

# Critical Release Notice

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

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

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

## Bookmark Color Legend

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

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

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

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

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

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

### *Attention!*

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

# Publication History

## March 2005

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

### Volume 7

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

## March 2005

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

### Volume 3

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

## December 2004

Standard release 17.05 for software release SN07 (DMS).

### Volume 7

New procedure for CR Q00840334 – NTMX82 in a DTCO2

## September 2004

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

### Volume 2

Modified procedure - Bus interface cards in an LCD

Modified procedure - NTB71 in an LCME

Modified procedure - NT9X30 in an LPP LIS

### Volume 3

Modified procedure - NT2X70 in an XPM

### Volumes 5

All of the changes below are due to CR Q00855532:

Modified procedure - NT6X40 in an SMA

Modified procedure - NT6X40 in an SMA-MVI-20

Modified procedure - NT6X40 in an SMA2

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

### **March 2004**

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

#### **Volume 1**

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

#### **Volume 2**

No changes

#### **Volume 3**

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

#### **Volumes 4 - 7**

No changes

### **September 2003**

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

#### **Volume 1**

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

#### **Volume 2**

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

#### **Volumes 3 - 7**

No changes

### **June 2003**

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

#### **Volume 1**

No changes

#### **Volume 2**

No changes

**Volume 3**

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

**Volumes 4 - 7**

No changes

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DMS-100 Family

## **North American DMS-100**

Card Replacement Procedures

Volume 7 of 7

LET0012 and up Standard 14.02 May 2001

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DMS-100 Family

# North American DMS-100

Card Replacement Procedures

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# 1 XPM card replacement procedures (continued)

---

This chapter provides card replacement procedures for XMS-based peripheral modules (XPM).

## NTMX73 in an RSC-M

---

### Application

Use this procedure to replace an NTMX73 circuit card in a Remote Switching Center Multi-access (RSC-M) main shelf.

*Note:* In this section, RSC-M is referred to as RCO2 in the examples. When software outputs messages to the MAP terminal, the software does not differentiate between the two types of RCO2.

PEC	Suffixes	Name
NTMX73	AB	pulse code modulation (PCM) signaling card

### Common procedures

Two common procedures are referenced in this section:

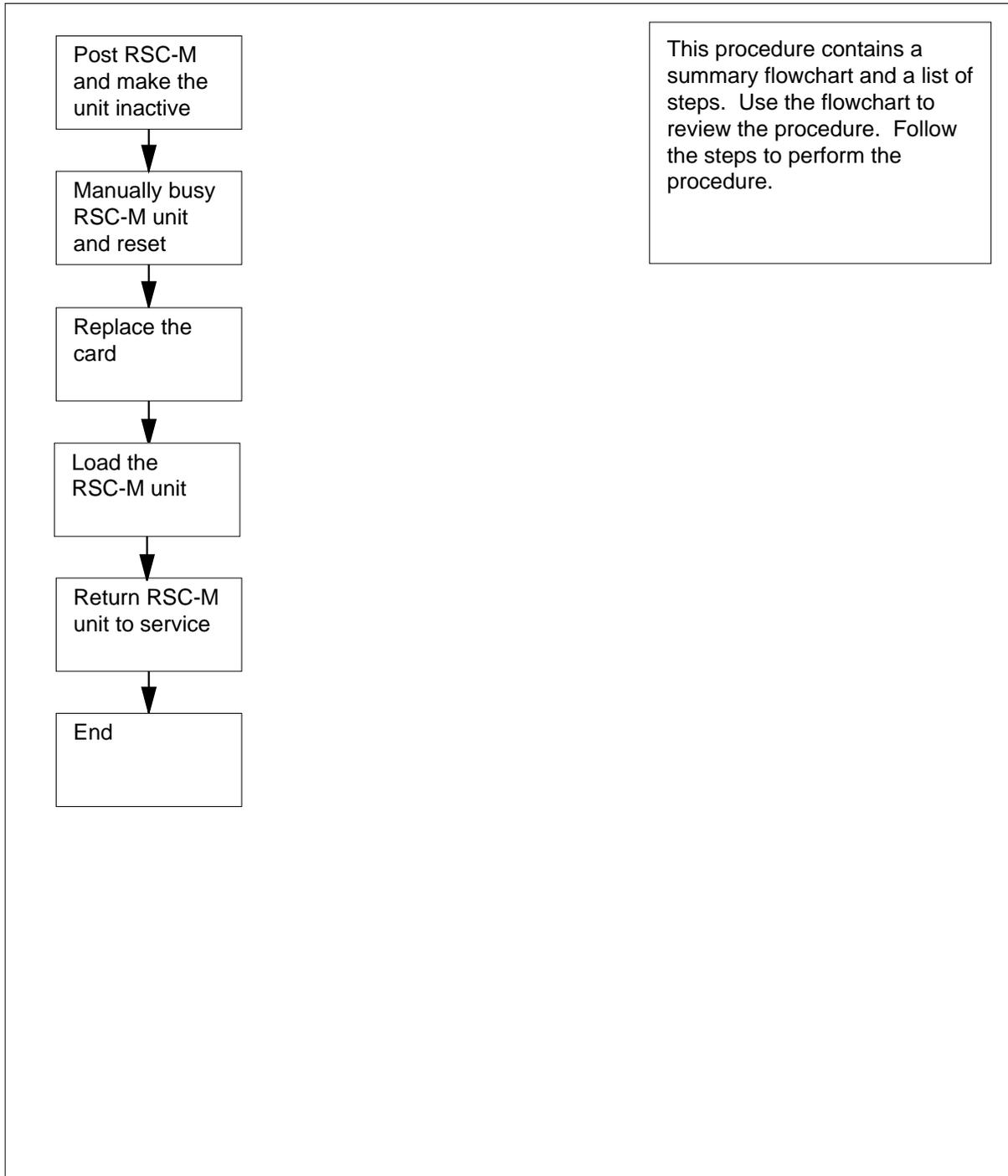
- replacing a card
- returning a card

### 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.

## NTMX73 in an RSC-M (continued)

### Summary of replacing an NTMX73 in an RSC-M



## NTMX73 in an RSC-M (continued)

---

### Replacing an NTMX73 in an RSC-M

#### At the MAP display

- 1 Proceed if:
  - a step in a maintenance procedure directs you to this card replacement procedure
  - you use the procedure to verify or accept cards
  - your maintenance support group directs you to this procedure.
- 2



#### **WARNING**

##### **Loss of service**

When you replace a card in the RSC-M, make sure the unit in which you replace the card is *inactive*. Make sure that the mate unit is *active*.

Obtain an NTMX73 replacement circuit card. Make sure the replacement circuit card has the same product engineering code (PEC), and PEC suffix, as the circuit card you remove.

#### At the MAP terminal

- 3 Make sure the peripheral module (PM) level appears on the MAP display. To post the RSC-M/RCO2, type:

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 with the defective card

*Example of a MAP response:*

## NTMX73 in an RSC-M (continued)

```

RCO2          SysB      ManB      OffL      Cbsy      ISTb      InSv
0 Quit      PM          0          0          2          0          2          25
2 Post_    RCO2          0          0          0          0          1          1
3 ListSet
4          RCO2      0 ISTb  Links_OOS:  CSide  1, PSide  1
5 TRNSL    Unit0:    Inact ISTb
6 TST      Unit1:    Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_

```

- 4** To determine the location of the RCO2 that contains the circuit card you must replace, type:

**>QUERYPM**

and press the Enter key.

*Example of a MAP response:*

```

PM Type: RSC-M PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname:KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
HOST 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
HOST 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA

```

- 5** Determine the state of the RCO2 unit that associates with the circuit card to replace.

If the state of the RCO2 unit is	Do
active	step 6
inactive	step 8

- 6** To perform a Switch of Activity (SWACT) of the units, type:

**>SWACT**

and press the Enter key.

*Example of a MAP response:*

## NTMX73 in an RSC-M (continued)

---

```
RCO2 0      A Warm SwAct will be performed after
             data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

---

<b>If</b>	<b>Do</b>
the system prompts you to confirm a warm SWACT	step 7
the system rejects the SWACT	step 22

---

- 7** To confirm the command, type:

>**YES**

and press the Enter key.

*Example of a MAP response:*

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb
```

```
RCO2 0      SwAct Passed
```

---

<b>If the MAP response is</b>	<b>Do</b>
SWACT passed	step 8
other	step 21

---

- 8** A maintenance flag (Mtce) can appear that indicates that system-initiated maintenance tasks are in progress. When the flag disappears from the status lines for both RCO2 units, you can proceed to the next step.

