave remote clock	Do
`is Fr`	step 6
`is  LKg`	step 8
`is Syn`	step 21

6 To perform an in-service test on the clock card of the slave message switch (MS), type

`>TST  ms_number`

and press the Enter key.

where

ms_number
is the number of the slave MS (0 or 1)

If the TST command	Do
passed, or passed with `Istb`	step 7
failed	step 23

7 Determine the state of the slave remote clock.

If the state of the slave remote clock	Do
`is LKg`	step 8
`is Fr`	step 10
`is Syn`	step 21

8 Wait until the slave remote clock completes linking and synchronization. Continue the procedure.

Note: Allow 30 min for the slave remote clock to synchronize.

9 Determine the state of the slave remote clock.

If the state of the slave remote clock	Do
`is Fr`	step 10
`is Syn`	step 21

Failure to switch clock mastership (continued)

If the state of the slave remote clock	Do
is LKg	step 24

10 To determine the office sync state of the clocks, type

>QUERYCK

and press the Enter key.

Note: The office sync state appears on the right of the Office SYNC state header.

Example of a MAP response:

```
Office SYNC state = LKng
Clock type = Stratum 2.5
Office configuration = Master External Office
External Frequency = fl0000
External Select = Analog
External Termination = 50ohm
External Alarm = Minor
Master Clock = MS0
Remote Clock Configuration = reference
MS0 Clock Alarms: REM EXT
MS1 Clock Alarms: none
```

If the office sync state	Do
is Free	step 11
is LKng	step 15
is Sync	step 21

11 To start the synchronization of the master clock, type

>SYNC

and press the Enter key.

Example of a MAP response:

Failure to switch clock mastership (continued)

```
Request to TEST INSV MS: 0 Shelf:0 Card:2
submitted. Request to TEST INSV MS: 0 Shelf:0
Card:2 passed. Request to TEST INSV MS: 1 Shelf:0
Card:2 submitted. Request to TEST INSV MS: 1
Shelf:0 Card:2 passed.
Request to Synchronize clock 0: submitted.
Request to Synchronize clock 0: passed.
Clock synchronization started ...
```

If the in-service test	Do
passed, and the response is `Clock synchronization started ...`	step 13
passed with `Istb`, the system generated a card list, and the response is `Clock synchronization started ...`	step 13
passed or passed with `Istb`, the response is `Request to Synchronize Clock 0: failed`, and an error response returns	step 17
passed, and the responses are `Warning: Master clock has a faulty remote` and `Clock synchronization started ...`	step 12
failed, the response is `Request to Synchronize Clock 0: failed`, and an error response returns	step 17
failed, and the system generated a card list	step 24

12 To determine if the Rem alarm is present, type

>QUERYCK

and press the Enter key.

Note: A Rem alarm appears on the right of the MS0 or MS1 Clock Alarms header.

Example of a MAP response:

Failure to switch clock mastership (continued)

```
Office SYNC state = LKng
Clock type = Stratum 2.5
Office configuration = Master External Office
External Frequency = fl0000
External Select = Analog
External Termination = 50ohm
External Alarm = Minor
Master Clock = MS0
Remote Clock Configuration = reference
MS0 Clock Alarms: none
MS1 Clock Alarms: Rem
```

If the Rem alarm	Do
is present	step 24
is not present	step 14

13 To access the clock status information, type

>QUERYCK

and press the Enter key.

Example of a MAP response:

```
Office SYNC state = LKng
Clock type = Stratum 2.5
Office configuration = Master External Office
External Frequency = fl0000
External Select = Analog
External Termination = 50ohm
External Alarm = Minor
Master Clock = MS0
Remote Clock Configuration = reference
MS0 Clock Alarms: none
MS1 Clock Alarms: Rem
```

14 Determine the office sync state of the clocks.

If the office sync state	Do
is LKng	step 15
is Sync	step 21
is Free	step 24

15 Wait for the clock to synchronize with the timing source. Continue the procedure.

Note: Allow 2 h for the clock to synchronize with the timing source.

Failure to switch clock mastership (continued)

16 To determine if the clocks synchronize, type

>QUERYCK

and press the Enter key.

If the office sync state	Do
is Sync	step 21
is LKng	step 24
is Free	step 24

17 Your next step depends on the error response that the system generated.

If the error response	Do
is Currently no master clock. Reattempt command in 10 seconds	step 18
is Clock is already syncing	step 19
is Clock must be Free running in Master-Internal Offices	step 24
is Data mismatch between the CM and MS 0/1	step 24
is Master clock has no remote reference	step 24
is Carriers are not inservice	step 24
is No external reference link available	step 24
is Master stratum1 alarm 0/1 present and SYNCLK table EXTALARM MAJOR	step 24

18 Wait 10 s, and continue the procedure.

Go to step 11.

19 Wait for the clock to synchronize with the timing source. Continue this procedure.

Note: Allow 2 h for the clock to synchronize with the timing source.

20 To determine if the clocks are synchronized, type

>QUERYCK

Failure to switch clock mastership (end)

and press the Enter key.

If the office sync state	Do
`is Sync`	step 21
`is LKng`	step 24
`is Free`	step 24

21 To switch clock mastership, type

`>SWMAST`

and press the Enter key.

Example of a MAP response:

```
Request to Switch Clock Mastership MS: 0 submitted.
Request to Switch Clock Mastership MS: 0 passed.
```

If the SWMAST command	Do
passed	step 25
failed	step 24

22 Perform the procedure *Clearing an MS CLOCK major alarm* in *Alarm and Performance Monitoring Procedures.*

23 Perform the procedure *Clearing an MS SysB major alarm* in *Alarm and Performance Monitoring Procedures.*

24 For additional help, contact the next level of support.

25 Return to the maintenance procedure that sent you to this procedure and continue as directed.

Loading a PM

Application

Use this procedure to load a peripheral module (PM) following a LOADPM command failure for the following peripherals:

- application processor unit (APU)
- CCS6 and CCS7 message switch and buffer (MSB6 and MSB7)
- CCS7 link interface unit (LIU7)
- CCS7 multiple link interface unit (MLIU)
- CLASS modem resource (CMR)
- D-channel handler (DCH)
- digital carrier module (DCM)
- Ethernet interface unit (EIU)
- frame relay interface unit (FRIU)
- high-speed link interface unit (HLIU)
- high-speed link router (HSLR)
- host XPMs
- integrated service modules (ISM)
- line concentrating module (LCM)
- line module (LM)
- maintenance trunk modules (MTM)
- metallic test unit (MTU)
- network interface unit (NIU)
- office alarm unit (OAU)
- service trunk modules (STM)
- signaling terminal (ST)
- trunk module (TM)
- voice processor unit (VPU)
- X.25 link interface unit (XLIU)

Perform this procedure when the LOADPM command in a card replacement procedure fails. Post the peripheral before starting this procedure.

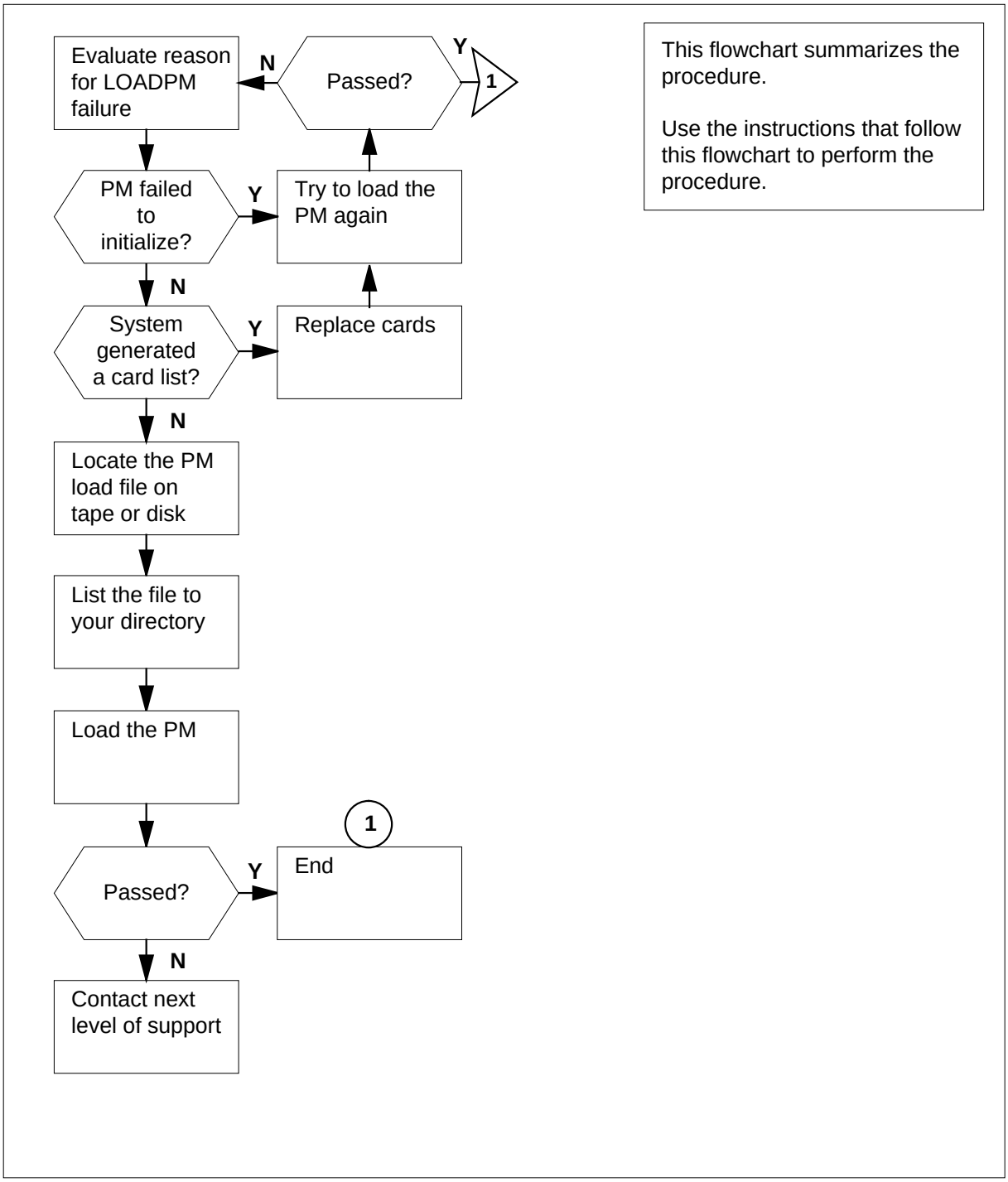
Loading a PM (continued)

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Loading a PM (continued)

Summary of Loading a PM



Loading a PM

At the MAP terminal

1

CAUTION
Loss of service
Make sure that you proceed only if a step in a maintenance procedure directed you. If you use this procedure separately without permission, a loss of service to in-service PMs can occur. This loss of service affects subscriber service.

Determine why the load failed.

If the load failed and	Do
the MAP response is `PM failed to initialize`	step 24
the system generated a card list	step 2
the MAP response is `Load file not in directory`	step 4
the MAP response is `Load LRS06BF is meant for an 8-meg processor. LIU7 100 has been datafilled with a 32-meg processor. Loadpm LRS06BF aborted. (LIU7s only)`	step 21
the MAP response is other than listed here	step 34

Note: Where the link interface unit is an MLIU, MLIU is shown in the MAP display in place of LIU7.

2 Record the locations and product equipment codes, including suffixes, of the cards on the card list.

3 To change the first card on the list, perform the correct procedure in this document. Complete the procedure and return to this point.

Go to step 24.

4 Determine the type of device that contains the PM load files.

If load files	Do
are on a tape	step 5

Loading a PM (continued)

If load files	Do
are on an input/output controller (IOC) disk	step 11
are on a system load module (SLM) disk	step 18

5 Locate the tape that contains the PM load files.

At the IOE frame

6 Mount the tape on a magnetic tape drive.

At the MAP terminal

7 To download the tape, type

`>MOUNT tape_no`

and press the Enter key.

where

tape_no
is the number of the tape drive that contains the PM load files

8 To list the contents of the tape in your user directory, type

`>LIST T tape_no`

and press the Enter key.

where

tape_no
is the tape drive number

9 To demount the tape, type

`>DEMOUNT T tape_no`

and press the Enter key.

where

tape_no
is the tape drive number

10 Remove the tape from the magnetic tape drive.

Go to step 24.

11 From office records or operating company personnel, determine and note the number of the IOC disk. Determine and note the number of the volume that contains the PM load files.

12 To access the disk utility, type

`>DSKUT`

and press the Enter key.

Loading a PM (continued)

13 The next action depends if you know the volume name that stores the load file.

If you	Do
know the volume name	step 16
do not know the volume name	step 14

14 To query the PM to obtain the name of the load file datafilled for the PM, type

>QUERYPM

and press the Enter key.

Example of a MAP response:

```
PM Type: DTC  PM No.: 1  PM Int. No.: 0  Node_No.: 93
PMs Equipped: 70  Loadname: ED703BX  EEPRom Load: MX77NB05
WARM SWACT is supported and available.
DTC 1 is included in the REX schedule.
REX on DTC 1 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Inact, Status: {OK, FALSE}
Unit 1   Act, Status: {OK, FALSE}
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  00  D04  DTE   00  51  DTC : 001            6X02P2
```

15 To list the volumes on the disk, type

>DISPLAYVOLS disk_no

and press the Enter key.

where

disk_no
is the number of the disk (0 to 9)

16 To list file names for a specified volume into your user directory, type

>LISTVOL vol_name

and press the Enter key.

where

vol_name
is the name of the volume that contains the PM load files

Note: If you are searching for the file, use the LISTVOL command on each volume until you find the file that you require.

17 To exit the disk utility, type

>QUIT

and press the Enter key.

Go to step 24.

18 To access the disk utility, type

>DISKUT

Loading a PM (continued)

and press the Enter key.

19 To list the SLM file names into your user directory, type

>LISTFL vol_name

and press the Enter key.

where

vol_name
is the name of the volume that contains the PM load files

Example of a MAP response:

```
File information for volume S00DIMAGE1:
{NOTE:  1 BLOCK = 512 BYTES }
-------------------------------------------------------------------
 LAST FILE O R I O     FILE    NUM OF   MAX    FILE NAME
 MODIFY CODE R E T P     SIZE    RECORDS   REC
 DATE      G C O E       IN       IN   LEN
           C N   BLOCKS       FILE
-------------------------------------------------------------------
930215    0 I F      12744      6372  1020 930215_CM
930215    0 I F     188180     94090  1020 930215_MS
930212    0 O F      13460      6730  1020 APX35CG
930212    0 O F       7154      3577  1020 ERS35CG
930216    0 O F      33936     16968  1020 FPX35CG
930216    0 O F       5334      2667  1020 LRC35CG
930215    0 O F       5334      2667  1020 LCC35CG
930129    0 O F         12        24   256 ASN1UI$LD
920109    0 I F       5464      2732  1020 LRS35CD
930212    0 I F       9104      4552  1020 LPX35CG
930212    0 I F      13432      7160  1024 930212_CM
930212    0 I F     189272     93136  1024 930212_MS
```

20 To exit the disk utility, type

>QUIT

and press the Enter key.

21 To access table LIUINV, type

>TABLE LIUINV

and press the Enter key.

Example of a MAP response:
Table: LIUINV

22 To display all tuples in LIUINV, type

>LIS ALL

and press the Enter key.

Example of a MAP response:

Loading a PM (continued)

```
TOP
 LIUNAME      LOCATION     LOAD          PROCINFO
                                                        CARDINFO
------------------------------------------------------------
LIU7 119   LIM  0 2  9  LRC36BY         NTEX22BB
                       NT9X76CA NT9X78CA     FBUS 56000    NIL
XLIU 121   LIM  0 2 12  XRX35CQ         NTEX22BB
                                            NTFX10AA NTFX09AA
XLIU 122   LIM  0 2 15  XRX35CQ         NTEX22BB
                                            NTFX10AA NTFX09AA
```

Note: Where the link interface unit is an MLIU, MLIU is shown in the MAP display in place of LIU7.

23 Make sure that the loadsize matches the processor size.

If the loadsize	Do
matches the processor size	step 24
does not match the processor size	step 34

24 The next action depends on the type of PM you work with.

If the LOADPM command	Do
applies to a single-unit PM	step 25
applies to an MTU	step 25
applies to a dual-unit PM	step 26
applies to a D-channel handler (DCH) card	step 25
applies to a CLASS modem resource (CMR) card	step 27
applies to a signaling terminal (ST) card	step 28

25 To load the PM, type

>LOADPM

and press the Enter key.

If the LOADPM command	Do
passed	step 35
failed, and the reason is different from the first time LOADPM failed	step 1

Loading a PM (continued)

If the LOADPM command	Do
failed, and the reason is the same as the first time LOADPM failed	step 34
failed, and you did not replace all the cards recorded in step 2	step 33
failed, and you replaced all the cards recorded in step 2	step 34

26 To load the PM unit, type

>LOADPM UNIT unit_no

and press the Enter key.

where

unit_no
is the PM unit number (0 or 1)

If the LOADPM command	Do
passed	step 35
failed, and the reason is different from the first time LOADPM failed	step 1
failed, and the reason is the same as the first time LOADPM failed	step 34
failed, and you did not replace all the cards recorded in step 2	step 33
failed, and you replaced all the cards recorded in step 2	step 34

27 To load the CLASS modem resource (CMR) card, type

>LOADPM UNIT unit_no CMR

and press the Enter key.

where

unit_no
is the number of the PM unit (0 or 1) that contains the CMR card

If the LOADPM command	Do
passed	step 35
failed, and the reason is different from the first time LOADPM failed	step 1

Loading a PM (continued)

If the LOADPM command	Do
failed, and the reason is the same as the first time LOADPM failed	step 34
failed, and you did not replace all the cards you recorded in step 2	step 33
failed, and you replaced all the cards you recorded in step 2	step 34

28 To access the STC level of the MAP display, type

>PM;STC

and press the Enter key.

Example of a MAP display:

```
SysB   ManB   OffL   CBsy   ISTb   InSv
 PM            12     0      2      0     13     24
 MSB7           0     0      0      0      1      2

MSB7   0 ISTb  Links_OOS: CSide  0 , PSide  0
Unit0:  Inact ManB
Unit1:  Act   InSv

STC            0      1      0      0      0     20
```

29 To post the STCM or ST7G, type

>POST stcm_no

and press the Enter key.

where

stcm_no
is the STCM number (0 to 9)

Example of a MAP display:

Loading a PM (continued)

```
SysB   ManB   OffL   CBsy   ISTb   InSv
 PM            12     0      2      0     13     24
 MSB7           0     0      0      0      1      2

MSB7   1 ISTb  Links_OOS: CSide  0 , PSide  0
Unit0:  Inact ManB
Unit1:  Act   InSv

STC             0      1      0      0      0     20

STC  301   STCM  0    Ctrl  0    Bd    ManB  Diag        Mtce
```

If the ST	Do
appears	step 32
does not appear	step 30

30 To display the next ST in the posted set, type

>NEXT

and press the Enter key.

If the ST	Do
appears	step 32
does not appear	step 31

31 Repeat step 30 until the ST appears in the posted set.

32 To load the ST, type

>LOADPM

and press the Enter key.

If the LOADPM command	Do
passed	step 35
failed, and the reason is different from the first time LOADPM failed	step 1
failed, and the reason is the same as the first time LOADPM failed	step 34
failed, and you did not replace all the cards listed in step 2	step 33
failed, and you replaced all the cards listed in step 2	step 34

Loading a PM (end)

33 To replace the next card on the list that you recorded in step 2, perform the correct procedure in this document. Complete the procedure and return to this point.

Go to step 24.

34 For additional help, contact the next level of support.

35 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Manually busying LIM-to-MS DS30 links

Application

Use this procedure to manually busy DS30 links between a link interface module (LIM) unit and the message switch (MS). You must perform this procedure before you replace an NT9X17 or NT9X23 card in the LIM unit.

Before you use this procedure, the LIM is posted and available for query. This procedure instructs you to post the LIM again. You must know the particular location of the MS port card you want to change on the LIM.

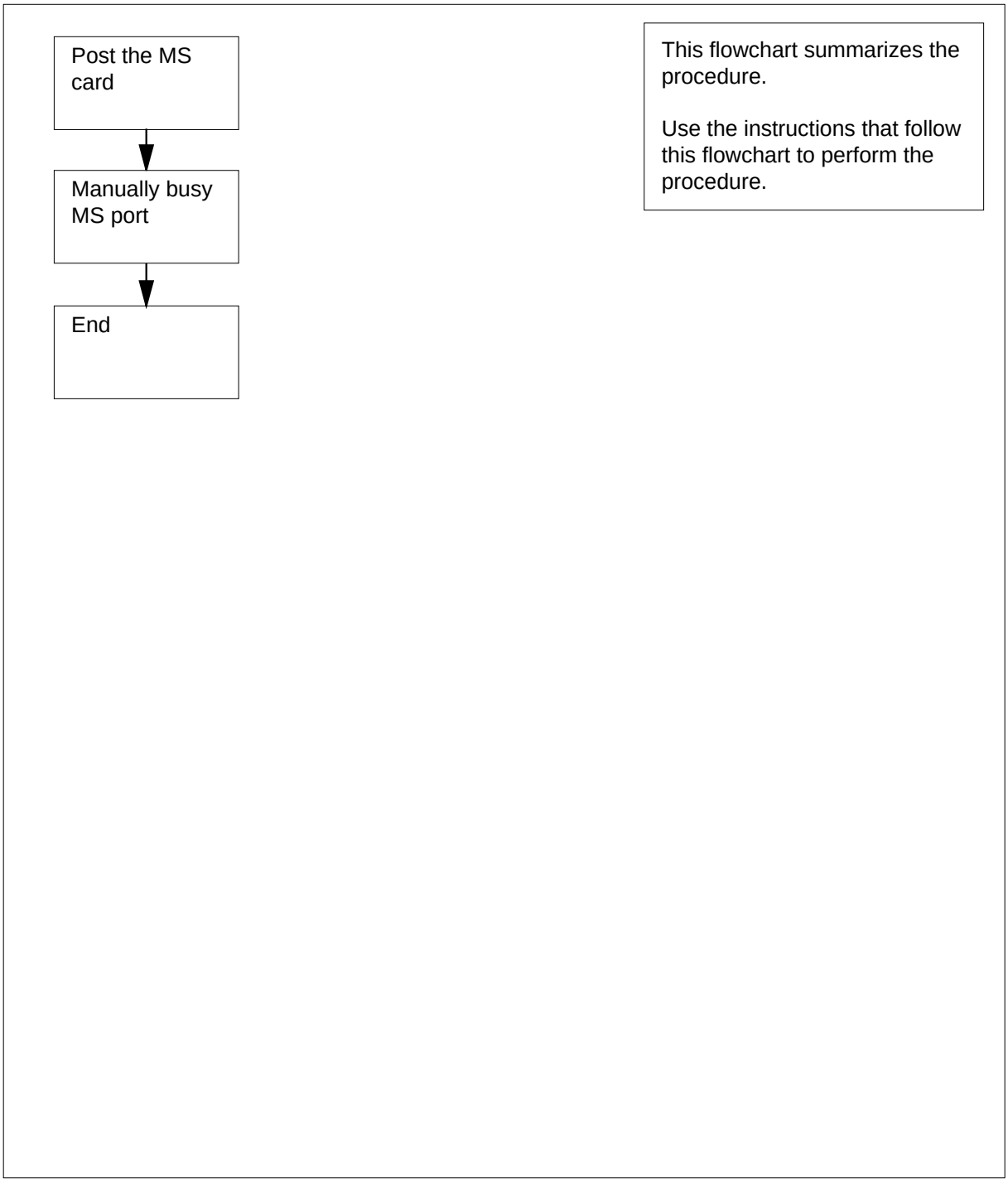
Note: Manually busy only the DS30 links associated with an NT9X17 or NT9X23 card in the LIM unit. The other DS30 links associated with the LIM unit must remain in service.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Manually busying LIM-to-MS DS30 links (continued)

Summary of Manually busying LIM-to-MS DS30 links



Manually busying LIM-to-MS DS30 links (continued)

Manually busying LIM-to-MS DS30 links

CAUTION
Potential loss of service
Proceed only if a step in a maintenance procedure directed you to this procedure. This procedure removes LIM-to-MS DS30 links from service. Loss of service can occur.

At the MAP Terminal

1 To display information about the DS30 links between the LIM unit that contains the card you want to replace and the MS, type

`>TRNSL unit_no`

and press the Enter key.

where

unit_no
is the number of the LIM unit (0 or 1)

Example of a MAP response:

```
LIM 0 UNIT 0 LINK 0 (  9:0 - MS  1:20:0 ) Open
LIM 0 UNIT 0 LINK 1 (  9:1 - MS  0:20:0 ) Open
LIM 0 UNIT 0 LINK 2 (  9:2 - LIM 0:30:2 ) Open
LIM 0 UNIT 0 LINK 3 is unequipped.
LIM 0 UNIT 0 LINK 4 ( 10:0 - MS  0:21:0 ) Open
LIM 0 UNIT 0 LINK 5 ( 10:1 - MS  1:21:0 ) Open
LIM 0 UNIT 0 LINK 6 ( 10:2 - LIM 0:29:2 ) Open
LIM 0 UNIT 0 LINK 7 is unequipped.
```

Note: In this example response, 9:0 refers to slot number 9 and port number 0 on the LIM side of the connection. MS 1:20:0 refers to MS number 1, card 20, and port number 0 that the link connects to in the MS.

2 From the response that you obtained in step 1, record the MS number, MS card number, and MS port number. You must record these numbers for each LIM-to-MS link associated with the card you want to replace.

Note: Each MS port card for the LIM unit supports two LIM-to-MS links.

3 To access the SHELF level of the MAP display, type

`>MS;SHELF 0`

and press the Enter key.

Example of a MAP display:

Manually busying LIM-to-MS DS30 links (continued)

```
 Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0       .          Master          .                      - -
MS 1       .          Slave           .                      - -

Shelf 0                  1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . . - - - - - - - - - - - - - - - . . . . . . . .
MS 1  . . . . . - - - - - - - - - - - - - - - . . . . . . . .
```

4 To post the MS card number of the first DS30 link that you recorded in step 2, type

>CARD card_no

and press the Enter key.

where

card_no
is the card number (1 to 26) of the first link that you recorded in step 2

Example of a MAP response:

```
 Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0       .          Master          .                      - -
MS 1       .          Slave           .                      - -

Shelf 0                  1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . . - - - - - - - - - - - - - - - . . . . . . . .
MS 1  . . . . . - - - - - - - - - - - - - - - . . . . . . . .

Card 20 Protocol Port  0_____3
MS 0  .   DS30     4   . - . .
MS 1  .   DS30     4   . - . .
```

5 To manually busy the MS port for the first DS30 link that you recorded in step 2, type

>BSY ms_no PORT port_no

and press the Enter key.

where

ms_no
is the MS number (0 or 1) of the first link that you recorded in step 2

port_no
is the MS port number (0 to 3) of the first link that you recorded in step 2

Example of a MAP response:

Manually busying LIM-to-MS DS30 links (continued)

```
Request to MAN BUSY MS: 1 shelf: 0 card:20 port:  0
submitted.
Request to MAN BUSY MS: 1 shelf: 0 card:20 port:  0 passed.
```

If the BSY command	Do
passed	step 6
failed	step 11

6 Determine the card number of the second DS30 link that you recorded in step 2.

If the second DS30 link	Do
is on the same MS card as the first link	step 7
is not on the same MS card as the first link	step 8

7 To manually busy the MS port for the second DS30 link, type

>BSY ms_no PORT port_no

and press the Enter key.

where

ms_no
is the MS number (0 or 1) of the second link that you recordedin step 2

port_no
is the MS port number (0 to 3) of the second link that yourecorded in step 2

If the BSY command	Do
passed	step 10
failed	step 11

8 To post the MS card number of the second DS30 link that you recorded in step 2, type

>CARD card_no

and press the Enter key.

where

card_no
is the card number (1 to 26) of the second link that yourecorded in step 2

9 To manually busy the MS port for the second DS30 link, type

>BSY ms_no PORT port_no

and press the Enter key.

