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DMS-100 Family

## **North American DMS-100**

Card Replacement Procedures

Volume 3 of 7

LEC0015 and up   Standard   14.02   May 2001

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DMS-100 Family

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Card Replacement Procedures

Volume 3 of 7

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# 1 Remote oscillator shelf card replacement procedures

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## 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.

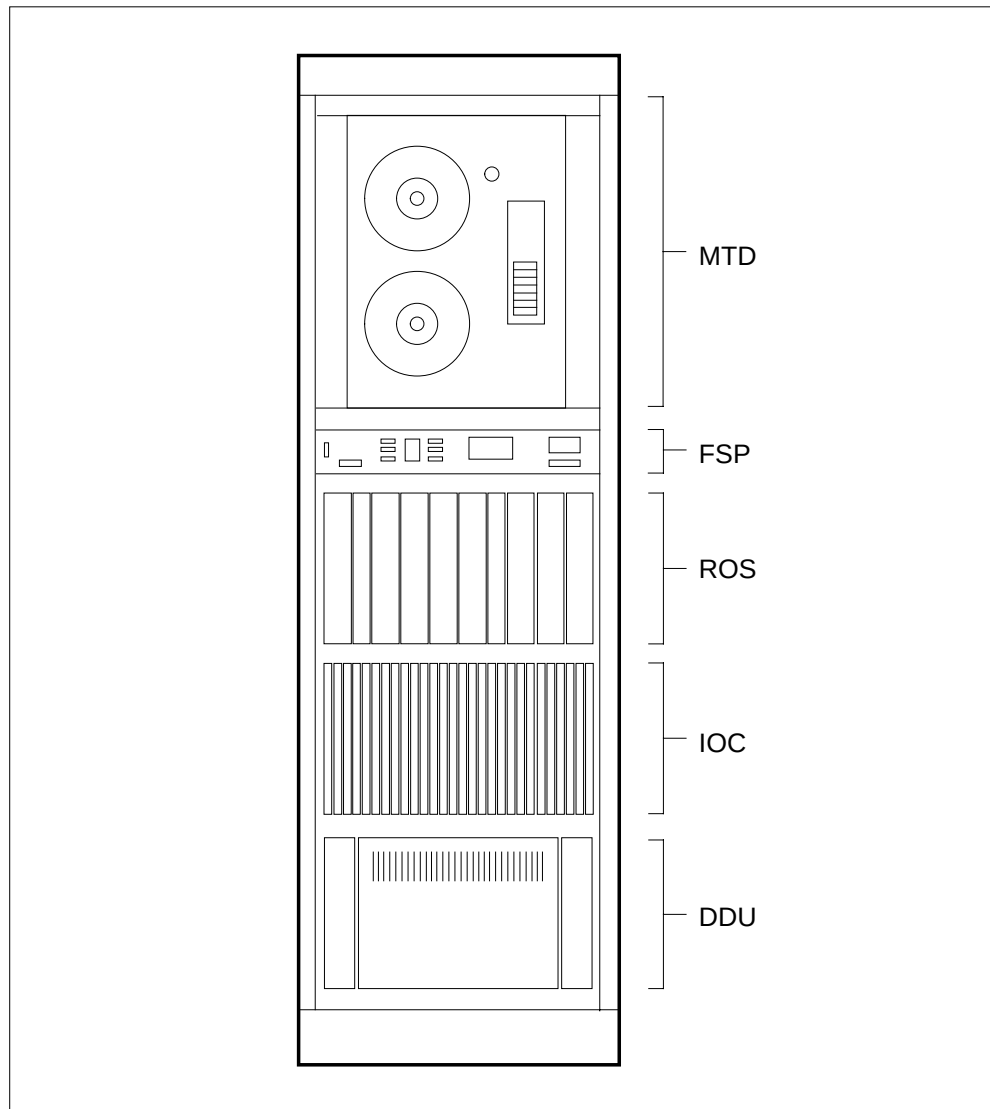
## Remote oscillator shelf layouts

### Application

This procedure provides the following layout diagrams:

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

**Figure Input/output equipment frame**



The diagram illustrates the rear panel of the 10000 system. On the left is the **Circuit board**, which contains a vertical slot for a card. To the right of the circuit board is a stack of **Cards**. The cards are labeled with their part numbers and functions, and are numbered from 01F to 26F from bottom to top.

| Card Number | Part Number | Function                 |
|-------------|-------------|--------------------------|
| 26F         | NT0X50      | Filler faceplate         |
| 23F         | NT0X50      | Filler faceplate         |
| 20F         | NT1X78      | Power converter          |
| 18F         | NT0X50      | Filler faceplate         |
| 15F         | NT3X16      | Stratum 2/2.5 oscillator |
| 12F         | NT0X50      | Filler faceplate         |
| 09F         | NT0X50      | Filler faceplate         |
| 06F         | NT1X78      | Power converter          |
| 04F         | NT0X50      | Filler faceplate         |
| 01F         | NT3X16      | Stratum 2/2.5 oscillator |

At the bottom of the diagram, there are two arrows indicating the orientation: **Rear** (pointing left) and **Front** (pointing right).



## 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*

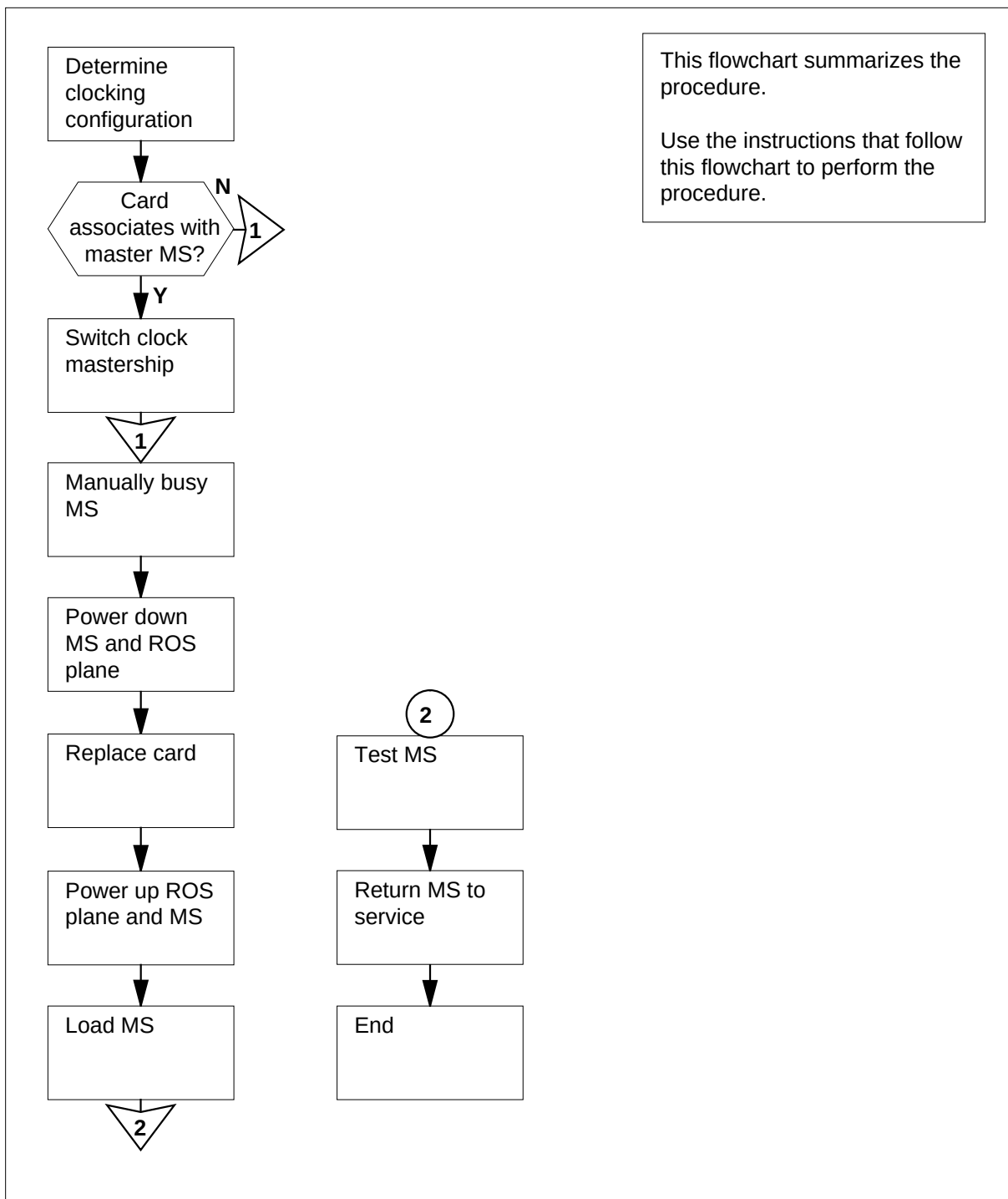
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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:
- 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.
  - 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.

| <b>If the converter fail light on the power converter</b> |  | <b>Do</b> |
|-----------------------------------------------------------|--|-----------|
| 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)

|           |                                                                                                                                                                                               | <b>If the LOADMS command</b>         | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|
|           |                                                                                                                                                                                               | passed                               | step 25   |
|           |                                                                                                                                                                                               | failed                               | step 29   |
| <b>25</b> | Determine if a maintenance procedure directed you to this procedure.                                                                                                                          |                                      |           |
|           |                                                                                                                                                                                               | <b>If a maintenance procedure</b>    | <b>Do</b> |
|           |                                                                                                                                                                                               | directed you to this procedure       | step 26   |
|           |                                                                                                                                                                                               | did not direct you to this procedure | step 27   |
| <b>26</b> | Return to the maintenance procedure that sent you to this procedure. Continue as directed.                                                                                                    |                                      |           |
| <b>27</b> | To perform an out-of-service test on the slave MS, type<br><b>&gt;TST ms_number</b><br>and press the Enter key.<br><i>where</i><br><b>ms_number</b><br>is the number of the slave MS (0 or 1) |                                      |           |
|           |                                                                                                                                                                                               | <b>If the TST command</b>            | <b>Do</b> |
|           |                                                                                                                                                                                               | passed                               | step 28   |
|           |                                                                                                                                                                                               | failed                               | step 29   |
| <b>28</b> | To return the slave MS to service, type<br><b>&gt;RTS ms_number</b><br>and press the Enter key.<br><i>where</i><br><b>ms_number</b><br>is the number of the slave MS (0 or 1)                 |                                      |           |
|           |                                                                                                                                                                                               | <b>If the RTS command</b>            | <b>Do</b> |
|           |                                                                                                                                                                                               | 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<br>oscillator/interface card<br>for SuperNode   | ROS                 |
| NT3X16 | BB     | Layer 2.5<br>oscillator/interface card<br>for SuperNode | ROS                 |

### Common procedures

This procedure refers to the following common procedures:

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

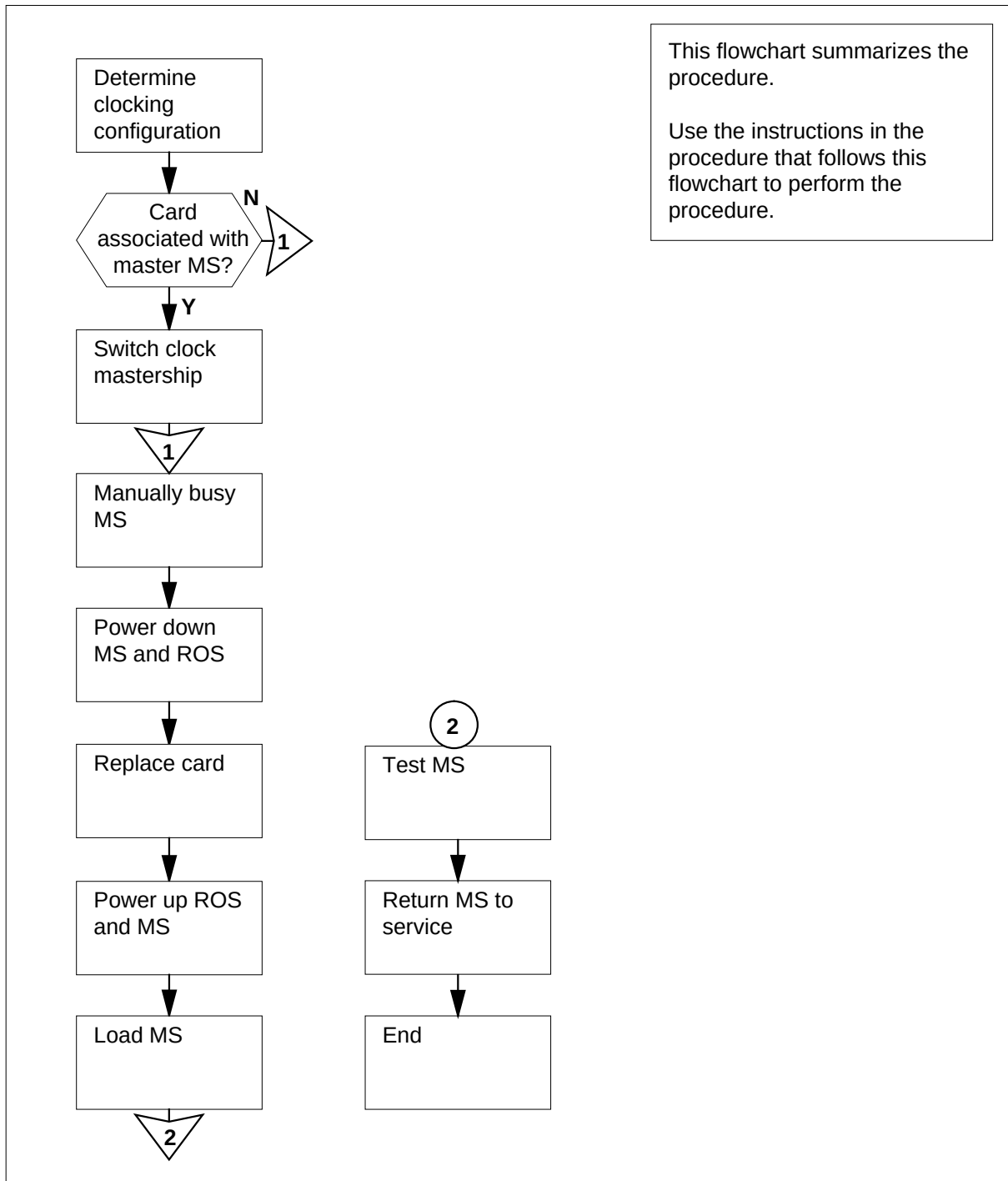
Do not go to the common procedure unless directed to in the step-action procedure directs you to go.

### 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

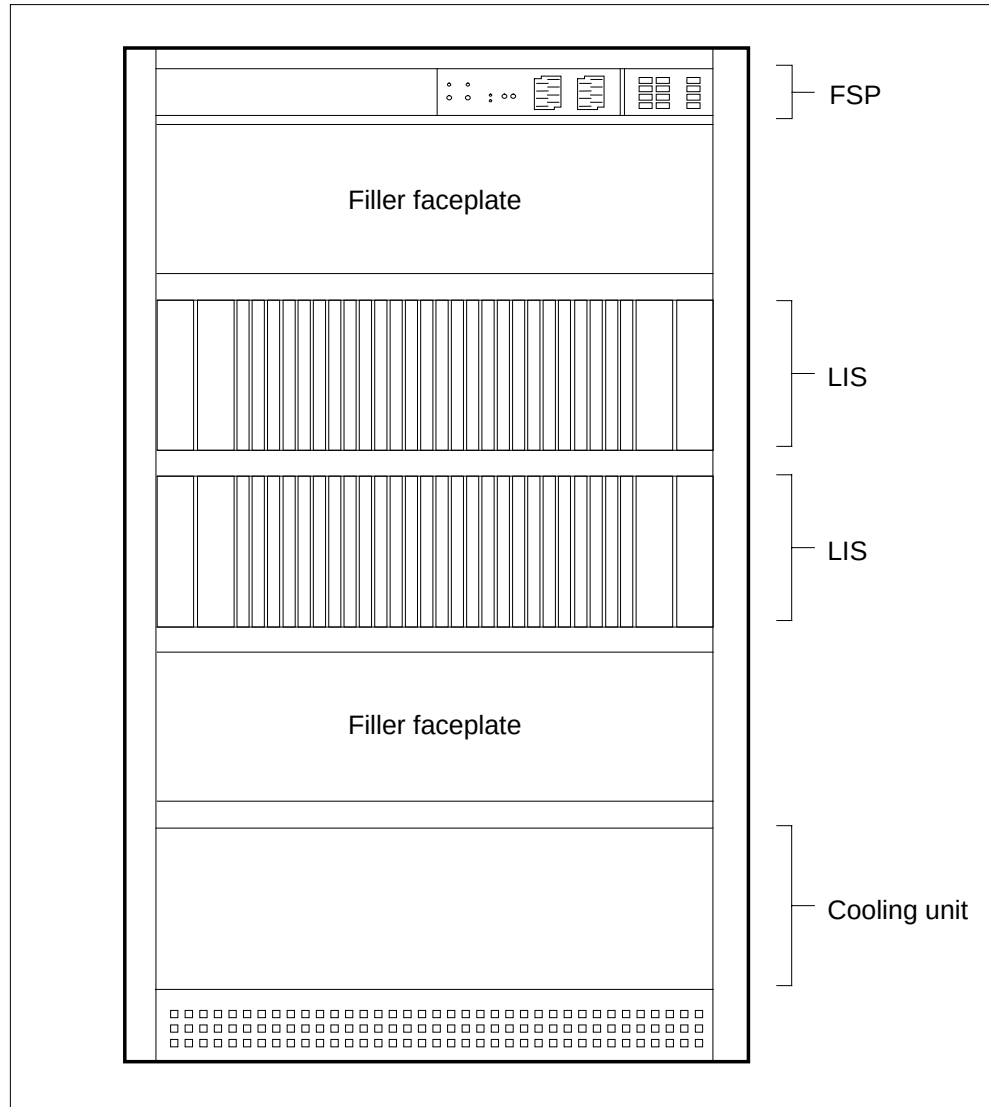
This module provides layout diagrams for the following:

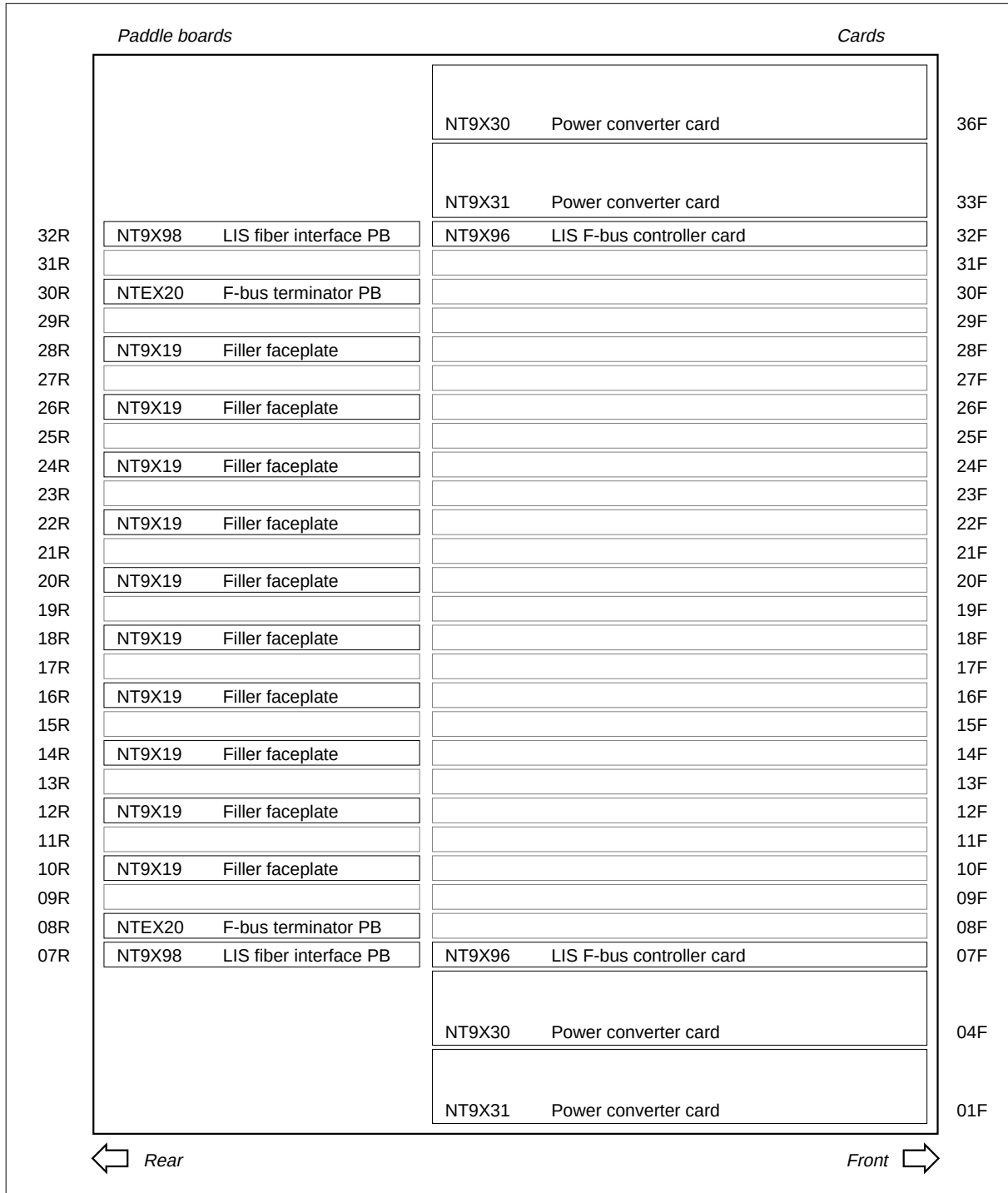
- enhanced multipurpose cabinet (EMC) with single-shelf link peripheral processors (SSLPP)
- SSLPP, with common fill cards and paddle boards for 2-slot application specific units (ASU)
- SSLPP 2-slot ASU, that includes ethernet interface units (EIU), frame relay interface units (FRIU), CCS7 link interface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

## SSLPP shelf layouts (continued)

---

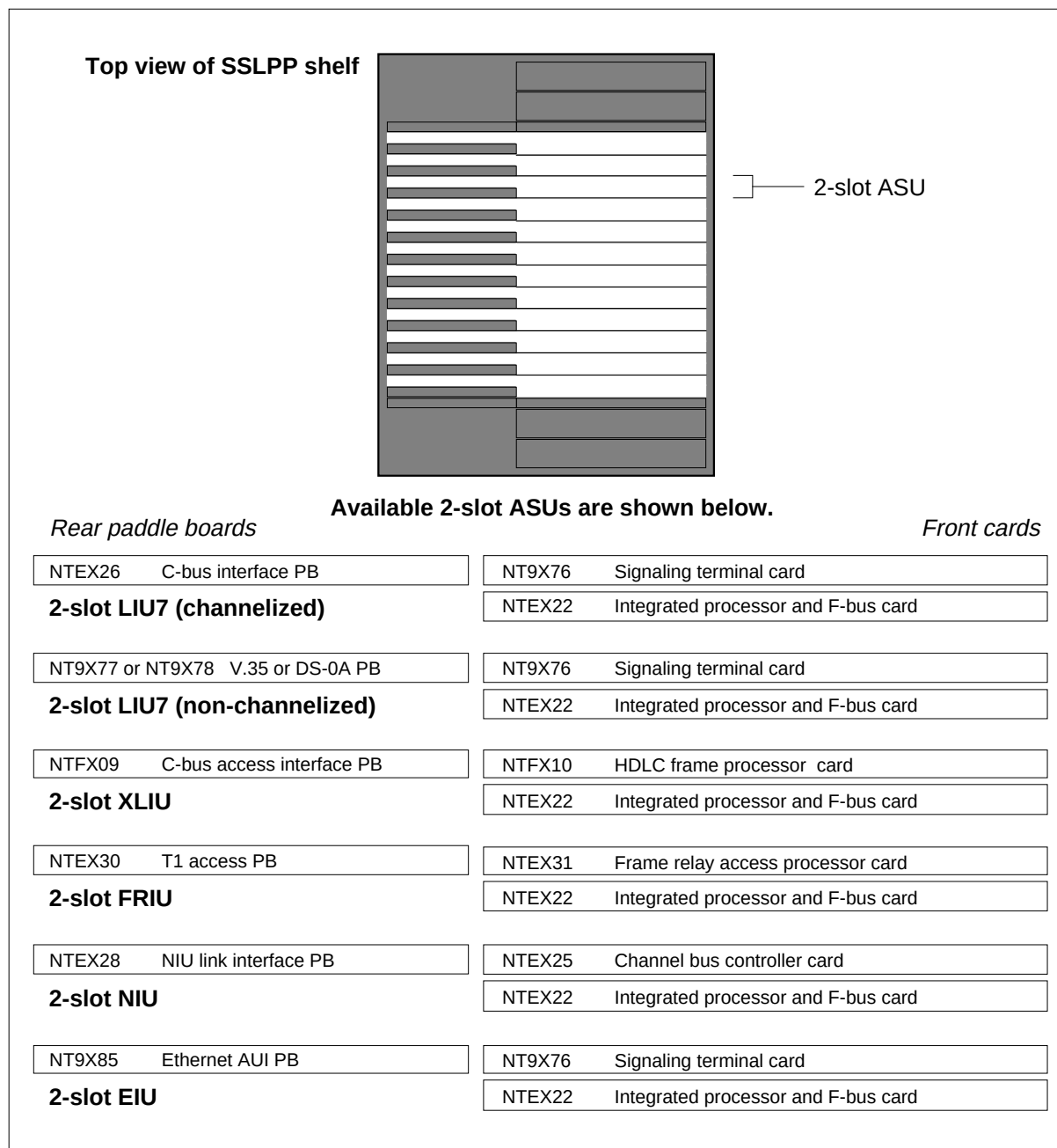
**Figure Enhanced multipurpose cabinet with SSLPP**



**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





## 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*

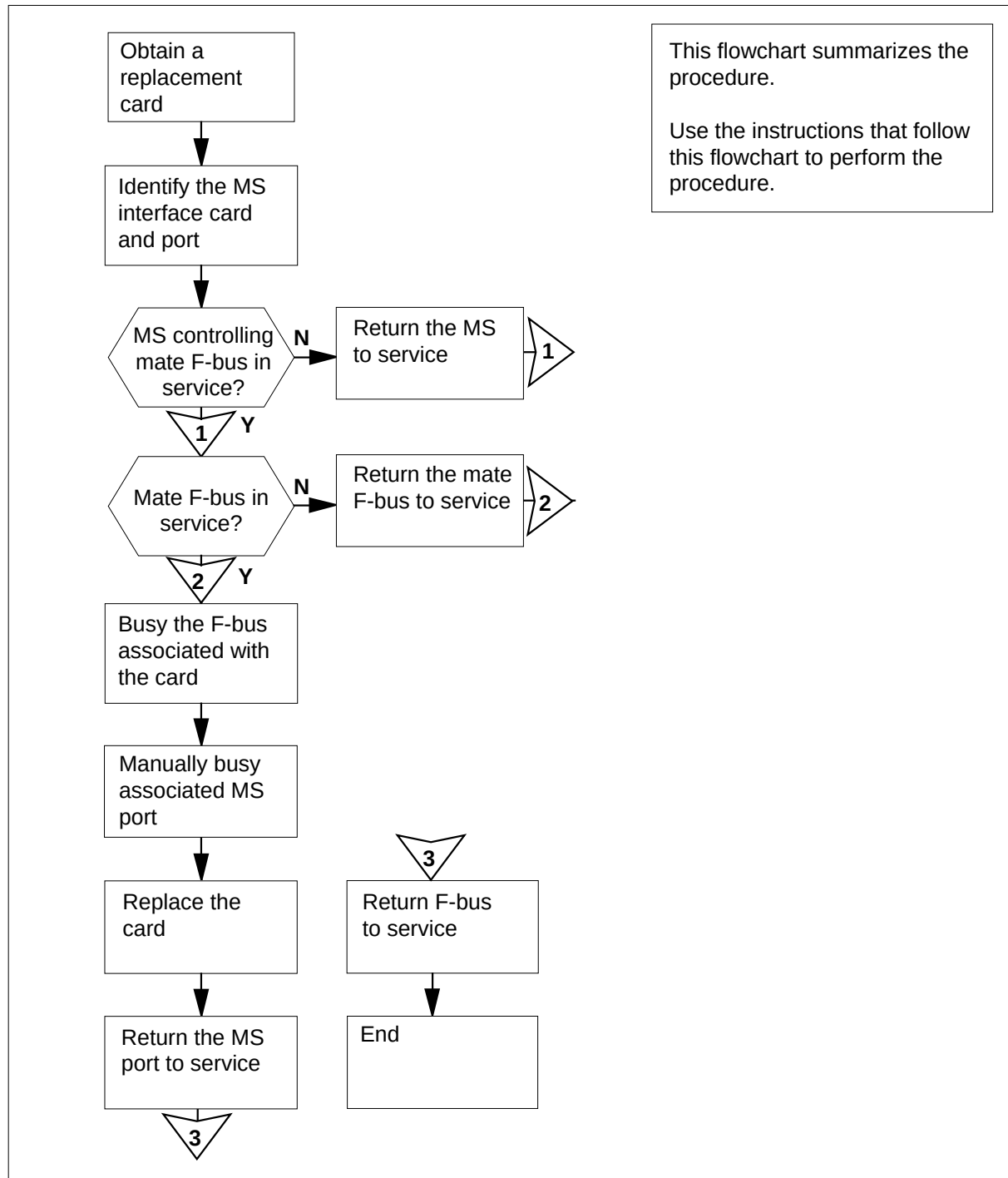
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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<br>(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$ |
| LIM      | 1     | 12  | 0        | 3        | 3        | C        | 3        | LIM 500 0 NT9X72AA<br>(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 1        | 3        | C        | 2        | LIM 501 26 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 2        | 3        | C        | 2        | LIM 501 13 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 3        | 3        | C        | 2        | LIM 501 0 NT9X72BA<br>(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$   |
| MS       | NIL   | 16  | 0        | 1        | 3        | C        | 4        | EMC 4 39 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$    |
| MS       | NIL   | 17  | 0        | 1        | 3        | C        | 4        | EMC 4 26 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(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 |
| <b>10</b> | Return the MS to service. Perform the correct MS alarm clearing procedure in <i>Alarm and Performance Monitoring Procedures</i> . Complete the procedure and return to this point.                                                                                                    |         |
| <b>11</b> | To access the F-bus level of the MAP display, type<br><b>&gt;SHELF 0;CARD card_no;PORT port_no</b><br>and press the Enter key.<br>where<br><b>card_no</b><br>is the MS card number that you recorded in step 6<br><b>port_no</b><br>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 1 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      .      .      . . . . . - . . . . .

```

*Example of a MAP display for SuperNode SE:*

## Common fill cards in an SSLPP (continued)

```

Shelf 0
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:<br>system busy (S),<br>manual busy (M),<br>in-service trouble (I)<br>or offline (O)<br>and any F-bus tap is:<br>C-side busy (C),<br>system busy (S),<br>manual busy (M),<br>in-service trouble (I),<br>or offline (O)                                                                                                                                                                                                                                                                                                                                                                 | step 21 |
| 13 | <p>To manually busy the F-bus for the card you replace, type<br/> <b>&gt;BSY ms_no FBUS</b><br/> and press the Enter key.<br/> <i>where</i><br/> <b>ms_no</b><br/> is the number of the MS (0 or 1) that controls the F-bus</p> <p><b>Note:</b> 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.</p> <p><i>Example of a MAP display:</i></p> <p>Request to MAN BUSY MS: 0 shelf: 0 card:15 port: 0<br/> FBus submitted.<br/> Request to MAN BUSY MS: 0 shelf: 0 card:15 port: 0<br/> FBus passed.</p> |         |
|    | If the response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Do      |
|    | requests confirmation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | step 14 |
|    | indicates the BSY command passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | step 15 |
| 14 | <p>To confirm the command, type<br/> <b>&gt;YES</b><br/> and press the Enter key.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |
| 15 | <p>To manually busy the MS port that terminates the DS512 fiber link for the card that you replace, type<br/> <b>&gt;BSY ms_no PORT</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |



## Common fill 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 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 |
| <b>18</b> | <p>To return to service the F-bus you busied in step 13, type</p> <p><b>&gt;RTS ms_no FBUS</b></p> <p>and press the Enter key.</p> <p>where</p> <p><b>ms_no</b><br/>is the number of MS (0 or 1) that controls the F-bus</p> <p><i>Example of a MAP response:</i></p> <p>Request return to Service MS: 0 shelf 0 card:12 port 0<br/>FBus submitted</p> <p>Request return to Service MS: 0 shelf 0 card:12 port 0<br/>FBus passed</p> |         |
|           | If the RTS command                                                                                                                                                                                                                                                                                                                                                                                                                   | Do      |
|           | passed                                                                                                                                                                                                                                                                                                                                                                                                                               | step 19 |
|           | failed                                                                                                                                                                                                                                                                                                                                                                                                                               | step 22 |
| <b>19</b> | 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 |
| <b>20</b> | Return to the maintenance procedure that sent you to this procedure and continue as directed.                                                                                                                                                                                                                                                                                                                                        |         |
| <b>21</b> | 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.                                                                                                                                                                                                                                                 |         |
| <b>22</b> | For additional help, contact the next level of support.                                                                                                                                                                                                                                                                                                                                                                              |         |
| <b>23</b> | The procedure is complete.                                                                                                                                                                                                                                                                                                                                                                                                           |         |

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## EIU cards in an SSLPP

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### 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.

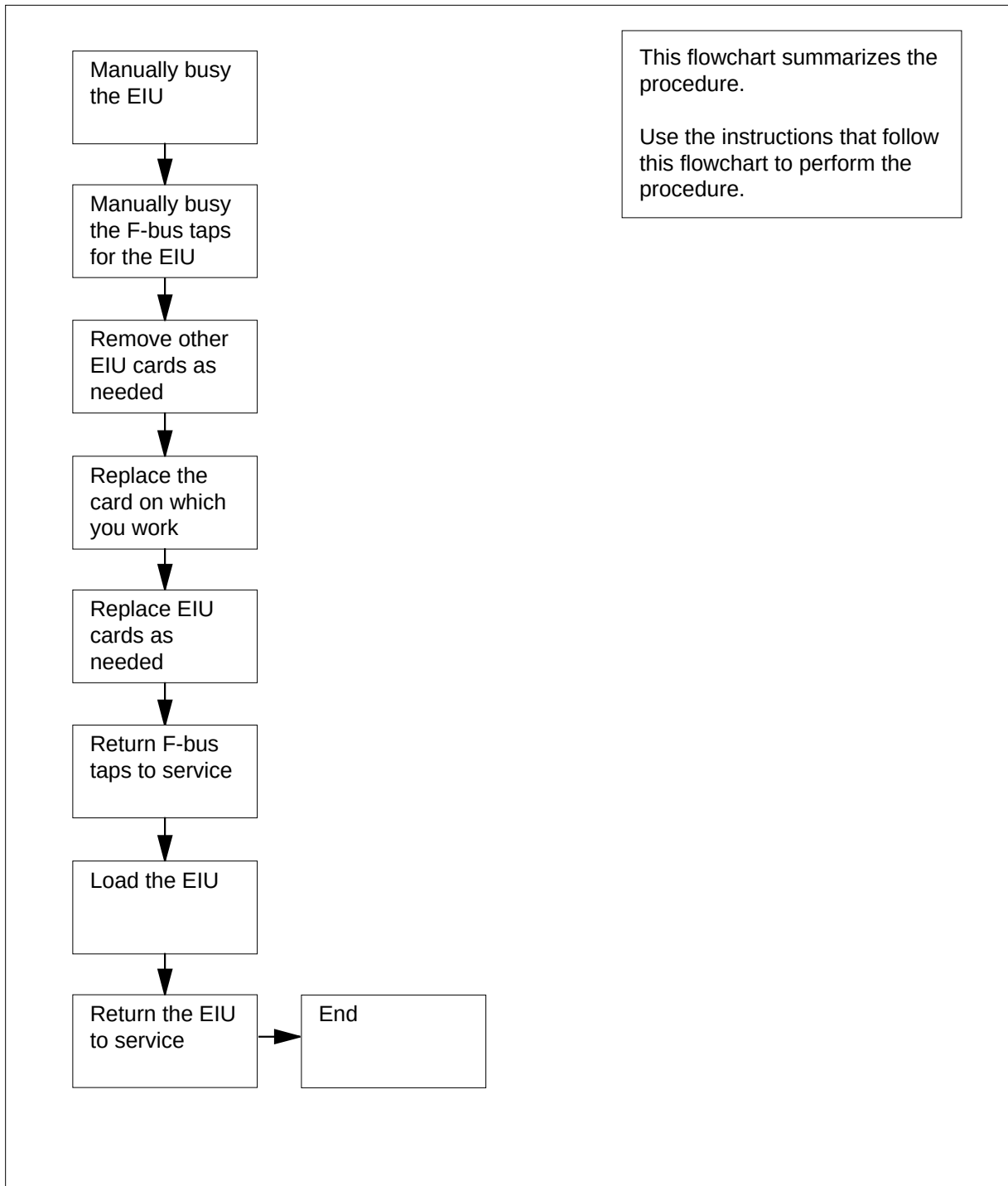
### Action

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)

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### 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.                                                                                                                                                                                                                                                              |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------|---------|---------|---------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                              |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| <table> <tr> <th>If the state of the EIU</th><th>Do</th></tr> <tr> <td>is ISTb, InSv, SysB, SysB (NA), ISTb (NA), or ManB (NA)</td><td>step 6</td></tr> <tr> <td>is ManB</td><td>step 10</td></tr> <tr> <td>is OffL</td><td>step 35</td></tr> </table>                                                                                                   |                                                                                                                                                                                                                                                                                              | 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 |
| 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<br><b>&gt;BSY</b><br>and press the Enter key                                                                                                                                                                                                                  |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                              |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| <table> <tr> <th>If the response is</th><th>Do</th></tr> <tr> <td>Bsy EIU 0 requires confirmation because the action may isolate the SuperNode from the nodes on the LAN. Please confirm ("YES", "Y", "NO", or "N"):</td><td>Step 9</td></tr> <tr> <td>Warning: The EIU 0 is currently being imaged. The BSY command will be aborted unless the FORCE option is used.</td><td>step 7</td></tr> </table> |                                                                                                                                                                                                                                                                                              | If the response is      | Do | Bsy EIU 0 requires confirmation because the action may isolate the SuperNode from the 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  |         |         |
| If the response is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Do                                                                                                                                                                                                                                                                                           |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| Bsy EIU 0 requires confirmation because the action may isolate the SuperNode from the 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<br><b>&gt;BSY FORCE</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>WARNING: EIU 0 is currently being imaged.<br>Do you wish to abort imaging to proceed with the BSY request?<br>Please confirm ("YES", "Y", "NO", or "N"): |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                              |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| <table> <tr> <th>If To</th><th>Do</th></tr> <tr> <td>proceed with BSY FORCE request</td><td>step 8</td></tr> <tr> <td>abort BSY FORCE request</td><td>step 37</td></tr> </table>                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                              | If To                   | Do | proceed with BSY FORCE request                                                                                                                     | step 8 | abort BSY FORCE request                                                                                        | step 37 |         |         |
| If To                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Do                                                                                                                                                                                                                                                                                           |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| proceed with BSY FORCE request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | step 8                                                                                                                                                                                                                                                                                       |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| abort BSY FORCE request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | step 37                                                                                                                                                                                                                                                                                      |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | To force bsy the EIU, type<br><b>&gt;YES</b>                                                                                                                                                                                                                                                 |                         |    |                                                                                                                                                    |        |                                                                                                                |         |         |         |

**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<br>(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$ |
| LIM      | 1     | 12  | 0        | 3        | 3        | C        | 3        | LIM 500 0 NT9X72AA<br>(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 1        | 3        | C        | 2        | LIM 501 26 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 2        | 3        | C        | 2        | LIM 501 13 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 3        | 3        | C        | 2        | LIM 501 0 NT9X72BA<br>(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$   |
| MS       | NIL   | 16  | 0        | 1        | 3        | C        | 4        | EMC 4 39 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$    |
| MS       | NIL   | 17  | 0        | 1        | 3        | C        | 4        | EMC 4 26 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(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 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*  
**ei\_u\_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*

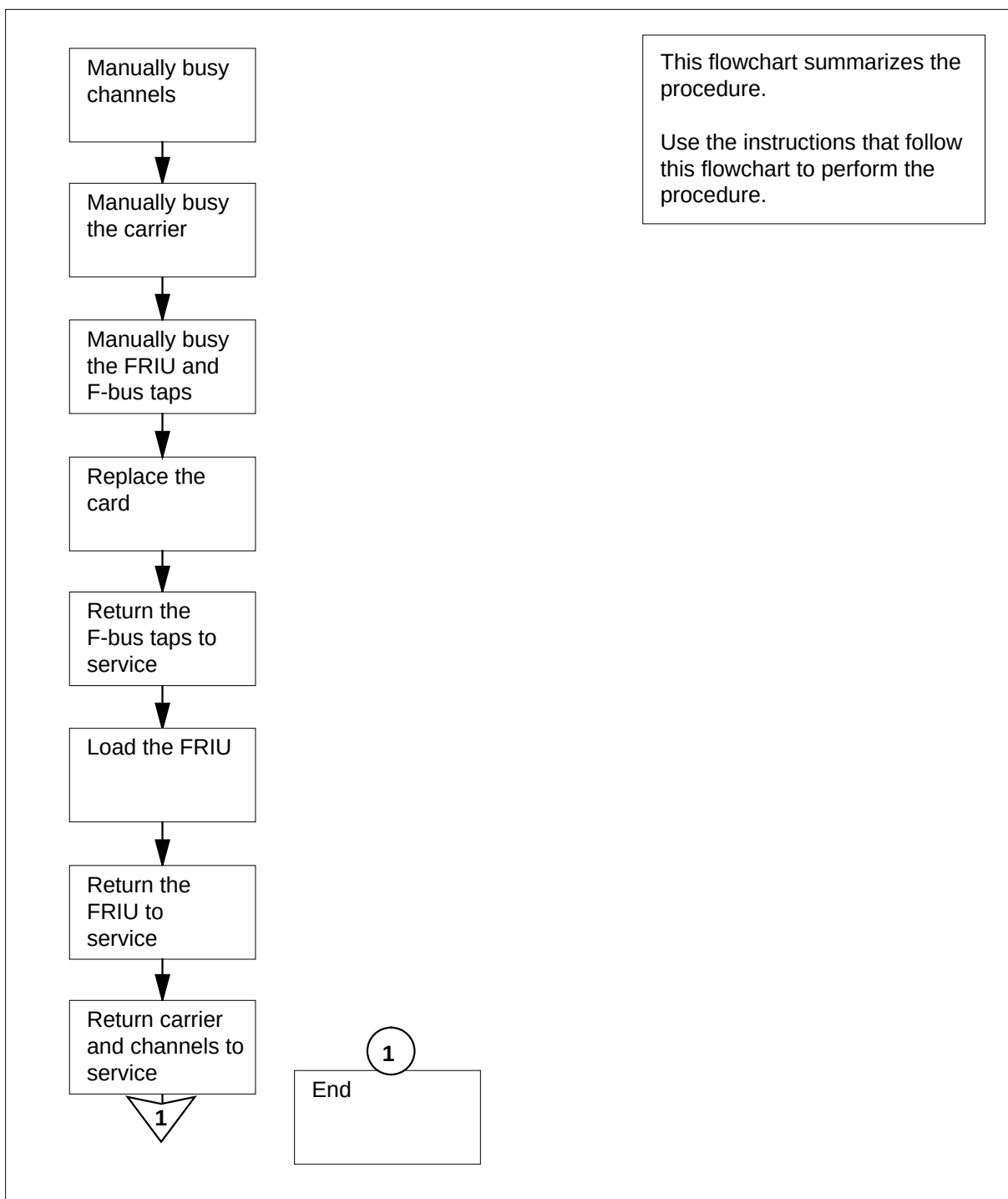
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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

#### At 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  |
| InSv    |   |      |      |             | -8.3 | 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

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

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.<br>Please confirm ("YES", "Y", "NO" or "N")                        | step 15 |
| 15 | Determine if you should proceed with the BSY and proceed as shown below.                                                                                                     |         |
|    | If proceed with                                                                                                                                                              | Do      |
|    | BUSY and abort imaging                                                                                                                                                       | step 16 |
|    | abort BSY request                                                                                                                                                            | step 48 |
| 16 | To continue with BSY FORCE the FRIU, type<br><b>&gt;BSY FORCE</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>Imaging will be aborted on FRIU 8. |         |
| 17 | To access table SUSHELF, type<br><b>&gt;TABLE SUSHELF</b><br>and press the Enter key.<br><i>Example of a MAP display:</i><br><br>TABLE: SUSHELF                              |         |
| 18 | To list the contents of the table, type<br><b>&gt;LIST ALL</b><br>and press the Enter key.<br><i>Example of a MAP display:</i>                                               |         |

## 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
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
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   | MS 0:0: 6   | 14   | 9X17AD FRNT |
| HOST                            | 03  | A01  | SCC    | 0   | 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:*

|      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|
| PM   | SysB | ManB | OffL | CBsy | ISTb | InSv |
| FRIU | 1    | 0    | 27   | 0    | 9    | 28   |
|      | 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:*

|         |         |      |         |       |      |      |      |
|---------|---------|------|---------|-------|------|------|------|
| PM      |         | SysB | ManB    | OffL  | CBsy | ISTb | InSv |
| FRIU    |         | 1    | 0       | 27    | 0    | 9    | 28   |
|         |         | 1    | 0       | 19    | 0    | 7    | 27   |
| FRIU    | 8       | ISTb | Rsvd    |       |      |      |      |
| CARRIER | Mtce    | /T1  | proving | Alarm | BER  | ES   | SES  |
| ManB    |         |      |         |       | -8.3 | 0    | 0    |
|         |         |      |         |       |      |      | UAS  |
|         |         |      |         |       |      |      | 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.

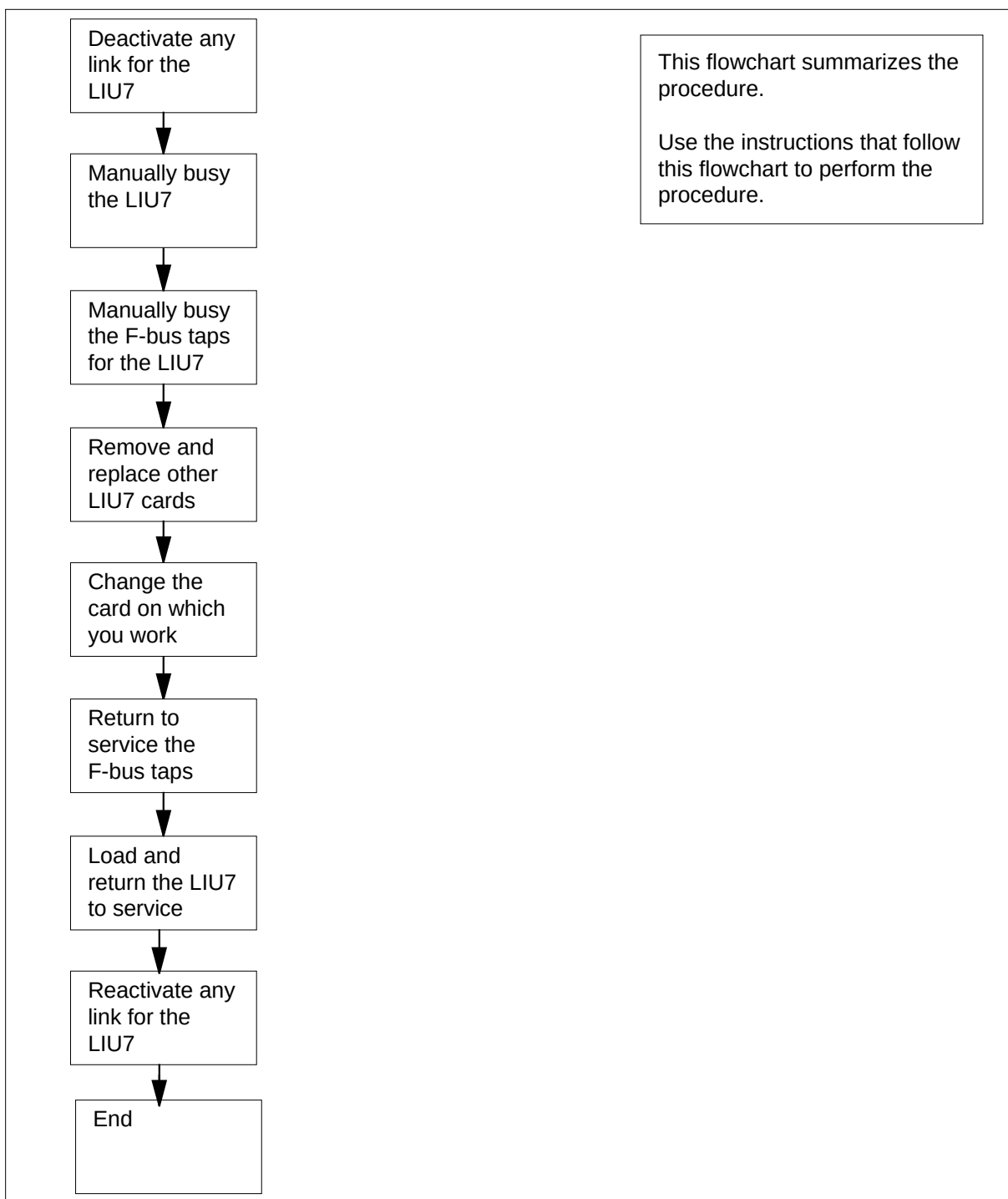
**Action**

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)

---

### Summary 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----|----------------------------------------|---------|-----------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                                                                                                                                             | <table border="1"> <thead> <tr> <th>If the state of the LIU7</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>is SysB, SysB (NA), ISTb, or InSv</td> <td>step 6</td> </tr> <tr> <td>is ManB or ManB (NA)</td> <td>step 12</td> </tr> <tr> <td>is OffL</td> <td>step 40</td> </tr> </tbody> </table>                                                                                                                                               | 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 |
| 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 <i>Deactivating CCS7 links</i> in this document. Complete the procedure and return to this point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| 7                                                                                                                                                           | <p>To manually busy the LIU7, type</p> <p><b>&gt;BSY FORCE</b></p> <p>and press the Enter key.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
|                                                                                                                                                             | <table border="1"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you need to confirm the command</td> <td>step 10</td> </tr> <tr> <td>the command passed</td> <td>step 12</td> </tr> <tr> <td>WARNING: LIU7 208 is currently being imaged.<br/>Do you wish to abort imaging to proceed with the BSY request?<br/>Please confirm ("YES", "Y", "NO", or "N"):</td> <td>step 8</td> </tr> </tbody> </table> | If                       | Do | you need to confirm the command        | step 10 | the command passed                | step 12 | WARNING: LIU7 208 is currently being imaged.<br>Do you wish to abort imaging to proceed with the BSY request?<br>Please confirm ("YES", "Y", "NO", or "N"): | step 8  |
| If                                                                                                                                                          | Do                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| you need to confirm the command                                                                                                                             | step 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| the command passed                                                                                                                                          | step 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| WARNING: LIU7 208 is currently being imaged.<br>Do you wish to abort imaging to proceed with the BSY request?<br>Please confirm ("YES", "Y", "NO", or "N"): | step 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| 8                                                                                                                                                           | <p>Determine if it is safe to continue with this procedure.</p> <table border="1"> <thead> <tr> <th>If it is</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>safe to proceed with BSY FORCE request</td> <td>step 9</td> </tr> <tr> <td>not safe, abort BSY FORCE request</td> <td>step 42</td> </tr> </tbody> </table>                                                                                                                                                                       | If it is                 | Do | safe to proceed with BSY FORCE request | step 9  | not safe, abort BSY FORCE request | step 42 |                                                                                                                                                             |         |
| If it is                                                                                                                                                    | Do                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| safe to proceed with BSY FORCE request                                                                                                                      | step 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| not safe, abort BSY FORCE request                                                                                                                           | step 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |
| 9                                                                                                                                                           | <p>To force bsy the LIU7, type</p> <p><b>&gt;YES</b></p> <p>and press the Enter key. Go to step 12</p> <p><i>Example of a MAP response:</i></p> <p>Imaging will be aborted on LIU7 208.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |    |                                        |         |                                   |         |                                                                                                                                                             |         |

**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<br>(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$ |
| LIM      | 1     | 12  | 0        | 3        | 3        | C        | 3        | LIM 500 0 NT9X72AA<br>(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 1        | 3        | C        | 2        | LIM 501 26 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 2        | 3        | C        | 2        | LIM 501 13 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 3        | 3        | C        | 2        | LIM 501 0 NT9X72BA<br>(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$   |
| MS       | NIL   | 16  | 0        | 1        | 3        | C        | 4        | EMC 4 39 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$    |
| MS       | NIL   | 17  | 0        | 1        | 3        | C        | 4        | EMC 4 26 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(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 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 reseal the cards in the LIU7 . To unseat a card, perform the procedure <i>Unseating cards in equipment shelves</i> in this document. To reseal a card, perform the procedure <i>Resealing cards in equipment shelves</i> 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 <i>Replacing a card</i> in this document. Complete the procedure and return to this point.                                                                                                                                                                   |                         |
|    | <b>Note:</b> 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 reseal 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
- |  | <b>If the RTS command</b> | <b>Do</b> |
|--|---------------------------|-----------|
|  | passed                    | step 32   |
|  | failed                    | step 41   |
- 32** The next action depends on the reason you performed this procedure.
- |  | <b>If a maintenance procedure</b>    | <b>Do</b> |
|--|--------------------------------------|-----------|
|  | 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
- |  | <b>If the LOADPM command</b> | <b>Do</b> |
|--|------------------------------|-----------|
|  | 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.

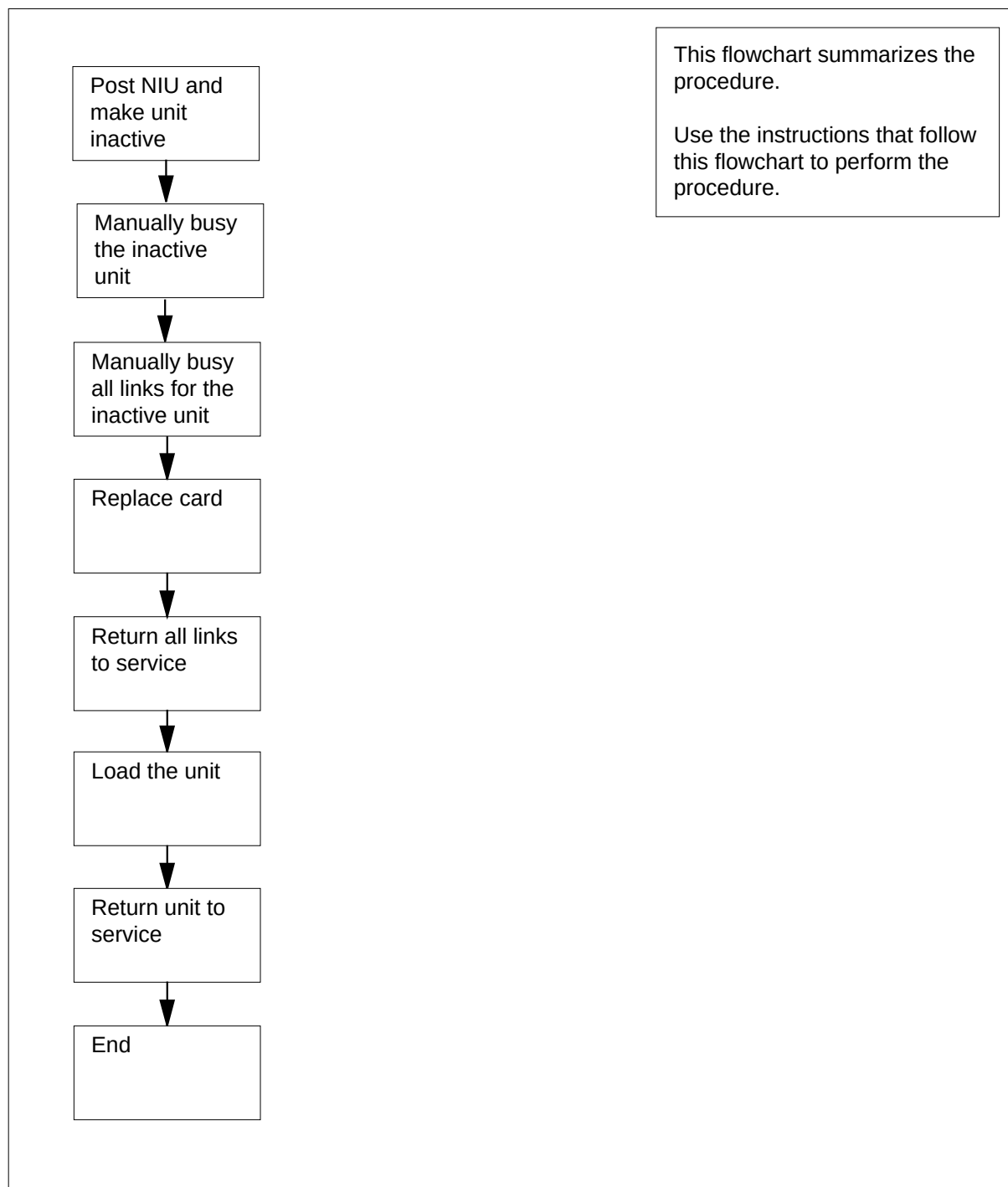
### Action

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),<br>or ManB (NA), and active   | step 6  |
| is ISTb, InSv, SysB, SysB (NA), ISTb (NA),<br>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. Busing 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<br><b>&gt;YES</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>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<br><b>&gt;DEVICES</b><br>and press the Enter key<br><i>Example of a MAP display:</i><br><br><table><tr><td></td><td>SysB</td><td>ManB</td><td>OffL</td><td>CBsy</td><td>ISTb</td><td>InSv</td></tr><tr><td>PM</td><td>0</td><td>0</td><td>1</td><td>0</td><td>5</td><td>45</td></tr><tr><td>NIU</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr></table><br>NIU 1: ISTb<br>Unit 0: InAct ManB<br>Unit 1: Act InSv<br><br><table><tr><td></td><td>Net Links</td><td></td></tr><tr><td></td><td>0 1 2 3</td><td>CBUS ports 00S</td></tr><tr><td>PB 0</td><td>. . . .</td><td>2</td></tr><tr><td>PB 1</td><td>. . . .</td><td>.</td></tr></table> |                |      | SysB | ManB | OffL | CBsy | ISTb | InSv | PM | 0 | 0 | 1 | 0 | 5 | 45 | NIU | 0 | 0 | 0 | 0 | 1 | 0 |  | Net Links |  |  | 0 1 2 3 | CBUS ports 00S | PB 0 | . . . . | 2 | PB 1 | . . . . | . |
|      | SysB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ManB           | OffL | CBsy | ISTb | InSv |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
| PM   | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0              | 1    | 0    | 5    | 45   |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
| NIU  | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0              | 0    | 0    | 1    | 0    |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
|      | Net Links                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |      |      |      |      |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
|      | 0 1 2 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CBUS ports 00S |      |      |      |      |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
| PB 0 | . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2              |      |      |      |      |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
| PB 1 | . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | .              |      |      |      |      |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |
| 14   | To manually busy all the links for the NIU, type<br><b>&gt;BSYLNKS INACTIVE</b><br>and press the Enter key<br><i>Example of a MAP display:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |      |      |      |      |      |      |      |    |   |   |   |   |   |    |     |   |   |   |   |   |   |  |           |  |  |         |                |      |         |   |      |         |   |



## NIU cards in an SSLPP (continued)

```

                Net Links
                0 1 2 3
PB 0           P P P P
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<br>(7 NT9X74DA NT9X79AA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$ |
| LIM      | 1     | 12  | 0        | 3        | 3        | C        | 3        | LIM 500 0 NT9X72AA<br>(7 NT9X74DA NT9X79BA) (31 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (10 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 1        | 3        | C        | 2        | LIM 501 26 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 2        | 3        | C        | 2        | LIM 501 13 NT9X72BA<br>(7 NT9X74DA NT9X79AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$  |
| LIM      | 2     | 12  | 0        | 3        | 3        | C        | 2        | LIM 501 0 NT9X72BA<br>(7 NT9X74DA NT9X79BA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X74DA NT9X79BA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$   |
| MS NIL   | 16    | 0   | 1        | 3        | C        | 4        | EMC      | 4 39 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) (33 NIL NIL) (36 NIL NIL) \$        |
| MS NIL   | 17    | 0   | 1        | 3        | C        | 4        | EMC      | 4 26 NT9X72CA<br>(7 NT9X96AA NT9X98AA) (30 NIL NTEX20AA) (1 NIL NIL) (4 NIL NIL) \$<br>(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 1 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
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 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**

## NIU cards in an SSLPP (continued)

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**

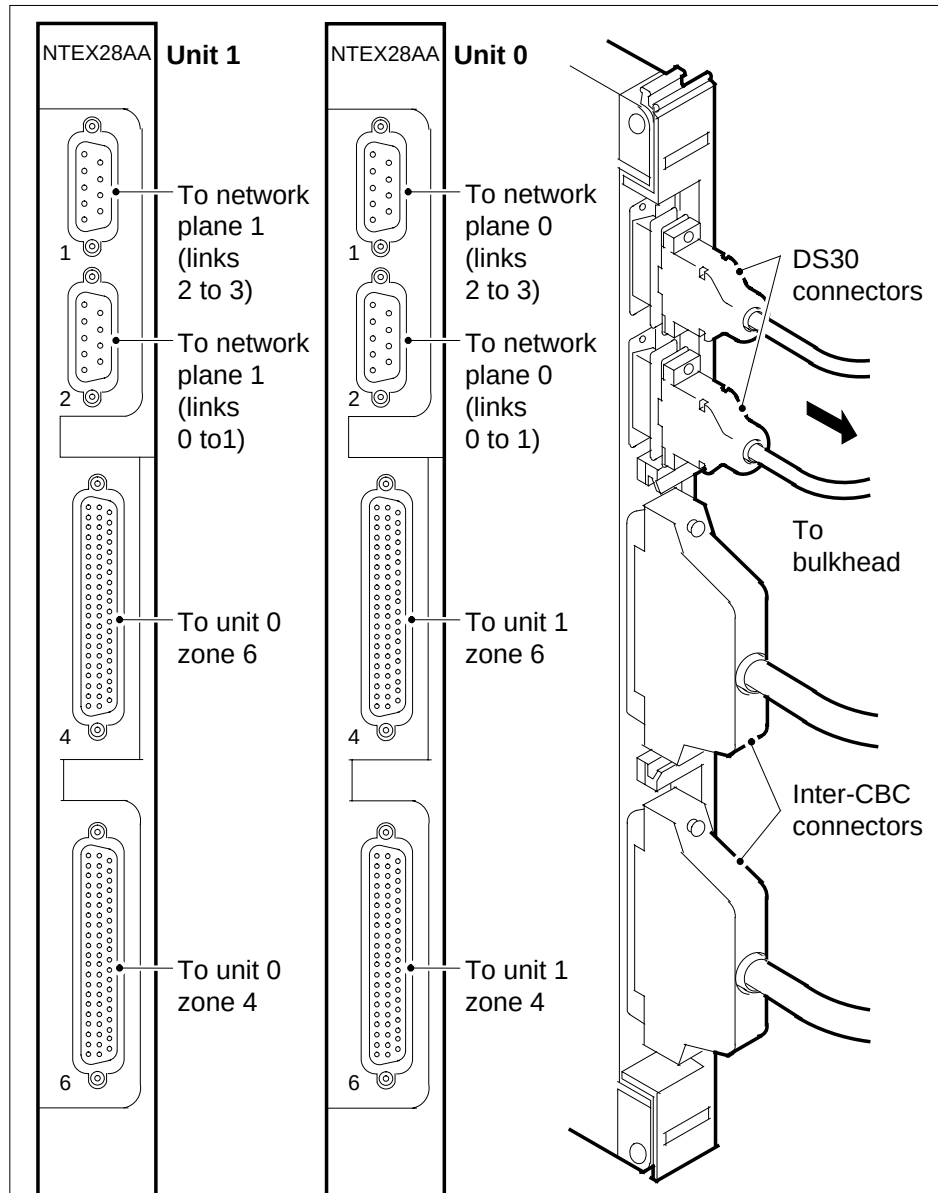
Do not cross-connect the cables when you connect the cables to the new NTEX28 paddle board. If you cross-connect the cables a loss of service occurs when you return the NIU to service.

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 00S |
| 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)

|                                      | <p><b>tap_no</b><br/>is the number of the F-bus tap you recorded in step 25</p>                                                                                                                                                                                                                                        |                            |    |                                |         |                                      |         |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----|--------------------------------|---------|--------------------------------------|---------|
|                                      | <table> <tr> <th>If the RTS command</th><th>Do</th></tr> <tr> <td>passed</td><td>step 40</td></tr> <tr> <td>failed</td><td>step 48</td></tr> </table>                                                                                                                                                                  | If the RTS command         | Do | passed                         | step 40 | failed                               | step 48 |
| If the RTS command                   | Do                                                                                                                                                                                                                                                                                                                     |                            |    |                                |         |                                      |         |
| passed                               | step 40                                                                                                                                                                                                                                                                                                                |                            |    |                                |         |                                      |         |
| failed                               | step 48                                                                                                                                                                                                                                                                                                                |                            |    |                                |         |                                      |         |
| 40                                   | The next action depends on why you perform this procedure.                                                                                                                                                                                                                                                             |                            |    |                                |         |                                      |         |
|                                      | <table> <tr> <th>If a maintenance procedure</th><th>Do</th></tr> <tr> <td>directed you to this procedure</td><td>step 41</td></tr> <tr> <td>did not direct you to this procedure</td><td>step 42</td></tr> </table>                                                                                                    | If a maintenance procedure | Do | directed you to this procedure | step 41 | did not direct you to this procedure | step 42 |
| 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<br><b>&gt;PM</b><br>and press the Enter key                                                                                                                                                                                                                            |                            |    |                                |         |                                      |         |
| 43                                   | To post the NIU that contains the card you replace, type<br><b>&gt;POST NIU niu_no</b><br>and press the Enter key<br><i>where</i><br><b>niu_no</b><br>is the NIU number (0 to 29)                                                                                                                                      |                            |    |                                |         |                                      |         |
| 44                                   | To load the NIU unit, type<br><b>&gt;LOADPM INACTIVE</b><br>and press the Enter key<br><i>Examples of MAP responses:</i><br><i>Example 1</i><br><br>NIU 1 Load Inactive Unit: Request has been submitted.<br>NIU 1 Load Unit 0: Command completed.<br>The Unit contains the "NRS0 123BA" load.<br><br><i>Example 2</i> |                            |    |                                |         |                                      |         |

## NIU cards in an SSLPP (end)

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 Unit contains 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*
- *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.

**Power converter cards  
in an SSLPP (continued)**

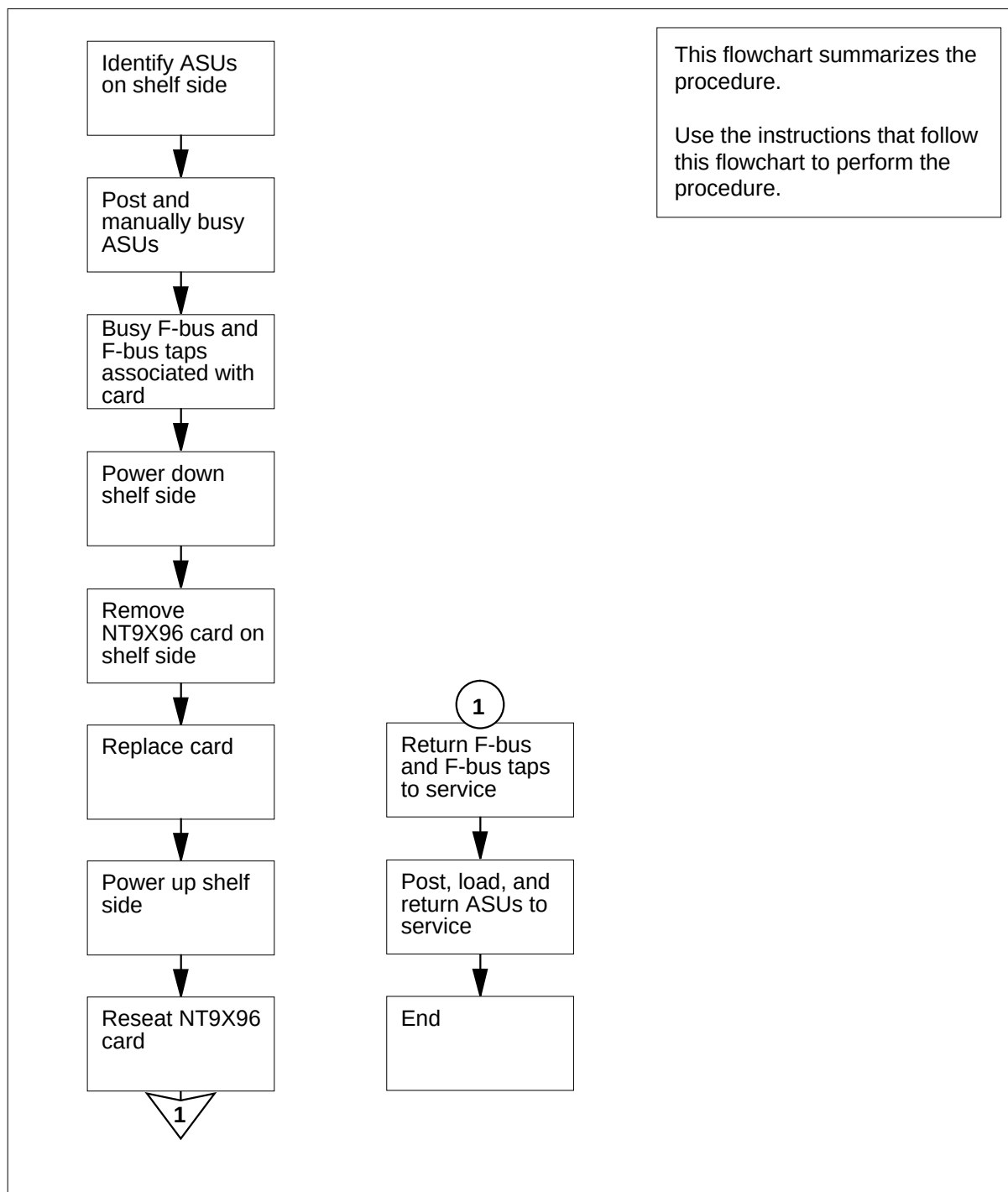
---

**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<br><b>&gt;QUIT ALL</b><br>and press the Enter key.                                                                                                                                                                      |        |
| 6 | To access table NIUINV, type<br><b>&gt;TABLE NIUINV;FORMAT PACK</b><br>and press the Enter key.<br><i>Example of a MAP display:</i>                                                                                                                                     |        |
|   | JOURNAL FILE NOT AVAILABLE - DMOS NOT ALLOWED TABLE: NIUINV<br><line length>: 76 columns can be output per line.<br><pack mode>: Pack mode is ON.<br><indent column>: Indented lines will begin in column 1.<br><first column>: The first column of output is column 1. |        |
| 7 | To list the NIUs available, type<br><b>&gt;LIST ALL</b><br>and press the Enter key.<br><i>Example of a MAP display:</i>                                                                                                                                                 |        |

```

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.

|           | <b>If an NIU</b>                                                                                                                | <b>Do</b> |
|-----------|---------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | 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    |
| <b>8</b>  | 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. |           |
| <b>9</b>  | To quit table NIUINV, type<br><b>&gt;QUIT</b><br>and press the Enter key.                                                       |           |
| <b>10</b> | To access table LIUINV, type<br><b>&gt;TABLE LIUINV;FORMAT PACK</b><br>and press the Enter key.                                 |           |
| <b>11</b> | To list all ASUs in the office, type<br><b>&gt;LIST ALL</b><br>and press the Enter key.                                         |           |

*Example of a MAP display:*

## Power converter cards in an SSLPP (continued)

```

LIU NAME 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 ABI

```

**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 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<br><b>&gt;BSY FORCE</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>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<br><b>&gt;YES</b><br>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.<br><b>Note:</b> 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 <i>Moving an XSG to a spare XLIU</i> in this document. Complete the procedure and return to this point.<br><b>Note:</b> The XLIU that associates with the card you replace is now the spare. All the next steps refer to this XLIU as the spare.<br>Go to step 40. |          |
| 39 | To manually busy the XLIU, type<br><b>&gt;BSY</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>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:*

|         |      |      |             |       |      |      |      |     |
|---------|------|------|-------------|-------|------|------|------|-----|
|         |      | 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:<br>EIU 201 is currently being imaged.<br>Do you want to abort imaging to proceed with the<br>BSY request?<br>Please confirm ("YES", "Y", "NO" or "N"): | step 60                         |
| 60 | Continue the procedure.                                                                                                                                                             |                                 |
|    | If you                                                                                                                                                                              | Do                              |
|    | proceed with BSY FORCE re-<br>quest                                                                                                                                                 | step 61                         |
|    | abort BSY FORCE request                                                                                                                                                             | step 125                        |
| 61 | To confirm the busy command, type<br>>YES<br>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<br>>MAPCI;MTC;MS<br>and press the Enter key.<br><i>Example of a MAP display:</i>                                                    |                                 |
|    | 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 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 or 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.<br><b>Note:</b> 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 <i>Unseating cards in equipment shelves</i> in this document.                                                                                                                                                                          |          |
| 79                         | To replace the power converter card, perform the procedure <i>Replacing a card</i> in this document. Complete the procedure and return to this point.<br><b>Note:</b> 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 <i>Reseating cards in equipment shelves</i> in this document.                                                                                                                                                                          |          |
| <b>At the MAP terminal</b> |                                                                                                                                                                                                                                                                                         |          |
| 83                         | To return to service the F-bus that you manually busied in step 68, type<br><b>&gt;RTS ms_no FBUS</b><br>and press the Enter key.<br><i>where</i>                                                                                                                                       |          |

## 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 manually 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.

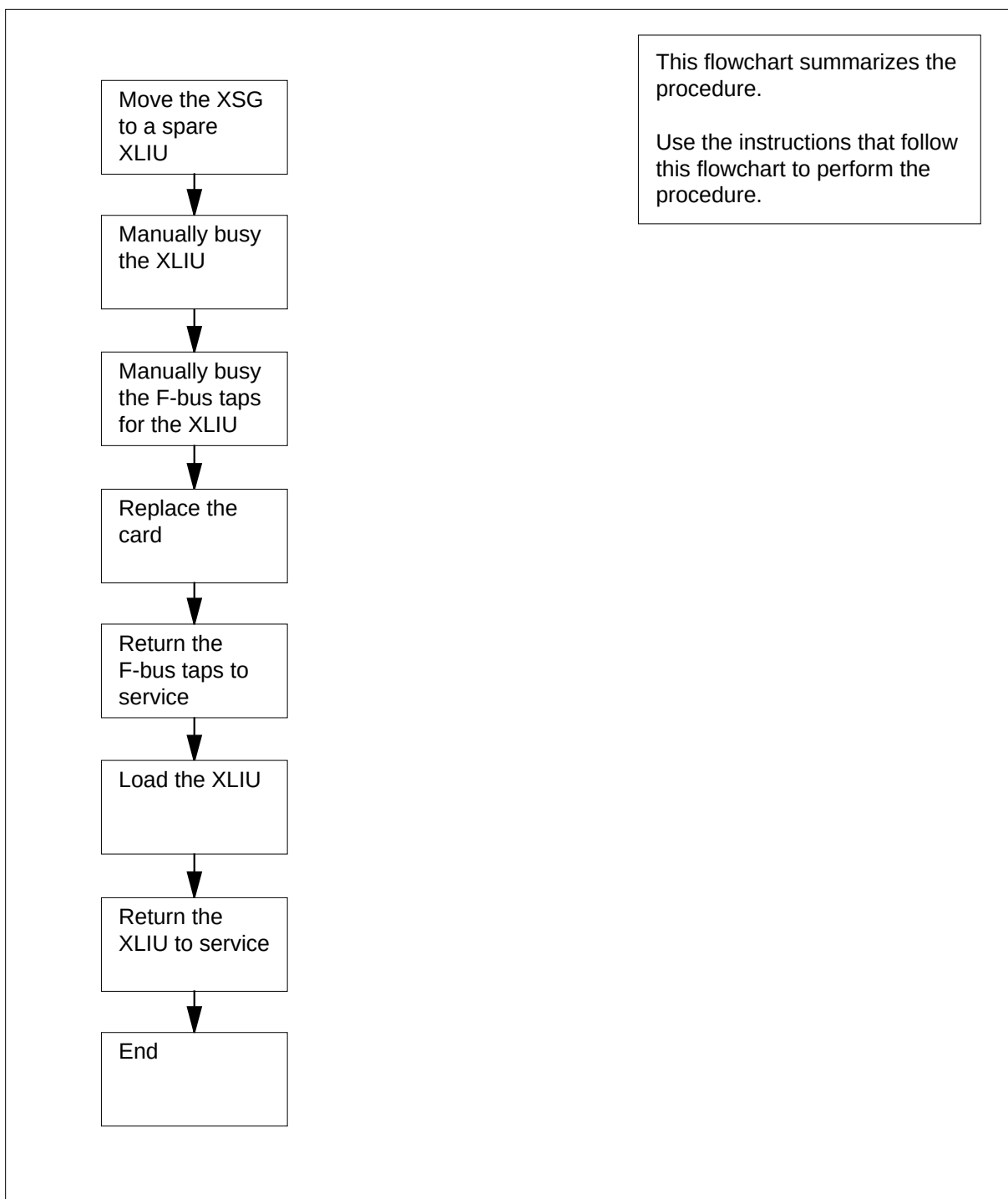
### Action

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:*

| PM | SysB | ManB | OffL | Cbsy | ISTb | InSv |
|----|------|------|------|------|------|------|
|    | 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:*

| PM   | SysB | ManB | OffL | Cbsy | ISTb | InSv |
|------|------|------|------|------|------|------|
|      | 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 | 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 | 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:** 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.