***At the cabinet***

- 9** Place a sign on the active unit that bears the words *Active unit-Do not touch*. Do not use magnets or tape to attach the sign.

- 10** To manually busy (ManB) the inactive unit, type:

>**BSY INACTIVE**

and press the Enter key.

*Example of a MAP response:*

## NTMX73 in an RSC-M (continued)

```
RSC-M      0 ISTb Links_OOS: CSide  0 , PSide  1
Unit0:    Inact ManB
Unit1:    Act   ISTb
bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

If the BSY command	Do
passes	step 11
fails	step 21

- 11 To reset the inactive RCO2 unit, type:

```
>PMRESET UNIT unit_no NORUN
```

and press the Enter key.

where

**unit\_no**

is the RCO2 unit number zero or one

### At the shelf

- 12



#### WARNING

##### Static electricity damage

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

Locate the circuit card you must replace.

**Note:** The NTMX73 circuit cards, are in slot 11 of unit zero, and slot 17 of unit one.

- 13 To replace the card, use the common replacing a card procedure in this document. When the procedure is complete, return to this point.

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

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

If	Do
a maintenance procedure directs you to this procedure	step 15

## NTMX73 in an RSC-M (end)

---

	<b>If</b>	<b>Do</b>
	a maintenance procedure does not direct you to this procedure	step 16
<b>15</b>	Remove the sign from the active unit. Return to the maintenance procedure that sent you to this procedure and continue as directed. At the point where the system produces a defective card list, identify the next defective card on the list. Go to the correct card replacement procedure for that card in this manual.	
	<b>At the MAP terminal</b>	
<b>16</b>	To load the inactive unit, type: >LOADPM INACTIVE and press the Enter key.	
	<b>If the LOADPM command</b>	<b>Do</b>
	fails	step 21
	passes	step 17
<b>17</b>	To return the inactive unit to service, type: >RTS INACTIVE and press the Enter key.	
	<b>If the RTS command</b>	<b>Do</b>
	passes	step 18
	fails	step 21
<b>18</b>	Remove the sign from the active unit.	
<b>19</b>	Go to the common returning a card procedure in this document.	
<b>20</b>	The procedure is complete.	
<b>21</b>	For additional help, contact the next level of maintenance.	
<b>22</b>	For additional help with a SWACT, contact the next level of maintenance. <b>Note:</b> The system can recommend that you use the SWACT command with the FORCE option. Consult office personnel to determine if you must use the FORCE option.	

**NTMX73  
in an RSC RCC2**

---

**Application**

Use this procedure to replace an NTMX73 card in an RSCE RCC2.

PEC	Suffixes	Name
NTMX73	AA, AB	PCM Signaling Processor

**Common procedures**

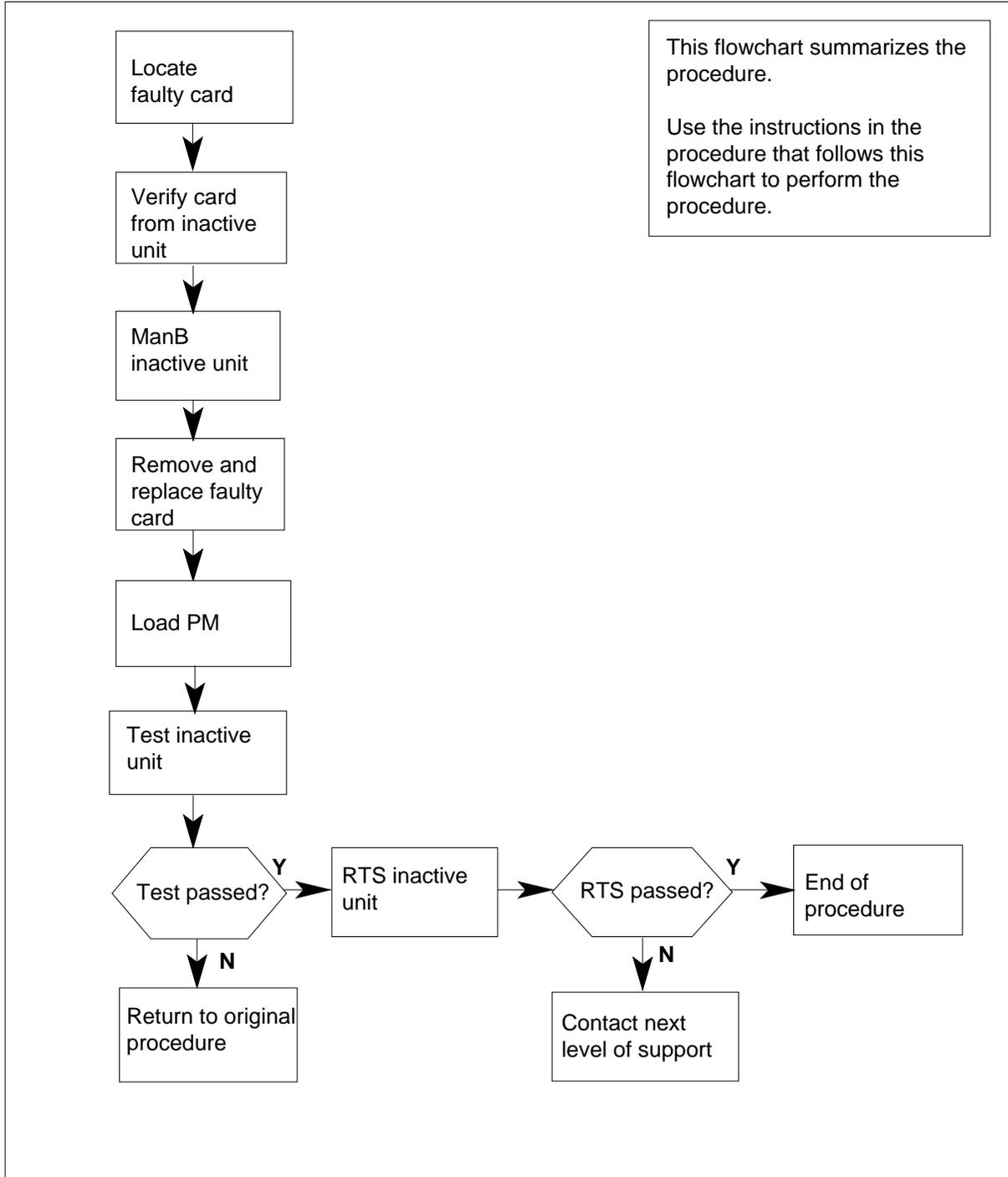
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX73 in an RSC RCC2 (continued)

### Summary of card replacement procedure for an NTMX73 card in RSC RCC2



## NTMX73 in an RSC RCC2 (continued)

---

### Replacing an NTMX73 card in RSC RCC2

#### 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



#### CAUTION

##### Loss of service

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify that the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### At the MAP display

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

Example of a MAP display:

## NTMX73 in an RSC RCC2 (continued)

CM	MS	IOD	Net	PM	CCS	LNS	Trks	Ext	Appl
.	.	.	.	.	.	.	.	.	.
RCC2			SysB	ManB	OffL	CBsy	ISTb	InSv	
0	Quit	PM	0	0	0	0	1	25	
2	Post_	RCC2	0	0	0	0	1	0	
3	ListSet								
4		RCC2	0	ISTb	Links_OOS:	Cside	0, Pside	0	
5	TRNSL	Unit0:	Inact	SYSB					
6	TST	Unit1:	Act	InSv					
7	BSY								
8	RTS								
9	OffL								
10	LoadPM_								
11	Disp_								
12	Next_								
13									
14	QueryPM								
15									
16									
17									
18									

- 4 By observing the MAP display, be sure the card that is to be removed is on the inactive unit.

**At the RSCE frame**

- 5 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**At the MAP terminal**

- 6 Busy the inactive PM unit by typing

**>bsy INACTIVE**

and pressing the Enter key.

*Example of a MAP response:*