Manually busying LIM-to-MS DS30 links (end)

where

ms_no
is the MS number (0 or 1) of the second link that you recordedin step 2

port_no
is the MS port number (0 to 3) of the second link that yourecorded in step 2

If the BSY command	Do
passed	step 10
failed	step 11

10 To post the LIM that contains the card you want to replace, type

>PM;POST LIM lim_no

and press the Enter key.

where

lim_no
is the number of the LIM (0 to 16)

Example of a MAP display:

```
LIM  0 InSv
                    Links_OOS Taps_OOS
Unit0: InSv             2         .
Unit1: InSv             .         .
```

Go to step 12.

11 For additional help, contact the next level of support.

12 The procedure is complete. Return to the main procedure that sent you to this procedure. Continue as directed by the main procedure.

Manually busying Series II PM and CPM C-side links

Application

Use this procedure to remove from service C-side links between an XPM and the network. Use this procedure for junctored networks (JNET) and enhanced networks (ENET).

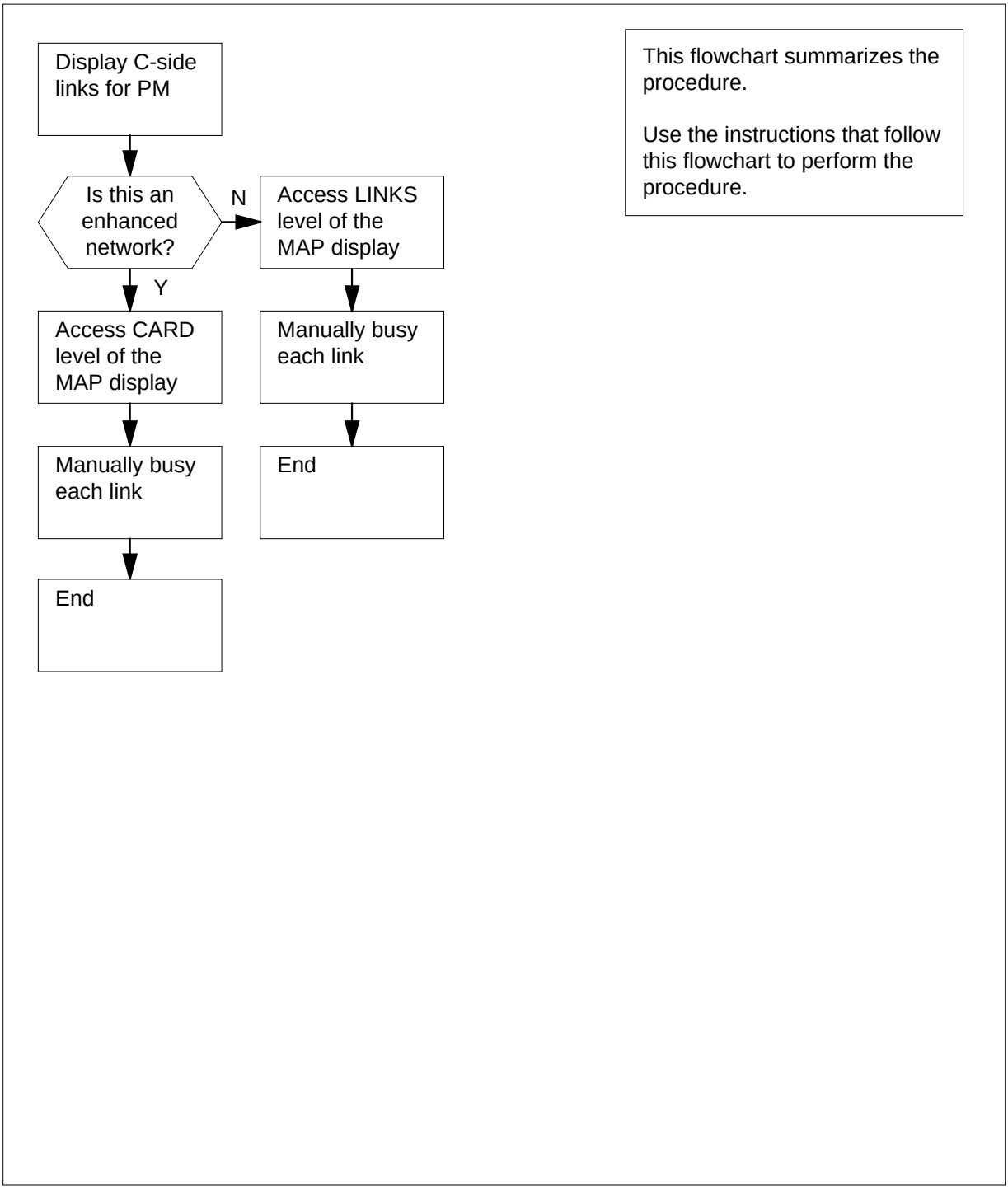
You must post the PM and make the PM available for query. Instructions in the main procedure direct you to post the PM again after you complete this common procedure.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Manually busying Series II PM and CPM C-side links (continued)

Summary of Manually busying Series II PM and CPM C-side links



Manually busying Series II PM and CPM C-side links (continued)

Manually busying Series II PM and CPM C-side links

WARNING
Loss of service.
Proceed only when a step in a maintenance procedure directs you. This procedure removes from service C-side links between the Series II PM and the network. The system can drop calls.

At the MAP terminal

1 To display a list of C-side links, type

>TRNSL C

and press the Enter key.

Example #1 of a MAP response:

```
Link  0: NET 0  1 18;Cap MS;Status:OK    ;MsgCond:OPN,Unrestrict
Link  1: NET 1  1 18;Cap MS;Status:OK    ;MsgCond:OPN,Unrestrict
Link  2: NET 0  1 22;Cap  S;Status:OK
Link  3: NET 1  1 22;Cap  S;Status:OK
Link  4: NET 0  1 26;Cap MS;Status:OK    ;MsgCond:OPN,Restrict
Link  5: NET 1  1 26;Cap MS;Status:OK    ;MsgCond:OPN,Restrict
Link  6: NET 0  1 30;Cap  S;Status:OK
Link  7: NET 1  1 30;Cap  S;Status:OK
```

Example #2 of a MAP response:

```
Link  0: ENET 0  0 32 01  0;Cap MS;Status:OK    ;MsgCond:OPN,Restrict
Link  1: ENET 1  0 32 01  0;Cap MS;Status:OK    ;MsgCond:OPN,Restrict
Link  2: ENET 0  0 32 01  1;Cap  S;Status:OK
Link  3: ENET 1  0 32 01  1;Cap  S;Status:OK
Link  4: ENET 0  0 32 01  2;Cap MS;Status:OK    ;MsgCond:OPN,Unrestrict
Link  5: ENET 1  0 32 01  2;Cap MS;Status:OK    ;MsgCond:OPN,Unrestrict
Link  6: ENET 0  0 32 01  3;Cap  S;Status:OK
Link  7: ENET 1  0 32 01  3;Cap  S;Status:OK
```

If the network	Do
is a junctor network (JNET)	step 2
is an enhanced network (ENET)	step 7

2 Record the network plane, pair, and link for each C-side link for the XPM shelf associated with the card that you replace.

Note 1: The NT6X40AA DS-30 C-side interface card supports eight C-side links per card, with two cards at each PM unit. All other NT6X40 versions support 16 ports. Manually busy links to a single NT6X40AA in slot 22 or 23 for XPMs and slots 23 or 24 for MSBs. Use table in this procedure to identify the links to record and manually busy.

Manually busying Series II PM and CPM C-side links (continued)

Note 2: C-side links for network plane 0 connect to the shelf for PM unit 0. The C-side links for network plane 1 connect to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 3: The network plane, pair, and link are in three columns. These columns are 4, 5, and 6 of the response to a TRNSL command at the PM level. *Example #1 of a MAP response* in step 1 demonstrates this response . For example, C-side link 7 is on network plane 1, pair 1, link 30.

3 To access the NET level of the MAP display, type

>NET

and press the Enter key.

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
Plane  01234  56789  01234  56789  01234  56789  01
   0    L..
   1    ...
```

4 To access the LINKS level of the MAP display, type

>LINKS pair_no

and press the Enter key.

where

pair_no
is the number of the pair (0 to 31) that connect to the XPM C-side links

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
 Plane  01234  56789  01234  56789  01234  56789  01
    0    L..
    1    ...
Net   1  Links                11  1111  1111  2222  2222  2233
       Plane   0123  4567  8901  2345  6789  0123  4567  8901
         0     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
         1     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
        Links  3333  3333  4444  4444  4455  5555  5555  6666
       Plane   2345  6789  0123  4567  8901  2345  6789  0123
         0     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
         1     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
```

5 To busy one of the links you recorded in step 2, type

>BSY plane_no link_no

and press the Enter key.

where

plane_no
is the number of the plane for the link (0 or 1)

link_no
is the link number (0 to 63)

Example of a MAP response:

Manually busying Series II PM and CPM C-side links (continued)

```
BSY 0 30
OK
```

6 Repeat step 5 for all C-side links for the XPM unit.

Go to step 13.

7 Record the network plane, shelf, card, and link for the C-side links for the XPM shelf associated with the card that you replace.

Note 1: The NT6X40AA DS-30 C-side interface card supports eight C-side links for each card, with two cards at each PM unit. All other NT6X40 versions support 16 ports. Manually busy links to a single NT6X40AA in slot 22 or 23 for XPMs and slot 23 or 24 for MSBs. Use table in this procedure to identify the links to record and manually busy.

Note 2: C-side links for network plane 0 connect to the shelf for PM unit 0. C-side links for network plane 1 connect to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 3: The network plane, shelf, card, and link are in three columns. These columns are 4, 5, 6, and 7 of the response to a TRNSL command at the PM level. *Example #2 of a MAP response* in step 1 demonstrates this response. For example, C-side link 7 is on network plane 1, shelf 0, card 32, and link 1.

8 To access the NET level of the MAP display, type

`>NET`

and press the Enter key.

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
Plane 0 CSLink     .           F - - -
Plane 1 CSLink     .           F - - -ENET:
```

9 To access the SHELF level of the MAP display, type

`>SHELF  shelf_no`

and press the Enter key.

where

shelf_no
is the number of the shelf (0 to 7) that connects to the XPM C-side links

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
  Plane 0 CSLink     .           F - - -
  Plane 1 CSLink     .           F - - -

SHELF 00  Slot         1111111 11122222 22222333 333333
           123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF ....---- -------- ----.... .  .
Plane 1    .  .   IF ....---- -------- ----.... .  .
```

Manually busying Series II PM and CPM C-side links (continued)

10 To access the CARD level of the MAP display, type

>CARD card_no

and press the Enter key.

where

card_no
is the number of the card (1 to 38) that connects to the XPM C-side links

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
 Plane 0 CSLink     .           F - - -
 Plane 1 CSLink     .           F - - -

SHELF 00  Slot         1111111 11122222 22222333 333333
             123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF ........ -------- ---.... .  .
Plane 1    .  .   IF ........ -------- ---.... .  .

CARD 32   Front:     Back:   DS-512 Links
          Xpt        I/F    0 1 2 3
Plane 0    .          .     . . . -
Plane 1    .          .     . . . -
```

11 To busy the link you recorded in step 7, type

>BSY plane_no LINK link_no

and press the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 18 for DS512) or (0 to 15 for DS30)

Example of a MAP response:

```
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.
```

If	Do
the links are DS-30s and you have not manually busied all links	step 12
the links are DS-30s and you have manually busied all links	step 13
the link is a DS-512	step 13

12 Repeat step 11 for each DS-30 link you recorded in step 7.

Manually busying Series II PM and CPM C-side links (end)

13 The procedure is complete. Return to the main procedure that sent you to this procedure and continue as directed.

Port to link correlation for NT6X40 cards in MSB and XPM

6X40 port	MSB slot	XPM slot	trnsl link	Net plane	6X40 port	MSB slot	XPM slot	trnsl link	Net plane
0	23	22	0	0	8	23	22	16	0
0	23	22	1	1	8	23	22	17	1
1	23	22	2	0	9	23	22	18	0
1	23	22	3	1	9	23	22	19	1
2	24	23	4	0	10	24	23	20	0
2	24	23	5	1	10	24	23	21	1
3	24	23	6	0	11	24	23	22	0
3	24	23	7	1	11	24	23	23	1
4	23	22	8	0	12	23	22	24	0
4	23	22	9	1	12	23	22	25	1
5	23	22	10	0	13	23	22	26	0
5	23	22	11	1	13	23	22	27	1
6	24	23	12	0	14	24	23	28	0
6	24	23	13	1	14	24	23	29	1
7	24	23	14	0	15	24	23	30	0
7	24	23	15	1	15	24	23	31	1

Note: The trnsl link corresponds to the listing obtained through the TRNSL C command. The network plane number corresponds to the PM unit number.

Manually busying SMA C-side links

Application

Use this procedure to remove from service C-side links between an XPM and the network. This procedure is used for both junctored networks (JNET) and enhanced networks (ENET).

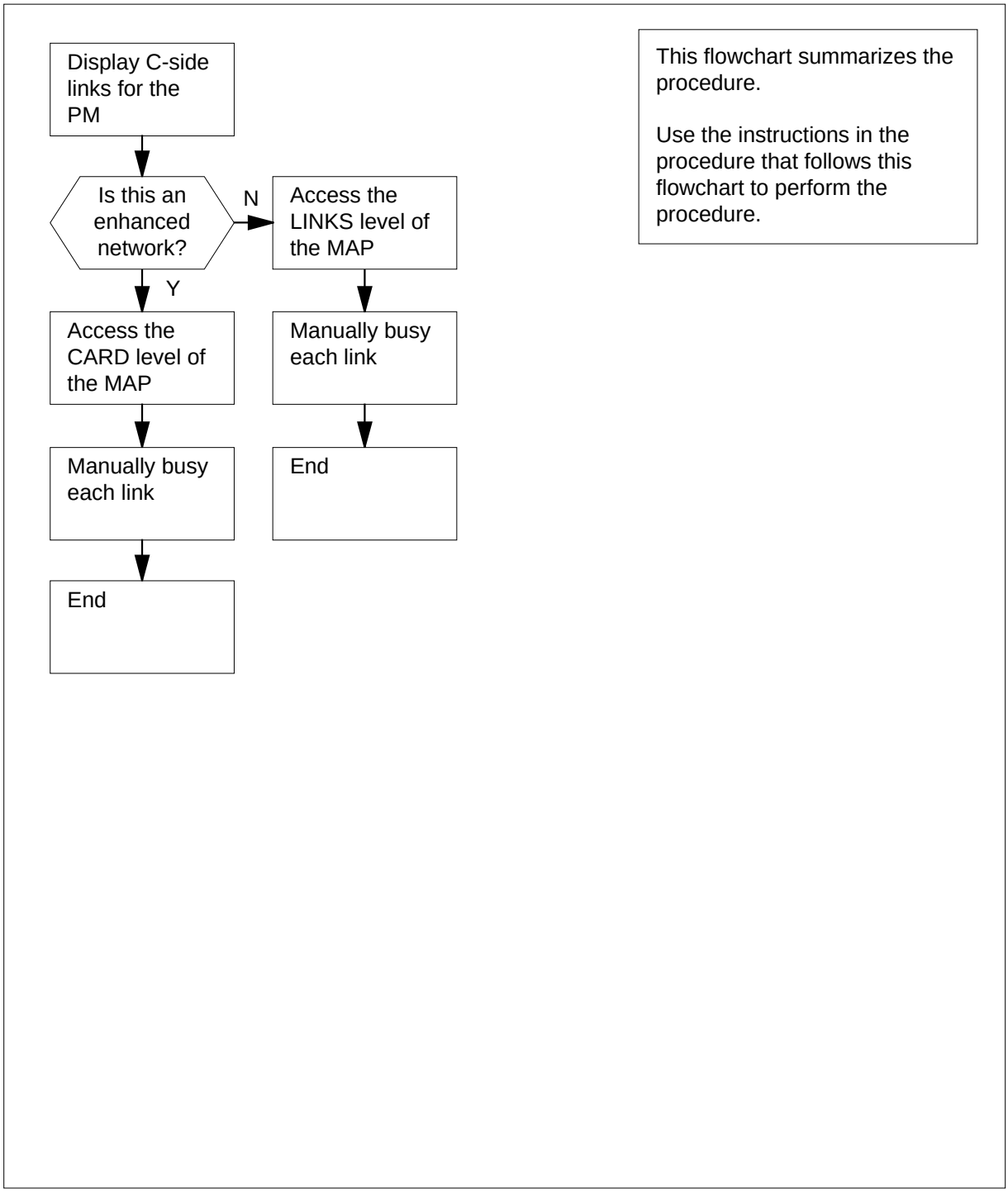
This procedure assumes that the PM is posted and available for query. Instructions in the main procedure direct you to re-post the PM after you have completed this common procedure.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Manually busying SMA C-side links (continued)

Summary of Manually busying SMA C-side links



Manually busying SMA C-side links (continued)

Manually busying SMA C-side links

CAUTION
Loss of service.
Proceed only if you have been directed here from a step in a maintenance procedure. This procedure removes from service C-side links between the Series II PM and the network. Calls may be dropped.

At the MAP terminal

1 Display a list of C-side links by typing

>TRNSL C

and pressing the Enter key.

Example #1 of a MAP response:

```
Link  0: NET 0  1 18;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  1: NET 1  1 18;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  2: NET 0  1 22;Cap  S;Status:OK
Link  3: NET 1  1 22;Cap  S;Status:OK
Link  4: NET 0  1 26;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  5: NET 1  1 26;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  6: NET 0  1 30;Cap  S;Status:OK
Link  7: NET 1  1 30;Cap  S;Status:OK
```

Example #2 of a MAP response:

```
Link  0: ENET 0  0 32 01  0;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  1: ENET 1  0 32 01  0;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  2: ENET 0  0 32 01  1;Cap  S;Status:OK
Link  3: ENET 1  0 32 01  1;Cap  S;Status:OK
Link  4: ENET 0  0 32 01  2;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  5: ENET 1  0 32 01  2;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  6: ENET 0  0 32 01  3;Cap  S;Status:OK
Link  7: ENET 1  0 32 01  3;Cap  S;Status:OK
```

If the network is a	Do
junctor network (JNET)	step 2
enhanced network (ENET)	step 7

2 Record the network plane, pair, and link for each C-side link for the XPM shelf associated with the card you are replacing.

Note 1: C-side links for network plane 0 are connected to the shelf for PM unit 0; C-side links for network plane 1 are connected to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 2: The network plane, pair, and link are listed in columns 4, 5, and 6 of the response to a TRNSL command at the PM level, as shown in

Manually busying SMA C-side links (continued)

Example #1 of a MAP response: in step 1. For example, C-side link 7 is on network plane 1, pair 1, link 30.

3 Access the NET level of the MAP display by typing

>NET

and pressing the Enter key.

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
Plane  01234  56789  01234  56789  01234  56789  01
    0    L..
    1    ...
```

4 Access the LINKS level of the MAP display by typing

>LINKS pair_no

and pressing the Enter key.

where

pair_no
is the number of the pair (0 to 31) to which the XPM C-side links areconnected

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
 Plane  01234  56789  01234  56789  01234  56789  01
   0    L..
   1    ...
Net   1  Links                11  1111  1111  2222  2222  2233
       Plane   0123  4567  8901  2345  6789  0123  4567  8901
         0     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
         1     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
        Links  3333  3333  4444  4444  4455  5555  5555  6666
       Plane   2345  6789  0123  4567  8901  2345  6789  0123
         0     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
         1     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
```

5 Busy one of the links you recorded in step 2 by typing

>BSY plane_no link_no

and pressing the Enter key.

where

plane_no
is the number of the plane for the link (0 or 1)

link_no
is the link number (0 to 63)

Example of a MAP response:

```
BSY 0 30
OK
```

6 Repeat step 5 for all C-side links for the XPM unit you are working on.

Manually busying SMA C-side links (continued)

Go to step 13.

7 Record the network plane, shelf, card, and link for the C-side links for the XPM shelf associated with the card you are replacing.

Note 1: C-side links for network plane 0 are connected to the shelf for PM unit 0; C-side links for network plane 1 are connected to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 2: The network plane, shelf, card, and link are listed in columns 4, 5, 6, and 7 of the response to a TRNSL command at the PM level, as shown in *Example #2 of a MAP response:* in step 1. For example, C-side link 7 is on network plane 1, shelf 0, card 32, and link 1.

8 Access the NET level of the MAP display by typing

>NET

and pressing the Enter key.

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
  Plane 0 CSLink     .           F - - -
  Plane 1 CSLink     .           F - - -ENET:
```

9 Access the SHELF level of the MAP display by typing

>SHELF shelf_no

and pressing the Enter key.

where

shelf_no
is the number of the shelf (0 to 7) to which the XPM C-side links areconnected

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
  Plane 0 CSw        .           F - - -
  Plane 1 CSLink     .           F - - -

SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF ...---- -------- ---.... .  .
Plane 1    .  .   IF ...---- -------- ---.... .  .
```

10 Access the CARD level of the MAP display by typing

>CARD card_no

and pressing the Enter key.

where

card_no
is the number of the card (1 to 38) to which the XPM C-side links areconnected

Example of a MAP display:

Manually busying SMA C-side links (end)

```
ENET     System   Matrix  Shelf 0 1 2 3
 Plane 0 CSLink     .           F - - -
 Plane 1 CSLink     .           F - - -

SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF ....---- -------- ----.... .  .
Plane 1    .  .   IF ....---- -------- ----.... .  .

 CARD 32   Front:     Back:   DS-512 Links
           Xpt        I/F    0 1 2 3
 Plane 0    .          .     . . . -
 Plane 1    .          .     . . . -
```

11 Busy the link you recorded in step 7 by typing

>BSY plane_no LINK link_no

and pressing the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 18 for DS512) or (0 to 15 for DS30)

Example of a MAP response:

```
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.
```

If	Do
the links are DS30s and you have not manually busied all links	step 12
the links are DS30s and you have manually busied all links	step 13
the link is a DS512	step 13

12 Repeat step 11 for each DS30 link recorded in step 7.

13 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

Manually busying SMA2 C-side links

Application

Use this procedure to remove from service C-side links between an XPM and the network. This procedure is used for both junctored networks (JNET) and enhanced networks (ENET).

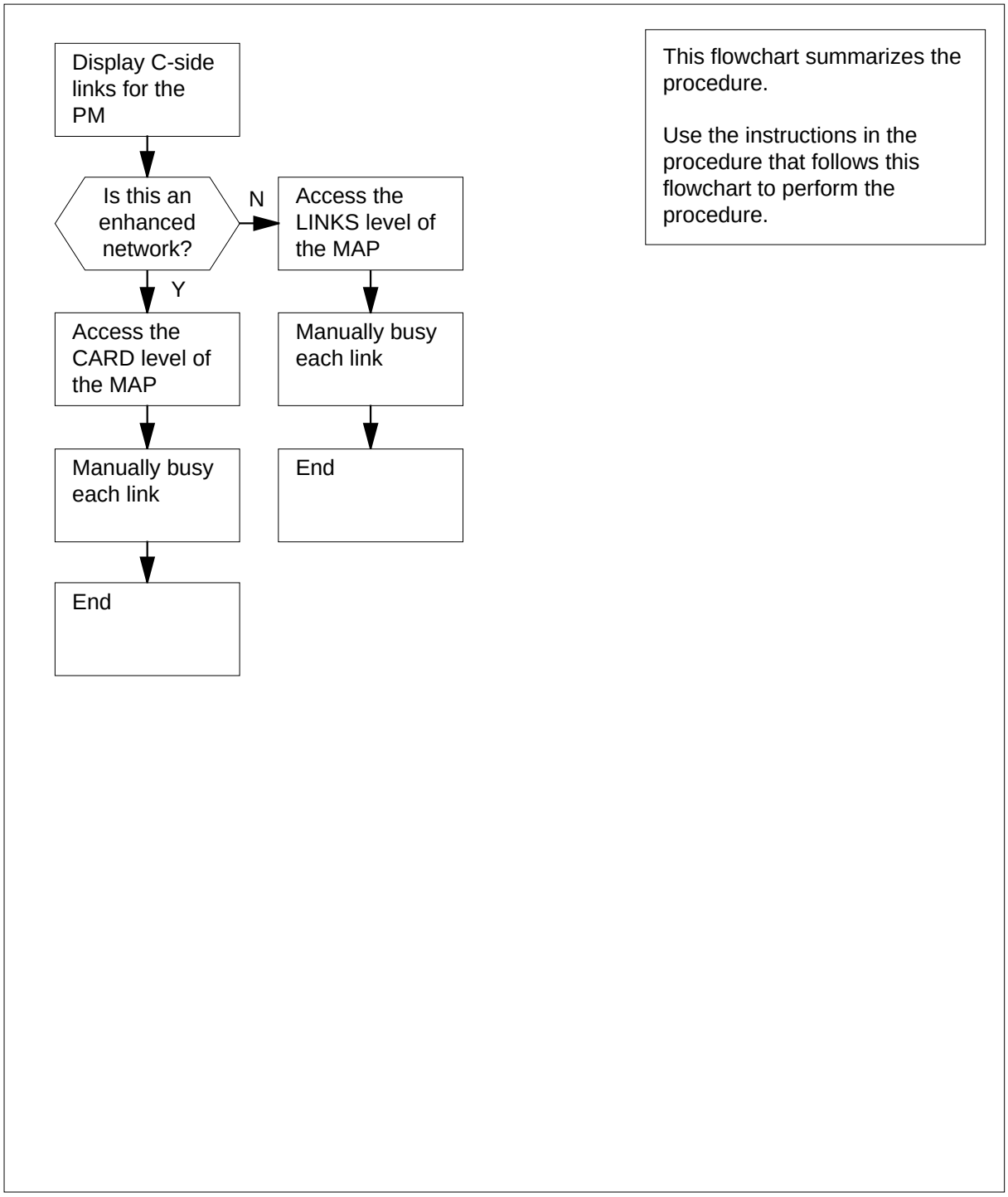
This procedure assumes that the PM is posted and available for query. Instructions in the main procedure direct you to re-post the PM after you have completed this common procedure.

Action

The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.

Manually busying SMA2 C-side links (continued)

Summary of Manually busying SMA2 C-side links



Manually busying SMA2 C-side links (continued)

Manually busying SMA2 C-side links

CAUTION
Loss of service.
Proceed only if you have been directed here from a step in a maintenance procedure. This procedure removes from service C-side links between the Series II PM and the network. Calls may be dropped.

At the MAP terminal

1 Display a list of C-side links by typing

>TRNSL C

and pressing the Enter key.

Example #1 of a MAP response:

```
Link  0: NET 0  1 18;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  1: NET 1  1 18;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  2: NET 0  1 22;Cap  S;Status:OK
Link  3: NET 1  1 22;Cap  S;Status:OK
Link  4: NET 0  1 26;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  5: NET 1  1 26;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  6: NET 0  1 30;Cap  S;Status:OK
Link  7: NET 1  1 30;Cap  S;Status:OK
```

Example #2 of a MAP response:

```
Link  0: ENET 0  0 32 01  0;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  1: ENET 1  0 32 01  0;Cap MS;Status:OK   ;MsgCond:OPN,Restrict
Link  2: ENET 0  0 32 01  1;Cap  S;Status:OK
Link  3: ENET 1  0 32 01  1;Cap  S;Status:OK
Link  4: ENET 0  0 32 01  2;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  5: ENET 1  0 32 01  2;Cap MS;Status:OK   ;MsgCond:OPN,Unrestrict
Link  6: ENET 0  0 32 01  3;Cap  S;Status:OK
Link  7: ENET 1  0 32 01  3;Cap  S;Status:OK
```

If the network is a	Do
junctor network (JNET)	step 2
enhanced network (ENET)	step 7

2 Record the network plane, pair, and link for each C-side link for the XPM shelf associated with the card you are replacing.

Note 1: C-side links for network plane 0 are connected to the shelf for PM unit 0; C-side links for network plane 1 are connected to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 2: The network plane, pair, and link are listed in columns 4, 5, and 6 of the response to a TRNSL command at the PM level, as shown in

Manually busying SMA2 C-side links (continued)

Example #1 of a MAP response: in step 1. For example, C-side link 7 is on network plane 1, pair 1, link 30.

3 Access the NET level of the MAP display by typing

>NET

and pressing the Enter key.

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
 Plane  01234  56789  01234  56789  01234  56789  01
   0    L..
   1    ...
```

4 Access the LINKS level of the MAP display by typing

>LINKS pair_no

and pressing the Enter key.

where

pair_no
is the number of the pair (0 to 31) to which the XPM C-side links areconnected

Example of a MAP display:

```
Net                    11111  11111  22222  22222  33
 Plane  01234  56789  01234  56789  01234  56789  01
    0    L..
    1    ...
Net   1  Links                11  1111  1111  2222  2222  2233
       Plane   0123  4567  8901  2345  6789  0123  4567  8901
         0     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
         1     ....  ....  ..P.  ....  .P..  .P..  .P..  .P..
        Links  3333  3333  4444  4444  4455  5555  5555  6666
       Plane   2345  6789  0123  4567  8901  2345  6789  0123
         0     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
         1     .P..  .P..  .P..  .P..  ..P.  ..-.  ..-.  ..-.
```

5 Busy one of the links you recorded in step 2 by typing

>BSY plane_no link_no

and pressing the Enter key.

where

plane_no
is the number of the plane for the link (0 or 1)

link_no
is the link number (0 to 63)

Example of a MAP response:

```
BSY 0 30
OK
```

Manually busying SMA2 C-side links (continued)

6 Repeat step 5 for all C-side links for the XPM unit you are working on.

Go to step 13.