## XLIU cards in an SSLPP (continued)

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.

| <b>If the RTS command</b> | <b>Do</b> |
|---------------------------|-----------|
| 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 <i>Loading a PM</i> in this document. Complete the procedure and return to this point.                                                                                                                                                                                                 |         |
| 33 | To return the XLIU to service, type<br><b>&gt;RTS</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>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<br><b>&gt;NO</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>BSY command aborted due to imaging in progress.                                                                                                                                                |         |
| 38 | The procedure is complete.                                                                                                                                                                                                                                                                                                   |         |



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## 3 SuperNode system load module card replacement procedures

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### 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



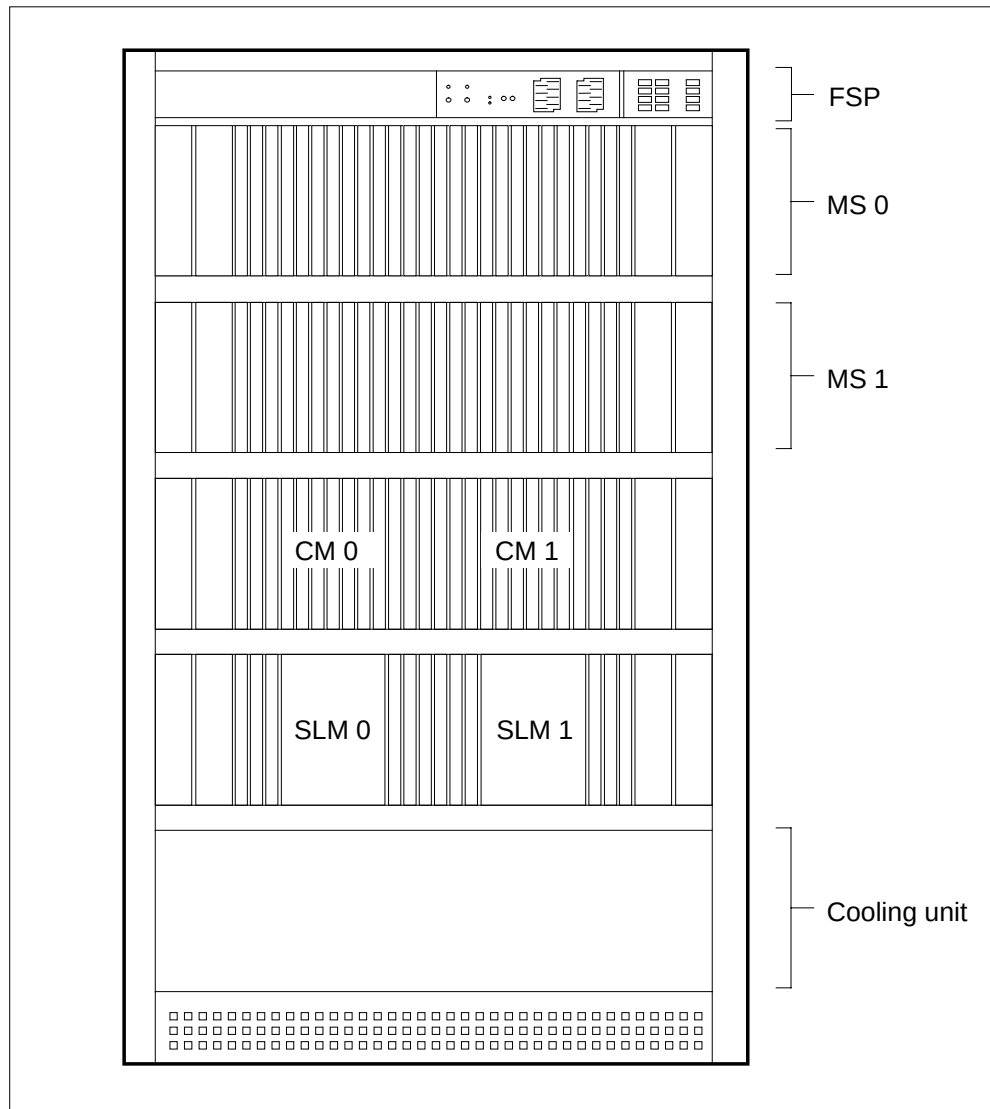
## SuperNode SLM shelf layouts

### Application

This procedure provides the following layout diagrams:

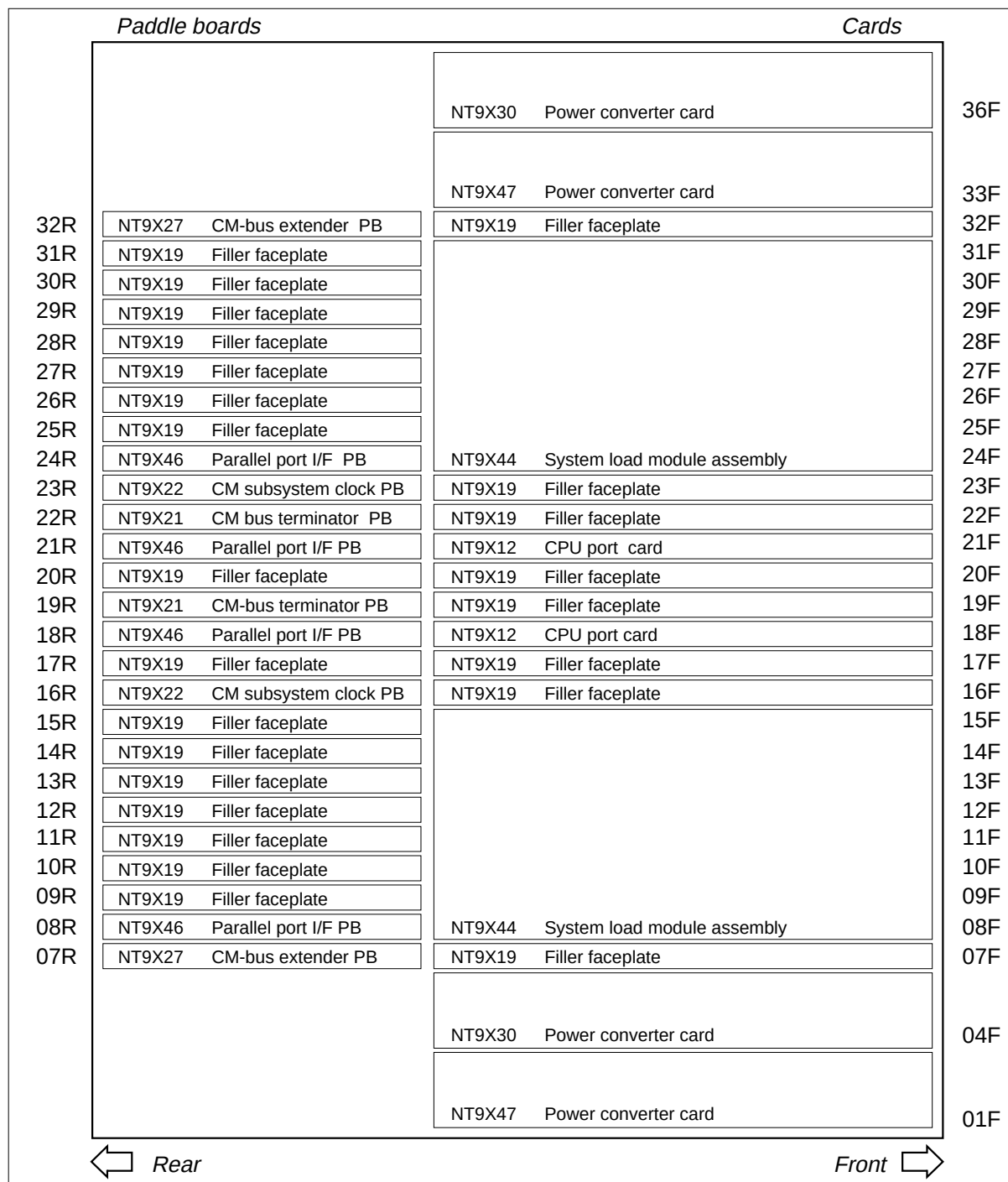
- dual-plane combined core cabinet (DPCC)
- SuperNode system load module (SLM)

**Figure Dual-plane combined core cabinet**



## SuperNode SLM shelf layouts (end)

**Figure SuperNode system load module**



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## 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*

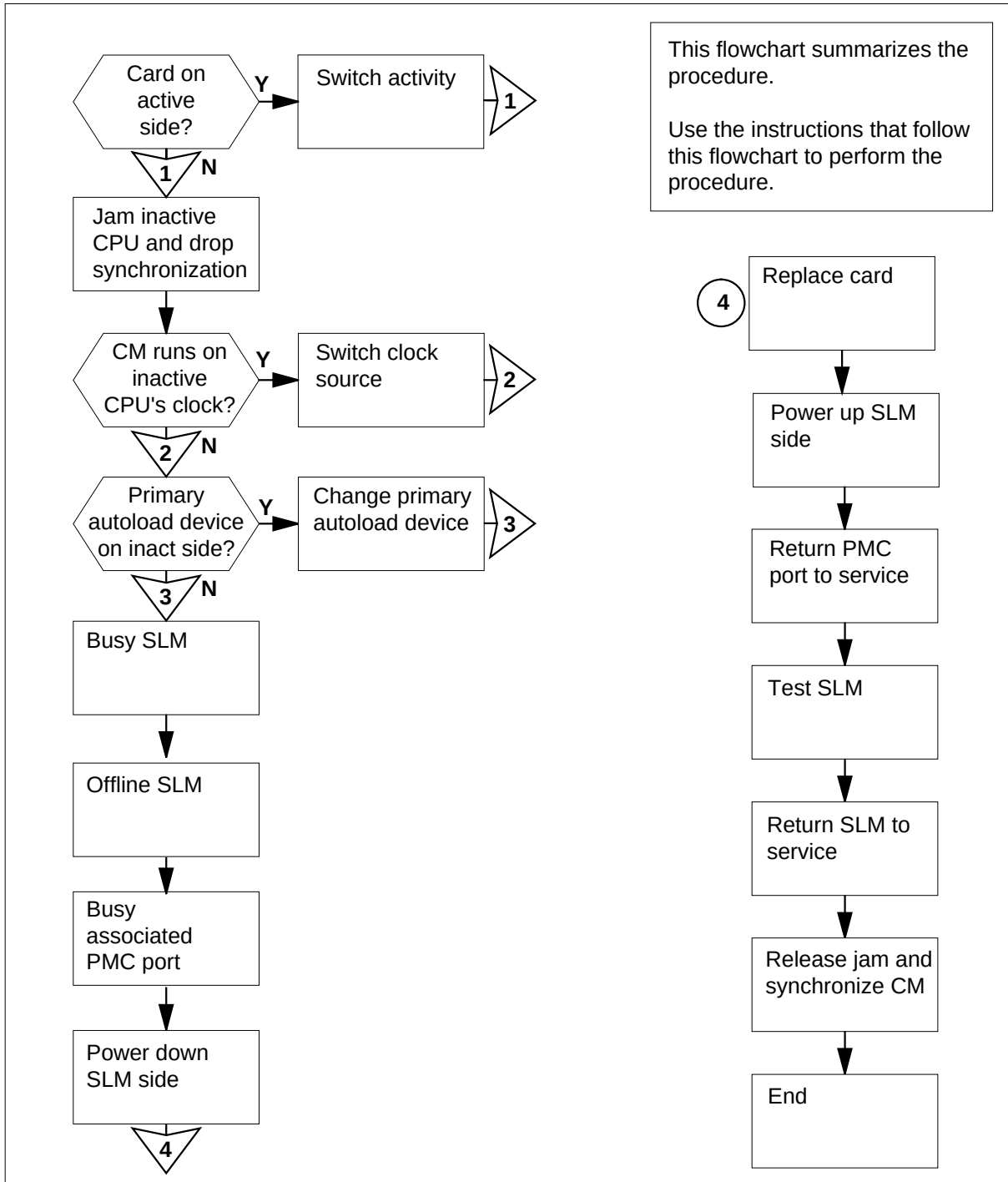
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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



## NT9X44 in a SuperNode SLM (continued)

### 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. | <b>Note:</b> 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

## NT9X44

### in a SuperNode SLM (continued)

#### ***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.

| <b>If the CM is</b> | <b>Do</b> |
|---------------------|-----------|
| synchronized        | step 9    |
| not synchronized    | step 13   |

- 9** To drop synchronization, type  
**>DPSYNC**  
and press the Enter key.

| <b>If the response is</b>                                                   | <b>Do</b> |
|-----------------------------------------------------------------------------|-----------|
| is About to drop sync with CPU n active.                                    | step 10   |
| is The inactive CPU is JAMMED.                                              |           |
| is Do you want to continue? Please confirm ("YES", "Y", "NO", or "N"):Text> |           |
| 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.

| <b>If A1</b>   | <b>Do</b> |
|----------------|-----------|
| 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 autoloader 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:*

## NT9X44

### in a SuperNode SLM (continued)

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

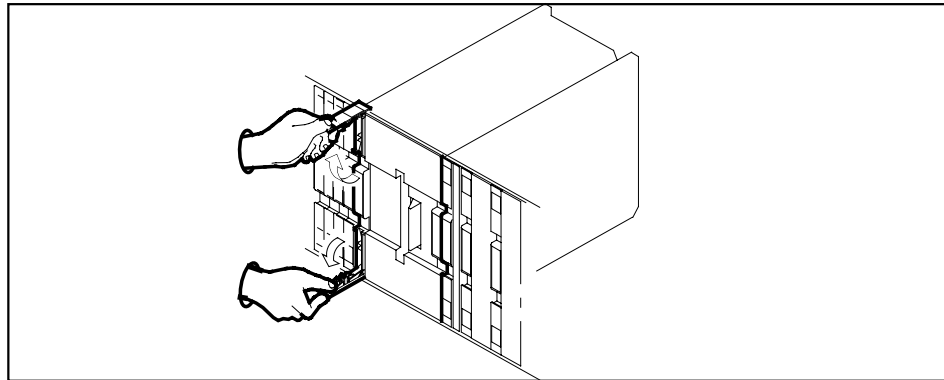
Wear a wrist strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP) to handle circuit cards. The wrist strap protects the cards against static electricity damage.

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.

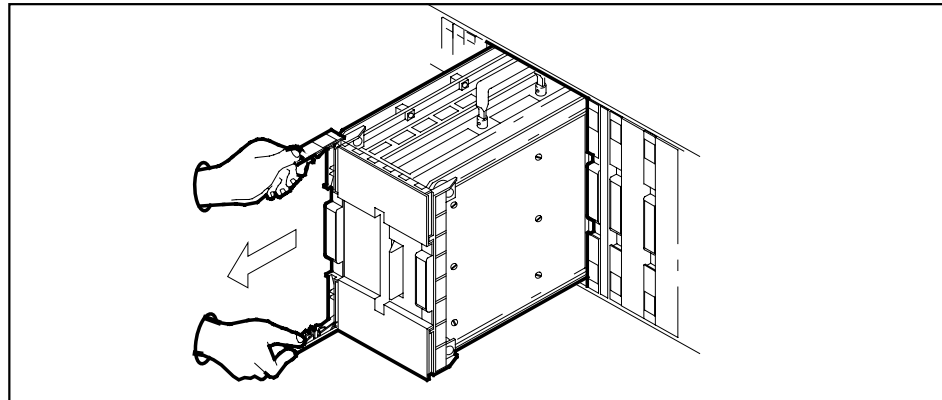
- 29 Pull open the locking levers on the SLM until the levers are horizontal.



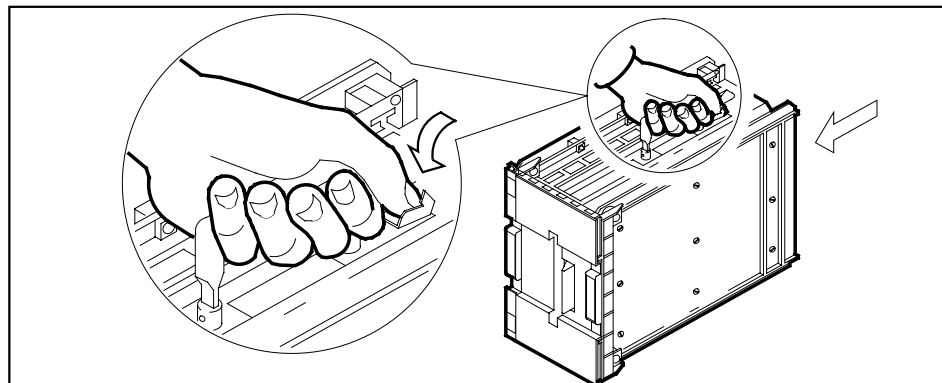
- 30 Grasp the locking levers and pull the SLM toward you until the locking latch at the back of the SLM assembly prevents the SLM from clearing the shelf.

## 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<br><b>&gt;IOD;SLM slm_number</b><br>and press the Enter key.<br><i>where</i><br><b>slm_number</b><br>is the number of the SLM (0 or 1) that you replaced                                                                                                                                  |         |
| 47 | To manually busy the SLM, type<br><b>&gt;BSY</b><br>and press the Enter key.                                                                                                                                                                                                                                                                          |         |
|    | If the BSY command                                                                                                                                                                                                                                                                                                                                    | Do      |
|    | passed                                                                                                                                                                                                                                                                                                                                                | step 48 |
|    | failed                                                                                                                                                                                                                                                                                                                                                | step 83 |
| 48 | To spin the SLM disk, type<br><b>&gt;SPIN UP</b><br>and press the Enter key.<br><br><b>Note:</b> Wait for the light on the faceplate of the SLM to light before you continue with the rest of this procedure.<br><br><i>Example of a MAP response:</i><br><br>Disk of SLM 0 is ready.                                                                 |         |
| 49 | To test the replacement SLM, type<br><b>&gt;TST ALL</b><br>and press the Enter key.<br><br><i>MAP response:</i><br><br>The tape test will write on the tape media.<br>It is recommended to insert a scratch tape,<br>otherwise data on the current tape may be<br>destroyed. Are you ready to continue?<br>Please confirm ("YES", "Y", "NO", or "N"): |         |
| 50 | To confirm the command, type<br><b>&gt;YES</b>                                                                                                                                                                                                                                                                                                        |         |



## NT9X44

### in a SuperNode SLM (continued)

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**

## NT9X44

### in a SuperNode SLM (continued)

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.

---

| <b>If the RTS command</b> | <b>Do</b> |
|---------------------------|-----------|
| passed                    | step 65   |
| failed                    | step 83   |

---

- 65** Obtain the back-up tape for the SLM that you replaced.

---

| <b>If the SLM has a</b> | <b>Do</b> |
|-------------------------|-----------|
| 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*

## NT9X44

### in a SuperNode SLM (continued)

**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-up SLM 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.

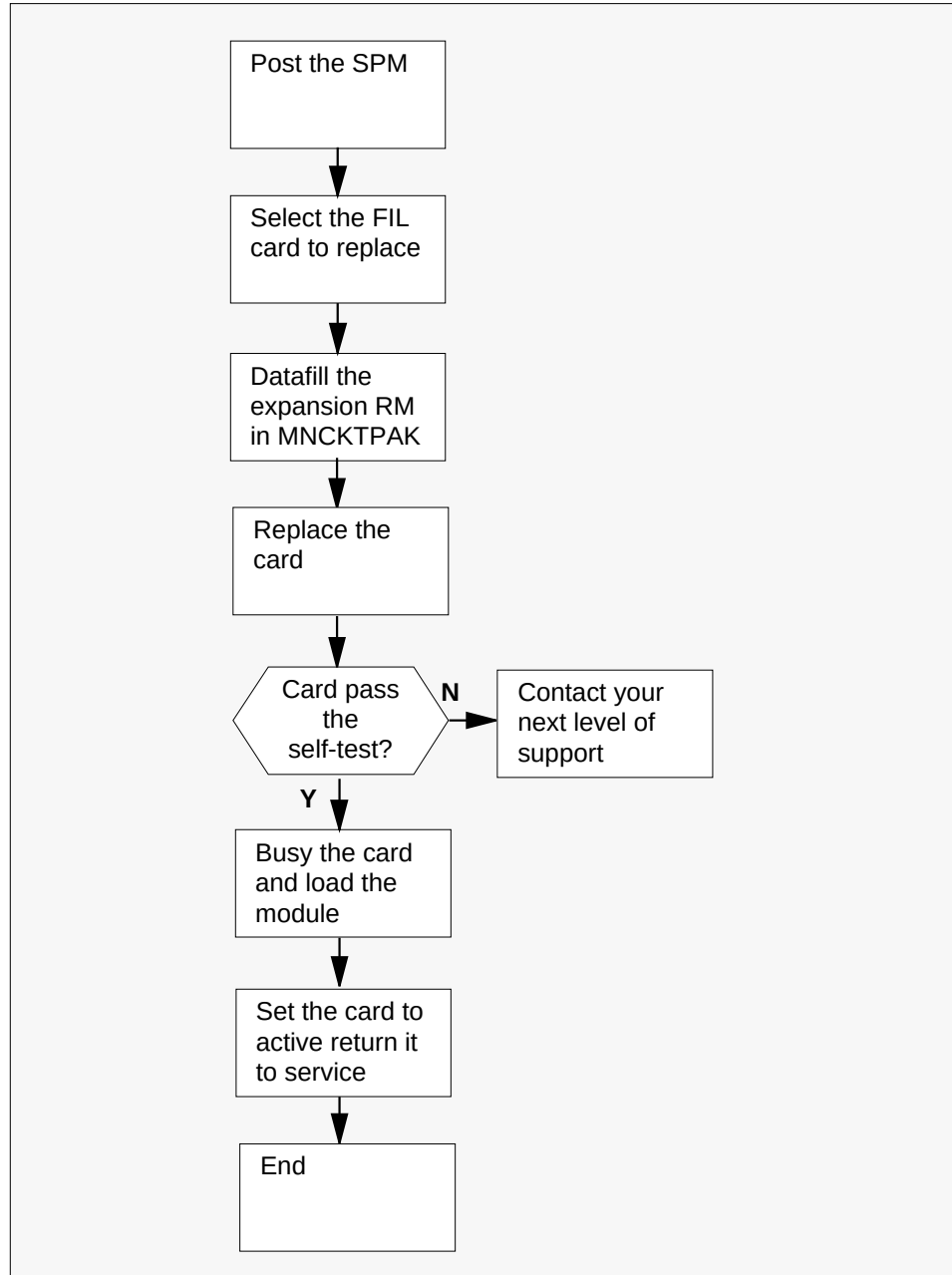


---

## 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  
.  
  
SPM  
0 Quit  
2 Post\_  
3 ListSet  
4 ListRes  
5 Trnsl  
6  
7  
8  
9  
10  
11 Disp\_  
12 Next  
13 Select\_  
14 QueryPM  
15 ListAlm\_  
16  
17  
18

MS  
.  
  
PM  
SPM

IOD  
.  
  
SysB  
0  
0

Net  
.  
  
ManB  
0  
0

PM  
.  
  
OffL  
0  
0

CCS  
.  
  
CBsy  
0  
0

Lns  
.  
  
ISTb  
0  
0

Trks  
.  
  
InSv  
38  
1

Ext  
.  
  
SPM 11 INSV Loc: Site HOST Floor 2 Row A FrPos 0

APPL  
.  
  
Shlf0 SL A Stat Shlf0 SL A Stat Shlf1 SL A Stat Shlf1 SL A Stat  
DSP 2 1 A Insv CEM 1 8 I Insv VSP 2 1 A Insv --- 8 - ----  
DSP 0 2 A Insv OC3 0 9 A Insv --- 2 - ---- VSP 6 9 A Insv  
DSP 1 3 I Insv OC3 1 10 I Insv --- 3 - ---- --- 10 - ----  
DSP 3 4 I Insv --- 11 - ---- --- 4 - ---- --- 11 - ----  
--- 5 - ---- --- 12 - ---- --- 5 - ---- --- 12 - ----  
--- 6 - ---- VSP 4 13 A Insv --- 6 - ---- --- 13 - ----  
CEM 0 7 A Insv VSP 5 14 A Insv --- 7 - ---- --- 14 - ----  
SPM:

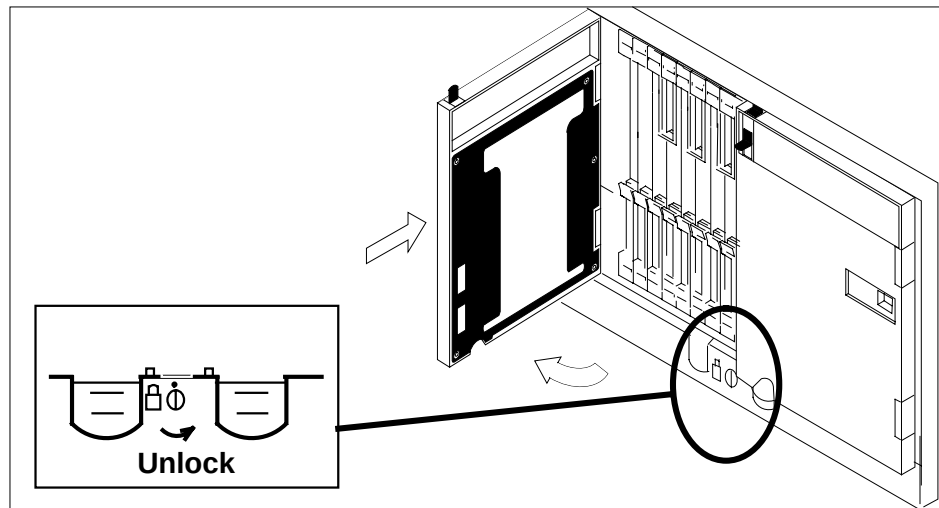
14:12 >

- 3 Choose a shelf and slot location for the expansion card.
- 4 Datafill the required information in table MNCKTPAK.

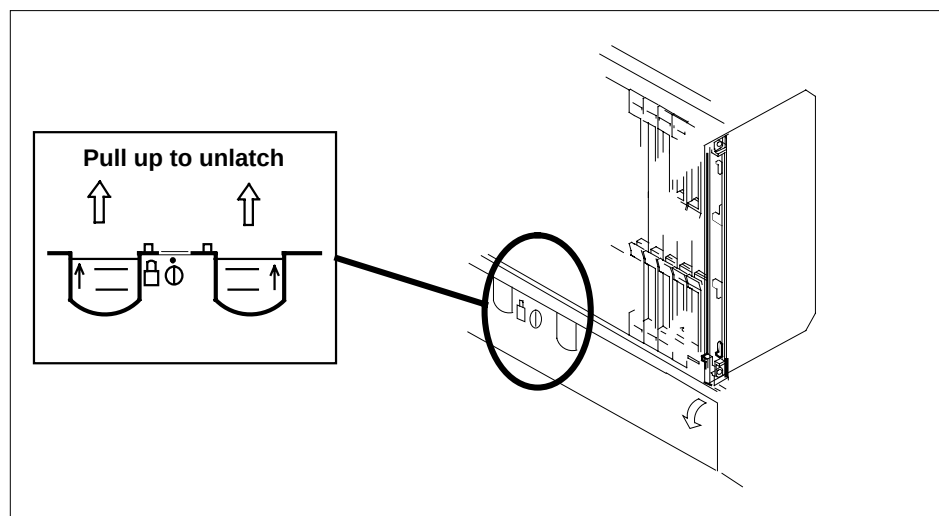
## SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module (continued)

### 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

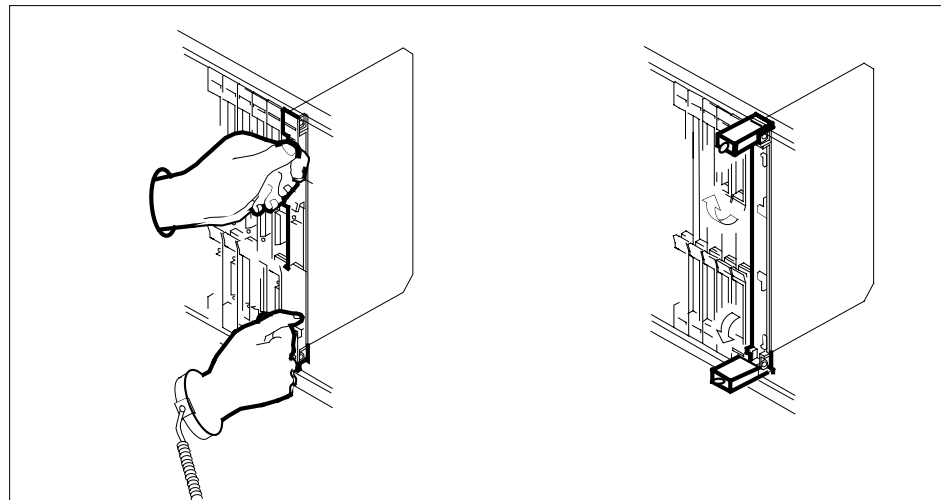


### CAUTION

#### Card lever breakage

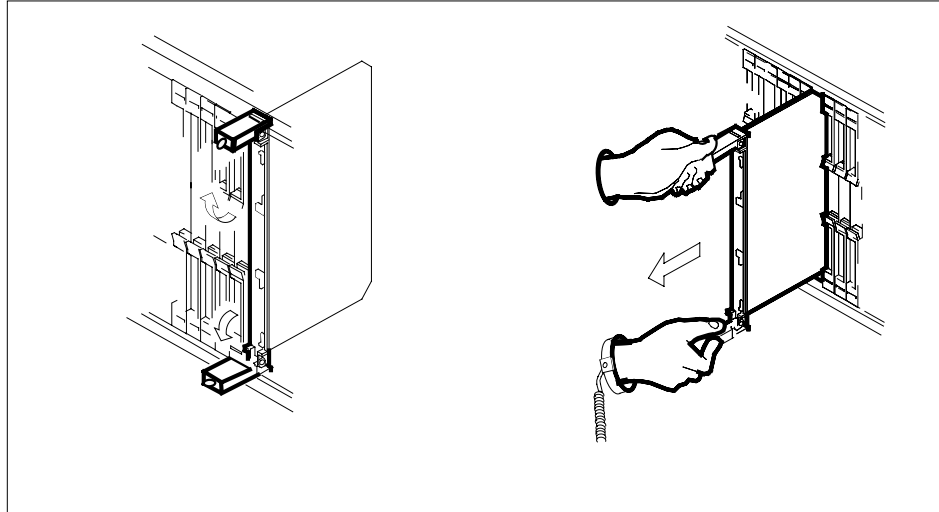
Holding a card by the levers only may result in lever breakage. Once the card has been pulled half way out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

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).



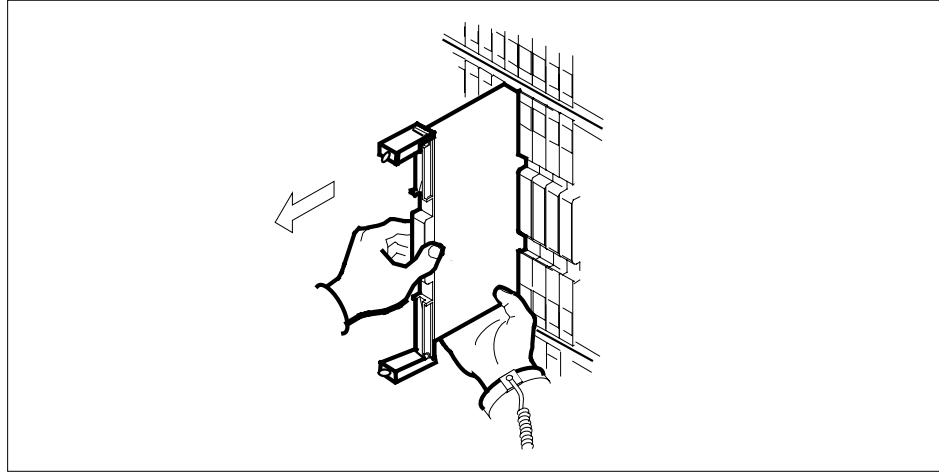
### CAUTION

#### 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

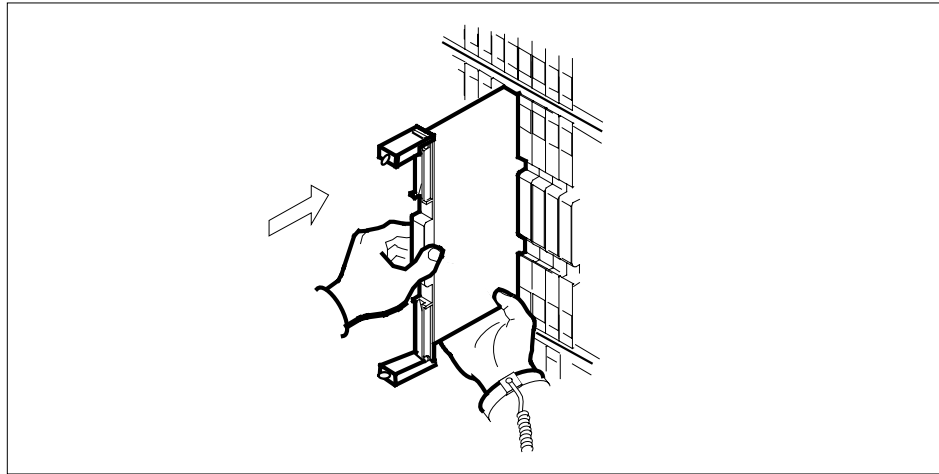
Open the locking levers on the card.

---

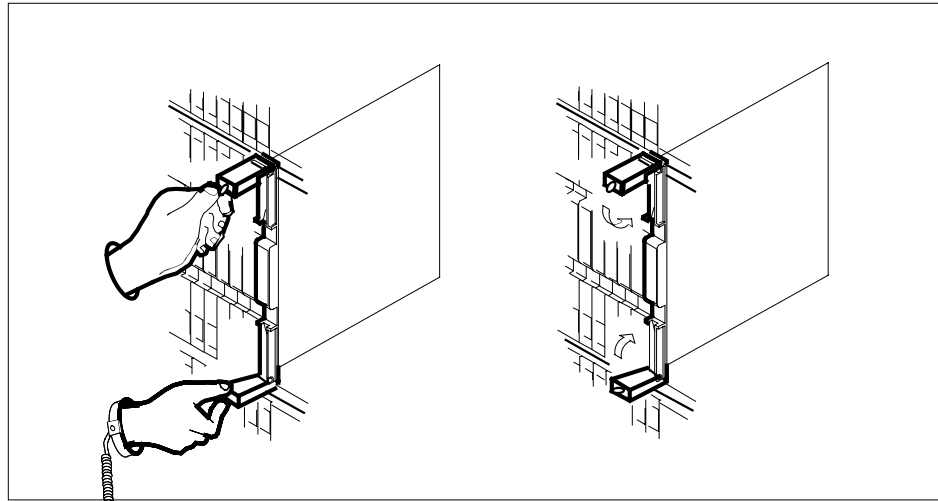
## SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module (continued)

---

- 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
0 Quit      PM      SysB      ManB      OffL      CBsy      ISTb      InSv
2           SPM      0        0        0        0        0        38
3 ListSet   DSP      0        0        0        0        0        1
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 >
```



---

## SPM NTLX60AA FIL with DSP RM DMS-Spectrum Peripheral Module (continued)

---

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 |

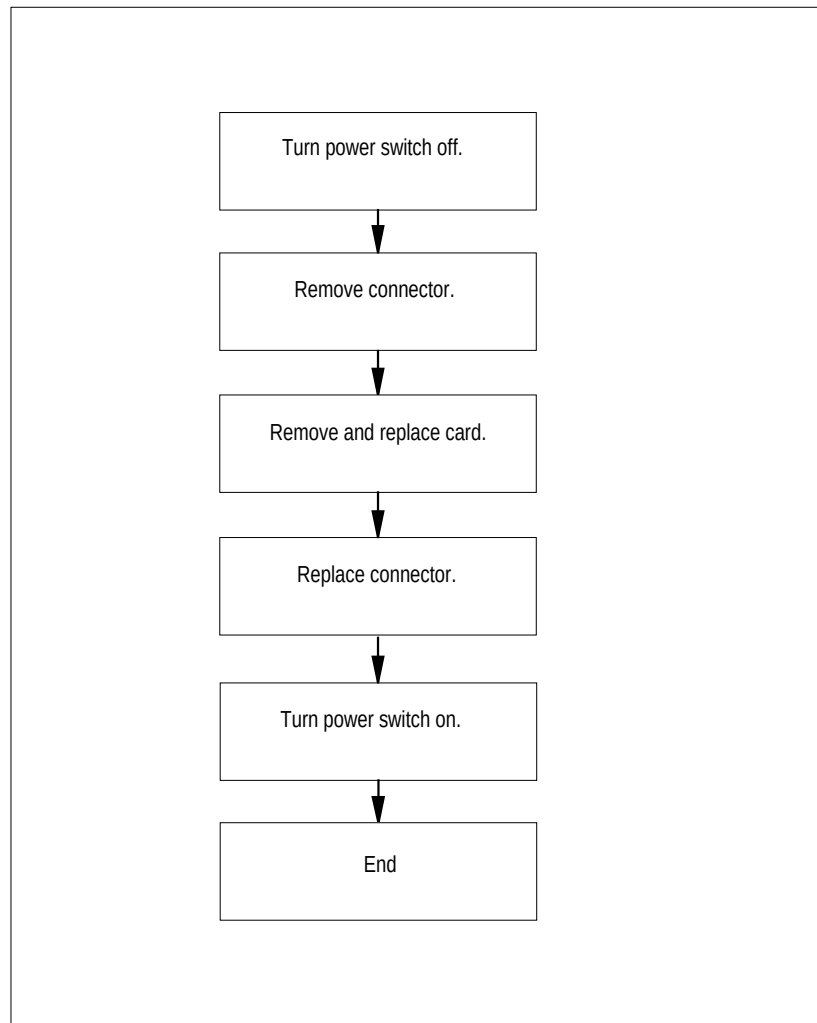
### Action

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**

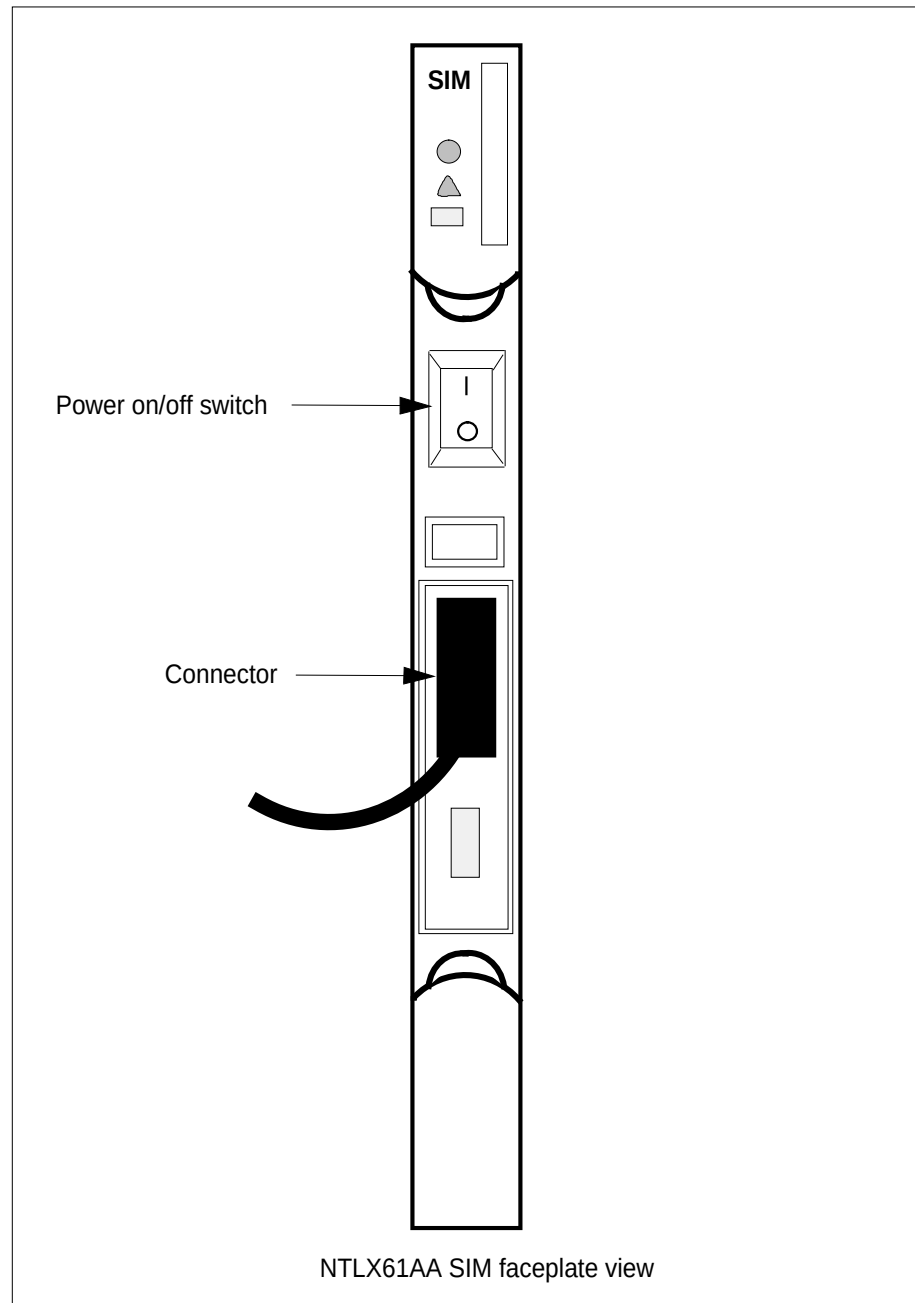
Equipment damage can result if the exposed pins of the SIM power-cable connector come into contact with metal surfaces. Tie-off or cap the cable connector when it is removed from the SIM.

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)

---



---

## SPM NTLX61AA SIM card DMS-Spectrum Peripheral Module (continued)

---

3



**CAUTION**

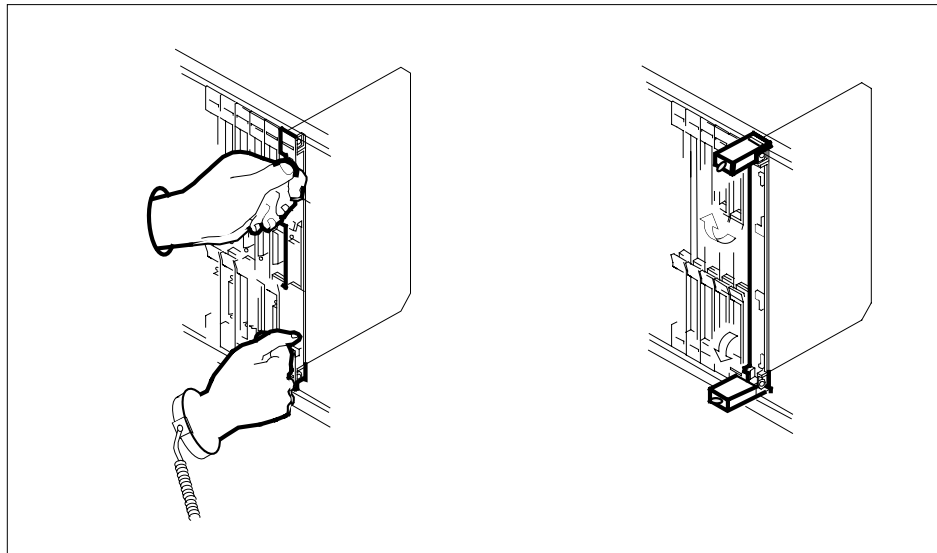
**Wait 15 s for power dissipation**

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.

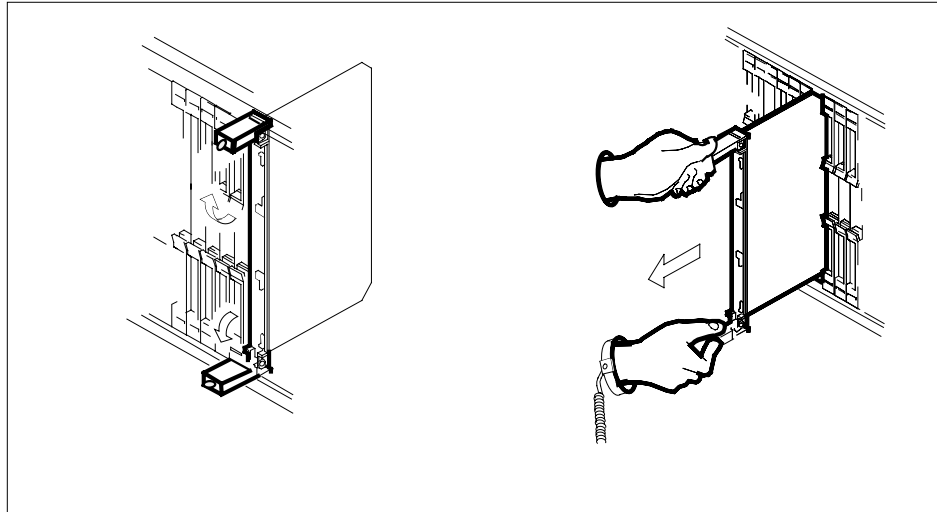


5

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.

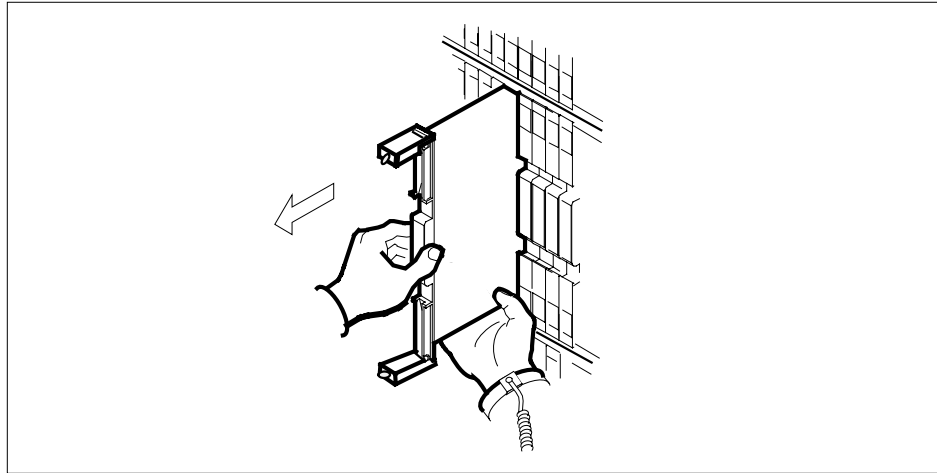
Hold the card by the face plate with one hand while supporting the bottom edge with the other hand. As shown in the following figure, gently pull the card toward you until it clears the shelf.



---

## 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.

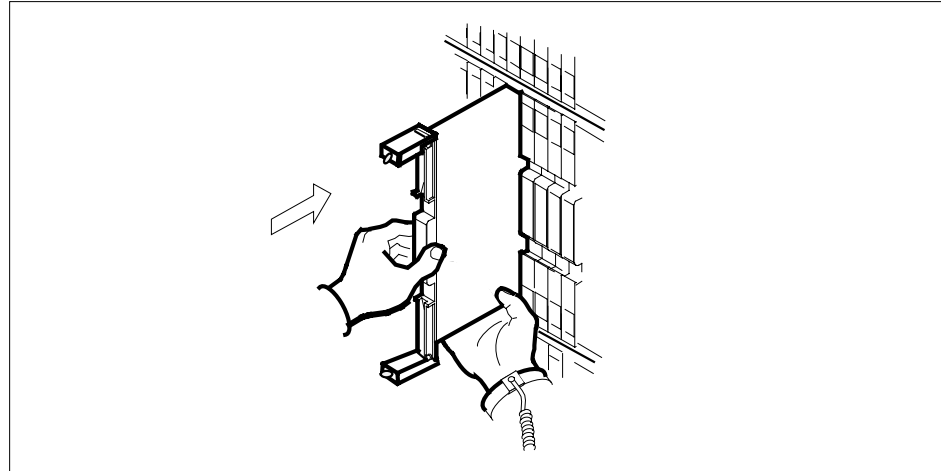
Ensure the replacement card has the same PEC and the same release.

**Note:** Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

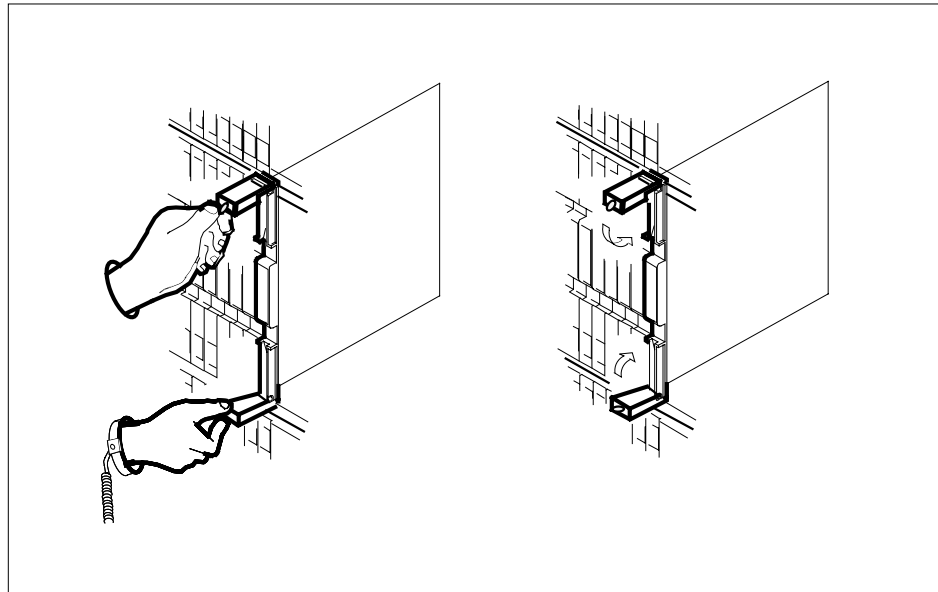
- 9 Insert the replacement SIM card into the shelf.
- 10 Open the locking levers on the card.
- 11 Hold the card by the face plate with one hand while supporting the bottom edge with the other hand. As shown in the following figure, gently slide the card into the shelf.

## 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 |

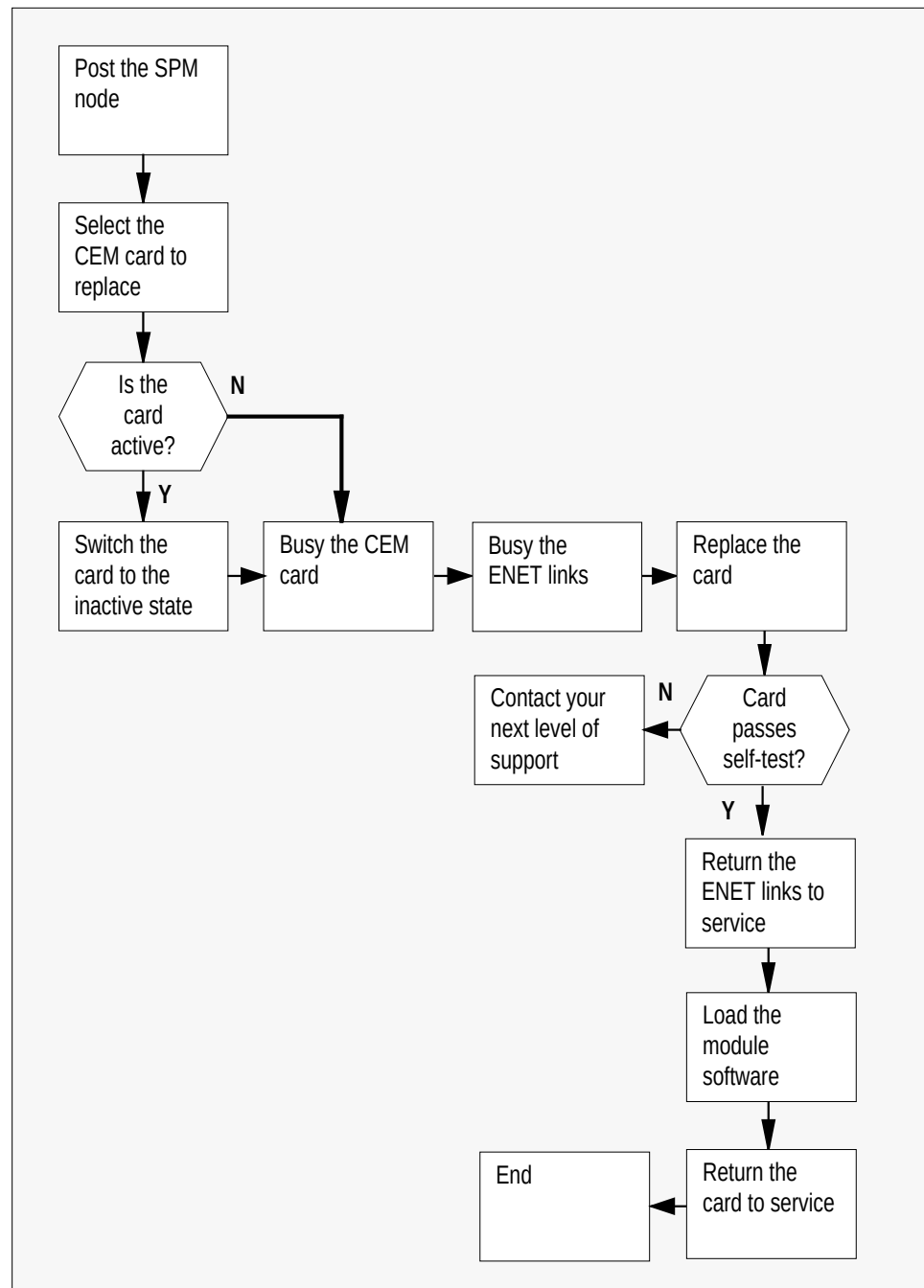
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

### 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

0 Quit

2 Post\_

3 ListSet

4 ListRes

5 Trnsl

6

7

8

9

10

11 Disp\_

12 Next

13 Select\_

14 QueryPM

15 ListAlm\_

16

17

18

|  |     |  |  |      |      |      |      |      |      |
|--|-----|--|--|------|------|------|------|------|------|
|  |     |  |  | SysB | ManB | OffL | CBsy | ISTb | InSv |
|  | PM  |  |  | 0    | 0    | 0    | 0    | 0    | 1    |
|  | SPM |  |  | 0    | 0    | 0    | 0    | 0    | 1    |

SPM 11 INSV Loc: Site HOST Floor 2 Row A FrPos 0

| Shlf0 | SL | A | Stat | Shlf0 | SL | A  | Stat | Shlf1 | SL | A | Stat | Shlf1 | SL | A  | Stat |
|-------|----|---|------|-------|----|----|------|-------|----|---|------|-------|----|----|------|
| DSP 2 | 1  | A | Insv | CEM 1 | 8  | I  | Insv | VSP 2 | 1  | A | Insv | ---   | -  | 8  | ---- |
| DSP 0 | 2  | A | Insv | OC3 0 | 9  | A  | Insv | ---   | 2  | - | ---- | VSP 6 | 9  | A  | Insv |
| DSP 1 | 3  | I | Insv | OC3 1 | 10 | I  | Insv | ---   | 3  | - | ---- | ---   | -  | 10 | ---- |
| DSP 3 | 4  | I | Insv | ---   | -  | 11 | ---- | ---   | -  | 4 | ---- | ---   | -  | 11 | ---- |
| ---   | -  | 5 | ---- | ---   | -  | 12 | ---- | ---   | -  | 5 | ---- | ---   | -  | 12 | ---- |
| ---   | -  | 6 | ---- | VSP 4 | 13 | A  | Insv | ---   | -  | 6 | ---- | ---   | -  | 13 | ---- |
| CEM 0 | 7  | A | Insv | VSP 5 | 14 | A  | Insv | ---   | -  | 7 | ---- | ---   | -  | 14 | ---- |

SPM:

14:12 >

- 3 Access the CEM card by typing

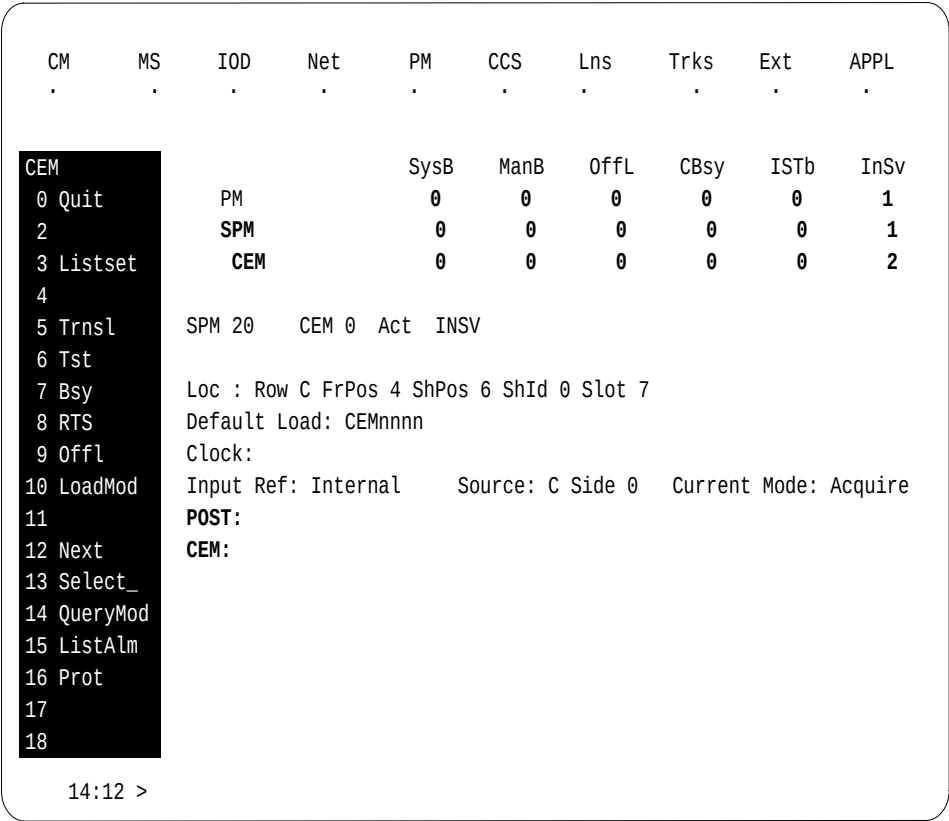
*>SELECT CEM cem\_no*

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.



- 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
0 Quit      ENET      System  Matrix  Shelf 0 1 2 3
2           Plane 0 CSLink Fault      F - - -
3 QueryEN   Plane 1 CSLink  .       F - - -
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 ..00.F-- ----- ..00.F.. .   .
Plane 1   .   .   .F ..00...-- ----- ..00.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:*

## SPM NTLX63AA CEM card DMS-Spectrum Peripheral Module (continued)

```

SHELF 00 Slot      1111111 1112222 2222233 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

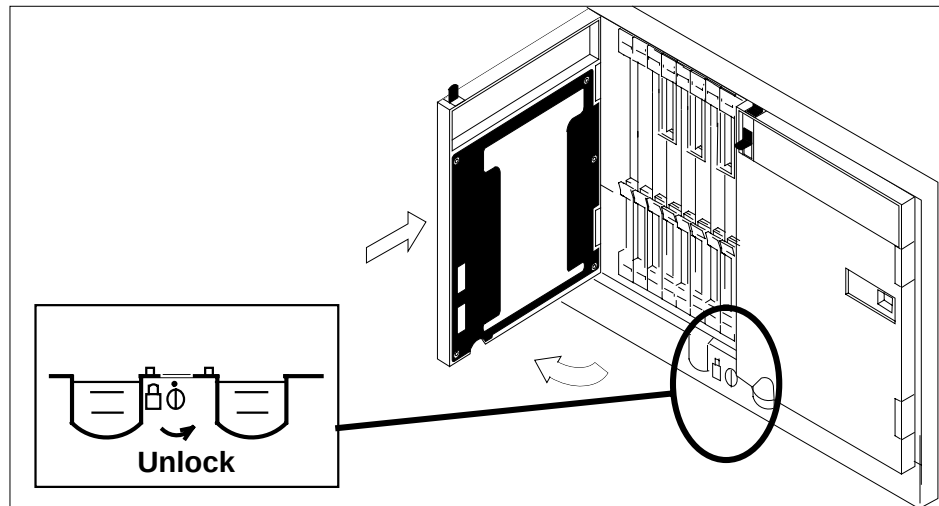
#### Static electricity damage

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.

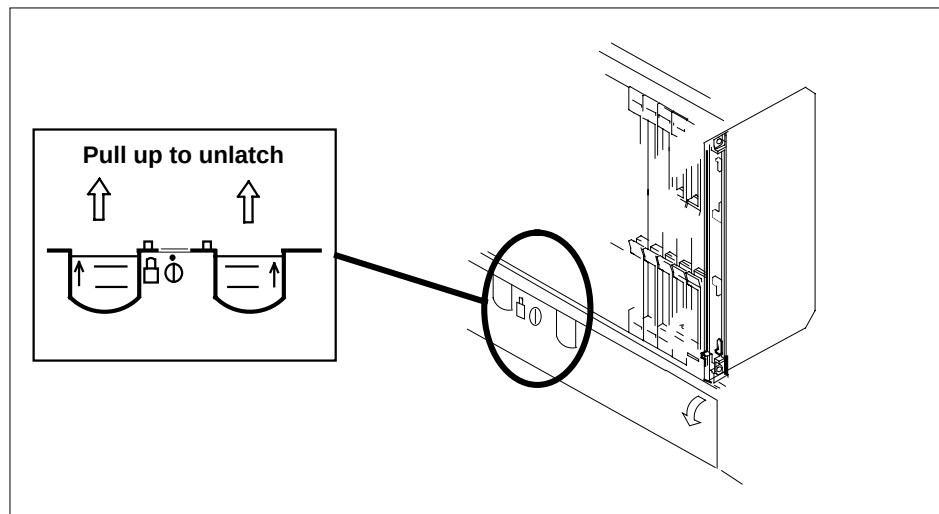
As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of 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

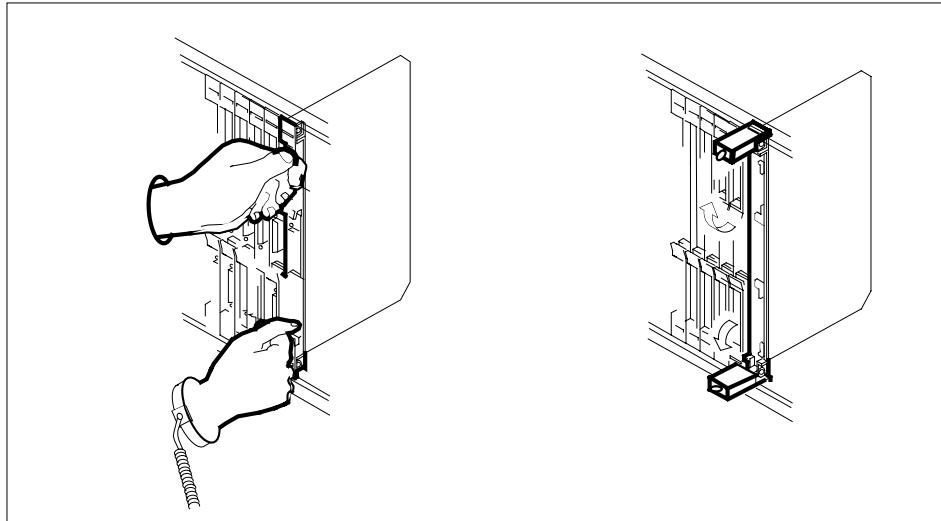


### CAUTION

#### 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.

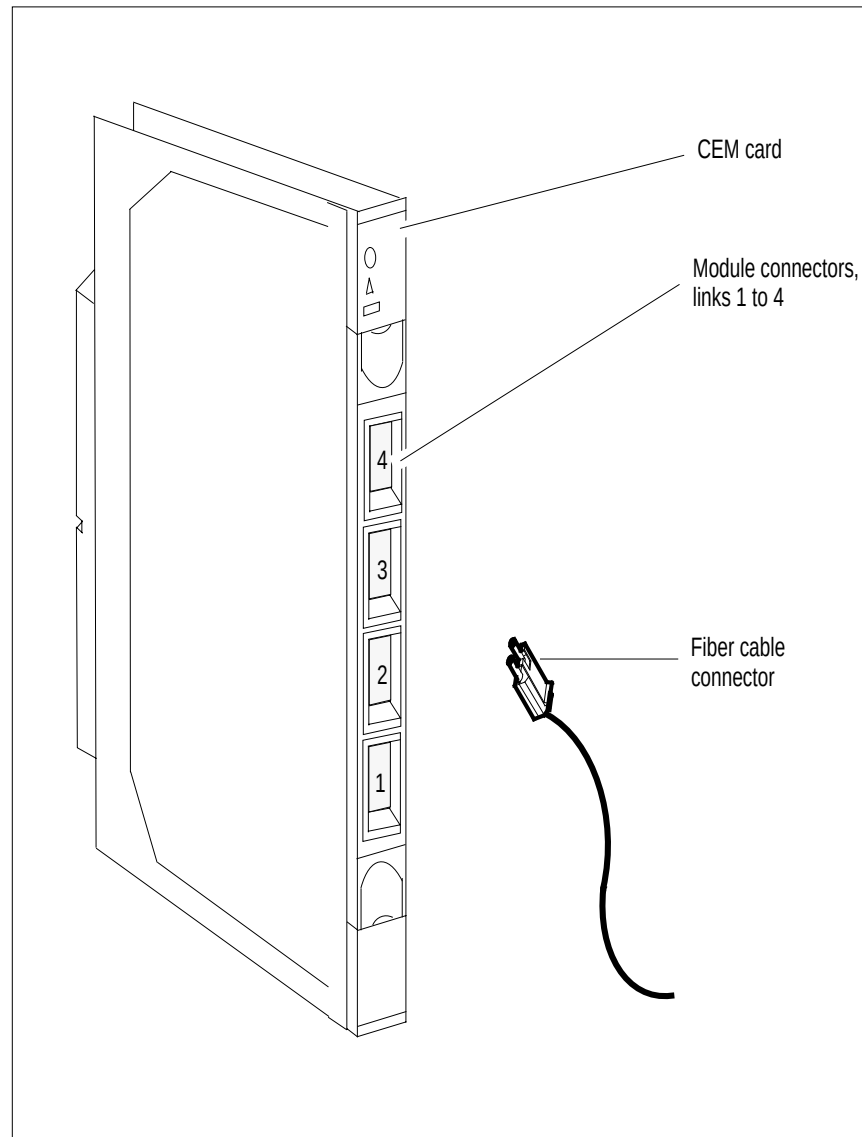
Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

- 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)

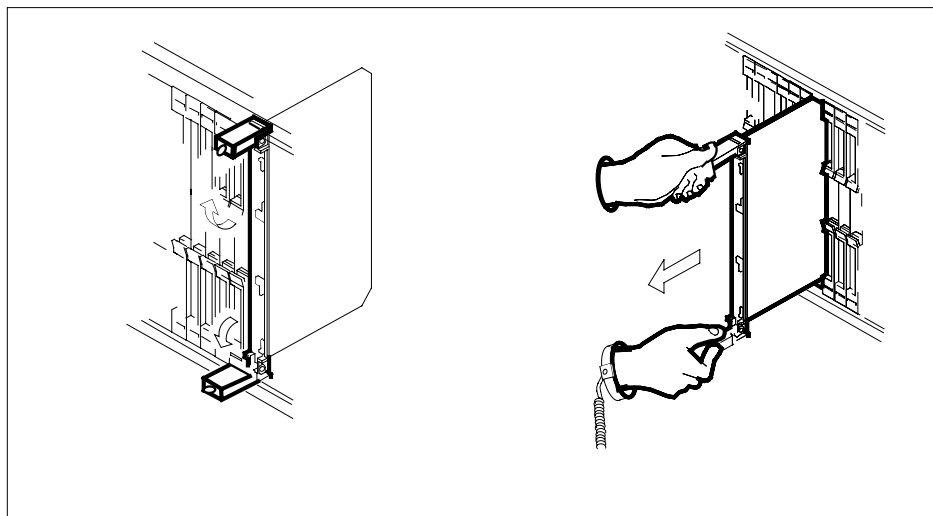
---



- 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)

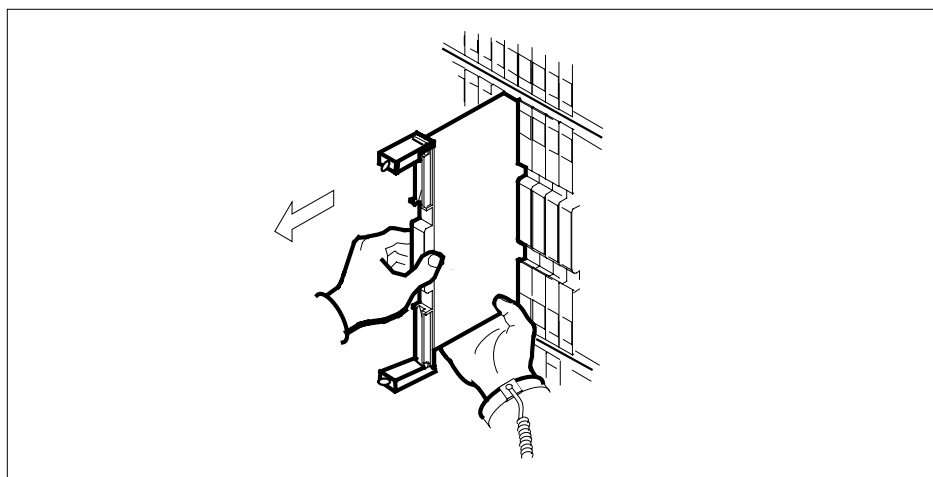


23

### 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.

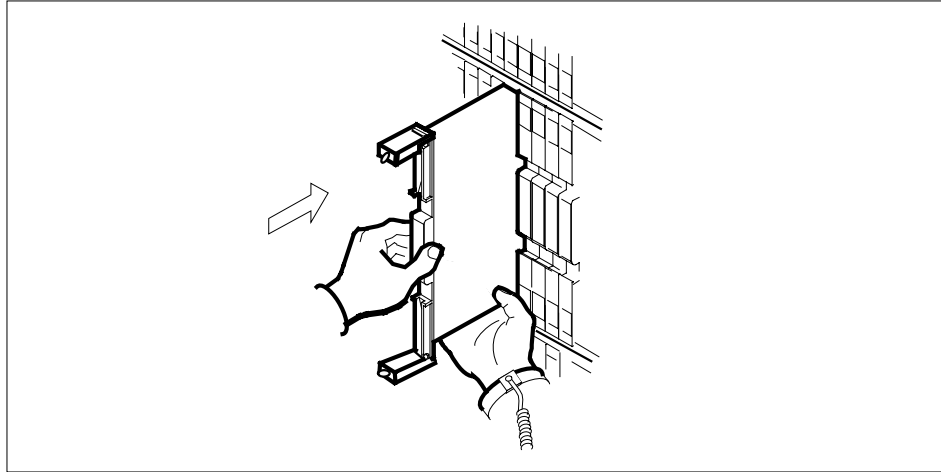
**Note:** Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for information about Table MNCKTPAK.

- 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

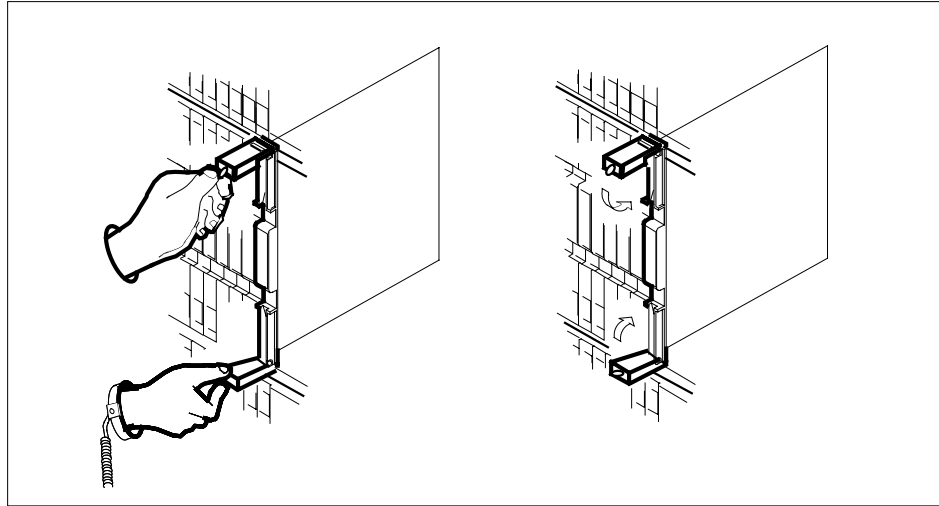
#### Damage to fiber cables

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

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### 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.

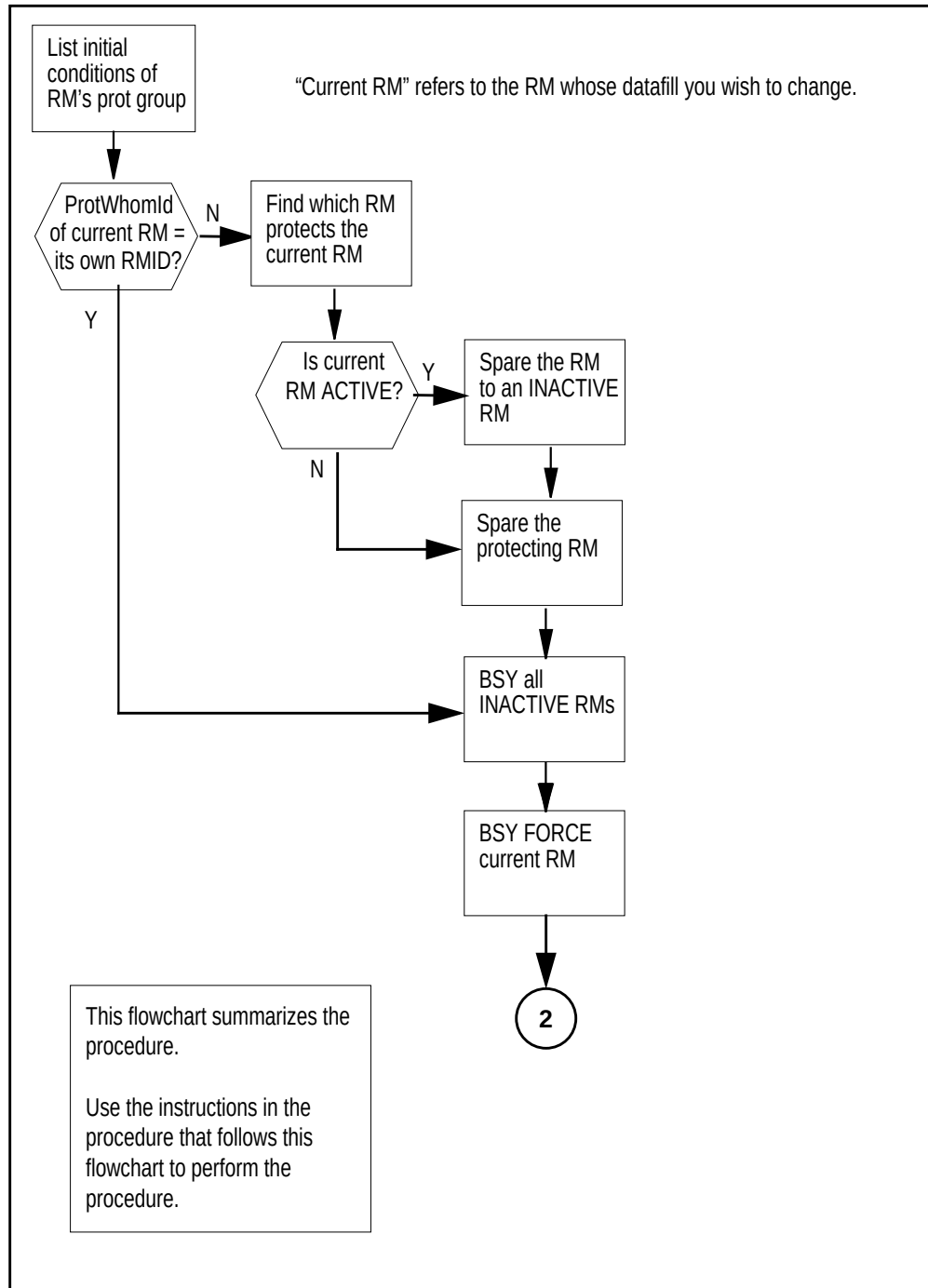
**Note:** When the DSP RM is part of a protection group, special procedures apply for modifying or deleting MNCKTPAK datafill. See the MNCKTPAK section of the *Data Schema Reference Manual or Translation Guide*, as appropriate for your product, for these procedures.

### 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.

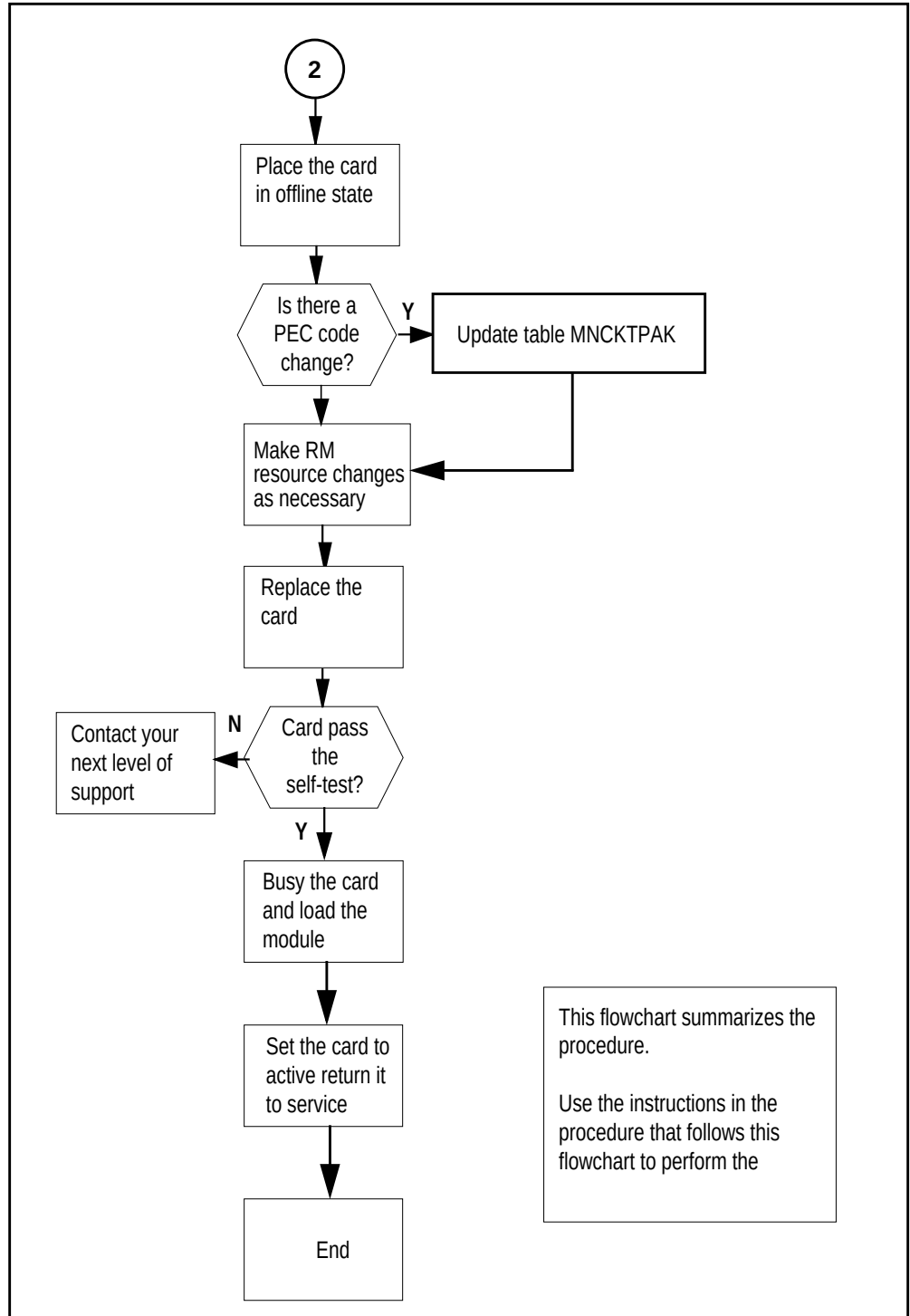
## SPM NTLX65BA DSP RM DMS-Spectrum Peripheral Module (continued)

### 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 the RM's own RMID, regardless of its activity state      step 6

ProtWhomID is not the same as the 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

#### >OFFL

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.