```
RCC2      0 ISTb  Links_OOS: Cside  0 , Pside  1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCC2 0 Unit 0      Bsy Passed
```

- 7 Reset the inactive RCC2 unit to the ROM level by typing

**>PMRESET UNIT rcc2\_unit\_no NORUN**

and pressing the Enter key.

*where*

**NTMX73**  
**in an RSC RCC2 (continued)**

**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

**At the frame**

**8**



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

**9**



**DANGER**

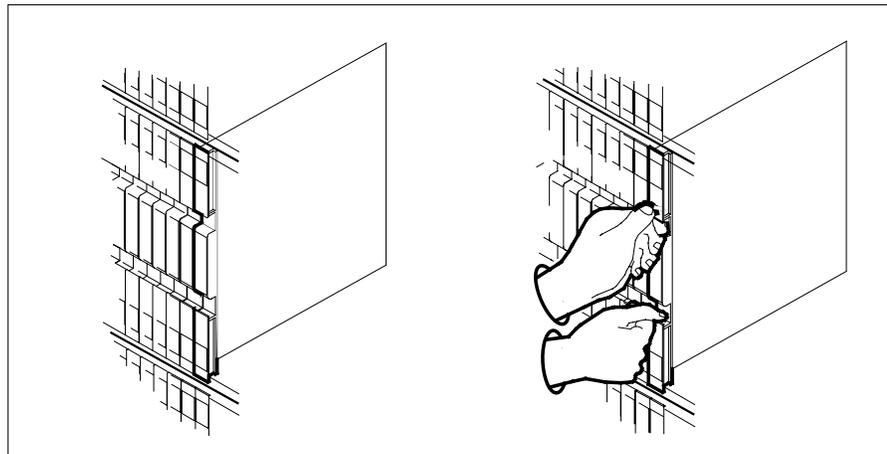
**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX73 card as shown in the following figures.

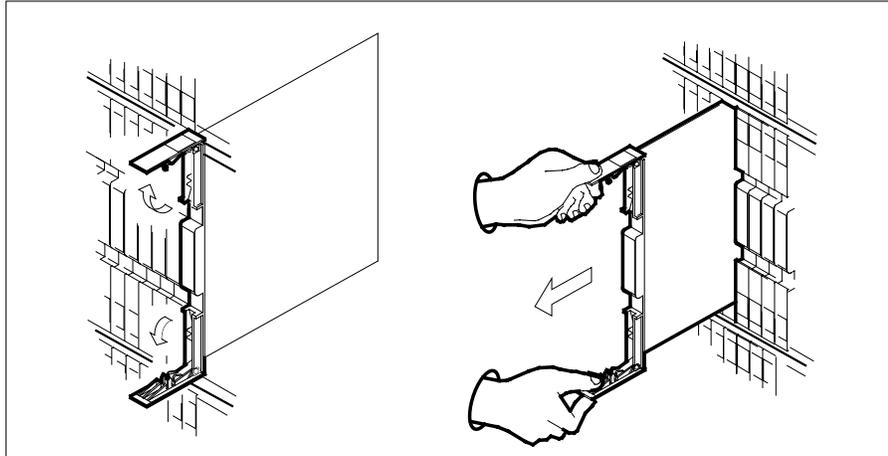
**a** Locate the card to be removed on the appropriate shelf.



## NTMX73 in an RSC RCC2 (continued)

---

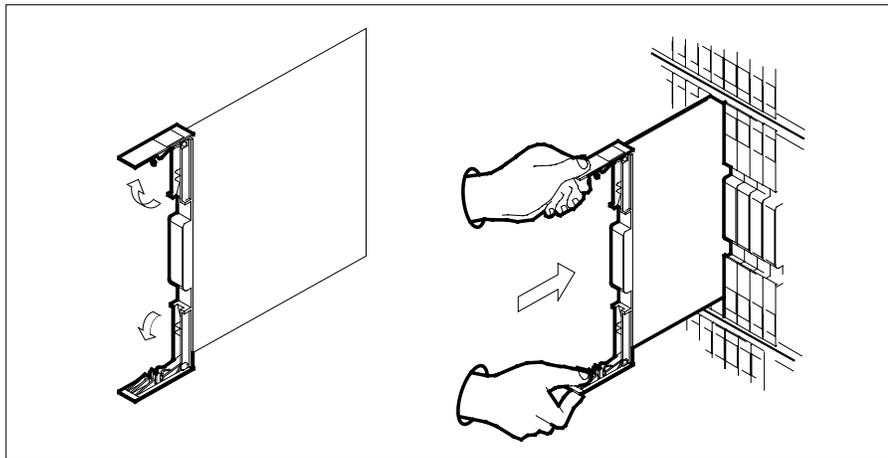
- b Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



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

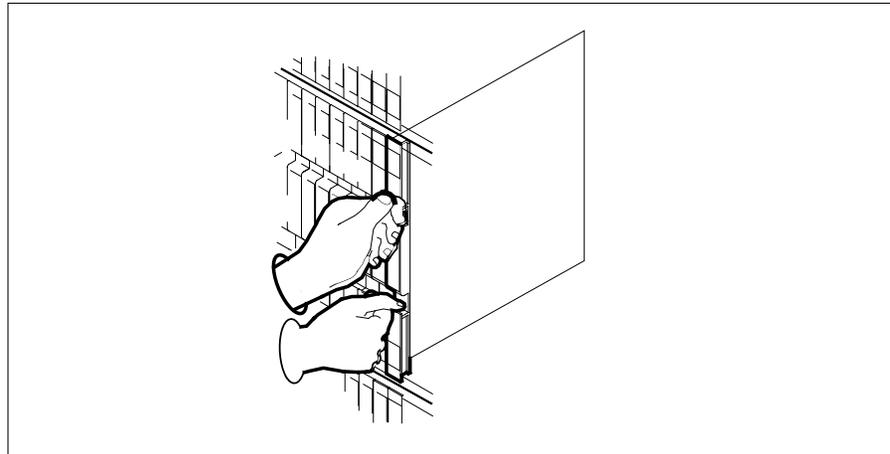
**Note:** Set dip switch S1 toward IC U1.

- 10 Open the locking levers on the replacement card.
  - a Align the card with the slots in the shelf.
  - b Gently slide the card into the shelf.



- 11 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.

## NTMX73 in an RSC RCC2 (continued)



### ***At the MAP display***

- 12** Load the inactive RCC2 unit by typing

```
>loadpm unit unit_no CC
```

and pressing the Enter key.

*where*

**unit\_no**

is the number of the faulty RCC2 unit

<b>If load</b>	<b>Do</b>
passed	step 13
failed	step 16

- 13** Use the following information to determine where to proceed.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 15
other	step 14

- 14** Return the inactive RCC2 unit to service by typing