7 Record the network plane, shelf, card, and link for the C-side links for the XPM shelf associated with the card you are replacing.

Note 1: C-side links for network plane 0 are connected to the shelf for PM unit 0; C-side links for network plane 1 are connected to the shelf for PM unit 1. All C-side links interface to the active PM unit.

Note 2: The network plane, shelf, card, and link are listed in columns 4, 5, 6, and 7 of the response to a TRNSL command at the PM level, as shown in *Example #2 of a MAP response:* in step 1. For example, C-side link 7 is on network plane 1, shelf 0, card 32, and link 1.

8 Access the NET level of the MAP display by typing

>NET

and pressing the Enter key.

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
 Plane 0 CSLink     .           F - - -
 Plane 1 CSLink     .           F - - -

ENET:
```

9 Access the SHELF level of the MAP display by typing

>SHELF shelf_no

and pressing the Enter key.

where

shelf_no
is the number of the shelf (0 to 7) to which the XPM C-side links areconnected

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
 Plane 0 CSLink     .           F - - -
 Plane 1 CSLink     .           F - - -

SHELF 00  Slot          1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF  ...---- -------- ---.... .  .
Plane 1    .  .   IF  ...---- -------- ---.... .  .
```

10 Access the CARD level of the MAP display by typing

>CARD card_no

and pressing the Enter key.

where

card_no
is the number of the card (1 to 38) to which the XPM C-side links areconnected

Manually busying SMA2 C-side links (end)

Example of a MAP display:

```
ENET     System   Matrix  Shelf 0 1 2 3
 Plane 0 CSLink     .           F - - -
 Plane 1 CSLink     .           F - - -

SHELF 00  Slot         1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
Plane 0    .  .   IF  ........ -------- ----.... .  .
Plane 1    .  .   IF  ........ -------- ----.... .  .

CARD 32   Front:     Back:   DS-512 Links
          Xpt        I/F    0 1 2 3
Plane 0    .          .     . . . -
Plane 1    .          .     . . . -
```

11 Busy the link you recorded in step 7 by typing

`>BSY  plane_no  LINK  link_no`

and pressing the Enter key.

where

plane_no
is the number of the plane (0 or 1) for the link

link_no
is the link number (0 to 18 for DS512) or (0 to 15 for DS30)

Example of a MAP response:

```
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.
Request to MAN BUSY ENET Plane:0 Shelf:00 Slot:32 Link:01 passed.
```

If	Do
the links are DS30s and you have not manually busied all links	step 12
the links are DS30s and you have manually busied all links	step 13
the link is a DS512	step 13

12 Repeat step 11 for each DS30 link recorded in step 7.

13 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

Memory extension in the SuperNode CM

Application

Use this procedure to perform memory extensions in the computing module (CM). The following table lists available memory cards.

PEC	Suffixes	Name
NT9X14	BB	6-Mbyte memory card
NT9X14	DB	24-Mbyte memory card
NT9X14	EA	96-Mbyte memory card
NT9X14	FA	96-Mbyte memory card (used only with the 66-MHz SR70EM processor)

Memory cards are organized as follows:

- NT9X14BB, three 2-Mbyte modules
- NT9X14DB, three 8-Mbyte modules
- NT9X14EA, three 32-Mbyte modules
- NT9X14FA, three 32-Mbyte modules

This procedure explains how to add memory cards to extend one of the following:

- a 2-Mbyte memory configuration with 2-Mbyte modules
- an 8-Mbyte memory configuration with 8-Mbyte modules
- a 32-Mbyte memory configuration with 32-Mbyte modules
- a mixed 2-Mbyte and 8-Mbyte memory configuration
- a mixed 8-Mbyte and 32-Mbyte memory configuration

In a 2-Mbyte memory configuration, memory transfers occur in blocks of 2 Mbytes.

In an 8-Mbyte memory configuration, a mixed 2-Mbyte and 8-Mbyte memory configuration, and a mixed 8-Mbyte and 32-Mbyte memory configuration, memory transfers are done in blocks of 8 Mbytes.

In a 32-Mbyte memory configuration, memory transfers occur in blocks of 32 Mbytes.

Memory extension in the SuperNode CM (continued)

Common procedures

This procedure refers to the following procedures:

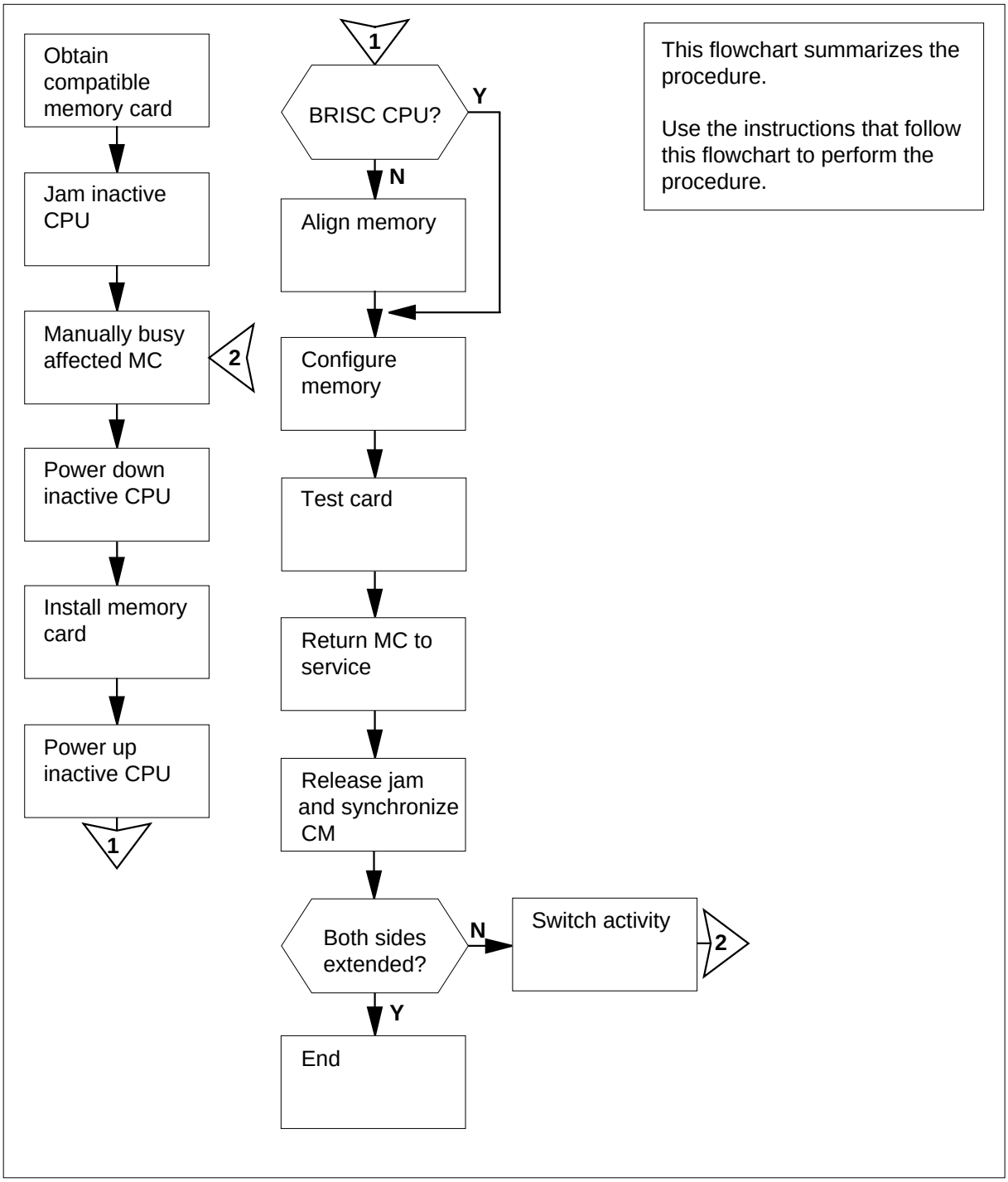
- *Activity switch with memory match*
- *Replacing a card*
- *Switching the clock source*
- *Verifying load compatibility of SuperNode cards*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Memory extension in the SuperNode CM (continued)

Summary of Memory extension in the SuperNode CM



Memory extension in the SuperNode CM (continued)

Memory extension in the SuperNode CM

DANGER
Possible invalid memory configuration
Do not leave empty slots between memory cards or between the first memory card and a CPU port card. These empty slots cause unsupported memory configurations.

DANGER
Possible invalid memory configuration
Contact your next level of support if you replace an NT9X14DB card with an NT9X14EA card. This replacement can cause an invalid memory configuration.

DANGER
Possible invalid memory configuration
The NT9X14FA memory card is an optional memory extension card designed for use exclusively with the NT9X10DA processor card and the NT9X26GA RTIF card. Do not combine an NT9X14FA card with any other memory card. This results in an invalid memory configuration. Do not use the NT9X14FA memory card with any processor other than the NT9X10DA processor card.

At your current location

1 Obtain the required memory cards. Make sure that the cards have the correct product engineering code (PEC) and the correct suffix for the memory extension you perform.

2 For each card perform the procedure *Verifying load compatibility of SuperNode cards* in this NTP.

At the MAP terminal

3 To access the CM level of the MAP display, type

```
>MAPCI;MTC;CM
```

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode CM (continued)

```
CM  Sync  Act  CPU0  CPU1 Jam Memory
CMMnt  MC  PMC
 0   no  cpu 1   .     .  yes   .
 .     .
```

Note: In the example, the active CPU is CPU 1.

4 Determine if the inactive CPU is jammed.

Note: The word yes under the Jam header indicates that the inactive CPU is jammed. The area is blank if the CPU is not jammed.

If the inactive CPU	Do
is jammed	step 7
is not jammed	step 5

At the CM reset terminal for the inactive CPU

5

WARNING
Loss of service
Make sure that you do not jam the active CPU. If you jam the active CPU while the CM is not in sync, a cold restart occurs. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
Please confirm: (YES/NO)
```

6 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

Memory extension in the SuperNode CM (continued)

At the MAP terminal

7 Determine if the CM is in sync.

Note: A dot or EccOn under the Sync header indicates that the CM is in sync. The word NO means that the CM is not in sync.

If the CM	Do
is in sync	step 8
is not in sync	step 12

8 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response	Do
is About to drop sync with CPU n active. The inactive CPU is JAMMED. Do you want to continue? Please confirm ("YES", "Y", "NO" or "N"):	step 9
is other than listed here	step 50

9 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU n.
```

At the CM reset terminal for the inactive CPU

10 Wait until A1 flashes on the reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to flash.

If A1	Do
flashes	step 12
does not flash	step 50

11 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

Memory extension in the SuperNode CM (continued)

At the MAP terminal

12

WARNING
Loss of service
Make sure that the CM runs on the clock of the active CPU. A cold restart or a system image reload can occur if you power down the inactive side of the CM. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the active CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

```
CPU pair is NOT in sync, CPU 0 is
active.
CM is running on active CPU clock.
Memory Error Correction is ENABLED.
The Inactive CPU IS Jammed.
```

If the CM	Do
runs on the inactive clock	step 13
runs on the active clock	step 14

13 To run the CM on the clock of the active CPU, perform the procedure *Switching the clock source* in this document. Complete the procedure and return to this point.

14 To access the MC level of the MAP display, type

>MC

and press the Enter key.

Example of a MAP response:

```
MC 0    MC 1
mbsy      .
```

15 Determine the state of the message controller (MC) on the inactive CPU.

Note: Under the MC header, mbsy indicates that the MC is manual busy.

If the the state of the MC	Do
is mbsy	step 17

Memory extension in the SuperNode CM (continued)

If the the state of the MC	Do
is not `mbsy`	step 16

16

WARNING
Loss of service
Make sure that you busy the MC that corresponds to the inactive CPU. A warm restart occurs if you power down the plane after you busy the wrong MC.

To manually busy the MC that corresponds to the inactive CPU, type

>BSY mc_number

and press the Enter key.

where

mc_number
is the number of the inactive side MC (0 or 1)

Example of a MAP response:

```
Maintenance action submitted.
MC busied OK.
```

If the MC	Do
busied	step 17
did not busy	step 50

Memory extension in the SuperNode CM (continued)

At the CM shelf

17

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

Power down the inactive CPU as follows:

a Press down and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

b Press down and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

18 The next step depends on if you replace memory cards with cards that have more memory capacity. The next step depends on if you replace an NT9X19 filler faceplate with a memory card.

If you	Do
replace memory cards with cards that have more memory	step 19
fill empty slots with memory cards	step 20

19 Make sure that you install the memory card with the highest capacity next to the CPU card.

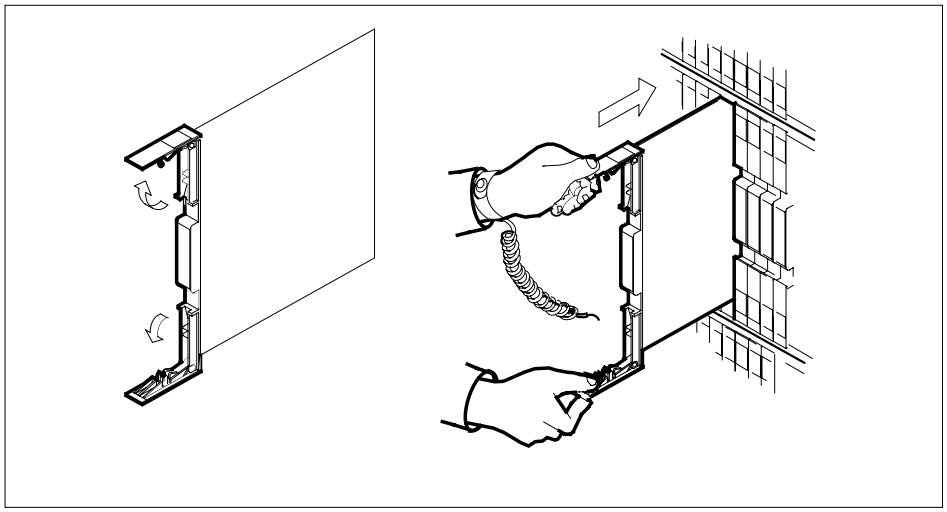
Go to step 25.

20 Make sure that you install the new card in the next empty slot. Do not leave empty slots between memory cards.

21 Remove the NT9X19 filler faceplate next to the NT9X13 card. Open the locking levers and carefully pull the faceplate toward you until the faceplate clears the shelf.

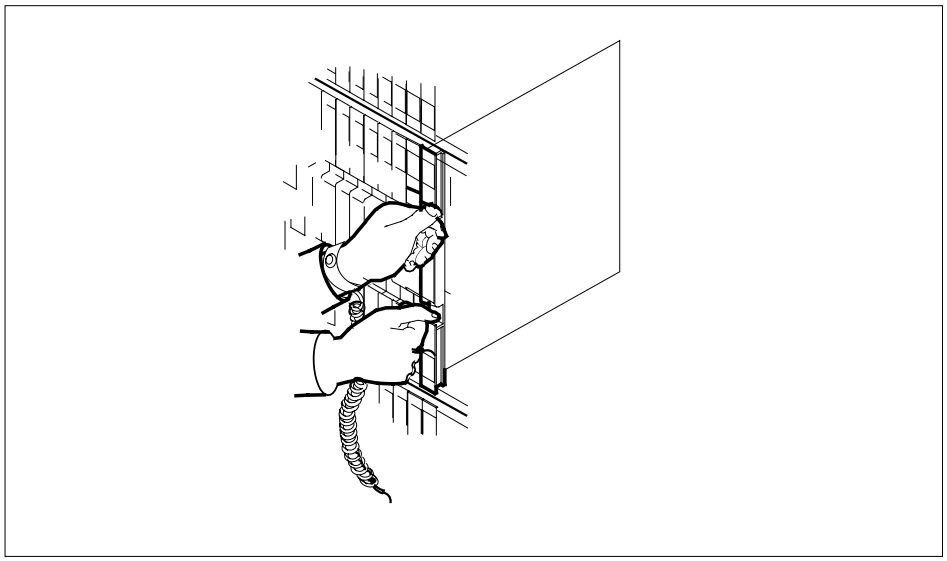
22 Pull open the locking levers on the memory card that you will install until the levers are horizontal. Align the card with the slots in the shelf and carefully slide the card into the shelf.

Memory extension in the SuperNode CM (continued)



23 Seat and lock the card as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the card sits completely in the shelf.



b Close the locking levers.

24 Go to step 26.

25 To install the memory card, perform the procedure *How to replace a card* in this document. Complete the procedure and return to this point.

26 Power up the inactive CPU as follows:

Memory extension in the SuperNode CM (continued)

a Lift and release the power switch on the faceplate of the NT9X31 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 1F through 3F. For CPU 1, the power converter is in slots 33F through 35F.

b Lift and release the power switch on the faceplate of the NT9X30 power converter on the inactive side of the CM shelf.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 36F through 38F.

At the CM reset terminal for the inactive CPU

27 After you power up the inactive CPU, wait for the switch to complete memory card tests.

Example of an RTIF response:

```
Shelf      Slot
00         12          NT9X14DB...
00         13          NT9X14DB...
Waiting for activity...
```

Note: When firmware testing is in progress, dots appear on the right side of the card PEC. The card PEC is in the firmware testing status line of the RTIF response. As each firmware test completes, another dot appears. This process occurs until firmware testing for the card is complete.

Two indications that the firmware test stopped are:

- the dots do not appear and another firmware testing status line appears
- the message Waiting for activity does not appear

28 Determine if the inactive CPU powered up.

Note: If the firmware tests are complete and the CPU powered up, the message Waiting for activity appears.

If the inactive CPU	Do
powered up	step 29
did not power up	step 50

At the MAP terminal

29 To access the Memory level of the MAP display, type

`>MEMORY`

and press the Enter key.

Example of a MAP display:

```
CM 0   Plane 0 | Plane 1
               |
  0987654321  P|P  1234567890
  ----......       ......----
```

Memory extension in the SuperNode CM (continued)

30 The next step depends on the type of CPU in the CM.

If the CPU type	Do
is BRISC	step 32
is other than listed here	step 31

31 To align the memory, type

>ALIGN

and press the Enter key.

If the ALIGN command	Do
passed	step 32
failed	step 50

32 The next step depends on the memory configuration in the inactive side.

If the memory configuration	Do
is not mixed (one block size)	step 33
is mixed (different block sizes)	step 35

33 To configure the memory to make sure that the inactive CPU and the mate of the inactive CPU match, type

>CONFIG

and press the Enter key.

Example of a MAP response:

```
WARNING:
I will now ask the mate CPU to re-configure its
memories. I will take the new configuration data and
re-build the MEMORY MAP display for the inactive CPU
memory cards. This must only be done when out of SYNC
and during a memory extension or reduction (adding or
deleting a memory card or replacing a memory card with
one of a different PEC code). Please confirm (”YES”,
”Y”, ”NO” or ”N”):
```

34 To confirm the CONFIG command, type

>YES

and press the Enter key.

If the response	Do
indicates the CONFIG command passed	step 38
is other than listed here	step 50

35 To configure the memory to make sure that the inactive CPU and the mate of the inactive CPU match, type

>CONFIG OPTIMUM

and press the Enter key.

Example of a MAP response:

```
WARNING:
The OPTIMUM option should only be used when doing
memory extensions.  It will configure mate memory such
that a maximum number of spares of each memory module
size is provided.
However, under this configuration, a CM running in
SYNC will have Handshake–Override disabled.
Pease confirm (”YES”, ”Y”, ”NO”, or ”N:)
```

36 To confirm the CONFIG command, type

>YES

and press the Enter key.

37 To confirm the OPTIMUM parameter, type

>YES

and press the Enter key.

If the response	Do
indicates the CONFIG command passed	step 38
is other than listed here	step 50

38 To test the new card, type

>TST CARD card_number

and press the Enter key.

where

card_number
is the number of the card that you installed (1 to 10)

Example of a MAP response:

Memory extension in the SuperNode CM (continued)

```
Maintenance action submitted.
Test passed.
```

If the TST command	Do
passed	step 39
failed	step 50

39 To query the memory status, type

>QRYMEM

and press the Enter key.

If the command	Do
passed	step 40
failed	step 50

40 To access the MC level of the MAP display, type

>MC

and press the Enter key.

41 To return the manual busy MC to service, type

>RTS mc_number

and press the Enter key.

where

mc_number
is the number of the manual busy MC (0 or 1)

Example of a MAP response:

```
Maintenance action submitted.
MC RTS OK.
```

If the RTS command	Do
passed	step 42
failed	step 50

42 To test the inactive CPU, type

>CM;TST

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode CM (continued)

```
The test(s) listed below will destroy
the software load in inactive CPU:

    Static RAM test

Do you want to do the test(s) anyway?
Please confirm: ("YES", "Y", "NO", or "N"):
```

43 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Test passed.
```

If the TST command	Do
passed	step 44
is other than listed here	step 50

At the CM reset terminal for the inactive CPU

44 To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

Example of a MAP response:

```
JAM RELEASE DONE
```

45 The next step depends if you extended the memory on both sides.

If	Do
you extended the memory on both sides	step 46
you did not extend the memory on both sides	step 11

Memory extension in the SuperNode CM (continued)

At the MAP terminal

46 To access the CM level of the MAP display, type

>CM

and press the Enter key.

If the memory configuration	Do
is not mixed (one block size)	step 47
is mixed (different block sizes)	step 48

47 To synchronize the CM, type

>SYNC

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Synchronization successful
```

If the response	Do
indicates the SYNC command was successful	step 51
is other than listed here	step 50

48 To synchronize the CM, type

>SYNC OPTIMUM

and press the Enter key.

49 To confirm the command, type

>YES

and press the Enter key.

If the response	Do
indicates the SYNC command was successful	step 51
is other than listed here	step 50

50 For additional help, contact the next level of support.

51 To ensure the next automatic daily routine exercise (REx) test will start and complete successfully, type

>QUERYCM REXSCHD COUNTS ALL

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode CM (continued)

```
The Link Closure count is 0.
The Out-of-sync Recovery Mismatch count is 0.
The In-Sync Recovery Mismatch count is 0.
The Trap Rate count is 0.
The Processor Memory Fault count is 0.
The Clock Fault count is 2.
The Cancelled REx count is 0.
```

If one or more errors	Do
are observed	step 52
are not observed	step 54

52 To clear all observed errors, type

>REXTST BASE RESETCOUNTS

and press the Enter key.