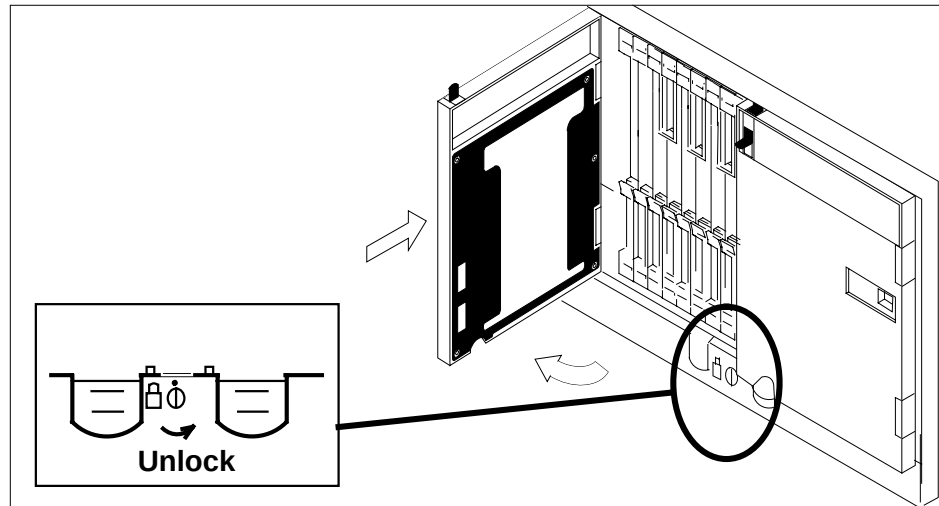
Return to the SPM screen and wait for the module state to change.

**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.

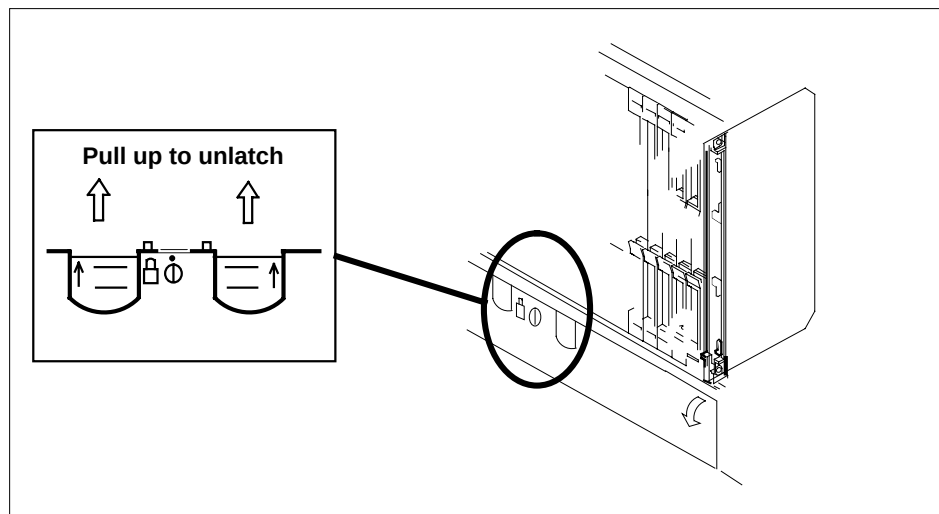
- 10 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top 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)

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12

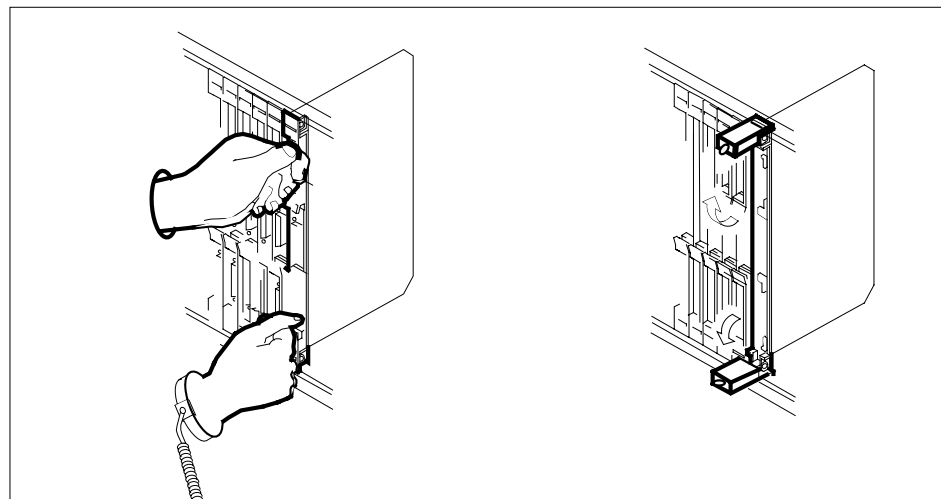


### CAUTION

#### Card lever breakage

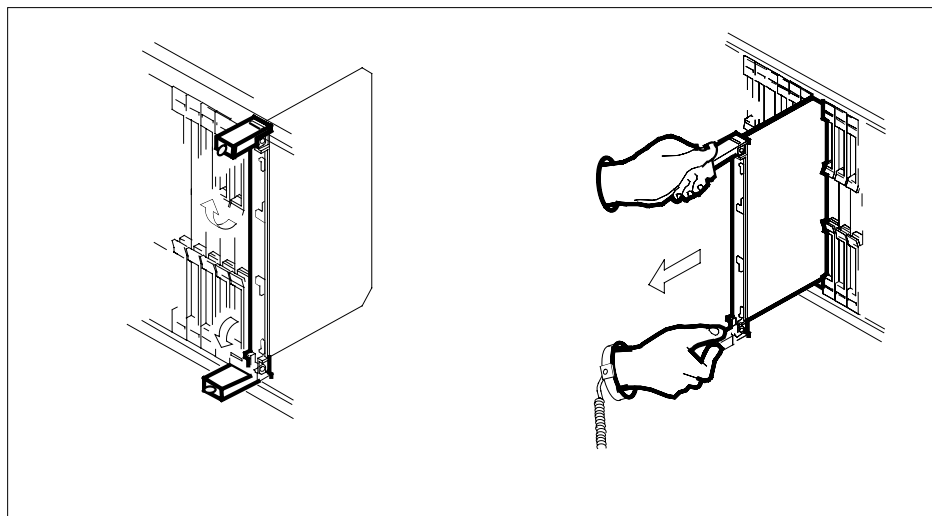
Holding a card by the levers only can result in lever breakage. Once the card has been pulled halfway out of the shelf, carefully grasp the card underneath for more secure support and continue to remove the card from the shelf. Avoid touching any wires or internal parts on the card.

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)

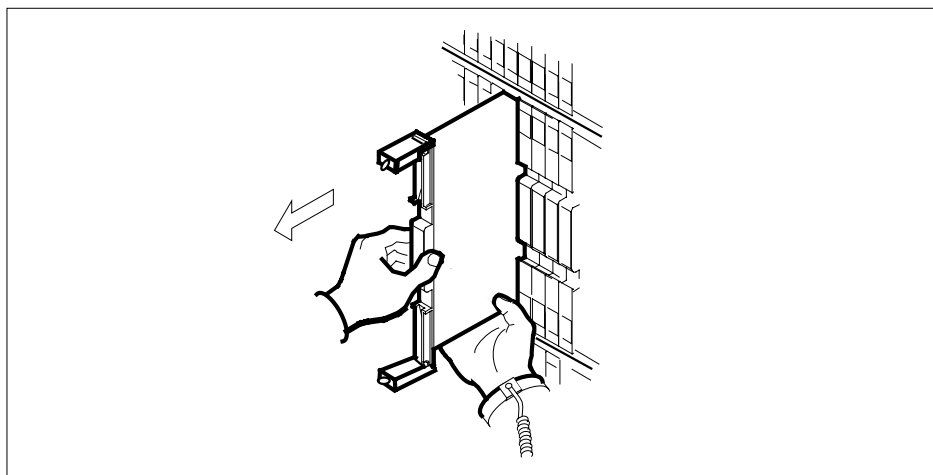


14

### 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.

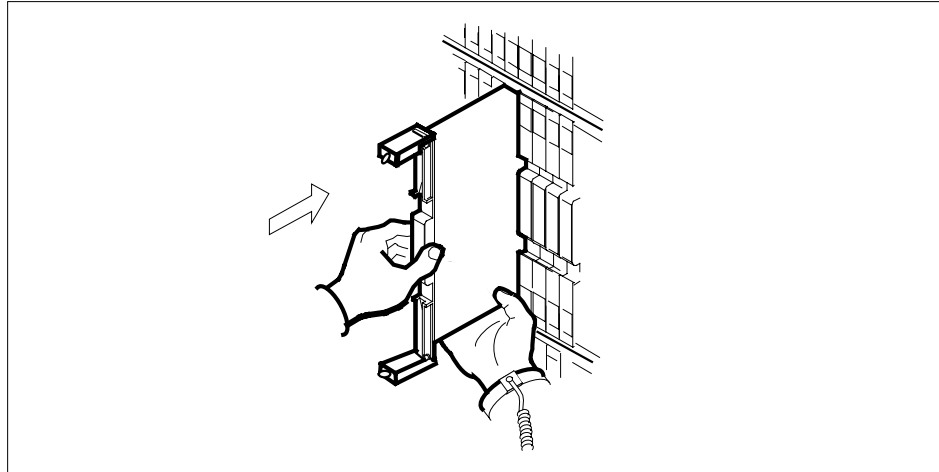
18 As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.



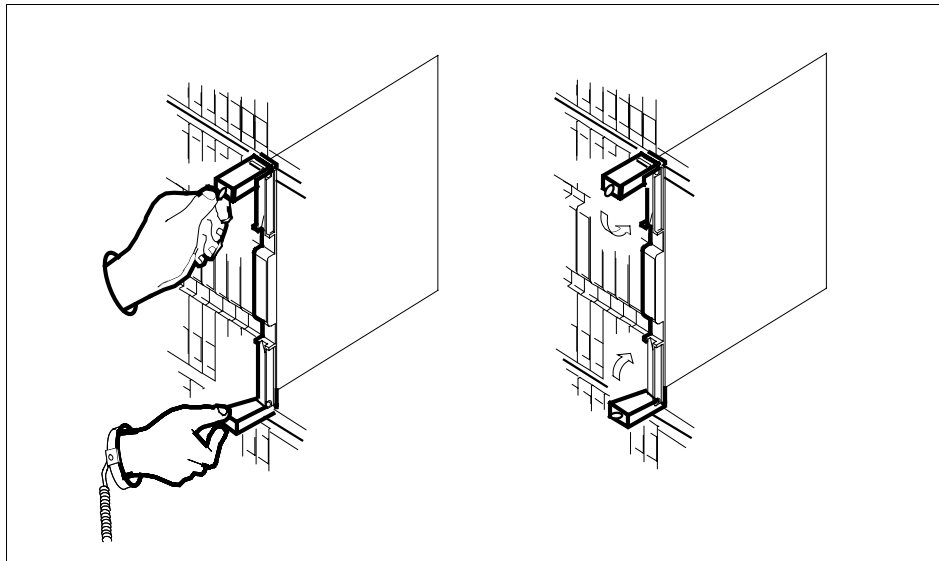
---

## 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 |

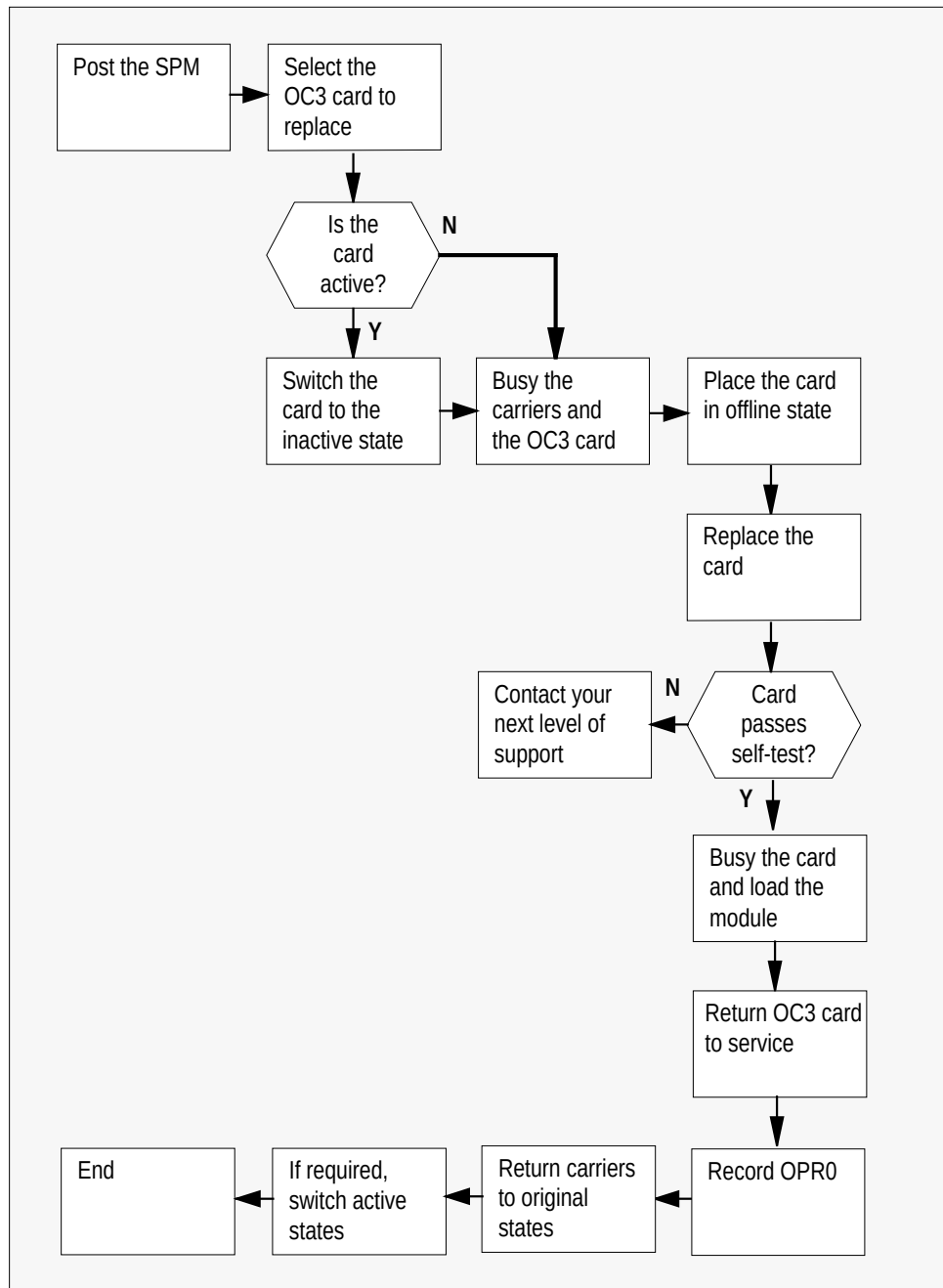
To verify the PEC of the card being replaced, check the datafill in table MNCKTPAK.

#### **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   |    |     |     |      |      |      |      |      |      |
| 5 TrnsL     |    |     |     |      |      |      |      |      |      |
| 6           |    |     |     |      |      |      |      |      |      |
| 7           |    |     |     |      |      |      |      |      |      |
| 8           |    |     |     |      |      |      |      |      |      |
| 9           |    |     |     |      |      |      |      |      |      |
| 10          |    |     |     |      |      |      |      |      |      |
| 11 Disp_    |    |     |     |      |      |      |      |      |      |
| 12 Next     |    |     |     |      |      |      |      |      |      |
| 13 Select_  |    |     |     |      |      |      |      |      |      |
| 14 QueryPM  |    |     |     |      |      |      |      |      |      |
| 15 ListAlm_ |    |     |     |      |      |      |      |      |      |
| 16          |    |     |     |      |      |      |      |      |      |
| 17          |    |     |     |      |      |      |      |      |      |
| 18          |    |     |     |      |      |      |      |      |      |
| 14:12       |    |     |     |      |      |      |      |      |      |

- 3 Access the OC3 card by typing

**>SELECT OC3 oc3\_no**

SPM NTLX71AA OC3 card  
DMS-Spectrum Peripheral Module (continued)

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
0 Quit          PM          SysB      ManB      OffL      CBsy      ISTb      InSv
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)

| 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          |    | OC3                 |     | 0                   | 0    | 0                    | 0    | 0              | 2    |
| 4          |    |                     |     |                     |      |                      |      |                |      |
| 5          |    | SPM 11 InSv         |     |                     |      |                      |      |                |      |
| 6          |    | Prot Grp: OC3_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 >    |    |                     |     |                     |      |                      |      |                |      |

- 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        |    |     |     |    |     |     |      |     |      |
| 0 Quit      |    |     |     |    |     |     |      |     |      |
| 2 Post_     |    |     |     |    |     |     |      |     |      |
| 3           |    |     |     |    |     |     |      |     |      |
| 4           |    |     |     |    |     |     |      |     |      |
| 5 Loop_     |    |     |     |    |     |     |      |     |      |
| 6 Tst_      |    |     |     |    |     |     |      |     |      |
| 7 Bsy_      |    |     |     |    |     |     |      |     |      |
| 8 RTS_      |    |     |     |    |     |     |      |     |      |
| 9 Offl_     |    |     |     |    |     |     |      |     |      |
| 10          |    |     |     |    |     |     |      |     |      |
| 11 Disp_    |    |     |     |    |     |     |      |     |      |
| 12 Next     |    |     |     |    |     |     |      |     |      |
| 13          |    |     |     |    |     |     |      |     |      |
| 14 Detail_  |    |     |     |    |     |     |      |     |      |
| 15 ListAlm_ |    |     |     |    |     |     |      |     |      |
| 16          |    |     |     |    |     |     |      |     |      |
| 17 Perfmon_ |    |     |     |    |     |     |      |     |      |
| 18          |    |     |     |    |     |     |      |     |      |

| 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  |

| STS3L |        |      |     |       |      |       |     |       |    |    |
|-------|--------|------|-----|-------|------|-------|-----|-------|----|----|
| N     | CLASS  | SITE | SPM | OC3RM | OC3S | STS3L | CKT | STATE | TR | MA |
| 0     | HSCARR | HOST | 11  | 0     | 0    | 0     | 3   | InSv  | .S | -- |
| 1     | HSCARR | HOST | 11  | 1     | 0    | 0     | 4   | InSv  | -- | -- |

SIZE OF POSTED SET : 2

MTC:

TRKS:

CARRIER:

POST:

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)

>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 OC3 card.

- 15

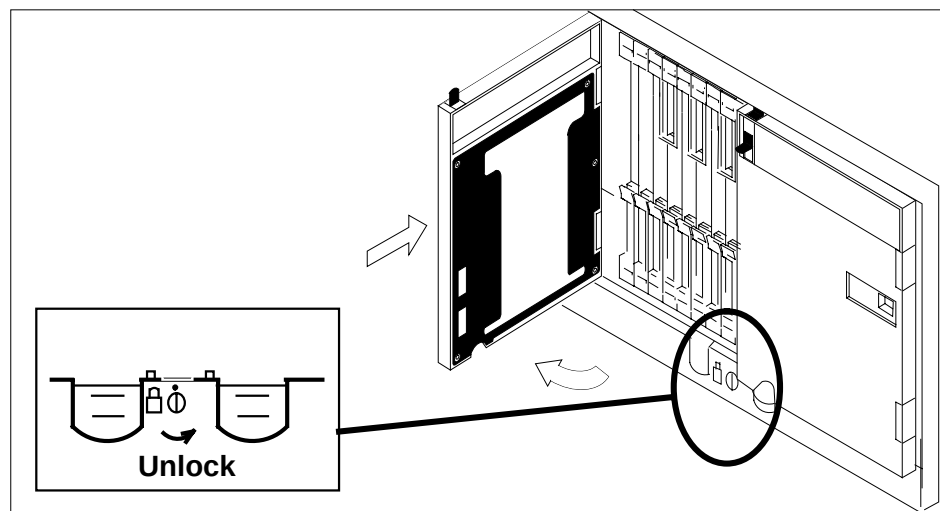


### CAUTION

#### 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.

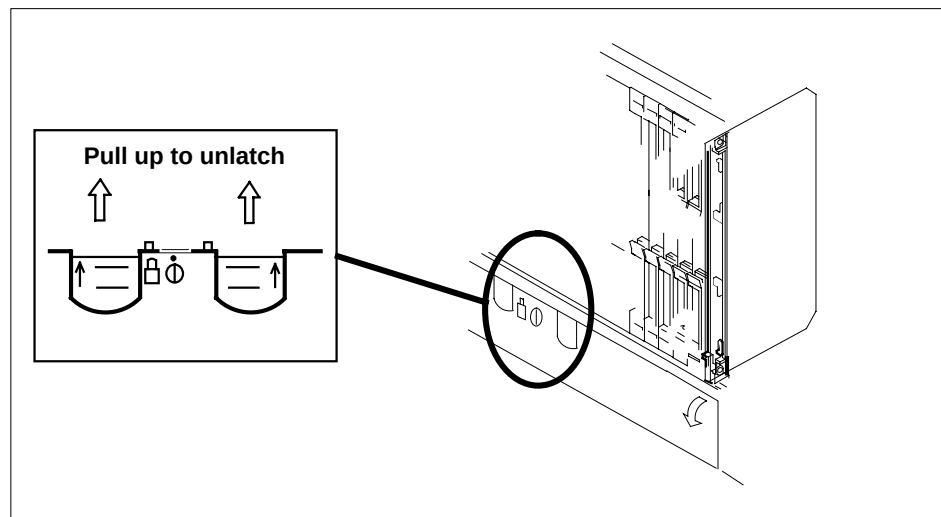
As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of 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



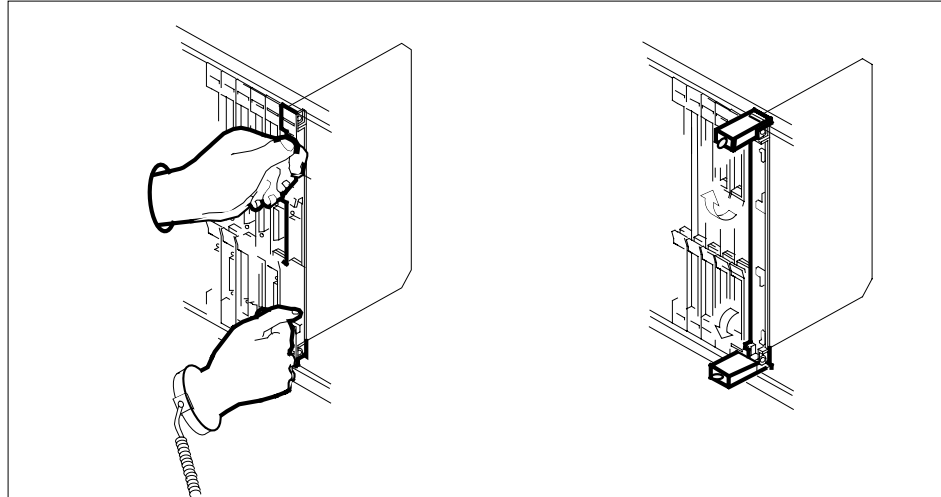
### **CAUTION**

#### **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)

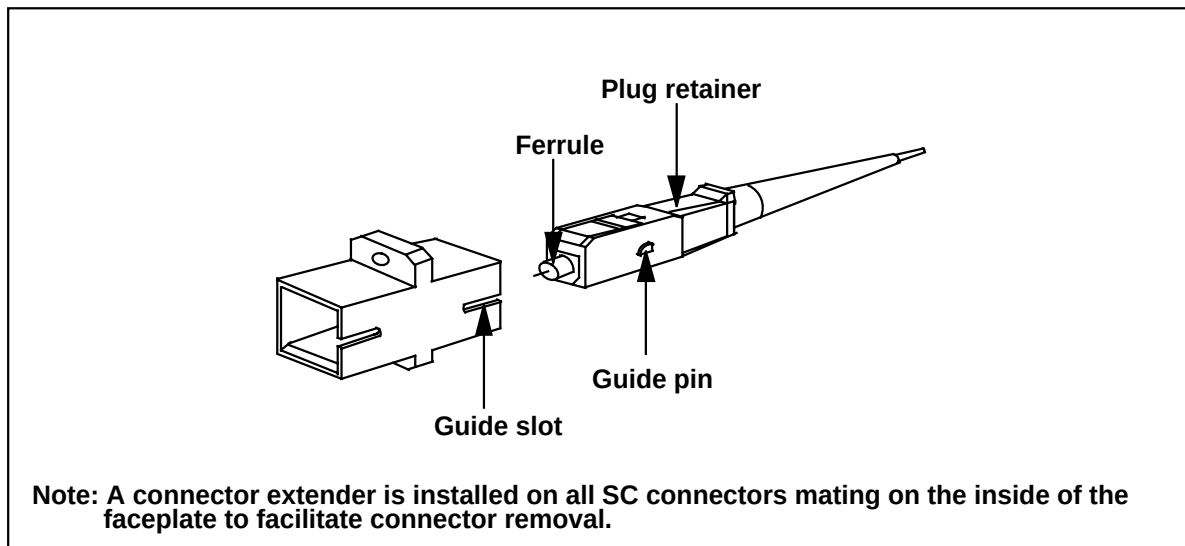
---

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

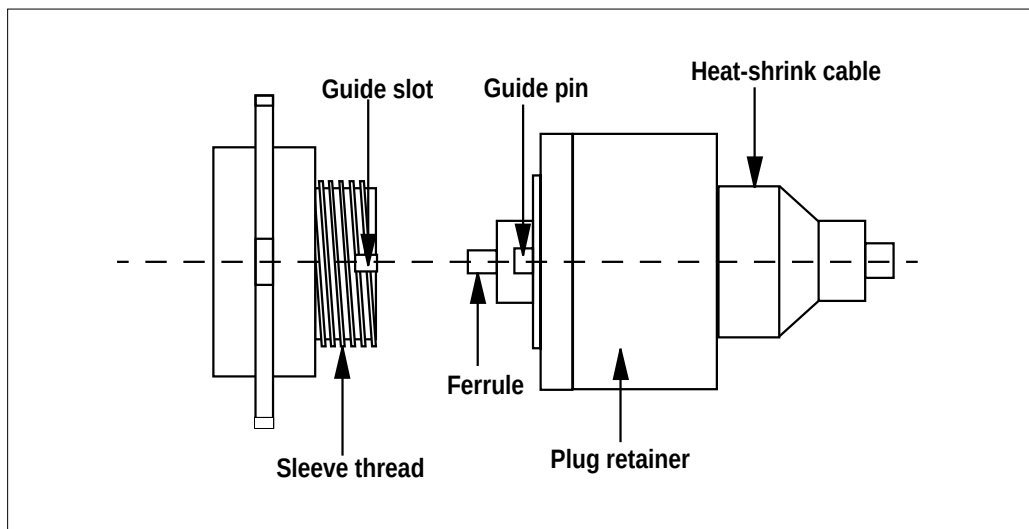
Refer to the following figures for each type of adapter.

#### SC to SC fiber optic adapter

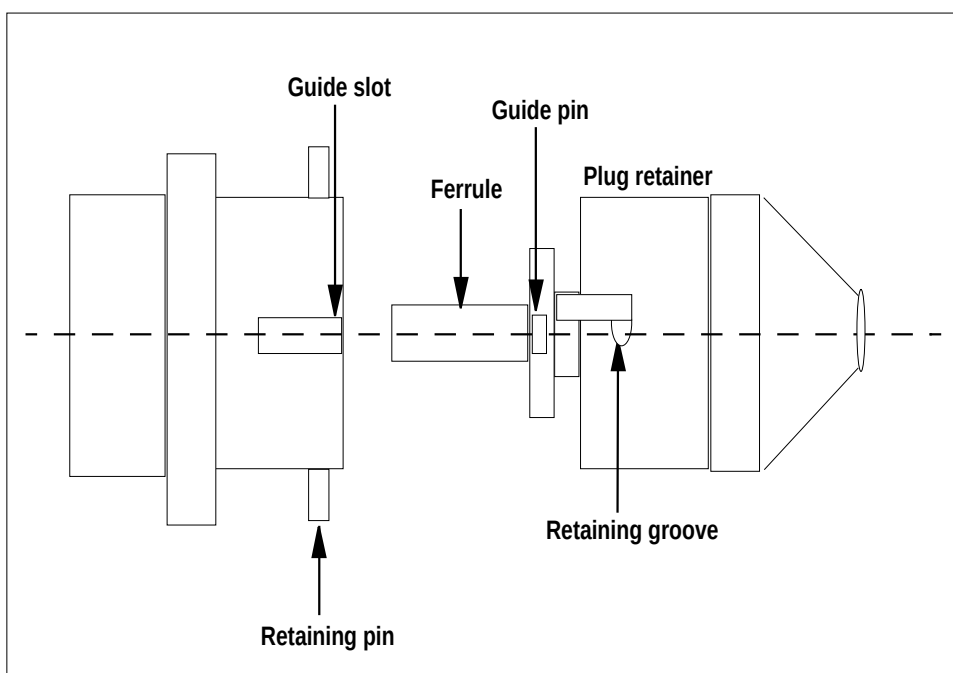


## SPM NTLX71AA OC3 card DMS-Spectrum Peripheral Module (continued)

### 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.

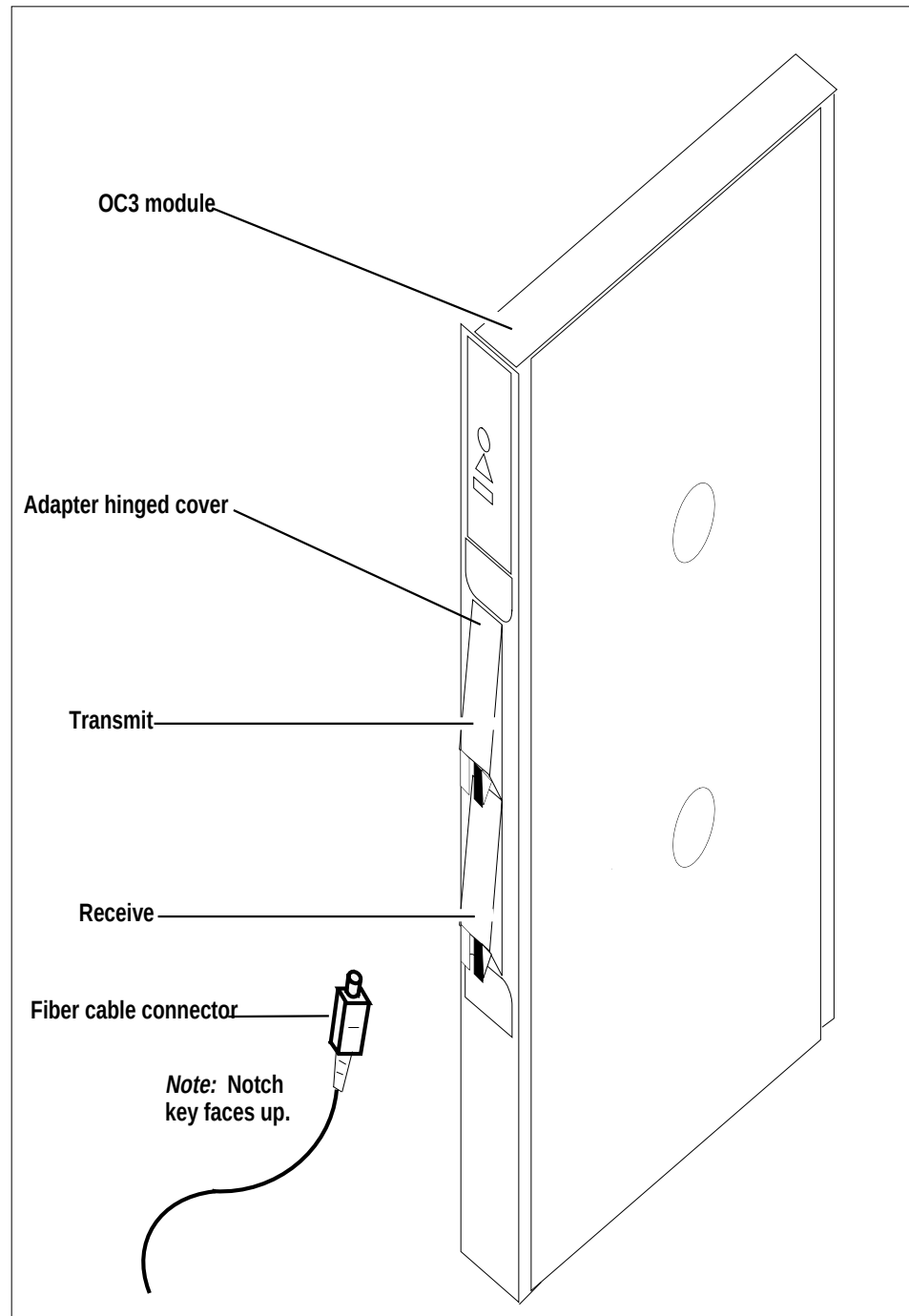
**Note:** Before removing the OC3 card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.



---

## SPM NTLX71AA OC3 card DMS-Spectrum Peripheral Module (continued)

---

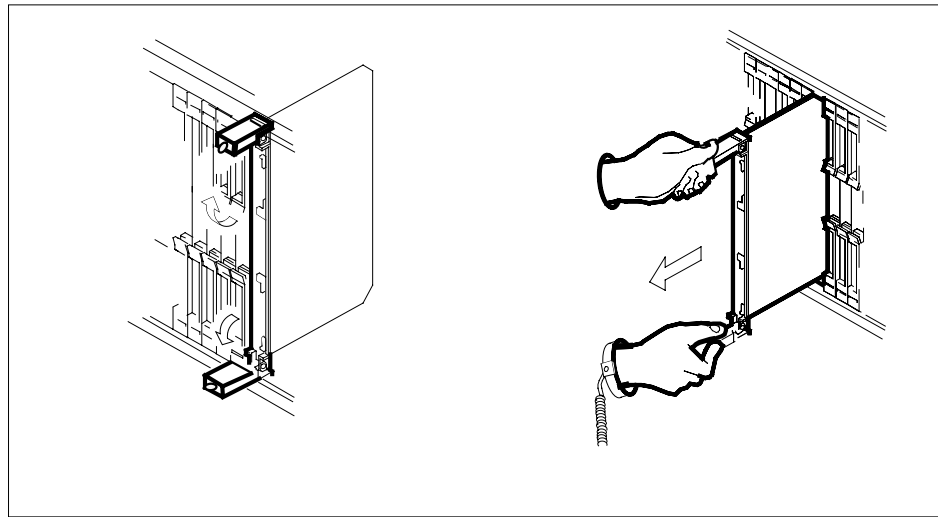


## SPM NTLX71AA OC3 card

### 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

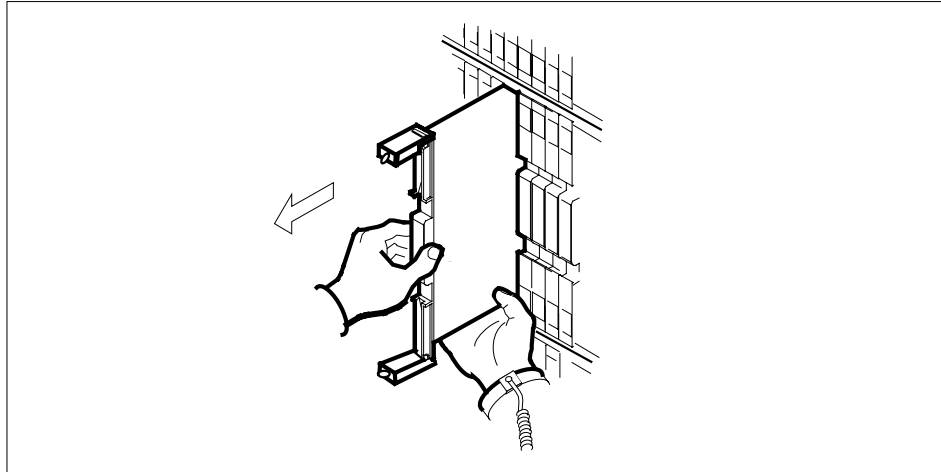
Cards can weigh up to 9 lbs (4 kg).

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.

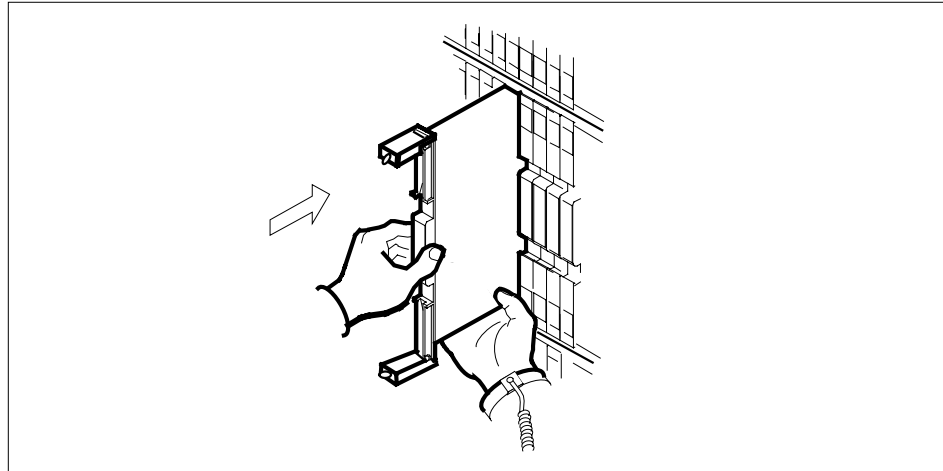
Insert the replacement OC3 card into the shelf. If a replacement card is not available, insert an NTLX60AA filler module in the slot until a replacement card is available.

- 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).

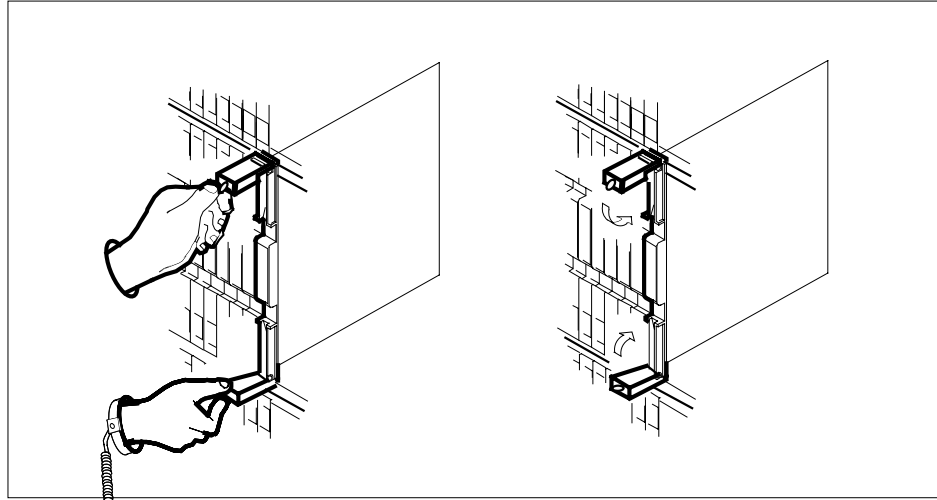
Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.

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:                       |       |   |   |
| Parm                            | Count | M | D |
| SEFS-N                          | 10    |   |   |
| SES-N                           | 9     |   |   |
| OPR-N                           | UNSET |   |   |

| Status: |       |   |   |
|---------|-------|---|---|
| Parm    | Count | M | D |
| CV-N    | 35    |   |   |
| LBC-N   | 0     |   |   |

| PERFMON: |       |   |   |
|----------|-------|---|---|
| Parm     | Count | M | D |
| ES-N     | 5     |   |   |
| OPT-N    | 7     |   |   |

**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 |

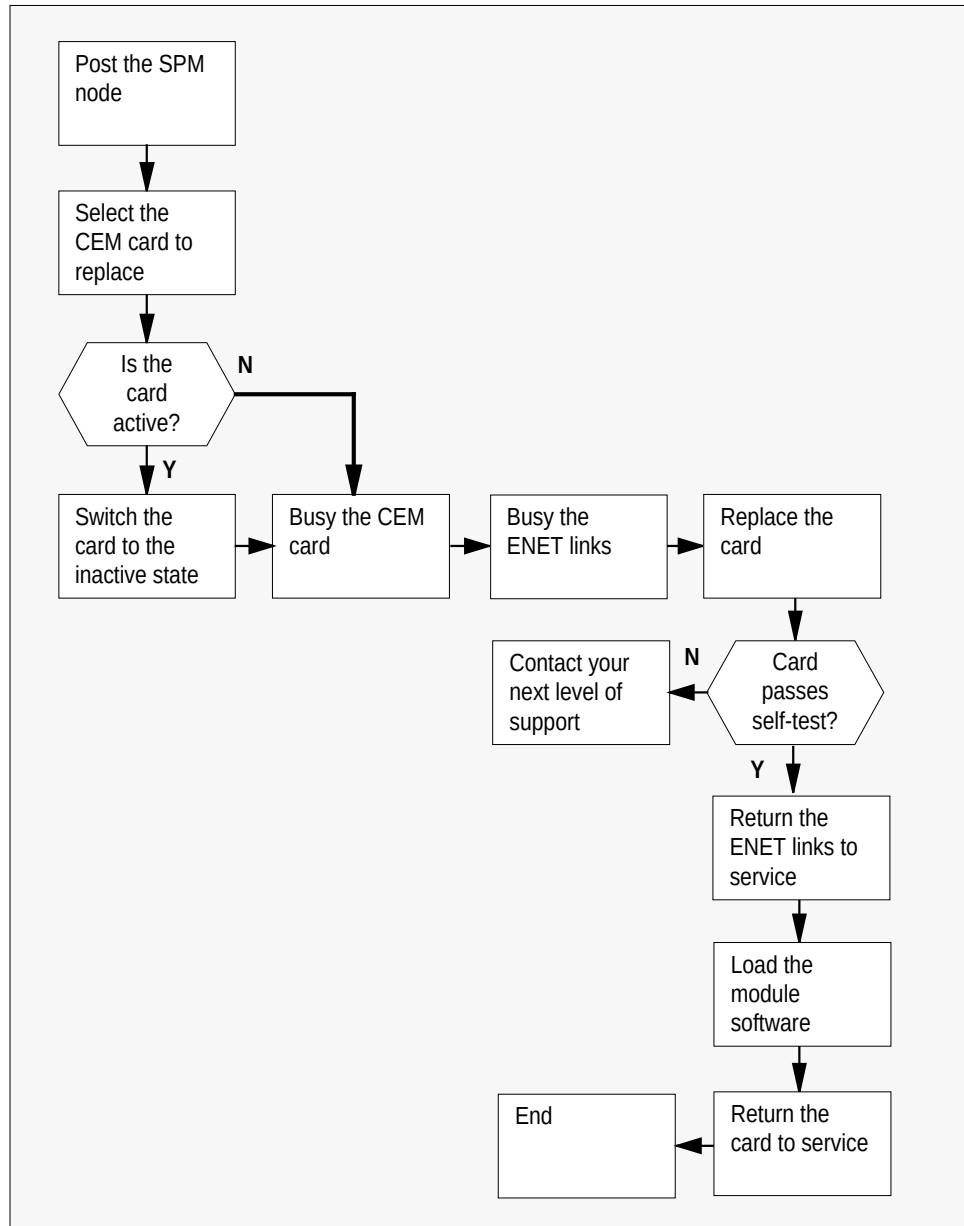
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

## 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 replacing 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         | PM  | SysB | ManB | OffL | CBsy | ISTb | InSv |
|-------------|-----|------|------|------|------|------|------|
| 0 Quit      |     | 0    | 0    | 0    | 0    | 0    | 1    |
| 2 Post_     | SPM | 0    | 0    | 0    | 0    | 0    | 1    |
| 3 ListSet   |     |      |      |      |      |      |      |
| 4 ListRes   |     |      |      |      |      |      |      |
| 5 Trnsl     |     |      |      |      |      |      |      |
| 6           |     |      |      |      |      |      |      |
| 7           |     |      |      |      |      |      |      |
| 8           |     |      |      |      |      |      |      |
| 9           |     |      |      |      |      |      |      |
| 10          |     |      |      |      |      |      |      |
| 11 Disp_    |     |      |      |      |      |      |      |
| 12 Next     |     |      |      |      |      |      |      |
| 13 Select_  |     |      |      |      |      |      |      |
| 14 QueryPM  |     |      |      |      |      |      |      |
| 15 ListAlm_ |     |      |      |      |      |      |      |
| 16          |     |      |      |      |      |      |      |
| 17          |     |      |      |      |      |      |      |
| 18          |     |      |      |      |      |      |      |

SPM 11 INSV Loc: Site HOST Floor 2 Row A FrPos 0

| Shlf0 | SL | A | Stat | Shlf0 | SL | A | Stat | Shlf1 | SL | A | Stat | Shlf1 | SL | A | Stat |
|-------|----|---|------|-------|----|---|------|-------|----|---|------|-------|----|---|------|
| DSP 2 | 1  | A | Insv | CEM 1 | 8  | I | Insv | VSP 2 | 1  | A | Insv | ---   | 8  | - | ---- |
| DSP 0 | 2  | A | Insv | OC3 0 | 9  | A | Insv | ---   | 2  | - | ---- | VSP 6 | 9  | A | Insv |
| DSP 1 | 3  | I | Insv | OC3 1 | 10 | I | Insv | ---   | 3  | - | ---- | ---   | 10 | - | ---- |
| DSP 3 | 4  | I | Insv | ---   | 11 | - | ---- | ---   | 4  | - | ---- | ---   | 11 | - | ---- |
| ---   | 5  | - | ---- | ---   | 12 | - | ---- | ---   | 5  | - | ---- | ---   | 12 | - | ---- |
| ---   | 6  | - | ---- | VSP 4 | 13 | A | Insv | ---   | 6  | - | ---- | ---   | 13 | - | ---- |
| CEM 0 | 7  | A | Insv | VSP 5 | 14 | A | Insv | ---   | 7  | - | ---- | ---   | 14 | - | ---- |

SPM:

14:12 >

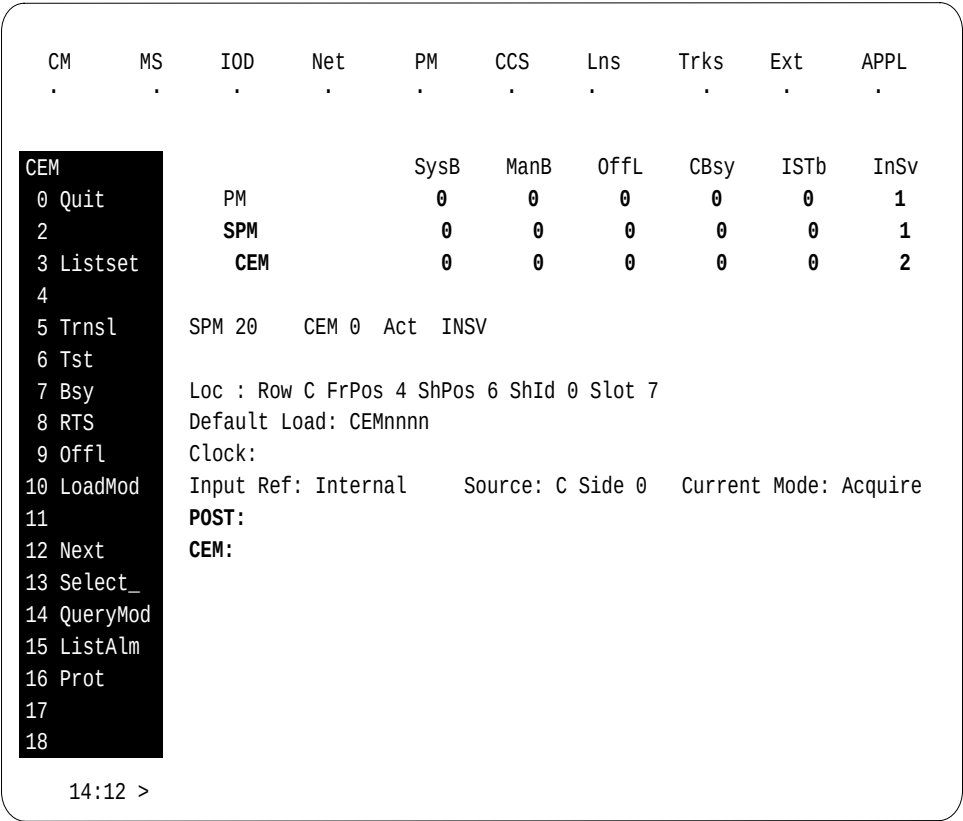
- 3 Access the CEM card by typing

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.



4 From the CEM screen, type

>PROT  
and press the Enter key.  
The following is an example of a Protection screen.

## SPM NTLX82AA CEM card DMS-Spectrum Peripheral Module (continued)

| CM              | MS      | IOD          | Net | PM                  | CCS  | Lns         | Trks | Ext  | APPL |    |      |
|-----------------|---------|--------------|-----|---------------------|------|-------------|------|------|------|----|------|
| .               | .       | .            | .   | .                   | .    | .           | .    | .    | .    |    |      |
| <b>Protectn</b> |         |              |     | 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 |
| 8               | Manual  | 1            | --  | --                  | --   | ----        | 8    | 1    | S    | I  | InSv |
| 9               |         | 2            | --  | --                  | --   | ----        | 9    | --   | --   | -- | ---- |
| 10              |         | 3            | --  | --                  | --   | ----        | 10   | --   | --   | -- | ---- |
| 11              |         | 4            | --  | --                  | --   | ----        | 11   | --   | --   | -- | ---- |
| 12              |         | 5            | --  | --                  | --   | ----        | 12   | --   | --   | -- | ---- |
| 13              | Select_ | 6            | --  | --                  | --   | ----        | 13   | --   | --   | -- | ---- |
| 14              |         | 7            | 0   | S                   | A    | InSv        | 14   | --   | --   | -- | ---- |
| 15              | ListAlm | <b>PROT:</b> |     |                     |      |             |      |      |      |    |      |
| 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.

SPM NTLX82AA CEM card  
DMS-Spectrum Peripheral Module (continued)

```
CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      APPL
.       .       .       .       .       .       .       .       .       .

CEM
0 Quit
2
3 QueryEN
4 Locate
5 Deload_
6
7
8
9
10
11 REXtst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

ENET      System      Matrix      Shelf 0 1 2 3
Plane 0 CSLink      Fault      F - - -
Plane 1 CSLink      .          F - - -

MTC:
ENET:
```

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 ..00.F-- ----- ..00.F.. .   .
Plane 1   .   .   .F ..00..-- ----- ..00.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 1112222 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)

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(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

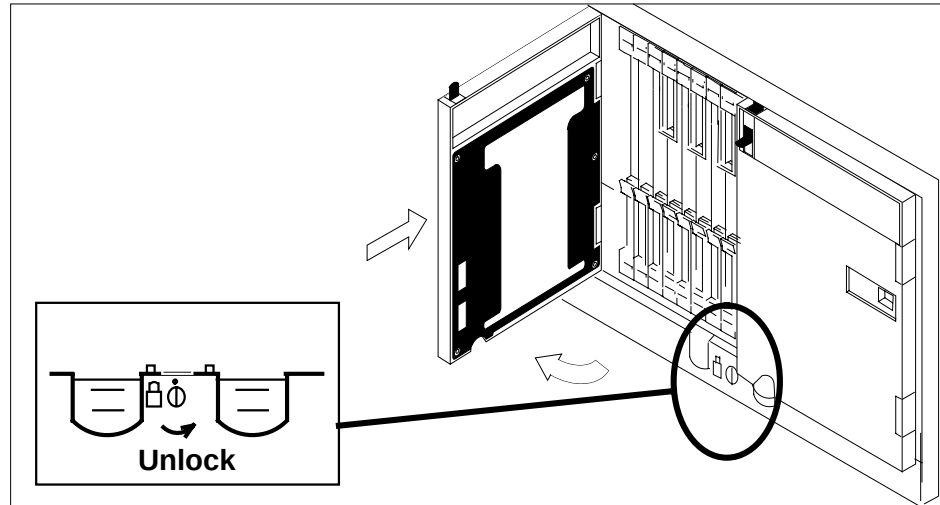
#### Static electricity damage

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.

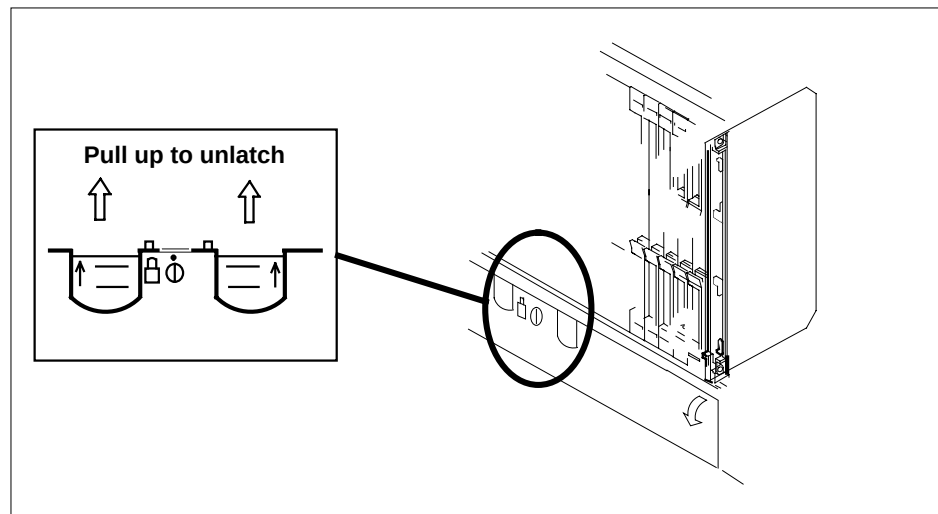
As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter turn counter clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of 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)

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19

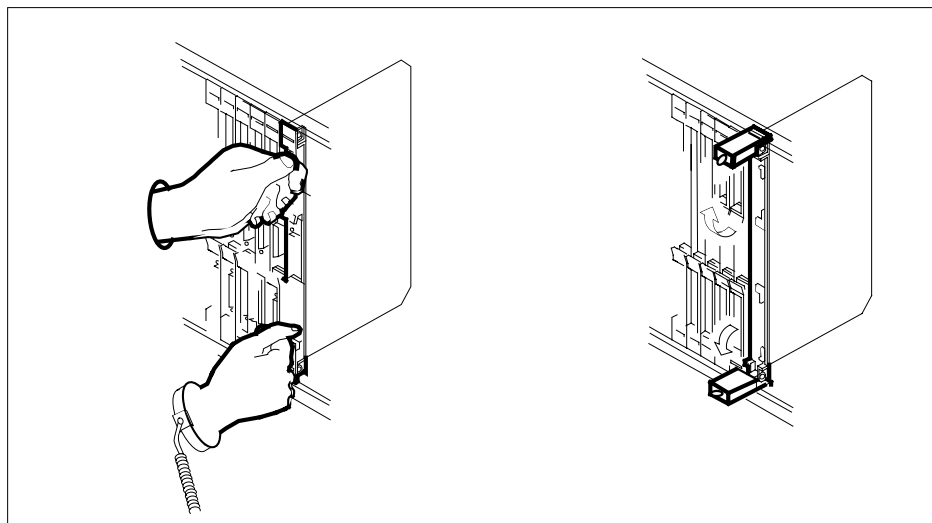


### CAUTION

#### 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)

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21



### **DANGER**

#### **Laser radiation exposure**

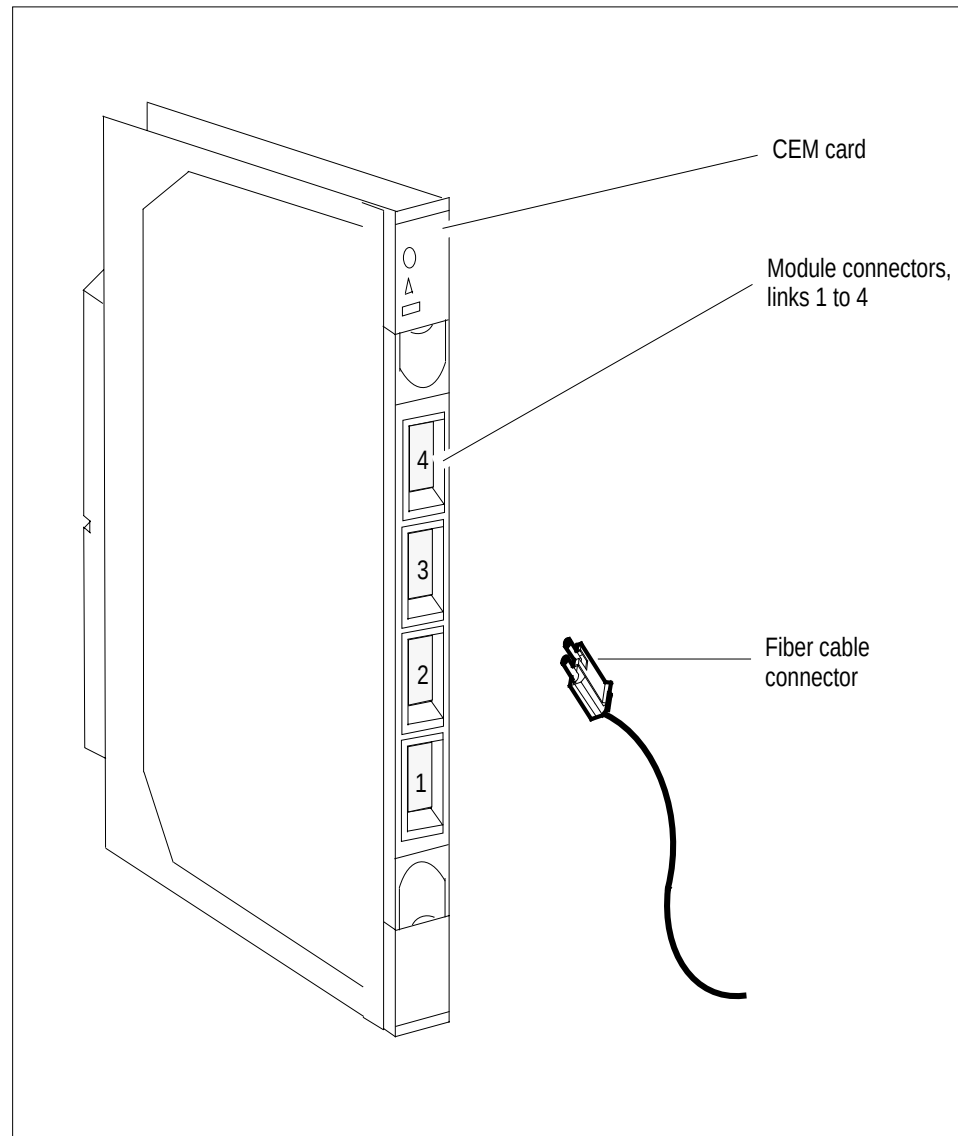
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

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.

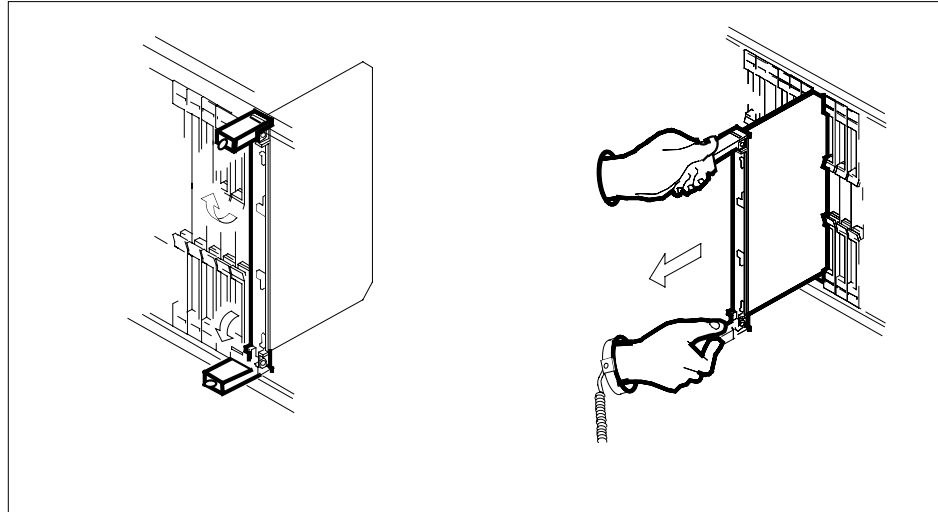
## SPM NTLX82AA CEM card DMS-Spectrum Peripheral Module (continued)

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- 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)

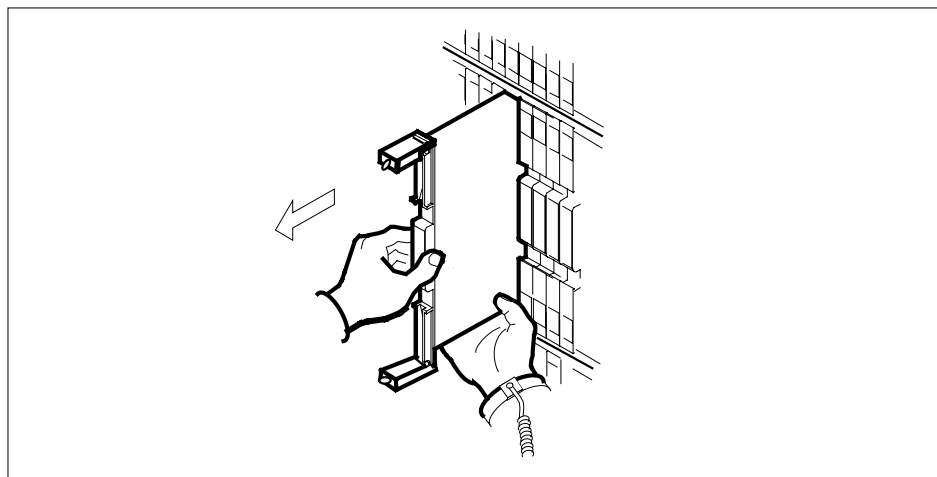


23

### 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**

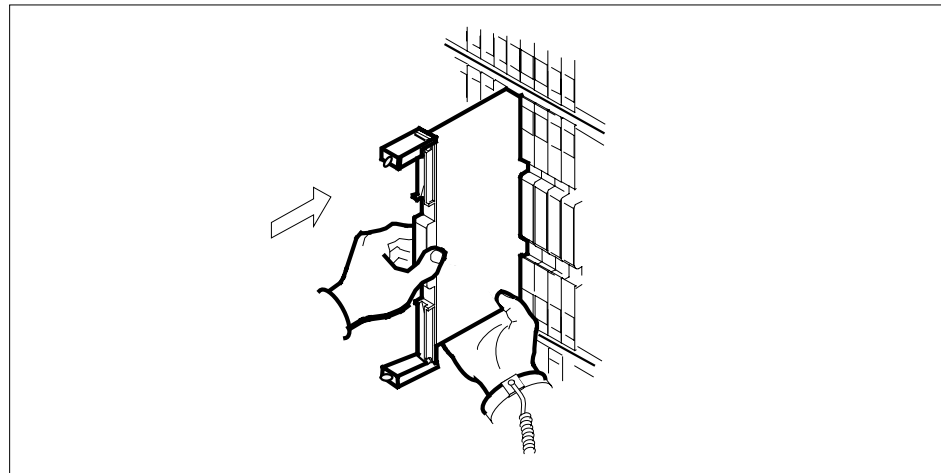
#### **Equipment malfunction**

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.





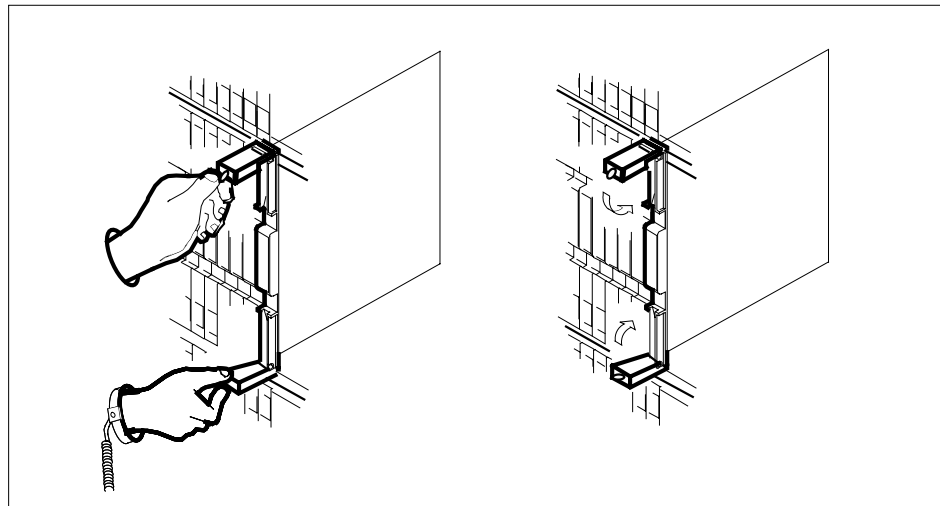
## SPM NTLX82AA CEM card DMS-Spectrum Peripheral Module (continued)

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**

## SPM NTLX82AA 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.

- 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 processor 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.

| <b>PEC</b> | <b>Release</b> | <b>Card name</b> | <b>Shelf or frame name</b>                                            |
|------------|----------------|------------------|-----------------------------------------------------------------------|
| NTLX82     | BA             | CEM              | NTLX51AA or BA dual-shelf assembly, NTLX91AA or BA DMS frame assembly |

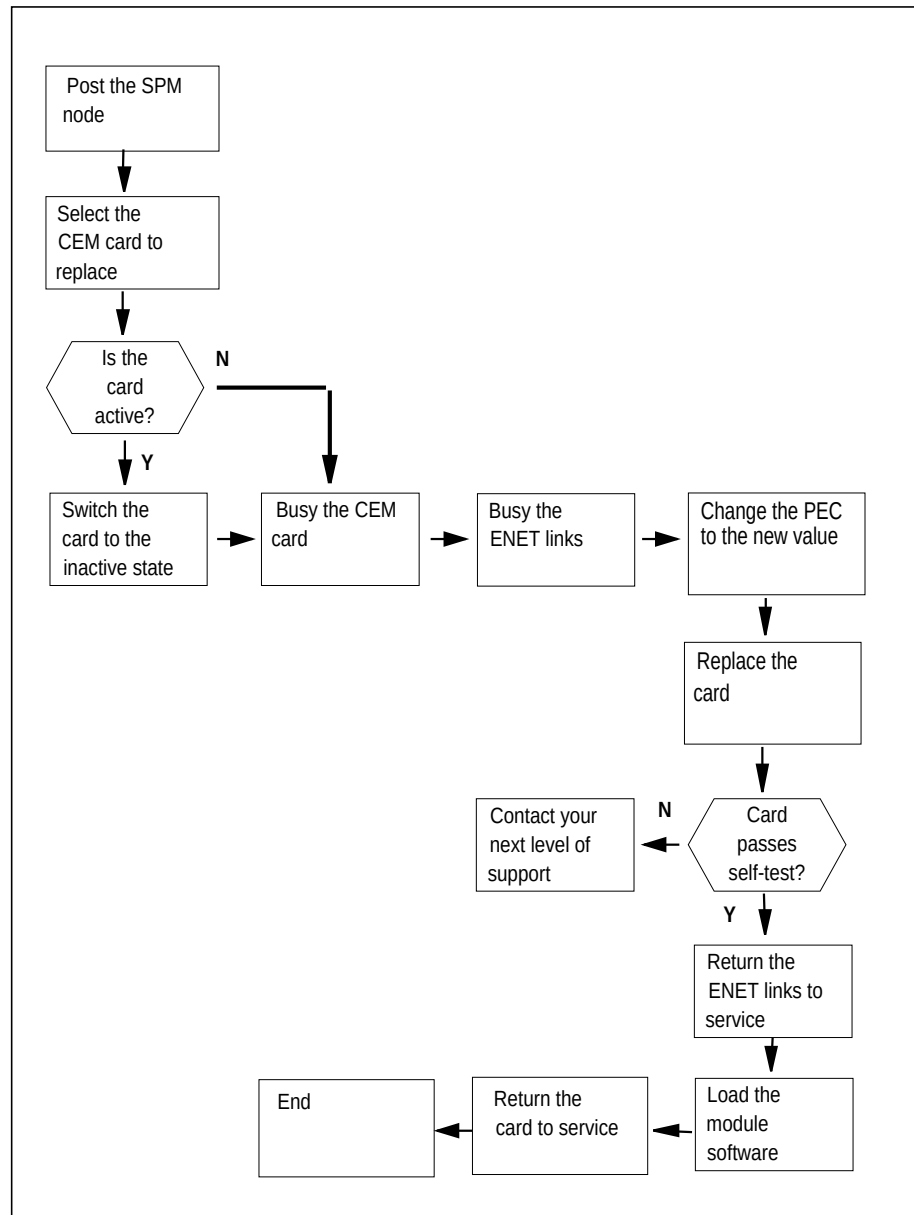
To verify the PEC of the card being replaced, check the datafill in Table MNCKTPAK.

#### **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 replacing 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         | PM  | SysB | ManB | OffL | CBsy | ISTb | InSv |
|-------------|-----|------|------|------|------|------|------|
| 0 Quit      |     | 0    | 0    | 0    | 0    | 0    | 1    |
| 2 Post      | SPM | 0    | 0    | 0    | 0    | 0    | 1    |
| 3 ListSet   |     |      |      |      |      |      |      |
| 4 ListRes   |     |      |      |      |      |      |      |
| 5 Trnsl     |     |      |      |      |      |      |      |
| 6           |     |      |      |      |      |      |      |
| 7           |     |      |      |      |      |      |      |
| 8           |     |      |      |      |      |      |      |
| 9           |     |      |      |      |      |      |      |
| 10          |     |      |      |      |      |      |      |
| 11 Disp_    |     |      |      |      |      |      |      |
| 12 Next     |     |      |      |      |      |      |      |
| 13 Select_  |     |      |      |      |      |      |      |
| 14 QueryPM  |     |      |      |      |      |      |      |
| 15 ListAlm_ |     |      |      |      |      |      |      |
| 16          |     |      |      |      |      |      |      |
| 17          |     |      |      |      |      |      |      |
| 18          |     |      |      |      |      |      |      |

SPM 11 INSV Loc: Site HOST Floor 2 Row A FrPos 0

| Shlf0 | SL | A | Stat | Shlf0 | SL | A  | Stat | Shlf1 | SL | A | Stat | Shlf1 | SL | A  | Stat |
|-------|----|---|------|-------|----|----|------|-------|----|---|------|-------|----|----|------|
| DSP 2 | 1  | A | Insv | COT 1 | 8  | I  | Insv | VSP 2 | 1  | A | Insv | ---   | -  | 8  | ---- |
| DSP 0 | 2  | A | Insv | OC3 0 | 9  | A  | Insv | ---   | -  | 2 | ---- | VSP 6 | 9  | A  | Insv |
| DSP 1 | 3  | I | Insv | OC3 1 | 10 | I  | Insv | ---   | -  | 3 | ---- | ---   | -  | 10 | ---- |
| DSP 3 | 4  | I | Insv | ---   | -  | 11 | ---- | ---   | -  | 4 | ---- | ---   | -  | 11 | ---- |
| ---   | -  | 5 | ---- | ---   | -  | 12 | ---- | ---   | -  | 5 | ---- | ---   | -  | 12 | ---- |
| ---   | -  | 6 | ---- | VSP 4 | 13 | A  | Insv | ---   | -  | 6 | ---- | ---   | -  | 13 | ---- |
| COT 0 | 7  | A | Insv | VSP 5 | 14 | A  | Insv | ---   | -  | 7 | ---- | ---   | -  | 14 | ---- |

SPM:

14:12 >

- 3 Access the CEM card by typing

SPM NTLX82BA 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         |    |                     |         |           |        |                       |      |      |      |
| 0 Quit      |    | PM                  |         | SysB      | ManB   | OffL                  | CBsy | ISTb | InSv |
| 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)

| 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        |         | COT       |             | 0                   | 0           | 0           | 0           | 0    | 2           |
| 4        |         |           |             |                     |             |             |             |      |             |
| 5        |         | SPM       | 11          | InSv                |             |             |             |      |             |
| 6        |         | Prot Grp: | COT         | 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 NTLX82BA 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.

SPM NTLX82BA CEM card  
DMS-Spectrum Peripheral Module (continued)

```
CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      APPL
.       .       .       .       .       .       .       .       .       .

CEM
0 Quit
2
3 QueryEN
4 Locate
5 Deload_
6
7
8
9
10
11 REXtst_
12 BERT
13 Integ
14 Pathtest
15 System
16 Matrix
17 Shelf_
18

ENET      System      Matrix      Shelf 0 1 2 3
Plane 0 CSLink      Fault      F - - -
Plane 1 CSLink      .          F - - -

MTC:
ENET:
```

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 ..00.F-- ----- ..00.F.. . .
Plane 1    .  .    .F ..00..-- ----- ..00.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 1112222 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

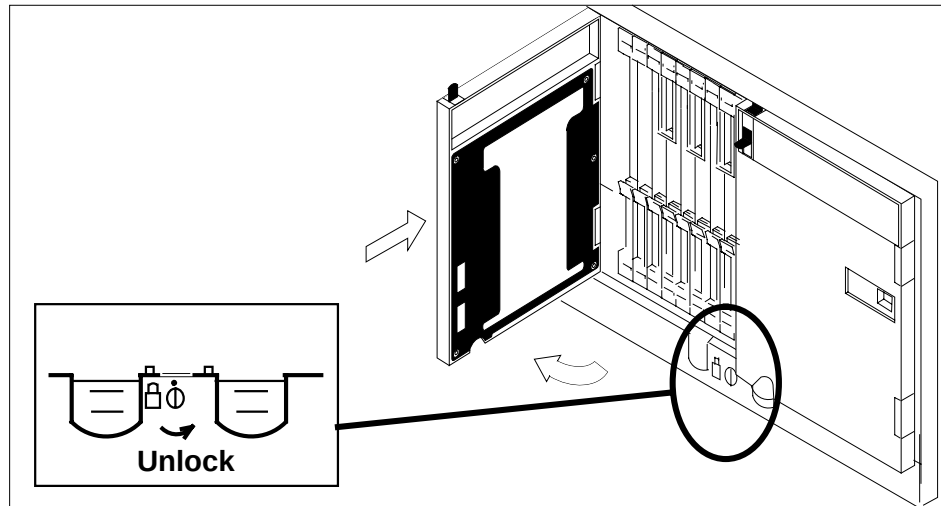


### CAUTION

#### Static electricity damage

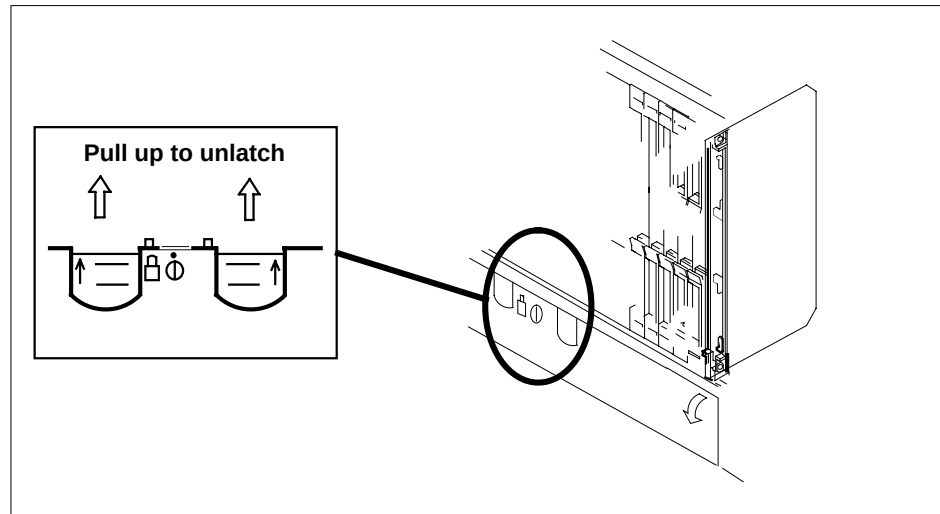
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame. This protects the cards against damage caused by static electricity.

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

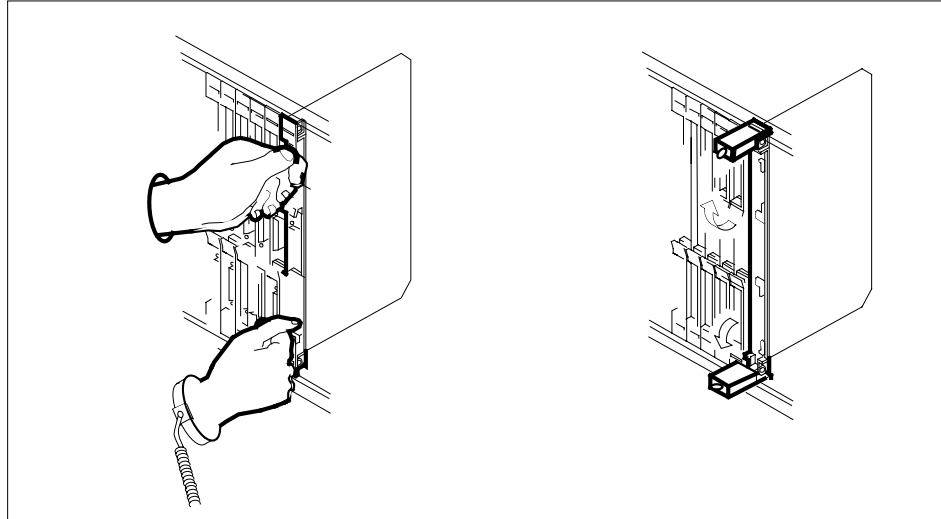
#### Card lever breakage

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.