```
>RTS UNIT unit_no
```

and pressing the Enter key.

*where*

**NTMX73**  
**in an RSC RCC2 (end)**

---

**unit\_no**  
is the number of the faulty RCC2 unit

---

<b>If RTS</b>	<b>Do</b>
passed	step 17
failed	step 16

---

- 15** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 16** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 17** Remove the sign from the active RCC2 unit.
- 18** Send any faulty cards for repair according to local procedure.
- 19** Note in office records the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 20** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX73  
in an RSC-S (DS-1) Model A RCC2**

---

**Application**

Use this procedure to replace an NTMX73 card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX73	AA, AB	PCM Signaling Processor

**Common procedures**

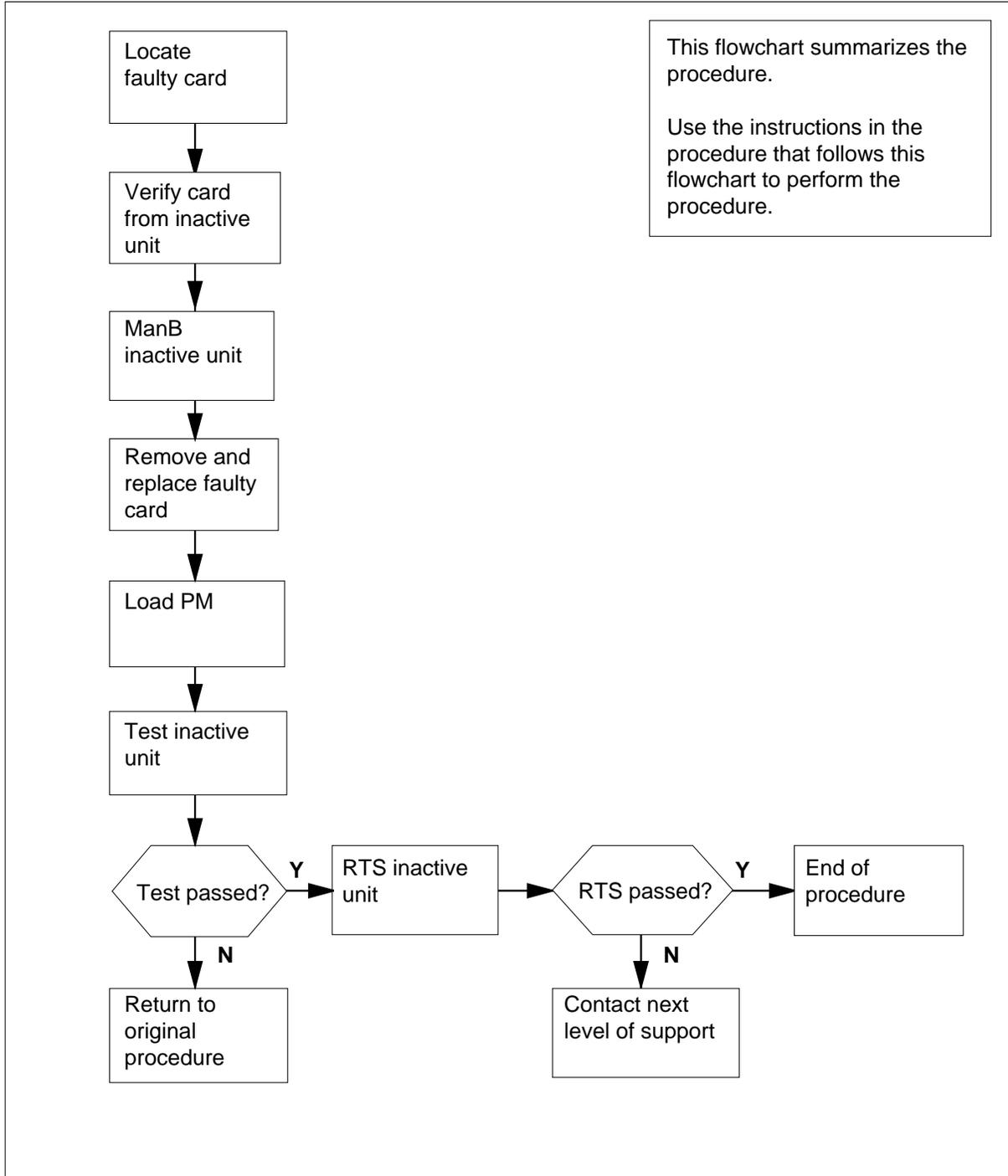
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX73 in an RSC-S (DS-1) Model A RCC2 (continued)

### Summary of card replacement procedure for an NTMX73 card in RSC-S RCC2



## NTMX73 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### Replacing an NTMX73 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify that the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

**NTMX73**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

CM	MS	IOD	Net	PM	CCS	LNS	Trks	Ext	Appl
.	.	.	.	.	.	.	.	.	.
RCC2			SysB	ManB	OffL	CBSy	ISTb	InSv	
0	Quit	PM	0	0	0	0	0	0	25
2	Post_	RCC2	0	0	0	0	0	0	0
3	ListSet								
4		RCC2	0	ISTb	Links_OOS:	Cside	0, Pside	0	
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									
18									

- 4 By observing the MAP display, be sure the card that is to be removed is on the inactive unit.

*Example of a MAP display:*

## NTMX73

### in an RSC-S (DS-1) Model A RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

RCC2
0 Quit      PM          0          0          0          0          0          0          25
2 Post_     RCC2        0          0          0          0          0          0          0
3 ListSet
4           RCC2        0 ISTb  Links_OOS:  CSide  0, PSide  0
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
18

```

If the faulty card is on the	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
and pressing the Enter key.
- 6 Confirm the system prompt by typing  
**>YES**  
and pressing the Enter key.  
After both units are in-service, proceed to the next step.
- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*.  
This sign should not be attached by magnets or tape.

#### **At the MAP display**

- 8 Busy the inactive PM unit by typing  
**>bsy unit unit\_no**  
and pressing the Enter key.  
*where*

## NTMX73 in an RSC-S (DS-1) Model A RCC2 (continued)

**unit\_no**

is the number of the unit to be busied (0 or 1)

When both units are in-service, proceed to the next step.

### *At the frame*

9



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

10



#### **DANGER**

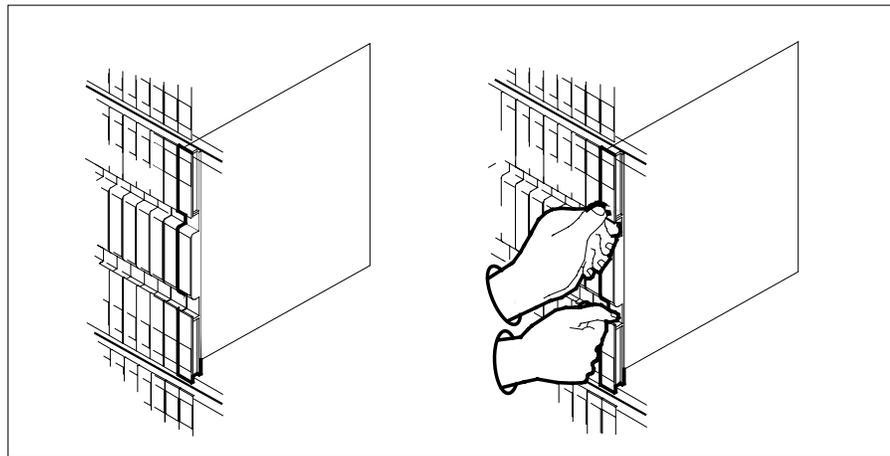
##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX73 card as shown in the following figures.

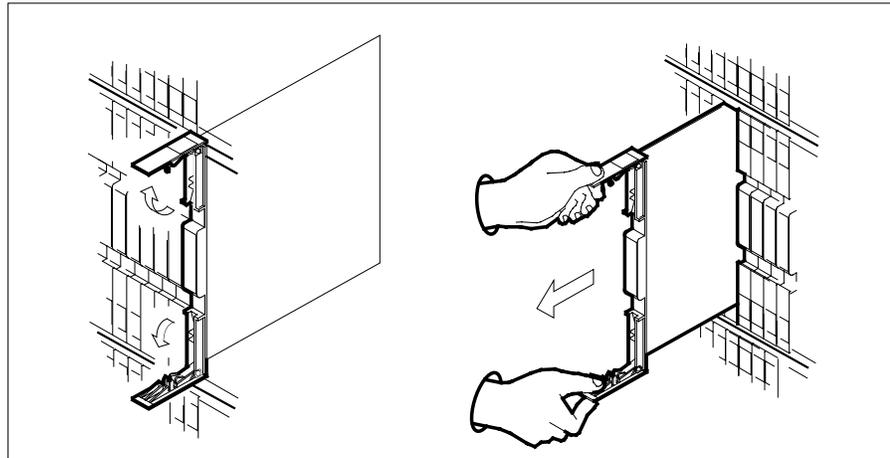
**a** Locate the card to be removed on the appropriate shelf.