Example of a MAP response:

```
Warning:  The clearing of the error counts is not
recommended until the source of the errors is
corrected.  Use the QUERYCM RExSchd command for more
details concerning the errors which have occurred.
Please confirm (”YES”, ”Y”, ”NO”, or ””N”):
```

53 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Error counts cleared.  The RExTst command must
be reissued to run the tests.
```

54 To run the REx test, type

>REXTST BASE

and press the Enter key.

Example of a MAP response:

```
Caution:  CM sync and activity states will change.
Please confirm (”YES”, ”Y”, ”NO”, or ””N”):
```

55 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode CM (end)

```
Maintenance action submitted.
RExTst passed.
```

56 The procedure is complete.

Memory extension in the SuperNode SE CM

Application

Use this procedure to perform memory extensions in the computing module/system load module (CM/SLM) shelf. The following table lists available memory cards.

PEC	Suffixes	Name
NT9X14	DB	24-Mbyte memory card
NT9X14	EA	96-Mbyte memory card
NT9X14	FA	96-Mbyte memory card (used only with the 66-MHz SR70EM processor)

Memory card arrangement is as follows:

- NT9X14DB three 8-Mbyte modules
- NT9X14EA three 32-Mbyte modules
- NT9X14FA three 32-Mbyte modules

This procedure explains how to add memory cards to extend one of the following:

- an 8-Mbyte memory configuration with 8-Mbyte modules
- a 32-Mbyte memory configuration with 32-Mbyte modules

In a pure 8-Mbyte memory configuration and a mixed 8-Mbyte and 32-Mbyte memory configuration, memory transfers occur in blocks of 8-Mbytes.

In a 32-Mbyte memory configuration, memory transfers occur in blocks of 32-Mbytes.

Common procedures

This procedure refers to the following procedures:

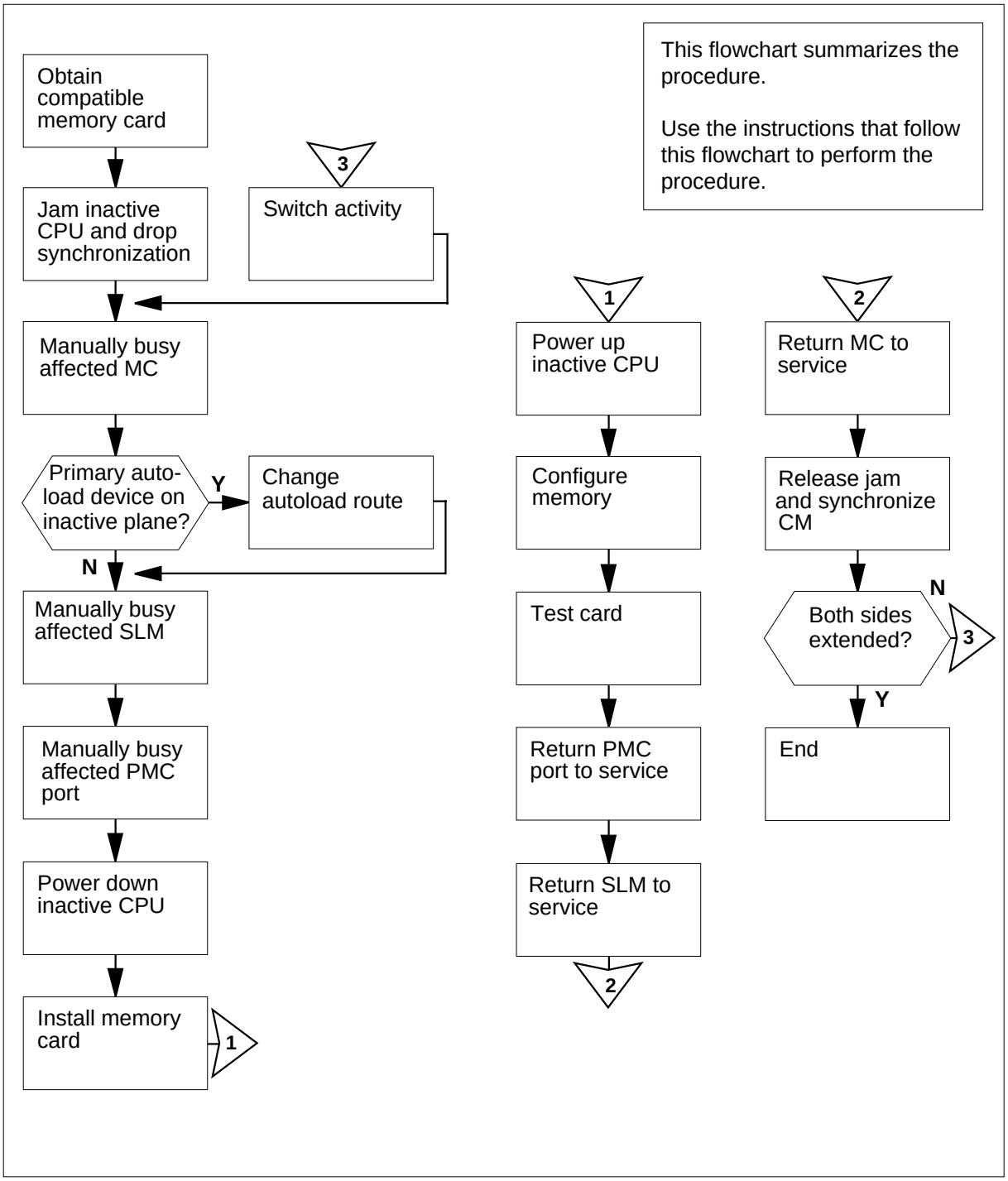
- *Activity switch with memory match*
- *Switching the clock source*
- *Verifying load compatibility of SuperNode cards*

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Memory extension in the SuperNode SE CM (continued)

Summary of Memory extension in the SuperNode SE CM



Memory extension in the SuperNode SE CM (continued)

Memory extension in the SuperNode SE CM

DANGER
Possible invalid memory configuration
Do not leave empty slots between memory cards or between the first memory card and a CPU port. These empty slots result in a memory configuration that is not supported.

DANGER
Possible invalid memory configuration
Contact your next level of support if you are replacing an NT9X14DB card with an NT9X14EA card. This replacement can cause an invalid memory configuration.

DANGER
Possible invalid memory configuration
The NT9X14FA memory card is an optional memory extension card designed for use exclusively with the NT9X10DA processor card and the NT9X26GA RTIF card. Do not combine an NT9X14FA card with any other memory card. This results in an invalid memory configuration. Do not use the NT9X14FA memory card with any processor other than the NT9X10DA processor card.

At your current location

1 Obtain the required memory cards. The memory card must have the same product engineering code (PEC) and suffix as the other memory cards on the shelf.

2 For each card, perform the procedure *How to verify load compatibility of SuperNode cards* in this NTP.

Memory extension in the SuperNode SE CM (continued)

At the MAP terminal

3 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

```
CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC
 0   no  cpu 1   .     .  yes   .      .     .   .
```

4 Determine if the inactive CPU is jammed.

Note: The word yes under the Jam header indicates that the CPU is jammed. The area is blank if the CPU is not jammed.

If the inactive CPU	Do
is jammed	step 7
is not jammed	step 5

At the CM reset terminal for the inactive CPU

5

WARNING
Possible loss of service
Make sure that you do not jam the active CPU. If you jam the active CPU while the CM is not in sync, a cold restart occurs. The word Active on the top banner of the display identifies the reset terminal for the active CPU.

To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
PLEASE CONFIRM (YES/NO)
```

6 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

Memory extension in the SuperNode SE CM (continued)

At the MAP terminal

7 Determine if the CM is in sync.

Note: A dot (.) or EccOn under the Sync header indicates that the CM is in sync. The word NO indicates that the CM is not in sync.

If the CM	Do
is in sync	step 8
is not in sync	step 12

8 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response	Do
is About to drop sync with CPU n active. The inactive CPU is JAMMED. Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"):	step 9
is other than listed here	step 54

9 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU n.
```

At the CM reset terminal for the inactive CPU

10 Wait until A1 flashes on the CM reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to flash.

If A1	Do
flashes	step 12
does not flash	step 54

11 Perform the procedure *Activity switch with memory match* in this document. Complete the procedure and return to this point.

Memory extension in the SuperNode SE CM (continued)

At the MAP terminal

12

WARNING
Loss of service
Make sure that the CM runs on the clock of the active CPU. A cold restart or a system image reload can occur if you power down the inactive side of the CM. Do not power down the inactive side of the CM while the CM runs on the clock of the inactive CPU.

To determine if the CM runs on the clock of the active CPU, type

>INSYNC

and press the Enter key.

Example of a MAP response:

```
CPU pair is not insync, CPU 0 is active.
CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU IS Jammed.
```

If the CM	Do
runs on the inactive clock	step 13
runs on the active clock	step 14

13 To run the CM on the clock of the active CPU, perform the procedure *How to switch the clock source* in this document. Complete the procedure and return to this point.

14 To access the CMMNT level of the MAP display, type

>CMMNT

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode SE CM (continued)

```
CM   Sync  Act  CPU0  CPU1  Jam  Memory  CMMnt  MC  PMC
 0    .   cpu 0  .     .           .       .    .    .

Traps:          Per minute =     0      Total =     5

AutoLdev:       Primary = SLM 0 DISK  Secondary =  SLM 1 DISK

Image Restartable = No image test since last restart

Next image test restart type =  RELOAD

Last CMREXTST executed

System memory in kbytes as of  14:39:07
Memory (kbytes): Used = 105984 Avail =  12800 Total = 118784
```

15 Determine the primary autoload device.

Note: The primary autoload device appears to the right side of the Primary header. In the example in step 14, the primary autoload device is the disk of SLM 0.

16 Determine if the primary autoload device is on the side of the switch with the active CPU or the inactive CPU.

If the primary autoload device	Do
is on the side of the switch with the active CPU	step 18
is on the side of the switch with the inactive CPU	step 17

17 To change the primary autoload device to a device on the same side as the active CPU, type

`>AUTOLD SLM slm_number device_type`

and press the Enter key.

where

slm_number
is the number of the SLM (0 or 1) on the active plane

device_type
is the type of SLM device (DISK or TAPE)

Example of a MAP response:

```
New autoload route has been set.
```

18 To access the SLM that corresponds to the inactive CPU, type

`>IOD;SLM slm_number`

and press the Enter key.

where

Memory extension in the SuperNode SE CM (continued)

slm_number
is the number of the SLM (0 or 1)

Example of a MAP display:

```
IOD
IOC  0  1  2  3
STAT .  .  .  .

DIRP:   .    XFER:   .    DVI :   .    DPPP:   .    DPPU:   .
NOP :   .    SLM :   .    NX25:   .    MLP :   .    SCAI:   .

SLM   0  1
Stat  .  .

SLM 0              device              TAPE           DISK
                   status                .              .
                   drive               idle           on line
                   user                               SYSTEM
```

Note: Dots on the right side of the SLM Stat header indicate that both SLM 0 and SLM 1 are in service.

19

CAUTION
Possible loss of data recording services
This step removes the SLM on the inactive side of the switch from service. Before you busy the SLM, make sure that the SLM on the active side of the switch assumes the data recording services.

To manually busy the SLM, type

>BSY

and press the Enter key.

Example of a MAP response:

```
SLM 0 busy passed.
```

Example of a MAP display:

```
SLM   0  1
Stat  M  .
```

If the BSY command	Do
passed	step 20
failed	step 54

Memory extension in the SuperNode SE CM (continued)

20 To access the PMC level of the MAP display, type

>CM;PMC

and press the Enter key.

Example of a MAP display:

```
          PMC 0
           .

PORT0:    pbsy
PORT1:     .
```

21 To manually busy the port that corresponds to the inactive CPU, type

>BSY pmc_number PORT port_number

and press the Enter key.

where

pmc_number
is the number of the peripheral module controller (0 or 1)

port_number
is the port number (0 or 1) on the inactive plane

Example input:

BSY 0 PORT 0

Example of a MAP response:

```
Maintenance action submitted.
Passed.
```

22 To access the MC level of the MAP display, type

>MC

and press the Enter key.

Example of a MAP display:

```
CM 0
 MC 0   MC 1
   .      .
```

23 Determine the state of the message controller (MC) on the inactive CPU.

Note: The term mbsy under the MC header indicates that the MC is manual busy.

If the state of the MC	Do
is mbsy	step 25
is not mbsy	step 24

Memory extension in the SuperNode SE CM (continued)

24

CAUTION
Possible loss of service
Make sure that you busy the MC that corresponds to the inactive CPU. A warm restart occurs if you power down the plane with the wrong MC busied.

To manually busy the MC that corresponds to the inactive CPU, type

>BSY mc_number

and press the Enter key.

where

mc_number
is the number of the MC (0 or 1) on the inactive plane

Example of a MAP response:

```
Maintenance action submitted.
MC busied OK.
```

If the MC	Do
busied	step 25
did not busy	step 54

At the CM/SLM shelf

25

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

To power down the inactive CPU, press and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 33F through 35F.

Memory extension in the SuperNode SE CM (continued)

26 The next step depends on if you replace memory cards with cards that have more memory capacity. The next step also depends on if you replace an NT9X19 filler faceplate with a memory card.

If you	Do
replace memory cards with cards that have more memory	step 27
fill empty slots with memory cards	step 28

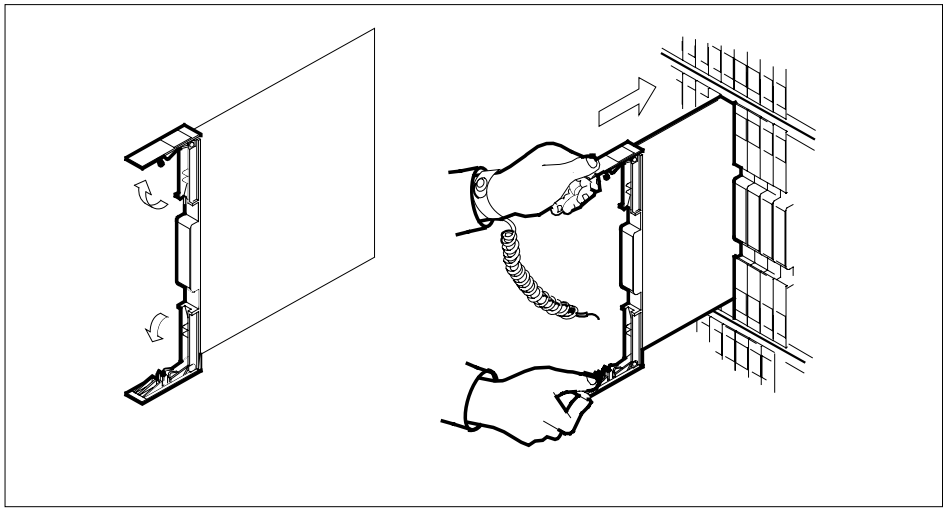
27 Make sure that you install the memory card with the highest capacity next to the CPU card.

Go to step 34.

28 Make sure that you install the new card in the next empty slot. Do not leave empty slots between memory cards.

29 Remove the NT9X19 filler faceplate located next to the NT9X13 card. To remove the faceplate, open the locking levers and carefully pull the faceplate toward you until the faceplate clears the shelf.

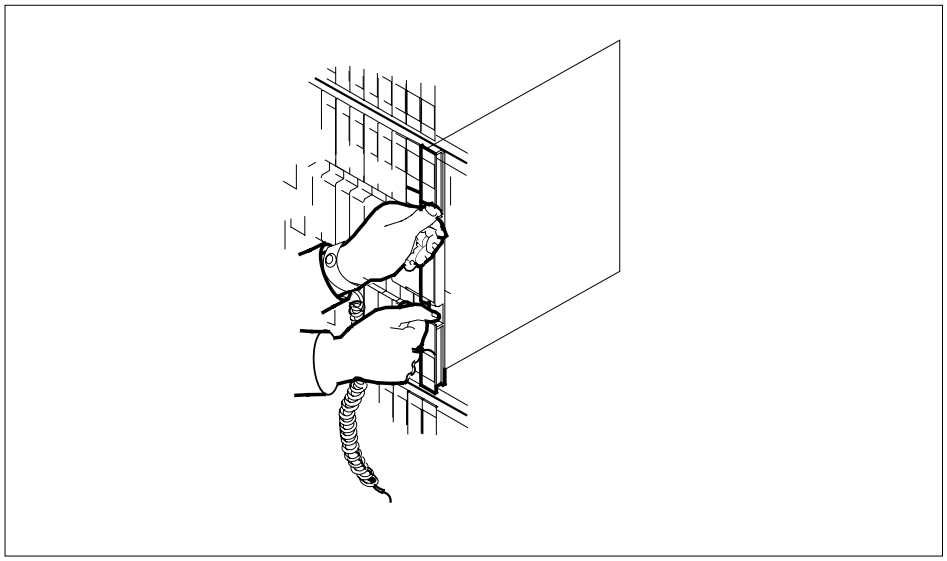
30 Pull open the locking levers on the memory card you want to install until the levers are horizontal. Align the card with the slots in the shelf and carefully slide the card into the shelf.



31 Seat and lock the memory card as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure that the card sits completely in the shelf.

Memory extension in the SuperNode SE CM (continued)



32 Close the locking levers.

33 Go to step 35.

34 To install the memory card, perform the procedure *How to replace a card* in this document. Complete the procedure and return to this point.

35 To power up the inactive CPU shelf, lift and release the power switch on the faceplate of the NTDX15 power converter.

Note: For CPU 0, the power converter is in slots 4F through 6F. For CPU 1, the power converter is in slots 33F through 35F.

At the CM reset terminal for the inactive CPU

36 After you turn on the inactive CPU, wait for the switch to complete memory card tests.

Example of a RTIF response:

```
Shelf      Slot
00         12          NT9X14DB ...
00         13          NT9X14DB ...
Waiting for activity.....
```

Note: When firmware testing is in progress, dots appear on the right side of the card PEC. The card PEC is in the firmware testing status line of the RTIF response. As each firmware test completes, another dot appears. This process occurs until firmware testing for the card is complete.

Two indications that the firmware test stopped are:

- the dots do not appear and another firmware testing status line appears
- the message Waiting for activity does not appear

Memory extension in the SuperNode SE CM (continued)

37 Determine if the inactive CPU powered up.

Note: If the firmware tests are complete and the CPU powered up, the message Waiting for activity appears.

If the inactive CPU	Do
powered up	step 38
did not power up	step 54

At the MAP terminal

38 To access the Memory level of the MAP display, type

>MEMORY

and press the Enter key.

Example of a MAP display:

```
CM 0
    Card 12345
 Plane 0 ...--
 Plane 1 ...--
```

39 To configure the memory to make sure the inactive CPU and the mate of the inactive CPU match, type

>CONFIG

and press the Enter key.

Example of a MAP response:

```
WARNING:
I will now ask the mate CPU to re-configure its
memories. I will take the new configuration data and
re-build the MEMORY MAP display for the inactive CPU
memory cards. This must only be done when out of SYNC
and during a memory extension or reduction (adding or
deleting a memory card or replacing a memory card with
one of a different PEC code). Please confirm (″YES″,
″Y″, ″NO″, or ″N″):
```

40 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode SE CM (continued)

```
Maintenance action submitted.
```

If the response	Do
indicates the command passed	step 41
is other than listed here	step 54

41 To test the memory card that you installed, type

`>TST CARD card_number`

and press the Enter key.

where

card_number
is the number of the memory card (0 to 5)

Example of a MAP response:

```
Maintenance action submitted.
```

If the TST command	Do
passed	step 42
failed	step 54

42 To query the memory status, type

`>QUERY MEM`

and press the Enter key.

If the command	Do
passed	step 43
failed	step 54

43 To return the manual busy PMC port to service, type

`>PMC;RTS pmc_number PORT port_number`

and press the Enter key.

where

pmc_number
is the number of the PMC (0 or 1)

port_number
is the number of the port (0 or 1)

Example of a MAP response:

Memory extension in the SuperNode SE CM (continued)

```
          PMC 0
           .

PORT0:    pbsy
PORT1:     .
```

44 To access the SLM that you manually busied in step 19, type

>IOD;SLM slm_number

and press the Enter key.

where

slm_number
is the number of the manual busy SLM (0 or 1)

45 To return the manual busy SLM to service, type

>RTS

and press the Enter key.

Example of a MAP response:

```
SLM 0 returned to service initiated.
```

46 To access the MC level of the MAP display, type

>MC

and press the Enter key.

47 To return the manual busy MC to service, type

>RTS mc_number

and press the Enter key.

where

mc_number
is the number of the manual busy MC (0 or 1)

Example of a MAP response:

```
Maintenance action submitted.
MC RTS OK.
```

If the RTS command	Do
passed	step 48
failed	step 54

48 To test the inactive CPU, type

>CM;TST

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode SE CM (continued)

```
The test(s) listed below will destroy
the software load in inactive CPU:

    Static RAM test

Do you want to do the test(s) anyway?
Please confirm: ("YES", "Y", "NO", or "N"):
```

49 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Test passed.
```

If the TST command	Do
passed	step 50
failed	step 54

At the CM reset terminal for the inactive CPU

50 To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

```
JAM RELEASE DONE
```

At the MAP terminal

51 To access the CM level of the MAP display, type

>CM

and press the Enter key.

52 To synchronize the CM, type

>SYNC

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Synchronization successful
```

If the response	Do
indicates the SYNC command was successful	step 53
is other than listed here	step 54

53 The next step depends if you extended memory on both sides.

If you	Do
extended memory on both sides	step 60
did not extend memory on both sides	step 11

54 For additional help, contact the next level of support.

55 To ensure the next automatic daily routine exercise (REx) test will start and complete successfully, type

>QUERYCM REXSCHD COUNTS ALL

and press the Enter key.

Example of a MAP response:

```
The Link Closure count is 0.
The Out-of-sync Recovery Mismatch count is 0.
The In-Sync Recovery Mismatch count is 0.
The Trap Rate count is 0.
The Processor Memory Fault count is 0.
The Clock Fault count is 2.
The Cancelled REx count is 0.
```

If one or more errors	Do
are observed	step 56
are not observed	step 58

56 To clear all observed errors, type

>REXTST BASE RESETCOUNTS

and press the Enter key.

Example of a MAP response:

Memory extension in the SuperNode SE CM (end)

```
Warning:  The clearing of the error counts is not
recommended until the source of the errors is
corrected.  Use the QUERYCM RExSchd command for more
details concerning the errors which have occurred.
Please confirm (”YES”, ”Y”, ”NO”, or ””N”):
```

57 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Error counts cleared.  The RExTst command must
be reissued to run the tests.
```

58 To run the REx test, type

>REXTST BASE

and press the Enter key.

Example of a MAP response:

```
Caution:  CM sync and activity states will change.
Please confirm (”YES”, ”Y”, ”NO”, or ””N”):
```

59 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
RExTst passed.
```

60 The procedure is complete.

Moving an XSG to a spare XLIU

Application

Use this procedure to move an X.25/X.75 service group (XSG) to a spare in-service X.25/X.75 link interface unit (XLIU).

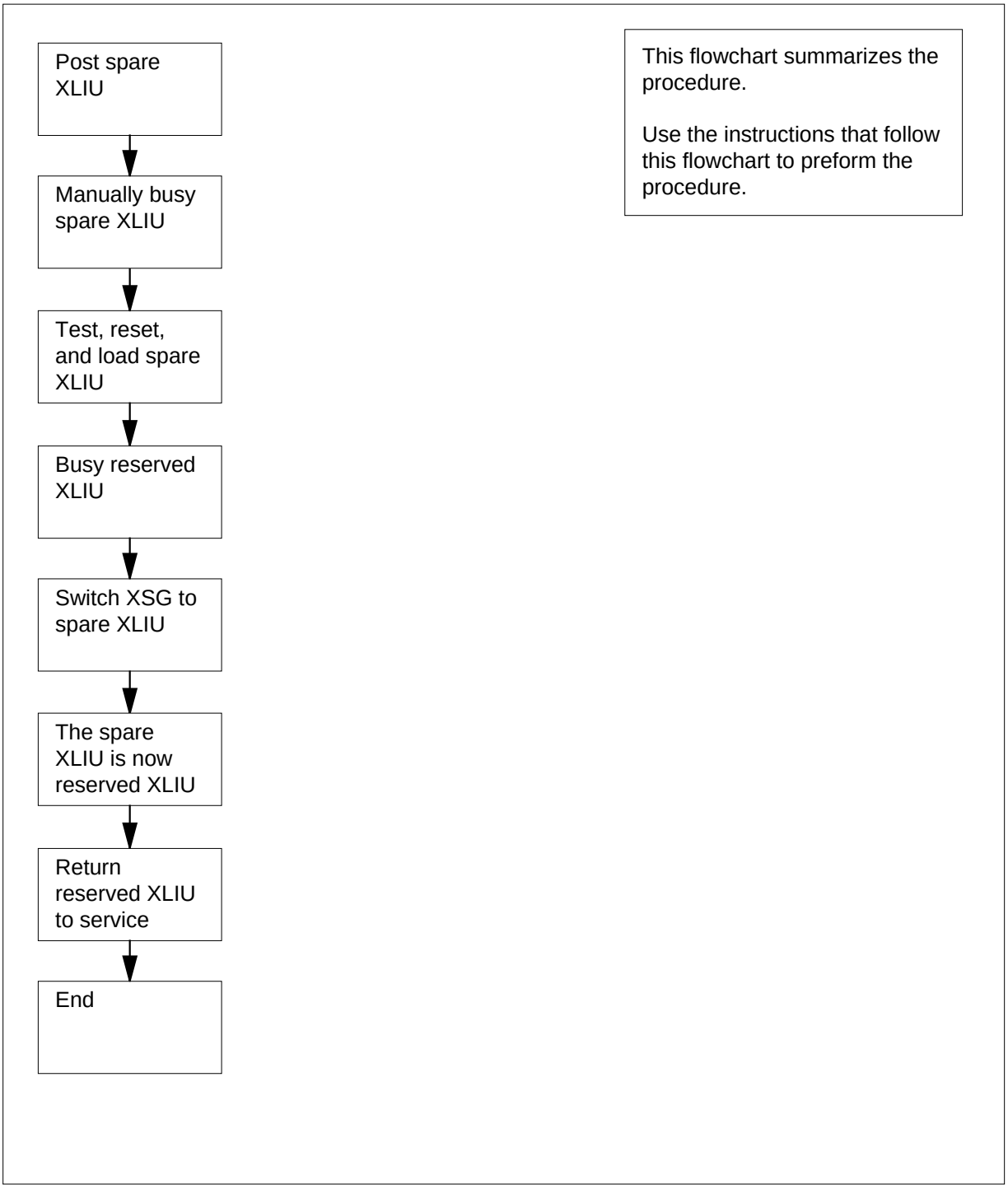
Before you use this procedure, the XLIU assigned to the XSG is posted, and you identify the spare XLIU.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Moving an XSG to a spare XLIU (continued)

Summary of Moving an XSG to a spare XLIU



Moving an XSG to a spare XLIU (continued)

Moving an XSG to a spare XLIU

WARNING
Loss of service
Proceed only if a step in a maintenance procedure directed you to this procedure. If you use this procedure independently, service can degrade for an XSG for a long period.

At the MAP terminal

1 To post the spare XLIU, type

>POST XLIU xliu_no

and press the Enter key.

where

xliu_no
is the number of the spare XLIU (0 to 511)

Example of a MAP display:

```
                  SysB    ManB    OffL    CBsy    ISTb    InSv
PM                   0       2      23       0      10      30
XLIU                 0       0       0       0       0       3


XLIU    31 InSv       Spre
```

If state of the spare XLIU	Do
is ManB	step 7
is InSv, ISTb, or Offl	step 3
is other than listed here, and another spare available for the shelf is present	step 2
is other than listed here, and a spare is not available for the shelf	step 19

2 Go to step 1 and post the other spare XLIU.

3 To manually busy the spare XLIU, type

>BSY

Moving an XSG to a spare XLIU (continued)

and press the Enter key.

If the response is	Do
XLIU 31 BSY Passed	step 7
Warning: XLIU 31 is currently being imaged. The BSY command will be aborted unless the FORCE option is used.	step 4

4 To manually force bsy the XLIU, type

>BSY FORCE

and press the Enter key.

Example of a MAP response:

```
WARNING: XLIU 31 is currently being imaged.
Do you wish to abort imaging to proceed with the BSY
request?
Please confirm (″YES″, ″Y″, ″NO″, or ″N″):
```

5 Determine if it safe to continue with this procedure.

If it is	Do
safe to proceed with BSY FORCE request	step 6
not safe, abort BSY FORCE request	step 21

6 To force bsy the XLIU, type

>YES

and press the Enter key.

Example of a MAP response:

```
Imaging will be aborted on XLIU.
```

7 To test the spare XLIU, type

>TST

and press the Enter key.

Example of a MAP response:

Moving an XSG to a spare XLIU (continued)

```
XLIU 31 TST Passed
```

If the TST command	Do
passed	step 11
failed	step 8

8 To reset the spare XLIU, type

>PMRESET

and press the Enter key.

Example of a MAP response:

```
XLIU 31 PMRESET Passed
```

If the PMRESET command	Do
passed	step 11
failed	step 9

9 To load the spare XLIU, type

>LOADPM

and press the Enter key.

Example of a MAP response:

```
XLIU 31 LOADPM Passed
```

If the LOADPM command	Do
passed	step 11
failed, and another spare for the shelf is available	step 10
failed, and another spare for the shelf is not available	step 19

10 Go to step 1 and post the other spare XLIU.

11 To post the reserved XLIU for which you want to change a card, type

>POST XLIU xliu_no

and press the Enter key.

where

xliu_no
is the number of the XLIU (0 to 511)

Moving an XSG to a spare XLIU (continued)

12 To manually busy the reserved XLIU, type

>BSY FORCE

and press the Enter key.

Note: You must manually busy the reserved XLIU before you switch the XSG to the spare.

If the response is	Do
Busying XLIU 27 will take XSG channels out of service.Please confirm ("YES", "Y", "NO", or "N"):	step 15
WARNING: The XLIU is currently being imaged.Do you wish to abort imaging to proceed with the BSY request?Please confirm ("YES", "Y", "NO", or "N"):	step 13

13 Determine if it safe to continue with this procedure.

If it is	Do
safe to proceed with BSY FORCE request	step 14
not safe, abort BSY FORCE request	step 21

14 To force bsy the XLIU, type

>YES

and press the Enter key.Go to step 16

Example of a MAP response:

```
Imaging will be aborted on XLIU.
```

15 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
XLIU 27 BSY Passed
```

16 To switch the XSG to the spare XLIU, type

>SWTCH xliu_no

and press the Enter key.

where

xliu_no
is the number of the spare XLIU (0 to 511)

Example of a MAP display:

```
                    SysB    ManB    OffL    CBsy    ISTb    InSv
   PM                  0       3      23       0      10      29
   XLIU                0       2       0       0       0       1

XLIU    27 ManB       Spre
Swtch  31
Takeover passed XLIU 27 to XLIU 31 XSG 27
```

If the SWTCH command	Do
passed	step 17
failed	step 20

17 To post the XLIU to which the XSG is assigned, type

>POST XLIU xliu_no

and press the Enter key.