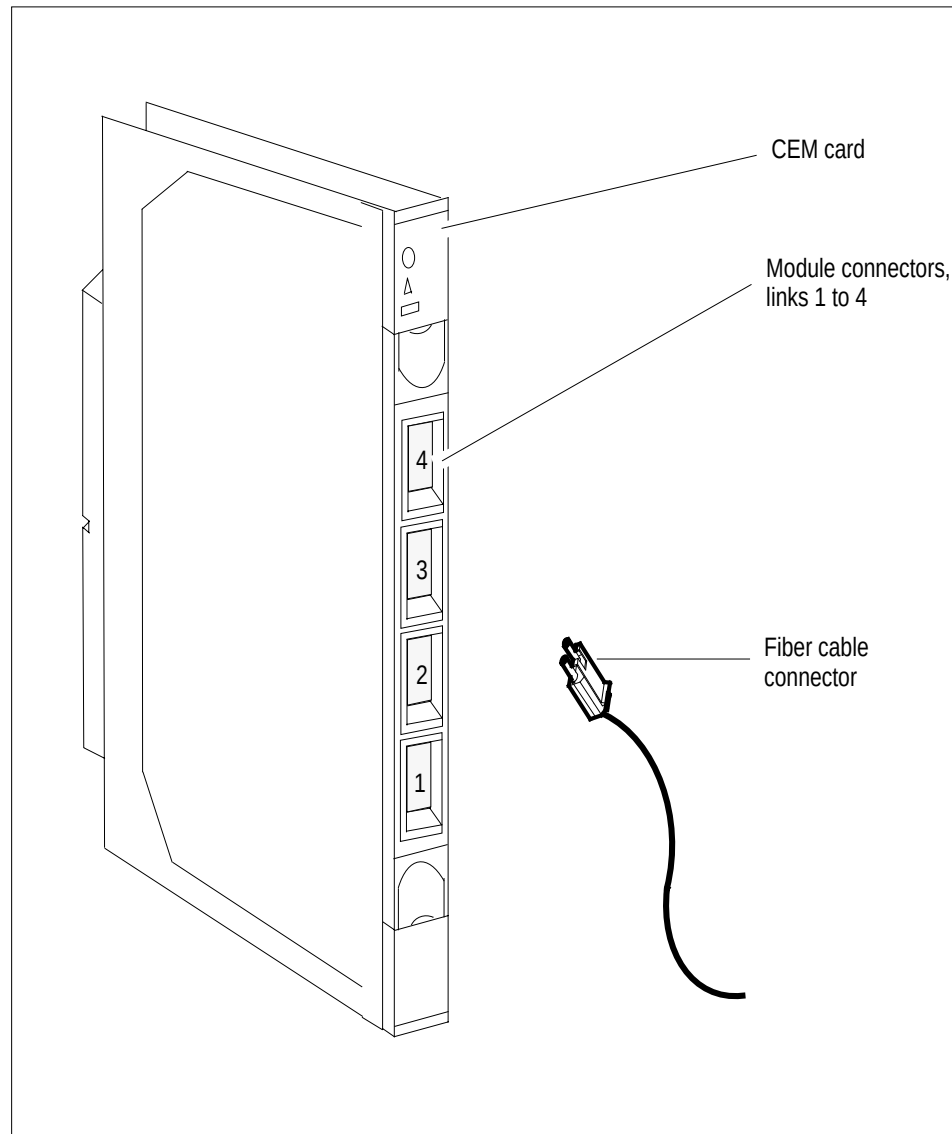
Refer to the following figure. Disconnect the fiber cables from the faceplate of the card as follows:

- Gently squeeze the locking clips on the connector.
- Pull the connector out of the receptacle.



## SPM NTLX82BA CEM card DMS-Spectrum Peripheral Module (continued)

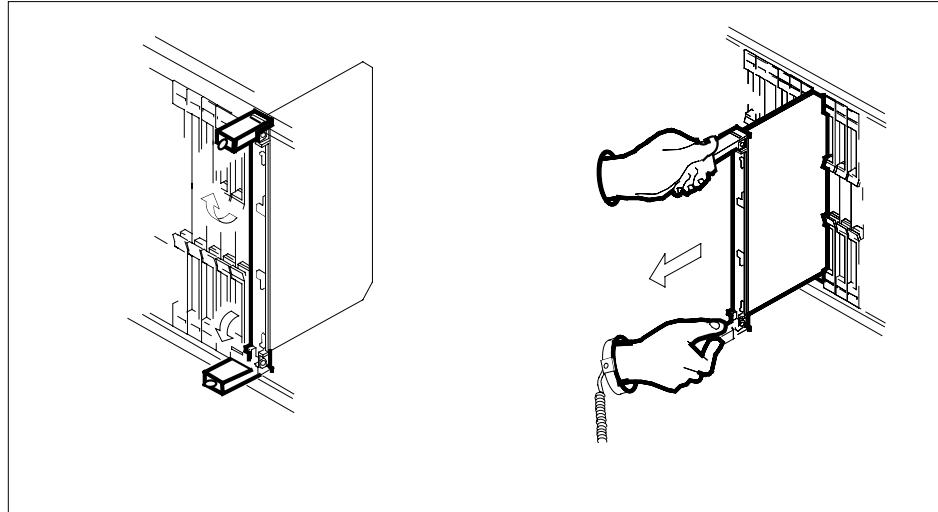
- After the cables have been removed, cap the connectors on the module and on the fiber cable.
- Store the cables in the cable trough.
- Before removing the CEM card, ensure that the fiber cables are stored below the bottom level of the card shelf to avoid cable damage when the card is removed.



- 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)

---

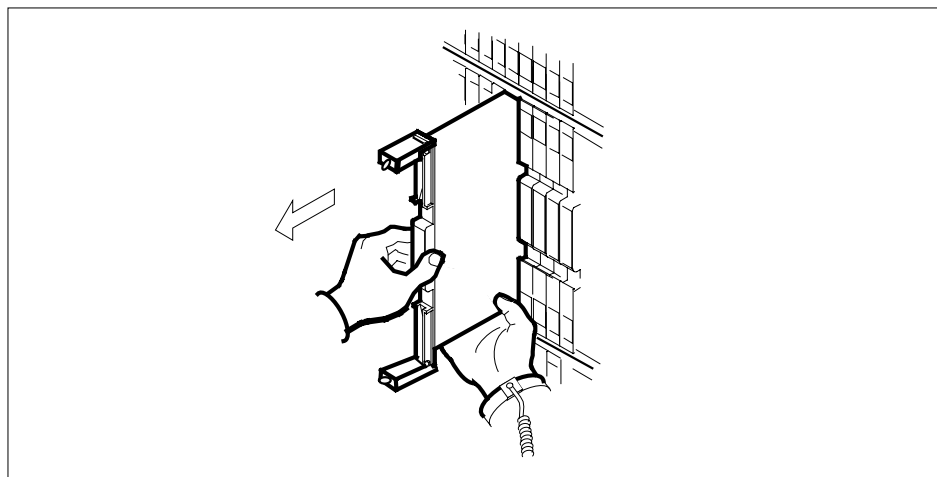


24

### 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

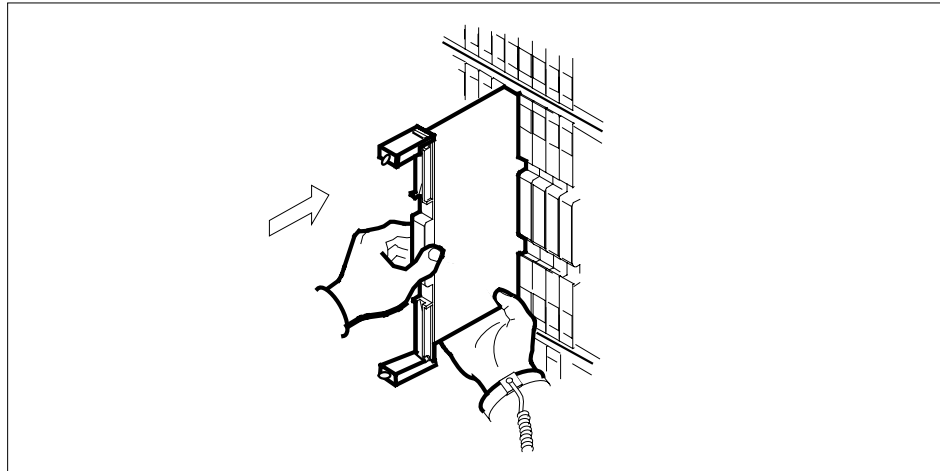
**DANGER****Equipment malfunction**

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

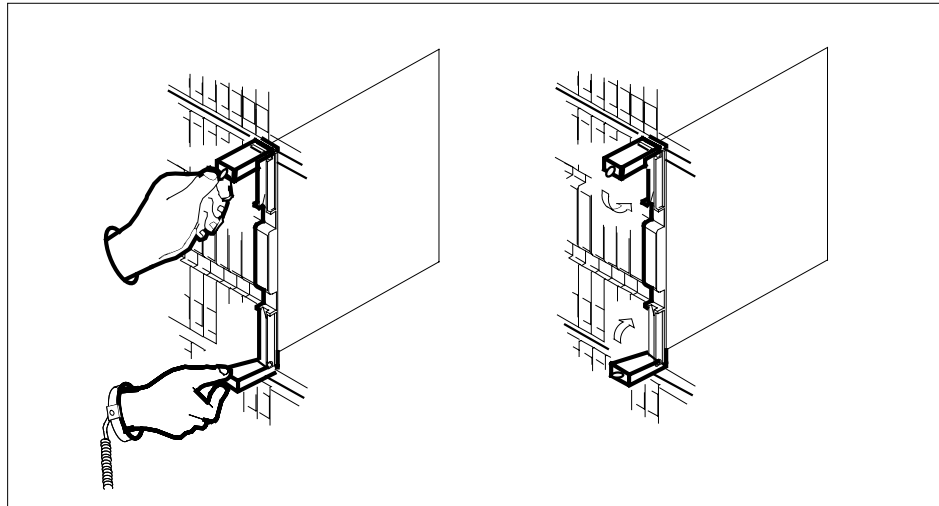


### CAUTION

#### 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.

---

## 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)**

---

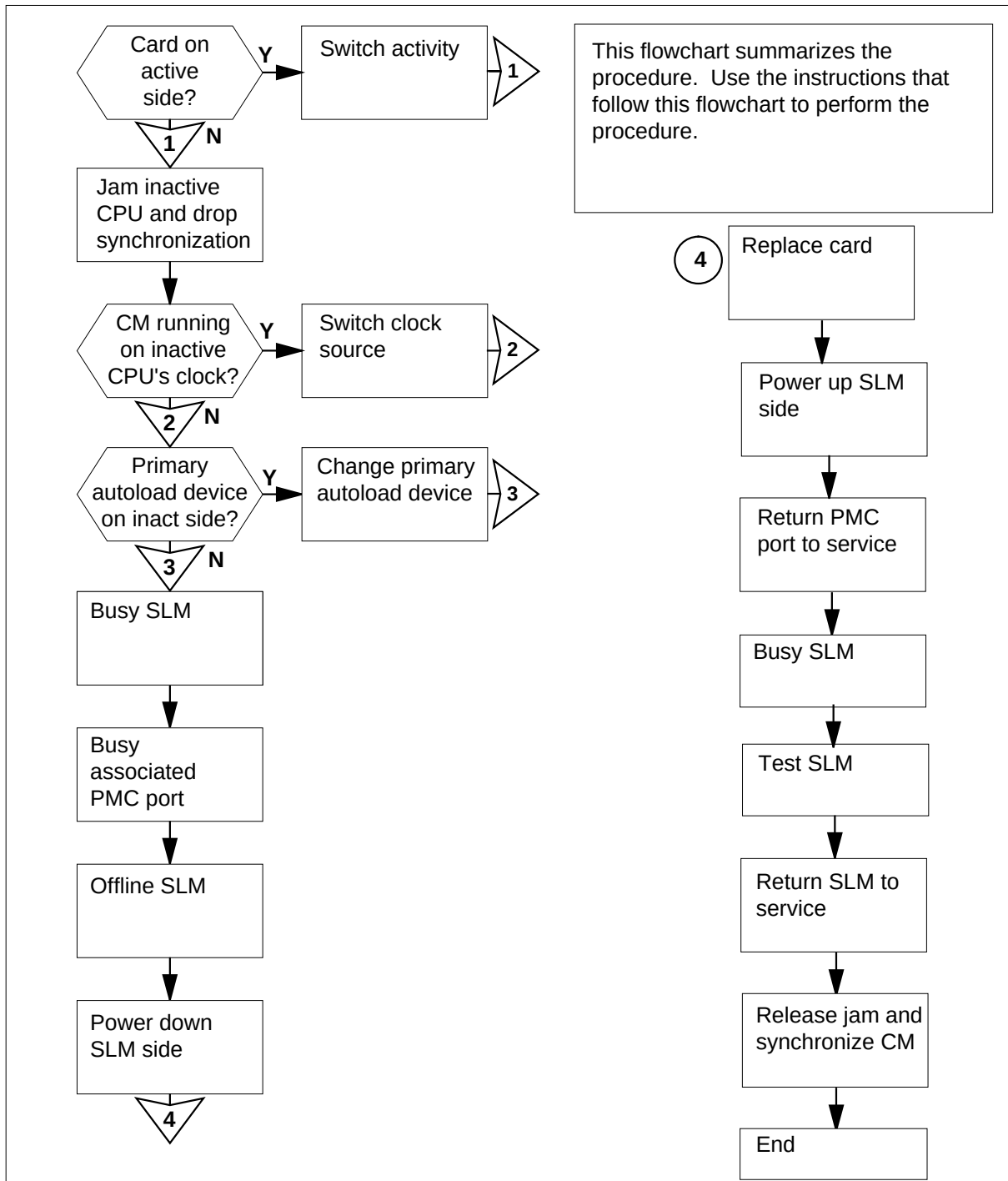
### **Action**

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

## System cards in a SuperNode SLM (continued)

### *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.<br>is The inactive CPU is JAMMED.<br>is Do you want to continue?<br>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.

System cards  
in a SuperNode SLM (continued)

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 autoloader device is on the side of the switch with the active CPU or the inactive CPU.

**Note:** The primary autoloader device appears on the right of the Primary header. In the example in step 14, the primary autoloader device is the disk of SLM 0.

| If the primary autoloader 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 autoloader 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 autoloader 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.

## System cards in a SuperNode SLM (continued)

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.

## System cards in a SuperNode SLM (continued)

- 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.                                                                    |         |

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## 4 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:

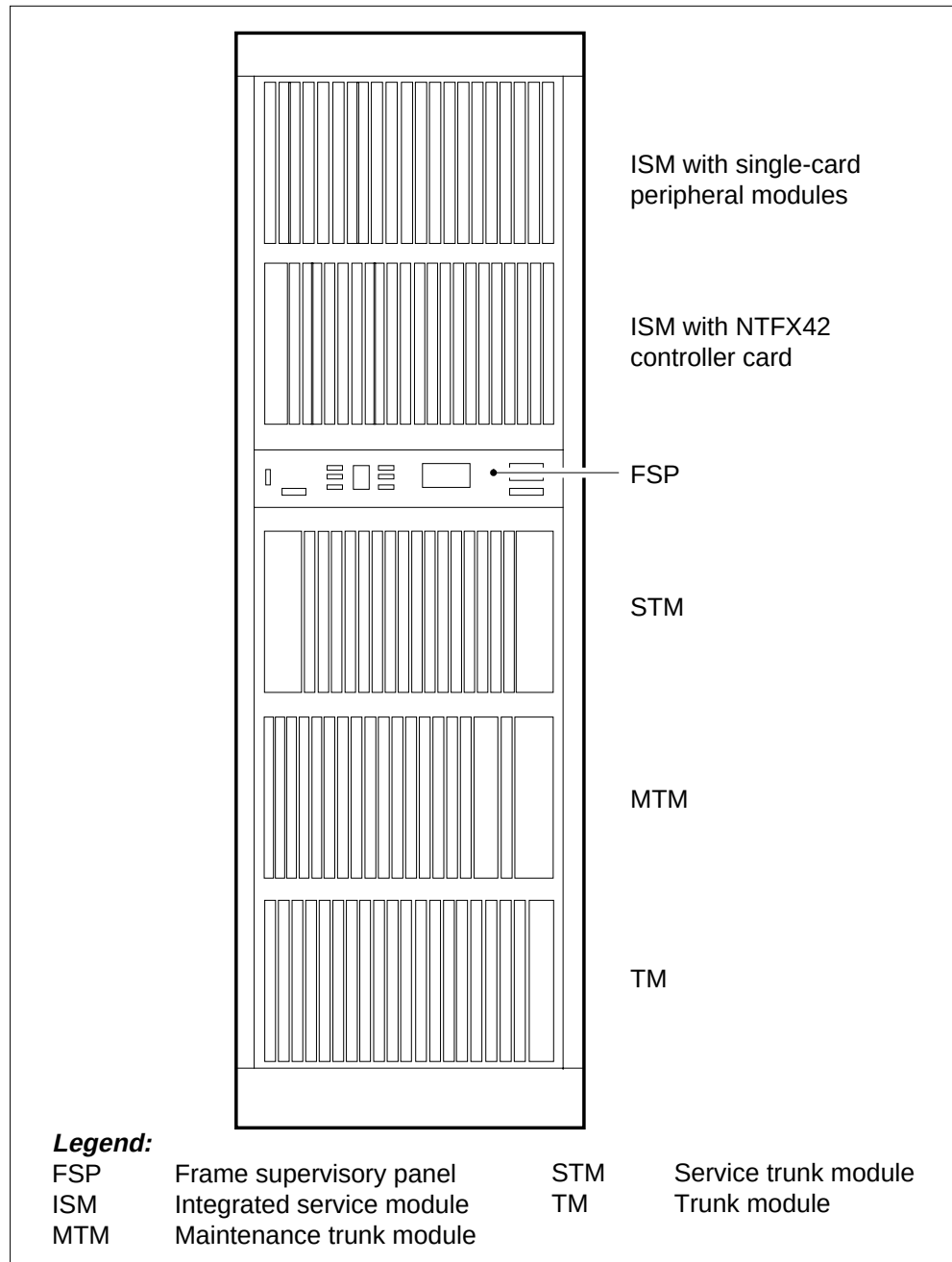
- trunk module (TM) with the NT0X70 TM processor and memory card
- TM with the NT4X65 TM group control card
- maintenance trunk module (MTM) with the NT0X70 TM processor and memory card
- MTM with the NT4X65 TM group control card
- digital-recorded announcement machine (DRAM) with the NT0X70 TM processor 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.

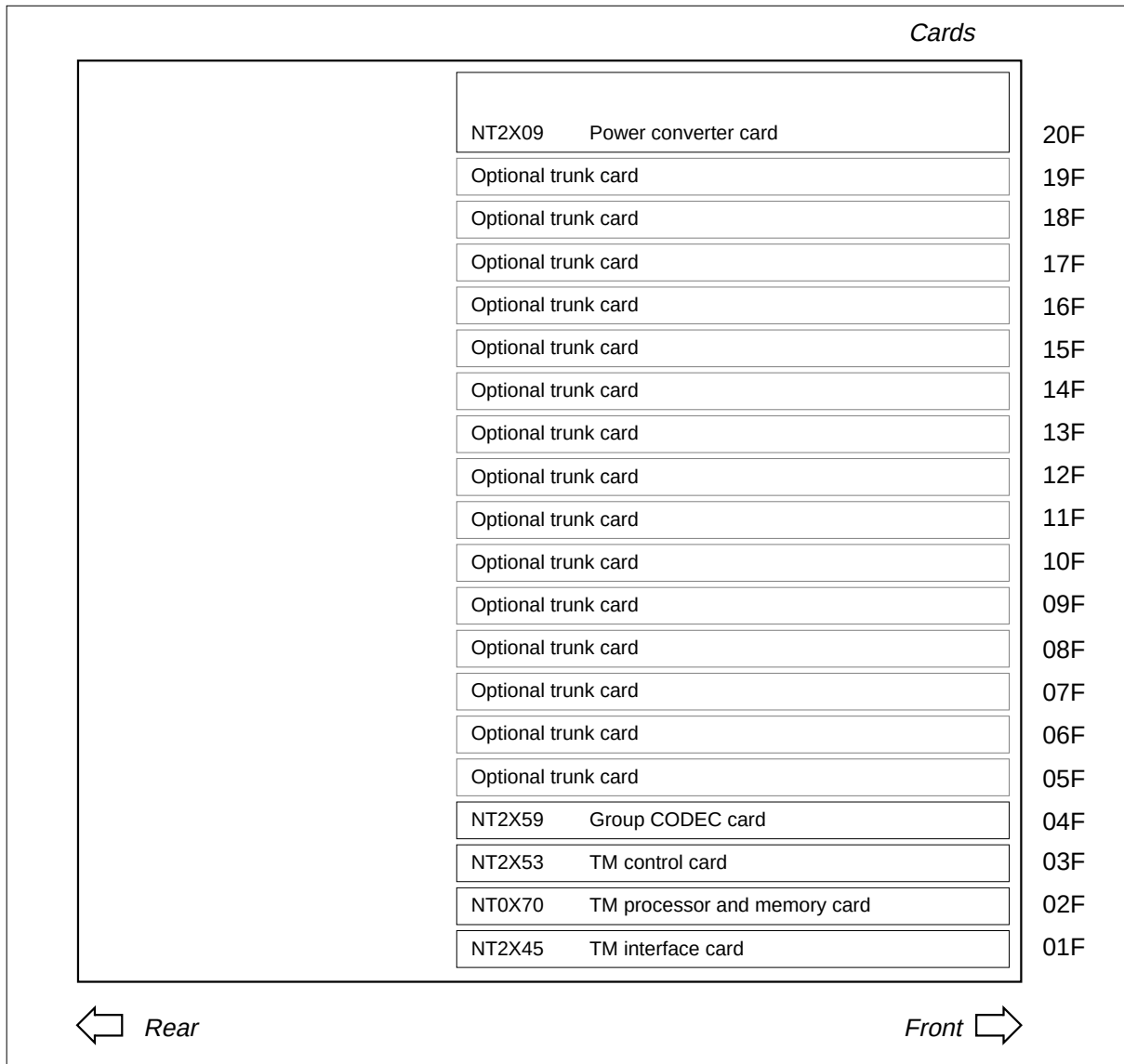
## TM shelf layouts (continued)

Figure Trunk module equipment frame



**Note:** This diagram shows a sample configuration.



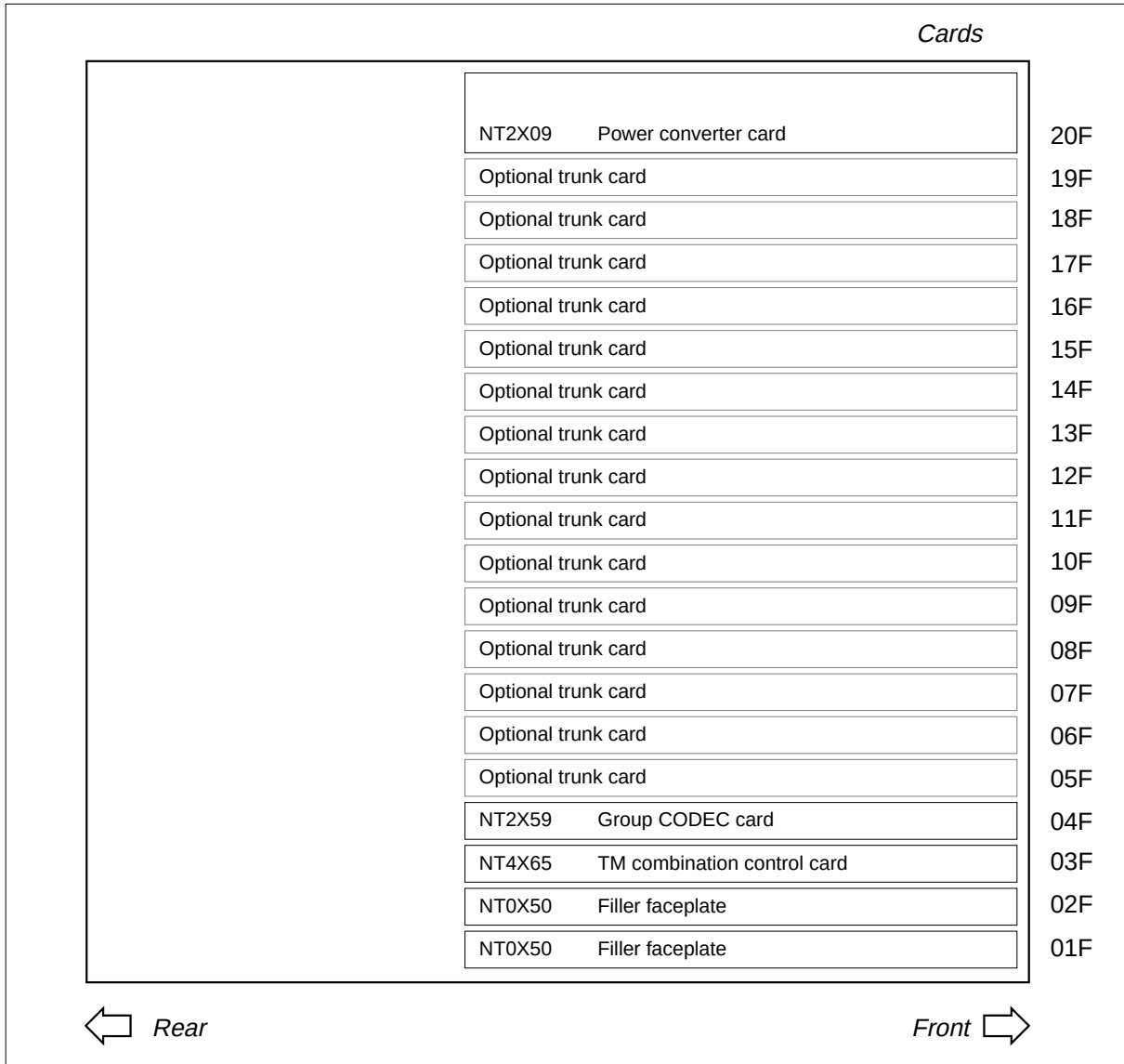
**TM shelf layouts** (continued)**Figure Trunk module with NT0X70 TM processor and memory card**

**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.

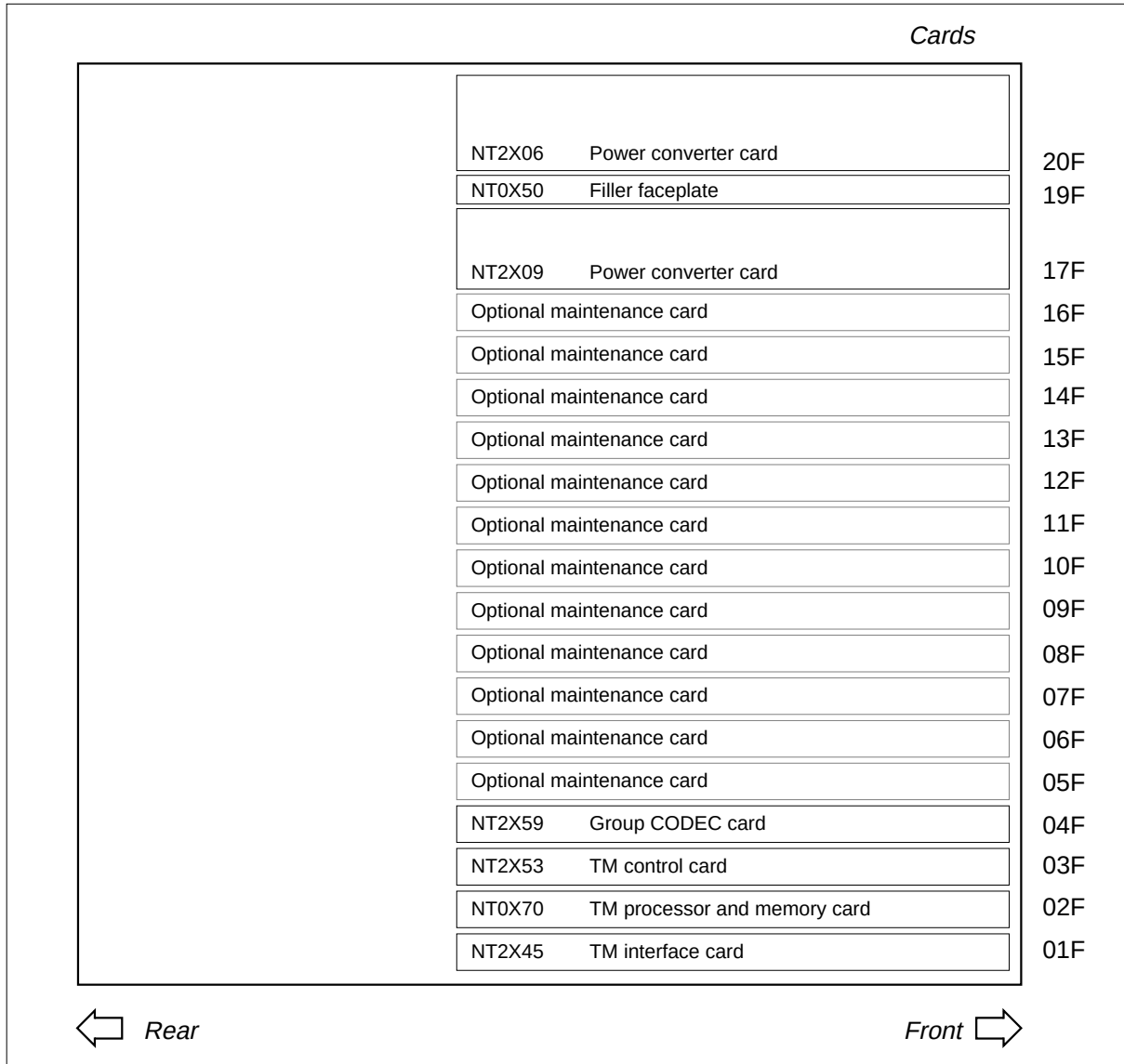
## TM shelf layouts (continued)

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.

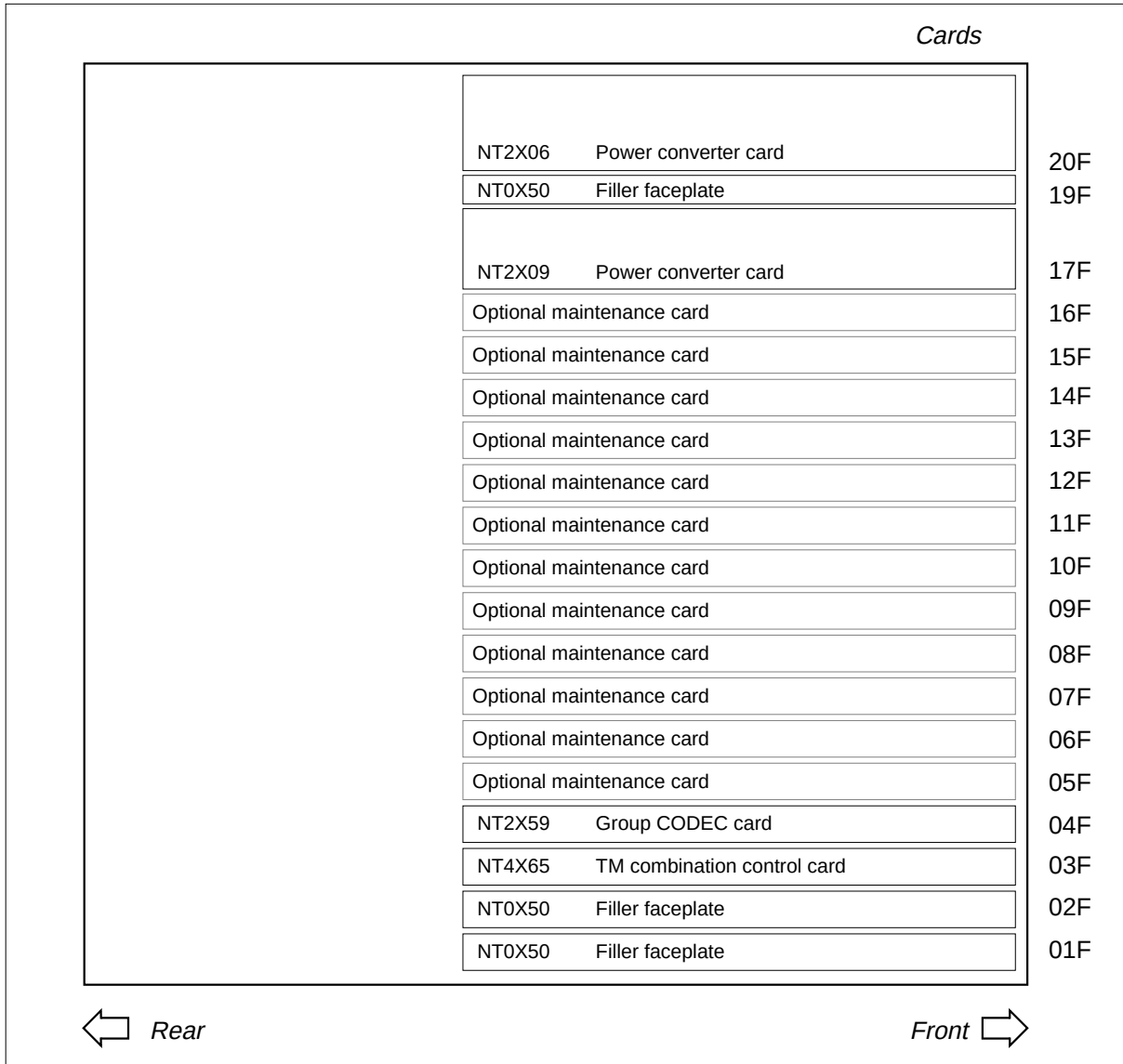
**TM shelf layouts** (continued)**Figure Maintenance trunk module with NT0X70 TM processor and memory card**

**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)

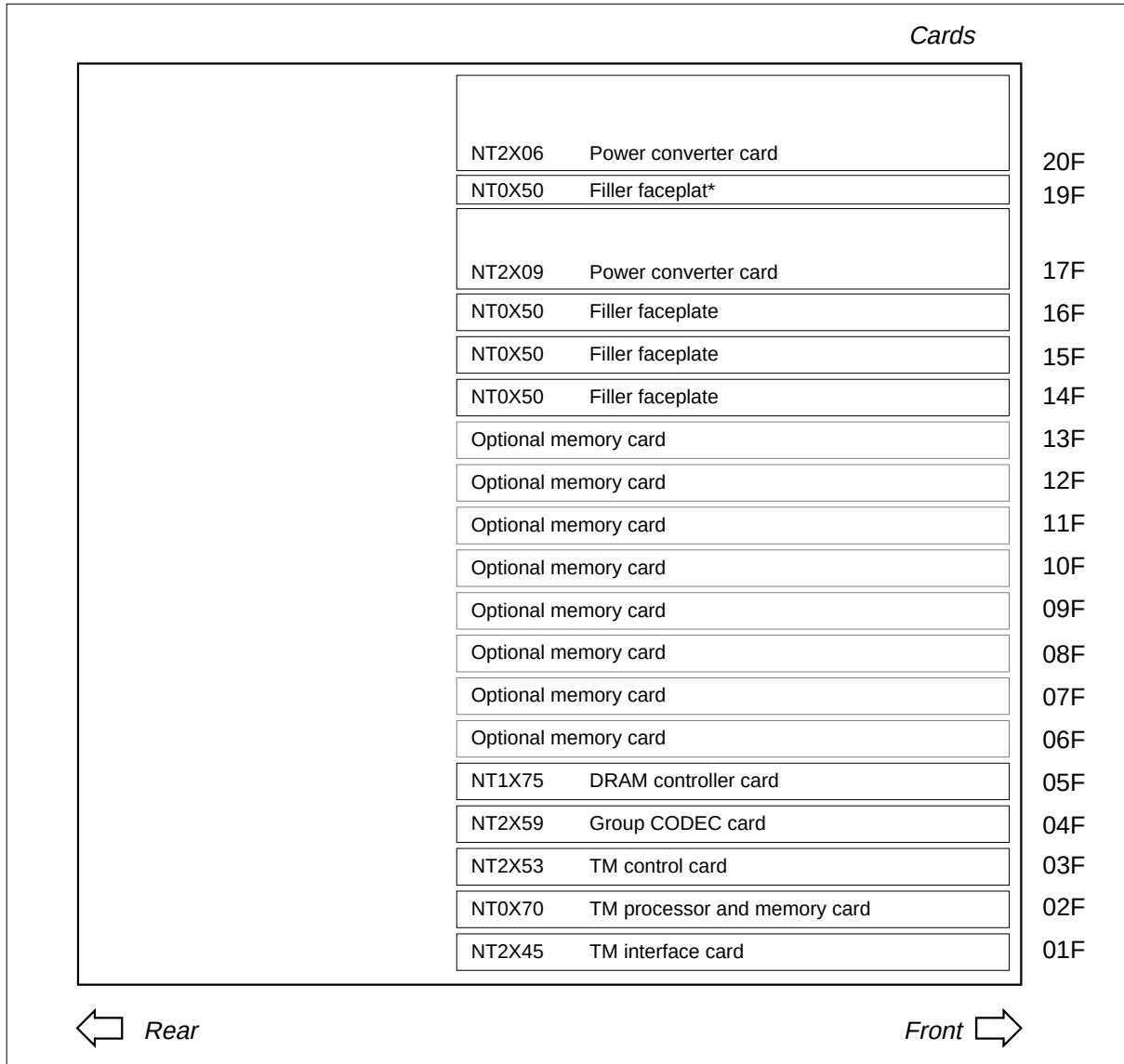
**Figure Maintenance trunk module with NT4X65 TM control card**



**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.

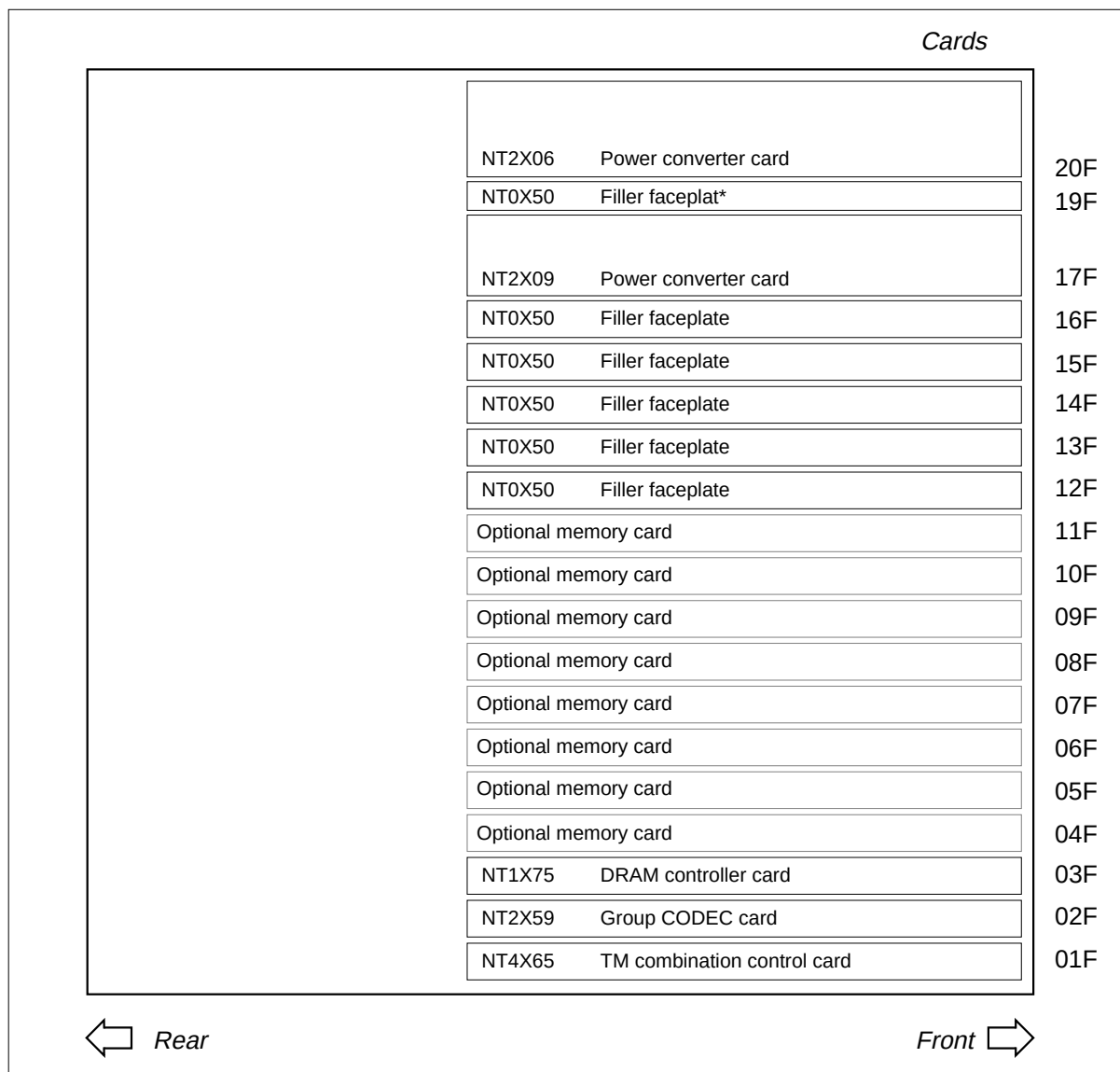
**Note 3:** When service cards are present, the packaged trunk module (PTM) is identical to the MTM with the NT4X65 TM combination control card. When service cards are not present, these PMs are not identical. On MAP displays, the system refers to PTMs as MTMs.

**TM shelf layouts** (continued)**Figure Digital recorded announcement machine with NT0X70 TM processor and memory card**

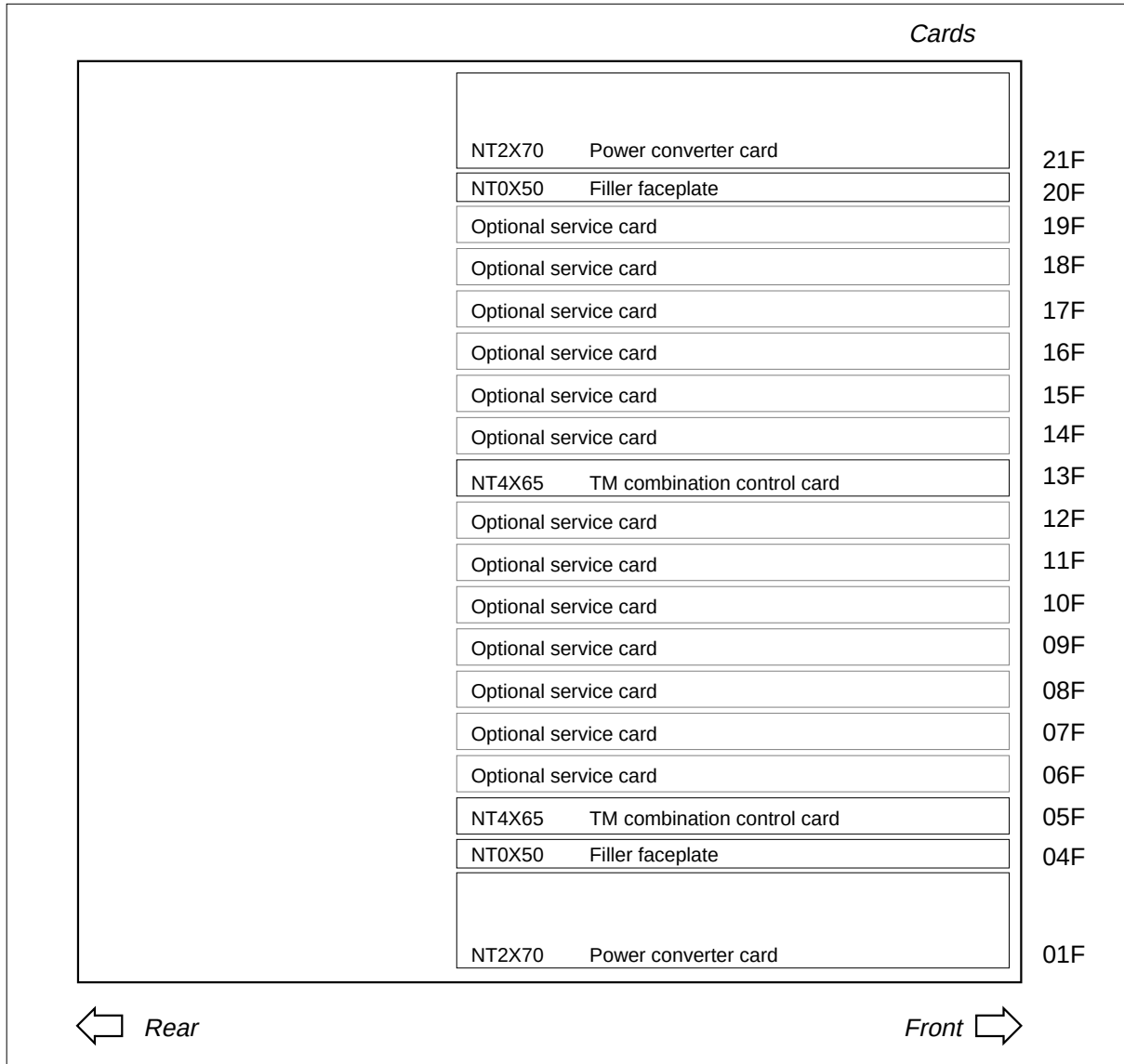
**Note:** Optional trunk cards for slots 06F to 13F are in the table “Optional cards for TM, MTM, STM, and ISM” found in this document after these figures.

## 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.

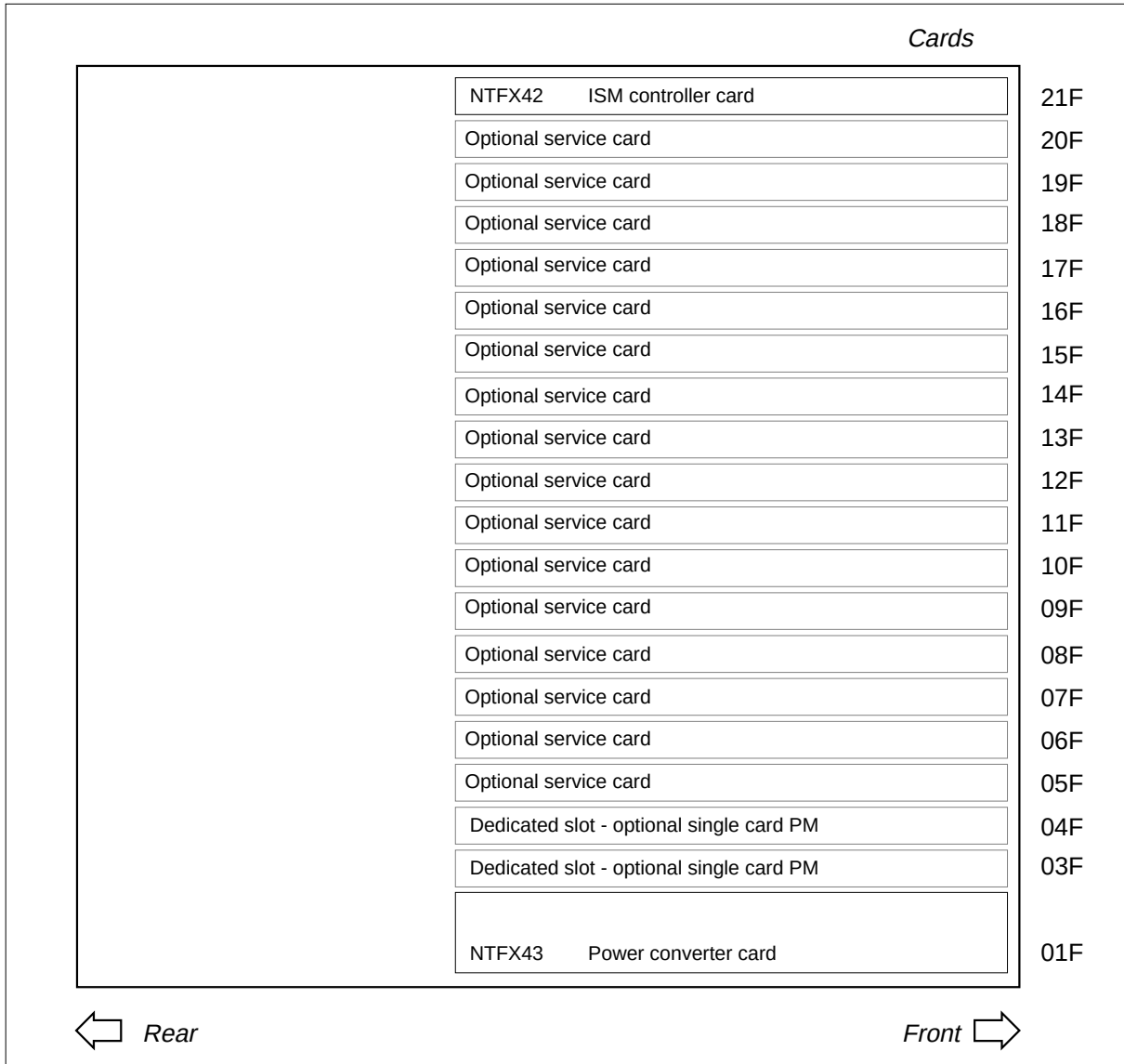
**TM shelf layouts** (continued)**Figure Service trunk module**

**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.

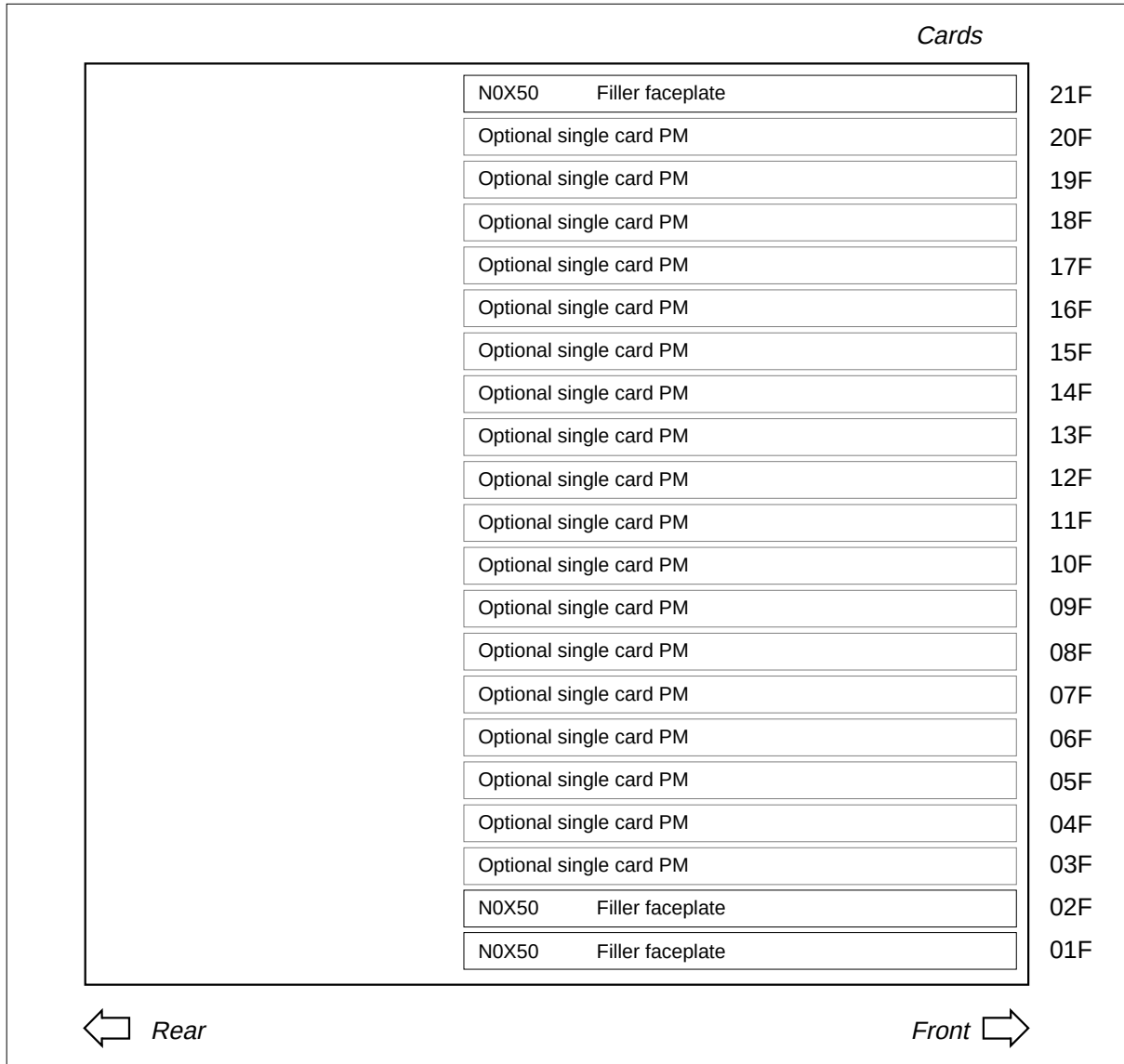
## TM shelf layouts (continued)

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<br>standard announcements - English<br>card                             |    | X   | X   | X   |     |
|        | AB U.S. Bell standard announcements<br>card                                                              |    | X   | X   | X   |     |
|        | AE Digital recorded announcement<br>(DRA) automatic coin toll service<br>(ACTS) card                     |    | X   | X   | X   |     |
|        | AF Digital recorded announcement<br>PROM AOSS - VR English card 1                                        |    | X   | X   | X   |     |
|        | AG Digital recorded announcement<br>PROM AOSS - VR English card 2                                        |    | X   | X   | X   |     |
|        | AH Digital recorded announcement<br>PROM ACCS English card                                               |    | X   | X   | X   |     |
|        | AJ Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(1 of 23 - English announcements) |    | X   | X   | X   |     |
|        | AK Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(2 of 23 - English announcements) |    | X   | X   | X   |     |
|        | AM Digital recorded announcement<br>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<br>PROM card CMS/CLASS PH I and II<br>(3 of 23 - English announcements)  |    | X   | X   | X   |     |
| AQ  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(4 of 23 - English announcements)  |    | X   | X   | X   |     |
| AR  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(5 of 23 - English announcements)  |    | X   | X   | X   |     |
| AS  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(6 of 23 - English announcements)  |    | X   | X   | X   |     |
| AT  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(7 of 23 - English announcements)  |    | X   | X   | X   |     |
| AU  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(8 of 23 - English announcements)  |    | X   | X   | X   |     |
| AV  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(9 of 23 - English announcements)  |    | X   | X   | X   |     |
| AW  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(10 of 23 - English announcements) |    | X   | X   | X   |     |
| BA  | Digital recorded announcement<br>standard announcements card -<br>French                               |    | X   | X   | X   |     |
| BF  | Digital recorded announcement<br>PROM AOSS - VR French card 1                                          |    | X   | X   | X   |     |
| BG  | Digital recorded announcement<br>PROM AOSS - VR French card 2                                          |    | X   | X   | X   |     |
| BH  | Digital recorded announcement<br>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<br>PROM card CMS/CLASS PH I and II<br>(1 of 10 - French announcements)   |    | X   | X   | X   |     |
| BK  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(2 of 10 - French announcements)   |    | X   | X   | X   |     |
| BP  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(3 of 10 - French announcements)   |    | X   | X   | X   |     |
| BQ  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(4 of 10 - French announcements)   |    | X   | X   | X   |     |
| BR  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(5 of 10 - French announcements)   |    | X   | X   | X   |     |
| BS  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(6 of 10 - French announcements)   |    | X   | X   | X   |     |
| BT  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(7 of 10 - French announcements)   |    | X   | X   | X   |     |
| BU  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(8 of 10 - French announcements)   |    | X   | X   | X   |     |
| BV  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(9 of 10 - French announcements)   |    | X   | X   | X   |     |
| BW  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(10 of 10 - French announcements)  |    | X   | X   | X   |     |
| CA  | Mechanized calling card service<br>standard announcement card                                          |    | X   | X   | X   |     |
| GA  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(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<br>PROM card CMS/CLASS PH I and II<br>(12 of 23 - English announcements) |    | X   | X   | X   |     |
| GC  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(13 of 23 - English announcements) |    | X   | X   | X   |     |
| GE  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(14 of 23 - English announcements) |    | X   | X   | X   |     |
| GF  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(15 of 23 - English announcements) |    | X   | X   | X   |     |
| GG  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(16 of 23 - English announcements) |    | X   | X   | X   |     |
| GH  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(17 of 23 - English announcements) |    | X   | X   | X   |     |
| GJ  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(18 of 23 - English announcements) |    | X   | X   | X   |     |
| GK  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(19 of 23 - English announcements) |    | X   | X   | X   |     |
| GL  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(20 of 23 - English announcements) |    | X   | X   | X   |     |
| GM  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(21 of 23 - English announcements) |    | X   | X   | X   |     |
| HC  | Digital recorded announcement<br>PROM card CMS/CLASS PH I and II<br>(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)

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### **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.

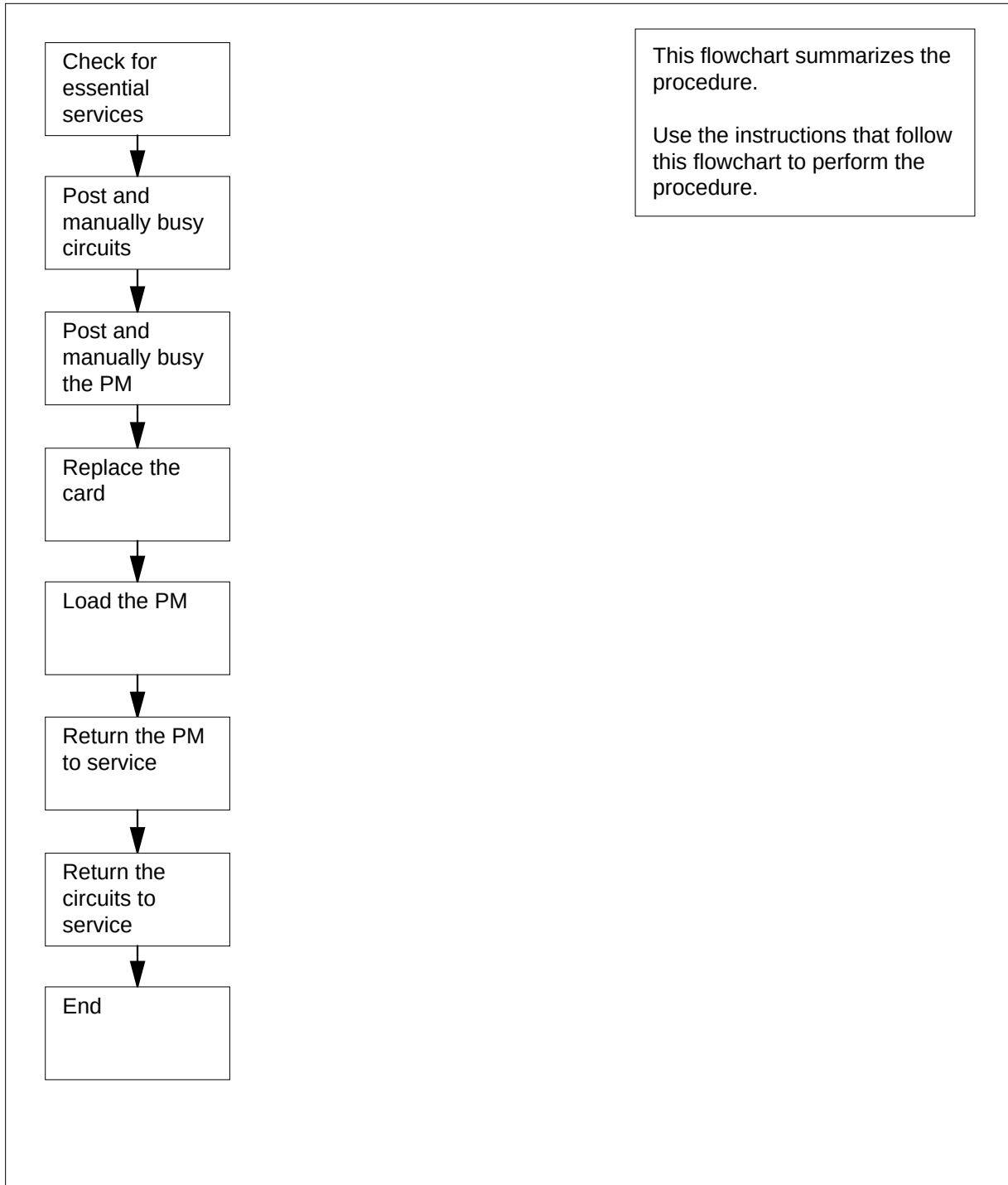
### **Action**

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



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## 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.                                                   |         |
| <b>At the MAP terminal</b> |                                                                                                                                              |         |
| 17                         | To load the PM, type<br><b>&gt;LOADPM</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>MTM 0 LoadPM Passed        |         |
|                            | If the LOADPM command                                                                                                                        | Do      |
|                            | passed                                                                                                                                       | step 19 |
|                            | failed                                                                                                                                       | step 18 |
| 18                         | Perform the procedure <i>Loading a PM</i> in this document to load the PM. Complete the procedure and return to this point.                  |         |
| 19                         | To return the PM to service, type<br><b>&gt;RTS</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>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<br><b>&gt;TRKS;TTP</b><br>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<br>and the system generated a card<br>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

InSvc 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*

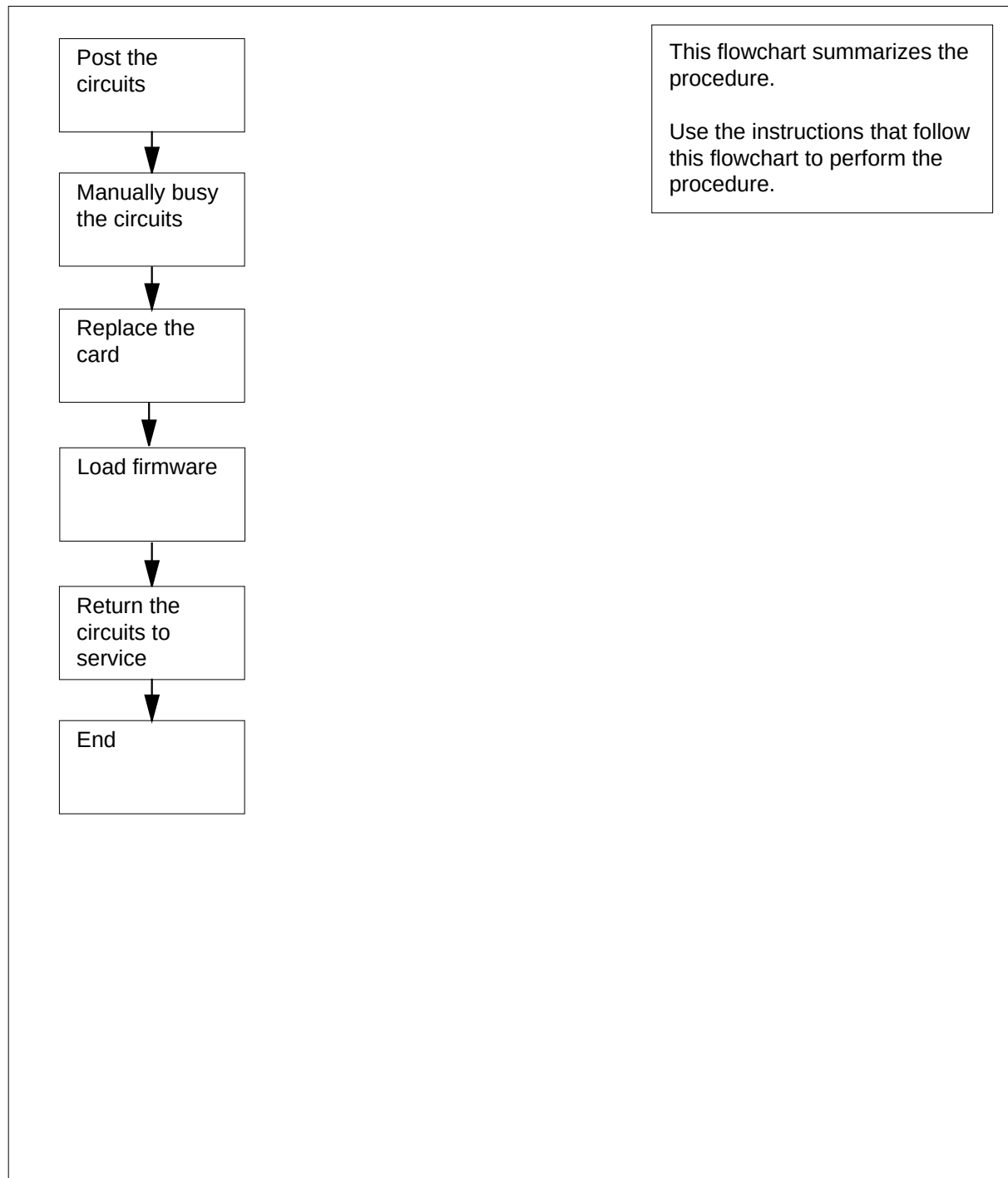
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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 utility, 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 $\Omega$ 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.

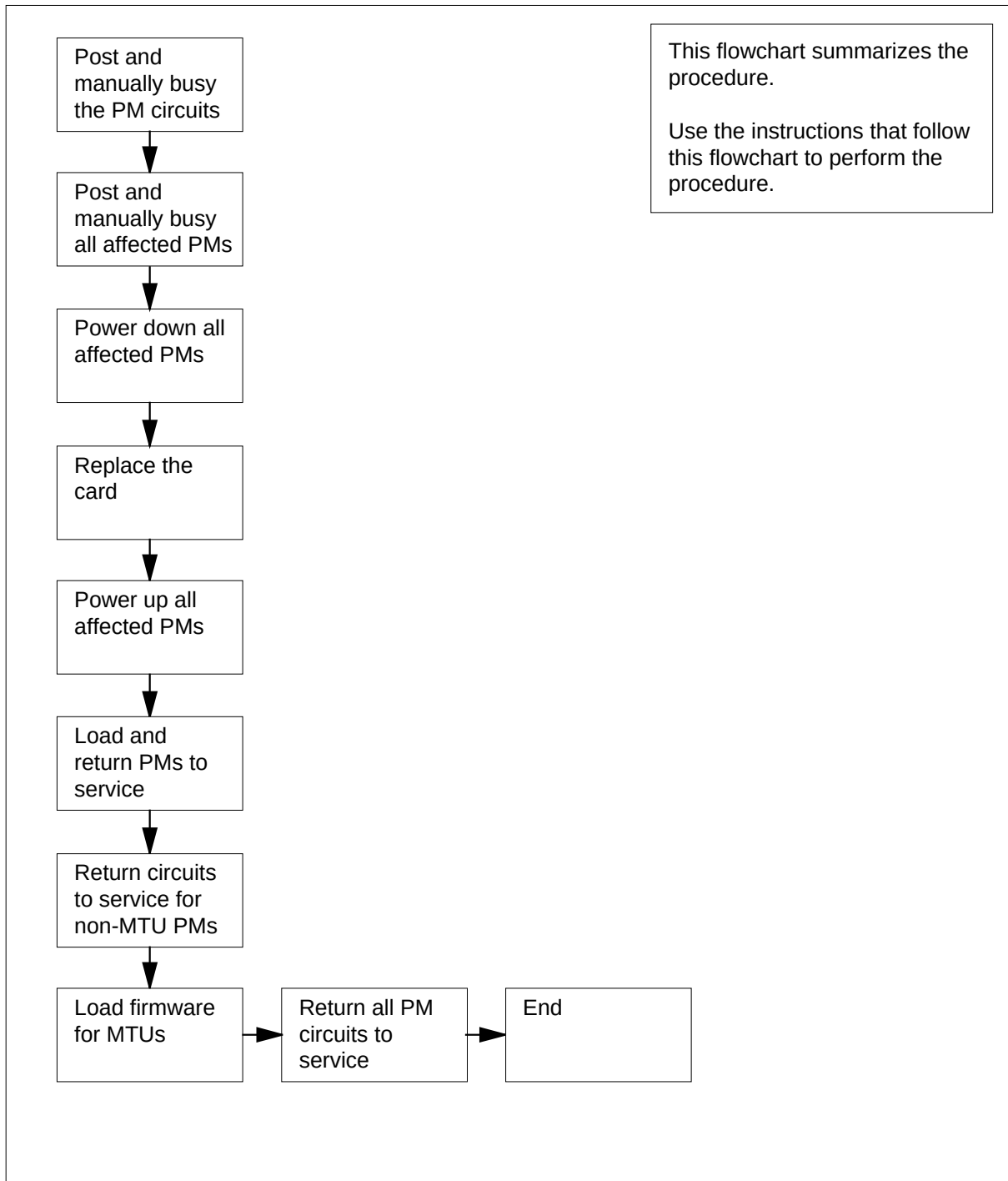
### Action

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<br><b>&gt;POST P pm_type pm_no</b><br>and press the Enter key.<br><i>where</i><br><b>pm_type</b><br>is the type of single-card PM (CTM, DTM)<br><b>pm_no</b><br>is the number of the PM (0 to 9999)<br><b>Note:</b> 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<br><b>&gt;BSY ALL</b><br>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<br><b>&gt;PM</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                      |           |
| 17 | To post the PM for which you replace the card, type<br><b>&gt;POST pm_type pm_no</b><br>and press the Enter key.<br><i>where</i><br><b>pm_type</b><br>is the type of PM (ISM, MTM, STM)<br><b>pm_no</b><br>is the number of the PM (0 to 9999)                                                                                                                                                    |           |
| 18 | Determine the state of the PM.                                                                                                                                                                                                                                                                                                                                                                    |           |
|    | <b>If the PM</b>                                                                                                                                                                                                                                                                                                                                                                                  | <b>Do</b> |
|    | 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 converter 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 |
|    | <b>Note:</b> The number of the PM that associates 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<br>>NEXT<br>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.<br><b>Note:</b> 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<br>>SEIZE<br>and press the Enter key.<br><i>Example of a MAP display:</i>                                                     |         |

## 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
                                6  SZD . .
                                HOLD1 MTU

```

```

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 |
| <b>76</b> | To load the MTU, perform the procedure <i>Loading a PM</i> in this document. Complete the procedure and return to this point.                                                                                                                     |         |
| <b>77</b> | To go to the next member of the posted set, type<br><b>&gt;NEXT</b><br>and press the Enter key.<br><b>Note:</b> If the mate MTU circuit is the last member of the posted set, the NEXT command will remove all members from the control position. |         |
| <b>78</b> | To discard the current TTP process and start a new process, type<br><b>&gt;CREATE_TTP</b>                                                                                                                                                         |         |

## 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.

## 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,<br>AC, AD,<br>*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*

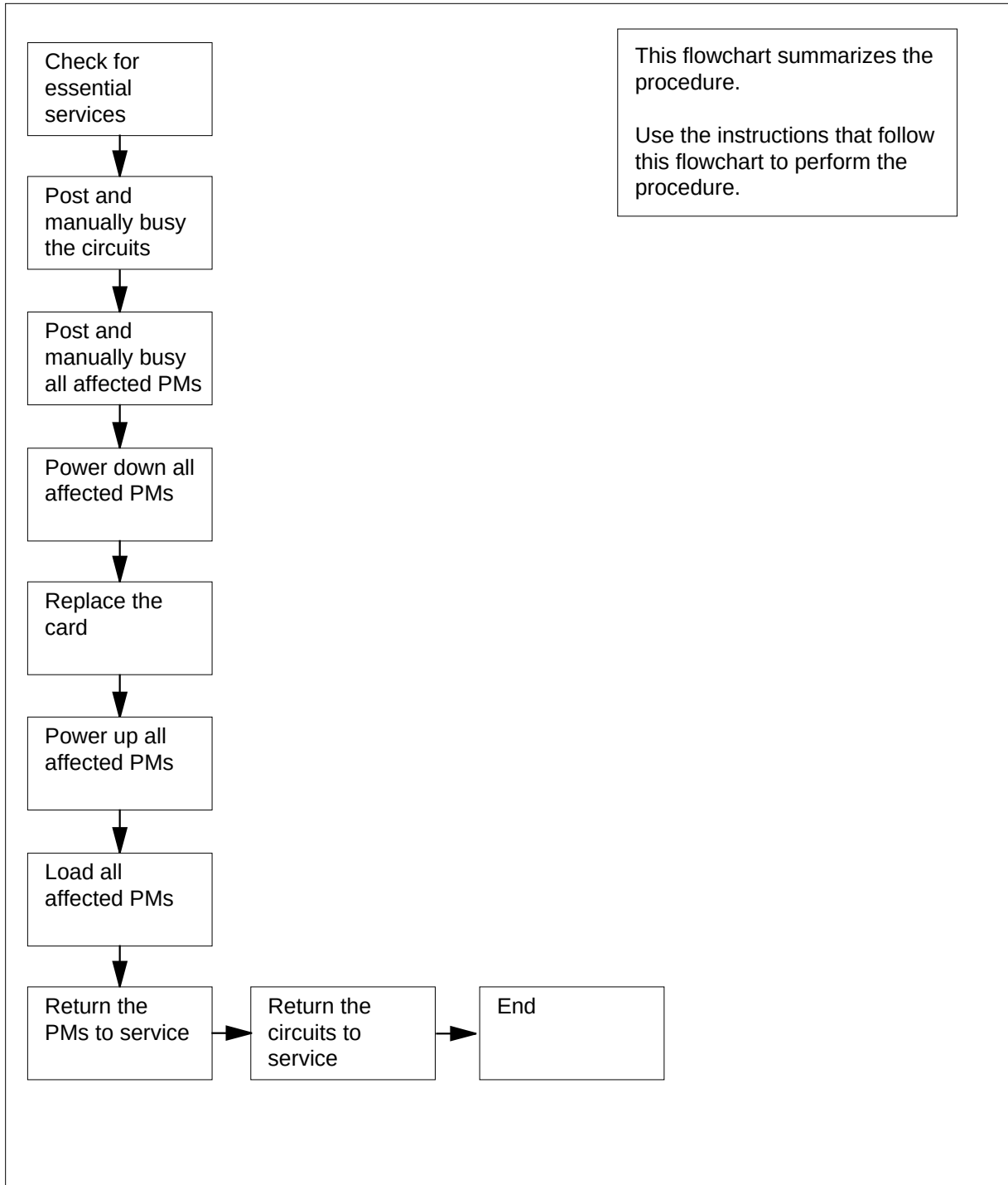
Do not go to the common procedure unless the step-action procedure directs you to proceed.

### 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 in trunk and service modules (continued)

### Summary of Replacing Power converter cards in trunk and service modules



## Power converter cards in trunk and service modules (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.

| <b>If essential services</b>                           | <b>Do</b> |
|--------------------------------------------------------|-----------|
| use PM resources and a minimum of one PM is in service | step 62   |
| use PM resources and all PMs are out of service        | step 3    |
| do not use PM resources                                | step 3    |

## Power converter cards in trunk and service modules (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 63 |
| 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 in trunk and service modules (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, manually busy the circuit. The number in the queue decreases by one. A blank field indicates that all circuits are manually busy.



## Power converter cards in trunk and service modules (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 in trunk and service modules (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 |
|-------|-----|------|------|------|------|------|------|
|       | PM  | 58   | 1    | 6    | 14   | 12   | 17   |
|       | 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 in trunk and service modules (continued)

|    | If the PM                                                                   | Do        |
|----|-----------------------------------------------------------------------------|-----------|
|    | is other than listed here                                                   | step 22   |
| 22 | To manually busy the PM, type<br><b>&gt;BSY</b><br>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.                          |           |
|    | <b>If the shelf</b>                                                         | <b>Do</b> |
|    | is an STM                                                                   | step 25   |
|    | is not an STM                                                               | step 27   |

25

**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 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.

Pull down and set the handle of the POWER toggle switch to the OFF position for the power converter you replace.

- | If the shelf                                         | Do      |
|------------------------------------------------------|---------|
| is an STM with an NT2X70AF (with or without DRAM)    | step 30 |
| is an STM without an NT2X70AF (with or without DRAM) | step 28 |
| is an MTM (with or without DRAM)                     | step 29 |
| is an ISM (with or without DRAM)                     | step 31 |
| is a TM                                              | step 32 |

- 31** Turn off the circuit breaker assigned to the NTFX43 power converter card on the affected ISM shelf. Each NTRX42xx circuit breaker power module in the MSP is provisioned with designation labels to cross-reference the circuit breaker to the shelf.

| <b>If</b>                       | <b>DoTurn off</b>  |
|---------------------------------|--------------------|
| 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 |

## Power converter cards in trunk and service modules (continued)

**Note:** Go to step 32.

- 32** 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.

- 33** Determine the next action.

| If power converter card        | Do      |
|--------------------------------|---------|
| is not an NTFX43AA or NT2X70AF | step 34 |
| is an NTFX43AA or NT2X70AF     | step 39 |

- 34** The next action depends on the type of power converter and the type of supervisory panel.

| If you                                                                                     | Do      |
|--------------------------------------------------------------------------------------------|---------|
| replace an NT2X70 AA, AB, AC, AD or AE card and the FSP or MSP has circuit breakers        | step 35 |
| replace an NT2X70 AA, AB, AC, AD or AE card and the FSP has fuses                          | step 36 |
| do not replace an NT2X70 AA, AB, AC, AD or AE card and the FSP or MSP has circuit breakers | step 37 |
| do not replace an NT2X70 AA, AB, AC, AD or AE card and the FSP has fuses                   | step 38 |

- 35** Power up the converter.

- a** Pull up 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 40.

- 36** Power up the converter.