## NTMX73

### in an RSC-S (DS-1) Model A RCC2 (continued)

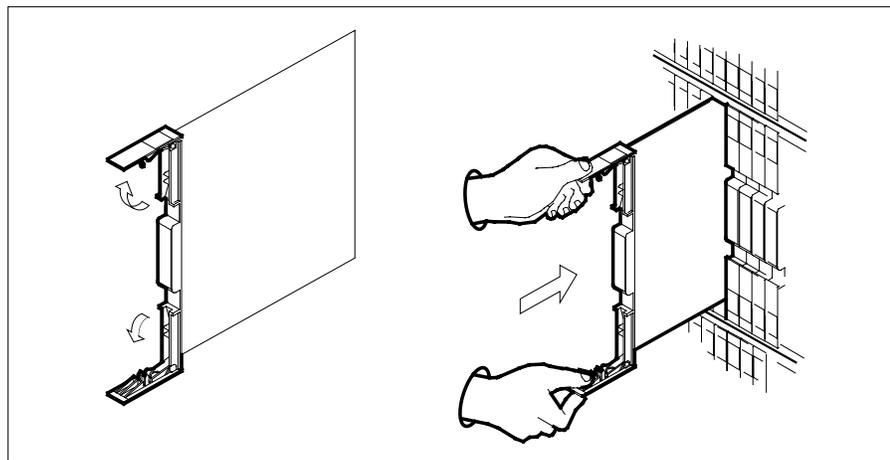
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



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

**Note:** Set dip switch S1 toward IC U1.

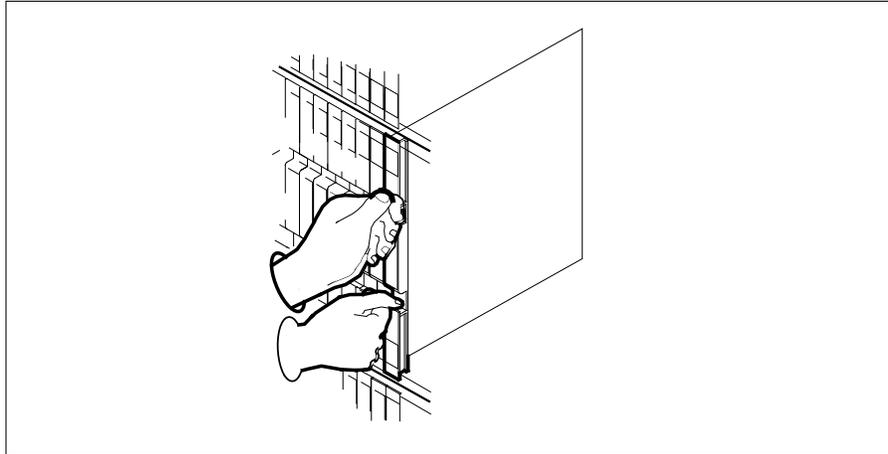
- 11** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.



- 12** 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.

## NTMX73 in an RSC-S (DS-1) Model A RCC2 (continued)

---



**At the MAP display**

- 13** Load the inactive RCC2 unit by typing

```
>loadpm unit unit_no CC
```

and pressing the Enter key.

where

**unit\_no**

is the number of the faulty RCC2 unit

---

If load	Do
passed	step 14
failed	step 18

---

- 14** Test the inactive unit by typing

```
>TST UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the faulty RCC2 unit

---

If TST	Do
passed	step 15
failed	step 17

---

---

**NTMX73**

**in an RSC-S (DS-1) Model A RCC2 (end)**

---

- 15** Use the following information to determine where to proceed.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 17
other	step 16

- 16** Return the inactive RCC2 unit to service by typing

**>RTS UNIT unit\_no**

and pressing the Enter key.

*where*

**unit\_no**

is the number of the faulty RCC2 unit

<b>If RTS</b>	<b>Do</b>
passed	step 19
failed	step 18

- 17** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 18** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 19** Remove the sign from the active RCC2 unit.
- 20** Send any faulty cards for repair according to local procedure.
- 21** Note in office records the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX73 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace an NTMX73 card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX73	AA, AB	PCM Signaling Processor

### **Common procedures**

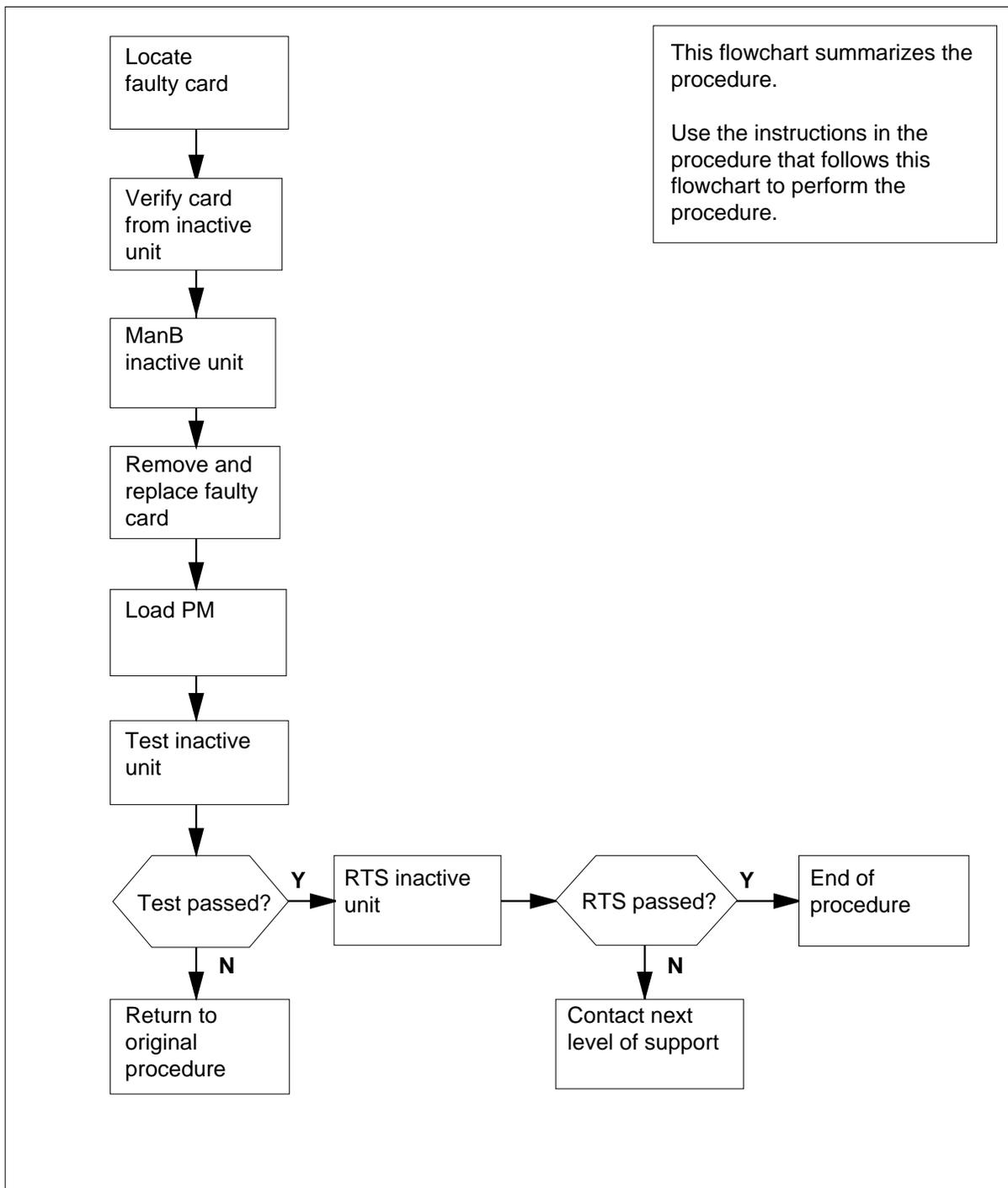
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX73 in an RSC-S (DS-1) Model B RCC2 (continued)

### Summary of card replacement procedure for an NTMX73 card in RSC-S RCC2



## NTMX73 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### Replacing an NTMX73 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify that the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  
`>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no`  
and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX73

### in an RSC-S (DS-1) Model B RCC2 (continued)

CM	MS	IOD	Net	PM	CCS	LNS	Trks	Ext	Appl
.	.	.	.	.	.	.	.	.	.
RCC2			SysB	ManB	OffL	CBsy	ISTb	InSv	
0	Quit	PM	0	0	0	0	0	0	25
2	Post_	RCC2	0	0	0	0	0	0	0
3	ListSet								
4		RCC2	0	ISTb	Links_OOS:	CSide	0, PSide	0	
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									
18									

- 4** By observing the MAP display, be sure the card that is to be removed is on the inactive unit.

*Example of a MAP display:*

**NTMX73**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

RCC2
0 Quit      PM          0          0          0          0          0          0          25
2 Post_     RCC2         0          0          0          0          0          0          0
3 ListSet
4           RCC2         0 ISTb  Links_OOS:  CSide  0, PSide  0
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
18

```

If the faulty card is on the	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.
- 6 Confirm the system prompt by typing  
**>YES**  
 and pressing the Enter key.  
 After both units are in-service, proceed to the next step.
- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*.  
 This sign should not be attached by magnets or tape.