Note: You have reserved this XLIU.

where

xliu_no
is the number of the XLIU (0 to 511)

18 To use the FORCE option to return the XLIU to service, type

>RTS FORCE

and press the Enter key.

If the RTS command	Do
passed, and the state of the XLIU is `InSv` or `ISTb`	step 22
passed, and the state of the XLIU is out of service	step 20
failed	step 20

19 Move the XSG to an in-service spare XLIU before you manually busy an XLIU to which an XSG is assigned. Failure to move the XSG will degrade service for a long period. Contact operating company personnel or the next level of support on how to proceed without a spare XLIU. Continue as directed by the next level of support.

20 For additional help, contact the next level of support.

Moving an XSG to a spare XLIU (end)

21 To abort the BSY FORCE request, type

```
>NO
```

and press the Enter key. BSY request has been aborted, node imaging is continuing.

22 The procedure is complete. Return to the main procedure that sent you to this procedure. Continue as directed by the main procedure.

Placing an MP position in service (standalone)

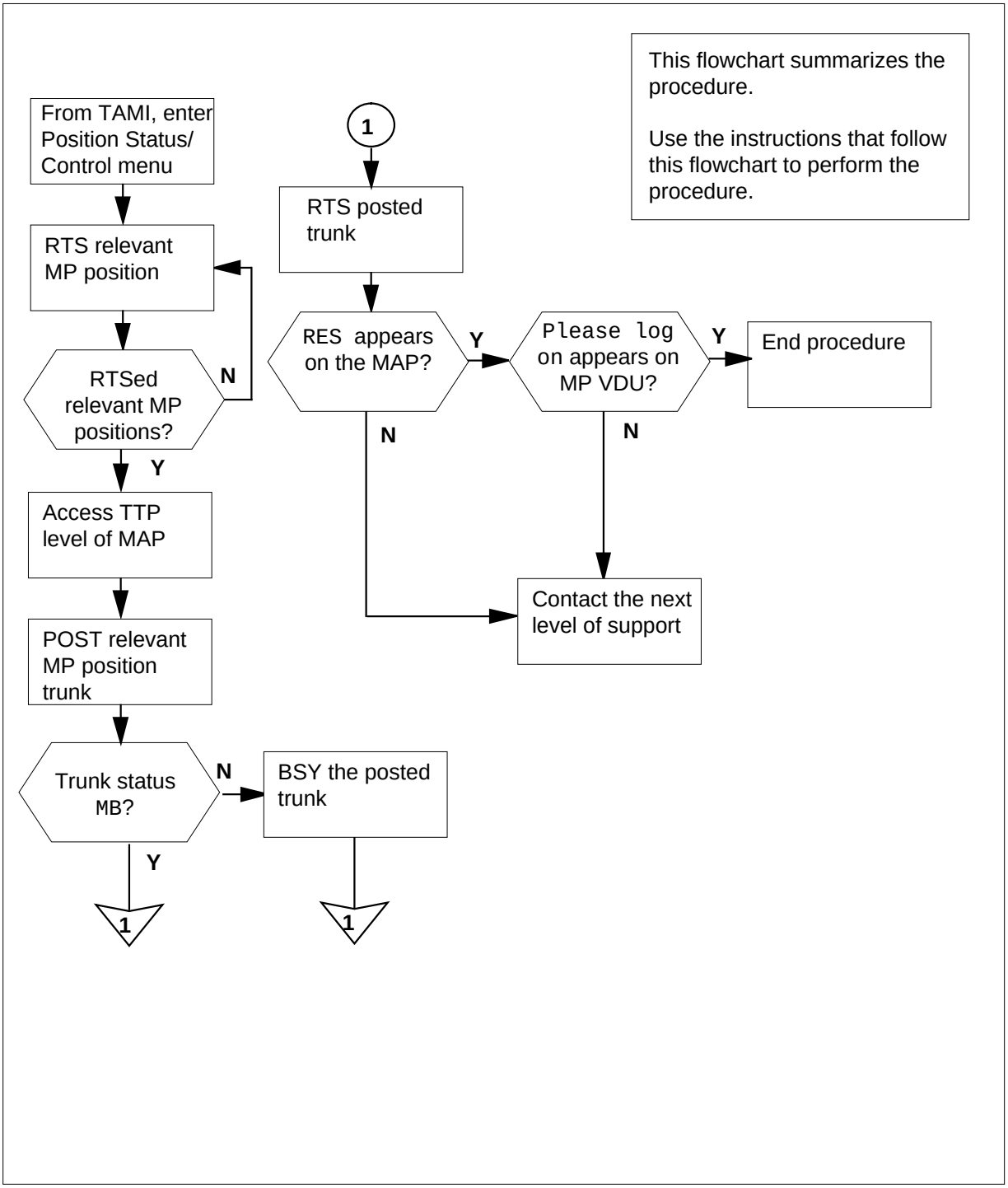
Application

Use this procedure to place a non-TOPS message switch (TMS) or standalone Traffic Operator Position System (TOPS) Multipurpose (MP) in service.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Placing an MP position in service (standalone) (continued)



Placing an MP position in service (standalone) (continued)

Placing an MP position in service (standalone)

WARNING
Possible equipment damage or service interruption
Proceed when a step in a maintenance procedure directs you to this procedure. Separate use of this feature can cause equipment damage or service interruption.

At the TAMI:

1 To access the Position Status/Control menu from the TAMI main menu type

>3

and press the Enter key.

TAMI response:

```
            POSITION STATUS/CONTROL
     1.  Bsy

     2.  RTS

     3.  OffL

     4.  RTS ALL POSITIONS
POSITION NUMBER        STATUS                CARD PRESENT
   0.                   InSv                      YES
   1.                   InSv                      YES
   2.                   InSv                      YES
   3.                   ManB                      YES
   MAKE CHOICE:
```

2 To return to service the MP position type

>2

and press the Enter key.

>n

and press the Enter key.

where

n
is the MP position number (0, 1, 2, or 3)

Note: Repeat this step until you return every position to service.

Placing an MP position in service (standalone) (continued)

At the MAP display terminal:

3 To access the TTP level, type

>MAPCI;MTC;TRKS;TTP

and press the Enter key.

4 To post the MP position trunk, type

>POST T TOPSPOS n

and press the Enter key.

where

n
is the MP position number (0, 1, 2, or 3)

5 Note the status of the trunk circuits.

If the trunk status	Do
is MB	step 7
is SB	step 6

6 To busy the posted trunk, type:

>BSY

and press the Enter key.

7

WARNING
Possible service interruption
Proceed when a step in a card replacement procedure directs you to this procedure. Separate use of this procedure can cause service interruption.

WARNING
Trunk goes system busy
Do not return the TOPSPOS trunk to service (RTS) until the MP position download is complete. The VDU displays Link problems encountered.

The trunk goes system busy when you RTS the trunk before Link problems encountered appears on the VDU.

To return the posted trunk to service, type

>RTS

Placing an MP position in service (standalone) (end)

and press the Enter key.

Note: Repeat Steps 4 through 7 until you return every position to service.

8 Determine if the trunk returns to service.

If trunk	Do
returns to service and RES appears on the MAP	step 10
fails to return to service	step 9

9 For additional help, contact the personnel responsible for the next level of support.

At the affected position:

10 Examine the MP VDU.

If	Do
`Please log on` appears	step 11
any other message appears	step 9

11 This procedure is complete. Return to the main procedure that directed you to this procedure. Continue according to procedure.

Removing an MP position from service (standalone)

Application

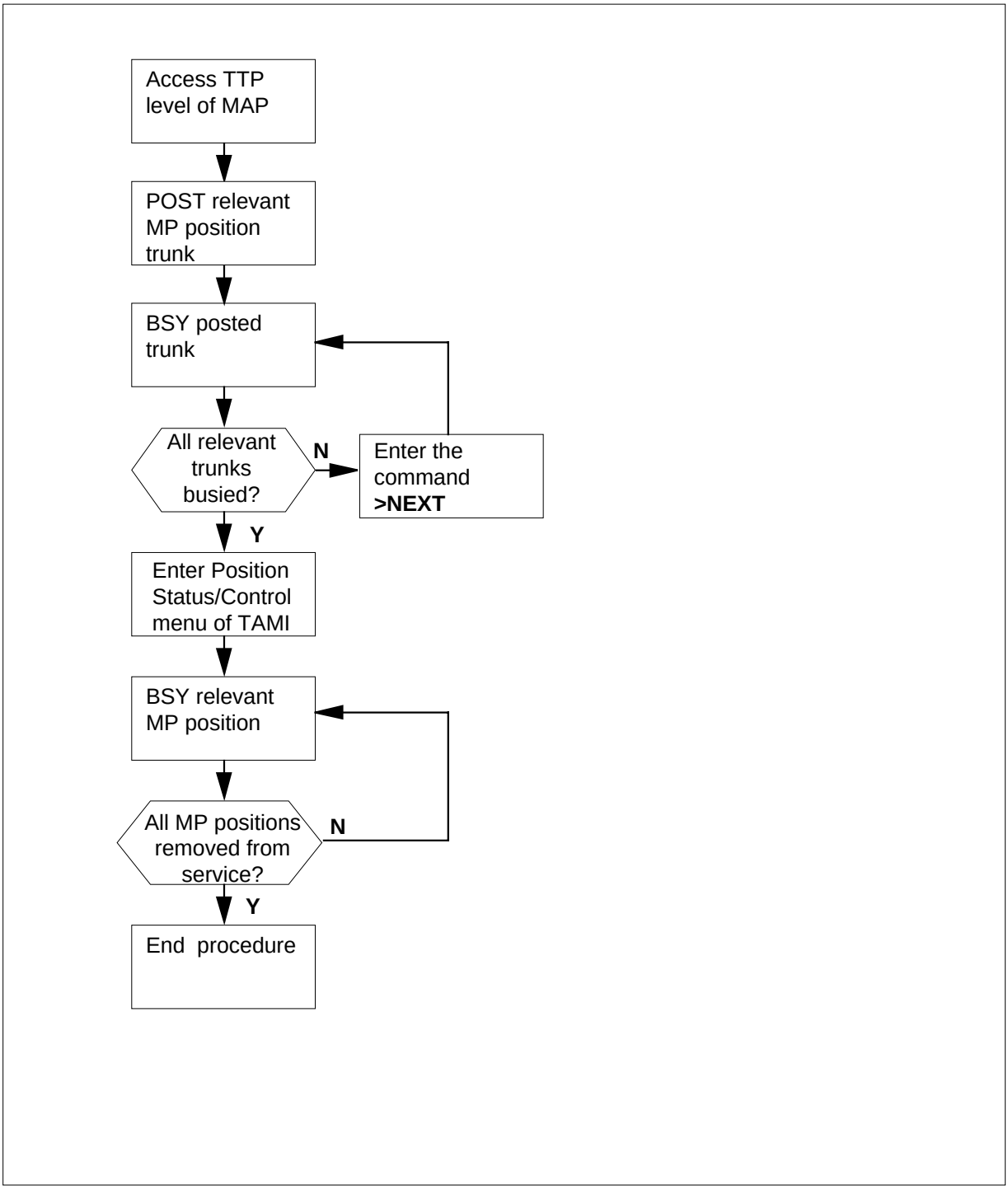
Use this procedure to remove a non-TOPS message switch (TMS) or standalone Traffic Operator Position System (TOPS) Multipurpose (MP) from service.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Removing an MP position from service (standalone) (continued)

Summary of Removing an MP position from service (stamdalone)



Removing an MP position from service (standalone) (continued)

Removing an MP position from service (standalone)

WARNING
Possible equipment damage or service interruption.
Proceed only when a step in a maintenance procedure directs you to this procedure. Independent use of this procedure can cause equipment damage or service interruption.

At the MAP:

1 To access the TTP level, type

>MAPCI;MTC;TRKS;TTP

and press the Enter key.

Example of MAP response:

```
   CM     MS    IOD    Net    PM    CCS    Lns    Trks  Ext    EIO
    .      .      .      .      .     .      .      .     .      .
 TTP
 0 Quit_    POST       DELQ         BUSYQ       DIG
 2 Post_    TTP  16
 3 Seize_   CKT TYPE  PM NO     COM LANG   STA    S R DOT TE  RESULT
 4          DESK     TMS 0 5 18  TOPSPOS  221 STATE  RES
 5 Bsy_                                      ID
 6 RTS_
 7 Tst_
 8
 9 CktInfo
10 CktLoc
11 Hold
12 Next_
13 Rls_
14 Ckt_
15 TrnslVf_
16 StkSdr_
17 Pads_
18 Level_
 User ID
```

2 To post the related MP position trunk, type

>POST G TOPSPOS n

and press the Enter key.

where

n
is the MP position number. The number is 0, 1, 2, or 3.

Removing an MP position from service (standalone) (continued)

Example of MAP response:

```
   CM     MS    IOD    Net    PM    CCS    Lns    Trks  Ext    EIO
    .      .      .      .      .     .      .      .     .      .
 TTP
 0 Quit_    POST  14   DELQ         BUSYQ       DIG
 2 Post_    TTP  6-024
 3 Seize_   CKT TYPE   PM NO.      COM LANG   STA  S R DOT TE RESULT
 4          DESK     TM8  2 16  TOPSPOS  200  IDL
 5 Bsy_
 6 RTS_
 7 Tst_
 8
 9 CktInfo
10 CktLoc
11 Hold
12 Next_
13 Rls_
14 Ckt_
15 TrnslVf_
16 StkSdr_
17 Pads_
18 Level_
 User ID
```

3 To busy the posted trunk, type

>BSY

and press the Enter key.

4 From the MAP, determine if all of the associated trunks are busy.

If all of the related trunks	Do
are busy	step 6
are not busy	step 5

5 To post the next trunk, type

>NEXT

and press the Enter key. Return to step 3.

At the TAMI:

6 To access the Position Status/Control menu from the TAMI main menu, type

>3

and press the Enter key.

TAMI response:

Removing an MP position from service (standalone) (continued)

```
                POSITION STATUS/CONTROL
        1.  Bsy

        2.  RTS

        3.  OffL

        4.  RTS ALL POSITIONS
POSITION NUMBER              STATUS                CARD PRESENT
   0.                      InSv                      YES
   1.                      InSv                      YES
   2.                      InSv                      YES
   3.                      InSv                      YES
   MAKE CHOICE:
```

7 To busy the MP position, use the following procedure.

a Type

>1

and press the Enter key.

where

1
is busy

b Type

>n

and press the Enter key.

where

n
is the MP position number. The number is 0, 1, 2, or 3.

c Type

>Y

and press the Enter key.

where

y
is yes. You busied the position at the MAP

8 From the TAMI, determine if all of the related positions are removed from service.

If all of the related MP positions	Do
are removed from service	step 9

Removing an MP position from service (standalone) (end)

If all of the related MP positions	Do
are not removed from service	step 7

9 To return to the TAMI main menu, press the PF3 key.

10 This procedure is complete. Return to the main procedure that sent you to this procedure. Continue as the procedure directs.

Removing and replacing a card

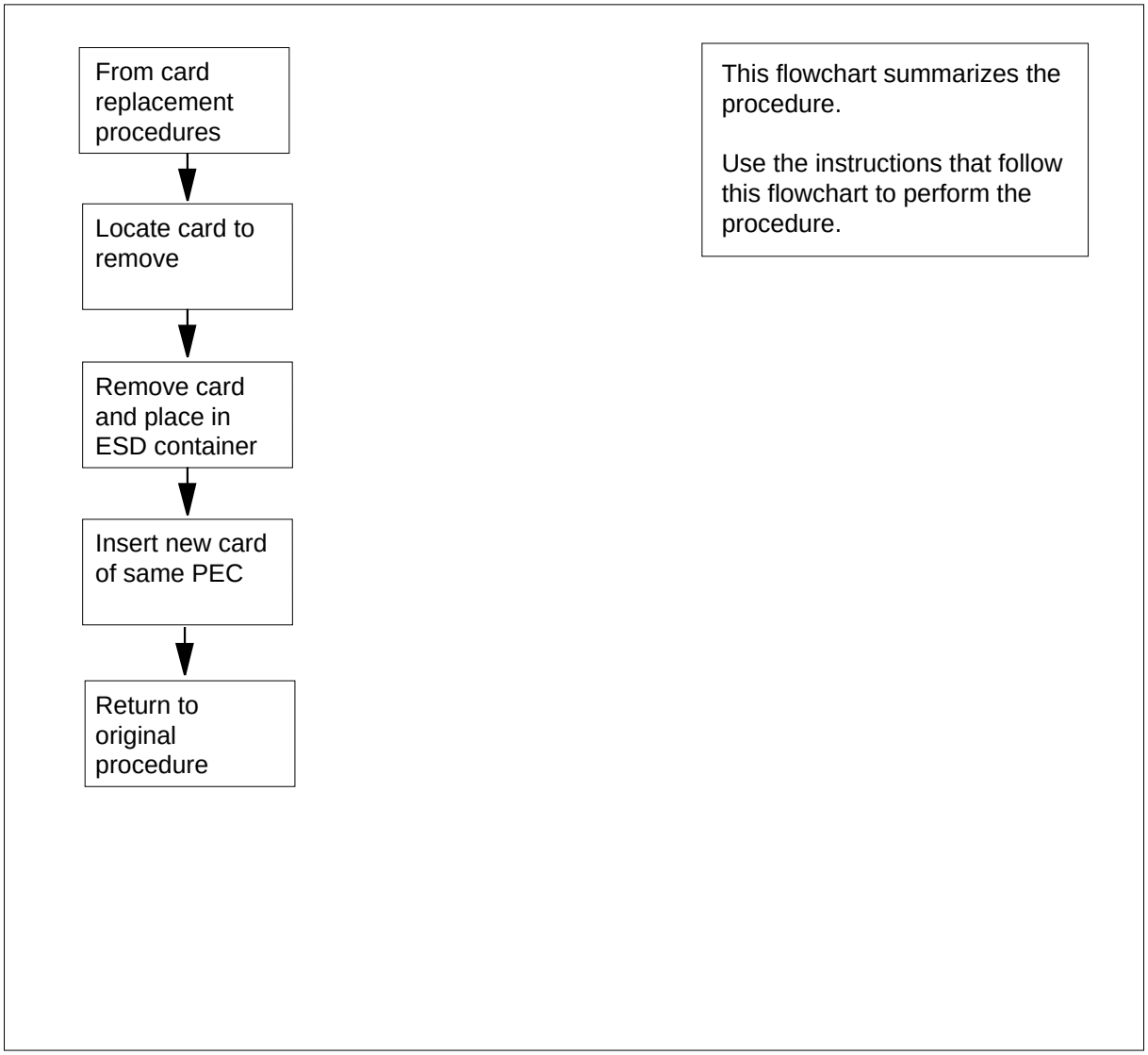
Application

Use this procedure when you remove a circuit card and insert a replacement circuit card.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Summary of Removing and replacing a card



Removing and replacing a card in a shelf

At the cabinet

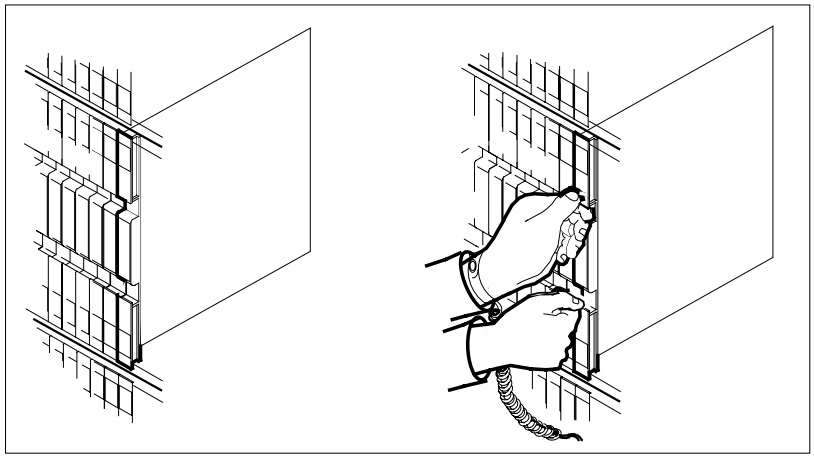
1

WARNING
Equipment damage
Take the following precautions when you remove or insert a card:1. Do not apply direct pressure to the components.2. Do not force the cards in the slots.

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a modular supervisory panel (MSP) or a frame supervisory panel (FSP). The wrist strap protects the cards against static electricity damage.

Put on a wrist strap.

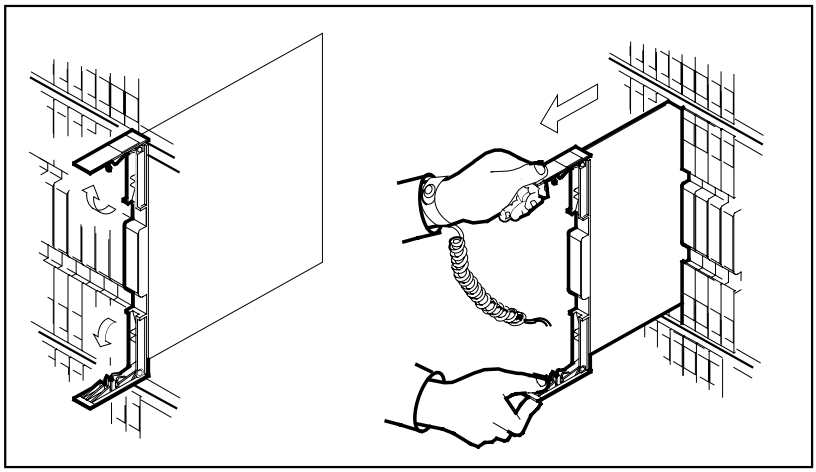
2 Locate the card you want to remove on the correct shelf.



3 Open the locking levers on the circuit card that has faults. The top locking lever opens up and the bottom locking lever opens down.

Carefully pull the circuit card toward you until the card clears the shelf.

Removing and replacing a card (continued)



4 Place the removed circuit card in an electrostatic discharge (ESD) protective container.

If the card	Do
is NTMX77	step 5
is other than listed here	step 6

5 Return to the NTMX77 circuit card replacement procedures for switch setting information.

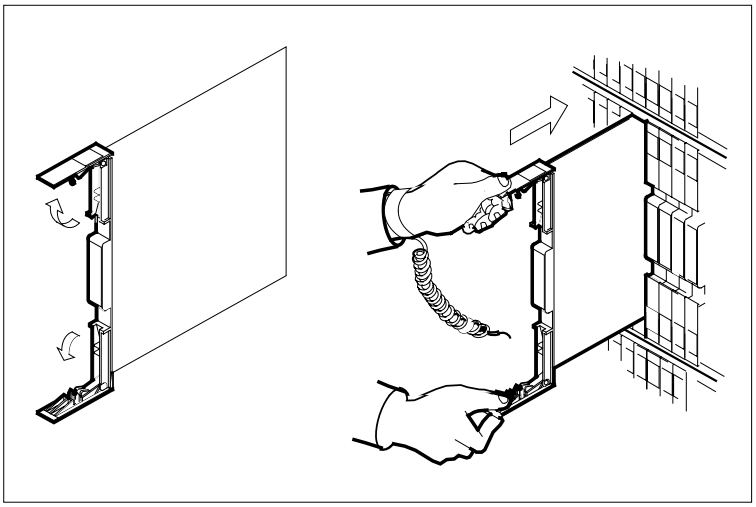
6 Make sure the replacement circuit card has a PEC, and PEC suffix that match the PEC and PEC suffix of the removed circuit card.

7 Make sure all the DIP switch settings match the DIP settings of the removed circuit card.

Note: When replacing the NTMX77, make sure the XPM/CPM switch on the circuit card is set to the correct position. If the NTMX77 you are replacing is in a CPM shelf (both units are on one shelf), set the switch to the CPM position. Otherwise, set the switch to the XPM position. If the replacement card does not have a switch, this instruction does not apply.

8 Open the locking levers on the replacement circuit card. Align the circuit card with the slots in the shelf. Carefully slide the circuit card in the shelf.

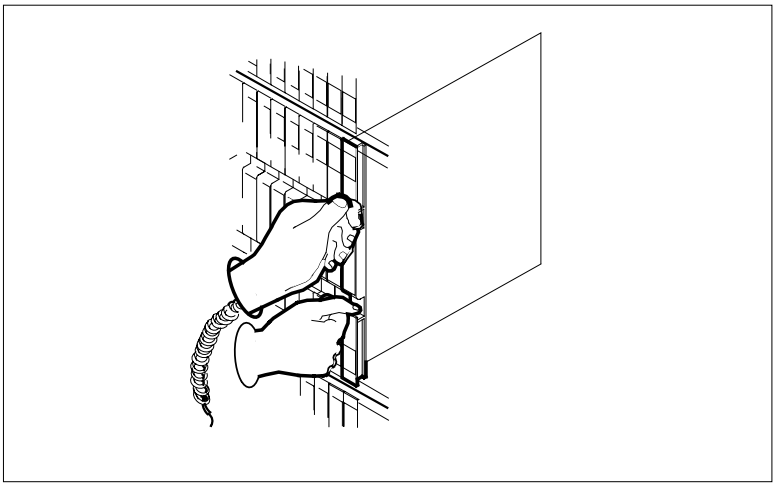
Removing and replacing a card (end)



9 Seat and lock the circuit card as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the circuit card sits completely in the shelf.

b Close the locking levers.



10 The procedure is complete. Return to the procedure that directed you to this procedure and continue as directed.

Replacing a card

Application

Use this procedure to replace a card in a modular equipment frame.

> ***Note:*** Use this procedure for cards in the front plane of 28 in. (71.1 cm) cabinets, and for cards in the front and back planes of 42 in. (106.7 cm) cabinets. The diagrams show single-slot cards in the 42 in. (106.7 cm) SuperNode cabinet.