## Power converter cards in trunk and service modules (continued)

- a Pull up and set the handle of the POWER toggle switch to the RESET position and hold until the CONVERTER FAIL LED goes out.
  - b Release the handle.  
Go to step 40.
- 37 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 or 2X09) and turn on the circuit breaker for the corresponding shelf at the same time.  
Go to step 40.
- 38 Power up the converter.
  - a Pull up and set the handle of the POWER toggle switch 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.  
Go to step 40.
- 39 Reset the circuit breaker on the MSP or the FSP to the ON position.
- 40 The next action depends on the type of PM that is in the shelf, and if you powered up both power converters.

| If the shelf                                                                                                | Do      |
|-------------------------------------------------------------------------------------------------------------|---------|
| is an STM or an MTM (with or without DRAM) and you have already powered up both power converters            | step 43 |
| is an STM (with or without DRAM)                                                                            | step 41 |
| is an MTM (with or without DRAM)                                                                            | step 42 |
| is an ISM (with or without DRAM)                                                                            | step 43 |
| is a TM                                                                                                     | step 43 |
| 41 Repeat step 34 for the mate power converter in the STM on the other half of the shelf.<br>Go to step 43. |         |
| 42 For the other power converter on the shelf, repeat step 34.                                              |         |

## Power converter cards in trunk and service modules (continued)

- 43** The next action depends on the reason you perform this procedure.

| If a maintenance procedure           | Do      |
|--------------------------------------|---------|
| directed you to this procedure       | step 44 |
| did not direct you to this procedure | step 45 |

- 44** Return to the maintenance procedure that sent you to this procedure and continue as directed.

### *At the MAP terminal*

- 45** 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 47 |
| failed                | step 46 |

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

- 47** 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 49 |
| passed, and the PM is ISTb with the system<br>generated card list | step 48 |
| failed                                                            | step 65 |

- 48** Record the messages on the MAP display for future reference.

- 49** To access the TTP level of the MAP display, type

**>TRKS;TTP**  
and press the Enter key.

---

## Power converter cards in trunk and service modules (continued)

---

- 50 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)

- 51 To return all circuits to service, type

**>RTS ALL**

and press the Enter key.

*Example of a MAP response:*

RTS OK

- 52 The next action depends on the results of the PM RTS in step 47.

---

| If the RTS command                                                           | Do      |
|------------------------------------------------------------------------------|---------|
| passed with no conditions                                                    | step 59 |
| passed, but in-service tests failed<br>and the system generated card<br>list | step 53 |

---

- 53 To manually busy all posted circuits, type

**>BSY ALL**

and press the Enter key.

- 54 To return all circuits to service, type

**>RTS ALL**

and press the Enter key.

- 55 To access the PM level of the MAP display, type

**>PM**

and press the Enter key.

- 56 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, MTM, STM, TM, AIM)



## Power converter cards in trunk and service modules (continued)

**pm\_no**

is the number of the PM (0 to 9999)

- 57** 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 59

passed, and you worked on all PMs this procedure affected and all PMs return to service

step 66

passed, and you worked on all PMs this procedure affected but a minimum of one PM does not successfully return to service

step 64

failed, and a single-card PM, compact PM, or an STM is present that you did not work on

step 58

failed, and you worked on all PMs this procedure affected

step 65

- 58** Record the messages on the MAP display for future reference.

- 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**

## Power converter cards in trunk and service modules (end)

---

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)

- 61 Repeat steps 45 to 57 for all PMs this procedure affected.
- 62 Contact the next level of support to determine how to handle essential services. Continue as directed by operating company personnel.
- 63 Contact operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.
- 64 Report the results of the maintenance activity to the next level of support.
- 65 For additional help, contact the next level of support.
- 66 The procedure is complete.

## 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.

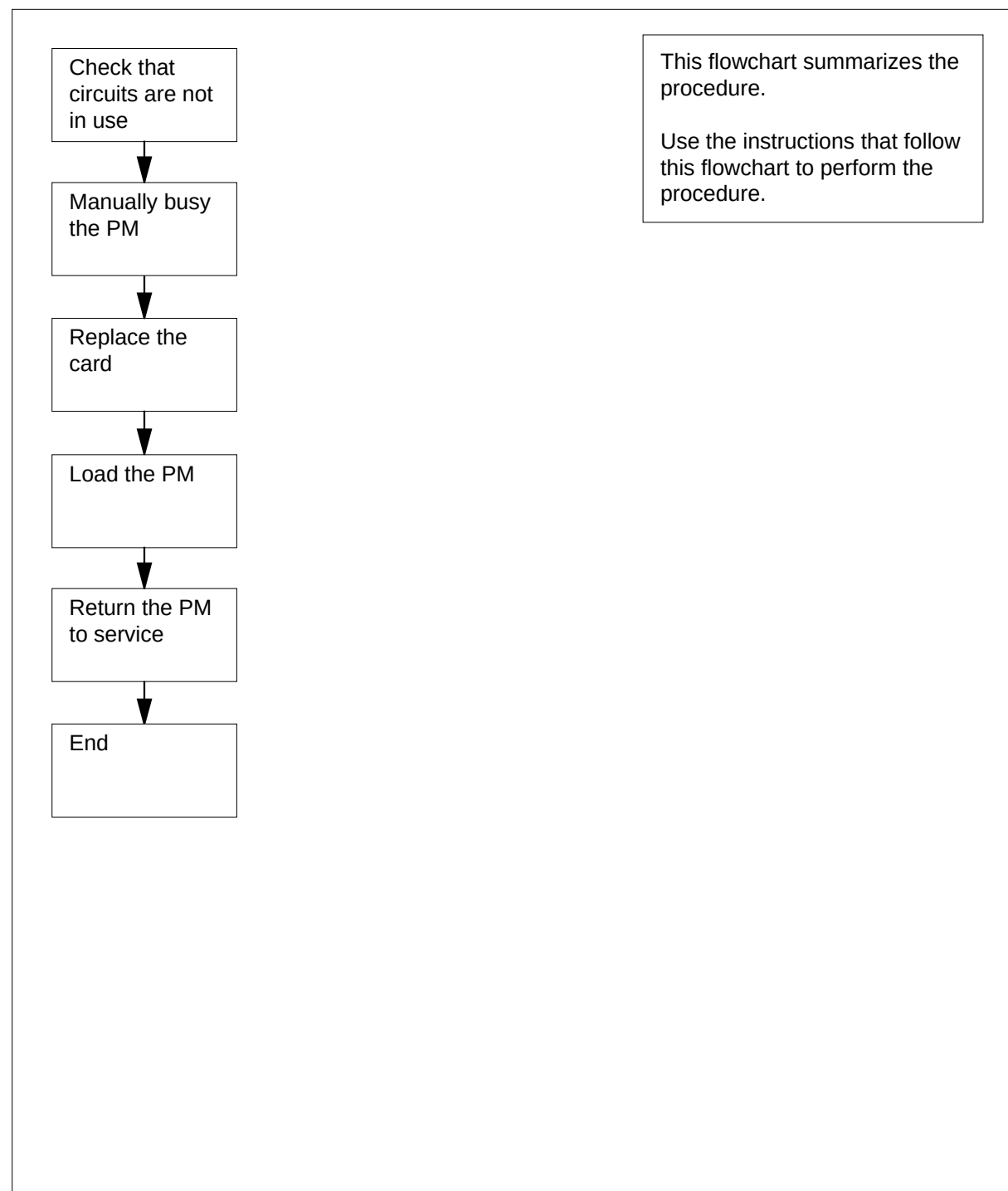
### Action

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 Off l                  | 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:*

```
PM          SysB  ManB  OffL  CBsy  ISTb  InSv
          1      1      6      6      0      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:*

```
PM          SysB  ManB  OffL  CBsy  ISTb  InSv
CTM          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 following 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 <i>Loading a PM</i> in this document . Complete the procedure and return to this point. |         |
| 18 | To load the PM, type<br><b>&gt;LOADPM</b><br>and press the Enter key.<br><i>Example of a MAP response:</i>                              |         |

## 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 this 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),<br>maintenance trunk module (MTM),<br>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<br>- 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<br>standard announcements - English<br>card         | MTM, STM                                                                                          |
|        | AB     | U.S. Bell standard announcements<br>card                                          | MTM, STM                                                                                          |
|        | AE     | Digital recorded announcement<br>(DRA) automatic coin toll service<br>(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<br>PROM AOSS - VR English card 1                              | MTM, STM            |
|     | AH                                                                                                                          | Digital recorded announcement<br>PROM ACCS English card                                     | MTM, STM            |
|     | AJ, AK,<br>AP, AQ,<br>AR, AS,<br>AT, AU,<br>AV, AW,<br>GA, GB,<br>GC, GE,<br>GF, GG,<br>GH, GJ,<br>GK, GL,<br>GM, HC,<br>HD | Digital recorded announcement<br>PROM card CMS/CLASS PH I and<br>II (English announcements) | MTM, STM            |
|     | AM                                                                                                                          | Digital recorded announcement<br>PROM card CFRA English version                             | MTM, STM            |
|     | BA                                                                                                                          | Digital recorded announcement<br>standard announcements card -<br>French                    | MTM, STM            |
|     | BF, BG                                                                                                                      | Digital recorded announcement<br>PROM AOSS - VR French card 1                               | MTM, STM            |
|     | BH                                                                                                                          | Digital recorded announcement<br>PROM ACCS French card                                      | MTM, STM            |
|     | BJ, BK,<br>BP, BQ,<br>BR, BS,<br>BT, BU,<br>BV, BW                                                                          | Digital recorded announcement<br>PROM card CMS/CLASS PH I and<br>II (French announcements)  | MTM, STM            |
|     | CA                                                                                                                          | Mechanized calling card service<br>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 |
|--------|------------|-----------------------------------------------------------------|---------------------|
| NT2X48 | BA         | Transmission test unit controller (A-law) card                  | ISM, MTM, STM       |
|        | 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.

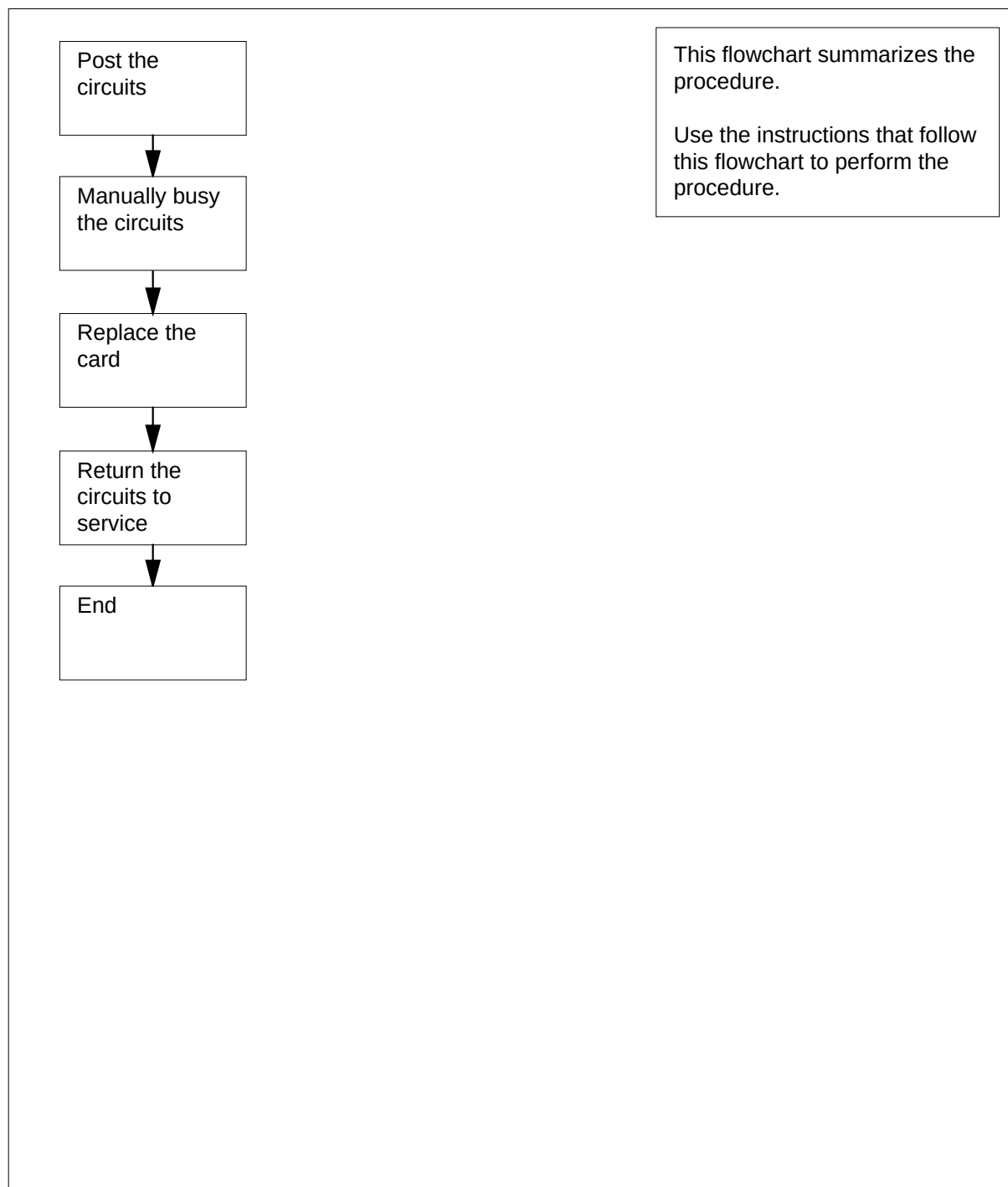
### Action

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)

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### 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 again.

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.<br><b>Note:</b> 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<br><b>&gt;BSY</b><br>and press the Enter key.                                                             |        |
| 8 | To put the next circuit in the control position, type<br><b>&gt;NEXT</b><br>and press the Enter key.<br>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.



---

# 5 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

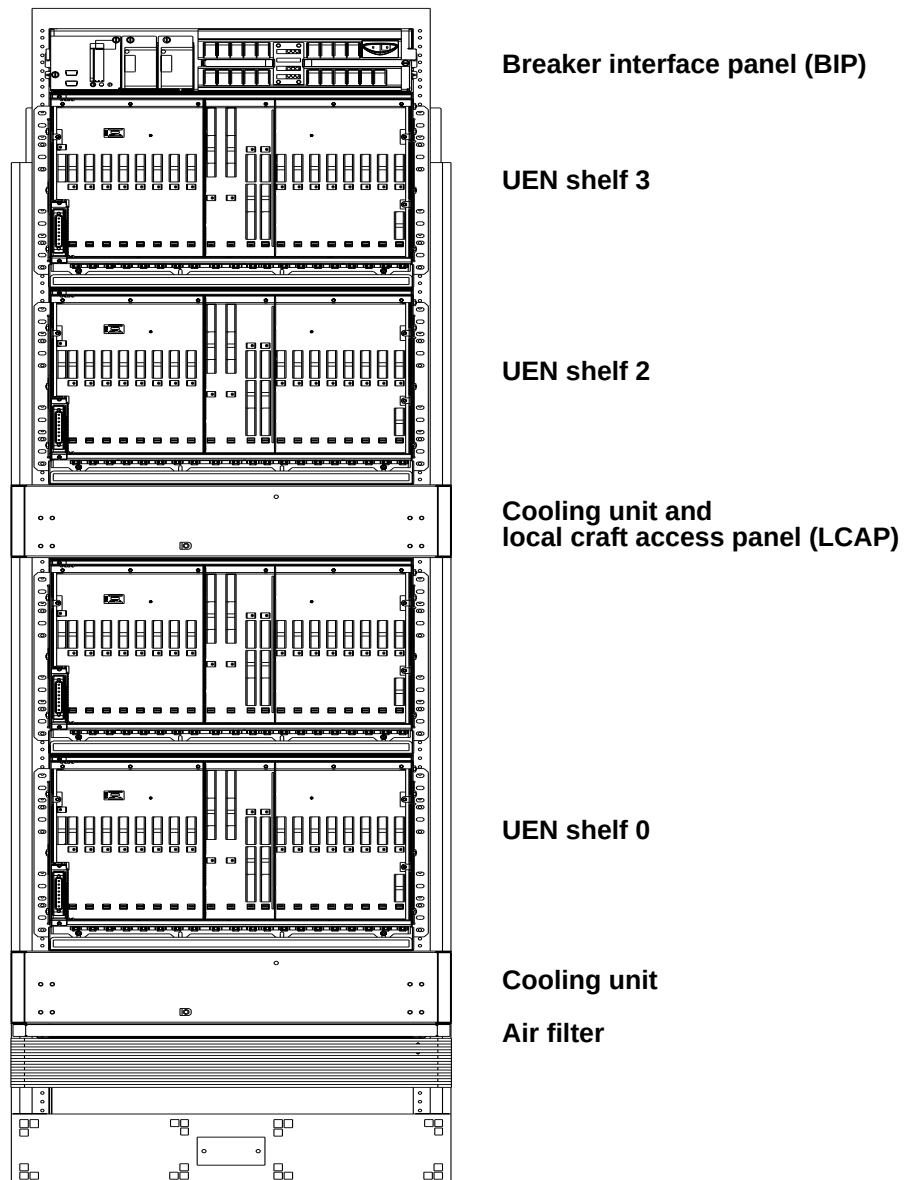
## UEN shelf layout

### Application

This procedure provides frame layouts for the Universal Edge 9000 DMS Bay frame (NTNY01AA).

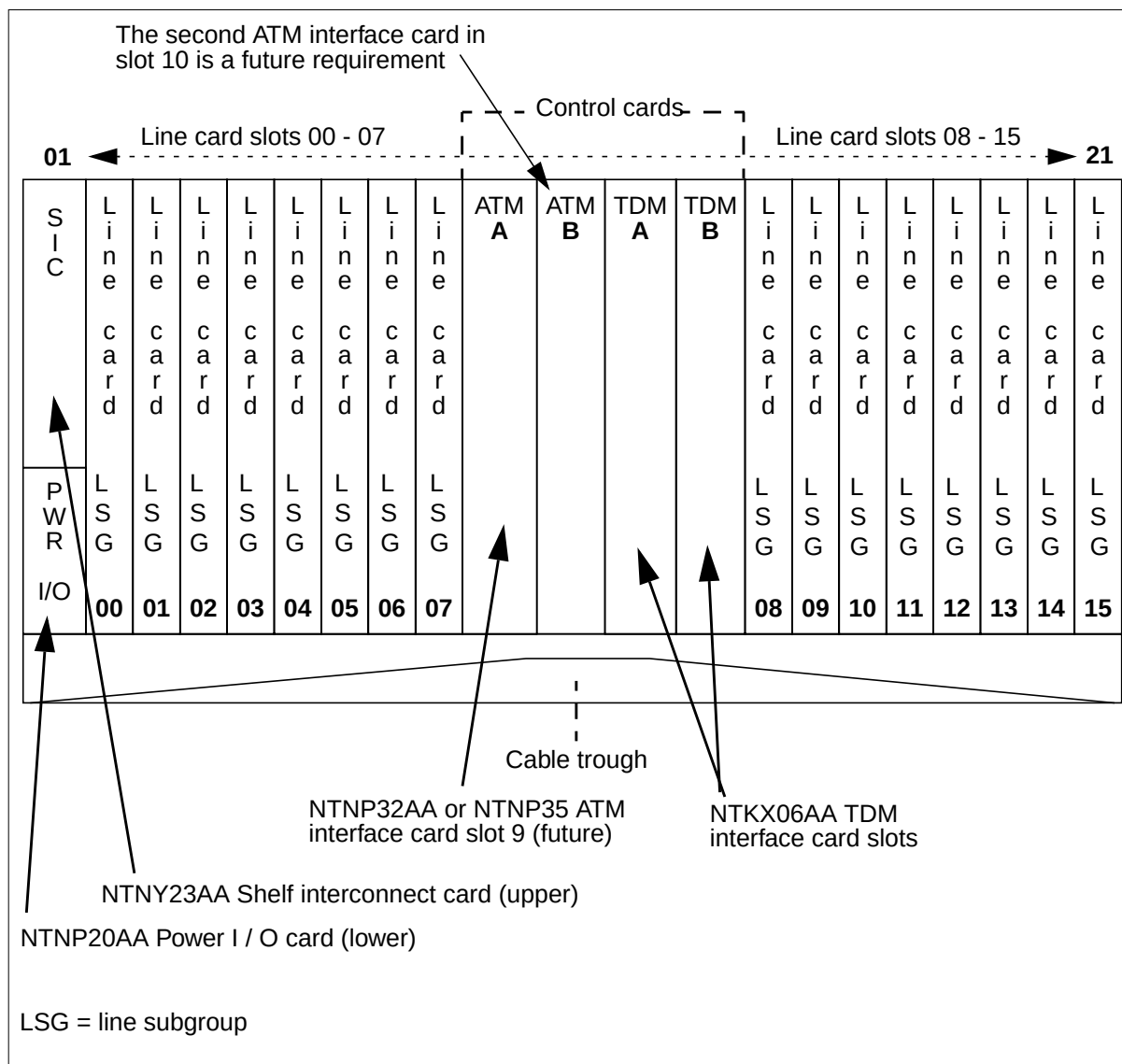
This procedure provides frame and shelf layouts for the UEN:

#### 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

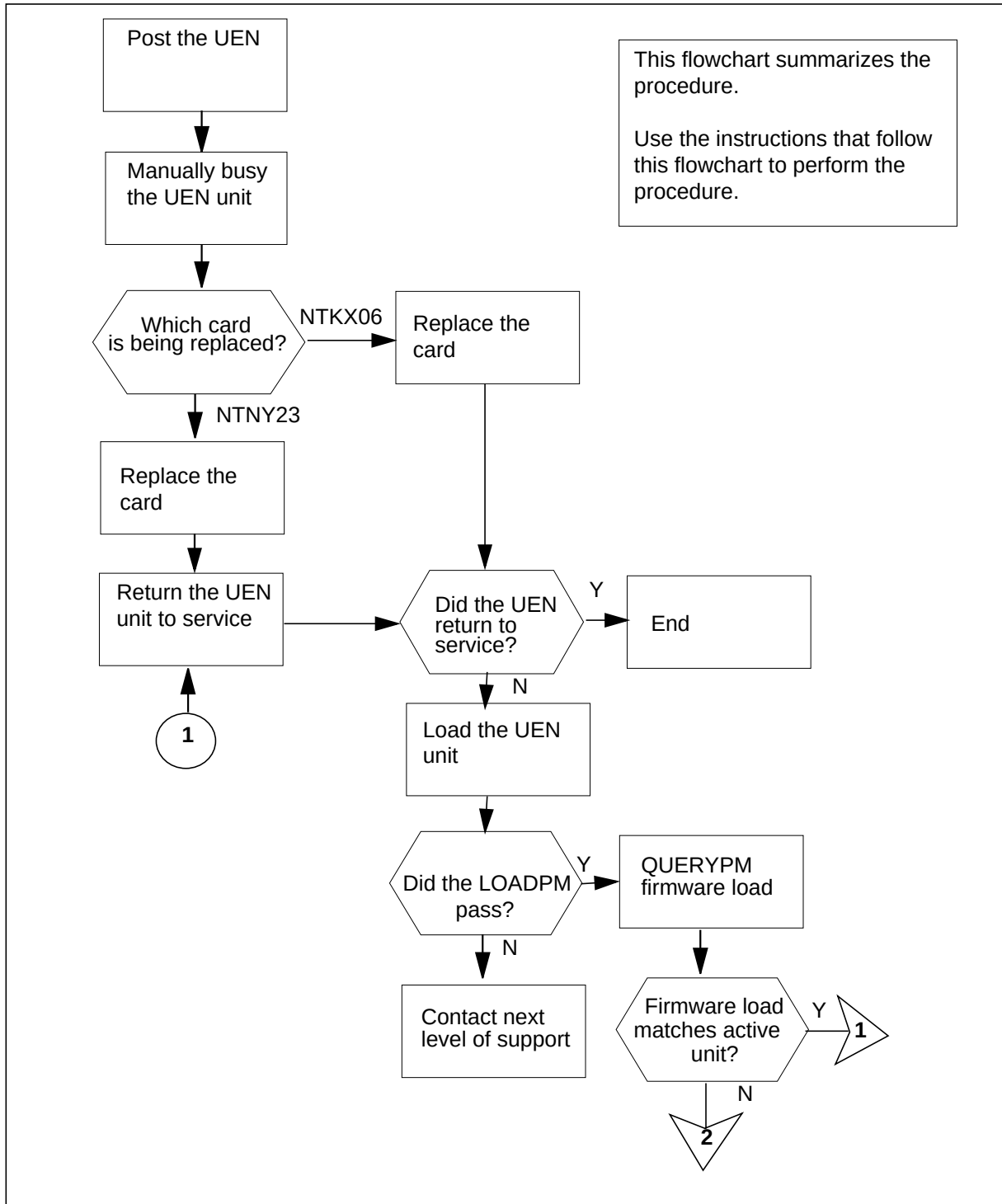
| DIP switch settings (5-1)                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |     |     |     |     | Cable length<br>in feet for<br>frame-based<br>equipment<br>(Note 2) | Cable length<br>in feet for<br>cabinetized<br>equipment<br>(Note 3) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|---------------------------------------------------------------------|---------------------------------------------------------------------|
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5   | 4   | 3   | 2   | 1   |                                                                     |                                                                     |
| Software<br>controlled<br>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                                                                 |
| <p><b>Note 1:</b> 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.</p> <p><b>Note 2:</b> When hosted by a frame-based XPM (such as, LGC) or RCC2.</p> <p><b>Note 3:</b> When hosted by a cabinetized XPM (CLGE) or RCC2 in a CRSC cabinet.</p> |     |     |     |     |     |                                                                     |                                                                     |

### 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.

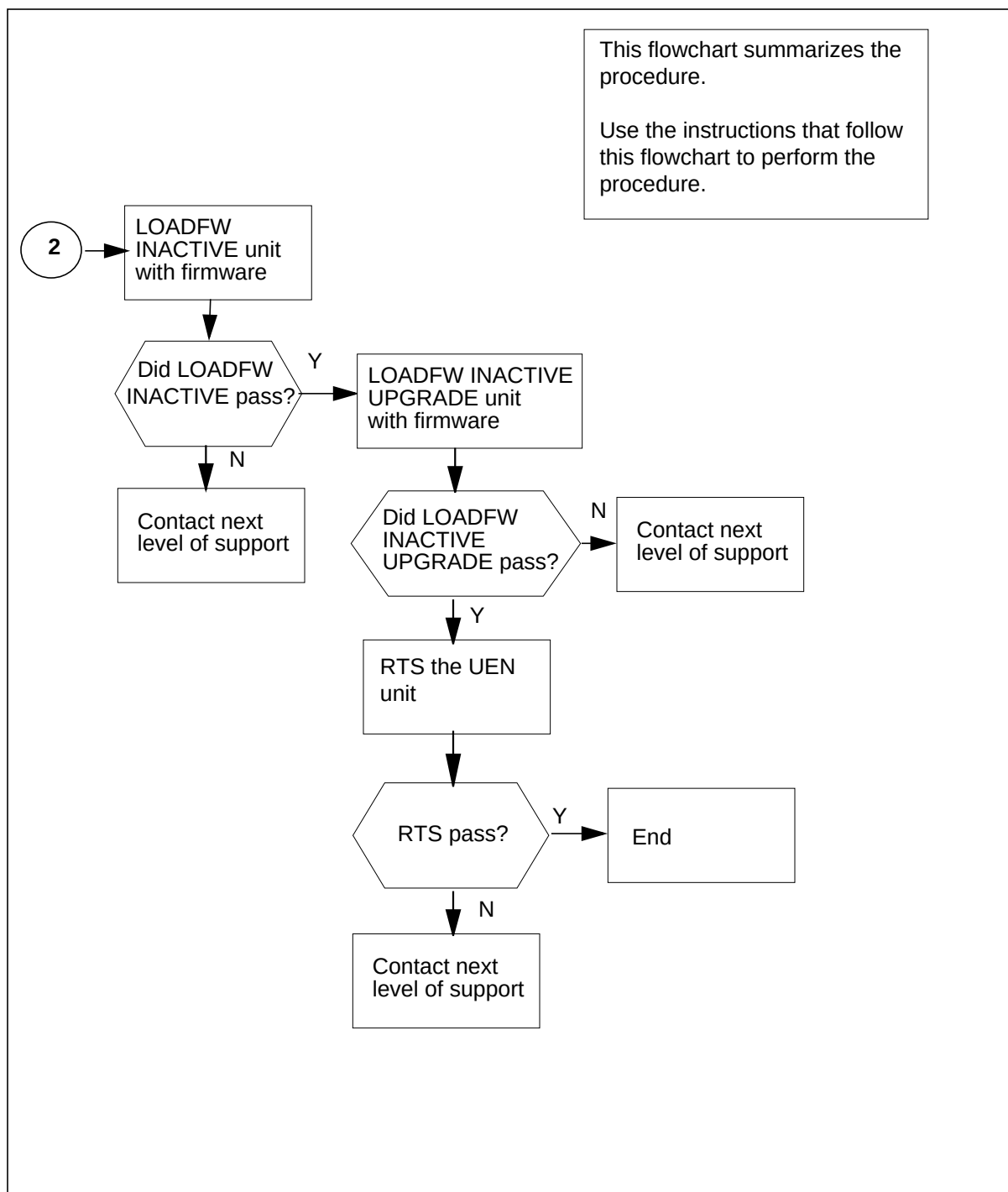
## Control cards in a UEN shelf (continued)

### 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:*

|    |      |      |      |      |      |      |
|----|------|------|------|------|------|------|
| PM | SysB | ManB | OffL | CBsy | ISTb | InSv |
|    | 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 00S: Cside 0 Pside 0
Unit 0: InSv
Unit 1: InSv

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 00S: Cside  0 Pside  0
Unit0: ManB
Unit1: InSv      Takeover
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

```

|           | <b>If the firmware</b>                                                                                                               | <b>Do</b> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | is valid                                                                                                                             | step 13   |
|           | is invalid                                                                                                                           | step 16   |
| <b>16</b> | To load the firmware into the inactive UEN unit, type<br><b>&gt;LOADFW INACTIVE</b><br>and press the Enter key                       |           |
|           | <b>If the LOADFW</b>                                                                                                                 | <b>Do</b> |
|           | passes                                                                                                                               | step 17   |
|           | fails                                                                                                                                | step 19   |
| <b>17</b> | To upgrade the inactive UEN unit firmware, type<br><b>&gt;LOADFW INACTIVE UPGRADE</b><br>and press the Enter key.                    |           |
|           | <b>If the LOADFW UPGRADE</b>                                                                                                         | <b>Do</b> |
|           | passes                                                                                                                               | step 13   |
|           | fails                                                                                                                                | step 19   |
| <b>18</b> | To determine why the component is offline, consult operating company personnel. Continue as directed by operating company personnel. |           |
| <b>19</b> | For additional help, contact the next level of support.                                                                              |           |
| <b>20</b> | Perform the "Returning a card for repair or replacement" procedure in this document and return to this step.                         |           |
| <b>21</b> | 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.

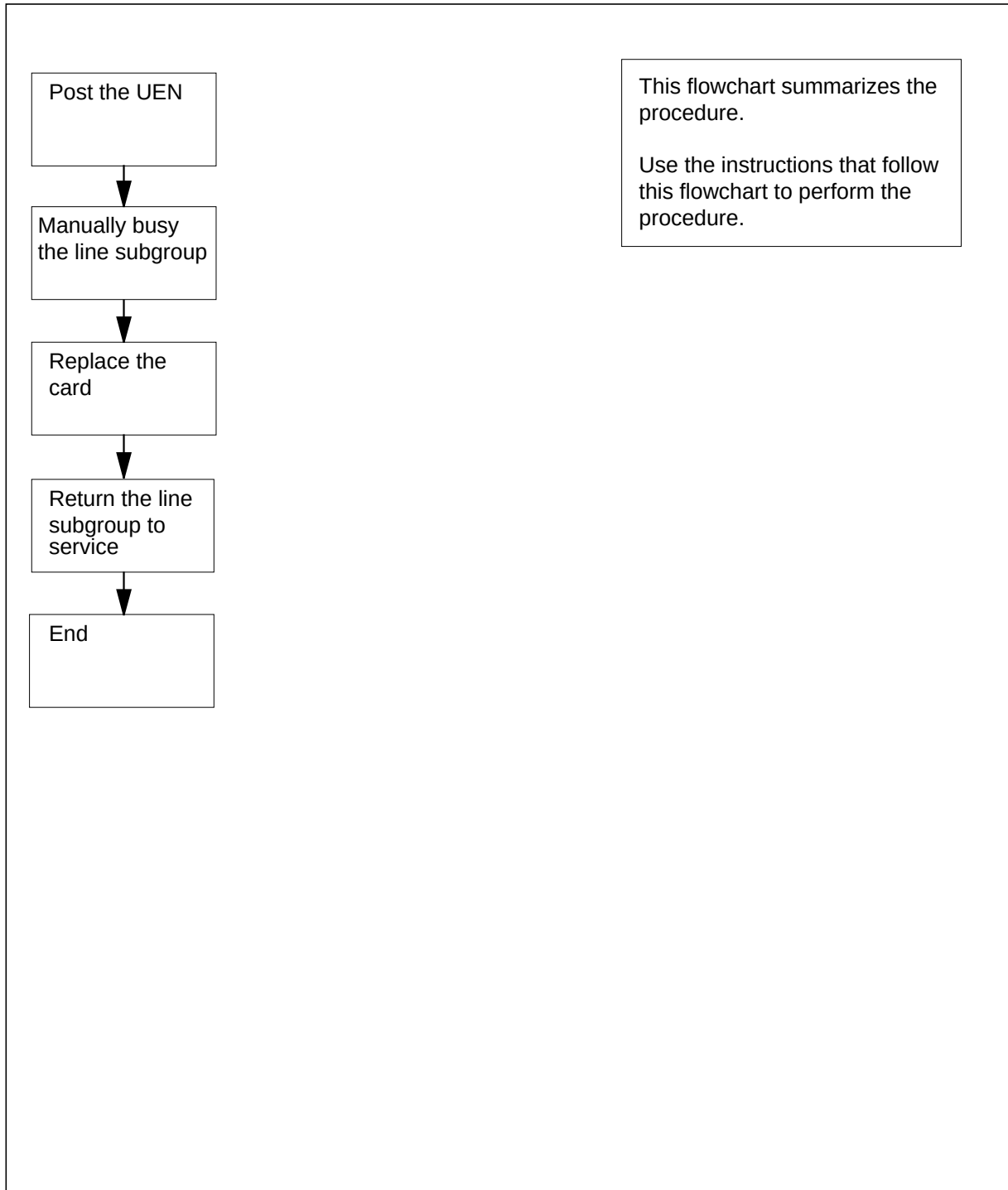
A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance 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:*

|    |      |      |      |      |      |      |
|----|------|------|------|------|------|------|
| PM | SysB | ManB | OffL | CBsy | ISTb | InSv |
|    | 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

LSG:   01  23  45  67  89  11  11  11
      ..  --  --  --  ..  ..  --  --

```



## 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.
- | <b>If a maintenance procedure</b>    | <b>Do</b> |
|--------------------------------------|-----------|
| 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.

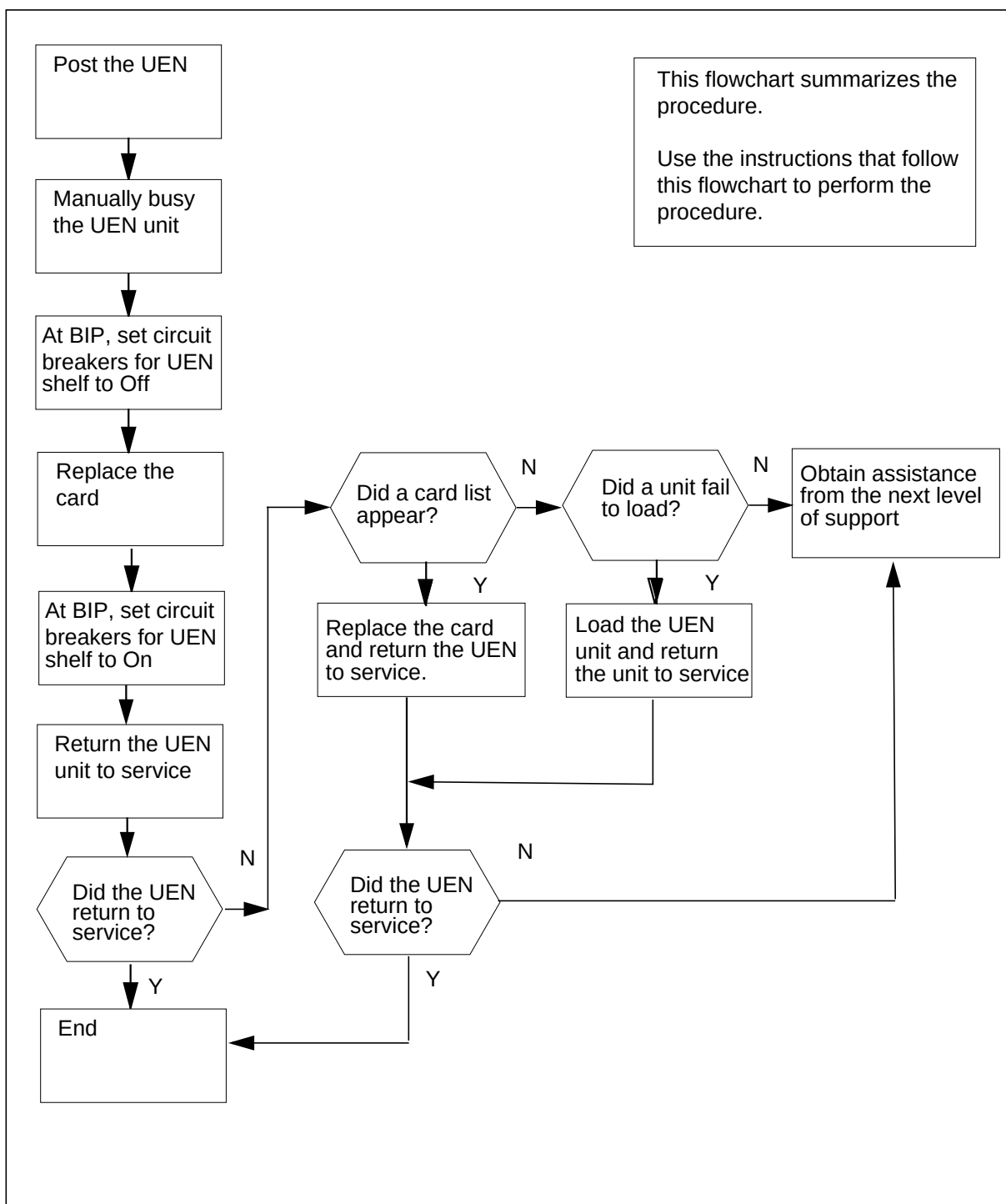
A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance 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:*

|    |      |      |      |      |      |      |
|----|------|------|------|------|------|------|
| PM | SysB | ManB | OffL | CBsy | ISTb | InSv |
|    | 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 00S: Cside 0 Pside 0
Unit 0: ISTb
Unit 1: ISTb

LSG:    01  23  45  67  89  11  11  11
        ..  --  --  --  ..  ..  --  --

```

- 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 00S: Cside 0 Pside 0
Unit0: ManB
Unit1: ManB

LSG:    01  23  45  67  89  11  11  11
        ..  ..  ..  --  ..  ..  --  --

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)

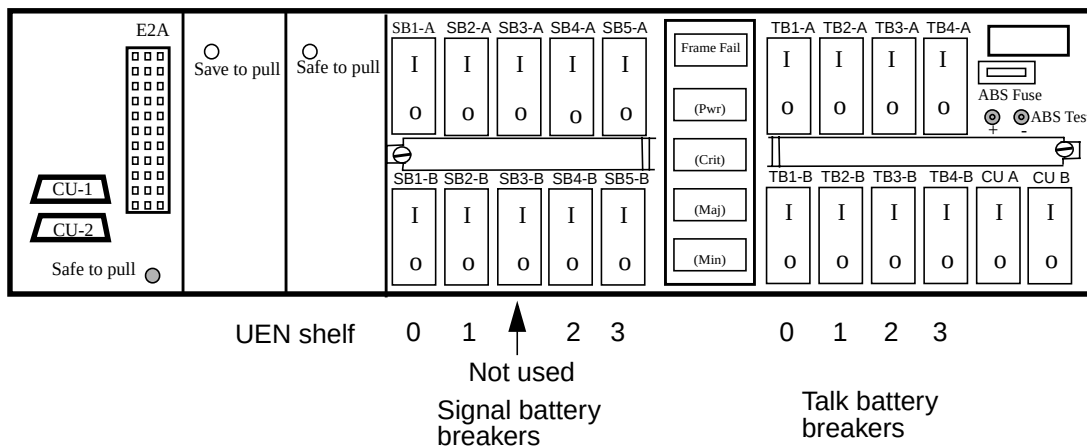
### At the equipment frame

- 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.

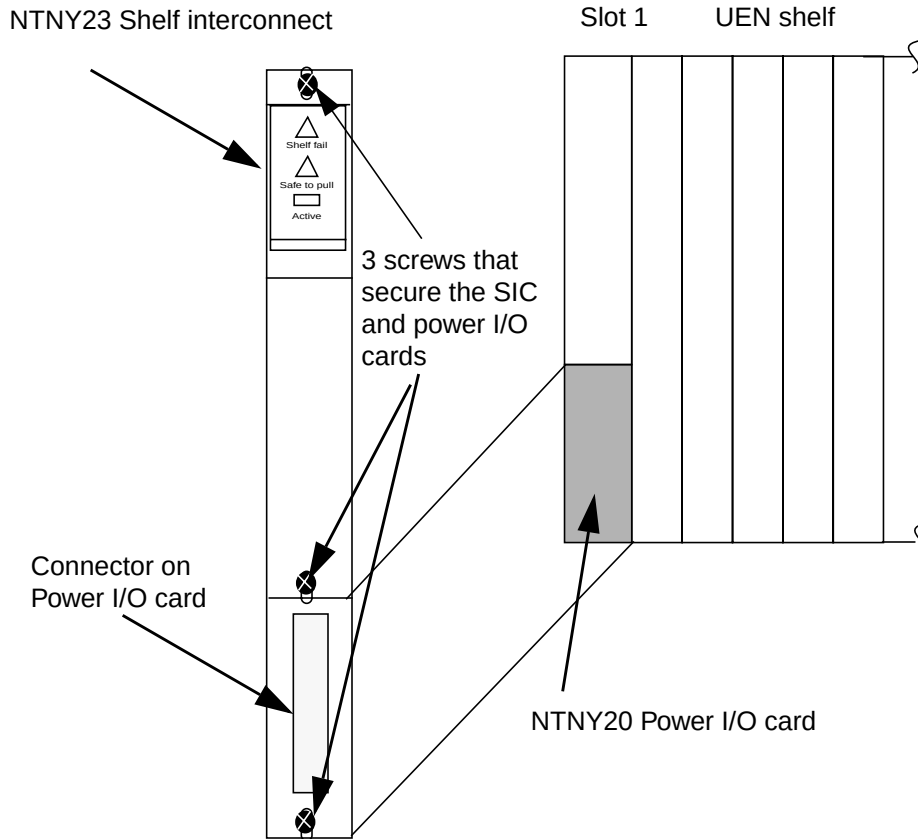
### Breaker interface panel



- 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. Replace 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.

---

## 6 XPM card replacement procedures

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### 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.

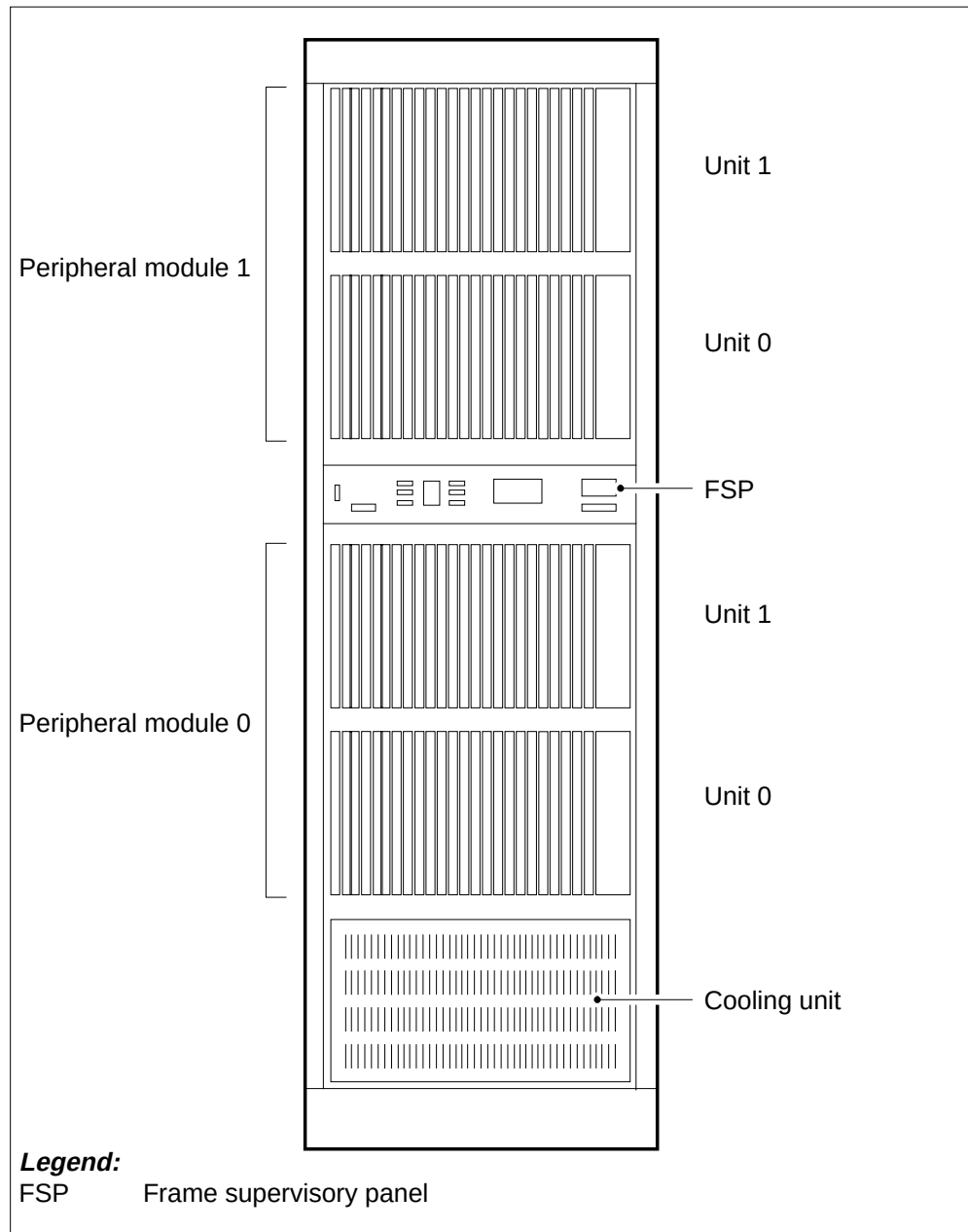
**Note 2:** PCM30 variants are also known as “offshore” and designated by the suffix “O” (DTCO, LGCO, and LTCO).

**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



**XPM shelf layouts** (continued)**Shelf layout for DTC with the unified processor (XPM plus)**

| <i>Paddle boards</i>                                                                            |                           | <i>Cards</i>                                                                                       |     |
|-------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------|-----|
| 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                                                                                             |                           | NT6X62 Specialized tone receiver card*                                                             | 17F |
| 16R                                                                                             |                           | NT6X92 Universal tone receiver card*                                                               | 16F |
| 15R                                                                                             |                           | NT6X92 Universal tone receiver card*                                                               | 15F |
| 14R                                                                                             |                           | NT6X44 Time switch card                                                                            | 14F |
| 13R                                                                                             |                           | NT6X70 Continuity tone detector 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                                                                                             |                           | NT0X50 Filler faceplate                                                                            | 07F |
| 06R                                                                                             |                           | NT0X50 Filler faceplate                                                                            | 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 |
|  <i>Rear</i> |                           | <i>Front</i>  |     |

**Note:** The NT6X40AA is in slots 22F and 23F for the “AA” version only. Subsequent versions are in slot 22F. Fiberized versions are provisioned as 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)**

| <i>Paddle boards</i> |                           | <i>Cards</i>                            |     |
|----------------------|---------------------------|-----------------------------------------|-----|
| 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**

| 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           | NT6X12      CPC PB | NT6X42 | Channel supervision message card | 20F |
| 19R           |                    | NT0X50 | Filler faceplate                 | 19F |
| 18R           |                    | NT6X69 | Message protocol and Tone card   | 18F |
| 17R           |                    | NT6X62 | Specialized tone receiver card*  | 17F |
| 16R           |                    | NT6X92 | Universal tone receiver card*    | 16F |
| 15R           |                    | NT6X92 | Universal tone receiver card*    | 15F |
| 14R           |                    | NT6X44 | Time switch card                 | 14F |
| 13R           |                    | NT6X70 | Continuity tone detector card*   | 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           |                    | NT0X50 | Filler faceplate                 | 07F |
| 06R           |                    | NT0X50 | Filler faceplate                 | 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 LGC**

| 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           | NT6X12    CPC PB | NT6X42 | Channel supervision message card | 20F |
| 19R           |                  | 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           |                  | 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           |                  | 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 LTC

| <i>Paddle boards</i> |               | <i>Cards</i>                            |     |
|----------------------|---------------|-----------------------------------------|-----|
| 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                  | NT6X12 CPC PB | NT6X42 Channel supervision message card | 20F |
| 19R                  |               | NT6X79 Tone generator card*             | 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                  |               | 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                  |               | 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 ISDN XPMs (DTCI, LGCI, and LTCI) with unified processor**

| 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           |                           | NTBX01 | ISDN signaling preprocessor card | 16F |
| 15R           |                           | NT6X92 | Universal tone receiver card     | 15F |
| 14R           |                           | NT6X44 | Time switch card                 | 14F |
| 13R           |                           | NT0X50 | Filler faceplate                 | 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 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)**

| <i>Paddle boards</i> |               | <i>Cards</i>                            |     |
|----------------------|---------------|-----------------------------------------|-----|
| 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                  | NT6X12 CPC PB | NT6X42 Channel supervision message card | 20F |
| 19R                  |               | NT0X50 Filler faceplate                 | 19F |
| 18R                  |               | NT6X69 Message protocol and Tone card   | 18F |
| 17R                  |               | NT0X50 Filler faceplate                 | 17F |
| 16R                  |               | NTBX01 ISDN signaling preprocessor card | 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                  |               | NT0X50 Filler faceplate                 | 07F |
| 06R                  |               | NT0X50 Filler faceplate                 | 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 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)**

| <i>Paddle boards</i> |                           | NT0X50 | Filler faceplate                 | <i>Cards</i> |
|----------------------|---------------------------|--------|----------------------------------|--------------|
| 25R                  |                           | NT2X70 | Power converter card             | 25F          |
| 24R                  |                           | NT0X50 | Filler faceplate                 | 24F          |
| 23R                  |                           | NT6X40 | DS30 C-side interface card       | 23F          |
| 22R                  |                           |        |                                  | 22F          |
| 21R                  |                           | NT6X41 | Speech bus format card           | 21F          |
| 20R                  | NTMX71 XPM+ terminator 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                  |                           | 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                  |                           | 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 two-processor XPMs (IDTC, ILGC, and ILTC)**

| <i>Paddle boards</i>                                                                            |               | <i>Cards</i>                                                                                       |     |
|-------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------|-----|
|                                                                                                 |               |                                                                                                    |     |
| 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 |
|  <i>Rear</i> |               | <i>Front</i>  |     |

**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)**

| <i>Paddle boards</i> |               | <i>Cards</i>                            |     |
|----------------------|---------------|-----------------------------------------|-----|
| 25R                  |               | NT2X70 Power converter card             | 25F |
| 24R                  |               | NT0X50 Filler faceplate                 | 24F |
| 23R                  |               | NT6X40 DS30 C-side interface card       | 23F |
| 22R                  |               | NT6X41 Speech bus format card           | 22F |
| 21R                  |               | NT6X42 Channel supervision message card | 21F |
| 20R                  | NT6X12 CPC PB | NT0X50 Filler faceplate                 | 20F |
| 19R                  |               | NT6X28 Signaling interface card         | 19F |
| 18R                  |               | NT6X45 Signaling processor card         | 18F |
| 17R                  |               | NT6X46 Signaling processor memory card  | 17F |
| 16R                  |               | NT6X47 Master processor memory card     | 16F |
| 15R                  |               | NT6X47 Master processor memory card     | 15F |
| 14R                  |               | NT6X45 Master processor card            | 14F |
| 13R                  | NT6X12 CPC PB | NT6X46 Signaling processor memory card  | 13F |
| 12R                  |               | NT6X45 Signaling processor card         | 12F |
| 11R                  |               | NT6X92 Universal tone receiver card     | 11F |
| 10R                  |               | NT6X69 CPP message protocol card        | 10F |
| 09R                  |               | NT6X92 Universal tone receiver card     | 09F |
| 08R                  |               | NT0X50 Filler faceplate                 | 08F |
| 07R                  |               | NT6X44 Universal time switch card       | 07F |
| 06R                  |               | NT6X48 DS30A peripheral interface card* | 06F |
| 05R                  |               | NT6X48 DS30A peripheral 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 PCM30 XPMs (PDTC, PLGC, and PLTC) with unified processor

| <i>Paddle boards</i> |                           | <i>Cards</i>                            |     |
|----------------------|---------------------------|-----------------------------------------|-----|
| 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 formatter card        | 21F |
| 20R                  | NTMX71 XPM+ terminator PB | NT6X42 Channel supervision message card | 20F |
| 19R                  |                           | NT6X28 PCM30 signaling card             | 19F |
| 18R                  |                           | NT6X69 Message protocol and Tone card   | 18F |
| 17R                  |                           | NT0X50 Filler faceplate                 | 17F |
| 16R                  |                           | NTBX01 ISDN signaling preprocessor card | 16F |
| 15R                  |                           | NT6X92 Universal tone receiver card     | 15F |
| 14R                  |                           | NT6X44 Time switch card                 | 14F |
| 13R                  |                           | NT0X50 Filler faceplate                 | 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                  |                           | 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 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+)**

| <i>Paddle boards</i>                                                                            |                               | <i>Cards</i>                                                                                       |     |
|-------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------|-----|
| 25R                                                                                             |                               | NT2X70 Power converter card                                                                        | 25F |
| 24R                                                                                             |                               | NT0X50 Filler faceplate                                                                            | 24F |
| 23R                                                                                             | NT6X40 DS30 C-side interface  | NT6X40 DS30 C-side interface card                                                                  | 23F |
| 22R                                                                                             |                               | NT6X41 Speech bus formatter card                                                                   | 22F |
| 21R                                                                                             |                               | NT6X42 Channel supervision message card                                                            | 21F |
| 20R                                                                                             | NTMX71 XPM+ terminator PB     | NT0X50 Filler faceplate                                                                            | 20F |
| 19R                                                                                             | NTCX50 Echo canceller control | NT6X28 PCM30 signaling card                                                                        | 19F |
| 18R                                                                                             |                               | NT0X50 Filler faceplate                                                                            | 18F |
| 17R                                                                                             |                               | NT7X80 Bus shorter card                                                                            | 17F |
| 16R                                                                                             |                               | NT0X50 Filler faceplate                                                                            | 16F |
| 15R                                                                                             |                               | NT0X50 Filler faceplate                                                                            | 15F |
| 14R                                                                                             |                               | NT0X50 Filler faceplate                                                                            | 14F |
| 13R                                                                                             |                               | NT7X80 Bus shorter card                                                                            | 13F |
| 12R                                                                                             |                               | NTMX77AA Unified processor card                                                                    | 12F |
| 11R                                                                                             |                               | NT6X62 Specialized tone receiver                                                                   | 11F |
| 10R                                                                                             |                               | NT6X69 Message protocol and Tone card                                                              | 10F |
| 09R                                                                                             |                               | NT6X92 Universal tone receiver                                                                     | 09F |
| 08R                                                                                             | NTMX71 XPM+ terminator PB     | NT6X92 Universal tone receiver card                                                                | 08F |
| 07R                                                                                             |                               | NT6X44 Time switch card                                                                            | 07F |
| 06R                                                                                             |                               | NT6X48 DS30A peripheral interface card                                                             | 06F |
| 05R                                                                                             |                               | NT6X48 DS30A peripheral 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 |
|  <i>Rear</i> |                               | <i>Front</i>  |     |

## XPM shelf layouts (end)

### Shelf layout for PCM30 two-processor XPMs (PDTC, PLGC, and PLTC)

| <i>Paddle boards</i> |               | <i>Cards</i>                            |     |
|----------------------|---------------|-----------------------------------------|-----|
| 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 formatter card        | 21F |
| 20R                  | NT6X12 CPC PB | NT6X42 Channel supervision message card | 20F |
| 19R                  |               | NT6X28 PCM30 signaling card             | 19F |
| 18R                  |               | NT6X69 Message protocol card            | 18F |
| 17R                  |               | NT0X50 Filler faceplate                 | 17F |
| 16R                  |               | NTBX01 ISDN signaling preprocessor card | 16F |
| 15R                  |               | NT6X92 Universal tone receiver card     | 15F |
| 14R                  |               | NT6X44 Time switch card                 | 14F |
| 13R                  |               | NT0X50 Filler faceplate                 | 13F |
| 12R                  |               | NT6X45 Master processor plus 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 Signaling processor plus 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:** 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)

---

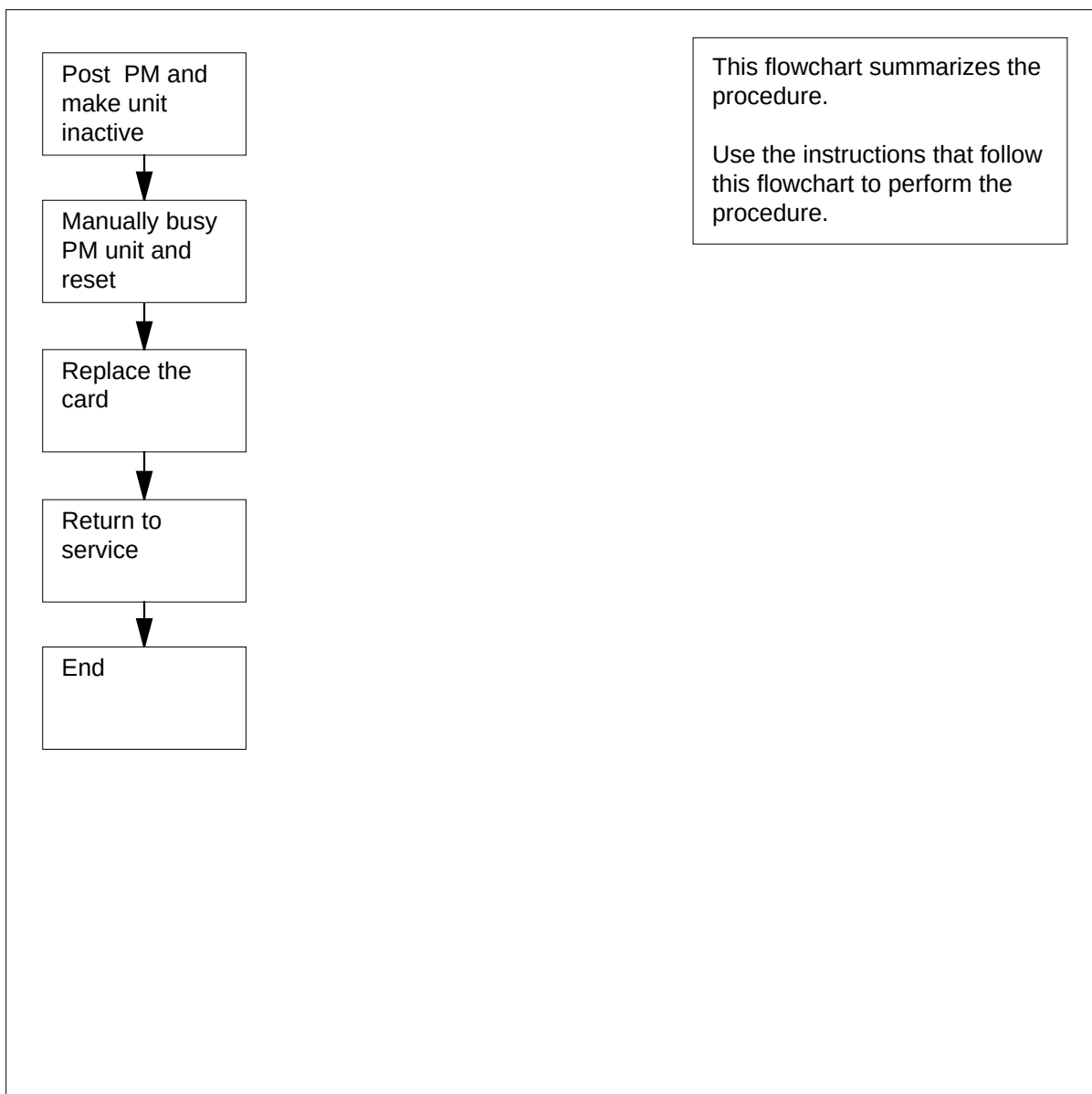
### Common procedures

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:*

|    |      |      |      |      |      |      |
|----|------|------|------|------|------|------|
| PM | SysB | ManB | OffL | CBsy | ISTb | InSv |
|    | 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:*

|     |      |      |      |      |      |      |
|-----|------|------|------|------|------|------|
| PM  | SysB | ManB | OffL | CBsy | ISTb | InSv |
| DTC | 0    | 0    | 0    | 0    | 3    | 39   |
|     | 0    | 0    | 0    | 0    | 0    | 4    |

DTC 0 InSv Links\_00S: 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:*



## Back plane cards in an XPM (continued)

```
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:

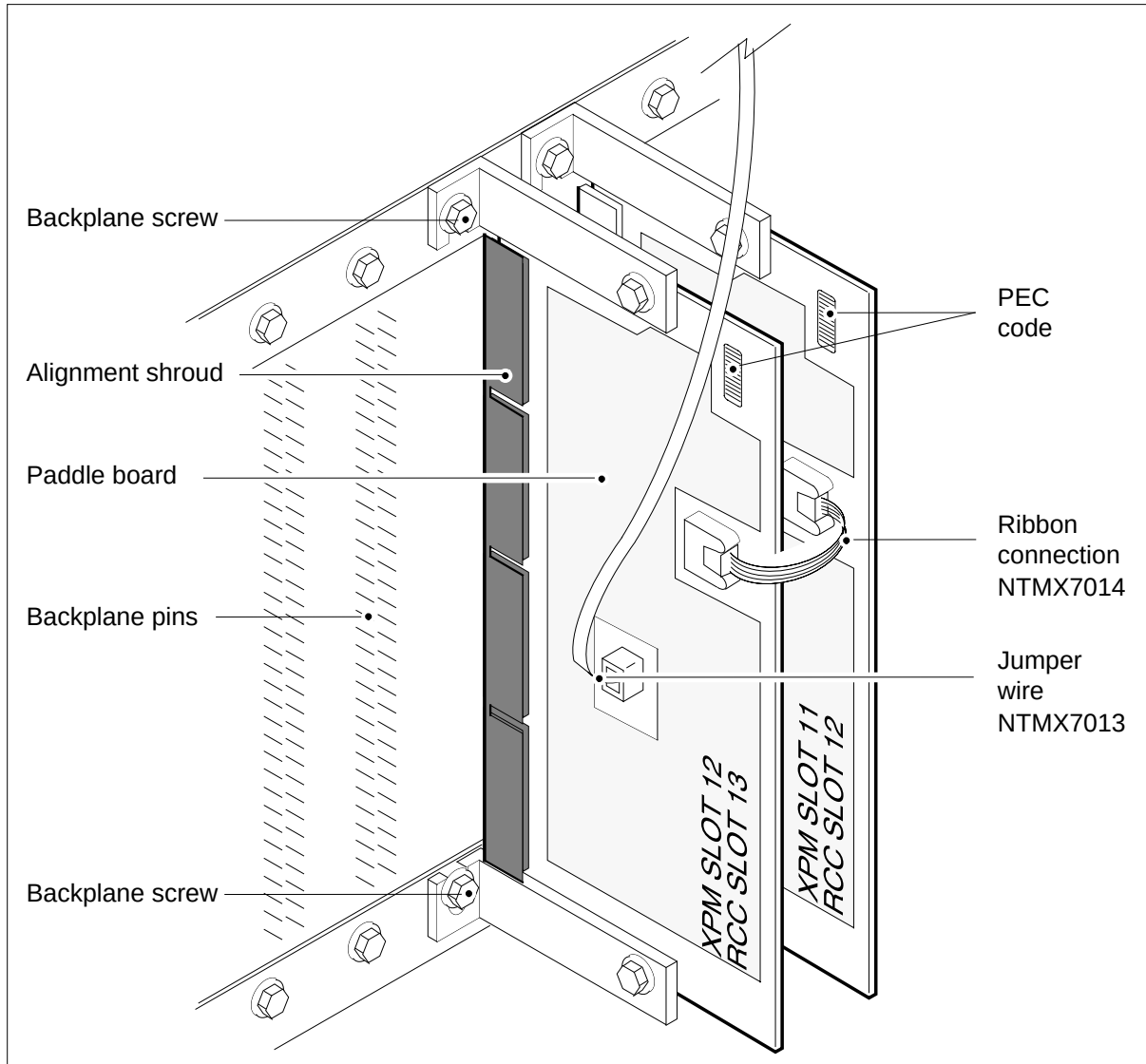
- NT6X48s in slots 6 and 7 (if provisioned)
- NT6X41 in slot 20 or 21
- NTMX77 in slot 12

### *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.

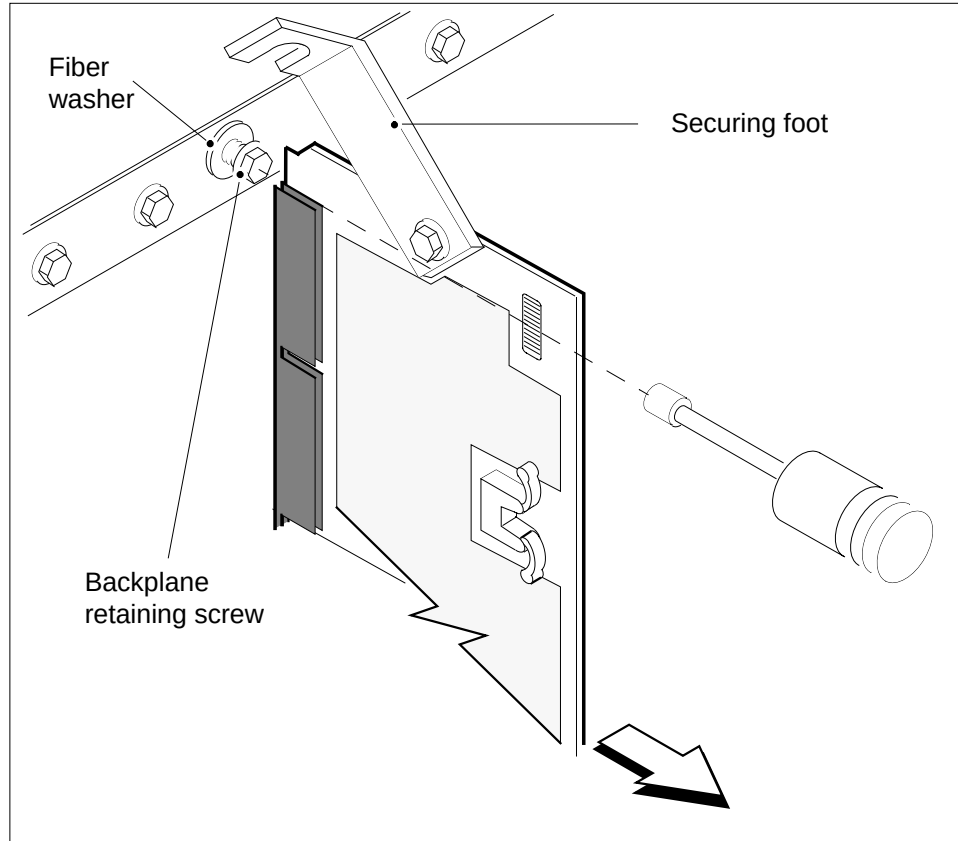
## Back plane cards in an XPM (continued)



- 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.

---

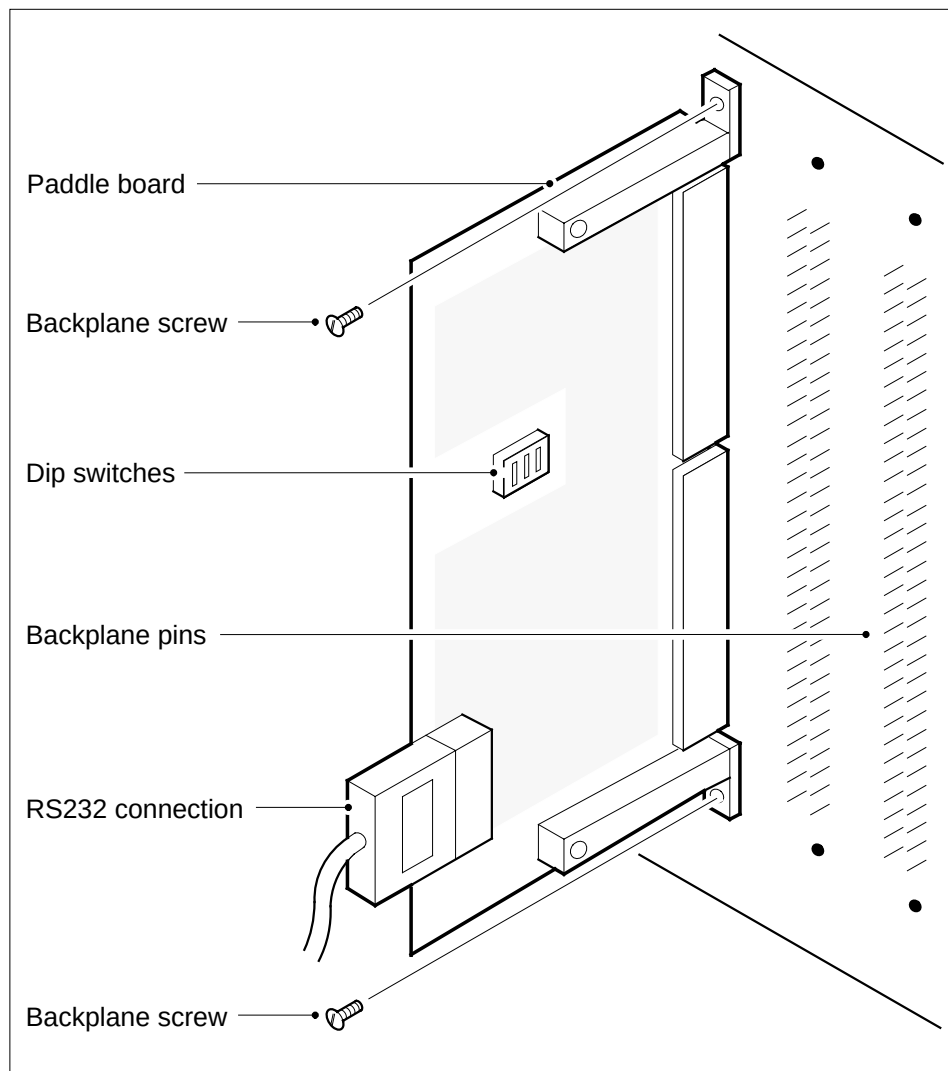
| If a maintenance procedure           | Do      |
|--------------------------------------|---------|
| directed you to this procedure       | step 37 |
| did not direct you to this procedure | step 38 |

---

- 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<br>(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                              |
|                      |                                |                                                          | <b>Note:</b> 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                                                                                                                                                                                                                                                                                    |
|        |        |                                       | <b>Note:</b> 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)**

---

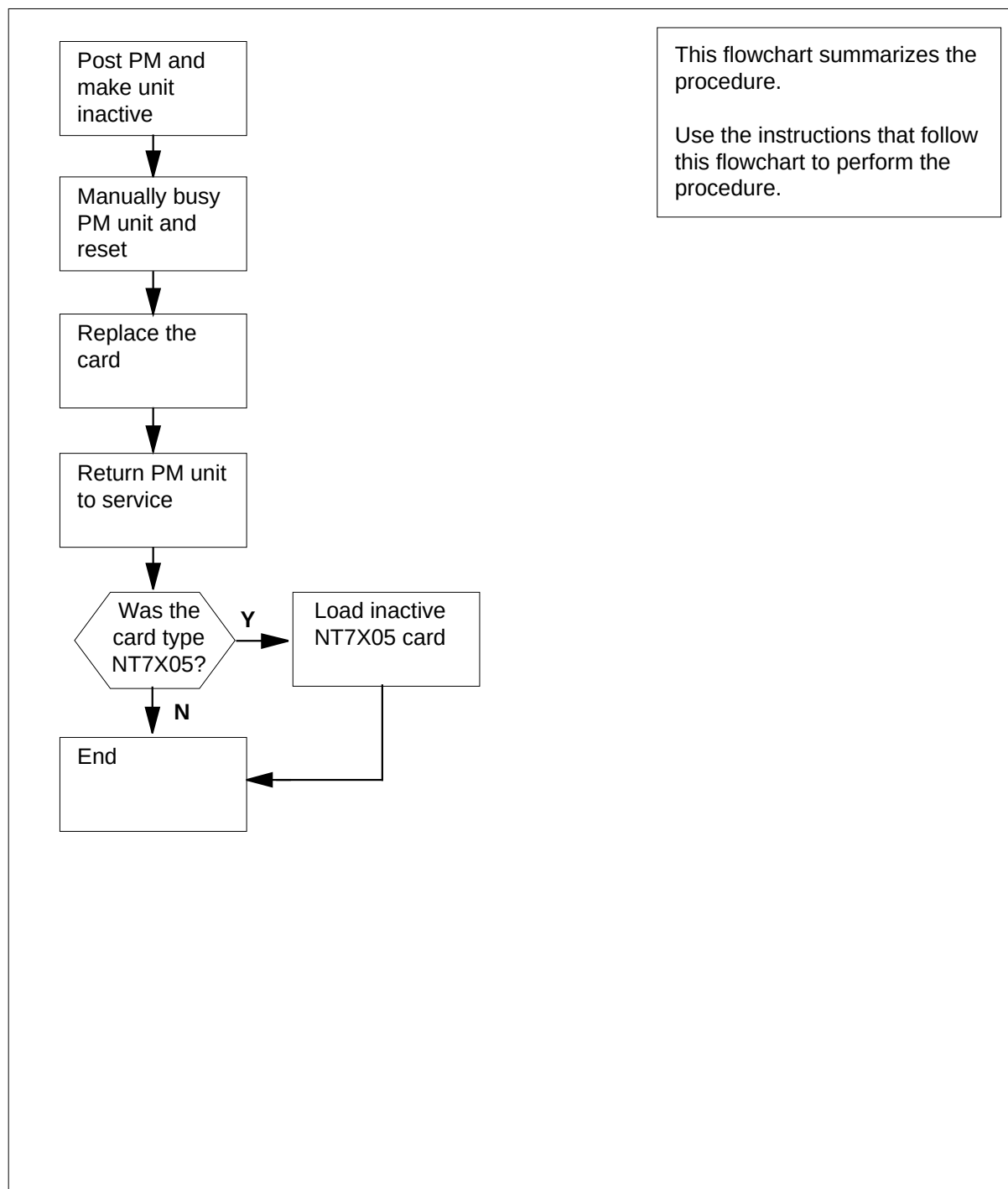
Do not go to the common procedure unless the step-action procedure directs you to go.

### **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.

| <b>If a maintenance procedure</b>    | <b>Do</b> |
|--------------------------------------|-----------|
| 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.

| <b>If the RTS command</b> | <b>Do</b> |
|---------------------------|-----------|
| passed                    | step 15   |
| failed                    | step 19   |

15 Determine if the replaced card is an NT7X05.

| <b>If card type</b>       | <b>Do</b> |
|---------------------------|-----------|
| 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”

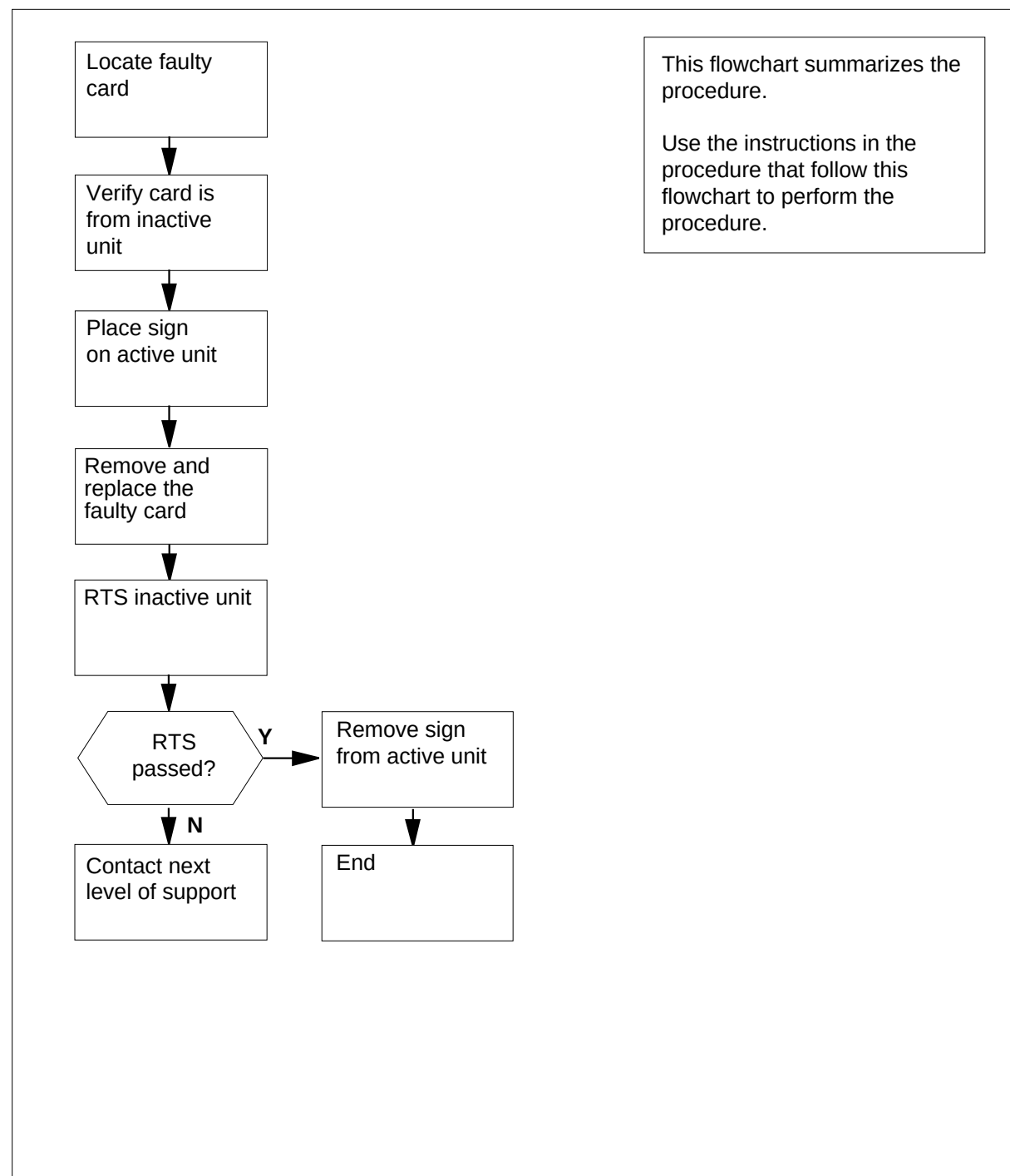
Do not go to the common procedure unless directed to do so in the step-action procedure.