**At the MAP display**

- 8 Busy the inactive PM unit by typing  
**>bsy unit unit\_no**  
 and pressing the Enter key.  
*where*

---

**NTMX73**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

**unit\_no**

is the number of the unit to be busied (0 or 1)

When both units are in-service, proceed to the next step.

**At the frame**

**9**



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

**10**



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

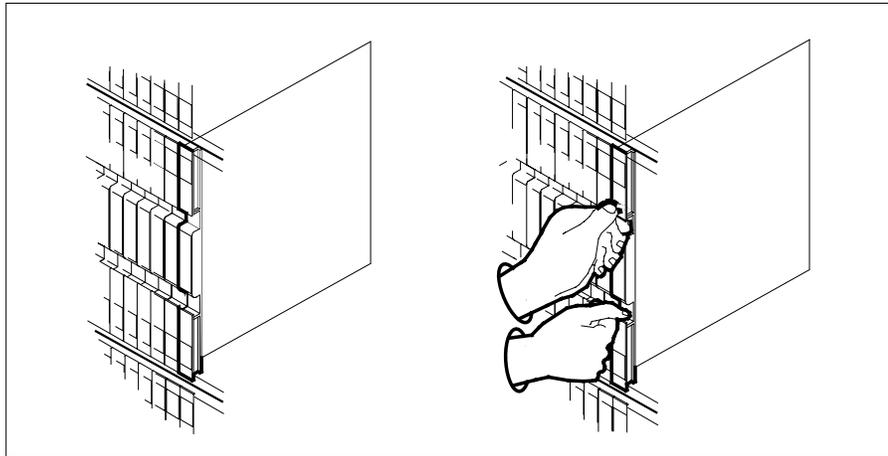
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Remove the NTMX73 card as shown in the following figures.

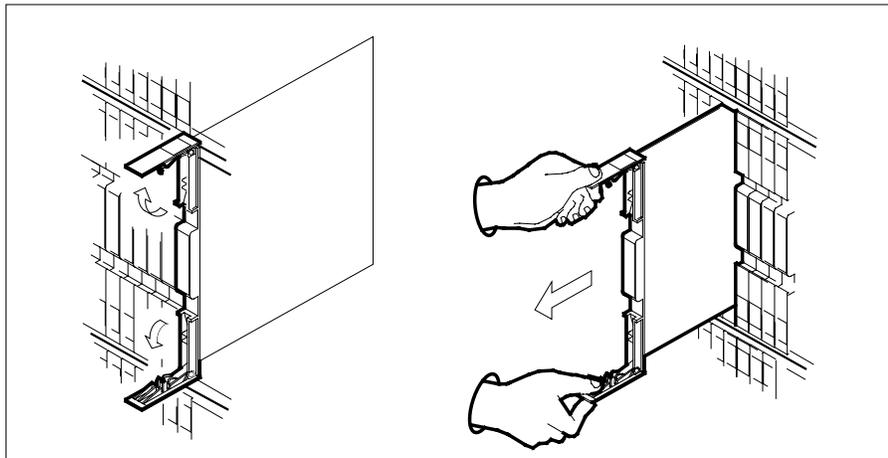
- a** Locate the card to be removed on the appropriate shelf.

## NTMX73 in an RSC-S (DS-1) Model B RCC2 (continued)

---



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



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

**Note:** Set dip switch S1 toward IC U1.

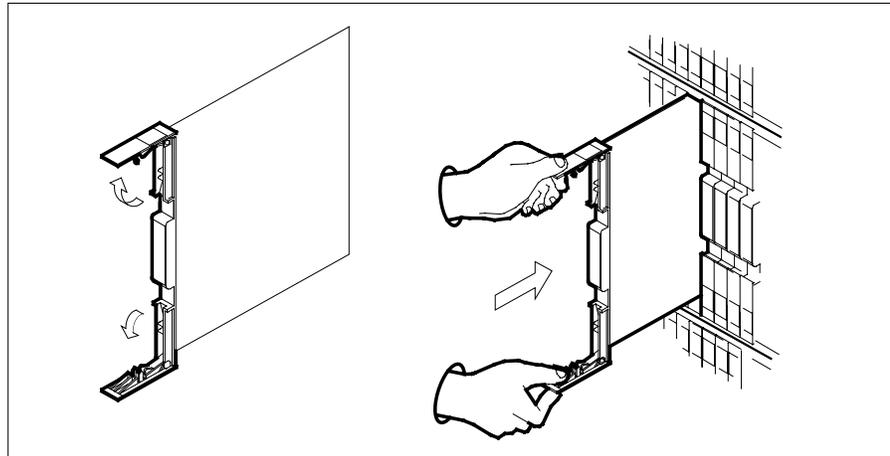
- 11** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

---

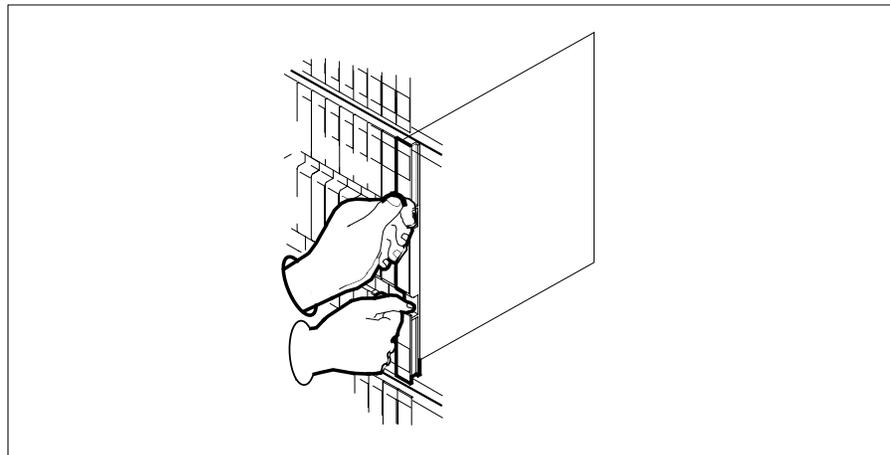
**NTMX73**

**in an RSC-S (DS-1) Model B RCC2 (continued)**

---



- 12** 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.



**At the MAP display**

- 13** Load the inactive RCC2 unit by typing  
`>loadpm unit unit_no CC`  
and pressing the Enter key.  
*where*

**NTMX73**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

	<p><b>unit_no</b> is the number of the faulty RCC2 unit</p>	
	<b>If load</b>	<b>Do</b>
	passed	step 14
	failed	step 18
<b>14</b>	<p>Test the inactive unit by typing  <b>&gt;TST UNIT unit_no</b>                      and pressing the Enter key.                      where                          <b>unit_no</b>                          is the number of the faulty RCC2 unit</p>	
	<b>If TST</b>	<b>Do</b>
	passed	step 15
	failed	step 17
<b>15</b>	<p>Use the following information to determine where to proceed.</p>	
	<b>If you entered this procedure from</b>	<b>Do</b>
	alarm clearing procedures	step 17
	other	step 16
<b>16</b>	<p>Return the inactive RCC2 unit to service by typing  <b>&gt;RTS UNIT unit_no</b>                      and pressing the Enter key.                      where                          <b>unit_no</b>                          is the number of the faulty RCC2 unit</p>	
	<b>If RTS</b>	<b>Do</b>
	passed	step 19
	failed	step 18
<b>17</b>	<p>Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.</p>	

**NTMX73**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

- 18** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 19** Remove the sign from the active RCC2 unit.
- 20** Send any faulty cards for repair according to local procedure.
- 21** Note in office records the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX73 in an RSC-S (PCM-30) Model A RCO2**

---

### **Application**

Use this procedure to replace an NTMX73 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX73	AA	PCM Signaling Processor