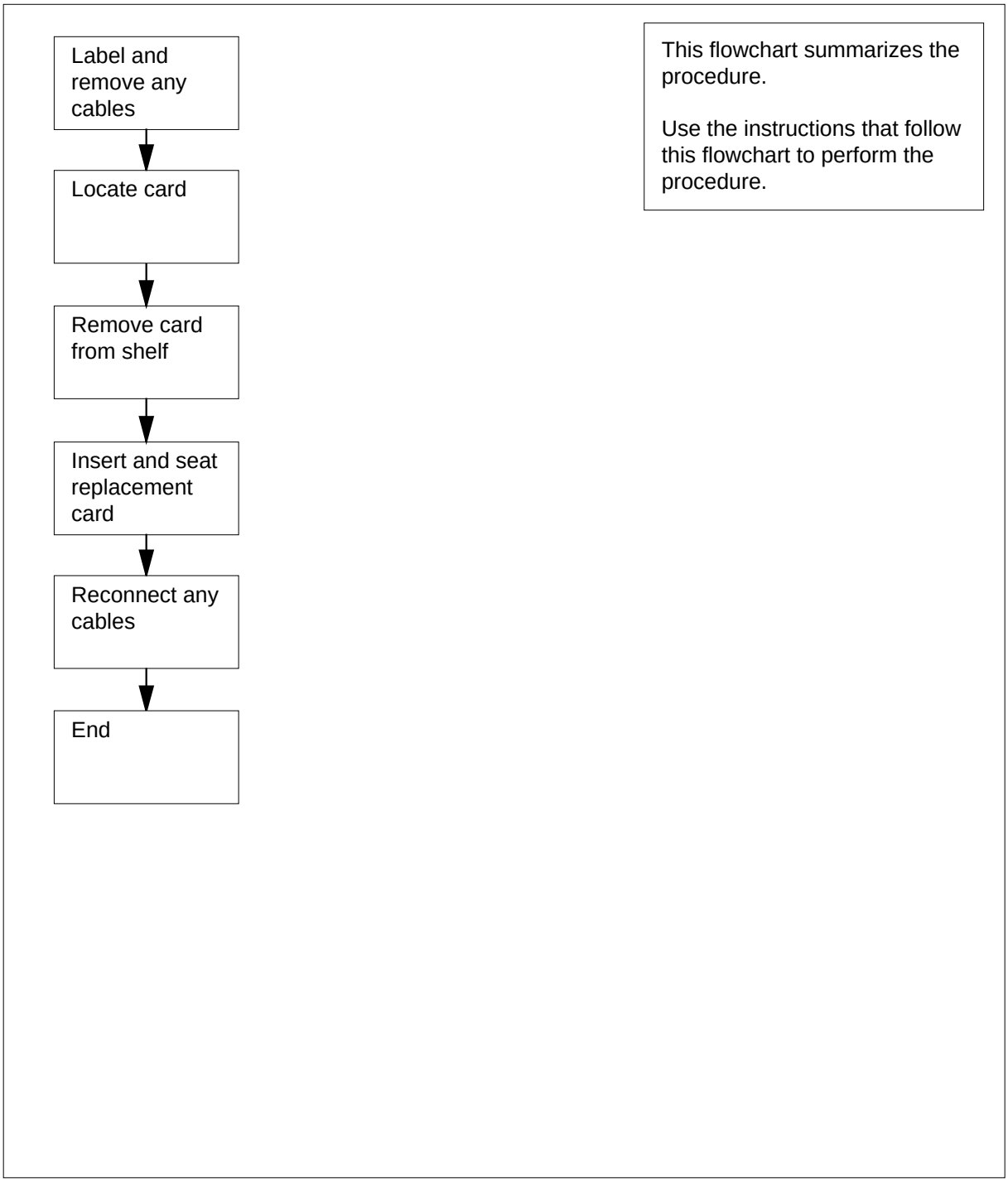
You must turn down all functionality associated with the card. Complete any required hardware preparations.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Replacing a card (continued)

Summary of Replacing a card



Replacing a card (continued)

Replacing a card

DANGER
Risk of electrocution
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, personal injury can occur.

DANGER
Risk of equipment damage
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, equipment damage can occur.

DANGER
Do not hold card by latches only
If you hold a card only by the latches, the latches can break. Pull the card half way out of the shelf. Grasp the card from below for more support. Continue to remove the card from the shelf. Make sure you do not touch any wires or internal parts on the card.

CAUTION
Loss of service
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, loss of service can occur.

At the frame

1 Locate the card on the shelf.

Replacing a card (continued)

2

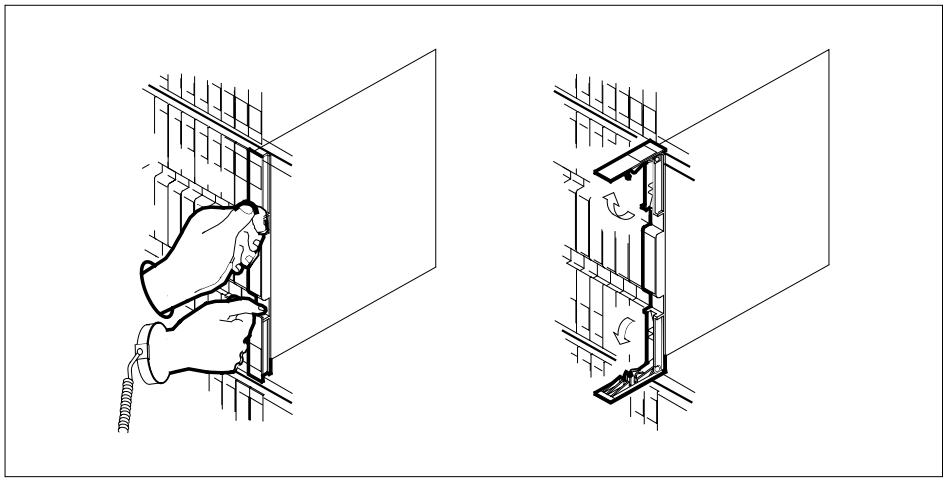
WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards or cables. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Label cables connected to the face plate of the card you will replace.

3 Remove cables from the faceplate of the card.

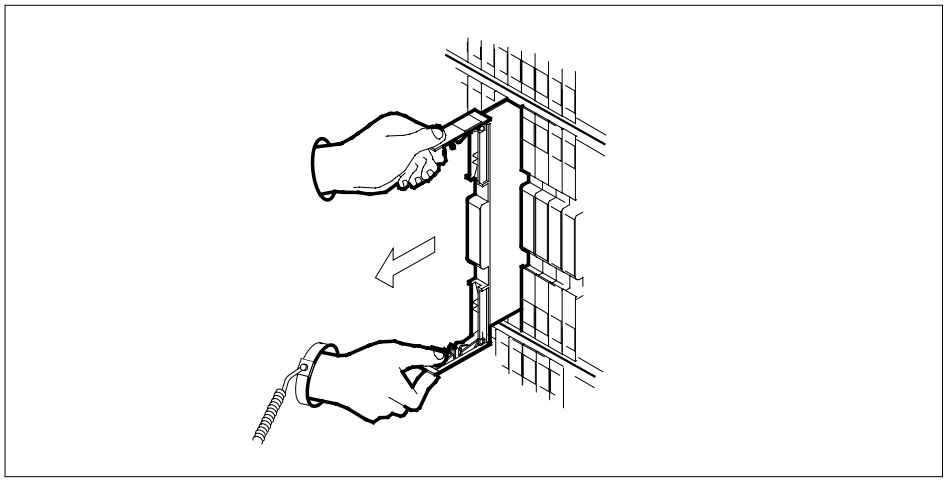
If the card	Do
is seated	step 4
is not seated	step 6

4 Open the latches on the face of the card.

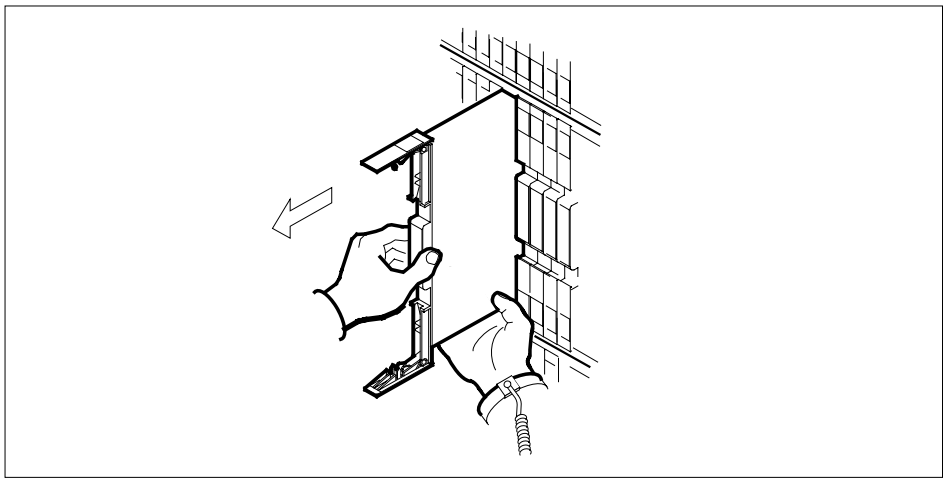


5 Grasp the latches and carefully pull the card toward you until the card protrudes 2 in. (5.1 cm) from the equipment shelf.

Replacing a card (continued)



6 Hold the card by the faceplate with one hand and support the bottom edge with the other hand. Carefully pull the card toward you until the card clears the shelf.



7 Place the card you removed in an electrostatic discharge (ESD) protective container.

8 Make sure the replacement card and the card you removed have the same PEC and PEC suffix.

Note: Determine if the card you replace has switches. Make sure the switches for the replacement card and the card you replace have the same settings.

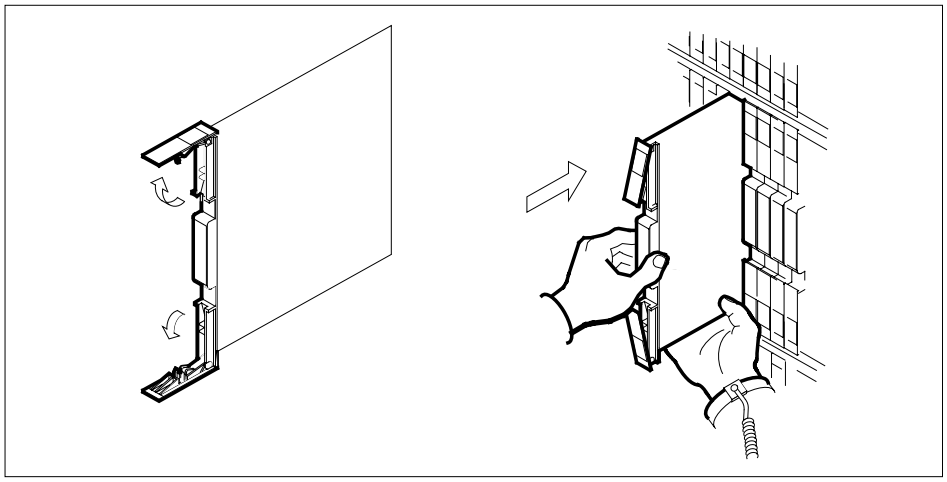
9 Insert the replacement card into the shelf as follows:

a Open the latches on the card.

b Hold the card by the faceplate with one hand and support the bottom edge with the other hand. Push the circuit pack at the push points until the latches start to angle inward 1/8 in. (0.32 cm).

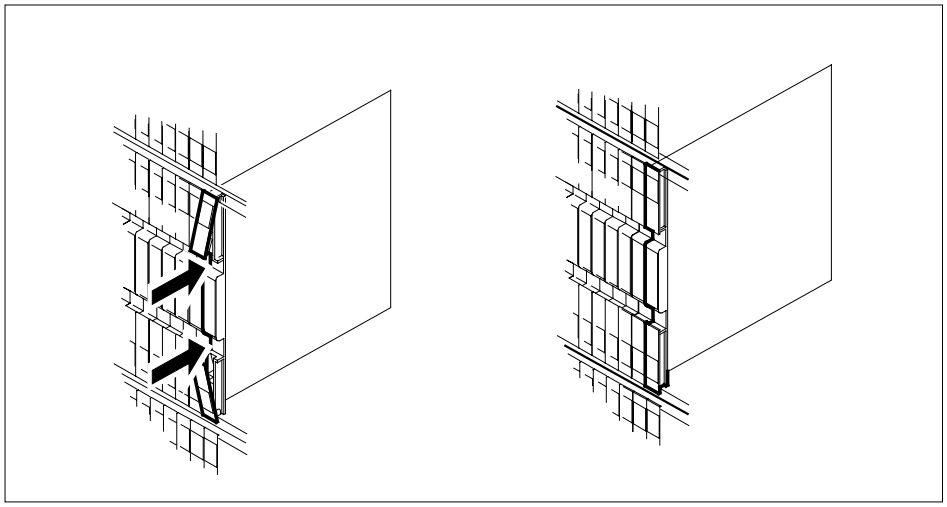
Replacing a card (end)

All of the back panel pins pass through the opening for the connector housing entrance. The back panel pins line up with the appropriate connector contacts.



10 Seat and lock the card as follows:

a Grasp the locking latches and push on the latches to seat the circuit pack completely. Lock the latches to the faceplate.



11 Connect the cables you removed to the replacement card.

12 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Replacing a card STAR or RLD

Application

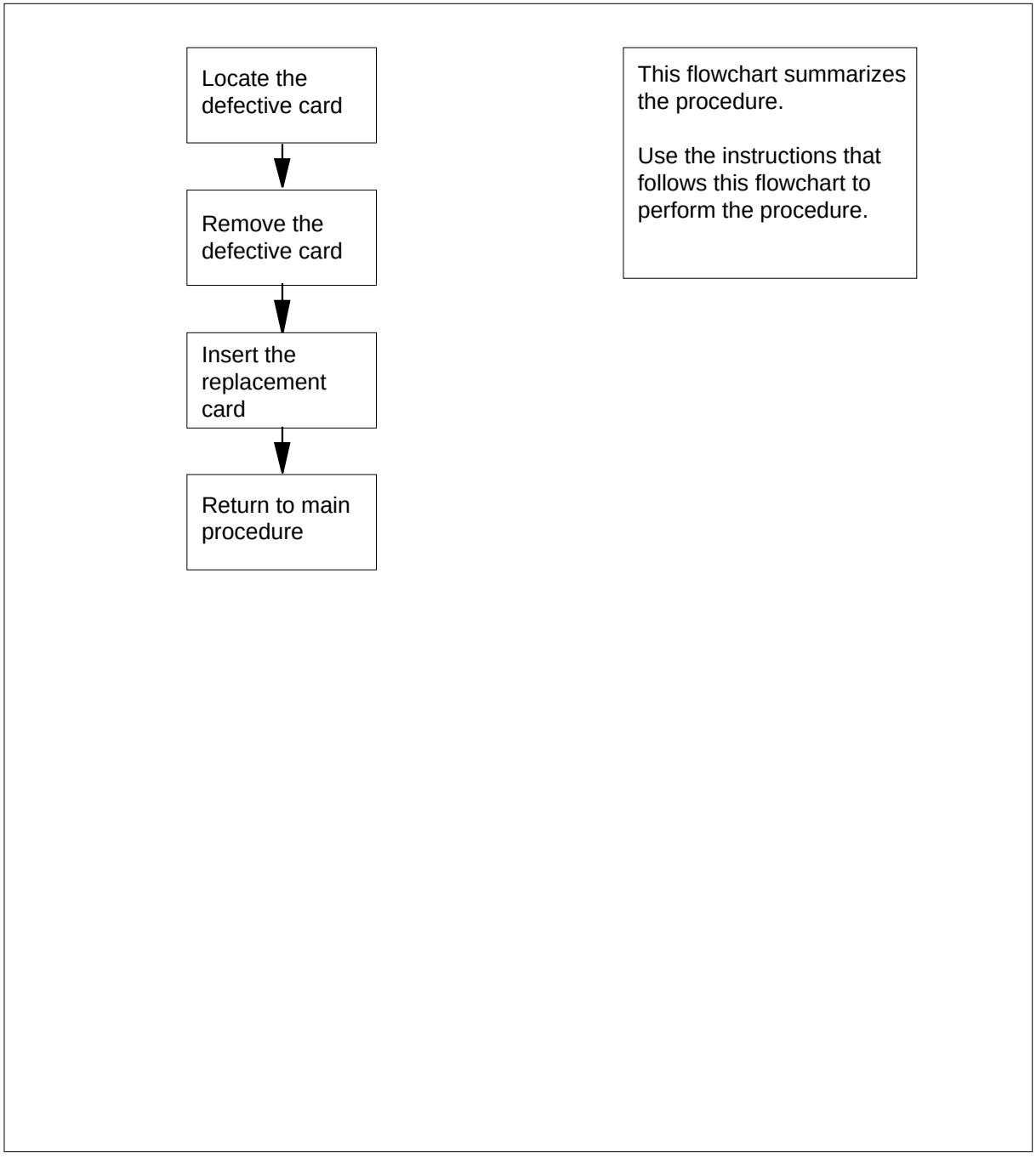
Use this procedure to unseat, remove, and reseat cards.

Action

The following flowchart is a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

Replacing a card
STAR or RLD (continued)

Summary of common procedures for Replacing a card in a STAR or RLD



Replacing a card
STAR or RLD (continued)

Replacing a card

At the STAR or RLD

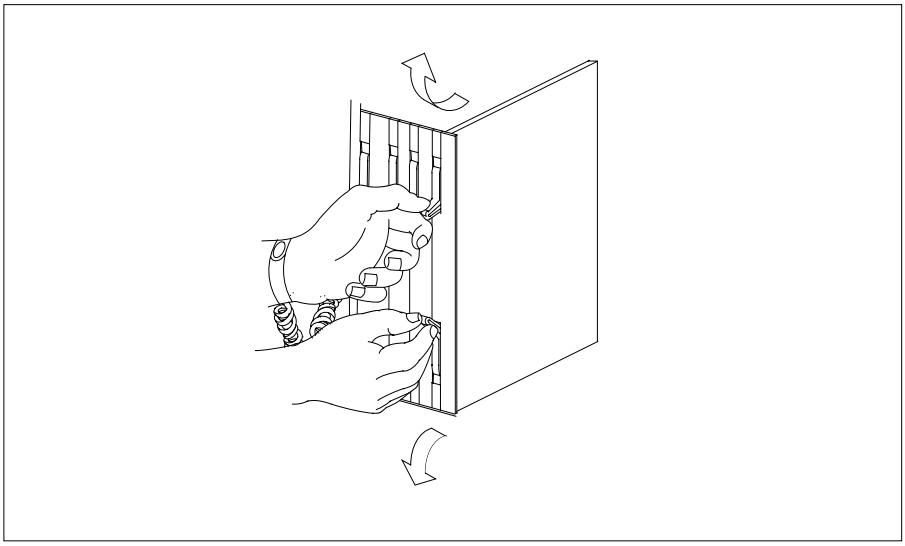
1 Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Using this procedure independently may cause equipment damage or loss of service.

2

DANGER
Static electricity damage
Wear a wrist strap connected to the wrist strap grounding point on the frame supervisory panel (FSP) while handling cards. This precaution protects the cards against damage caused by static electricity.

Remove any cables from the faceplate of the card to be replaced and note the connector numbers.

3 Locate the card to be removed on the appropriate shelf if you have not already done so.

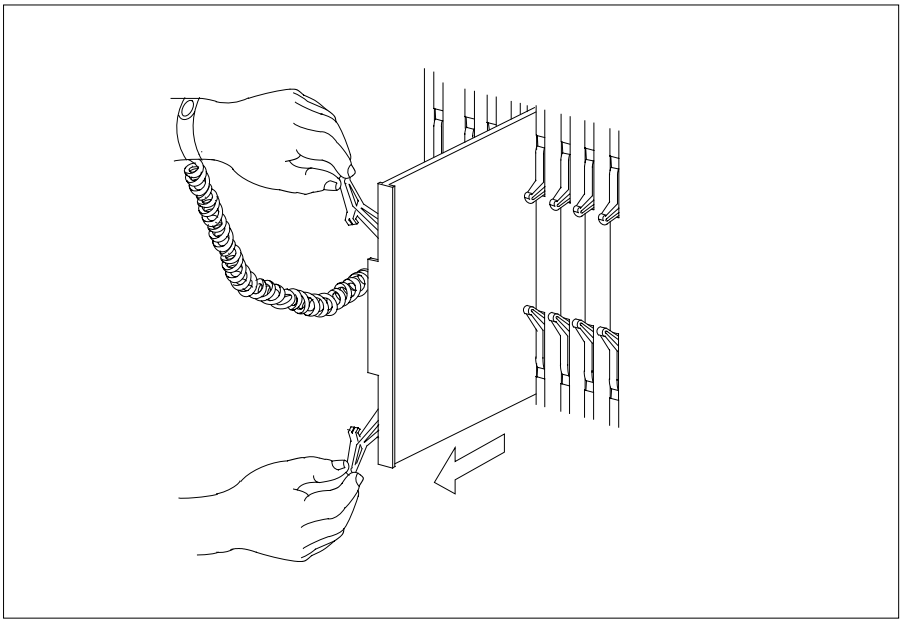


Replacing a card
STAR or RLD (continued)

4

DANGER
Do not hold card by levers only
Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



5 Examine the switch settings (if any) of the card just removed. Ensure the switch settings on the replacement card match those of the card being replaced.

6 Place the card you have removed in an electrostatic discharge (ESD) protective container.

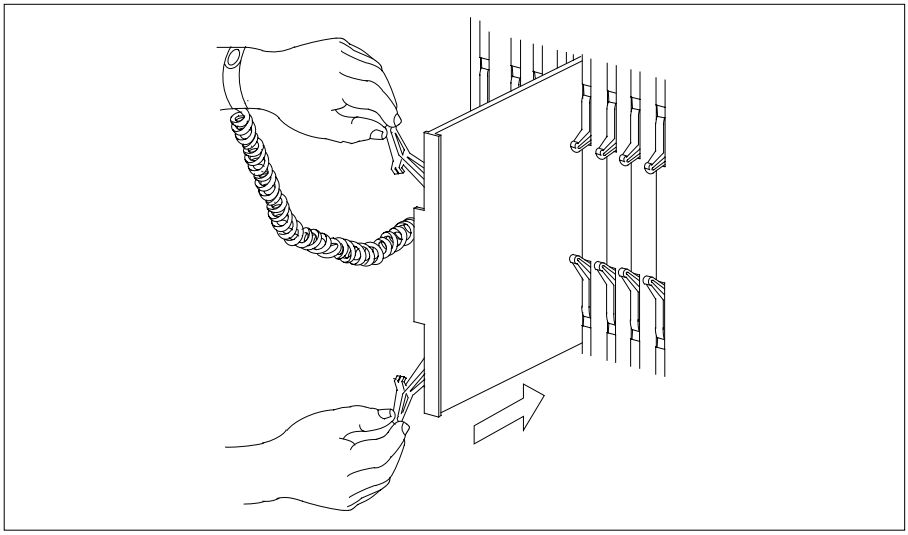
7 Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card you just removed.

Replacing a card
STAR or RLD (continued)

8

DANGER
Improper insertion may damage circuit packs
Do not apply direct pressure to the components.Do not force the cards into the slots.

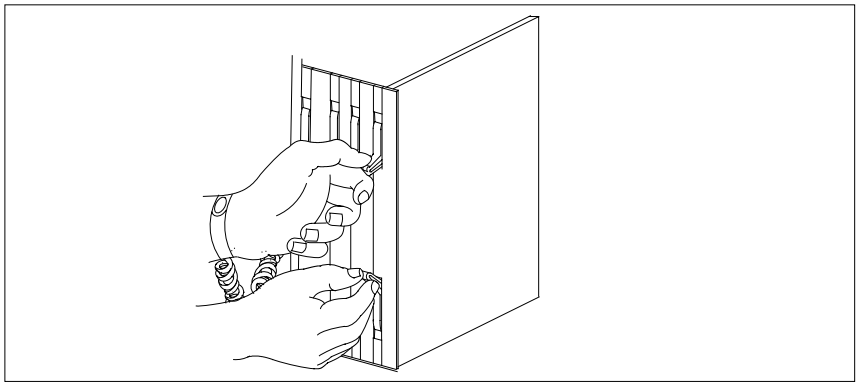
Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.



9 Seat and lock the card.

a Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure the card is fully seated in the shelf.

b Close the locking levers.



Replacing a card
STAR or RLD (end)

10 Reconnect any previously removed cables to the faceplate of the replacement card.

11 You have completed this procedure. Return to the main procedure that sent you to this procedure and continue as directed.

Replacing a line card

Application

Use this procedure to replace line cards in:

- a line module (LM)
- a line concentrating module (LCM)
- an enhanced line concentrating module (LCME)

To perform the procedure, you must perform the following procedures:

- manually busy all associated circuits
- turn down all functionality that associates with the card
- complete required hardware preparations

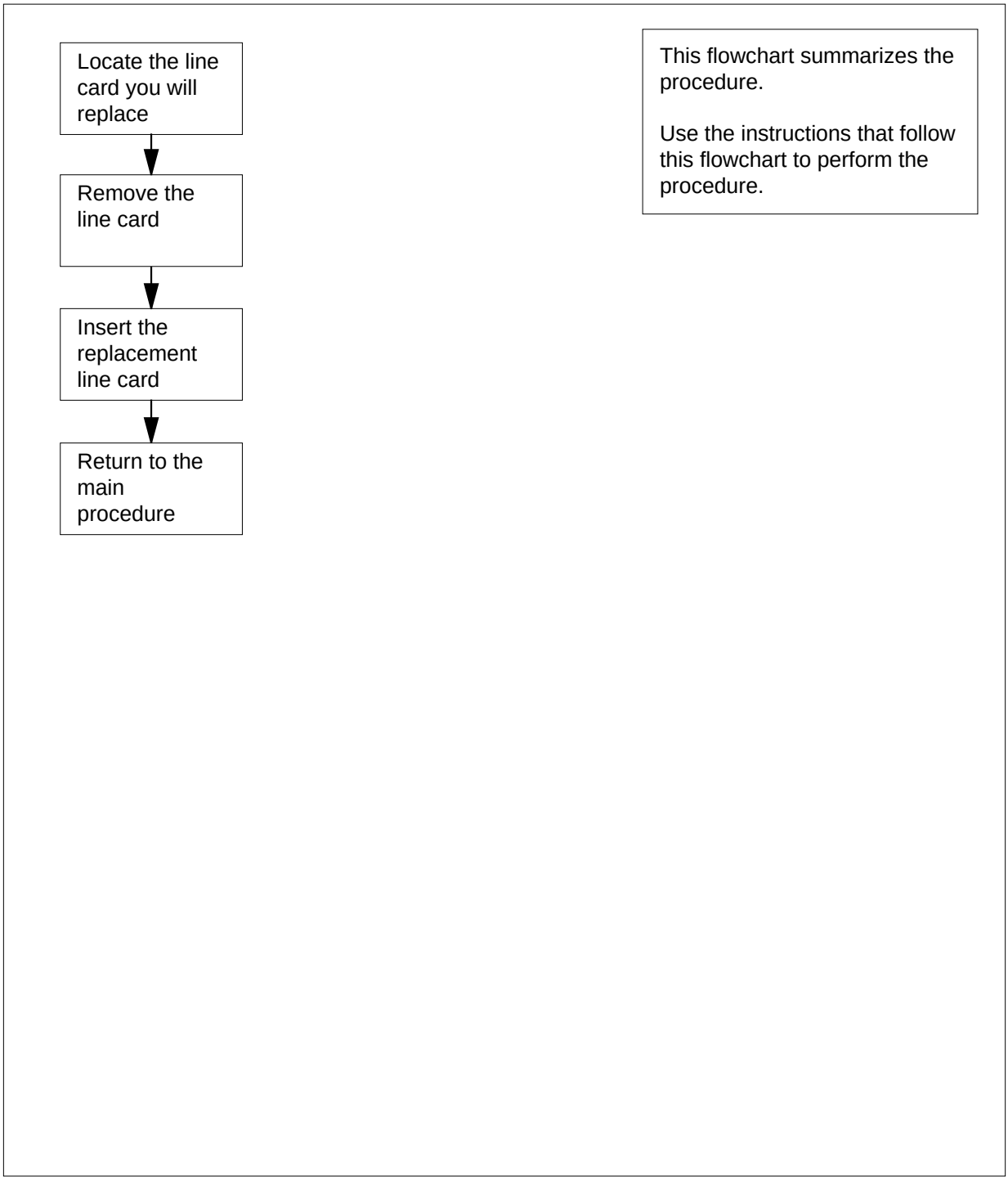
You must post the circuit to complete a hardware location query.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Replacing a line card (continued)

Summary of Replacing a line card



Replacing a line card (continued)

Replacing a line card

DANGER
Risk of electrocution
Proceed only if a step in a maintenance procedure directs you here. If you perform this procedure without permission, personal injury can occur.

DANGER
Risk of equipment damage
Proceed only if a step in a maintenance procedure directs you here. If you perform this procedure without permission, equipment damage can occur.

WARNING
Loss of service
Proceed only if a maintenance procedure directs you here. If you perform this procedure without permission, a loss of service can occur.

At the MAP terminal

1 To display the cabinet location of the line card, type

>CKTLOC

and press the Enter key.