**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 busy-ing 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
```

**NT2X70****in an XPM** (continued)

- 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 |

- 7 To confirm the command, type  
**>YES**  
and press the Enter key.

*Example of a MAP response:*



## NT2X70 in an XPM (continued)

```
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_00S: 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, type  
**>PMRESET UNIT unit\_no NORUN**  
and press the Enter key.  
*where*

## NT2X70

### in an XPM (continued)

**unit\_no**

is the PM unit number (0 or 1)

*Example of a MAP response:*

DTC 0 Unit 0 PMReset Passed

- 13** Manually busy all 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.

| <b>If</b>                                        | <b>Do</b> |
|--------------------------------------------------|-----------|
| the NT6X48 cards in slots 6 and 7 are equipped   | step 16   |
| the NT6X48 cards in slots 6 and 7 are unequipped | step 19   |

- 16** Determine the type of processor you are working on.

| <b>If you work on</b>                                | <b>Do</b> |
|------------------------------------------------------|-----------|
| 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.

---

**NT2X70**  
**in an XPM (continued)**

---

- 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.
- 20**

**DANGER****Equipment damage**

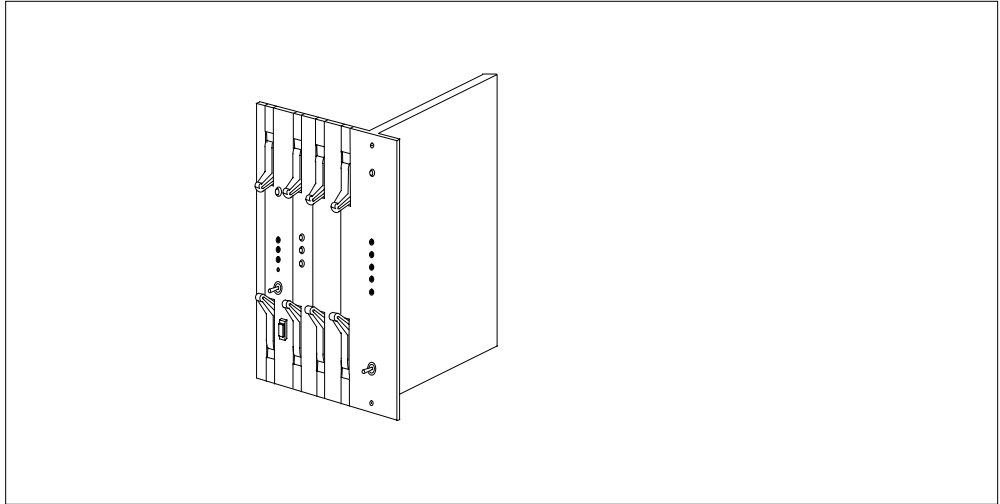
When you remove or insert a card, do not apply direct pressure to the components. Do not force the cards into the slots.

Remove the NT2X70 power converter card as shown in the following figures.

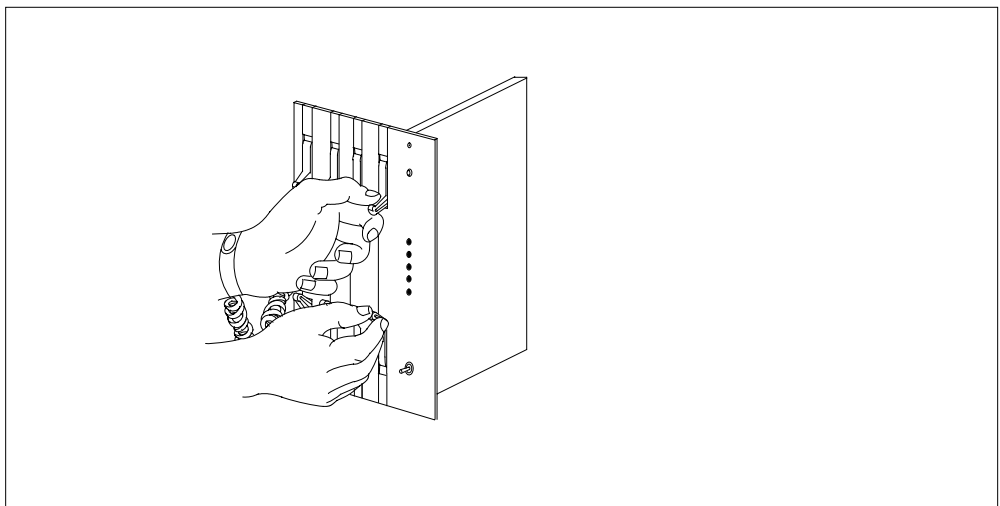
- a Locate the card to be removed on the appropriate shelf.

## NT2X70 in an XPM (continued)

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- b** If the card has an ENBL/DSBL switch, operate the switch to the DSBL position.
- c** Grasp the top and the bottom latch assemblies.

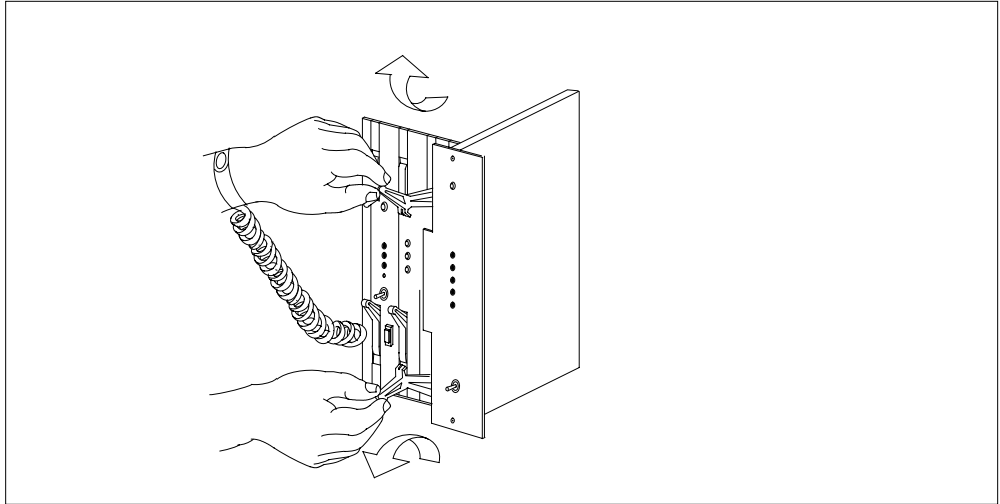


- d** Rotate the top latch up and the bottom latch down until the latches are in the horizontal position at the same time. This action will move the card 1/2 inch from the shelf backplane.

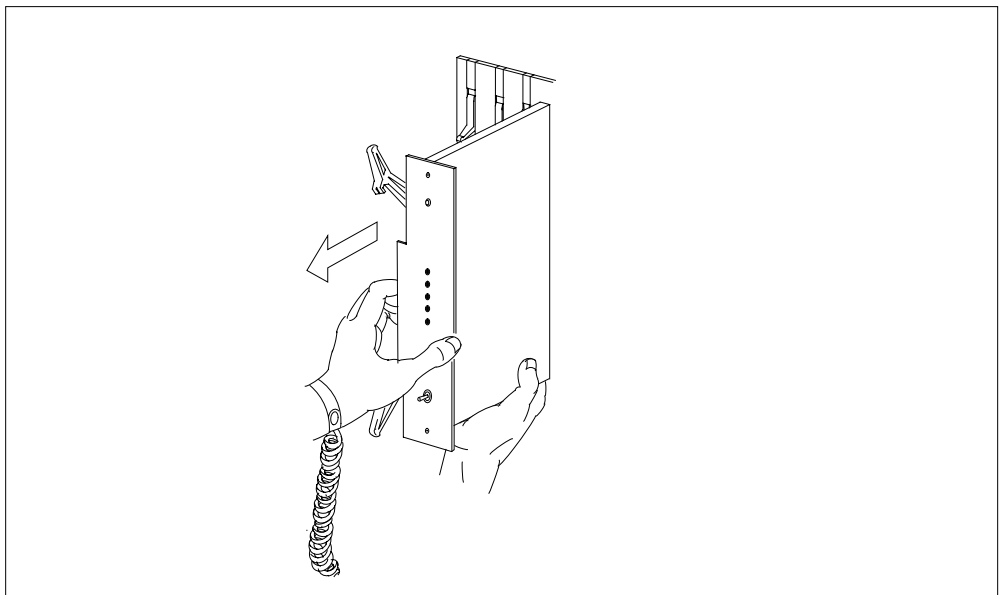
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**NT2X70**  
**in an XPM** (continued)

---



- 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.

## NT2X70 in an XPM (continued)

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21



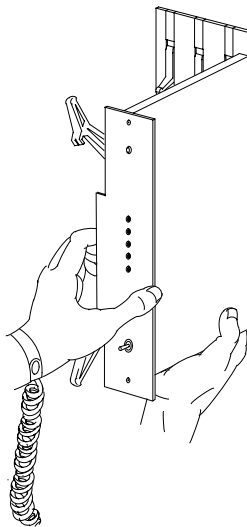
### **DANGER**

#### **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.
- c** Place the back edge of the card into the upper and lower guides of the desired slot position on the shelf.

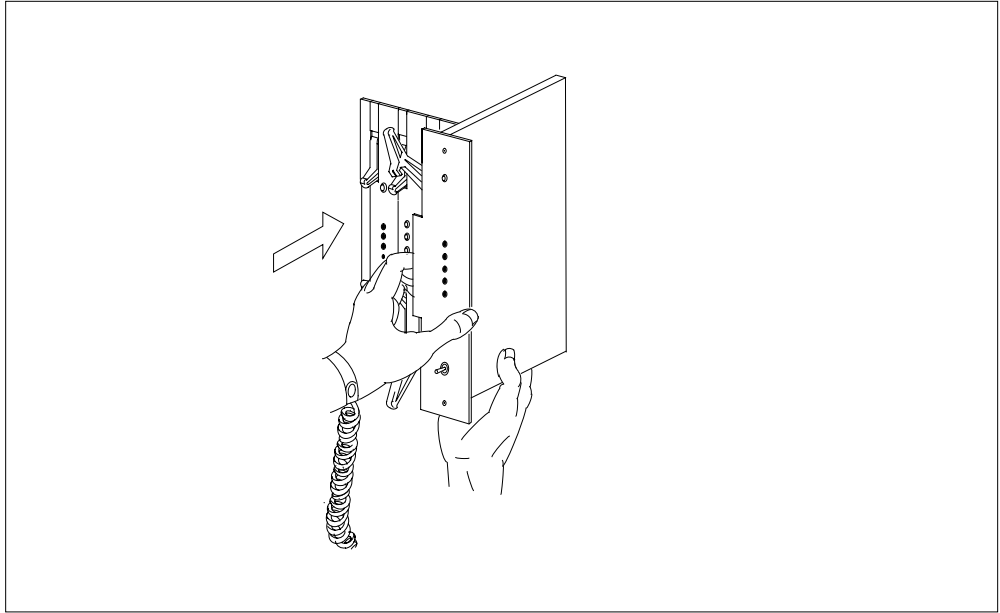


- d** Gently slide the card into the shelf.

---

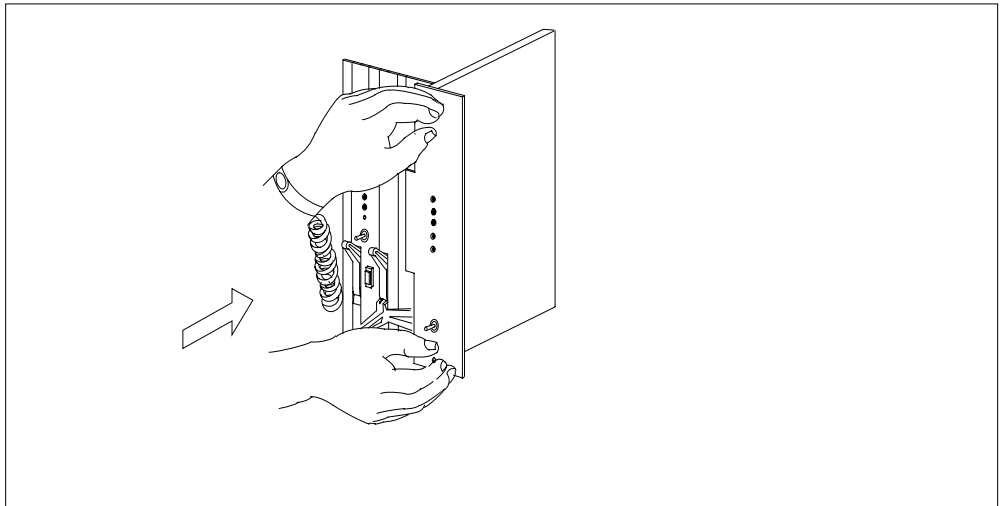
**NT2X70**  
**in an XPM (continued)**

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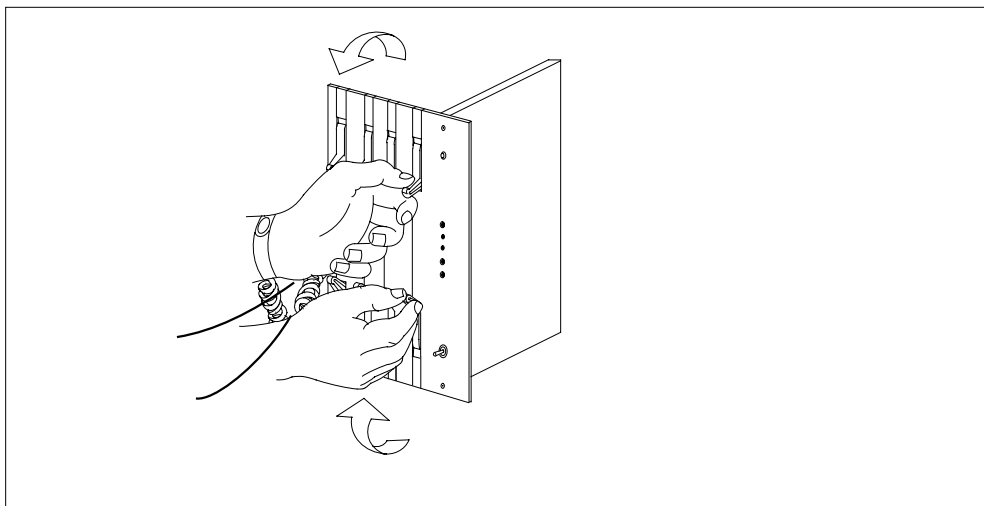
**22** Seat and lock the card.

- 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.

## NT2X70 in an XPM (continued)



- c** If the card has an ENBL/DSBL switch, operate the switch to the ENBL position.

- 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.



## NT2X70 in an XPM (continued)

- 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.
- 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.

**NT2X70****in an XPM** (continued)

- 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.
- 31** Check if you unseated the NT6X48 cards.

| <b>If</b>                                      | <b>Do</b> |
|------------------------------------------------|-----------|
| 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.

| <b>If the type of network in the office</b> | <b>Do</b> |
|---------------------------------------------|-----------|
| 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)

| <b>If the link</b>                                             | <b>Do</b> |
|----------------------------------------------------------------|-----------|
| 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   |

## NT2X70 in an XPM (continued)

|                                                                                                                                 | If the link                                                                                                                                                                                                                                                                                                           | Do      |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                                                                                                                                 | did not return to service                                                                                                                                                                                                                                                                                             | step 44 |
| 35                                                                                                                              | Repeat step 34 for all C-side links to the shelf on which you work.                                                                                                                                                                                                                                                   |         |
| 36                                                                                                                              | To return the link to service, type<br><b>&gt;RTS plane_no LINK link_no</b><br>and press the Enter key.<br><i>where</i><br><b>plane_no</b><br>is the number of the plane (0 or 1) for the link<br><b>link_no</b><br>is the link number (0 to 18 for DS512) or (0 to 15 for DS30)<br><i>Example of a MAP response:</i> |         |
| Request to RTS ENET Plane:0 Shelf:00 Slot:32 Link:01 submitted.<br>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<br><b>&gt;PM;POST pm_type pm_no</b><br>and press the Enter key.<br><i>where</i><br><b>pm_type</b><br>is the PM type (for example DTC, ILGC, LTCL, PDTC, etc.)<br><b>pm_no</b><br>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.                                                                                                                                                                                                                         |         |
| 40                                                                                                                              | To load the inactive unit, type<br><b>&gt;LOADPM INACTIVE</b>                                                                                                                                                                                                                                                         |         |

## NT2X70 in an XPM (end)

---

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.

## 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,<br>AC, AD,<br>BA, | DS-30 C-side interface<br>card | digital trunk controller (DTC),<br>international DTC (IDTC),<br>international line group<br>controller (ILGC),<br>international line trunk<br>controller (ILTC), ISDN DTC<br>(DTCI), ISDN line group<br>controller (LGCI), ISDN line<br>trunk controller (LTCI), line<br>group controller (LGC), line<br>trunk controller (LTC), digital<br>trunk controller offshore<br>(DTCO), line group controller<br>offshore (LGCO), line trunk<br>controller offshore (LTCO),<br>PCM30 DTC (PDTC), PCM30<br>LGC (PLGC), PCM30 LTC<br>(PLTC), global peripheral<br>platform (GPP) |

## NT6X40 in an XPM (continued)

(Sheet 2 of 2)

| PEC    | Suffix        | Card name                       | Shelf or frame name                                                             |
|--------|---------------|---------------------------------|---------------------------------------------------------------------------------|
| NT6X40 | FA, FB,<br>FC | XPM DS-512 link control<br>card | DTC, DTCI, IDTC, ILGC,<br>ILTC, LGC, LGCI, LTC, LTCI,<br>PDTTC, PLGC, PLTC, GPP |
| NT6X40 | DA, GA        | DS-512 link paddle<br>board     | DTC, DTCI, IDTC, ILGC,<br>ILTC, LGC, LGCI, LTC, LTCI,<br>PDTTC, 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*

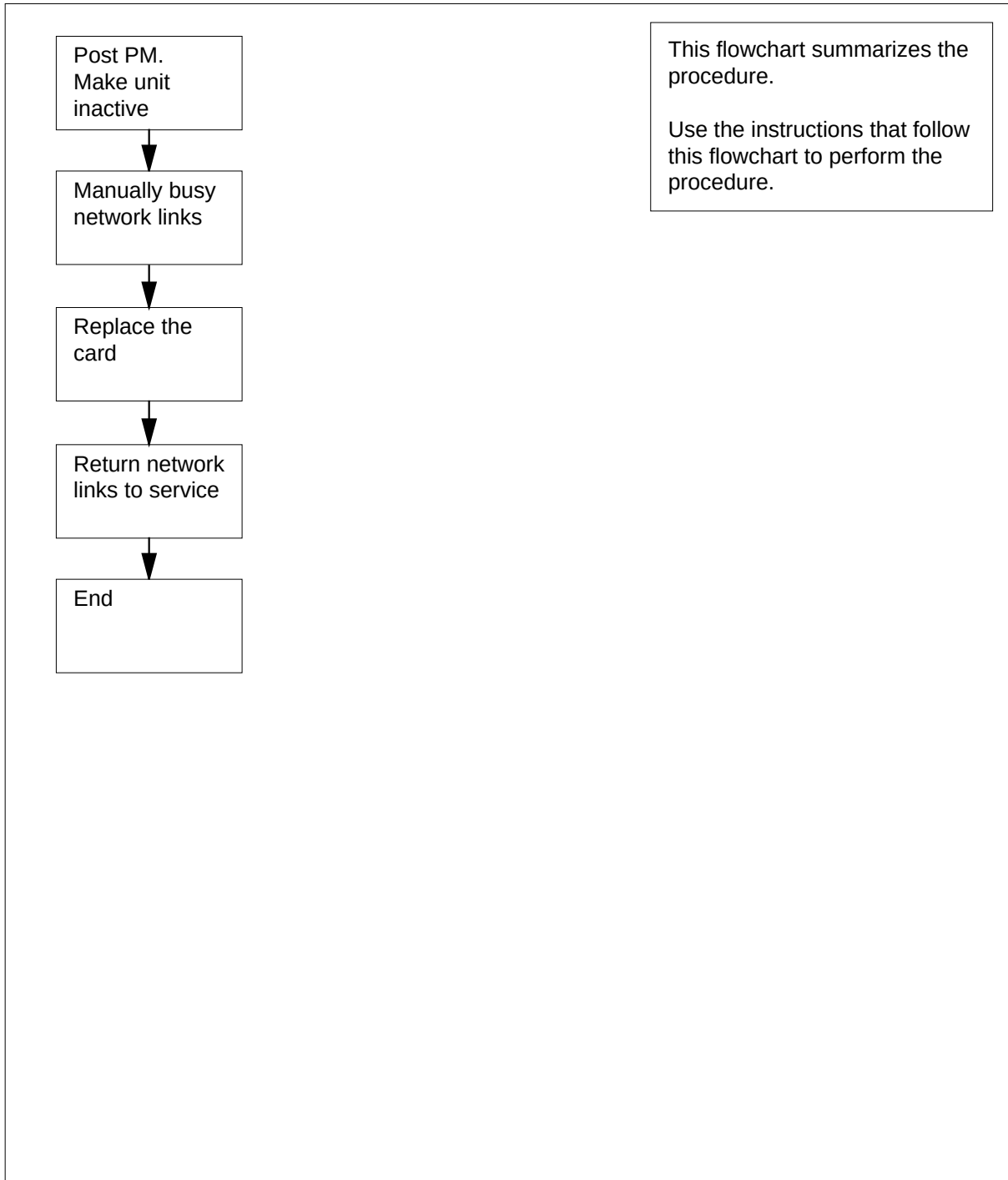
Do not go to a common procedure unless the step-action procedure directs you to go.

### 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 becomes 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:*



## NT6X40 in an XPM (continued)

|    |      |      |      |      |      |      |
|----|------|------|------|------|------|------|
|    | 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-<br>sy, and active | step 7 |

**NT6X40****in an XPM** (continued)

|          | <b>If the state of the PM unit</b>                                                                                                                                                                                                                  | <b>Do</b> |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|          | 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   |
| <b>7</b> | From the MAP display, determine the state of the mate PM unit.                                                                                                                                                                                      |           |
|          | <b>If the state of the mate PM unit</b>                                                                                                                                                                                                             | <b>Do</b> |
|          | is ISTb or InSv                                                                                                                                                                                                                                     | step 8    |
|          | is other than listed here                                                                                                                                                                                                                           | step 37   |
| <b>8</b> | To switch activity, type<br><b>&gt;SWACT</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>DTC 0 A Warm SwAct will be performed after<br>data sync of active terminals.<br><br>Please confirm ("YES", "Y", "NO", or "N"): |           |
|          | <b>If</b>                                                                                                                                                                                                                                           | <b>Do</b> |
|          | you must confirm the command                                                                                                                                                                                                                        | step 9    |
|          | the system rejects the SWACT                                                                                                                                                                                                                        | step 36   |
| <b>9</b> | To confirm the command, type<br><b>&gt;YES</b><br>and press the Enter key.<br><i>Example of a MAP response:</i>                                                                                                                                     |           |

## NT6X40 in an XPM (continued)

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.



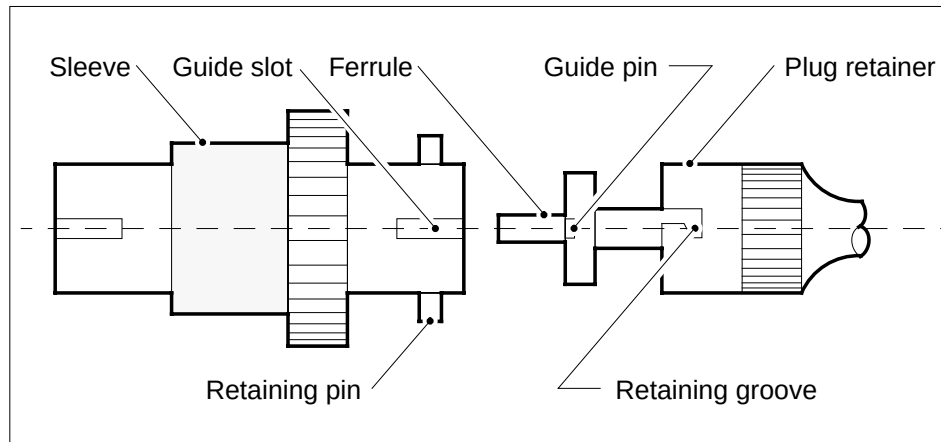
**DANGER**

**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.

**NT6X40**  
**in an XPM (continued)****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:

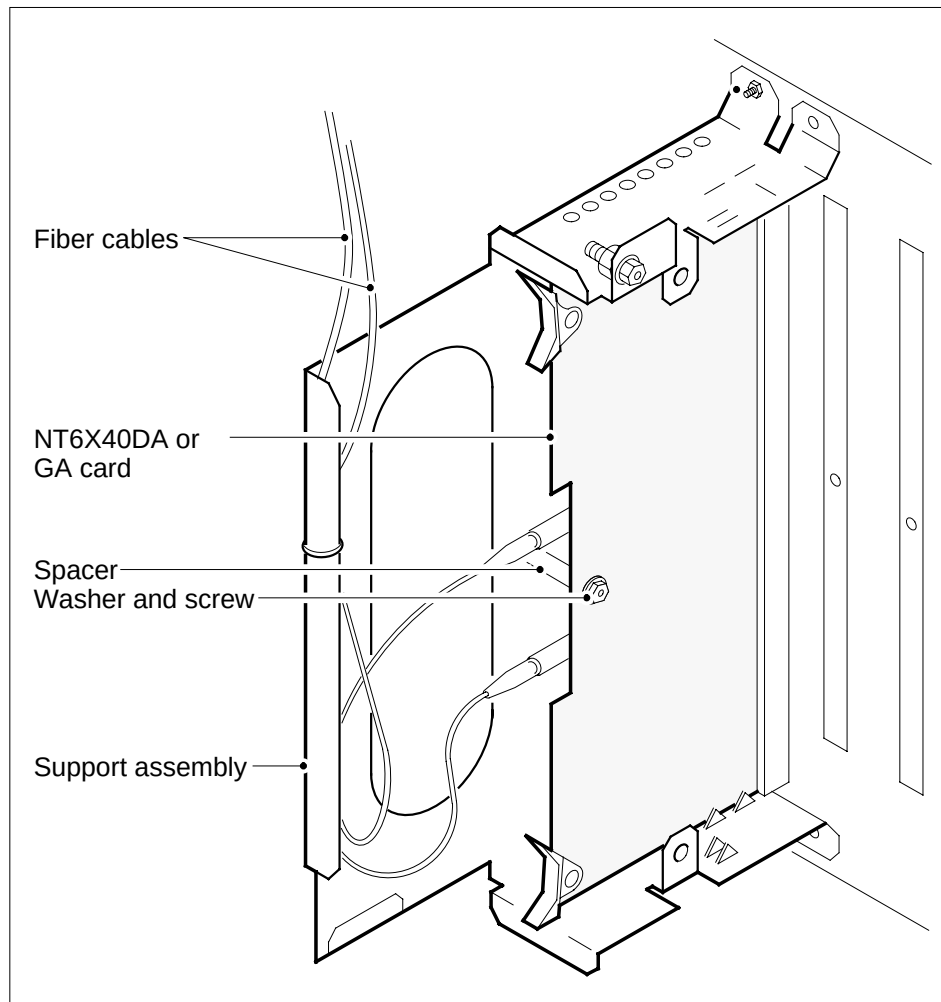
- Wrap electrical tape around a group of pins. Do not bend the pins.
- Cover the pins with NOMEX paper.

**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.

## NT6X40 in an XPM (continued)

- 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:*



## NT6X40 in an XPM (end)

```

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

```

|           | <b>If the inactive unit status</b>                                                                                                                                                                                                                          | <b>Do</b> |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | is InSv                                                                                                                                                                                                                                                     | step 33   |
|           | is other than listed here                                                                                                                                                                                                                                   | step 37   |
| <b>33</b> | Determine if a maintenance procedure directed you to this procedure.                                                                                                                                                                                        |           |
|           | <b>If a maintenance procedure</b>                                                                                                                                                                                                                           | <b>Do</b> |
|           | directed you to this procedure                                                                                                                                                                                                                              | step 34   |
|           | did not direct you to this procedure                                                                                                                                                                                                                        | step 38   |
| <b>34</b> | Return to the maintenance procedure that sent you to this procedure and continue as directed.                                                                                                                                                               |           |
| <b>35</b> | Consult operating company personnel to determine why the component is offline. Continue as directed by operating company personnel.                                                                                                                         |           |
| <b>36</b> | For additional help with switch of activity, contact the next level of support.<br><b>Note:</b> 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. |           |
| <b>37</b> | For additional help, contact the next level of support.                                                                                                                                                                                                     |           |
| <b>38</b> | To return the card for repair or replacement, perform the appropriate procedure in Trouble Locating and Clearing Procedures.                                                                                                                                |           |
| <b>39</b> | 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.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>           |
|------------|-----------------|-----------------------|
| NT6X48     | AA              | DS-30A interface card |

### **Common Procedures**

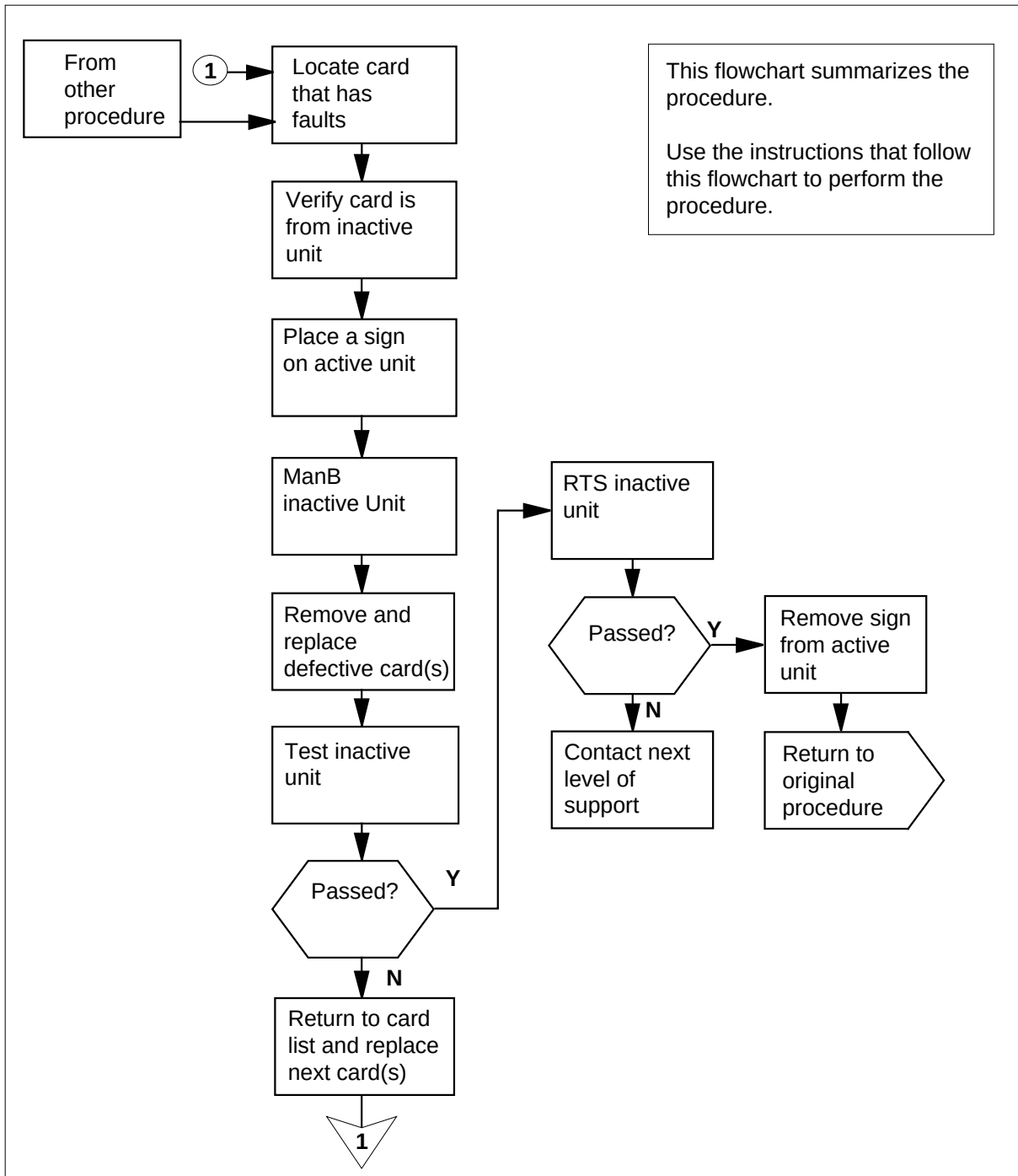
There are no common procedures.

### **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       | .     | .   | .     | .    | .    |
| <b>LGC</b> |    |        | 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

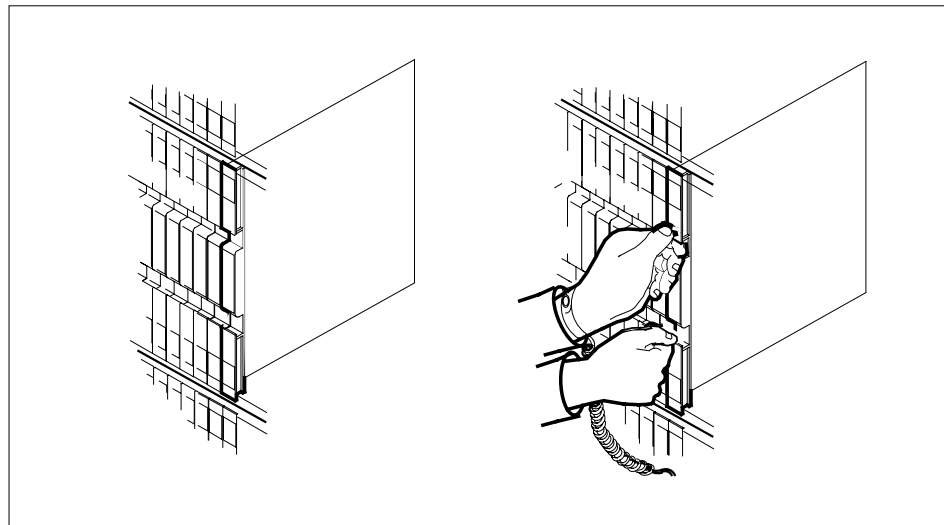
**DANGER****Equipment damage**

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.

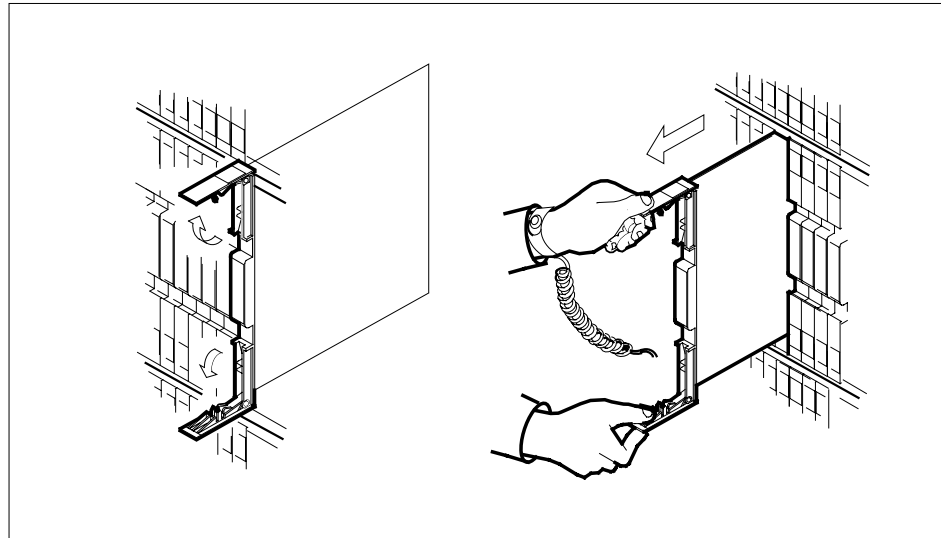
- a** Locate the card to remove on the correct shelf.



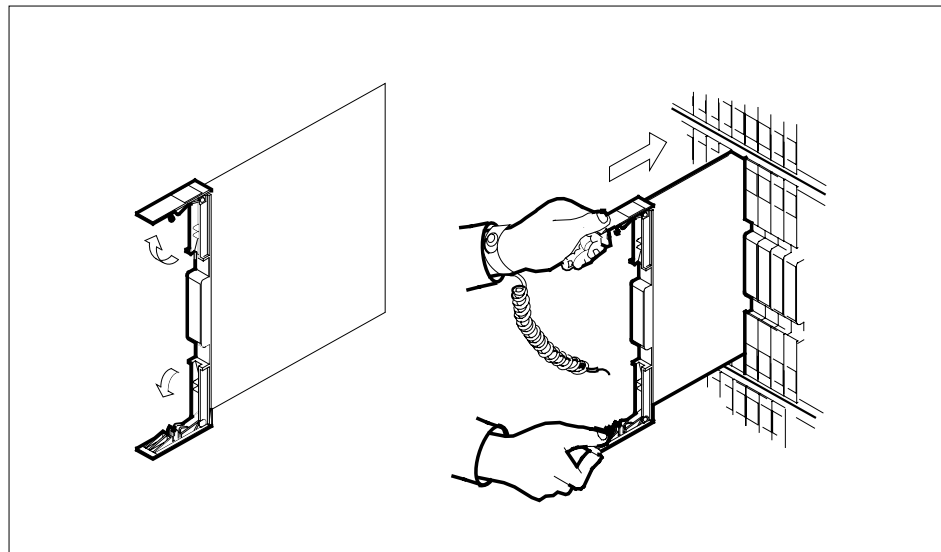
- b** Open the locking levers on the card you remove. Carefully pull the card toward you until the card clears the shelf.

## 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:

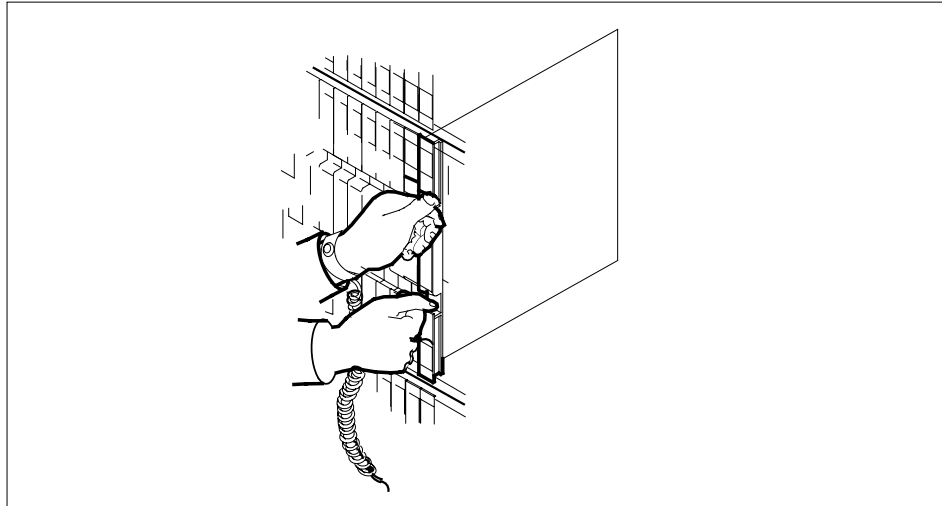
- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.



## NT6X48

### in LGC, PLGC, LTC, PLTC (continued)

- 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.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>           |
|------------|-----------------|-----------------------|
| NT6X48     | AA              | DS-30A interface card |

### **Common Procedures**

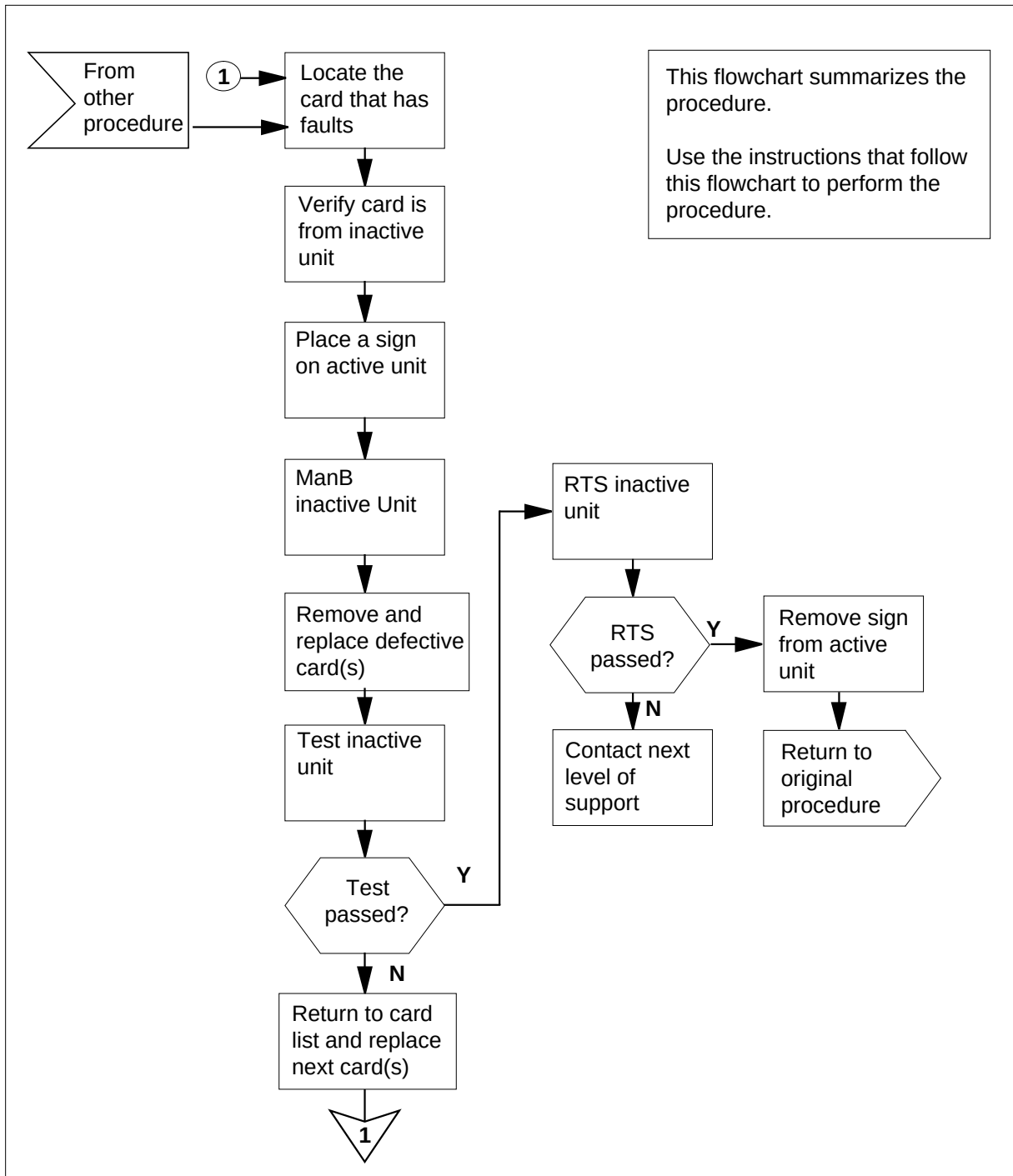
There are no common procedures.

### **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:*

## NT6X48 in MSB7 (continued)

|             | CM | MS     | IOD | Net    | PM         | CCS   | LNS      | Trks | Ext  | APPL |
|-------------|----|--------|-----|--------|------------|-------|----------|------|------|------|
|             | .  | .      | .   | .      | 1MSB7      | .     | .        | .    | .    | .    |
| <b>MSB7</b> |    |        |     | 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_00S: | 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**

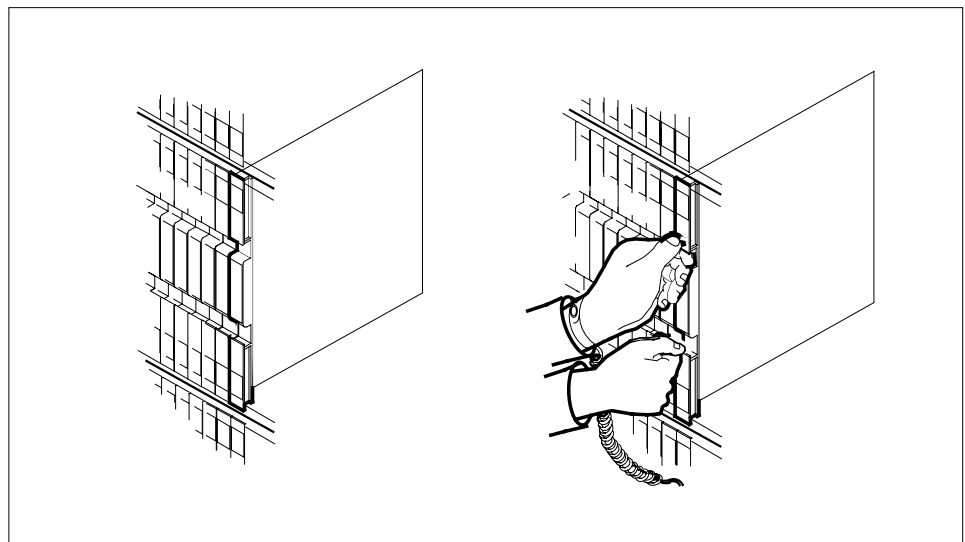
##### **Equipment damage**

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.

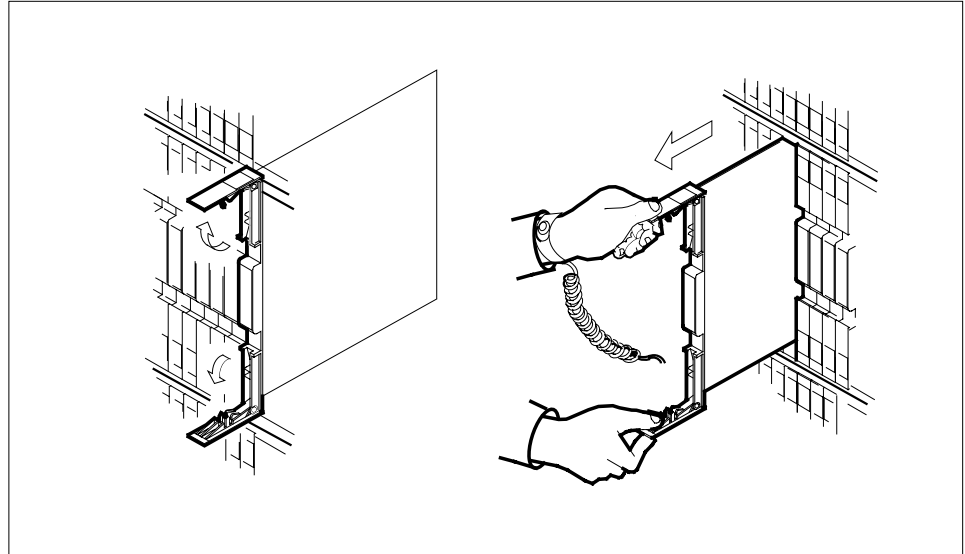
Replace the NT6X48 card according to the following figures.

- a** Locate the card that you remove on the appropriate shelf.

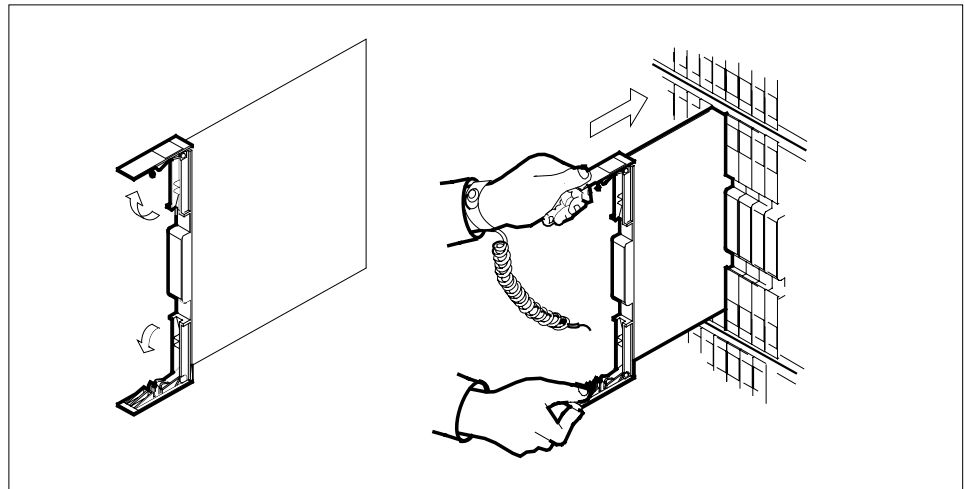


- b** Open the locking levers on the card you replace. Carefully pull the card toward you until the card clears the shelf.



**NT6X48**  
**in MSB7 (continued)**

- 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.

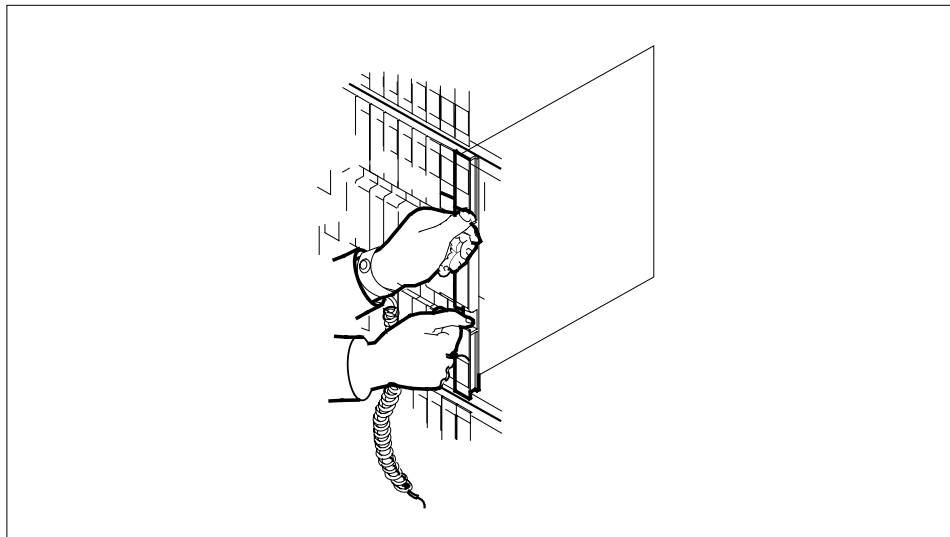


- 10** Seat and lock the card, as follows:
- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.
  - b Close the locking levers.

---

**NT6X48**  
**in MSB7** (continued)

---

***At the MAP display***

- 11** Use the following information to determine the next step in this procedure.

| <b>If you entered this procedure from</b> | <b>Do</b> |
|-------------------------------------------|-----------|
| 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

| <b>If PMRESET command</b> | <b>Do</b> |
|---------------------------|-----------|
| passed                    | step 13   |
| failed                    | step 17   |

---

## NT6X48 in MSB7 (end)

---

- 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,<br>BA | CLASS modem<br>resource (CMR) card | line group controller (LGC),<br>line trunk controller (LTC),<br>international line group<br>controller (ILGC),<br>international line trunk<br>controller (ILTC), line group<br>controller offshore (LGC0),<br>line trunk controller offshore<br>(LTC0), ISDN line group<br>controller offshore (LGC0I),<br>ISDN line trunk controller<br>offshore (LTC0I), PCM30<br>LGC (PLGC), PCM30 LTC<br>(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*

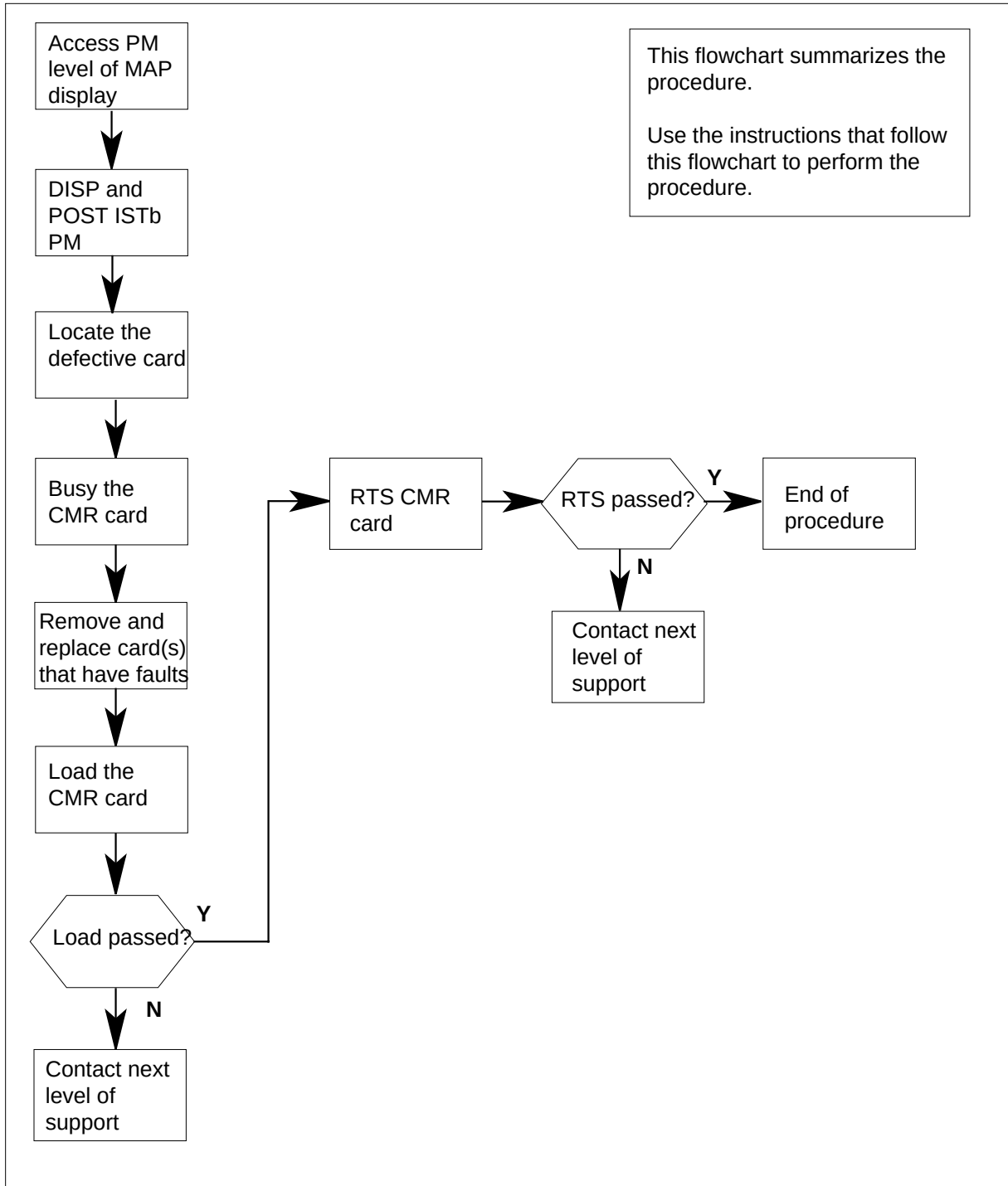
Do not go to the common procedure unless the step-action procedure directs you to go.

### 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, PDTTC.)

#### **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

## NT6X78 in an XPM (continued)

- 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.



## NT6X78 in an XPM (continued)

- 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**

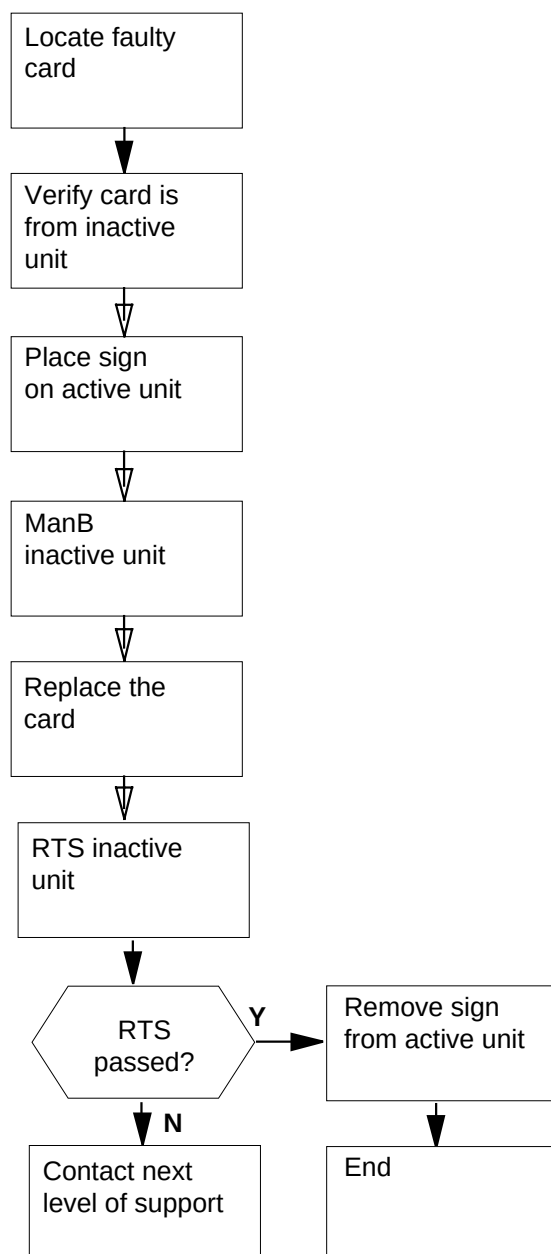
None.

**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



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.

## 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, PDTTC.)

*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\_00S: 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:*

## NT7X03 in an XPM (continued)

```
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_00S: 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.

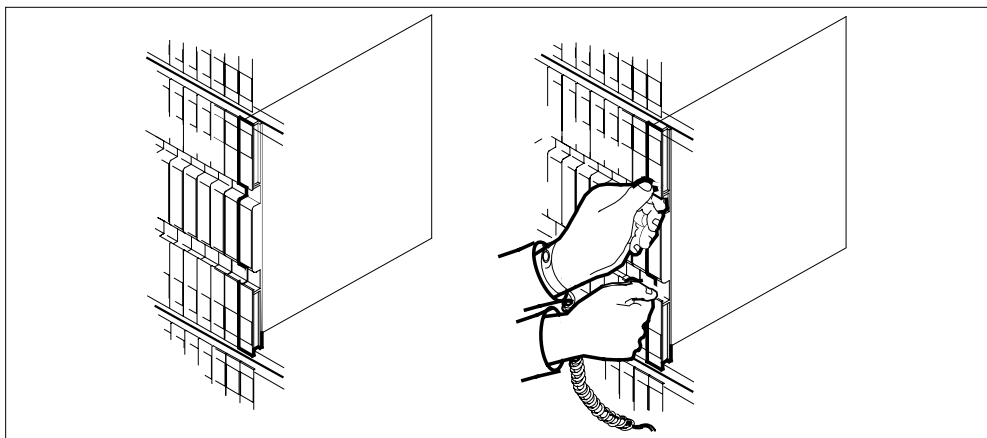
12

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.

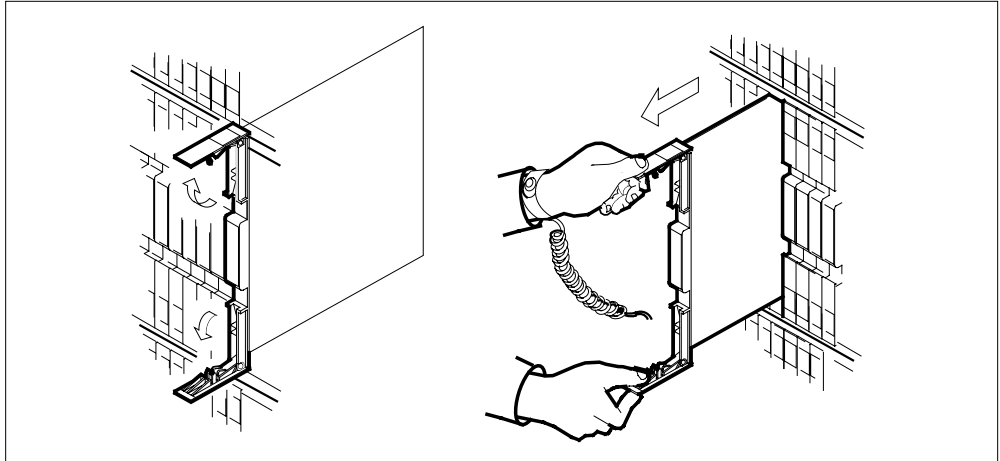
**Note 2:** If the LED does not illuminate, the card is defective and a new NT7X03 should be installed following normal pack procedures.

- 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.



**NT7X03**  
**in an XPM (continued)**

- c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.

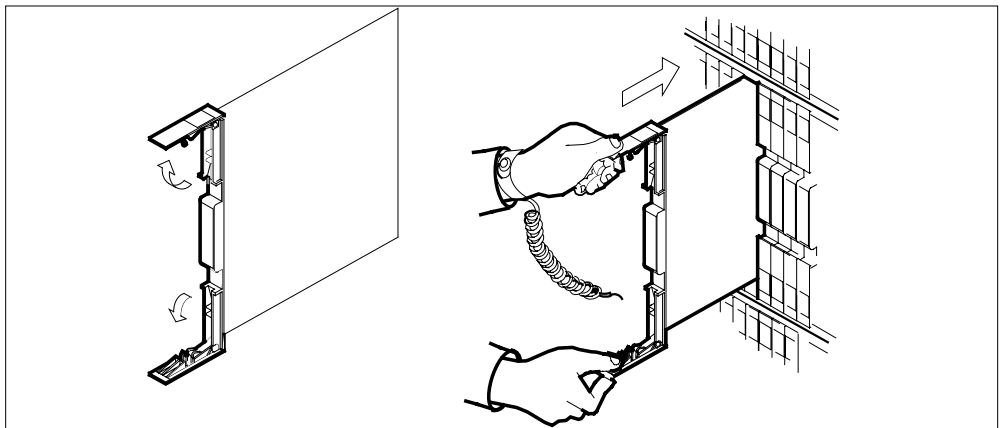
**13****WARNING****Equipment damage**

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.

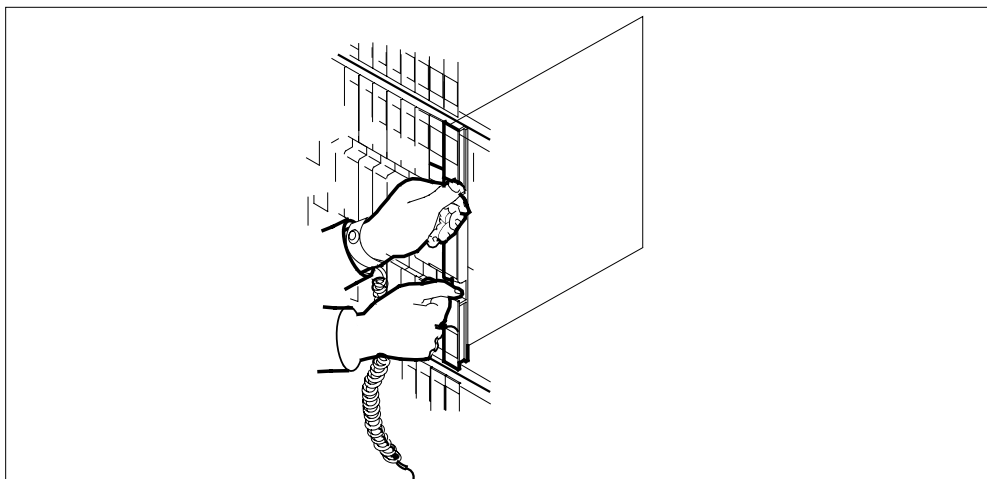
Align the card with the slots in the shelf and gently slide the card into the shelf.



**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.                  |                                                       |         |

## NT7X03 in an XPM (end)

- 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.

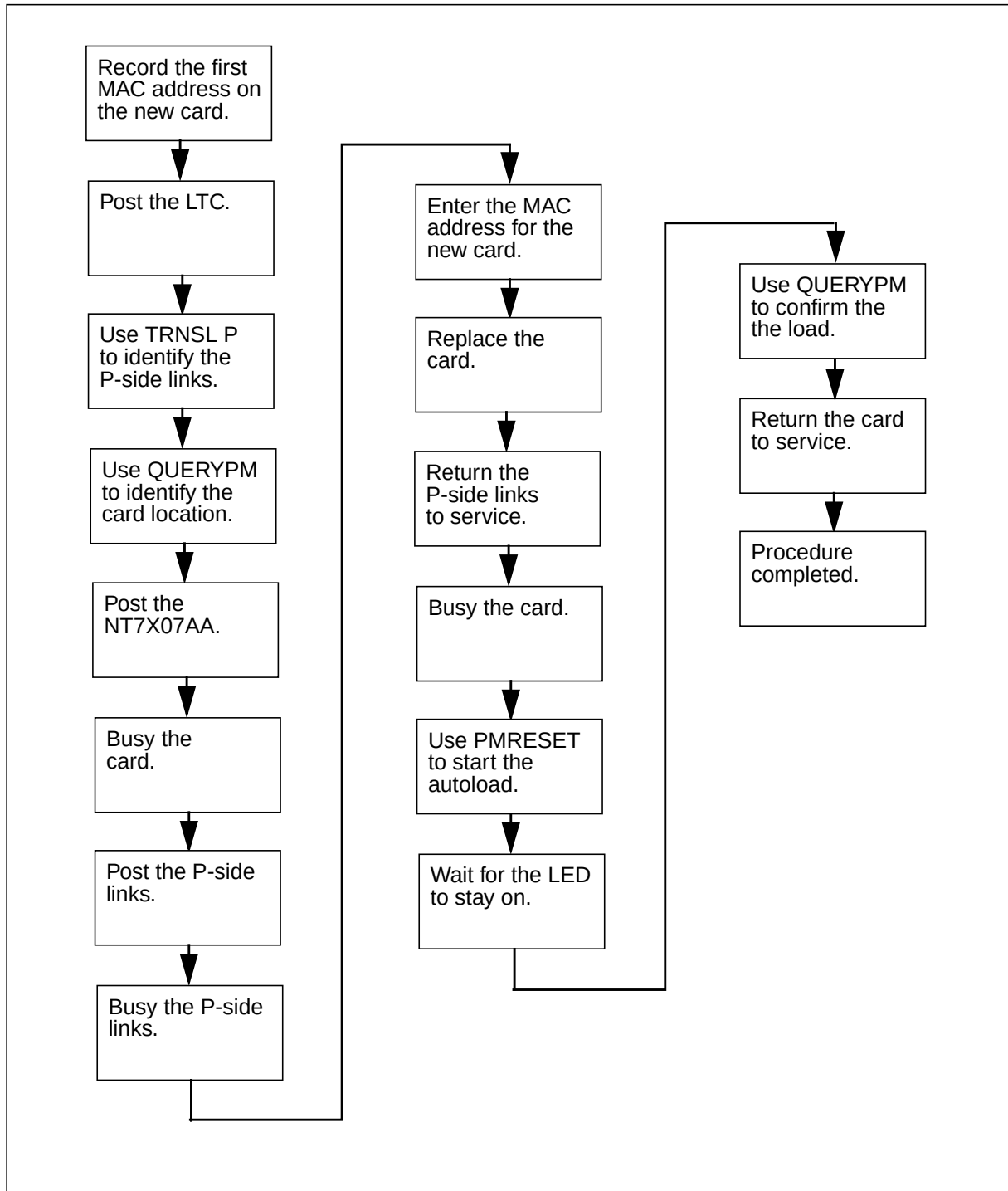
### **Next level of maintenance**

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:0      , P;MsgCond:MTC
LINK 11: IPGW GWIP 10 0      1:Cap S;Status:0        , P
LINK 12: IPGW GWIP 12 0      0:Cap MS;Status:0      , P;MsgCond:MTC
LINK 13: IPGW GWIP 12 0      1:Cap S;Status:0        , P
```

- 5 Record the numbers of the P-side links for the NT7X07AA card that you will replace.

## NT7X07AA in an LTCI (continued)

- 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 LTCl (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_00S: 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 LTCl.  
**>POST LTC ltc\_no**  
and press the Enter key.  
*where*  
**ltc\_no** is the number of the LTCl.  
*Example of command*  
**>POST LTC 0**



---

**NT7X07AA**  
**in an LTCI (continued)**

---

- 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.
- Expand the IP Address object three levels.
  - Expand the network object of the subnet with the NT7X07 card.
  - In the tree area, click on the NT7X07 card that you want to update. NetID identifies the NT7X07 card as a host.
  - Select **Options -> Update Host**.
  - Enter the MAC address that you recorded in step 2 in the Mac Address field.
  - Click OK.

**At the LTC frame****15****DANGER****Static electricity damage**

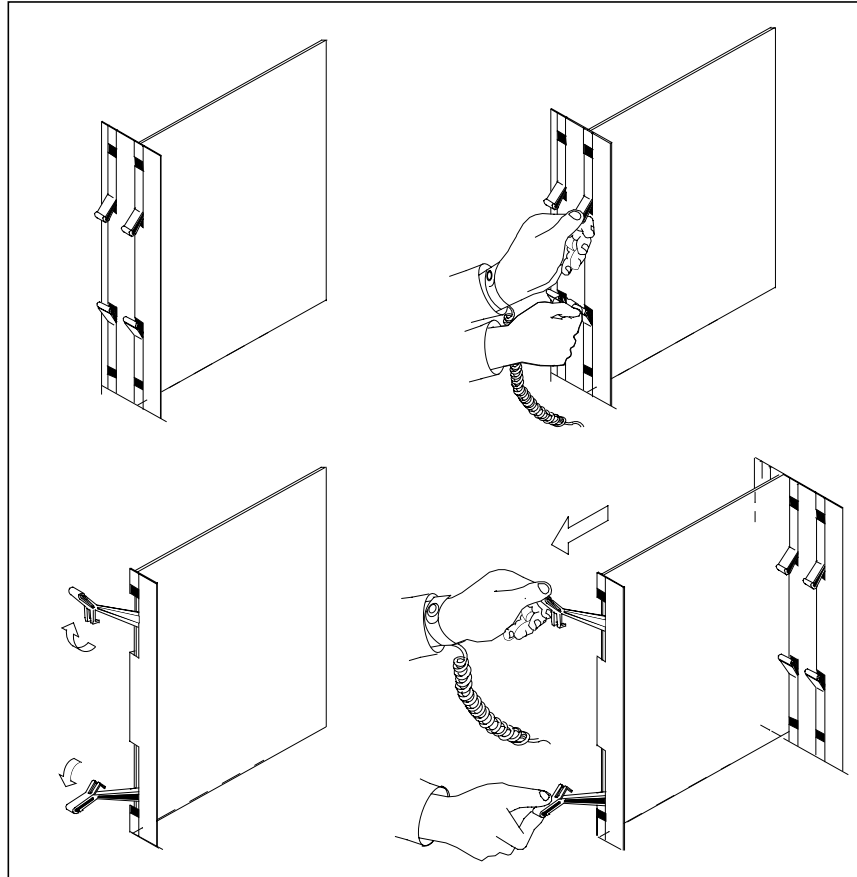
Before you remove any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel of the XPM. This strap protects the equipment from damage caused by static electricity.

Put on a wrist strap.

## NT7X07AA in an LTCl (continued)

---

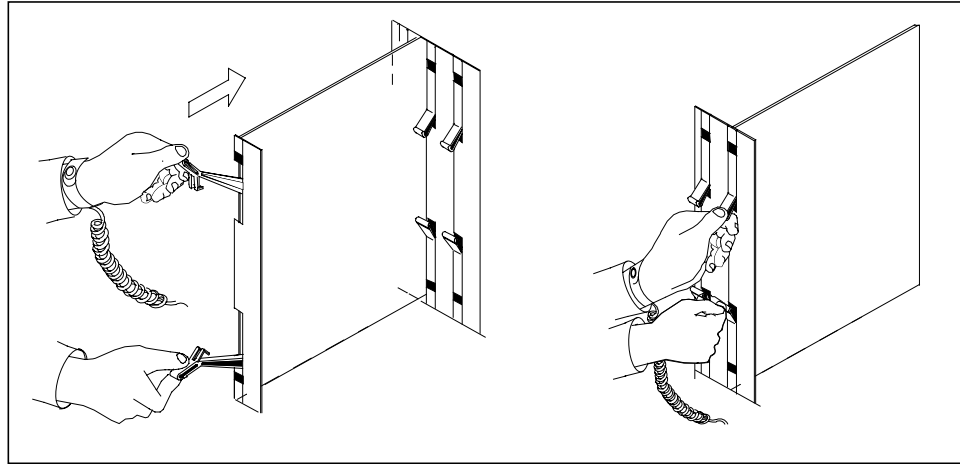
- 16** Replace the NT7X07 card.
- a** Locate the NT7X07 card to be removed.
  - b** Open the locking levers on the card and gently pull the card towards you until the card clears the shelf.



- c** Remove the card from the slot and shelf.

## NT7X07AA in an LTCI (continued)

- 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 autoloading of the NT7X07 card. Type

**>PMRESET**

## NT7X07AA in an LTCl (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**

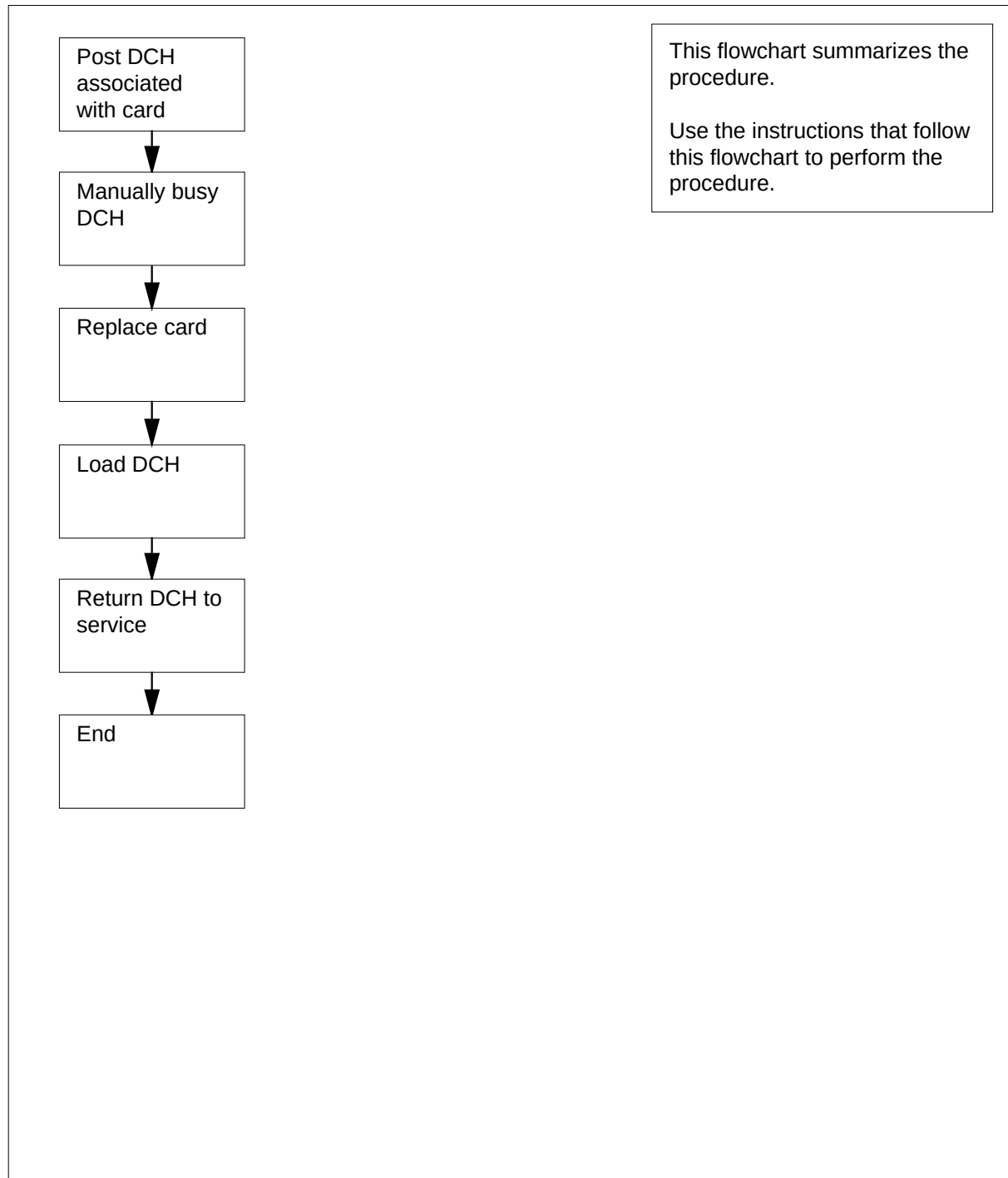
This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

## NTBX02

### in an XPM (continued)

---

#### Summary of replacing an NTBX02 in an XPM



## NTBX02 in an XPM (continued)

### 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, LTCl, 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
          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
          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:*

## NTBX02

### in an XPM (continued)

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<br>DCH takeover will be attempted is displayed     | step 12 |
| you must confirm the command and the message<br>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.

| <b>If a maintenance procedure</b>    | <b>Do</b> |
|--------------------------------------|-----------|
| 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)

| <b>If the LOADPM command</b> | <b>Do</b> |
|------------------------------|-----------|
| 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**

---

**NTBX02**  
**in an XPM (end)**

---

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.

(Sheet 1 of 2)

| 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 LGC 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)

(Sheet 2 of 2)

| 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

## **P-side interface cards in an XPM (continued)**

---

- 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.