### **Common procedures**

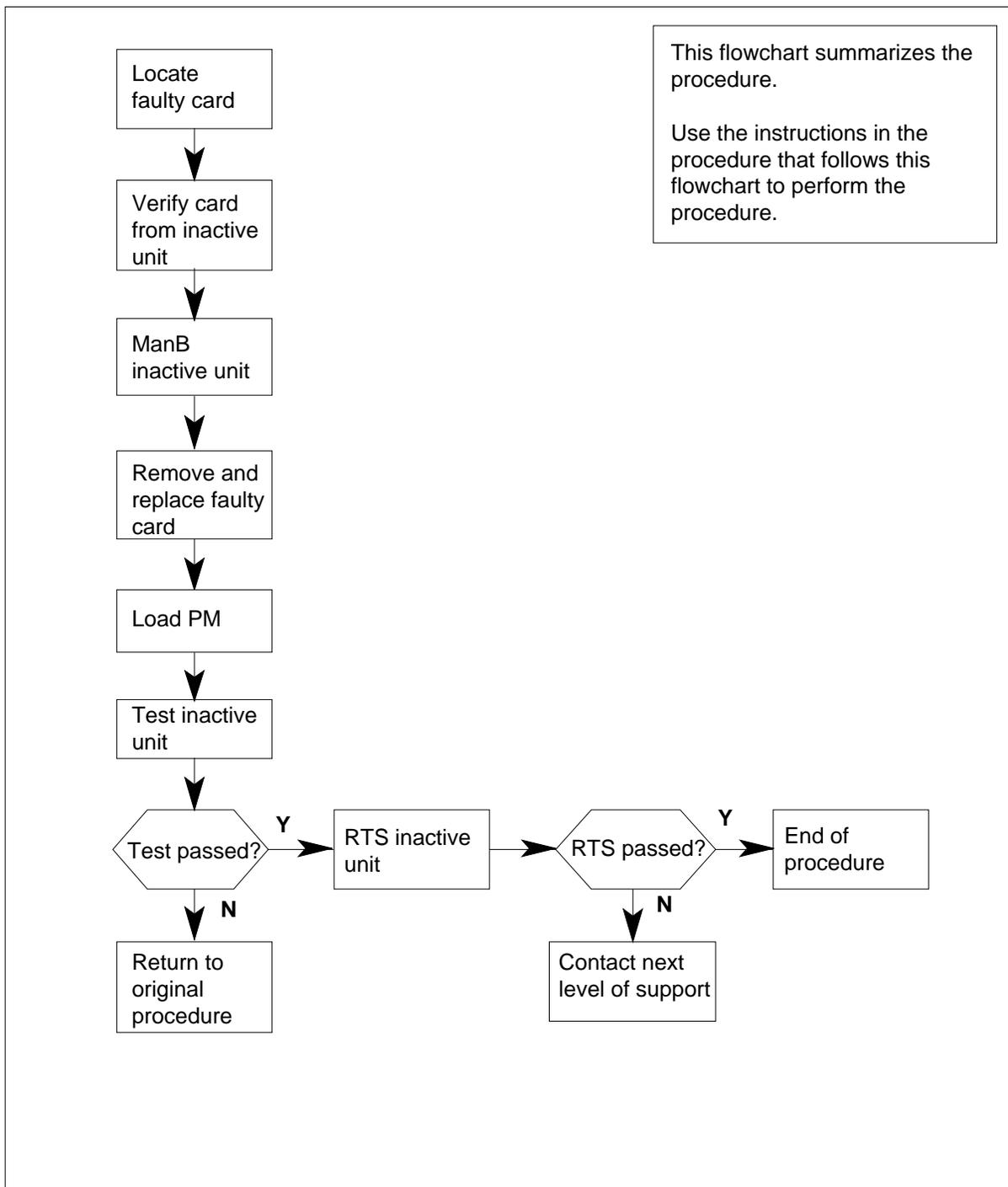
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX73 in an RSC-S (PCM-30) Model A RCO2 (continued)

### Summary of card replacement procedure for an NTMX73 card in RSC-S RCO2



## NTMX73 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### Replacing an NTMX73 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify that the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 Set the MAP display to the PM level and post the RCO2 by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.  
*where*  
**rco2\_no**  
is the number of the RCO2 to be posted (0 or 1)
- 4 By observing the MAP display, be sure that the card to be removed is on the inactive unit.