Example of a MAP display:

```
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  01  B04  LCE  01   04  LCM  01 0      01:00    6X17AA

GRD START   2DB LOSS   BAL  NETWORK   MAN OVR SET
 NO           NO       NON LOADED        NO
```

Note: In the example MAP display, the line card is an NT6X17AA and the location of the card is:

Site
in the HOST office

Flr
on the 1st floor

RPos
row B is the location of the line equipment bay 04

Replacing a line card (continued)

Bay_id
in line concentrating equipment, bay 01

Shf
in shelf 04

Description
in hardware device LCM, bay 01

Slot
in line drawer 01, slot 00

At the shelf

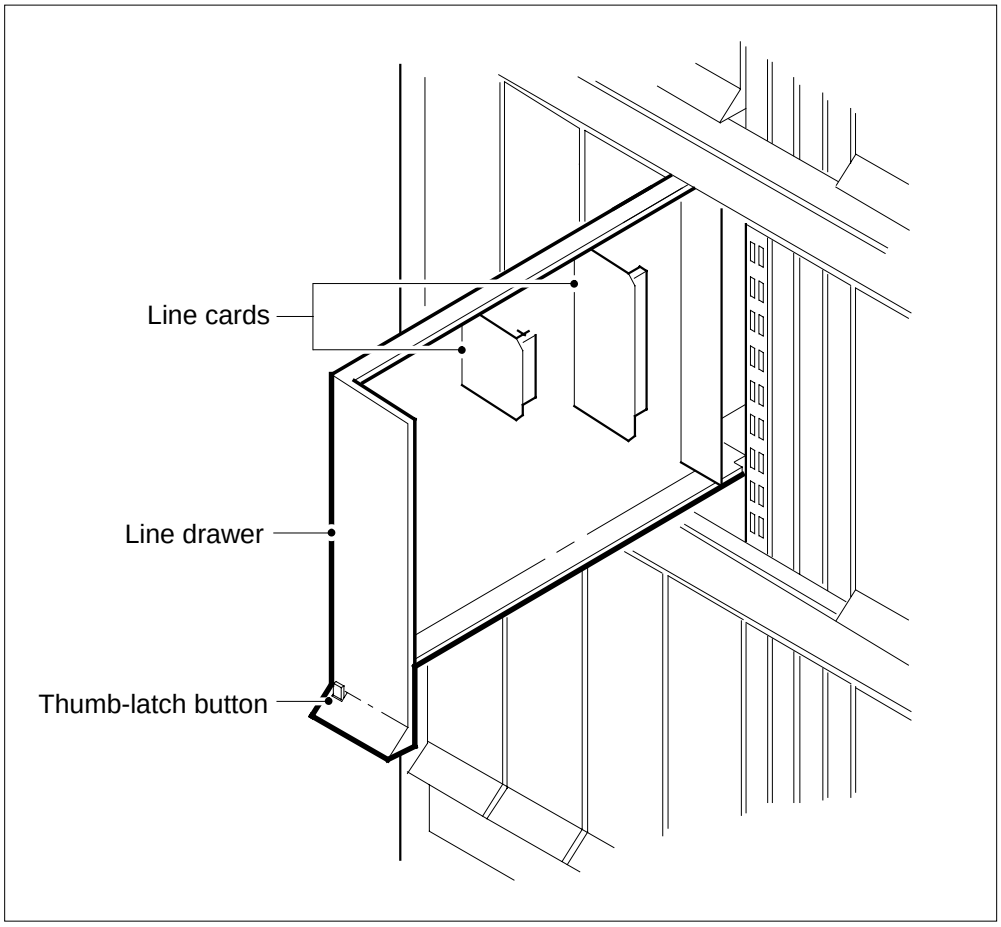
2

WARNING
Static electricity damage
Wear a wrist strap that connects to a wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Use the information you obtained in step 1 to locate the physical location of the line card.

3 Pull the drawer out.

Replacing a line card (continued)



Note: LMs, LCMs, and LCMEs equipped with plastic drawers use the thumb-latch locking device. Some LMs have metal drawers, which do not have the thumb-latch button device.

4 Identify the line card you replace. This line card can be a 76-mm (3-in.) or a 152-mm (6-in.) card. Note the slot location of the card. Insert the replacement card into this slot.

Note 1: A card shroud is necessary for insertion and removal of a card from a line drawer. The card shroud for a 3-in. (76-mm) is a line card insertion/withdrawal tool (3 in. (76 mm). The apparatus code of the card shroud is QTH56A, and the common product code is A0298291. The card shroud for a 6-in. (152-mm) card is a line card insertion/withdrawal tool (6 in. (152-mm). The apparatus code of the card shroud is QTH58A, and the common product code is A0313317.

Note 2: A card removal tool is necessary for the removal of a card from a line drawer. The small grip tool for 3-in. (76-mm) cards (or larger) is a removal tool (3-in. (76-mm). The apparatus code for the small grip tool is QTH57A, and the common product code is A0298292.

Replacing a line card (continued)

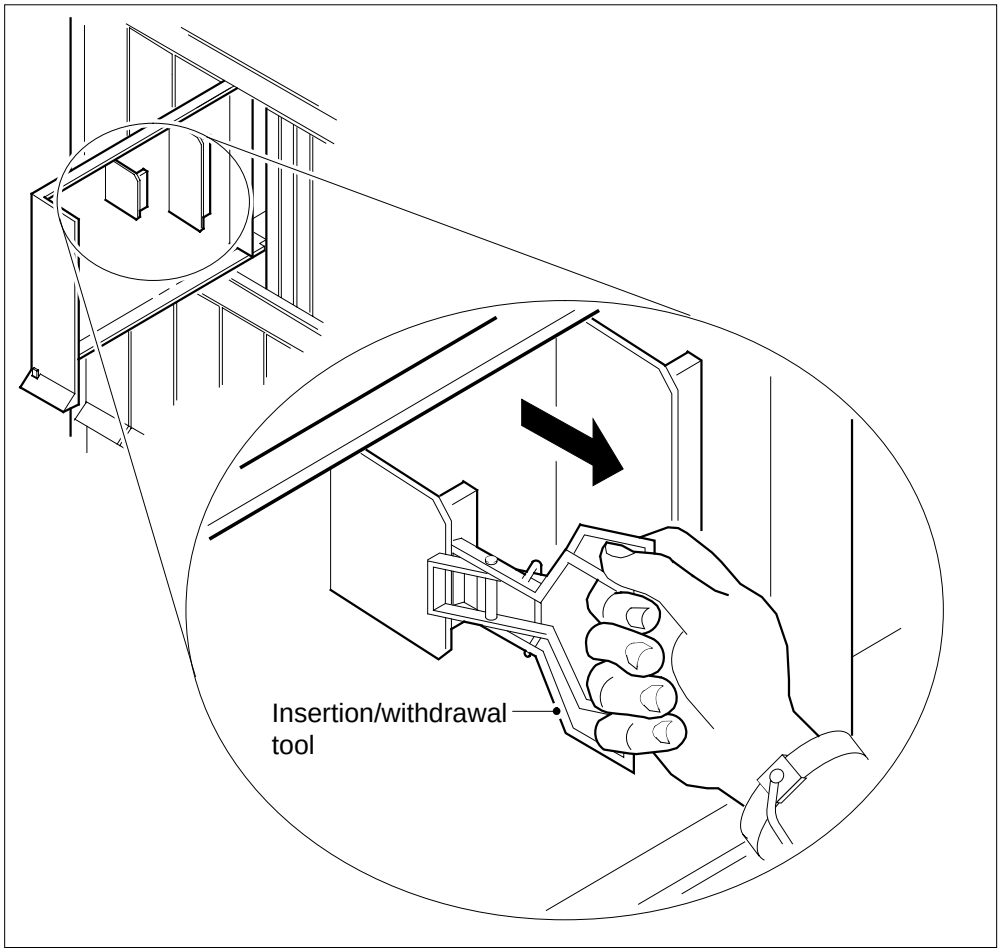
5

DANGER
Risk of personal injury
Make sure you handle the line card carefully. The line feed resistor can be very hot. To avoid injury, use the insertion/withdrawal tool to remove the card as illustrated below.

Remove the card from the drawer as follows:

a Clamp the insertion/withdrawal tool to the front edge of the card as illustrated below.

b Carefully pull the card out of the slot.



6 Place the card in a protective container for an electrostatic discharge (ESD).

Replacing a line card (end)

7 Remove the replacement card from the ESD protective container. Make sure the replacement card and the card you removed have the same PEC and PEC suffix.

8 Clamp the insertion/withdrawal tool to the front edge of the replacement card as shown in step 5. Insert the card into the slot. Make sure you seat the card firmly in the slot.

9 Close the line card drawer.

10 The procedure is complete. Return to the maintenance procedure that directed you to this procedure. Continue as directed by the maintenance procedure.

Reseating cards in equipment shelves

Application

Use this procedure to reseat cards in equipment shelves.

Note: Use this procedure for cards in the front plane of 28 in. (71.1 cm) cabinets. You can use this procedure for cards in the front and back planes of 42 in. (106.7 cm) cabinets. Single-slot cards in the 42 in. (106.7 cm) SuperNode cabinet appear in the diagrams.

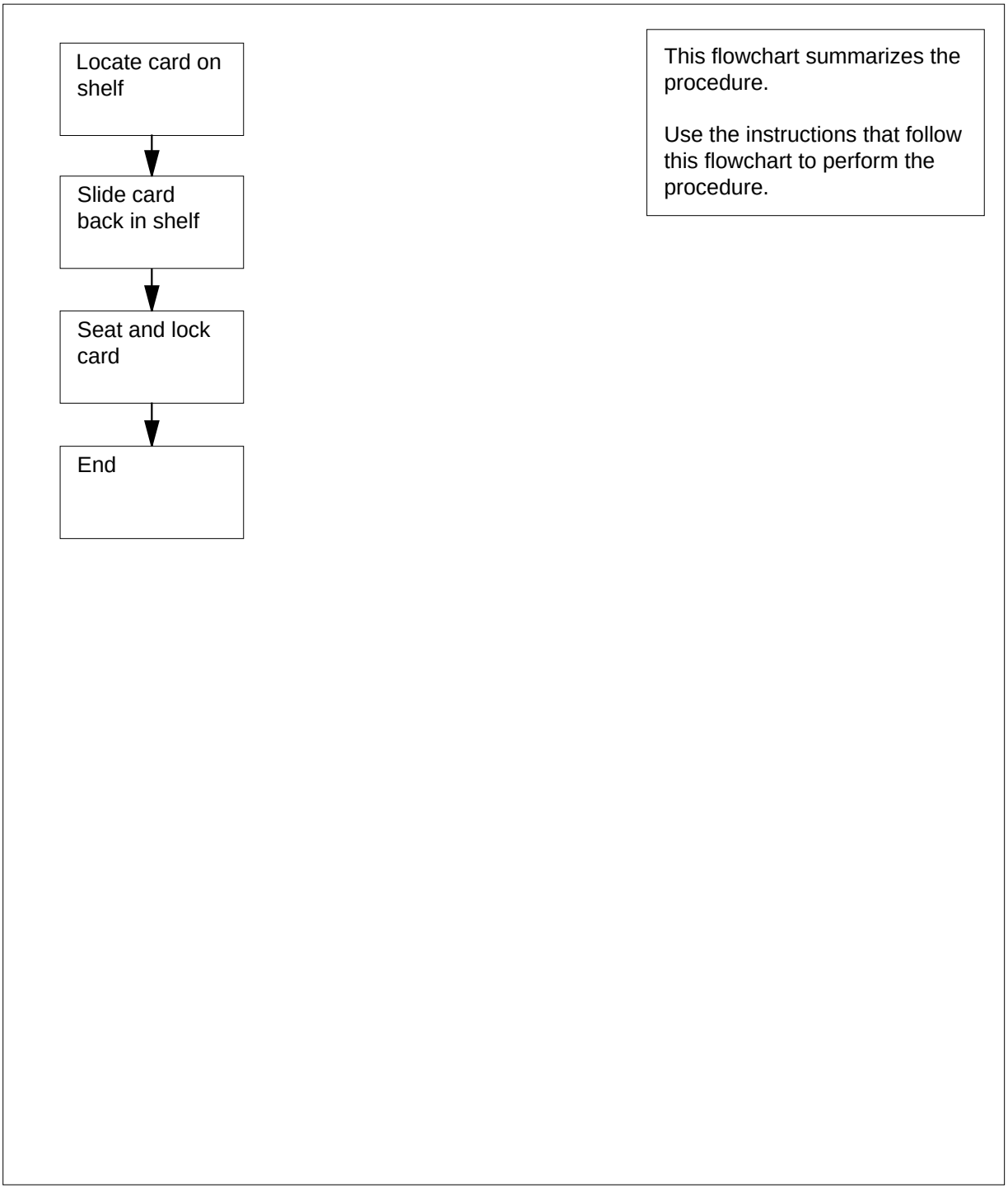
You must turn down all functionality associated with the card. Complete required hardware preparations.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Reseating cards in equipment shelves (continued)

Summary of Reseating cards in equipment shelves



Reseating cards in equipment shelves (continued)

Reseating cards in equipment shelves

DANGER
Risk of electrocution
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, personal injury can occur.

DANGER
Risk of equipment damage
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, equipment damage can occur.

WARNING
Loss of service
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, a loss of service can occur.

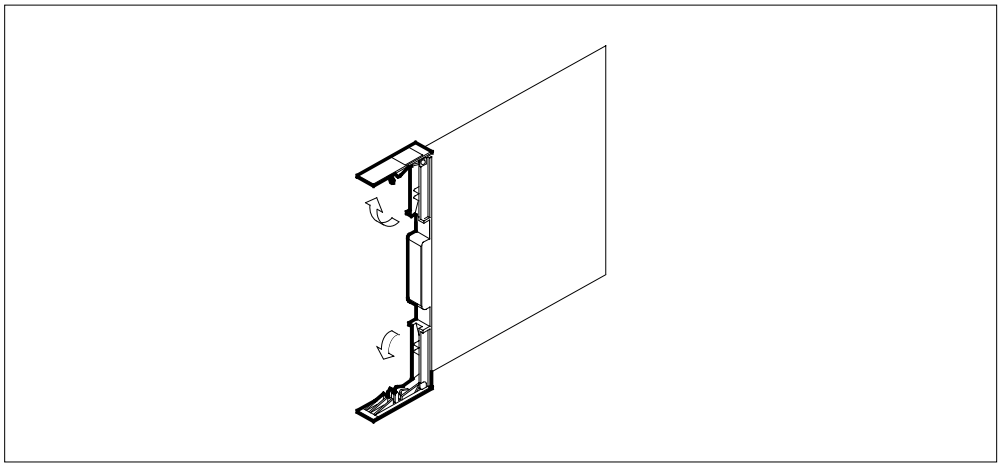
At the shelf

1

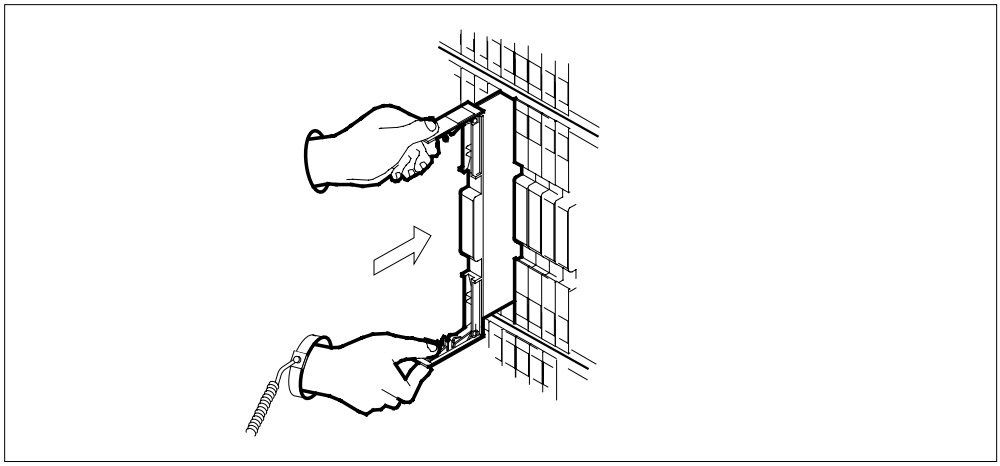
WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

Locate the card on the shelf. Make sure the locking levers are open.

Reseating cards in equipment shelves (continued)



2 Carefully slide the card back in the slot.

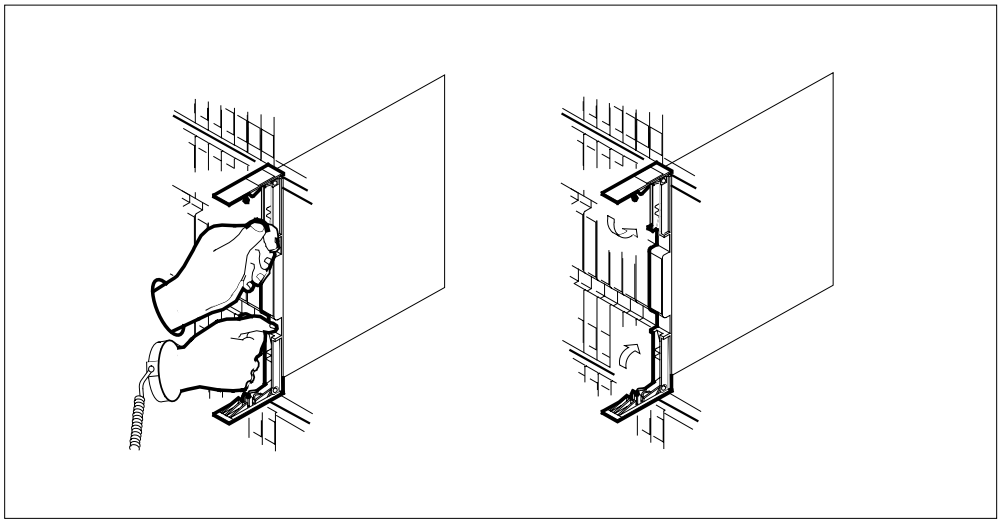


3 Seat and lock the card as follows:

a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.

b To secure the card, close the locking levers.

Reseating cards in equipment shelves (end)



4 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Returning a card for repair or replacement

Application

Use this procedure to return a circuit card, for example a power converter, for repair or replacement. The documents you must complete and the circuit card return address depends on your location.

Interval

Perform this procedure as needed.

Common procedures

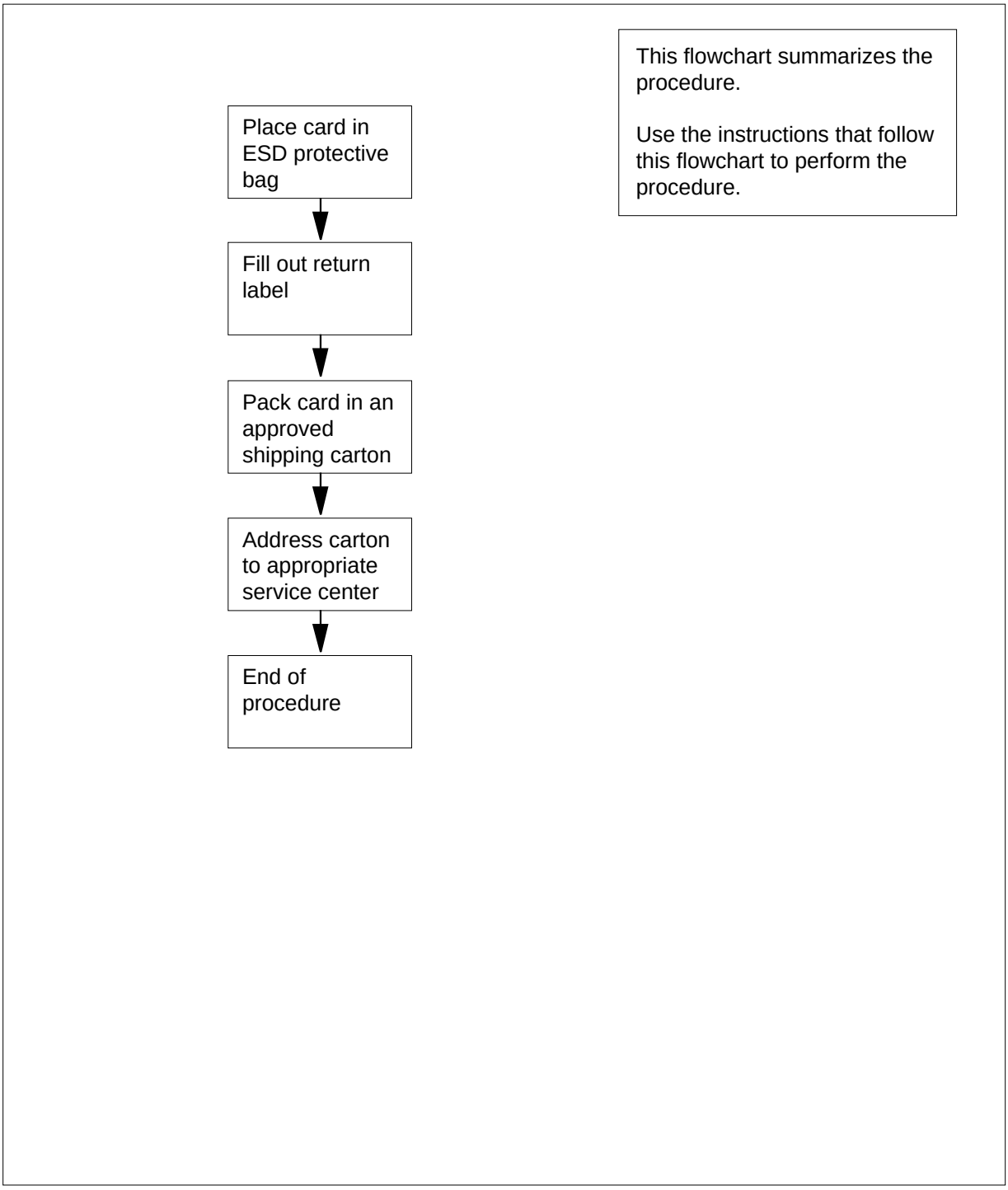
There are no common procedures.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Returning a card for repair or replacement (continued)

Summary of Returning a card for repair or replacement



Returning a card for repair or replacement (continued)

Returning a card for repair or replacement

At your current location

1 Place the circuit card in an electrostatic discharge (ESD) protective bag.

If your location	Do
is in Canada	step 6
is anwhere but Canada	step 2

2 Fill in the return label for each card you return. If you require help to fill out the label, call 1-800-347-4850.

Make sure to include the following information:

- return authorization number from customer service
- NT product engineering code (PEC)
- serial number
- release number
- BCS release software in use at the time of replacement
- peripheral module load name
- description of the failure and action taken to repair
- fault code that best describes the fault (see the bottom of the label)
- name of your company
- office identifier code
- your name
- site name

3 Pack the card or assembly in a Nortel (Northern Telecom) card shipping carton and seal the carton. If a Nortel shipping carton is not available, use another carton. Make sure you enclose each card or assembly in packing paper. Make sure you surround each card or assembly in bubble pack or foam. Make sure you secure each card or assembly in the carton so that the card or assembly cannot shift.

4 Address the carton to: Nortel Customer Service Center, 4600 Emperor Blvd., Morrisville, North Carolina, 27560

5 Go to step 11.

6 Fill in one return label (form 24-115) for each card or assembly you return.

Make sure to include the following information:

- return authorization number from customer service
- NT product engineering code (PEC)
- serial number
- release number
- BCS release software in use at the time of replacement

Returning a card for repair or replacement (end)

- peripheral module load name
- description of the failure and action taken to repair
- fault code that best describes the fault (see the bottom of the label)
- name of your company
- office identifier code
- your name
- site name

If you require help to complete the label, call 905-454-2808. In the event of an emergency, call 905-457-9555.

7 Attach one copy of the card label to one of the card latches.

8 Keep the other copies of the label for your records.

9 Pack the card or assembly in a Nortel shipping carton and seal the carton.

If a Nortel shipping carton is not available, use another carton. Make sure you enclose each card or assembly in packing paper. Make sure you surround each card or assembly in bubble pack or foam. Make sure you secure each card or assembly in the carton so that each card or assembly cannot shift.

10 Address the carton to: Nortel Customer Operations, c/o Wesbell Transport, 1630 Trinity Road, Unit #3 Door #4, Mississauga, Ontario, L5T 1L6

11 The procedure is complete.

Returning LIM-to-MS DS30 links to service

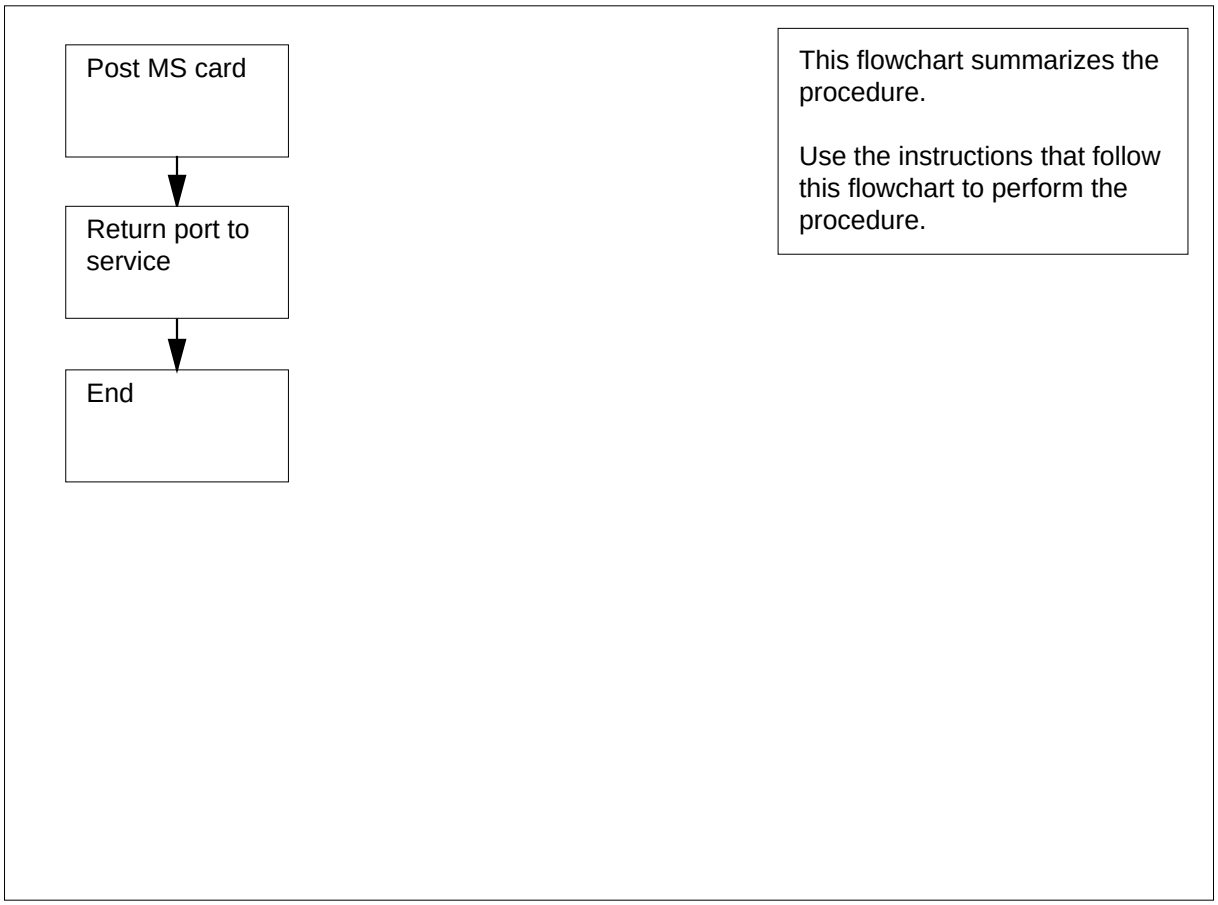
Application

Use this procedure to return DS30 links between a link interface module (LIM) unit and the message switch (MS) to service. Perform this procedure after you replace an NT9X17 or NT9X23 card in the LIM unit.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to preform the procedure.