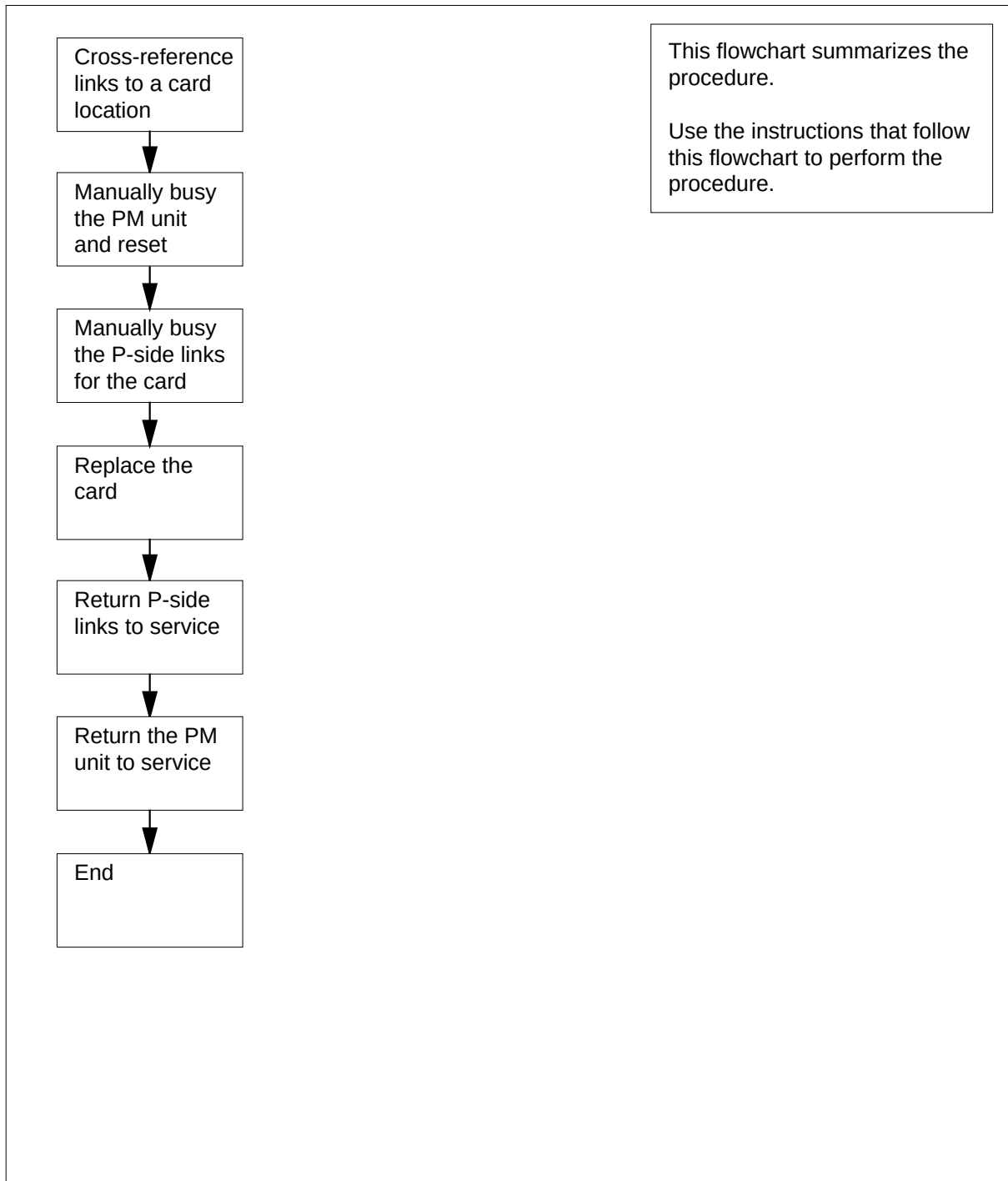
### **Action**

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



## P-side interface cards in an XPM (continued)

### 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                      |

## P-side interface cards in an XPM (continued)

**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.

### 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 CB-sy, and active   | step 6  |
| is ISTb, InSv, SysB, or CB-sy, and inactive | step 9  |
| is ManB                                     | step 11 |
| is OffL                                     | step 63 |

## P-side interface cards in an XPM (continued)

- 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 |

## P-side interface cards in an XPM (continued)

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   | 0 | 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

## P-side interface cards in an XPM (continued)

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<br><b>&gt;MS;CLOCK</b><br>and press the Enter key.<br><i>Example of a MAP display:</i>                                                                                                                                                                                                                                                                                                                          |           |
|    | <pre>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 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:</pre> |           |
| 23 | Determine if there is a CLOCK alarm appears under the MS alarm banner.                                                                                                                                                                                                                                                                                                                                                                                             |           |
|    | <b>If</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Do</b> |
|    | a CLOCK alarm appears                                                                                                                                                                                                                                                                                                                                                                                                                                              | step 24   |
|    | a CLOCK alarm does not appear                                                                                                                                                                                                                                                                                                                                                                                                                                      | step 25   |
| 24 | To synchronize the office, type<br><b>&gt;SYNC</b><br>and press the Enter key.<br><i>Example of a MAP response:</i>                                                                                                                                                                                                                                                                                                                                                |           |



## P-side interface cards in an XPM (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 ...

- 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:*

## P-side interface cards in an XPM (continued)

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, LTCL, 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 you replace

| If                                          | Do      |
|---------------------------------------------|---------|
| a set of circuits is posted                 | step 34 |
| the MAP response is NO CKT,<br>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 |

## P-side interface cards in an XPM (continued)

|           | 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   |
| <b>38</b> | To display the next five links in the posted set, type<br><b>&gt;NEXT</b><br>and press the Enter key.                                                                                                                                                                                                                                                    |           |
|           | <b>If</b>                                                                                                                                                                                                                                                                                                                                                | <b>Do</b> |
|           | 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   |
| <b>39</b> | Repeat step 38.                                                                                                                                                                                                                                                                                                                                          |           |
| <b>40</b> | Determine the state of the link.                                                                                                                                                                                                                                                                                                                         |           |
|           | <b>If the link</b>                                                                                                                                                                                                                                                                                                                                       | <b>Do</b> |
|           | is INSV, ISTB, or SYSB                                                                                                                                                                                                                                                                                                                                   | step 41   |
|           | is MANB                                                                                                                                                                                                                                                                                                                                                  | step 42   |
|           | is OFFL                                                                                                                                                                                                                                                                                                                                                  | step 63   |
| <b>41</b> | To manually busy the link, type<br><b>&gt;BSY list_no</b><br>and press the Enter key.<br><i>where</i><br><b>list_no</b><br>is the list number (0 to 4) for the link<br><br><b>Note:</b> 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. |           |
|           | <b>If the BSY command</b>                                                                                                                                                                                                                                                                                                                                | <b>Do</b> |
|           | 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 RL-CM) | step 45 |
| is a carrier                   | step 47 |

- 45 To access the PM level of the MAP display, type  
>PM

## P-side interface cards in an XPM (continued)

- 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<br><b>&gt;RTS list_no</b><br>and press the Enter key.<br><i>where</i><br><b>list_no</b><br>is the list number (0 to 4) for the link                                                                                                                             |           |
|    | <b>If the RTS command</b>                                                                                                                                                                                                                                                                           | <b>Do</b> |
|    | 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<br><b>&gt;TRKS;TTP</b><br>and press the Enter key.                                                                                                                                                                                            |           |
| 55 | To post the link, type<br><b>&gt;POST D pm_type pm_no link_no</b><br>and press the Enter key.<br><i>where</i><br><b>pm_type</b><br>is the PM type (DTC, ILGC, LTCI, PDTC, etc.)<br><b>pm_no</b><br>is the PM number (0 to 999)<br><b>link_no</b><br>is the link number (0 to 19) recorded in step 2 |           |
| 56 | To return all circuits on the link to service, type<br><b>&gt;RTS ALL</b>                                                                                                                                                                                                                           |           |

## P-side interface cards in an XPM (continued)

and press the Enter key.

|           | <b>If</b>                                                                                                                                                                                                                         | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | all circuits returned to service                                                                                                                                                                                                  | step 57   |
|           | a minimum of one circuit did not return to service                                                                                                                                                                                | step 66   |
| <b>57</b> | The next action depends on the number of links that the card supports.                                                                                                                                                            |           |
|           | <b>If the card</b>                                                                                                                                                                                                                | <b>Do</b> |
|           | 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   |
| <b>58</b> | To access the PM level of the MAP display, type<br><b>&gt;PM</b><br>and press the Enter key.                                                                                                                                      |           |
| <b>59</b> | To post the PM, type<br><b>&gt;PM;POST pm_type pm_no</b><br>and press the Enter key.<br><i>where</i><br><b>pm_type</b><br>is the PM type (for example DTC, ILGC, LTCI, PDTC, etc.)<br><b>pm_no</b><br>is the PM number (0 to 999) |           |
| <b>60</b> | To return the inactive unit to service, type<br><b>&gt;RTS INACTIVE</b><br>and press the Enter key.                                                                                                                               |           |
|           | <b>If the RTS command</b>                                                                                                                                                                                                         | <b>Do</b> |
|           | passed                                                                                                                                                                                                                            | step 61   |
|           | failed                                                                                                                                                                                                                            | step 66   |
| <b>61</b> | Determine if a maintenance procedure directed you to this procedure.                                                                                                                                                              |           |
|           | <b>If a maintenance procedure</b>                                                                                                                                                                                                 | <b>Do</b> |
|           | directed you to this procedure                                                                                                                                                                                                    | step 62   |



## P-side interface cards in an XPM (continued)

|    | 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.<br><b>Note:</b> 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 (Sheet 1 of 2)

| 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                                           |

## P-side interface cards in an XPM (continued)

### Switch settings for NT6X50AB for 24 AWG DS-1 cable (Sheet 2 of 2)

| 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 (339 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 (Sheet 1 of 2)

| 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 (Sheet 2 of 2)

| 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: |             |             |
|------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|-------------|
|                                                                                                                        | <i>pos3</i>           | <i>pos2</i> | <i>pos1</i> |
| 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          |
| <b>Note:</b> 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: | <i>pos2</i> | <i>pos1</i> |
|-----------------------------------------------|-------------|-------------|-------------|
| Ports 1 and 2, G.165                          |             | on          | on          |
| Ports 1 and 2, G.164                          |             | off         | off         |
| <b>Note:</b> SW1 has two 2-position switches. |             |             |             |

## P-side interface cards in an XPM (end)

### 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 (399 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<br><br>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, DTCL for Japan with QLI load, DTCO with QDT load, and GPP with QPO load in MMP/XPM12, LGC, LTC, DTC, LGCI, and LTCL with a QLI load in NA011/XPM11 |
| NTSX06 | AA     | Filler packet 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) packet |                                                                                                                                                                         |
|        | CA     | 120- Mbyte PRL packet                          |                                                                                                                                                                         |

### Common procedures

The following common procedures are referenced:

- *Loading a PM*
- *Replacing a card*

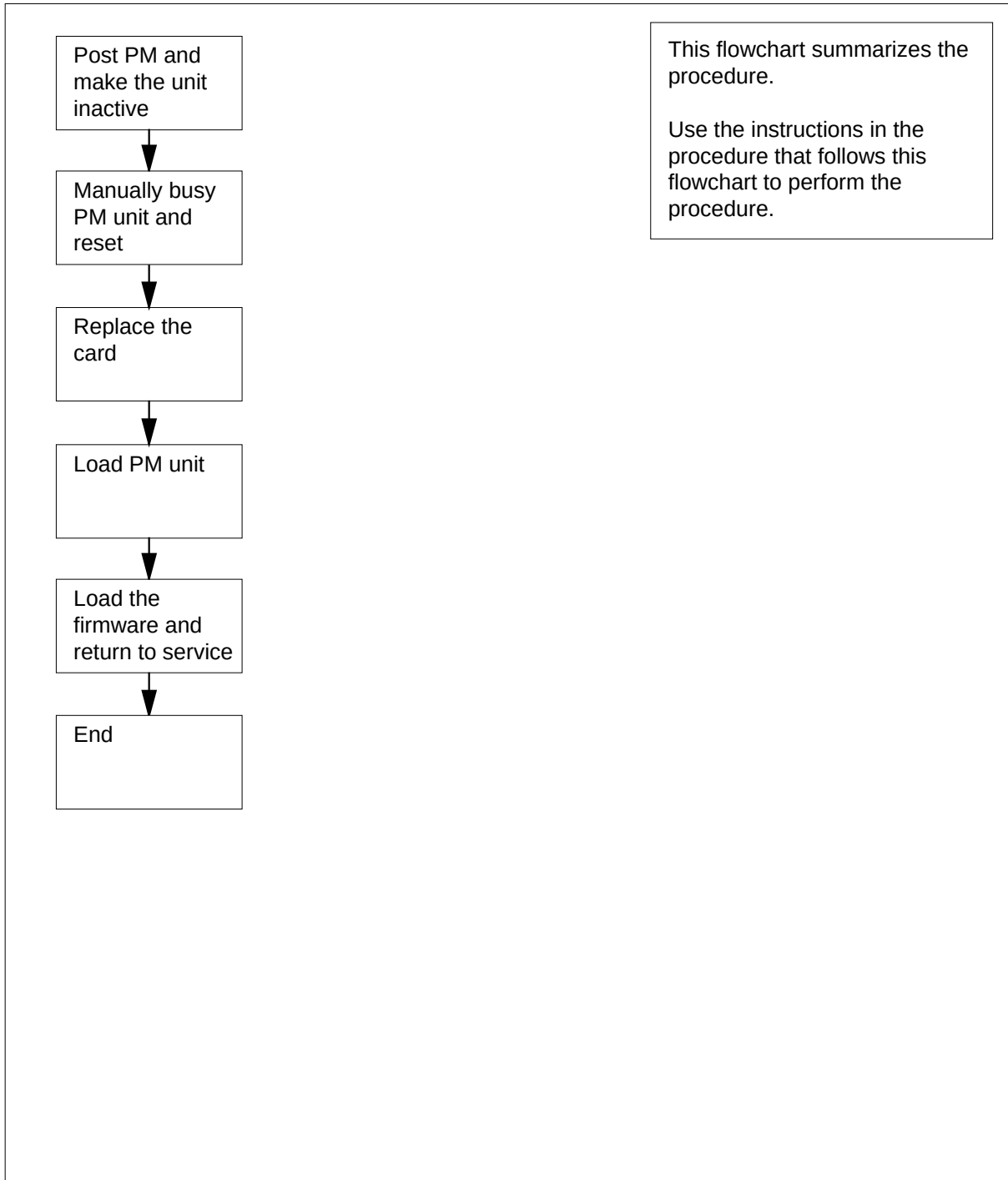
Do not go to the common procedure unless directed to do so in the step-action procedure.

### 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, LTCl, 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<br>or<br>Unusable or missing load file(s) on Flash<br>(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**

## Processor and memory cards in an XPM (continued)

and press the Enter key.

where

**unit\_no**

is the PM unit number (0 or 1) of the newly inactive unit

### At the shelf

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#### 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 NTB01 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 NTB01  | step 17 |

- 16** Reseat the NTB01 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)

|                                                             | <b>unit_no</b><br>is the PM unit number (0 or 1)                                                                                                                                                                                                     |                       |    |                                                         |         |                                                             |         |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----|---------------------------------------------------------|---------|-------------------------------------------------------------|---------|
|                                                             | <table> <tr> <th>If the load</th><th>Do</th></tr> <tr> <td>passes</td><td>step 25</td></tr> <tr> <td>fails</td><td>step 21</td></tr> </table>                                                                                                        | If the load           | Do | passes                                                  | step 25 | fails                                                       | step 21 |
| If the load                                                 | Do                                                                                                                                                                                                                                                   |                       |    |                                                         |         |                                                             |         |
| passes                                                      | step 25                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| fails                                                       | step 21                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| 20                                                          | To load the non-ISDN PM from the local image, type<br><b>&gt;LOADPM UNIT unit_no LOCAL IMAGE</b><br>and press the Enter key.<br><b>unit_no</b><br>is the PM unit number (0 or 1)                                                                     |                       |    |                                                         |         |                                                             |         |
|                                                             | <table> <tr> <th>If the load</th><th>Do</th></tr> <tr> <td>passes</td><td>step 25</td></tr> <tr> <td>fails</td><td>step 21</td></tr> </table>                                                                                                        | If the load           | Do | passes                                                  | step 25 | fails                                                       | step 21 |
| If the load                                                 | Do                                                                                                                                                                                                                                                   |                       |    |                                                         |         |                                                             |         |
| passes                                                      | step 25                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| fails                                                       | step 21                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| 21                                                          | To load the inactive unit, type<br><b>&gt;LOADPM INACTIVE</b><br>and press the Enter key.                                                                                                                                                            |                       |    |                                                         |         |                                                             |         |
|                                                             | <table> <tr> <th>If the LOADPM command</th><th>Do</th></tr> <tr> <td>fails</td><td>step 22</td></tr> <tr> <td>passes</td><td>step 25</td></tr> </table>                                                                                              | If the LOADPM command | Do | fails                                                   | step 22 | passes                                                      | step 25 |
| If the LOADPM command                                       | Do                                                                                                                                                                                                                                                   |                       |    |                                                         |         |                                                             |         |
| fails                                                       | step 22                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| passes                                                      | step 25                                                                                                                                                                                                                                              |                       |    |                                                         |         |                                                             |         |
| 22                                                          | Perform the procedure <i>Loading a PM</i> 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.                                                                                                                                                                                |                       |    |                                                         |         |                                                             |         |
|                                                             | <table> <tr> <th>If you were</th><th>Do</th></tr> <tr> <td>directed to this procedure from a maintenance procedure</td><td>step 24</td></tr> <tr> <td>not directed to this procedure from a maintenance procedure</td><td>step 25</td></tr> </table> | 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 |
| 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.<br><br>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:*

Unsolicited 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:

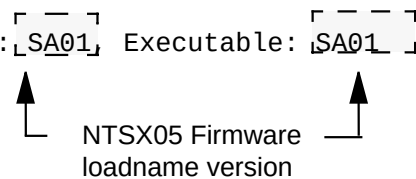
Ram Load: QLI10BG

EPROM Version: AC01

EEPROM Load: Loadable: SA01 Executable: SA01

UP: SX05AA

IP: BX01



| If the firmware                                           | Do      |
|-----------------------------------------------------------|---------|
| loadnames do not match and<br>firmware needs to be loaded | step 27 |
| does not need to be loaded                                | step 48 |

- 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 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 7)(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**



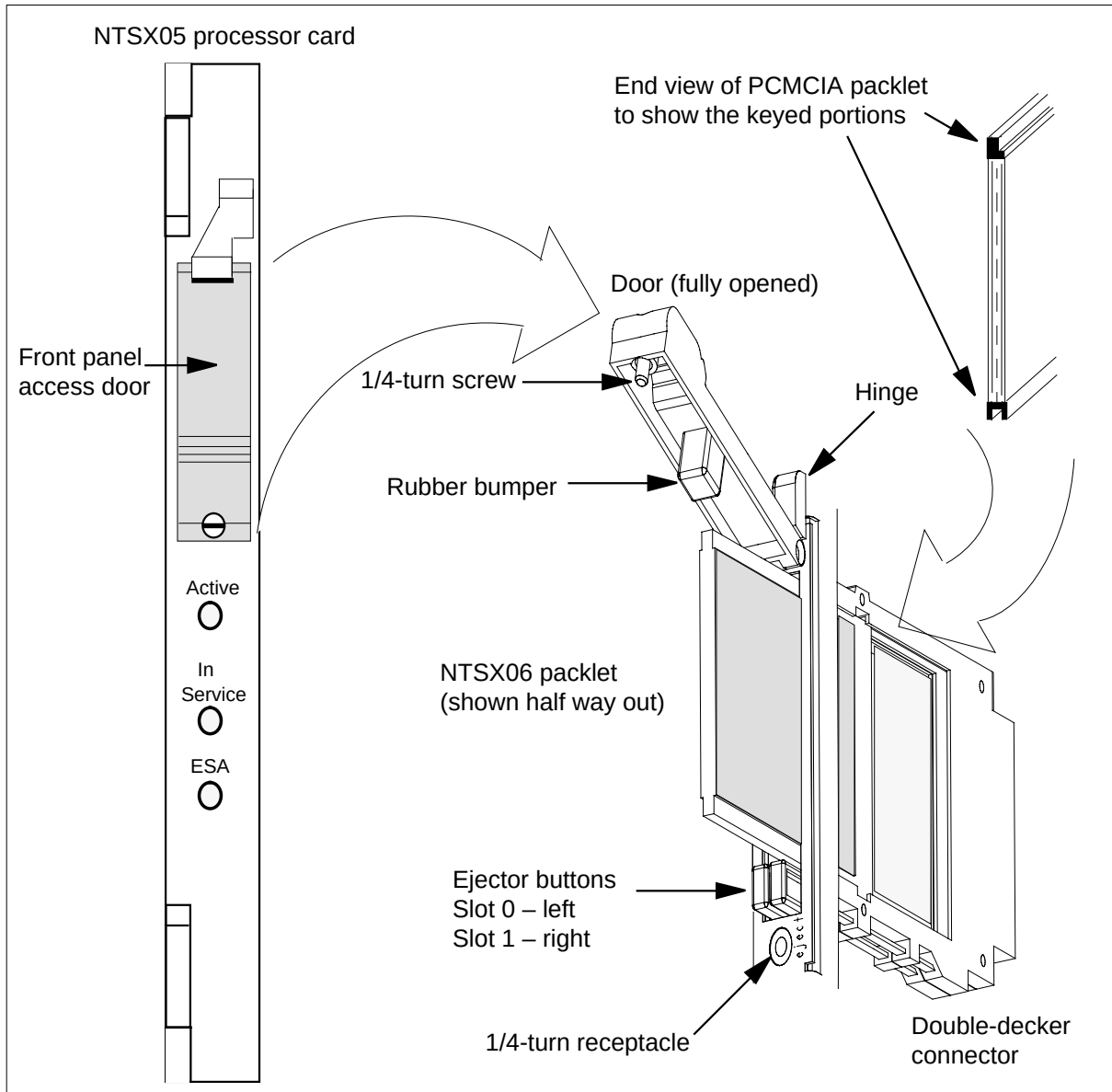
### WARNING

#### 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 packet 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.

## Processor and memory cards in an XPM (continued)

*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.

---

## 7 Card replacement common procedures

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### 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.

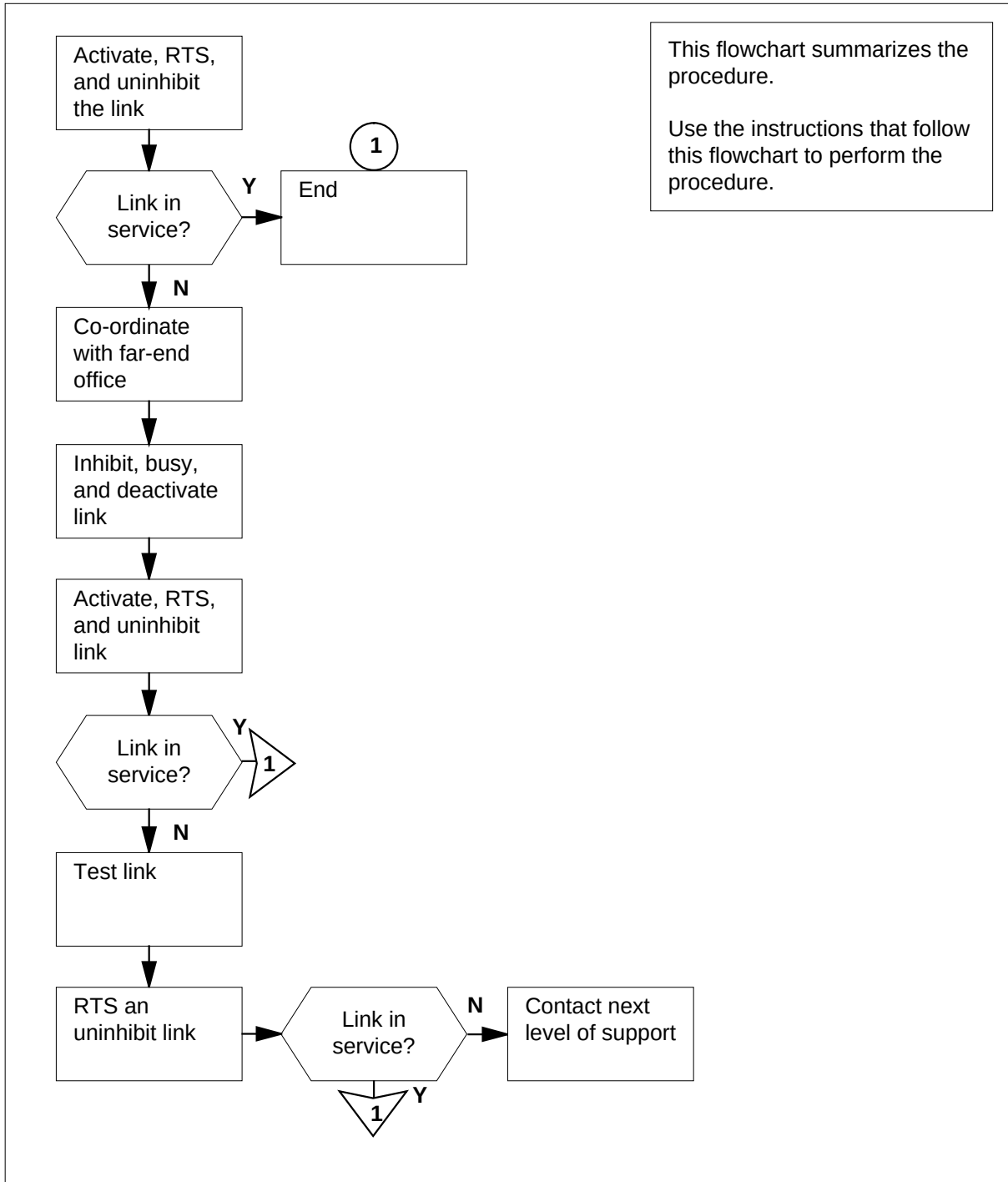
- link peripheral processor (LPP) link interface shelf (LIS)
- SuperNode combined core (SCC) enhanced network and interface shelf (ENI)
- SCC LIS
- single-shelf LPP (SSLPP) or fiberized link interface shelf.
- enhanced LPP (ELPP) LIS
- fiberized LPP (FLPP) LIS

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
LK Stat Stat Resource Stat Physical Access      Link
0 InSv Sync LIU7 208 InSv DS0A      Stat Action
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)

| <b>If the RTS command</b>                                                                                                                                                                                                       |  | <b>Do</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|
| passed, and the link synchronization state is <b>Sync</b> or <b>Alnd</b>                                                                                                                                                        |  | step 22   |
| passed, and the link synchronization state is not <b>Sync</b> or <b>Alnd</b>                                                                                                                                                    |  | step 7    |
| failed                                                                                                                                                                                                                          |  | step 21   |
| <b>7</b> Wait 8 min to determine if the link synchronizes and returns to service.                                                                                                                                               |  |           |
| <b>If</b>                                                                                                                                                                                                                       |  | <b>Do</b> |
| the traffic state is <b>InSv</b> and the synchronization state is <b>Sync</b> or <b>Alnd</b>                                                                                                                                    |  | step 22   |
| the traffic state is not <b>InSv</b> and the synchronization state is not <b>Sync</b> or <b>Alnd</b>                                                                                                                            |  | step 8    |
| the traffic state is not <b>InSv</b> and the synchronization state is not <b>Sync</b> or <b>Alnd</b>                                                                                                                            |  | step 9    |
| <b>8</b> To inhibit the link, type<br><b>&gt;INH link_no</b><br>and press the Enter key.<br><i>where</i><br><b>link_no</b><br>is the number of the link (0 to 15)                                                               |  |           |
| <b>9</b> To manually busy the link, type<br><b>&gt;BSY link_no</b><br>and press the Enter key.<br><i>where</i><br><b>link_no</b><br>is the number of the link (0 to 7)<br><b>link_no</b><br>is the number of the link (0 to 15) |  |           |
| <b>If you have busied an</b>                                                                                                                                                                                                    |  | <b>Do</b> |
| 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)
- | <b>If the RTS command</b>                                  | <b>Do</b> |
|------------------------------------------------------------|-----------|
| passed, and the link synchronization state is Sync or A1nd | 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**

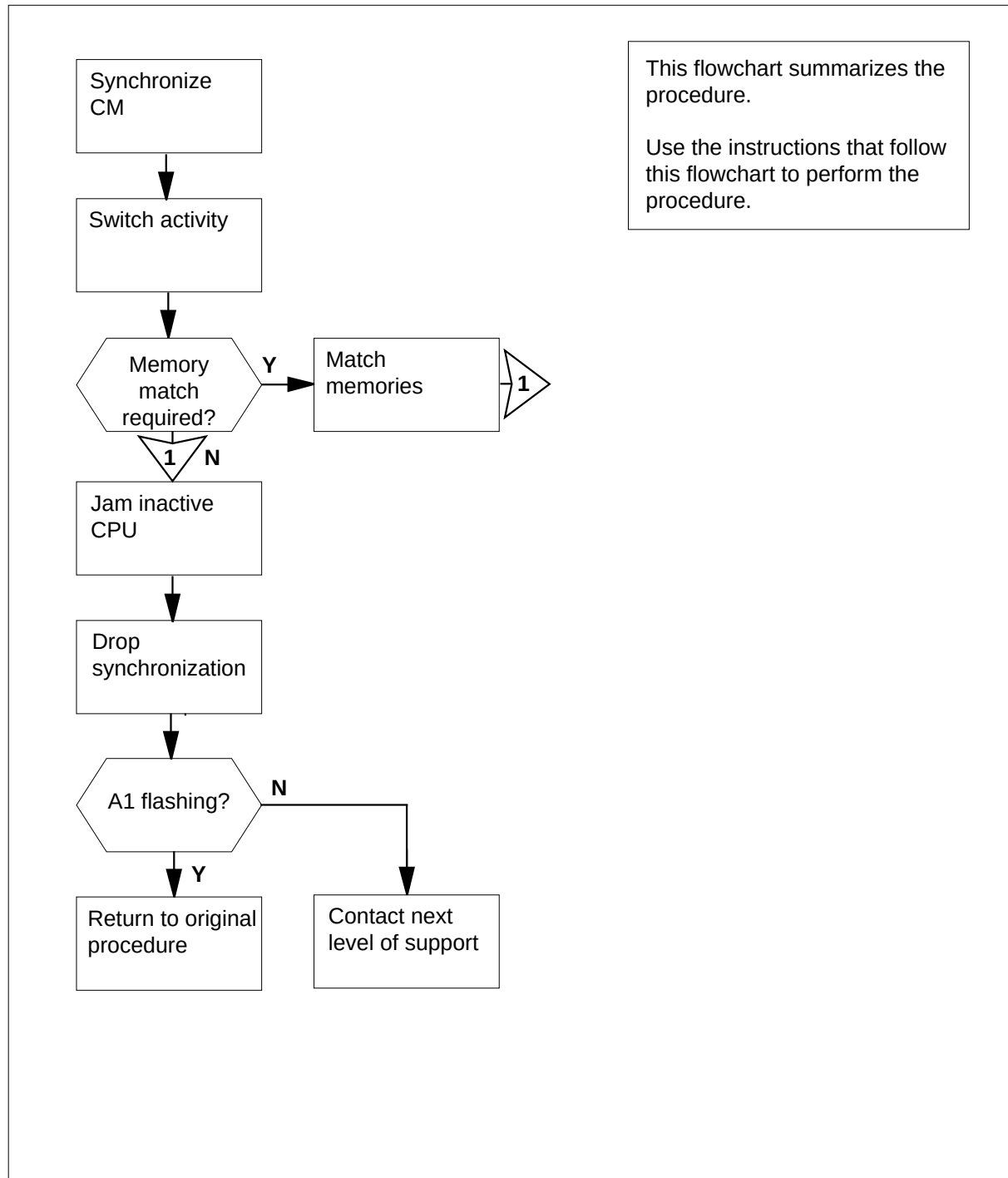
Use this procedure to switch activity between the active and inactive CPU. You must make sure that the switch is in sync and that neither CPU is jammed. The SLM assumes the active data.

### **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.       | step 9  |
| Switch of Activity successful.          |         |
| Drop Synchronization in progress...     |         |
| Running in simplex mode with active CPU |         |
| 1. Synchronization in progress...       |         |
| Synchronization successful.             |         |
| 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.

|           | <b>If the response</b>                                                                                                                                                                                                   | <b>Do</b> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | is Match ok                                                                                                                                                                                                              | step 12   |
|           | is other than listed here                                                                                                                                                                                                | step 23   |
| <b>12</b> | To access the CI level of the MAP display, type<br><b>&gt;QUIT ALL</b><br>and press the Enter key.                                                                                                                       |           |
| <b>13</b> | To access the log utility, type<br><b>&gt;LOGUTIL</b><br>and press the Enter key.                                                                                                                                        |           |
| <b>14</b> | To determine if the memory match generated an MM100 log report, type<br><b>&gt;OPEN MM 100</b><br>and press the Enter key.<br><br><b>Note:</b> If the memory match did not generate a report, the response is Log empty. |           |
|           | <b>If the response</b>                                                                                                                                                                                                   | <b>Do</b> |
|           | is Log empty                                                                                                                                                                                                             | step 15   |
|           | is other than listed here                                                                                                                                                                                                | step 23   |
| <b>15</b> | To determine if the memory match generated an MM101 log report, type<br><b>&gt;OPEN MM 101</b><br>and press the Enter key.                                                                                               |           |
|           | <b>If the response</b>                                                                                                                                                                                                   | <b>Do</b> |
|           | is Log empty                                                                                                                                                                                                             | step 16   |
|           | is other than listed here                                                                                                                                                                                                | step 23   |
| <b>16</b> | To quit the log utility, type<br><b>&gt;QUIT</b><br>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.



## **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.

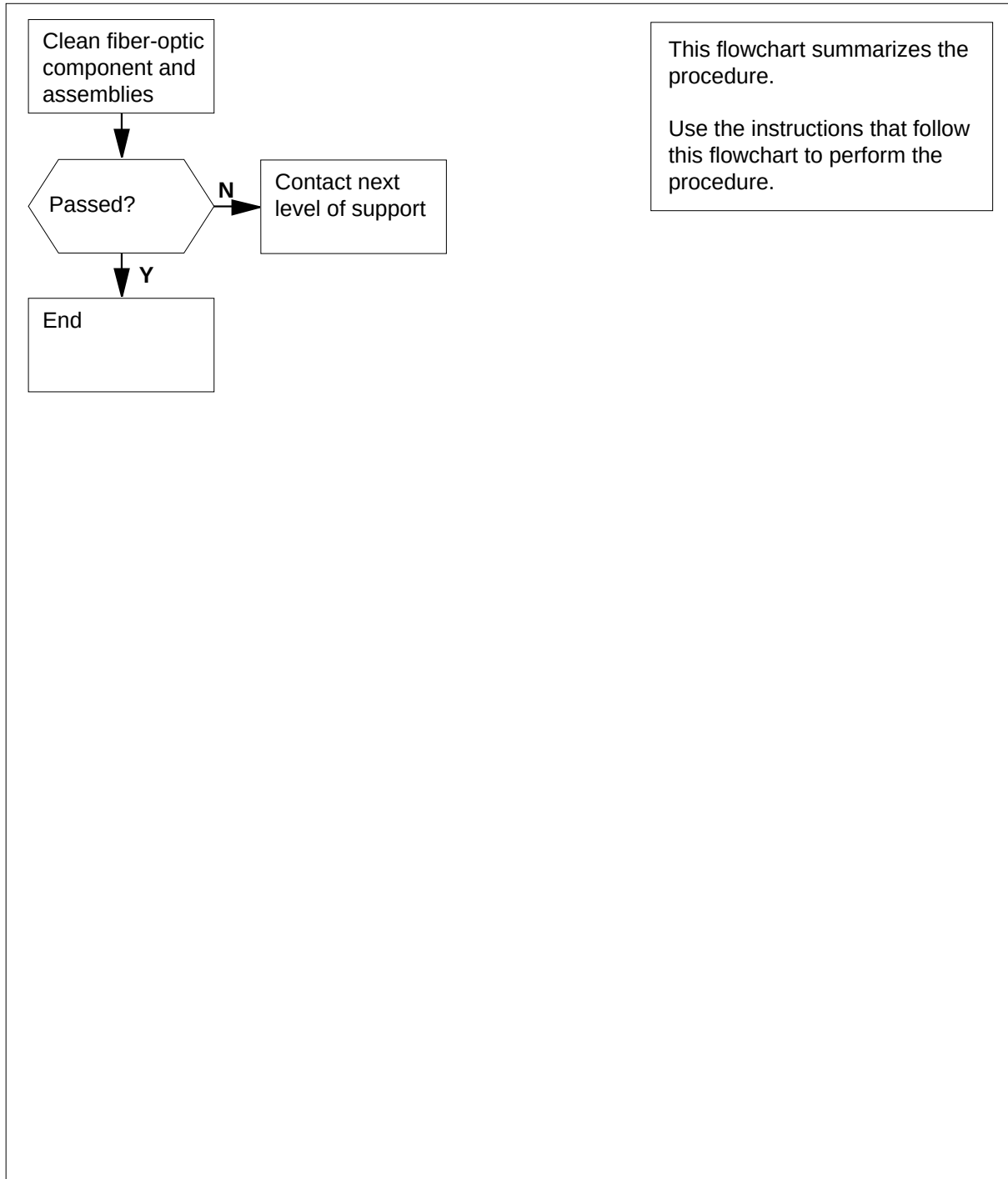
A problem can occur that requires the assistance of the local maintenance support group. Gather all relevant logs, reports, and system information (that is, product type and current software load) for analysis. That information can help make sure that the next level of maintenance support can quickly 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 Injury Risk of Skin Injury Risk 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 capable 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 capable 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 capable 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**

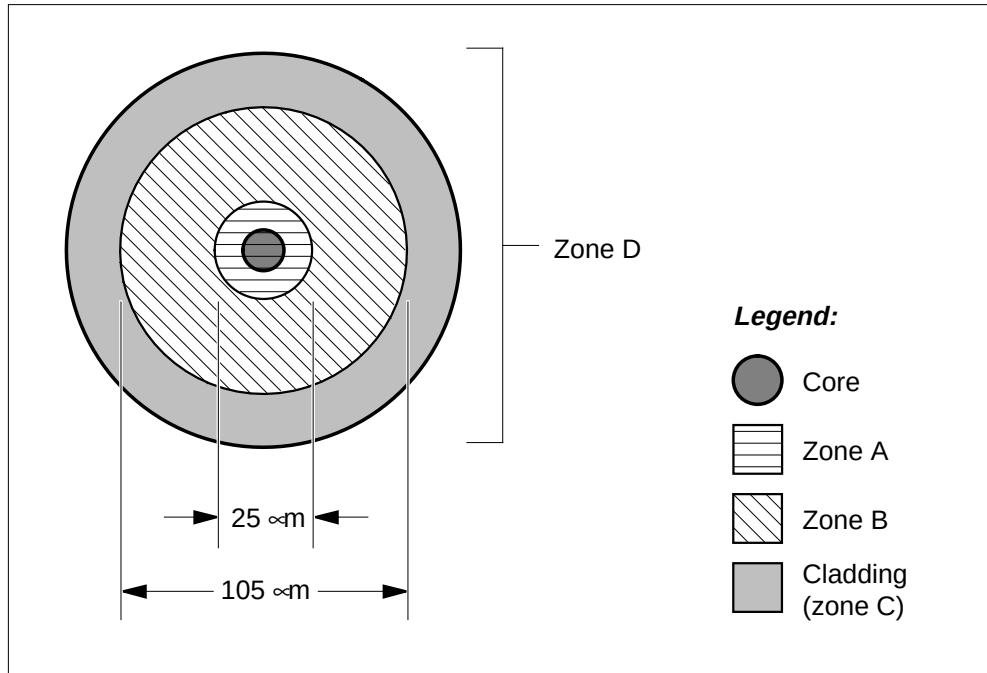
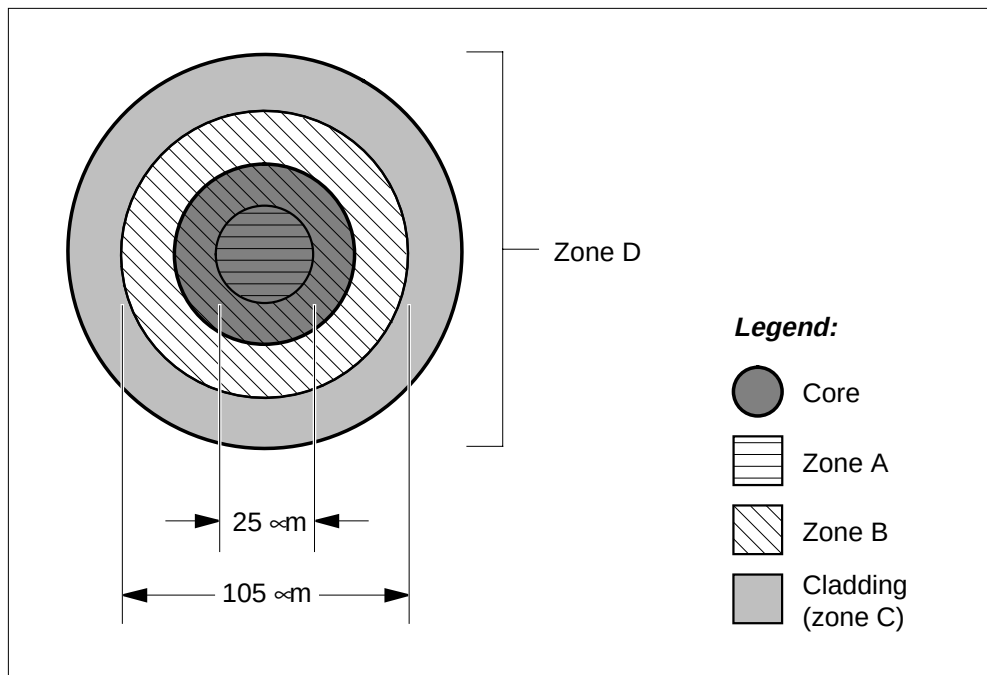
#### *End-face criteria*

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 than 1.5 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**

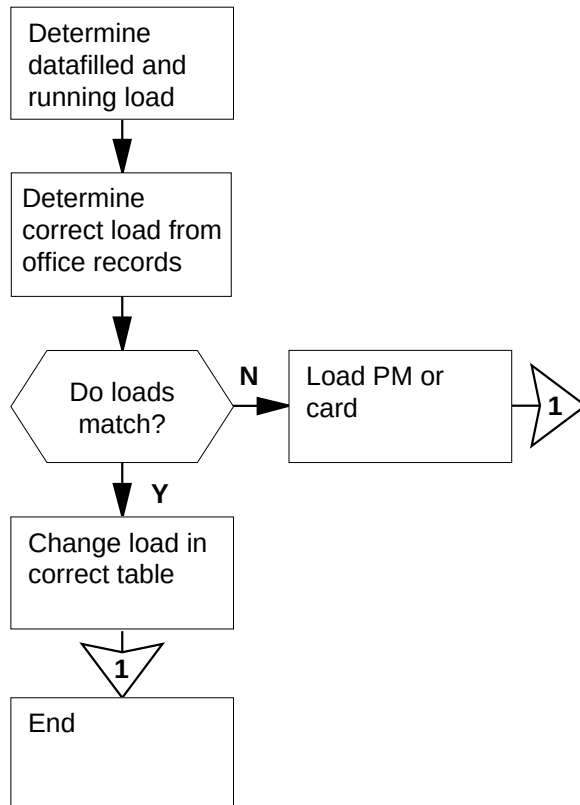
Use this procedure to match the software load to the specified datafilled load. This load runs on a PM, a signaling terminal controller (STC), or a CLASS modem resource (CMR) card.

### **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



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure

## 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)

---

- |           |                                                     |
|-----------|-----------------------------------------------------|
| <b>10</b> | Determine from office records the correct loadname. |
|-----------|-----------------------------------------------------|
- |                                                      |                                                                                                                                                                                                                                                                                                                                                              |                                            |           |                                                      |         |                                                    |         |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|------------------------------------------------------|---------|----------------------------------------------------|---------|
| <b>11</b>                                            | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><b>If the loadname from office records</b></td> <td style="width: 50%;"><b>Do</b></td> </tr> <tr> <td>match the load datafilled for the PM or the CMR card</td> <td>step 11</td> </tr> <tr> <td>match the load that runs on the PM or the CMR card</td> <td>step 16</td> </tr> </table> | <b>If the loadname from office records</b> | <b>Do</b> | 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 |
| <b>If the loadname from office records</b>           | <b>Do</b>                                                                                                                                                                                                                                                                                                                                                    |                                            |           |                                                      |         |                                                    |         |
| 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                                                                                                                                                                                                                                                                                                                                                      |                                            |           |                                                      |         |                                                    |         |
- |                    |                                                                                                                                                                                                                                                                                                                                                                        |               |           |              |         |                    |         |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|--------------|---------|--------------------|---------|
| <b>12</b>          | <p>Follow the correct procedure. The procedure you must follow depends on if you work on a PM or CMR card.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><b>If you</b></td> <td style="width: 50%;"><b>Do</b></td> </tr> <tr> <td>work on a PM</td> <td>step 12</td> </tr> <tr> <td>work on a CMR card</td> <td>step 14</td> </tr> </table> | <b>If you</b> | <b>Do</b> | work on a PM | step 12 | work on a CMR card | step 14 |
| <b>If you</b>      | <b>Do</b>                                                                                                                                                                                                                                                                                                                                                              |               |           |              |         |                    |         |
| work on a PM       | step 12                                                                                                                                                                                                                                                                                                                                                                |               |           |              |         |                    |         |
| work on a CMR card | step 14                                                                                                                                                                                                                                                                                                                                                                |               |           |              |         |                    |         |
- |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |           |        |         |        |         |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|--------|---------|--------|---------|
| <b>13</b>                    | <p>To load the PM unit, type<br/> <b>&gt;LOADPM UNIT unit_no</b><br/>         and press the Enter key.<br/> <i>where</i><br/>             <b>unit_no</b><br/>             is the PM unit (0 or 1)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><b>If the LOADPM command</b></td> <td style="width: 50%;"><b>Do</b></td> </tr> <tr> <td>passed</td> <td>step 13</td> </tr> <tr> <td>failed</td> <td>step 15</td> </tr> </table> | <b>If the LOADPM command</b> | <b>Do</b> | passed | step 13 | failed | step 15 |
| <b>If the LOADPM command</b> | <b>Do</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |           |        |         |        |         |
| passed                       | step 13                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |           |        |         |        |         |
| failed                       | step 15                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |           |        |         |        |         |
- |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |           |        |         |        |         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|--------|---------|--------|---------|
| <b>14</b>                 | <p>To return the PM unit to service, type<br/> <b>&gt;RTS UNIT unit_no</b><br/>         and press the Enter key.<br/> <i>where</i><br/>             <b>unit_no</b><br/>             is the PM unit (0 or 1)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><b>If the RTS command</b></td> <td style="width: 50%;"><b>Do</b></td> </tr> <tr> <td>passed</td> <td>step 64</td> </tr> <tr> <td>failed</td> <td>step 63</td> </tr> </table> | <b>If the RTS command</b> | <b>Do</b> | passed | step 64 | failed | step 63 |
| <b>If the RTS command</b> | <b>Do</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |           |        |         |        |         |
| passed                    | step 64                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |           |        |         |        |         |
| failed                    | step 63                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |           |        |         |        |         |
- |           |                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------|
| <b>14</b> | <p>To load the CMR card, type<br/> <b>&gt;LOADPM UNIT unit_no CMR</b><br/>         and press the Enter key.</p> |
|-----------|-----------------------------------------------------------------------------------------------------------------|

## 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**

**Correcting a load mismatch** (continued)

and press the Enter key.

|           | <b>If the MAP response</b>                                                                                                                                                                                                                                                                                                                                                          | <b>Do</b> |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | is TUPLE CHANGED                                                                                                                                                                                                                                                                                                                                                                    | step 64   |
|           | is Field_name file is not datafilled in table PMLOADS                                                                                                                                                                                                                                                                                                                               | step 25   |
| <b>25</b> | To reject the entry change, type<br><b>&gt;N</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                        |           |
| <b>26</b> | To exit the PM inventory table, type<br><b>&gt;QUIT</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                 |           |
| <b>27</b> | To access the disk utility, type<br><b>&gt;DISKUT</b><br>and press the Enter key.<br><b>Note:</b> The command DISKUT applies to a SuperNode front end. For an NT40 front end, the command is DSKUT.                                                                                                                                                                                 |           |
| <b>28</b> | To confirm that the load file you recorded in step 10 is in the user directory, type<br><b>&gt;LISTFL file_name</b><br>and press the Enter key.<br><i>where</i><br><b>file_name</b><br>is the name of the storage device from office records<br><b>Note:</b> The command LISTFL file_name applies to a SuperNode front end. For an NT40 front end, the command is LISTVOL vol_name. |           |
| <b>29</b> | To exit the disk utility, type<br><b>&gt;QUIT</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                       |           |
| <b>30</b> | Determine if the device specified for the PM load file matches the office records from step 10.                                                                                                                                                                                                                                                                                     |           |
|           | <b>If the device name</b>                                                                                                                                                                                                                                                                                                                                                           | <b>Do</b> |
|           | does not match                                                                                                                                                                                                                                                                                                                                                                      | step 63   |
|           | matches                                                                                                                                                                                                                                                                                                                                                                             | step 31   |
| <b>31</b> | To access table PMLOADS, type<br><b>&gt;TABLE PMLOADS</b><br>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:*

BKPFIL :

- 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 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

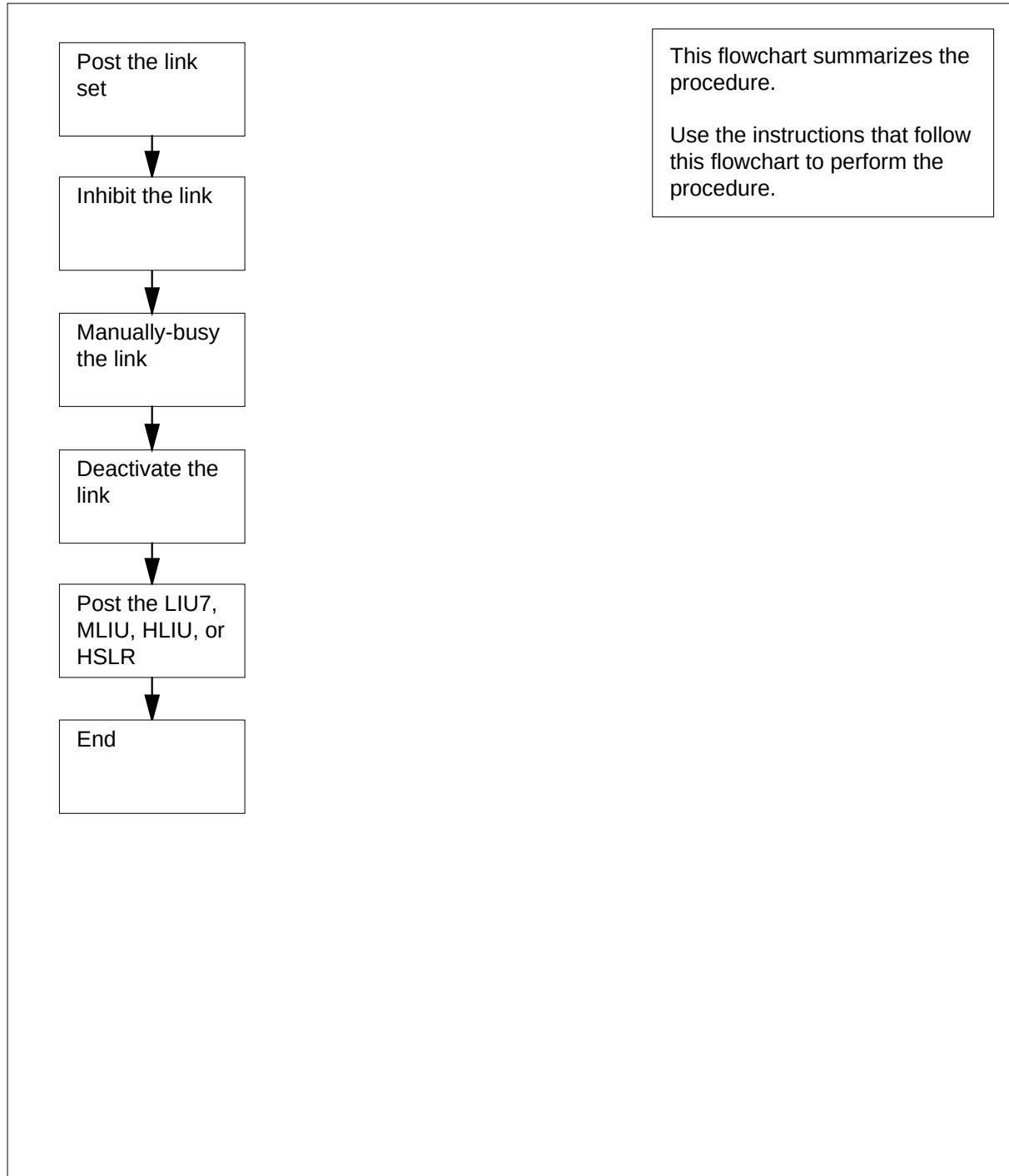
This procedure contains a summary flowchart and a list of steps. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.



---

**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
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 A lnd                            | 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**

Deactivating CCS7 links (continued)

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

|    |           |           |           |           |           |           |
|----|-----------|-----------|-----------|-----------|-----------|-----------|
| PM | SysB<br>1 | ManB<br>0 | OffL<br>2 | CBsy<br>0 | ISTb<br>3 | InSv<br>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.

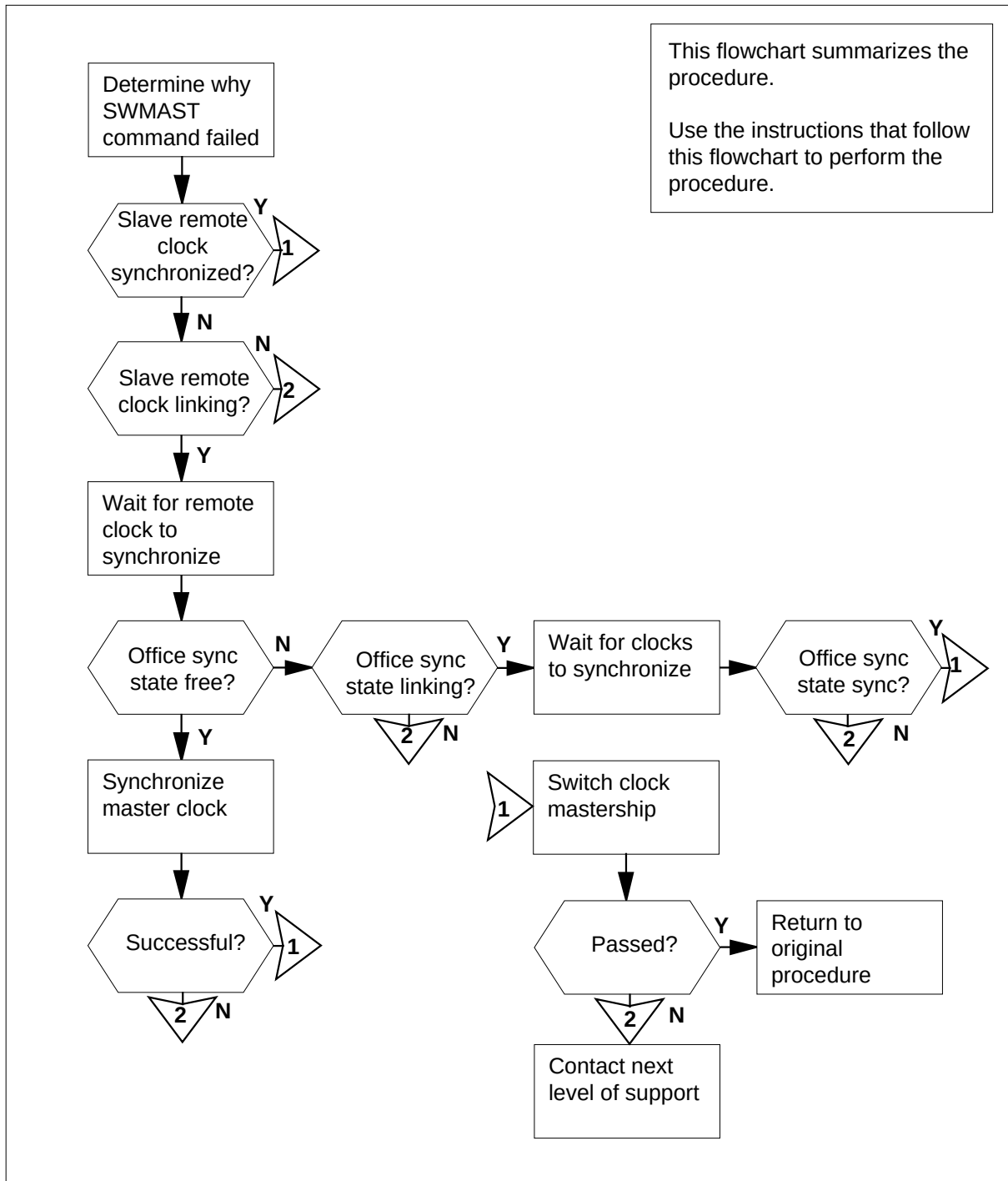
### **Action**

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 (continued)

### 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 re-mote 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)

|           | <b>If the state of the slave remote clock</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Do</b> |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | is LKng                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | step 24   |
| <b>10</b> | <p>To determine the office sync state of the clocks, type<br/> <b>&gt;QUERYCK</b><br/> and press the Enter key.</p> <p><b>Note:</b> The office sync state appears on the right of the Office SYNC state header.</p> <p><i>Example of a MAP response:</i></p> <pre>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</pre> |           |
|           | <b>If the office sync state</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Do</b> |
|           | is Free                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | step 11   |
|           | is LKng                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | step 15   |
|           | is Sync                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | step 21   |
| <b>11</b> | <p>To start the synchronization of the master clock, type<br/> <b>&gt;SYNC</b><br/> and press the Enter key.</p> <p><i>Example of a MAP response:</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |

## 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 = f10000
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 = f10000
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)

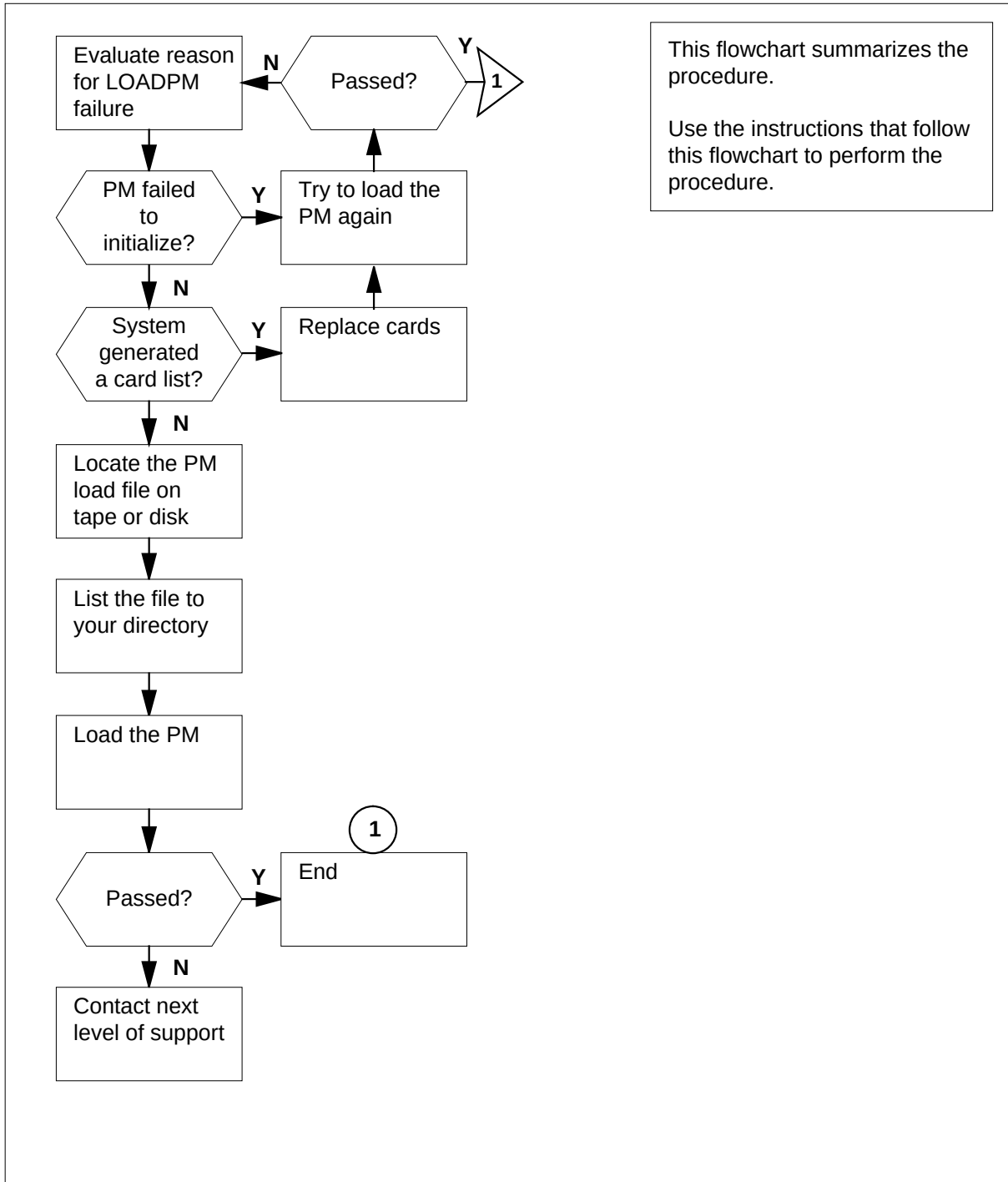
Perform this procedure when the LOADPM command in a card replacement procedure fails. Post the peripheral before starting this procedure.

## **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 (continued)

### 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 isLoad file not in directory                                                                                                               | step 4  |
| the MAP response isLoad 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 isother 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)**


---

|           | <b>If load files</b>                                                                                                                                                                    | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | are on an input/output controller (IOC) disk                                                                                                                                            | step 11   |
|           | are on a system load module (SLM) disk                                                                                                                                                  | step 18   |
| <b>5</b>  | Locate the tape that contains the PM load files.                                                                                                                                        |           |
|           | <b>At the IOE frame</b>                                                                                                                                                                 |           |
| <b>6</b>  | Mount the tape on a magnetic tape drive.                                                                                                                                                |           |
|           | <b>At the MAP terminal</b>                                                                                                                                                              |           |
| <b>7</b>  | To download the tape, type<br><b>&gt;MOUNT tape_no</b><br>and press the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive that contains the PM load files |           |
| <b>8</b>  | To list the contents of the tape in your user directory, type<br><b>&gt;LIST T tape_no</b><br>and press the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the tape drive number    |           |
| <b>9</b>  | To demount the tape, type<br><b>&gt;DEMOUNT T tape_no</b><br>and press the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the tape drive number                                     |           |
| <b>10</b> | Remove the tape from the magnetic tape drive.<br>Go to step 24.                                                                                                                         |           |
| <b>11</b> | 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.         |           |
| <b>12</b> | To access the disk utility, type<br><b>&gt;DSKUT</b><br>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.
- | <b>If you</b>               | <b>Do</b> |
|-----------------------------|-----------|
| 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.

---

**Loading a PM (continued)**


---

- 18** To access the disk utility, type

**>DISKUT**

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<br>MODIFY<br>DATE | FILE<br>CODE<br>G C O E<br>C N | O R I O<br>R E T P<br>IN<br>BLOCKS | FILE<br>SIZE<br>IN<br>FILE | NUM OF<br>RECORDS<br>LEN | MAX<br>FILE NAME<br>REC |
|------------------------|--------------------------------|------------------------------------|----------------------------|--------------------------|-------------------------|
| 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)**

|           | <b>If the LOADPM command</b>                                                                                                                                                                                              | <b>Do</b> |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | failed, and the reason is the same as the first time<br>LOADPM failed                                                                                                                                                     | step 34   |
|           | failed, and you did not replace all the cards recorded<br>in step 2                                                                                                                                                       | step 33   |
|           | failed, and you replaced all the cards recorded in step<br>2                                                                                                                                                              | step 34   |
| <b>26</b> | To load the PM unit, type<br><b>&gt;LOADPM UNIT unit_no</b><br>and press the Enter key.<br><i>where</i><br><b>unit_no</b><br>is the PM unit number (0 or 1)                                                               |           |
|           | <b>If the LOADPM command</b>                                                                                                                                                                                              | <b>Do</b> |
|           | passed                                                                                                                                                                                                                    | step 35   |
|           | failed, and the reason is different from the first time<br>LOADPM failed                                                                                                                                                  | step 1    |
|           | failed, and the reason is the same as the first time<br>LOADPM failed                                                                                                                                                     | step 34   |
|           | failed, and you did not replace all the cards recorded<br>in step 2                                                                                                                                                       | step 33   |
|           | failed, and you replaced all the cards recorded in step<br>2                                                                                                                                                              | step 34   |
| <b>27</b> | To load the CLASS modem resource (CMR) card, type<br><b>&gt;LOADPM UNIT unit_no CMR</b><br>and press the Enter key.<br><i>where</i><br><b>unit_no</b><br>is the number of the PM unit (0 or 1) that contains the CMR card |           |
|           | <b>If the LOADPM command</b>                                                                                                                                                                                              | <b>Do</b> |
|           | passed                                                                                                                                                                                                                    | step 35   |
|           | failed, and the reason is different from the first time<br>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 | <p>To access the STC level of the MAP display, type</p> <p><b>&gt;PM;STC</b></p> <p>and press the Enter key.</p> <p><i>Example of a MAP display:</i></p> <pre> 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 </pre> |         |
| 29 | <p>To post the STCM or ST7G, type</p> <p><b>&gt;POST stcm_no</b></p> <p>and press the Enter key.</p> <p><i>where</i></p> <p><b>stcm_no</b></p> <p>is the STCM number (0 to 9)</p> <p><i>Example of a MAP display:</i></p>                                                                                                                                                                               |         |

**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

```

|           | <b>If the ST</b>                                                                              | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------|-----------|
|           | appears                                                                                       | step 32   |
|           | does not appear                                                                               | step 30   |
| <b>30</b> | To display the next ST in the posted set, type<br><b>&gt;NEXT</b><br>and press the Enter key. |           |
|           | <b>If the ST</b>                                                                              | <b>Do</b> |
|           | appears                                                                                       | step 32   |
|           | does not appear                                                                               | step 31   |
| <b>31</b> | Repeat step 30 until the ST appears in the posted set.                                        |           |
| <b>32</b> | To load the ST, type<br><b>&gt;LOADPM</b><br>and press the Enter key.                         |           |
|           | <b>If the LOADPM command</b>                                                                  | <b>Do</b> |
|           | passed                                                                                        | step 35   |
|           | failed, and the reason is different from the first time<br>LOADPM failed                      | step 1    |
|           | failed, and the reason is the same as the first time<br>LOADPM failed                         | step 34   |
|           | failed, and you did not replace all the cards listed in<br>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.

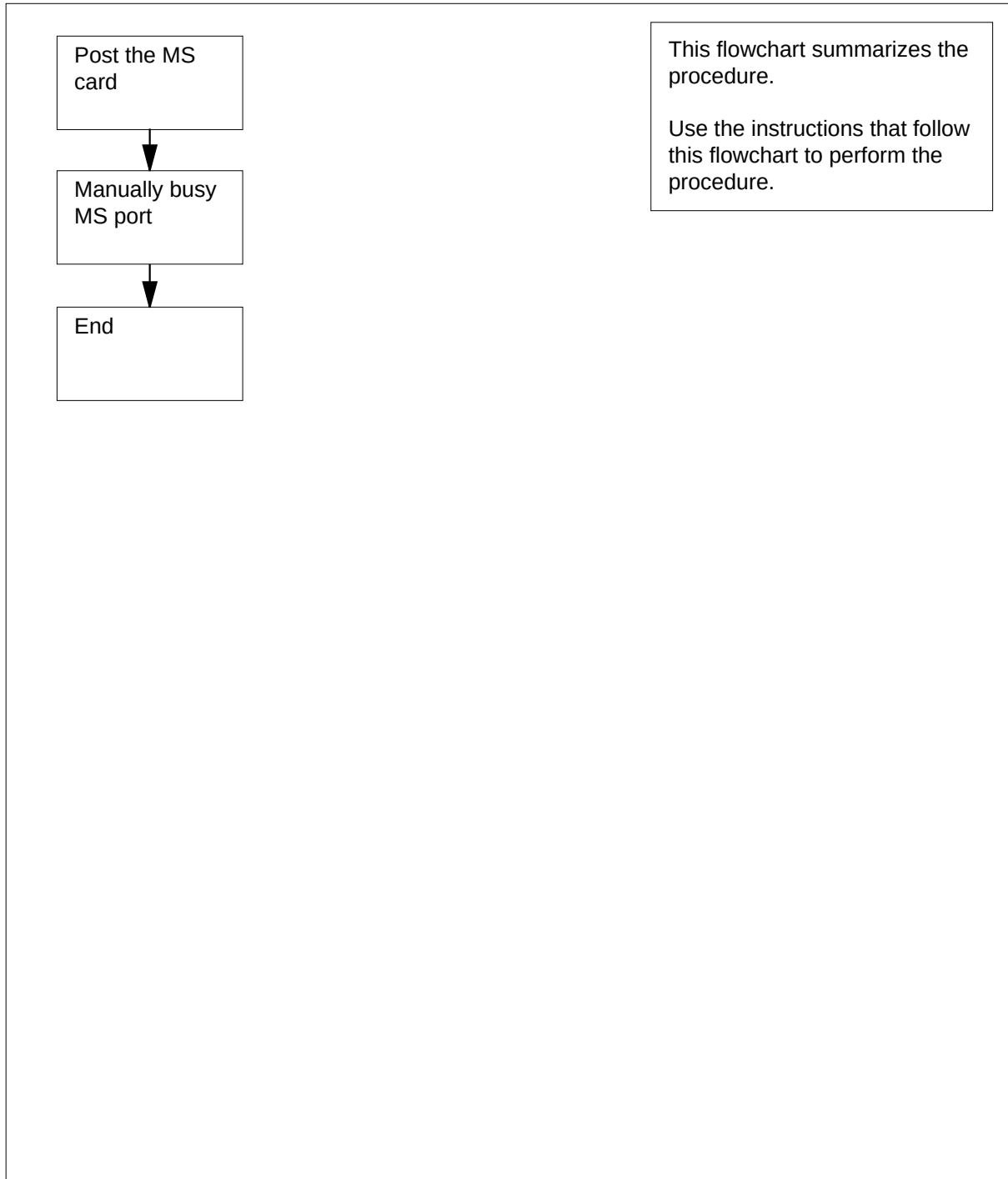
### Action

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
Card 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 2 2 2 2 2 2
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
Card 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 2 2 2 2 2 2
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<br><b>&gt;BSY ms_no PORT port_no</b><br>and press the Enter key.<br><i>where</i><br><b>ms_no</b><br>is the MS number (0 or 1) of the second link that you recorded in step 2<br><b>port_no</b><br>is the MS port number (0 to 3) of the second link that you recorded 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<br><b>&gt;CARD card_no</b><br>and press the Enter key.<br><i>where</i><br><b>card_no</b><br>is the card number (1 to 26) of the second link that you recorded in step 2                                                                                |         |
| 9 | To manually busy the MS port for the second DS30 link, type<br><b>&gt;BSY ms_no PORT port_no</b><br>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 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 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
Unit0: InSv      Links_00S Taps_00S
Unit1: 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).

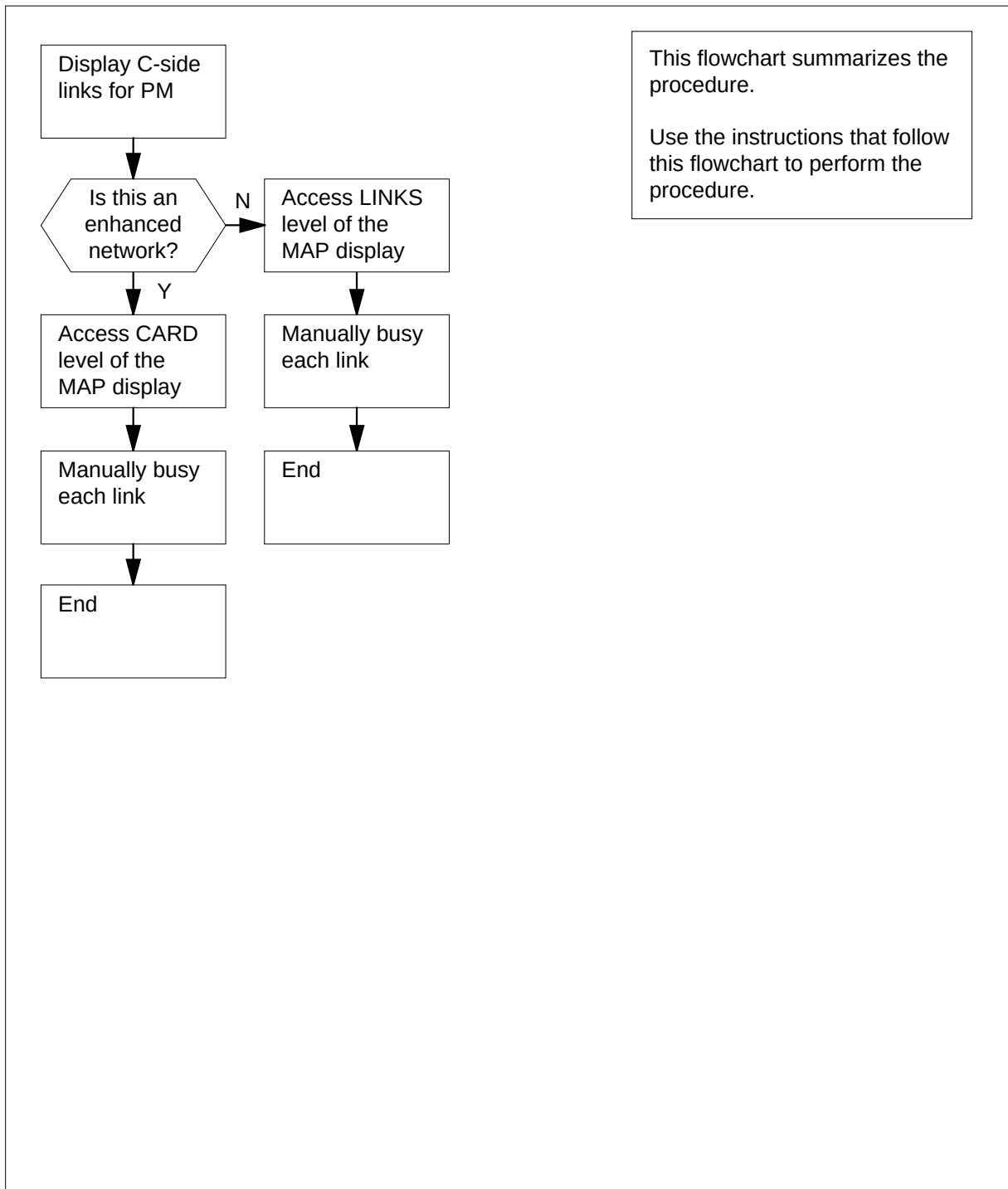
You must post the PM and make the PM available for query. Instructions in the main procedure direct you to post the PM again after you complete this common procedure.

### **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
Plane 01234 56789 11111 11111 22222 22222 33
      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
Plane 01234 56789 11111 11111 22222 22222 33
      0 L..
      1 ...
Net 1 Links
    Plane 0123 4567 8901 2345 6789 0123 4567 8901
      0 .... .... ..P. .... ..P.. ..P.. ..P..
      1 .... .... ..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.

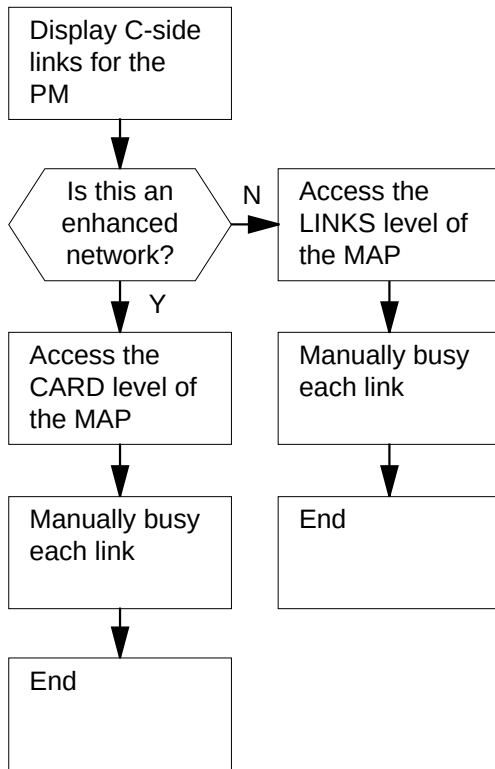
### Action

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**

This flowchart summarizes the procedure.

Use the instructions in the procedure that follows this flowchart to perform the procedure.

## 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     |
|-------------------------|--------|
| juncor 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
    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 .....
Plane 1   . . 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

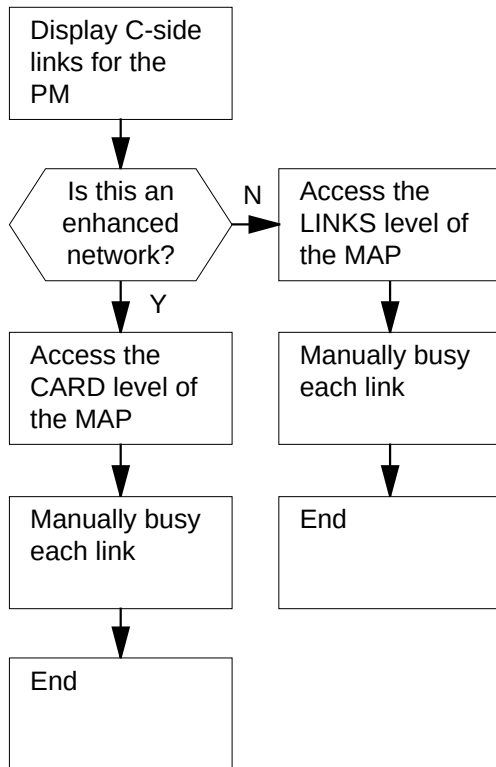
The following flowchart is only a summary of the procedure. To perform this procedure, use the instructions in the step-action procedure that follows the flowchart.



---

**Manually busying SMA2 C-side links** (continued)

---

**Summary of Manually busying SMA2 C-side links**

This flowchart summarizes the procedure.

Use the instructions in the procedure that follows this flowchart to perform the procedure.

## 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     |
|-------------------------|--------|
| junction 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 are connected  
*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 are connected

## 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 3333333
          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)

---

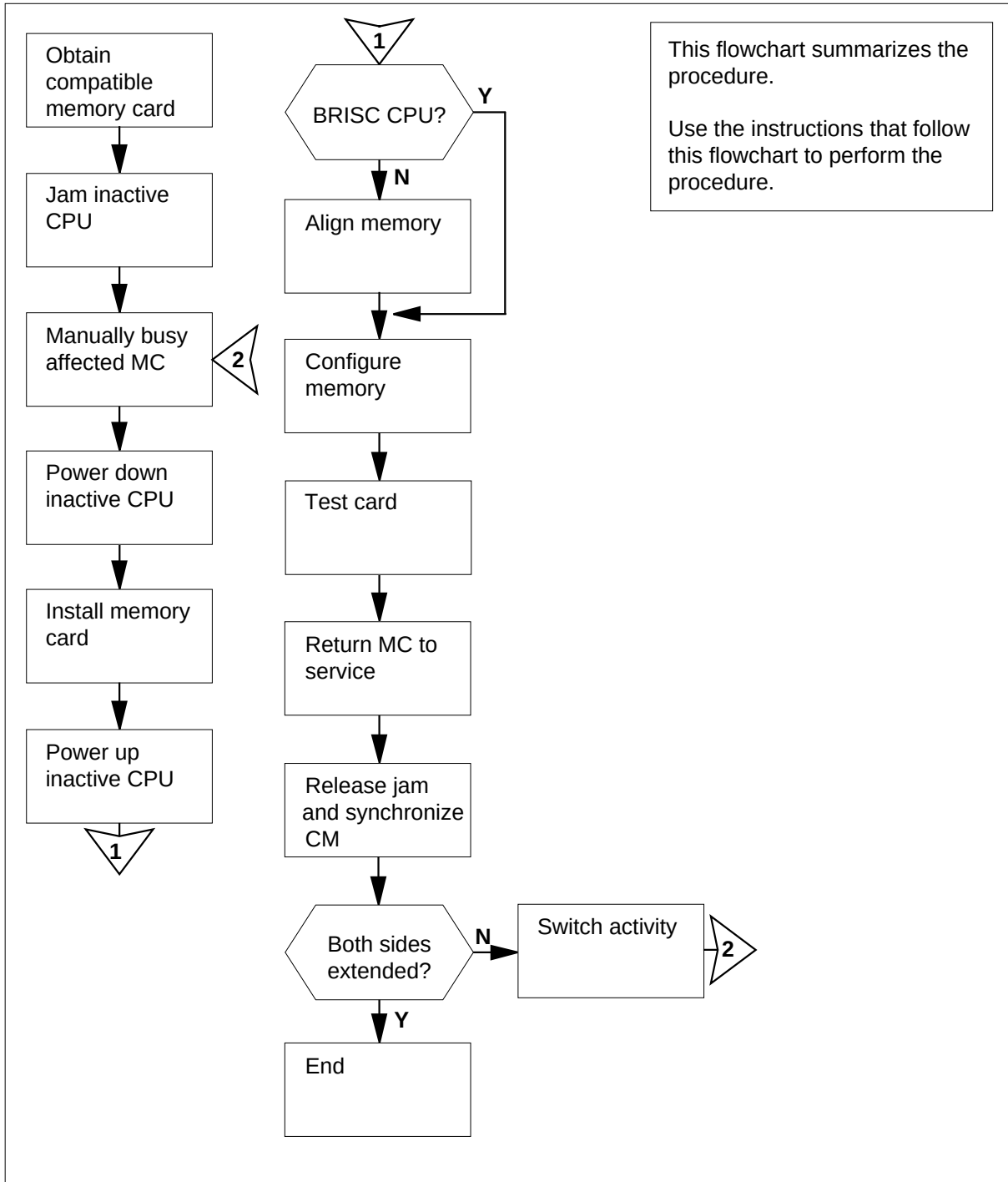
### Common procedures

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.<br>The inactive CPU is JAMMED.<br>Do you want to continue?<br>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)**


---

16

| <b>If the the state of the MC</b> | <b>Do</b> |
|-----------------------------------|-----------|
| is not mbsy                       | step 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.

---

| <b>If the MC</b> | <b>Do</b> |
|------------------|-----------|
| 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.

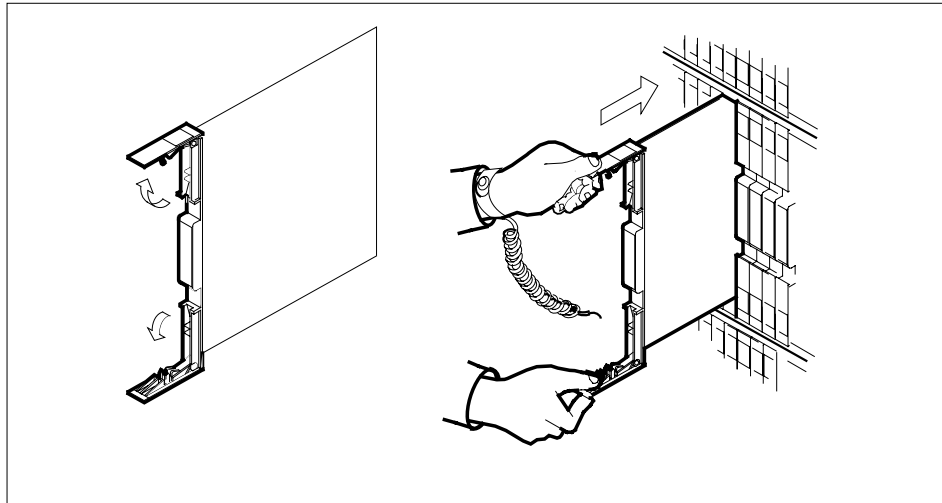
- 21 Remove the NT9X19 filler faceplate next to the NT9X13 card. Open the locking levers and carefully pull the faceplate toward you until the faceplate clears the shelf.

- 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.

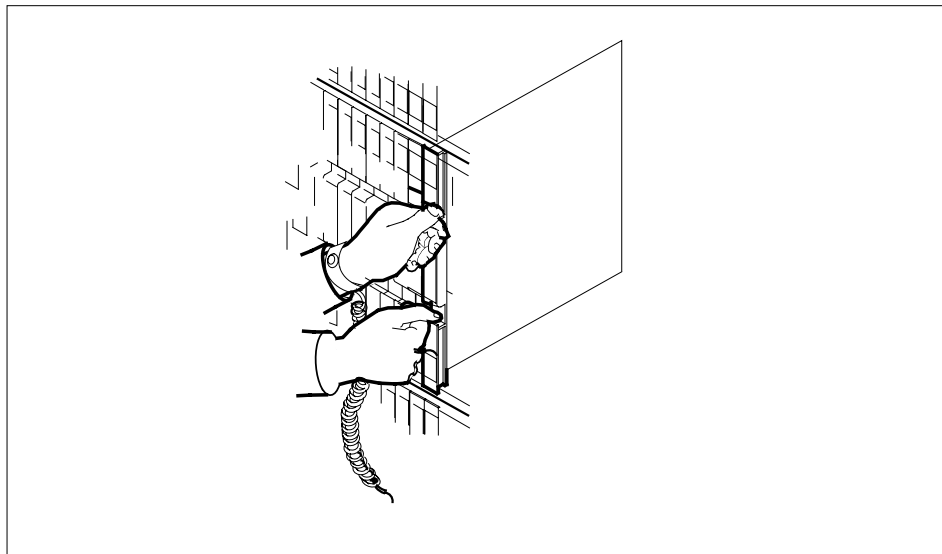
---

**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**

## Memory extension in the SuperNode CM (continued)

and press the Enter key.

|           | <b>If the response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | indicates the CONFIG command passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | step 38   |
|           | is other than listed here                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | step 50   |
| <b>35</b> | To configure the memory to make sure that the inactive CPU and the mate of the inactive CPU match, type<br><b>&gt;CONFIG OPTIMUM</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>WARNING:<br>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.<br>However, under this configuration, a CM running in SYNC will have Handshake-Override disabled.<br>Please confirm ("YES", "Y", "NO", or "N:)<br><br> |           |
| <b>36</b> | To confirm the CONFIG command, type<br><b>&gt;YES</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| <b>37</b> | To confirm the OPTIMUM parameter, type<br><b>&gt;YES</b><br>and press the Enter key.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
|           | <b>If the response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Do</b> |
|           | indicates the CONFIG command passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | step 38   |
|           | is other than listed here                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | step 50   |
| <b>38</b> | To test the new card, type<br><b>&gt;TST CARD card_number</b><br>and press the Enter key.<br><i>where</i><br><b>card_number</b><br>is the number of the card that you installed (1 to 10)<br><i>Example of a MAP response:</i>                                                                                                                                                                                                                                                                                                                                  |           |

---

**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.

| <b>If the memory configuration</b> | <b>Do</b> |
|------------------------------------|-----------|
| 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

| <b>If the response</b>                    | <b>Do</b> |
|-------------------------------------------|-----------|
| 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.

| <b>If the response</b>                    | <b>Do</b> |
|-------------------------------------------|-----------|
| 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.

---

| <b>If one or more errors</b> | <b>Do</b> |
|------------------------------|-----------|
| 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*

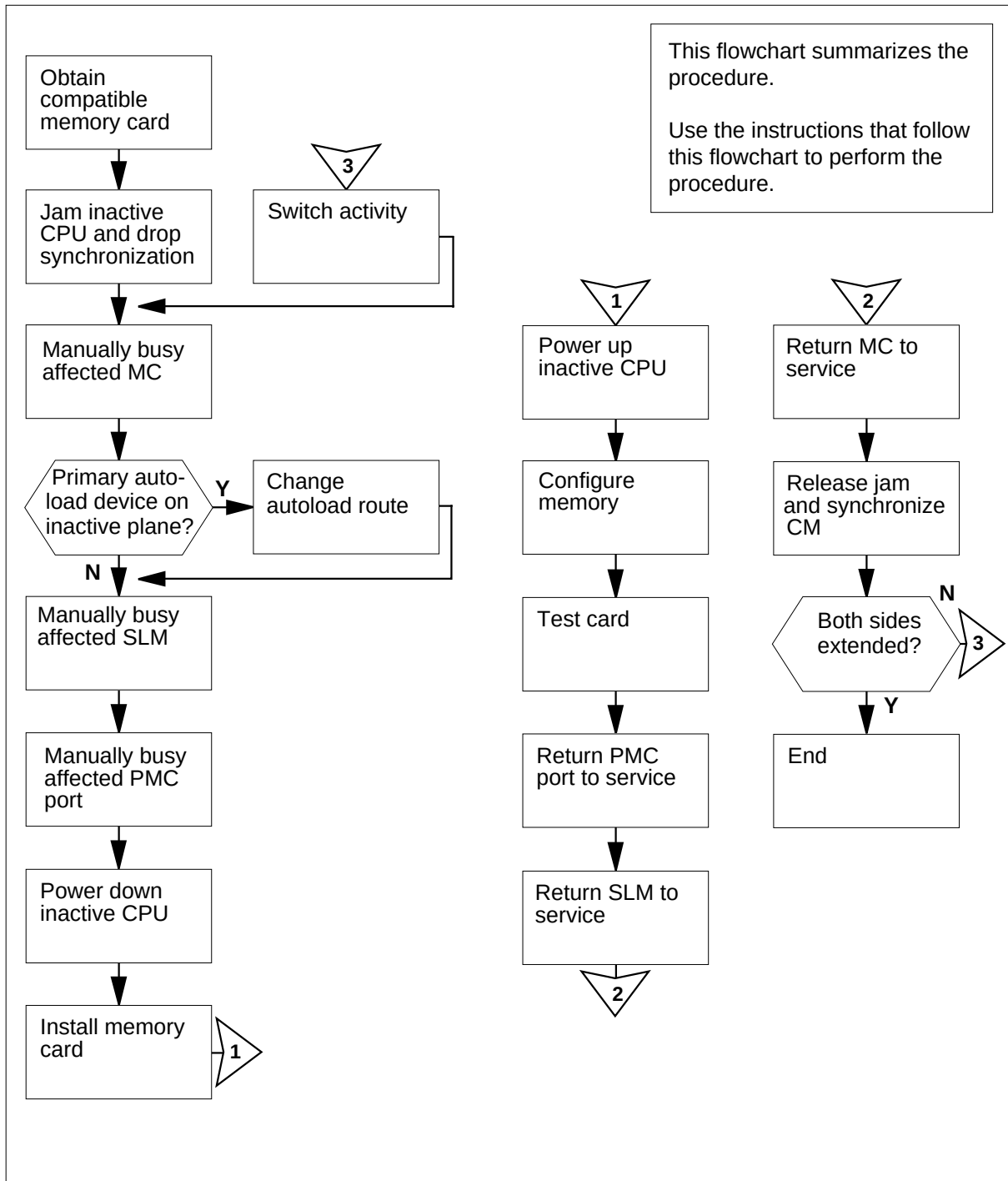
### Action

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.<br>The inactive CPU is JAMMED.<br>Do you want to continue?<br>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 autoloader device.  
**Note:** The primary autoloader device appears to the right side of the Primary header. In the example in step 14, the primary autoloader device is the disk of SLM 0.
- 16 Determine if the primary autoloader device is on the side of the switch with the active CPU or the inactive CPU.

| If the primary autoloader 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 autoloader 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 autoloader 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.

| <b>If the MC</b> | <b>Do</b> |
|------------------|-----------|
| 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.

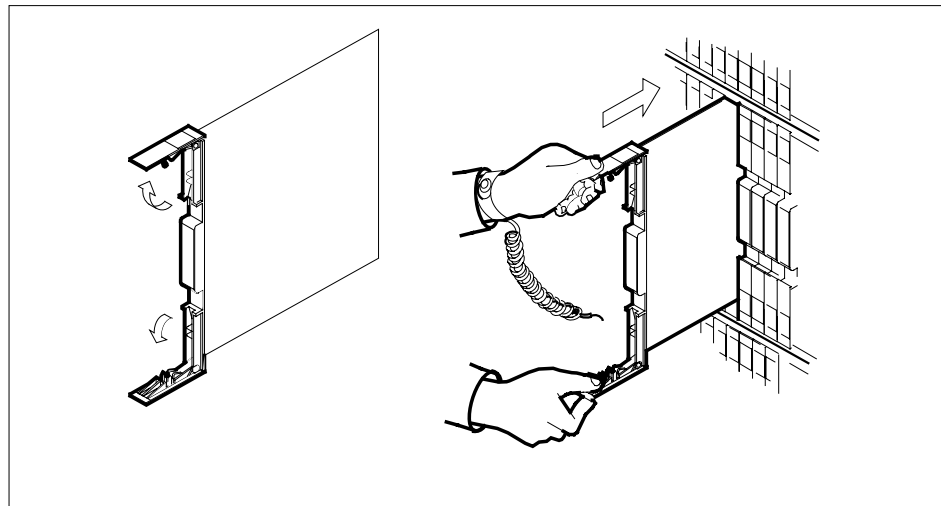
**If you**

**Do**

replace memory cards with cards that have more memory step 27  
memory

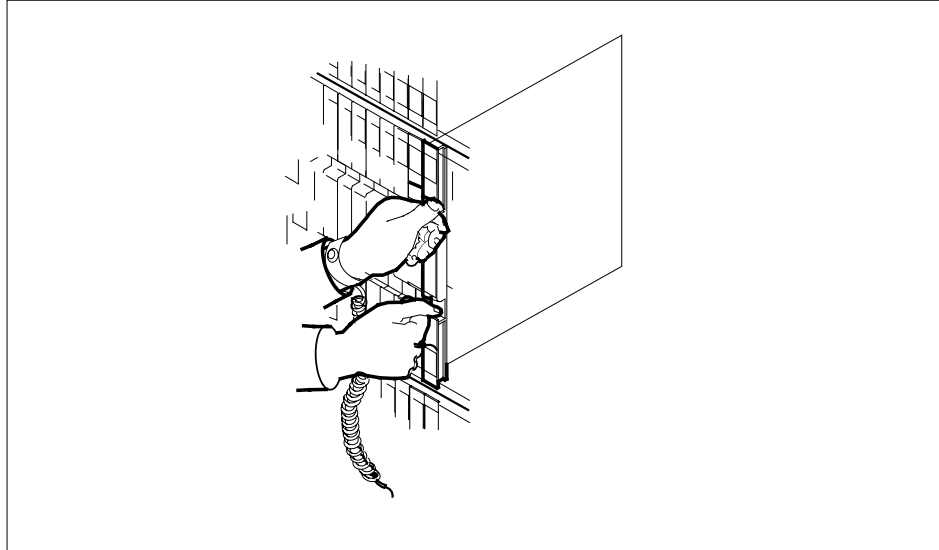
fill empty slots with memory cards step 28

- 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.

| <b>If the response</b>       | <b>Do</b> |
|------------------------------|-----------|
| 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.

| <b>If the TST command</b> | <b>Do</b> |
|---------------------------|-----------|
| passed                    | step 42   |
| failed                    | step 54   |

- 42** To query the memory status, type  
**>QUERY MEM**  
 and press the Enter key.

| <b>If the command</b> | <b>Do</b> |
|-----------------------|-----------|
| 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:*

---

**Memory extension in the SuperNode SE CM (continued)**


---

Maintenance action submitted.  
Synchronization successful

|           | <b>If the response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Do</b> |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | indicates the SYNC command was successful                                                                                                                                                                                                                                                                                                                                                                                                                                                    | step 53   |
|           | is other than listed here                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | step 54   |
| <b>53</b> | The next step depends if you extended memory on both sides.                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |
|           | <b>If you</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Do</b> |
|           | extended memory on both sides                                                                                                                                                                                                                                                                                                                                                                                                                                                                | step 60   |
|           | did not extend memory on both sides                                                                                                                                                                                                                                                                                                                                                                                                                                                          | step 11   |
| <b>54</b> | For additional help, contact the next level of support.                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| <b>55</b> | To ensure the next automatic daily routine exercise (REx) test will start and complete successfully, type<br><b>&gt;QUERYCM REXSCHD COUNTS ALL</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>The Link Closure count is 0.<br>The Out-of-sync Recovery Mismatch count is 0.<br>The In-Sync Recovery Mismatch count is 0.<br>The Trap Rate count is 0.<br>The Processor Memory Fault count is 0.<br>The Clock Fault count is 2.<br>The Cancelled REx count is 0. |           |
|           | <b>If one or more errors</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Do</b> |
|           | are observed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | step 56   |
|           | are not observed                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | step 58   |
| <b>56</b> | To clear all observed errors, type<br><b>&gt;REXTST BASE RESETCOUNTS</b><br>and press the Enter key.<br><i>Example of a MAP response:</i>                                                                                                                                                                                                                                                                                                                                                    |           |



---

## 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.

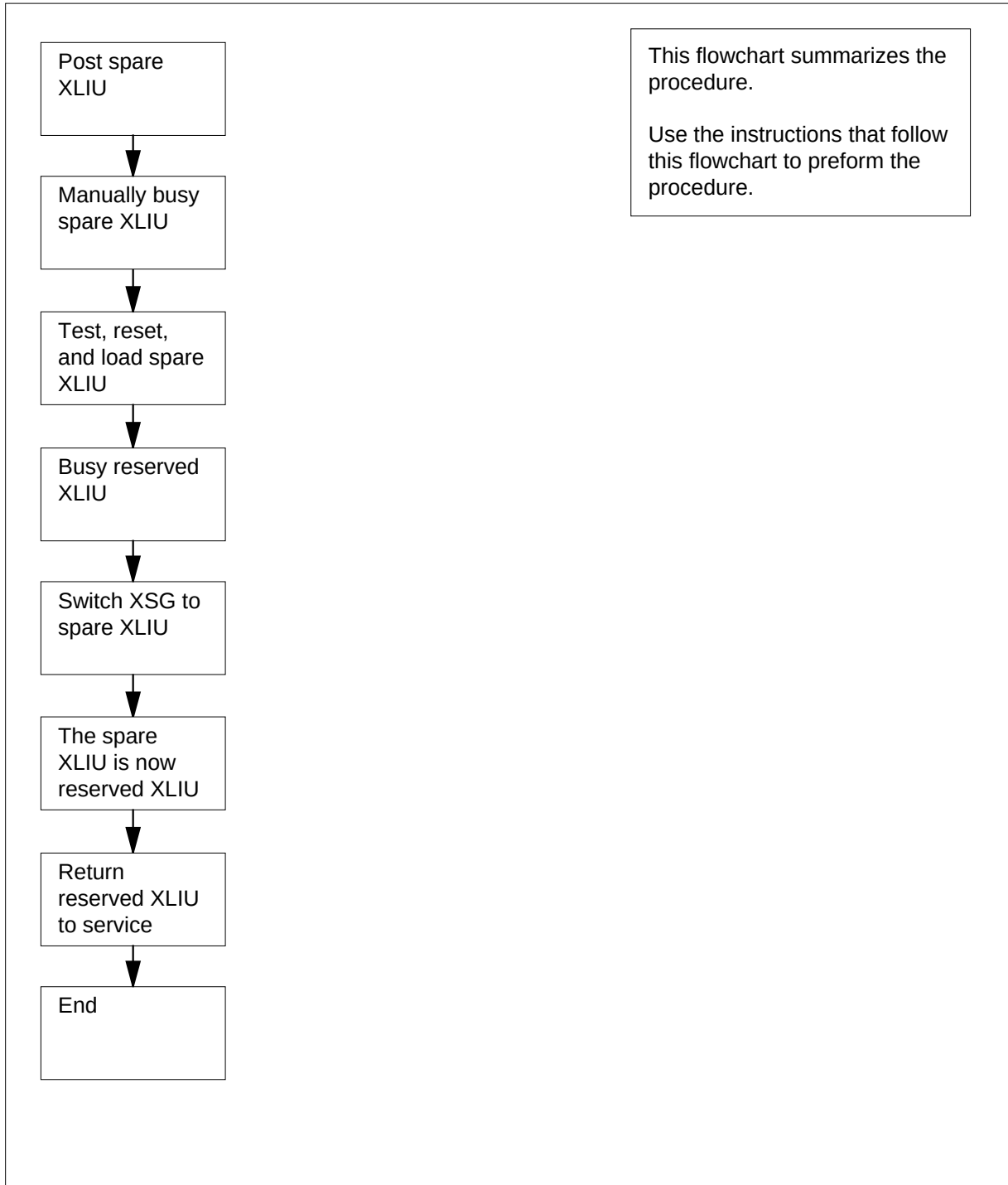
### Action

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<br><b>&gt;BSY FORCE</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>WARNING: XLIU 31 is currently being imaged.<br>Do you wish to abort imaging to proceed with the BSY request?<br>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<br><b>&gt;YES</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>Imaging will be aborted on XLIU.                                                                                                                                          |         |
| 7 | To test the spare XLIU, type<br><b>&gt;TST</b><br>and press the Enter key.<br><i>Example of a MAP response:</i>                                                                                                                                                                                 |         |

## 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**

## Moving an XSG to a spare XLIU (continued)

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.

## Removing and replacing a card

---

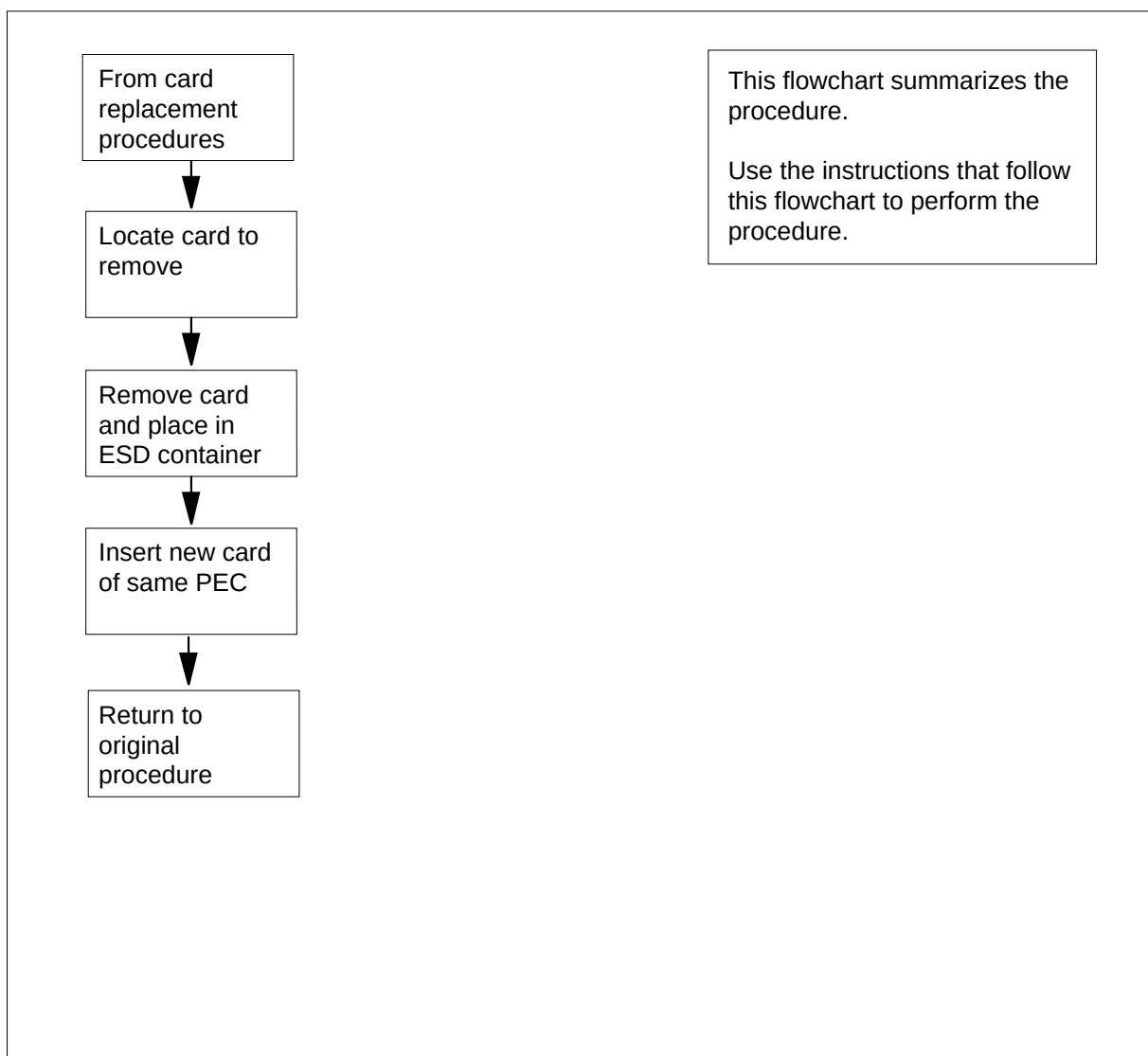
### Application

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 (continued)

---

### Removing and replacing a card in a shelf

#### *At the cabinet*

1

**WARNING****Equipment damage**

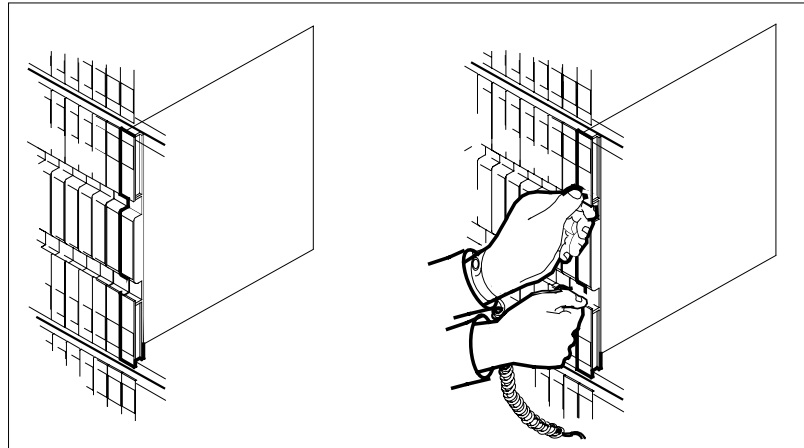
Take the following precautions when you remove or insert a card:1. Do not apply direct pressure to the components.2. Do not force the cards in the slots.

**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.

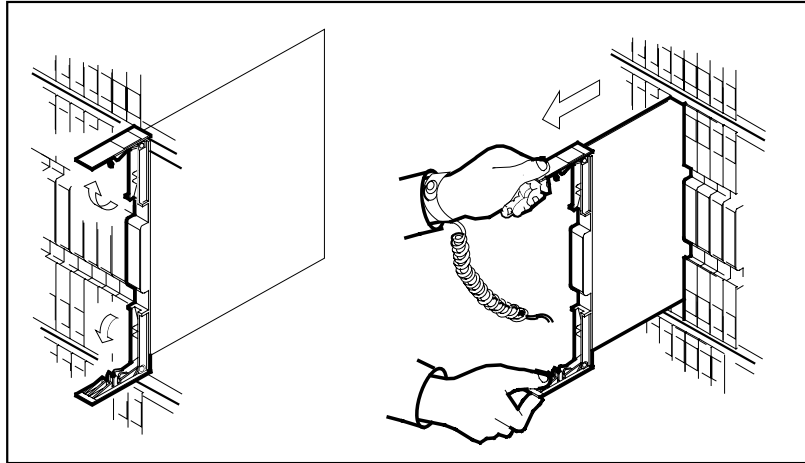
2 Locate the card you want to remove on the correct shelf.



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.

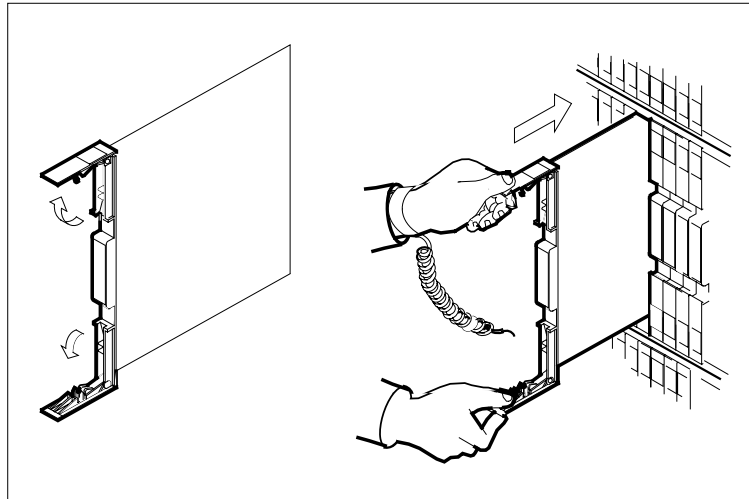
**Note:** When replacing the NTMX77, make sure the XPM/CPM switch on the circuit card is set to the correct position. If the NTMX77 you are replacing is in a CPM shelf (both units are on one shelf), set the switch to the CPM position. Otherwise, set the switch to the XPM position. If the replacement 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.

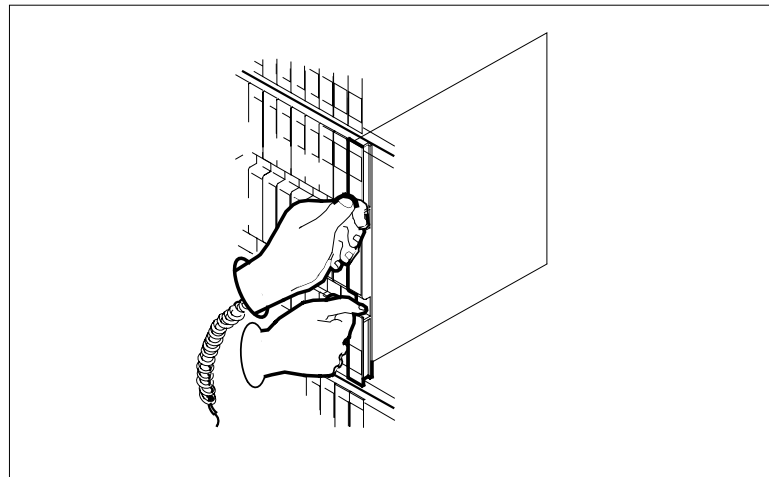
---

## 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

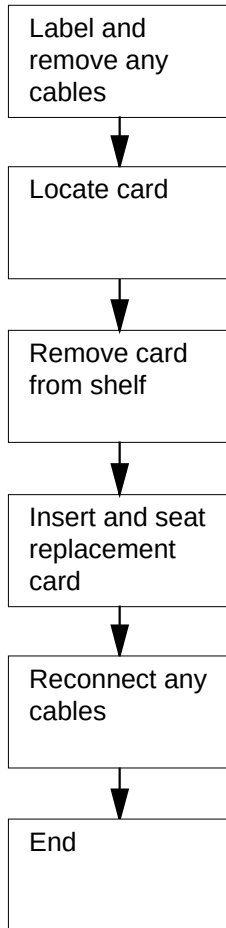
Use this procedure to replace a card in a modular equipment frame.

**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**

This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.

## 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

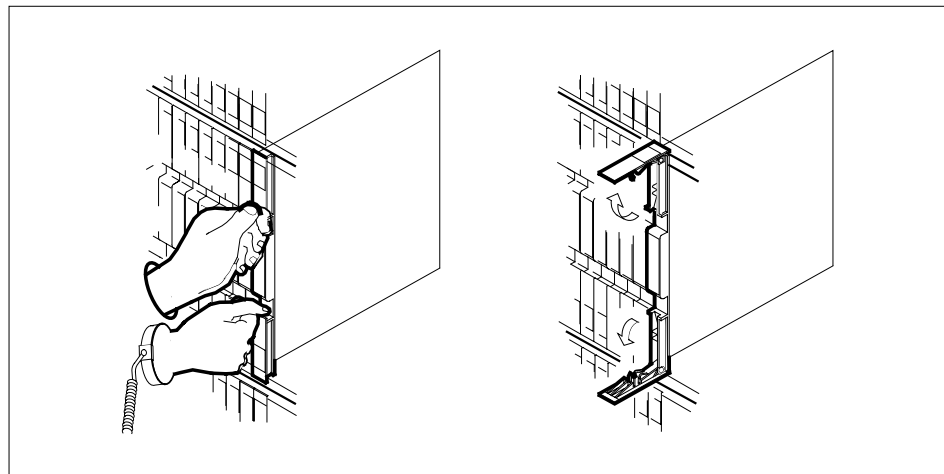
is not seated

step 6

---

**4**

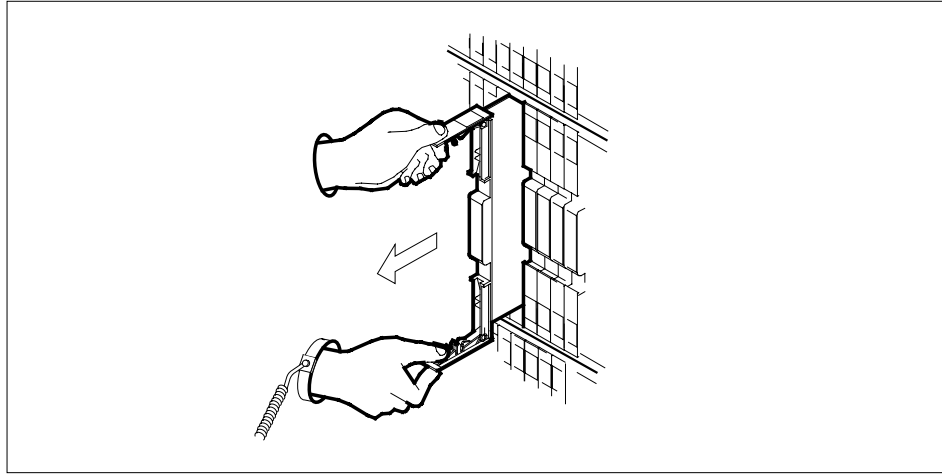
Open the latches on the face of the card.

**5**

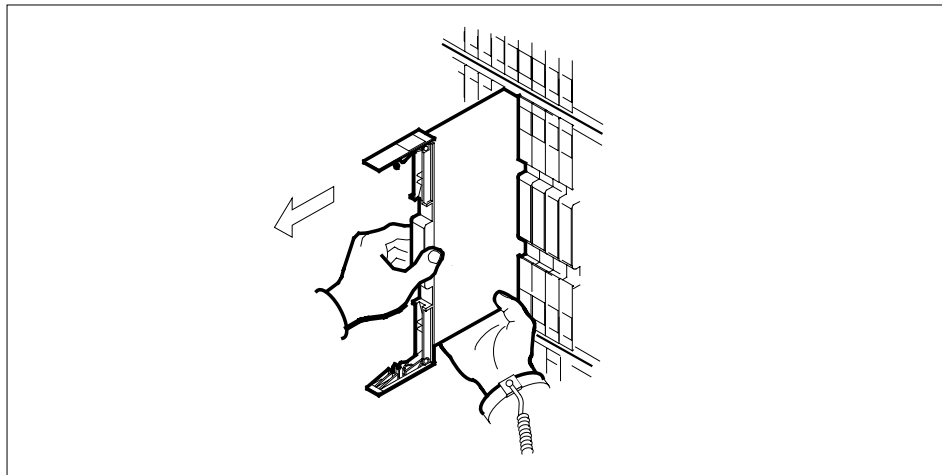
Grasp the latches and carefully pull the card toward you until the card protrudes 2 in. (5.1 cm) from the equipment shelf.

## 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.



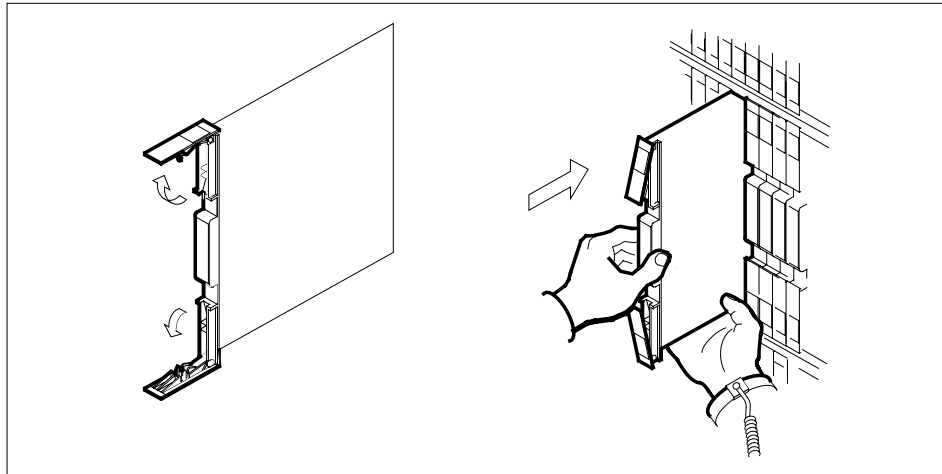
- 7 Place the card you removed in an electrostatic discharge (ESD) protective container.
- 8 Make sure the replacement card and the card you removed have the same PEC and PEC suffix.
- Note:** Determine if the card you replace has switches. Make sure the switches for the replacement card and the card 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).

---

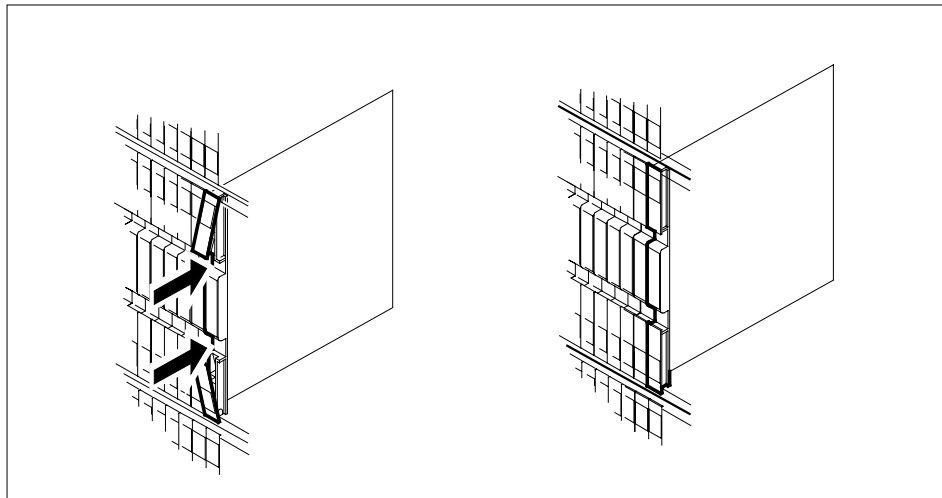
**Replacing a card (end)**

---

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**

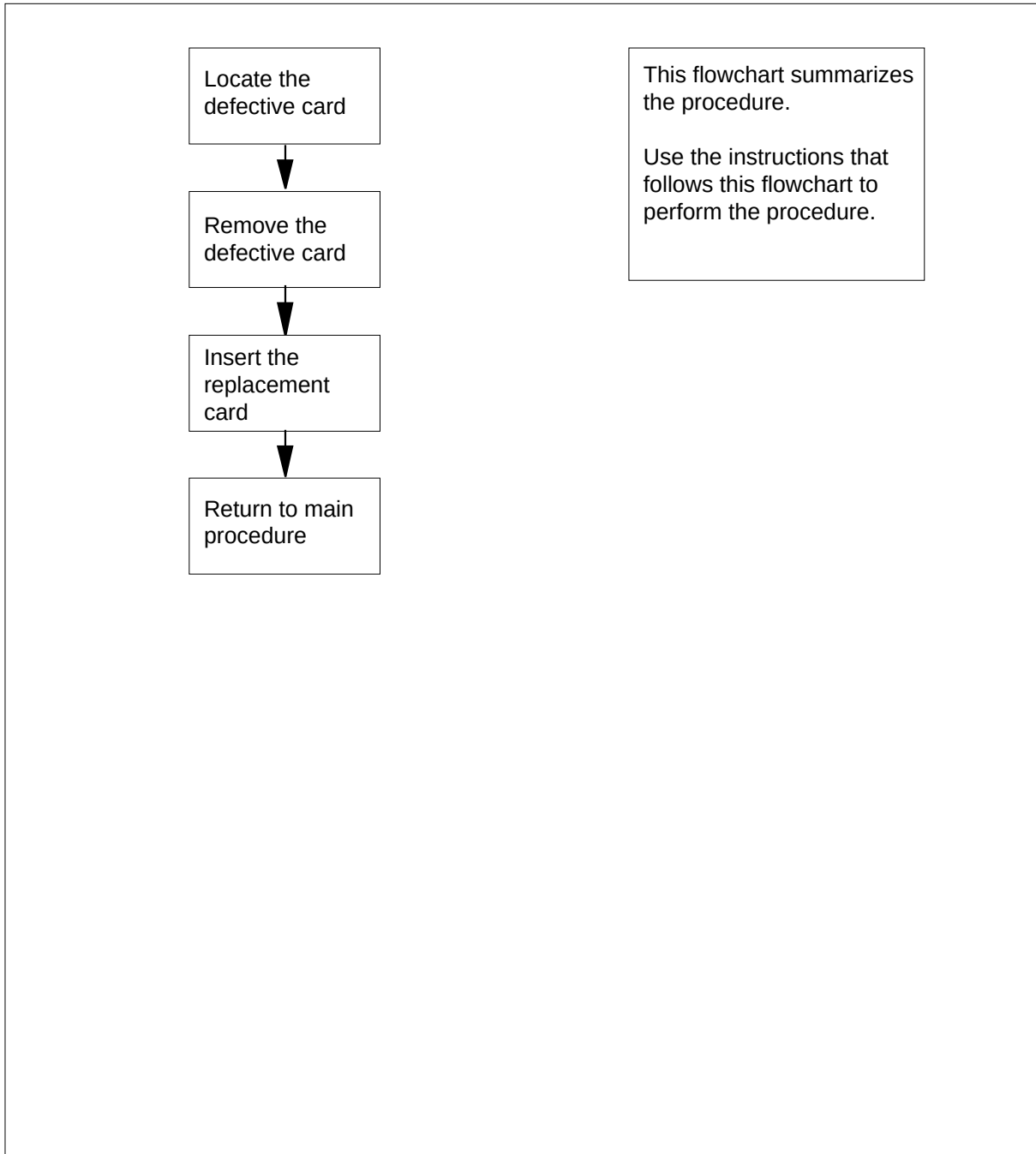
Use this procedure to unseat, remove, and reseal cards.

### **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



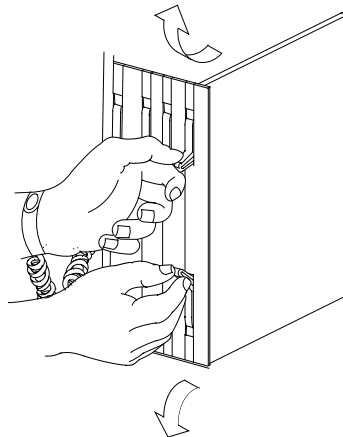
#### **DANGER**

##### **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

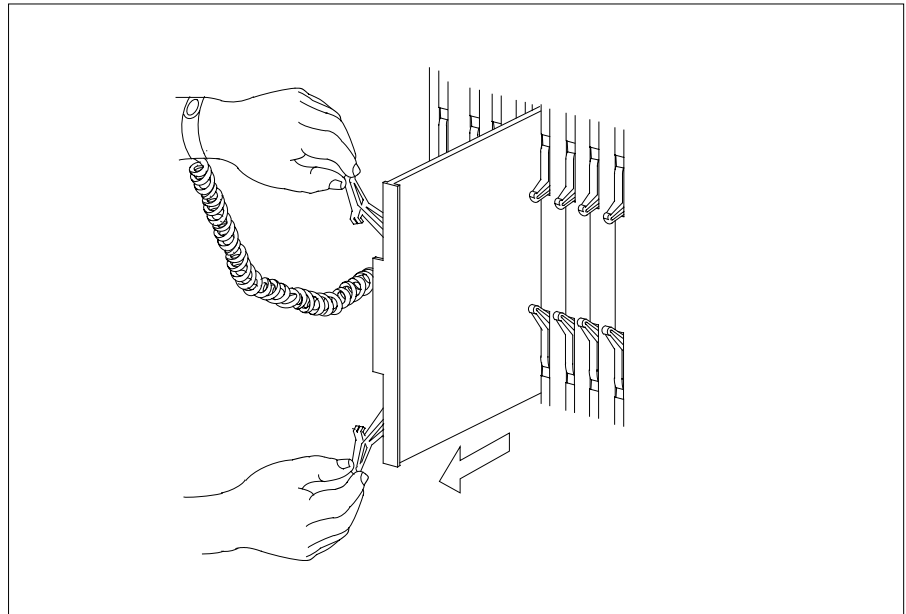


### **DANGER**

#### **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

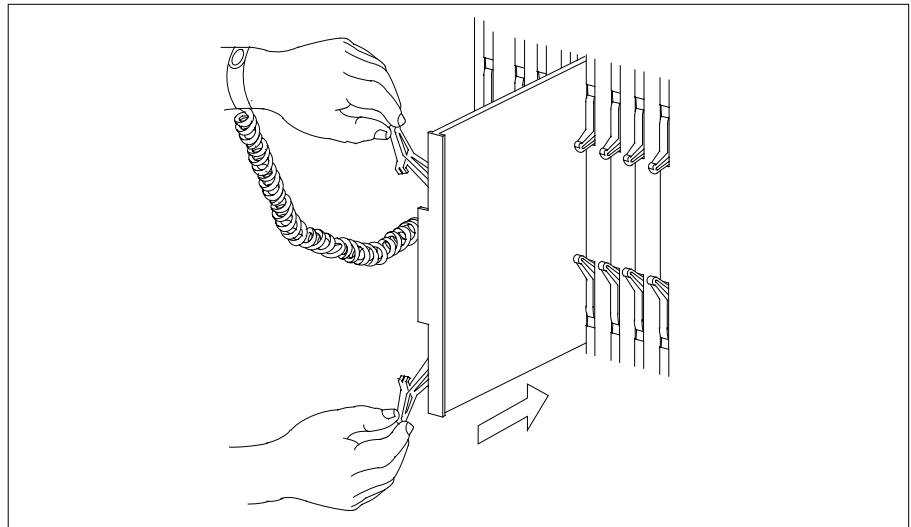


### **DANGER**

**Improper insertion may damage circuit packs**

Do not apply direct pressure to the components. Do not force the cards into the slots.

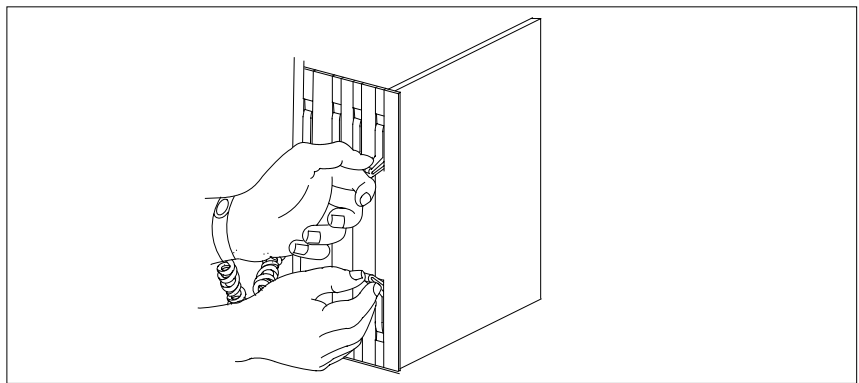
Open the locking levers on the replacement card. Align the card with the slots in the shelf and gently slide the card into the shelf.



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

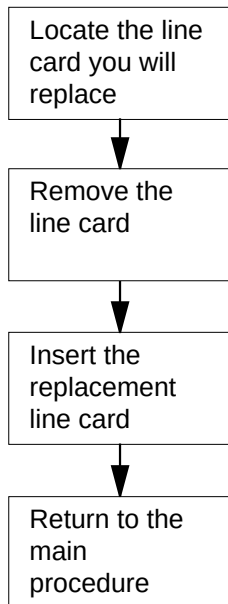
You must post the circuit to complete a hardware location query.

### 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



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.

## 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**

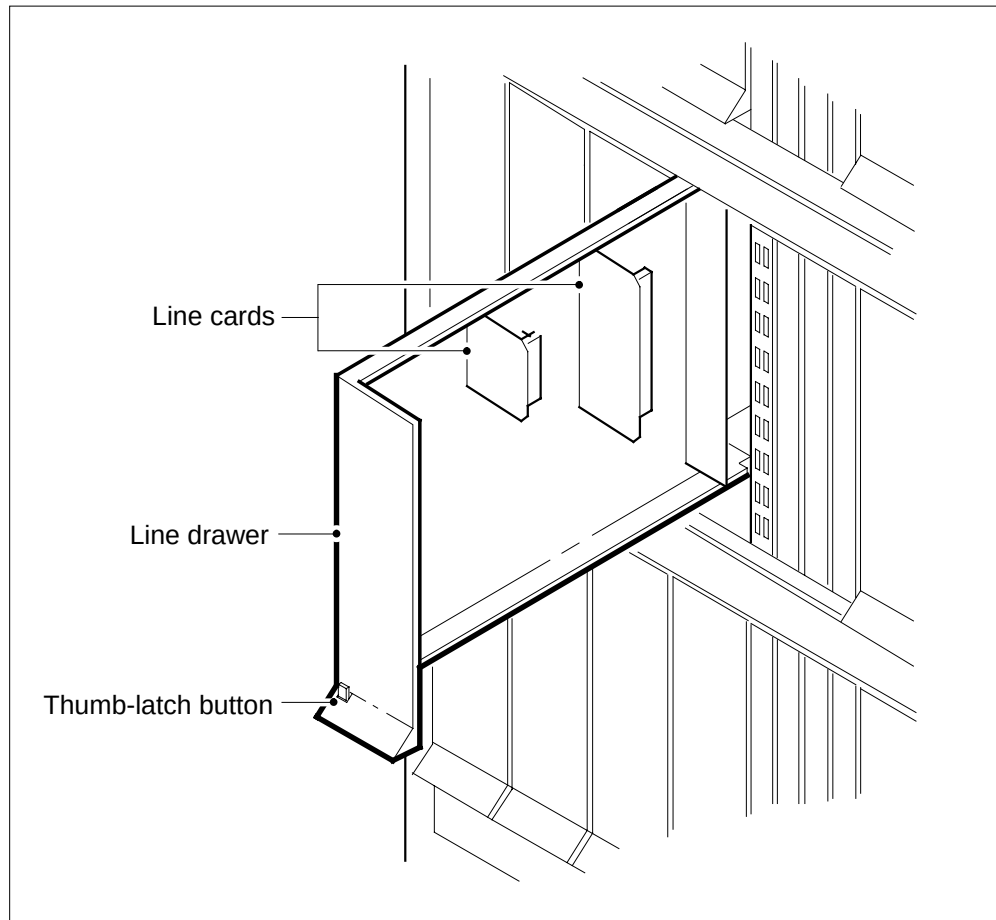
Wear a wrist strap that connects to a wrist-strap grounding point to handle circuit cards. The wrist-strap grounding point is on a frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist strap protects the cards against static electricity damage.

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



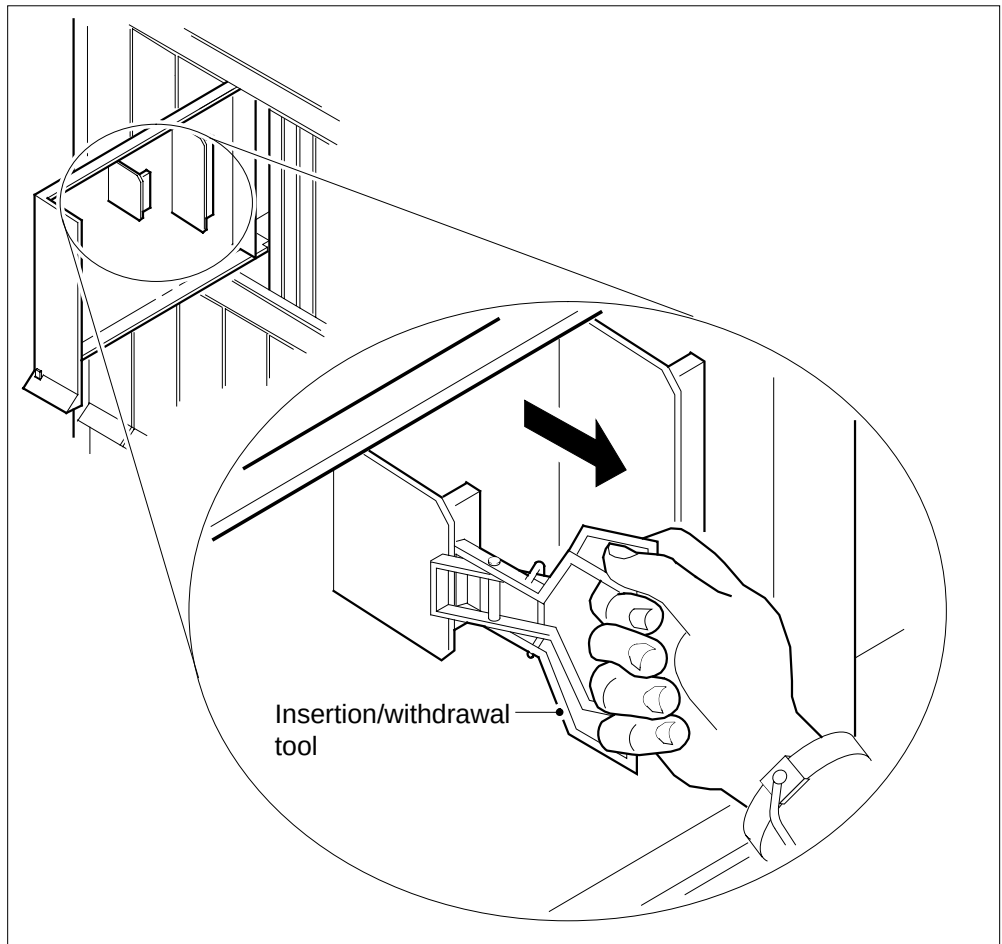
### **DANGER**

#### **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.

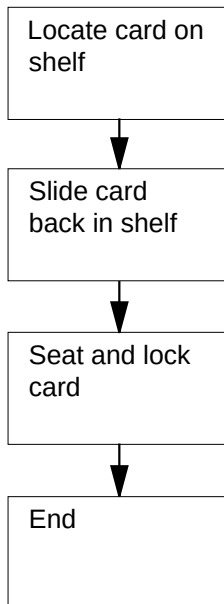
### Action

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



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.

---

**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.

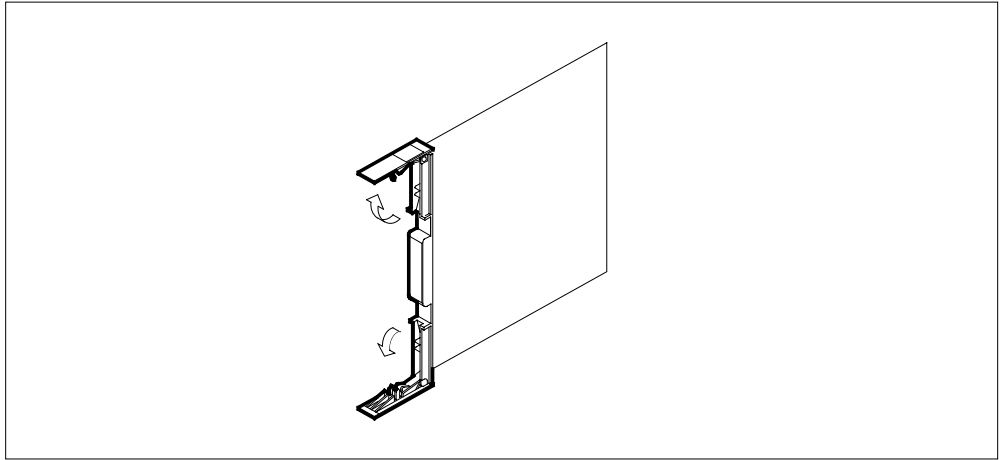
***At the shelf*****1****WARNING****Static electricity damage**

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.

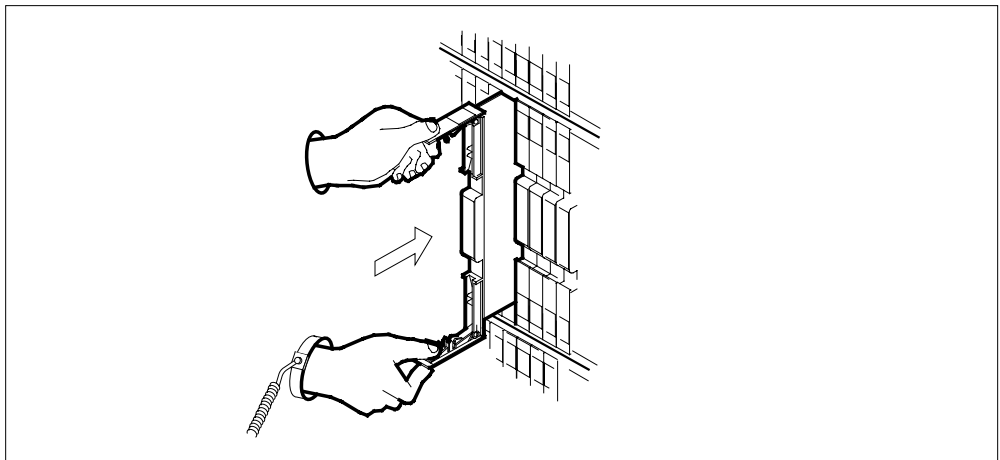
Locate the card on the shelf. Make sure the locking levers are open.

## Reseating cards in equipment shelves (continued)

---



- 2** Carefully slide the card back in the slot.

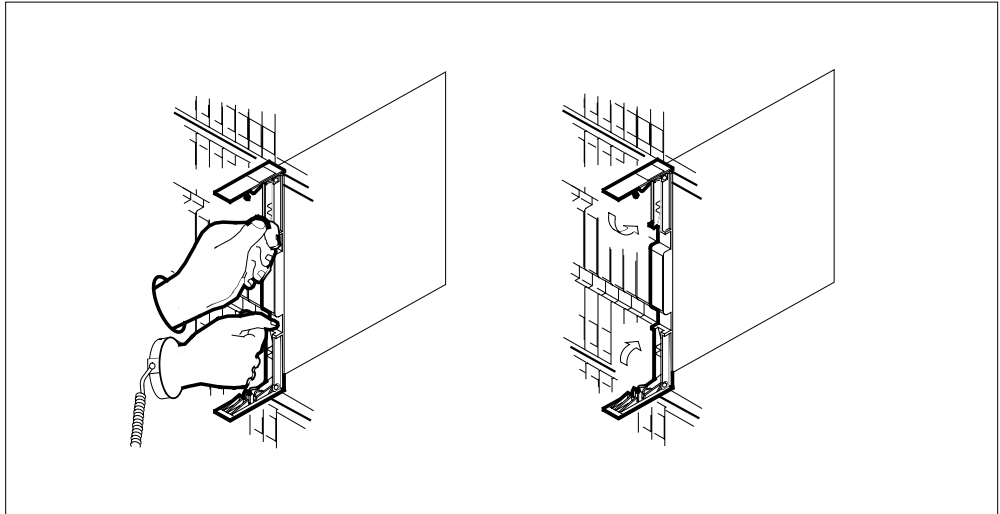


- 3** Seat and lock the card as follows:
- a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Make sure the card sits completely in the shelf.
  - b** To secure the card, close the locking levers.

---

## 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.

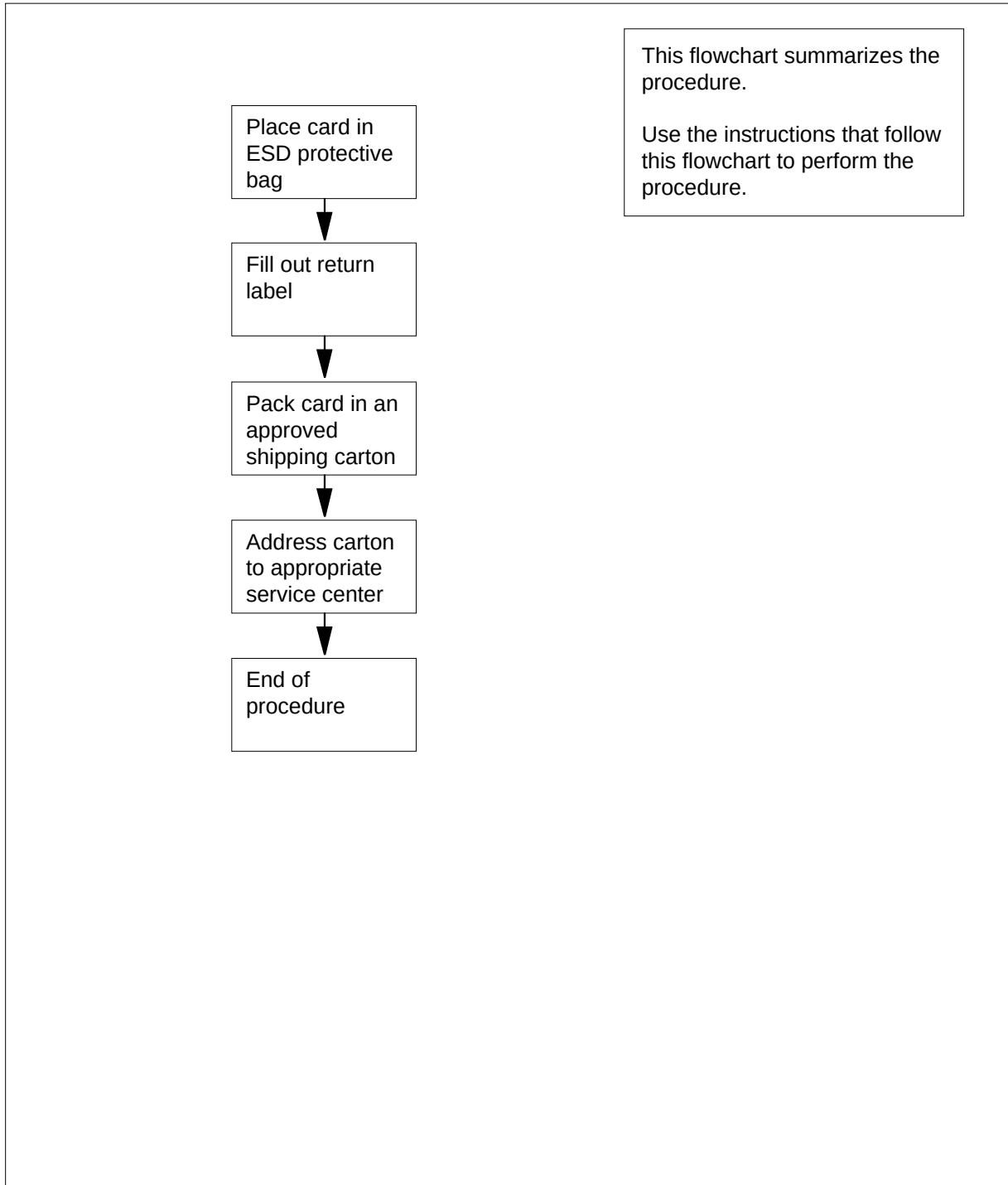
### **Action**

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 anywhere 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

---

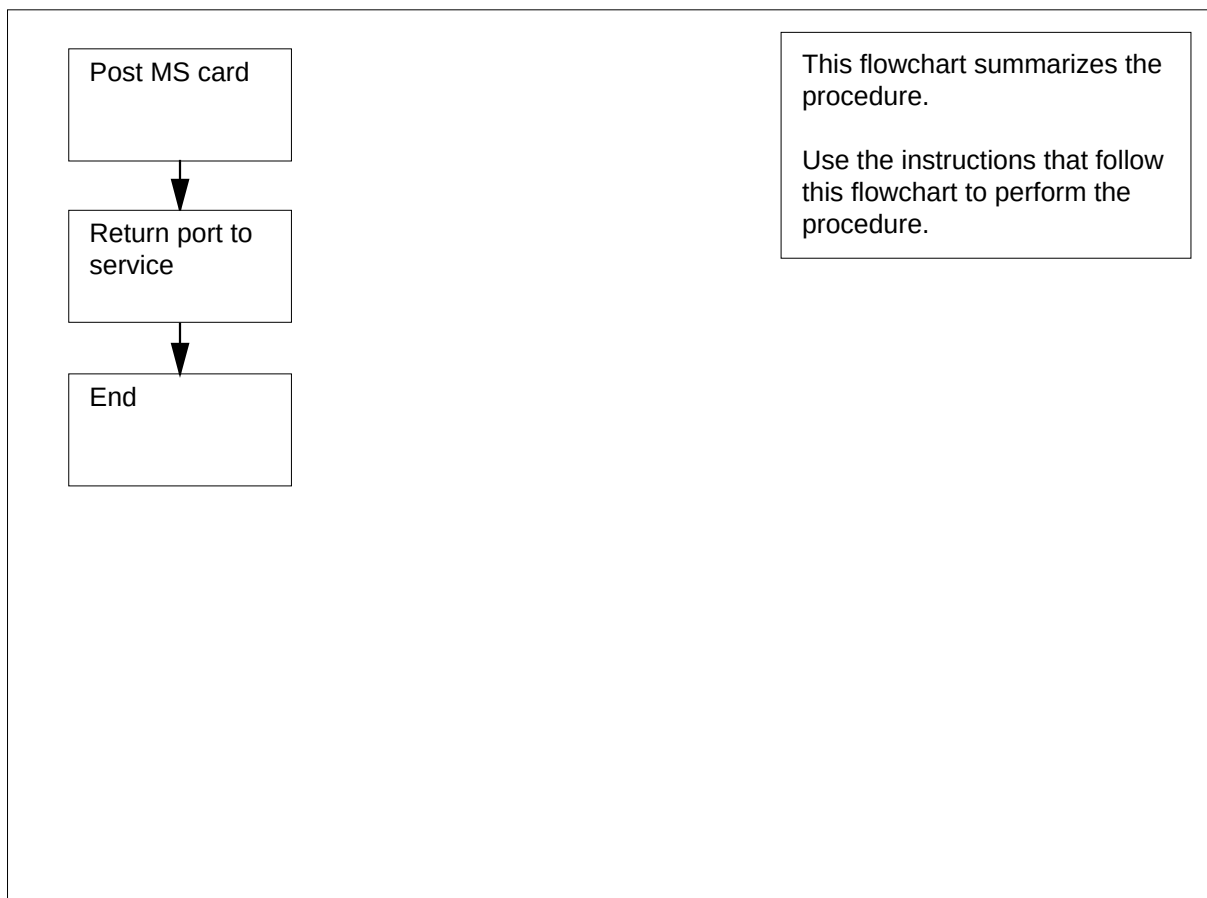
### Application

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 perform 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 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 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 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<br><b>&gt;RTS ms_no PORT port_no</b><br>and press the Enter key.<br><i>where</i><br><b>ms_no</b><br>is the MS number (0 or 1) of the second link that you recorded in step 2<br><b>port_no</b><br>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<br><b>&gt;CARD card_no</b><br>and press the Enter key.<br><i>where</i><br><b>card_no</b><br>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
Unit0: InSv      Links_00S Taps_00S
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.

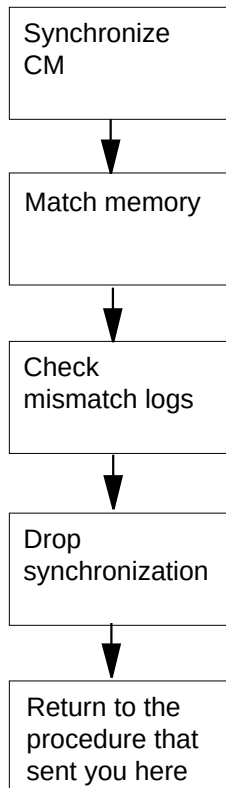
### Action

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



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.



## 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<br><b>&gt;MEMORY</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>CM 0<br>Card 123456<br>Plane 0 .....<br>Plane 1 .....                                                                                                    |         |
| 4 | To match the memories of the CPUs, type<br><b>&gt;MATCH ALL</b><br>and press the Enter key.<br><i>Example of a MAP response:</i><br><br>Matching memory between CPUs in SYNC.<br>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<br><b>&gt;QUIT ALL</b><br>and press the Enter key.                                                                                                                                                                                                        |         |
| 6 | To access the log utility, type<br><b>&gt;LOGUTIL</b><br>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.

---

| <b>If the response</b>                                                                                                                          | <b>Do</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| is About to drop sync with CPU n active.<br>The inactive CPU is JAMMED.<br>Do you want to continue?<br>Please confirm ("YES", "Y", "NO" or "N") | step 15   |
| is Drop synchronization failed.                                                                                                                 | step 18   |
| is Aborted. Active CPU n has a processor<br>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.

---

| <b>If A1</b>   | <b>Do</b> |
|----------------|-----------|
| 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.

---

| <b>If the CM</b>           | <b>Do</b> |
|----------------------------|-----------|
| 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

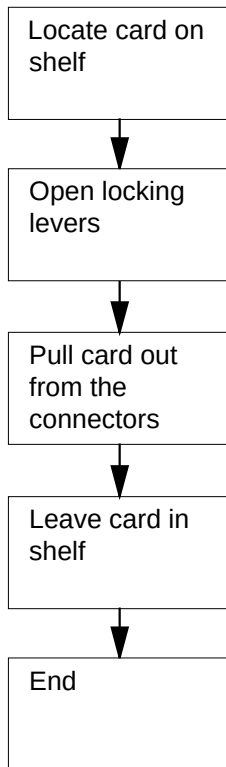
This procedure contains a summary flowchart and a list of steps. Use the flowchart to review the procedure. Follow the steps to perform the procedure.

---

## Unseating cards in equipment shelves (continued)

---

### Summary of Unseating cards in equipment shelves



This flowchart summarizes the procedure.

Use the instructions that follow this flowchart to perform the procedure.

## 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.

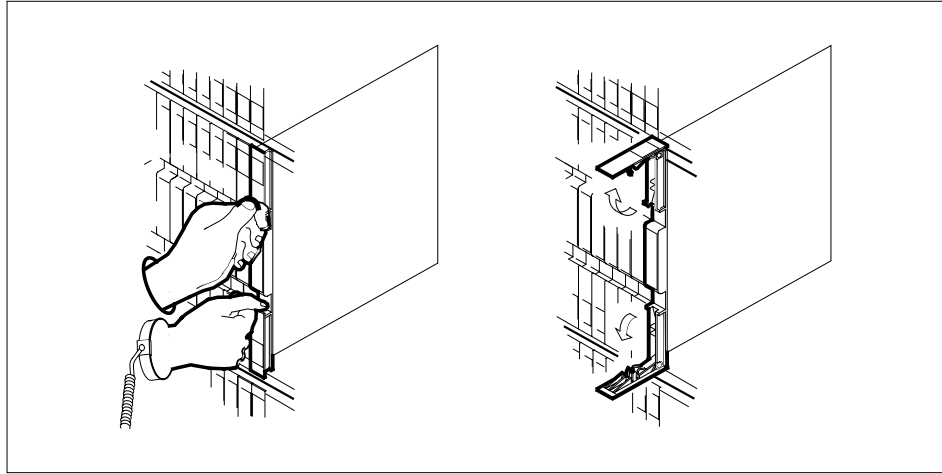
- 2
- Locate the card on the shelf.
- Open the locking levers on the face of the card.



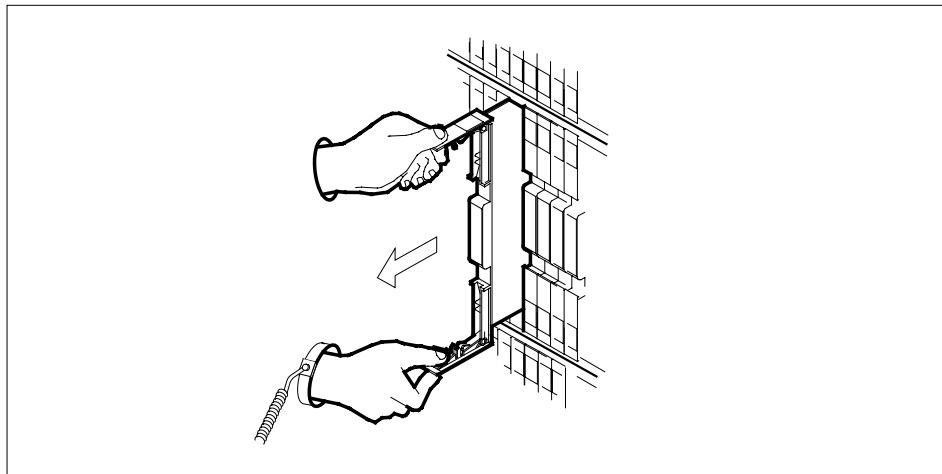
---

## 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

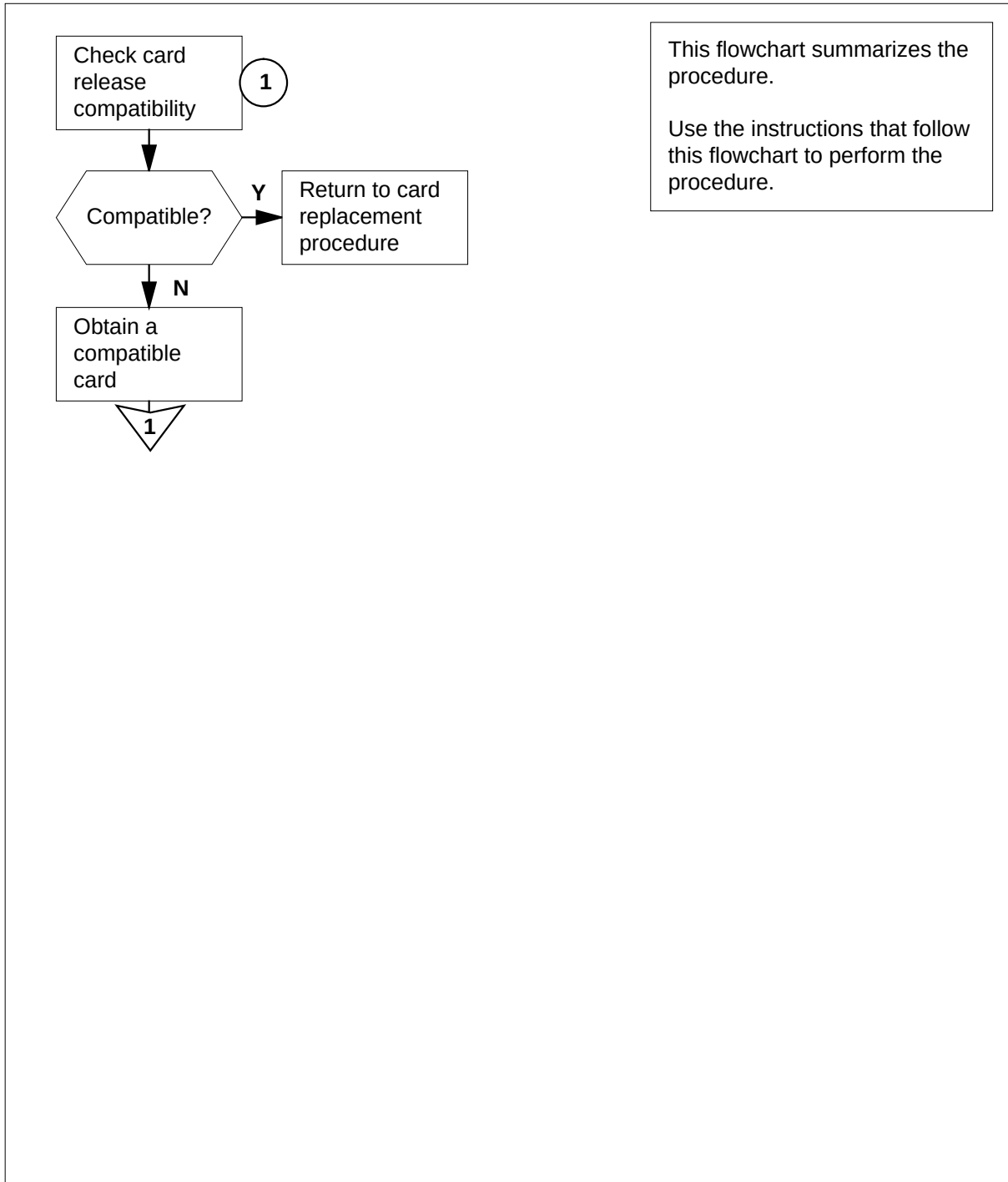
### Action

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.                                                                                                                                                                                        |        |    |                                          |        |                                             |        |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|------------------------------------------|--------|---------------------------------------------|--------|
|                                             | <table border="1"><thead><tr><th>If you</th><th>Do</th></tr></thead><tbody><tr><td>can obtain a compatible replacement card</td><td>step 6</td></tr><tr><td>cannot obtain a compatible replacement card</td><td>step 5</td></tr></tbody></table> | If you | Do | can obtain a compatible replacement card | step 6 | cannot obtain a compatible replacement card | step 5 |
|                                             | 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.



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Product Documentation - Dept. 3423  
Nortel Networks  
P.O. Box 13010  
RTP, NC 27709-3010  
Telephone: 1-877-662-5669  
email: [cits@nortelnetworks.com](mailto:cits@nortelnetworks.com)

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