Summary of Returning LIM-to-MS DS30 links to service



Returning LIM-to-MS DS30 links to service (continued)

Returning LIM-to-MS DS30 links to service

CAUTION
Potential loss of service
Proceed only if a maintenance procedure directed you to this procedure. This procedure removes LIM-to-MS DS30 links from service. Loss of service can result.

At the MAP terminal

1 To display information about the DS30 links between the LIM unit that contains the card you will replace and the MS, type

`>TRNSL  unit_no`

and press the Enter key.

where

unit_no
is the number of the LIM unit (0 or 1)

Example of a MAP response:

```
LIM 0 UNIT 0 LINK 0 (  9:0 - MS  1:20:0 ) Other end closed
LIM 0 UNIT 0 LINK 1 (  9:1 - MS  0:20:0 ) Open
LIM 0 UNIT 0 LINK 2 (  9:2 - LIM 0:30:2 ) Open
LIM 0 UNIT 0 LINK 3 is unequipped.
LIM 0 UNIT 0 LINK 4 ( 10:0 - MS  0:21:0 ) Open
LIM 0 UNIT 0 LINK 5 ( 10:1 - MS  1:21:0 ) Open
LIM 0 UNIT 0 LINK 6 ( 10:2 - LIM 0:29:2 ) Open
LIM 0 UNIT 0 LINK 7 is unequipped.
```

Note: In this example response, 9:0 refers to slot number 9 and port number 0 on the LIM side of the connection. MS 1:20:0 refers to MS number 1, card number 20, and port number 0 that the link connects to in the MS.

2 Record the response that you obtained in step 1. Record the MS number, MS card number, and MS port number for each LIM-to-MS link that associates with the card you will replace.

3 To access the SHELF level of the MAP display, type

`>MS;SHELF  0`

and press the Enter key.

Example of a MAP display:

Returning LIM-to-MS DS30 links to service (continued)

```
     Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0       .          Master          .                     - -
MS 1       .          Slave           .                     - -

Shelf 0                  1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . . - - - - - - - - - - - - - - F . . . . . .
MS 1  . . . . . - - - - - - - - - - - - - - F . . . . . .
```

4 To post the MS card number of the first DS30 link that you recorded in step 2, type

>CARD card_no

and press the Enter key.

where

card_no
is the card number (1 to 26) of the first link that you recorded instep 2

Example of a MAP response:

```
     Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0       .          Master          .                     - -
MS 1       .          Slave           .                     - -

Shelf 0                  1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain
MS 0  . . . . . - - - - - - - - - - - - - - F . . . . . .
MS 1  . . . . . - - - - - - - - - - - - - - F . . . . . .

Card 20 Protocol Port  0_____3
MS 0  .   DS30     4   M - . .
MS 1  .   DS30     4   M - . .
```

5 To return the MS port for the first DS30 link that you recorded in step 2, type

>RTS ms_no PORT port_no

and press the Enter key.

where

ms_no
is the MS number (0 or 1) of the first link that you recorded in step 2

port_no
is the MS port number (0 to 3) of the first link that you recorded in step 2

Example of a MAP response:

Returning LIM-to-MS DS30 links to service (continued)

```
Request to RTS MS: 1 shelf: 0 card:20 port:  0  submitted.
Request to RTS MS: 1 shelf: 0 card:20 port:  0  passed.
```

If the RTS command	Do
passed	step 6
failed	step 11

6 Determine the card number of the second DS30 link that you recorded in step 2.

If the second DS30 link	Do
is on the same MS card as the first link	step 7
is not on the same MS card as the first link	step 8

7 To return the MS port for the second DS30 link to service, type

`>RTS ms_no PORT port_no`

and press the Enter key.

where

ms_no
is the MS number (0 or 1) of the second link that you recorded in step 2

port_no
is the MS port number (0 to 3) of the second link that you recorded in step 2

If the RTS command	Do
passed	step 10
failed	step 11

8 To post the MS card number of the second DS30 link that you recorded in step 2, type

`>CARD card_no`

and press the Enter key.

where

card_no
is the card number (1 to 26) of the second link that you recorded in step 2

Returning LIM-to-MS DS30 links to service (end)

9 To return the MS port for the second DS30 link to service, type

>RTS ms_no PORT port_no

and press the Enter key.

where

ms_no
is the MS number (0 or 1) of the second link that you recorded in step 2

port_no
is the MS port number (0 to 3) of the second link that you recorded in step 2

If the RTS command	Do
passed	step 10
failed	step 11

10 To post the LIM, type

>PM;POST LIM lim_no

and press the Enter key

where

lim_no
is the number of the LIM (0 to 16)

Example of a MAP display:

```
LIM  0 InSv
                    Links_OOS Taps_OOS
Unit0: InSv             .         .
Unit1: InSv             .         .
```

Go to step 12.

11 For additional help, contact the next level of support.

12 The procedure is complete. Return to the main procedure that directed you to this procedure. Continue as directed by the main procedure.

Switching the clock source

Application

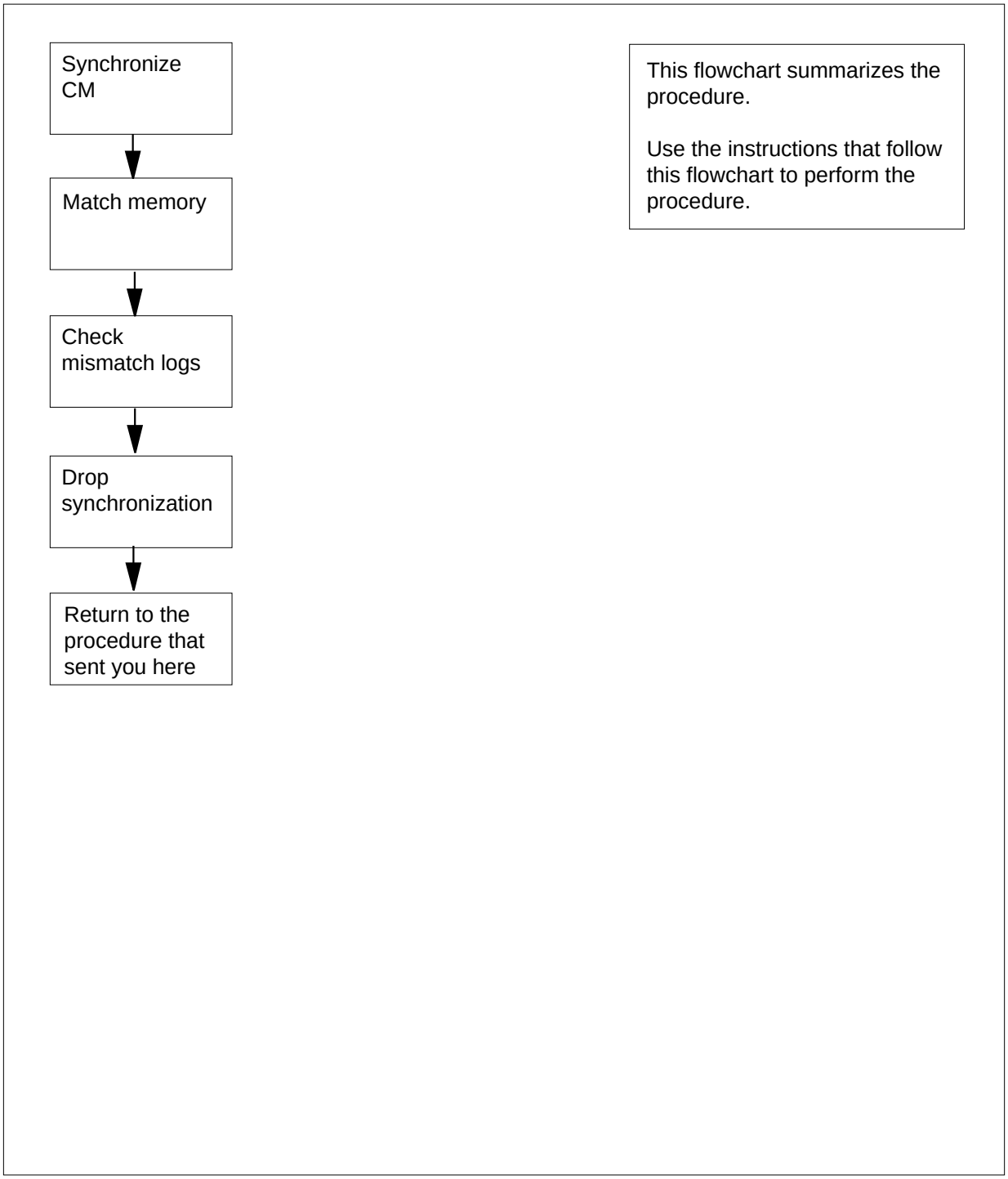
Use this procedure to force the active CPU to provide the clocking signal.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Switching the clock source (continued)

Summary of Switching the clock source



Switching the clock source (continued)

Switching the clock source

At the CM reset terminal for the inactive CPU

1

DANGER
Possible equipment damage
Do not proceed unless a step in a maintenance procedure directs you. If you do not have permission to proceed, you can cause damage or a loss of service.

To release the jam on the inactive CPU, type

>\RELEASE JAM

and press the Enter key.

RTIF response:

```
JAM RELEASE DONE
```

At the MAP terminal

2 To synchronize the computing module (CM), type

>SYNC

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Synchronization successful.
```

If the response	Do
indicates the SYNC command was successful	step 3
indicates the SYNC command failed	step 18
indicates inactive CPU configuration does not support burst mode operation.	step 18

Switching the clock source (continued)

If the response	Do
indicates burst mode operation will now be disabled because it is not supported by both CPUs. Current high call processing use indicates that disabling burst mode operation can result in raised call processing use. Call processing use can rise to a point where CALL ORIGINATION FAILURES CAN OCCUR.	step 18
is other than listed here	step 18

3 To access the Memory level of the MAP display, type

>MEMORY

and press the Enter key.

Example of a MAP response:

```
CM 0
     Card  123456
   Plane 0 ......
   Plane 1 ......
```

4 To match the memories of the CPUs, type

>MATCH ALL

and press the Enter key.

Example of a MAP response:

```
Matching memory between CPUs in SYNC.
Match ok.
```

If the response	Do
is `Match ok`	step 5
is other than listed here	step 18

5 To access the CI level of the MAP display, type

>QUIT ALL

and press the Enter key.

6 To access the log utility, type

>LOGUTIL

and press the Enter key.

Switching the clock source (continued)

7 To determine if the memory match generated an MM100 log report, type

>OPEN MM 100

and press the Enter key.

Note: If the system did not generate a report, the response is Log empty.

If the response	Do
is `Log Empty`	step 8
is other than listed here	step 18

8 To determine if the memory match generated an MM101 log report, type

>OPEN MM 101

and press the Enter key.

If the response	Do
is `Log Empty`	step 9
is other than listed here	step 18

9 To quit the log utility, type

>QUIT

and press the Enter key.

10 To access the CM level of the MAP display, type

>MAPCI;MTC;CM

and press the Enter key.

Example of a MAP display:

```
CM  Sync  Act  CPU0  CPU1 Jam Memory CMMnt  MC  PMC
 0   .   cpu 1  .
```

11 Determine if the CM remained in sync.

Note: A dot (.) or EccOn under the Sync header means that the CM is in sync. In the example in step 10, the CM is in sync.

If the CM	Do
remained in sync	step 12
did not remain in sync	step 18

Switching the clock source (continued)

At the CM reset terminal for the inactive CPU

12 To jam the inactive CPU, type

>\JAM

and press the Enter key.

RTIF response:

```
Please confirm: (YES/NO)
```

13 To confirm the command, type

>YES

and press the Enter key.

RTIF response:

```
JAM DONE
```

At the MAP terminal

14 To drop synchronization, type

>DPSYNC

and press the Enter key.

If the response	Do
is About to drop sync with CPU n active. The inactive CPU is JAMMED. Do you want to continue? Please confirm ("YES", "Y", "NO" or "N")	step 15
is Drop synchronization failed.	step 18
is Aborted. Active CPU n has a processor clock that has faults.	step 18
is other than listed here	step 18

15 To confirm the command, type

>YES

and press the Enter key.

Example of a MAP response:

```
Maintenance action submitted.
Running in simplex mode with active CPU 1.
```

Switching the clock source (end)

At the CM reset terminal for the inactive CPU

16 Wait until A1 flashes on the CM reset terminal for the inactive CPU.

Note: Allow 5 min for A1 to begin to flash.

If A1	Do
flashes	step 17
does not flash	step 18

17 To determine if the CM runs on the active CPU clock, type

`>INSYNC`

and press the Enter key.

Example of a MAP response:

```
CPU pair is NOT insync, CPU 1 is active.
CM is running on active CPU clock.

Memory Error Correction is ENABLED.

The Inactive CPU IS Jammed.
```

If the CM	Do
runs on the inactive clock	step 18
runs on the active clock	step 19

18 For additional help, contact the next level of support.

19 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Unseating cards in equipment shelves

Application

Use this procedure to unseat cards in equipment shelves.

> ***Note:*** Use this procedure for cards in the front plane of 28 in. (71.1 cm) cabinets. You can use this procedure for cards in the front and back planes of 42 in. (106.7 cm) cabinets. Single-slot cards in the 42 in. (106.7 cm) SuperNode cabinet appear in the diagrams.

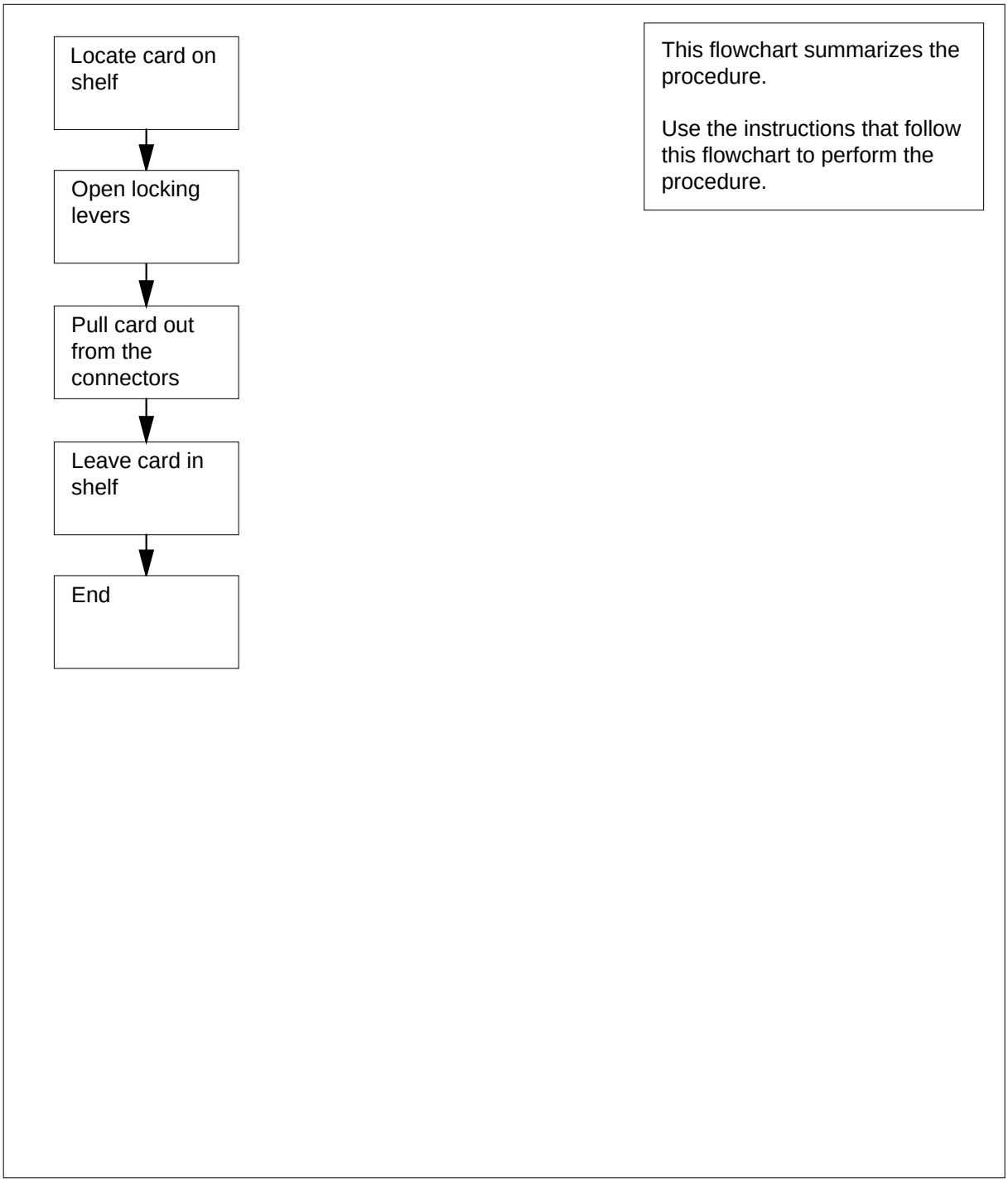
You must turn down all functionality associated with the card. Complete required hardware preparations.

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Unseating cards in equipment shelves (continued)

Summary of Unseating cards in equipment shelves



Unseating cards in equipment shelves (continued)

Unseating cards in equipment shelves

DANGER
Risk of electrocution
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, personal injury can occur.

DANGER
Risk of equipment damage
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, equipment damage can occur.

CAUTION
Loss of service
Proceed only if a step in a maintenance procedure directs you to this procedure. If you perform this procedure without permission, a loss of service can occur.

At the shelf

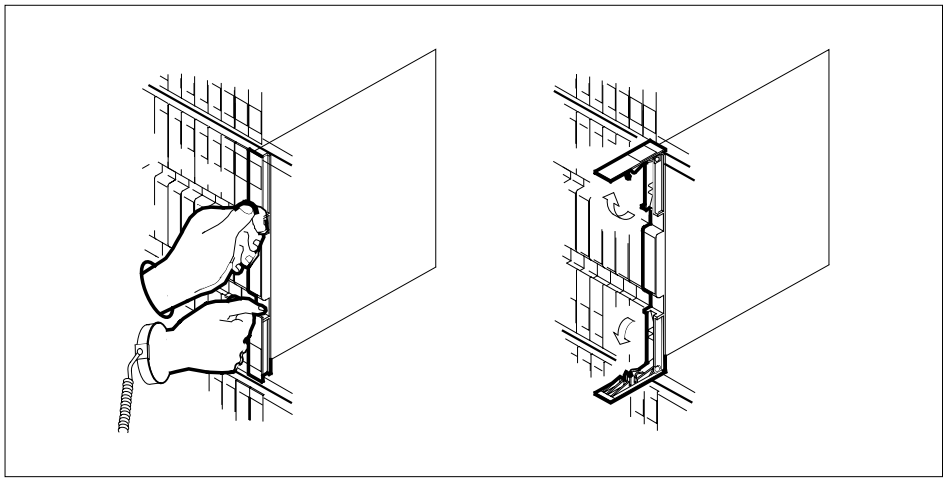
1

WARNING
Static electricity damage
Wear a wrist strap that connects to the wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

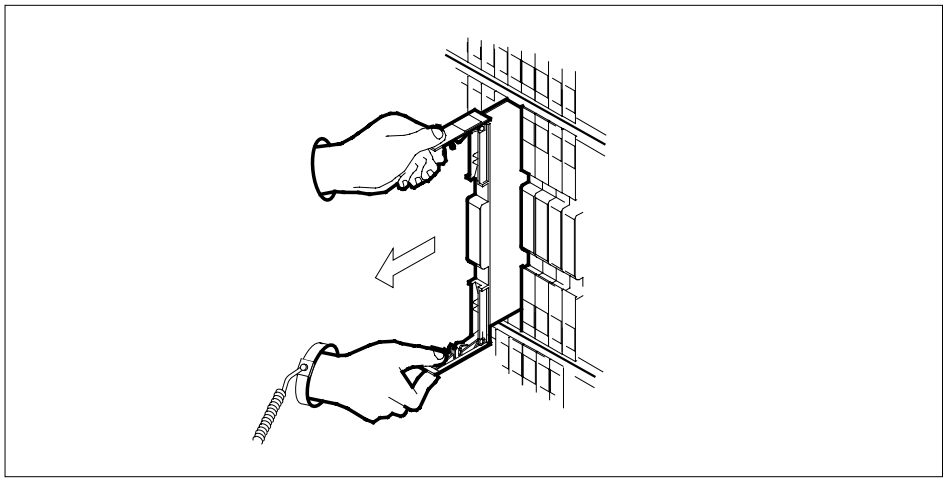
Locate the card on the shelf.

2 Open the locking levers on the face of the card.

Unseating cards in equipment shelves (end)



3 Grasp the locking levers and carefully pull the card toward you until the card protrudes 2 in. (5.1 cm) from the equipment shelf.



4 Leave the card in the slot.

5 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Verifying load compatibility of SuperNode cards

Application

Use this procedure to verify that a replacement card is compatible with the current software load.

You can perform verification for cards on the following subsystems:

- STD
- CM
- MS
- ENET
- LIM
- LIS
- AP
- HSI
- LTS

You can perform verification for SuperNode cards in the following series:

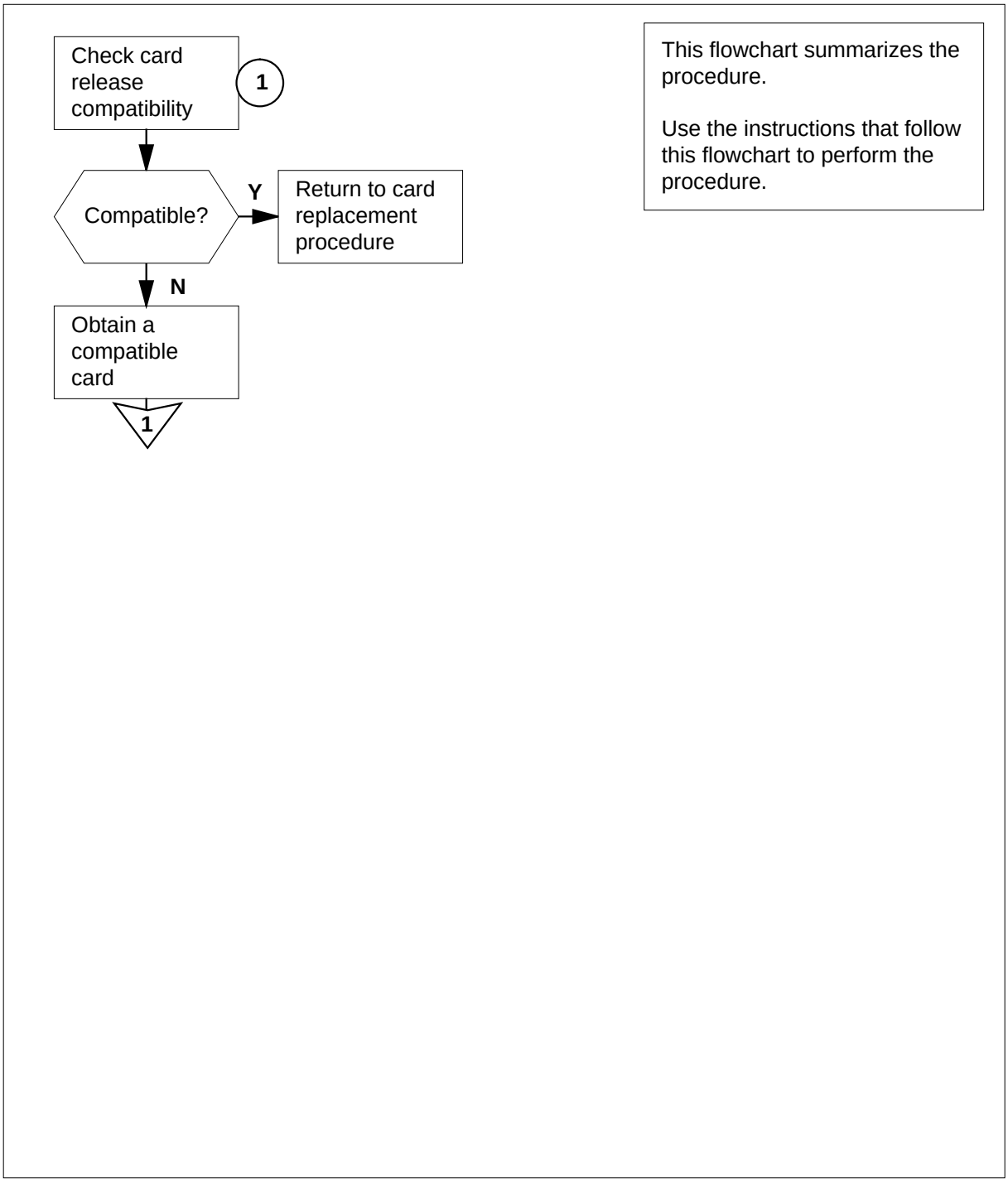
- NT0Xnnaa
- NT9Xnnaa
- NTDXnnaa
- NTEXnnaa
- NTNXnnaa

Action

This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

Verifying load compatibility of SuperNode cards (continued)

Summary of Verifying load compatibility of SuperNode cards



Verifying load compatibility of SuperNode cards (continued)

Verifying load compatibility of SuperNode cards

At the MAP terminal

1 To make sure that the replacement card is compatible with the software load, type

`>CHECKREL subsystem pec release`

and press the Enter key.

where

subsystem
is STD, CM, MS, ENET, LIM, LIS, AP, HSI, or LTS

pec
is the PEC and PEC suffix of the replacement card

release
is the two-character code located on the faceplate of the replacement card

Note 1: Use AP as the subsystem for cards in an application processor (AP), a file processor (FP), or an FP storage device shelf.

Note 2: Use ENET as the subsystem for ENET cards on an enhanced network and interface (ENI) shelf. Use LIS as the subsystem for common fill and application specific unit (ASU) cards on an ENI shelf.

Example input:

`>CHECKREL LIM NT9X13DB 2Z`

Example of a MAP response:

```
  PEC    BASELINE EXCEPT RELEASE  COMPATIBLE
NT9X13DA    A0    None     2Z        *NO
Card release is below baseline.
Do not plug the card into the LIM.
```

If the replacement card	Do
is on or above baseline	step 6
is below baseline	step 2

2 From the MAP display, record the baseline release code (BASELINE) and any exception release codes (EXCEPT).

3 Determine which release codes are compatible with the software load in the switch. A compatible release code is a code that

- is greater than or equal to the baseline release code, and
- is not an exception release code

Note: The range of release codes in ascending order is 01 to 09, 0A to 0Z, and 10 to VZ.

Verifying load compatibility of SuperNode cards (end)

4 Obtain a replacement card with a compatible release code.

If you	Do
can obtain a compatible replacement card	step 6
cannot obtain a compatible replacement card	step 5

5 For additional help, contact the next level of support.

6 The procedure is complete. Return to the main procedure that directed you to this procedure and continue as directed.

Index

C

M

N

P

R

S

T

DMS-100 Family

North American DMS-100

Card Replacement Procedures

Volume 3 of 7

Product Documentation - Dept. 3423
Nortel Networks
P.O. Box 13010
RTP, NC 27709-3010
Telephone: 1-877-662-5669
email: cits@nortelnetworks.com

Publication number: 297-8021-547
Product release: LET0015 and up
Document release: Standard 14.02
Date: May 2001
Printed in the United States of America

NORTEL NETWORKS™