*Example of a MAP display:*

## NTMX73

### in an RSC-S (PCM-30) Model A RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

RCO2
0 Quit      PM          0          0          0          0          0          0          25
2 Post_     RCO2         0          0          0          0          0          0          0
3 ListSet
4           RCO2      0 ISTb  Links_OOS:  CSide  0, PSide  0
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
18

```

**If faulty card is on****Do**

active unit

step 5

inactive unit

step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing  
>SWACT  
and pressing the Enter key.  
**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.
- 6 Confirm the system prompt by typing  
>YES  
and pressing the Enter key.  
After both units are in-service, proceed to the next step.
- 7 Place a sign on the *active* unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

## NTMX73 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### *At the MAP display*

- 8 Busy the inactive PM unit by typing  
`>bsy unit unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)  
When both units are in-service, proceed to the next step.

### *At the frame*

9



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

10



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX73 card as shown in the following figures.

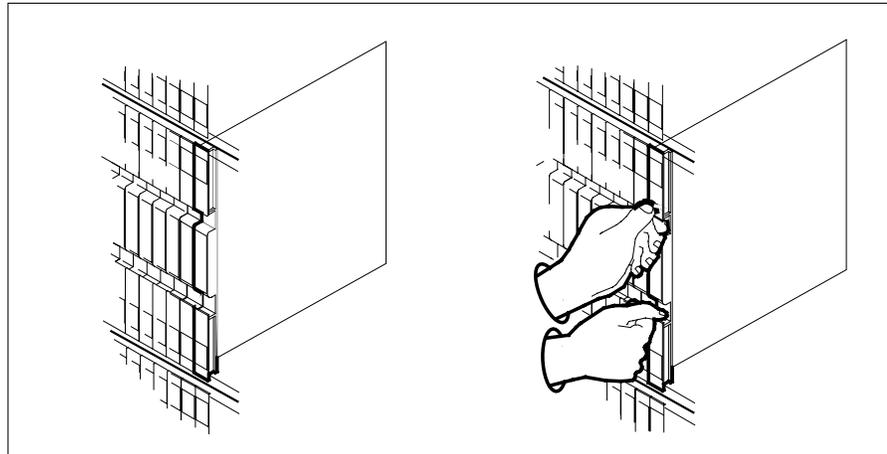
- a** Locate the card to be removed on the appropriate shelf.

---

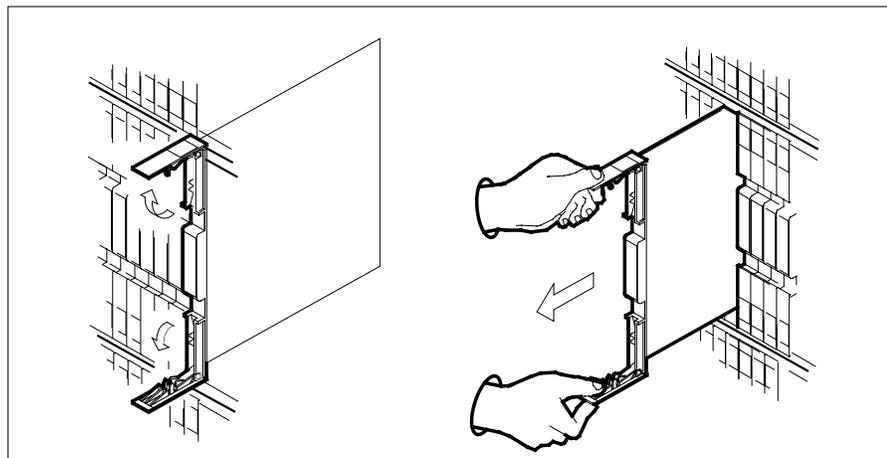
**NTMX73**

**in an RSC-S (PCM-30) Model A RCO2 (continued)**

---



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



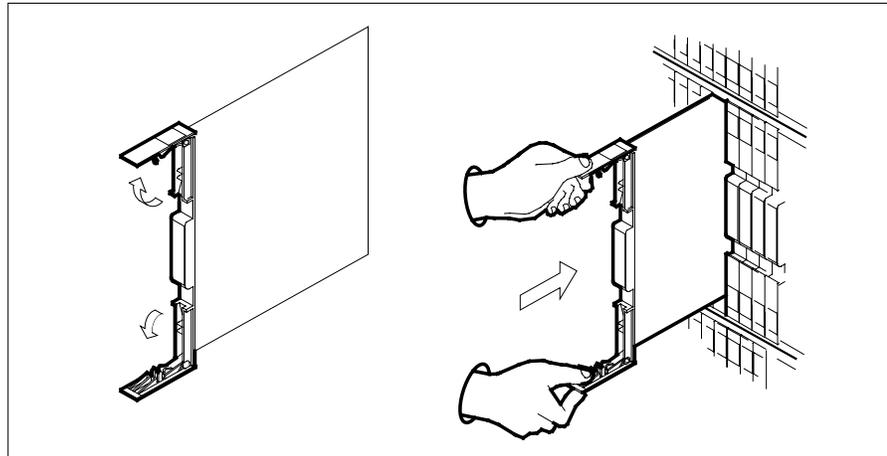
- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.

**Note:** Set dip switch S1 toward IC U1.

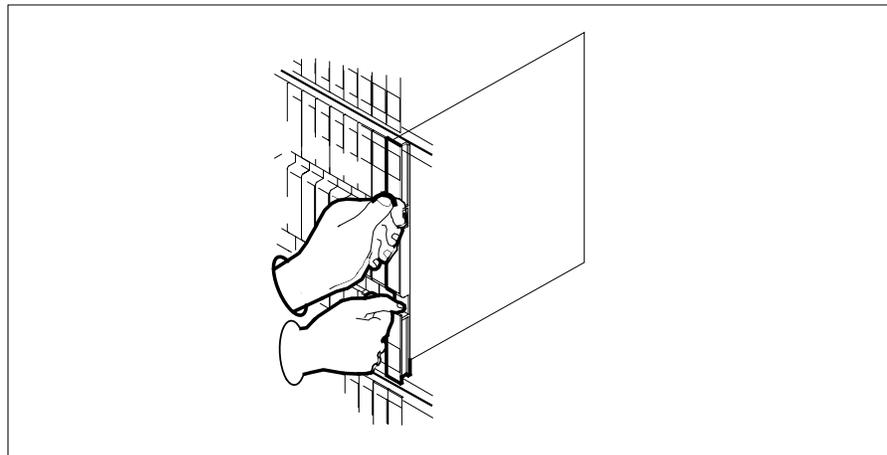
- 11** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

**NTMX73**  
**in an RSC-S (PCM-30) Model A RCO2 (continued)**

---



- 12** 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.



**At the MAP display**

- 13** Load the inactive RCO2 unit by typing  
`>loadpm unit unit_no CC`  
and pressing the Enter key.  
*where*

## NTMX73

### in an RSC-S (PCM-30) Model A RCO2 (continued)

- unit\_no**  
is the number of the faulty RCO2 unit
- 
- | <b>If LOADPM</b> | <b>Do</b> |
|------------------|-----------|
| passed           | step 14   |
| failed           | step 18   |
- 
- 14** Test the inactive unit by typing  
>*TST UNIT unit\_no*  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the faulty RCO2 unit
- 
- | <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 15   |
| failed        | step 17   |
- 
- 15** Use the following information to determine where to proceed.
- 
- | <b>If you entered this procedure from</b> | <b>Do</b> |
|---|-----------|
| alarm clearing procedures                 | step 17   |
| other                                     | step 16   |
- 
- 16** Return the inactive RCO2 unit to service by typing  
>*RTS UNIT unit\_no*  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the faulty RCO2 unit
- 
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 19   |
| failed        | step 18   |
- 
- 17** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

## **NTMX73**

### **in an RSC-S (PCM-30) Model A RCO2 (end)**

---

- 18** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 19** Remove the sign from the active RCO2 unit.
- 20** Send any faulty cards for repair according to local procedure.
- 21** Note in office records the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX73  
in an RSC-S (PCM-30) Model B RCO2**

---

**Application**

Use this procedure to replace an NTMX73 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX73	AA	PCM Signaling Processor

**Common procedures**

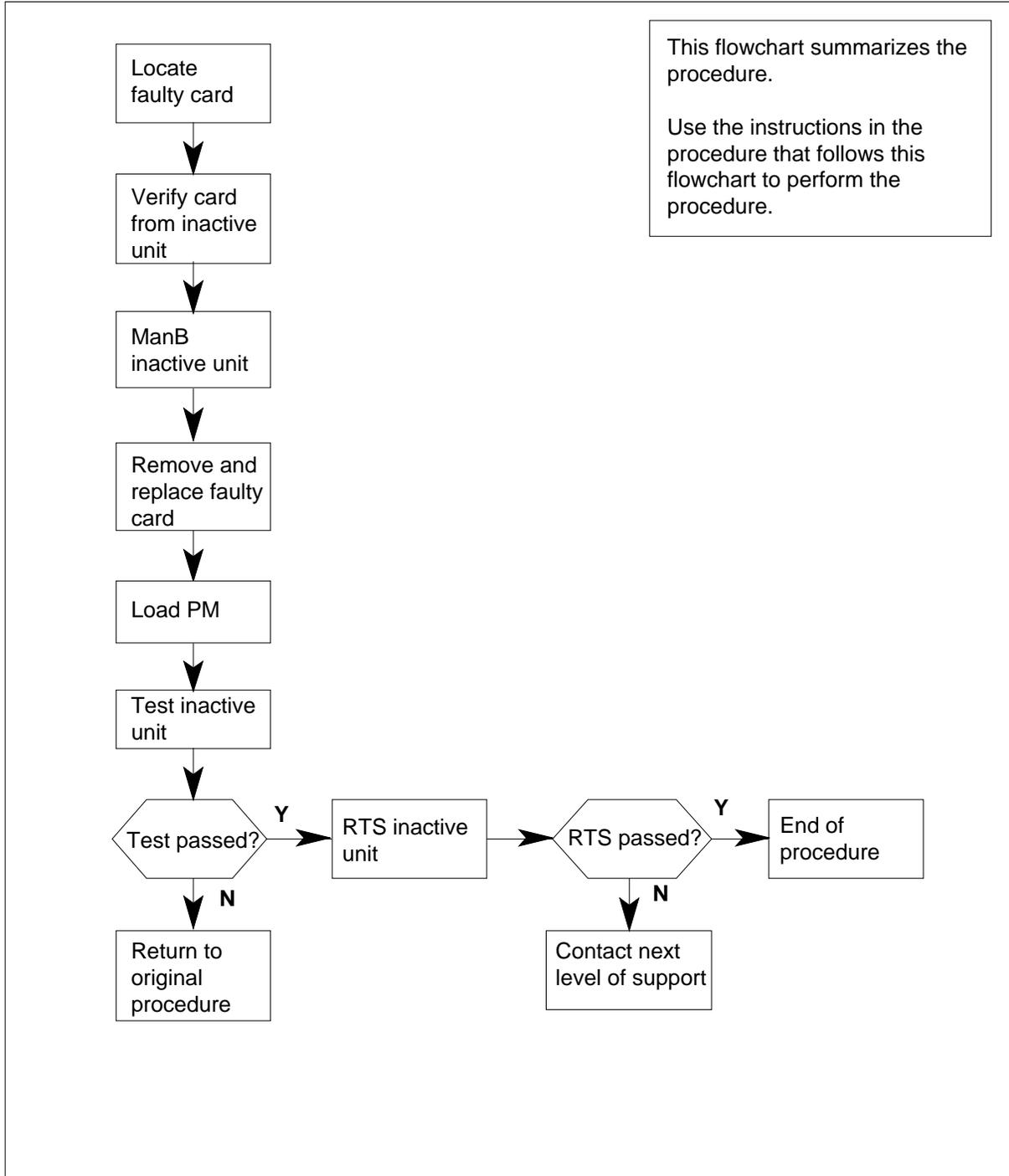
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX73 in an RSC-S (PCM-30) Model B RCO2 (continued)

### Summary of card replacement procedure for an NTMX73 card in RSC-S RCO2



---

## NTMX73

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

#### Replacing an NTMX73 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify that the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP display*

- 3 Set the MAP display to the PM level and post the RCO2 by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.  
*where*  
**rco2\_no**  
is the number of the RCO2 to be posted (0 or 1)
- 4 By observing the MAP display, be sure that the card to be removed is on the inactive unit.

*Example of a MAP display:*

**NTMX73**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

RCO2
0 Quit      PM        0        0        0        0        0        0        0        25
2 Post_     RCO2      0        0        0        0        0        0        0        0
3 ListSet
4          RCO2      0 ISTb  Links_OOS:  CSide  0, PSide  0
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
18
    
```

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing **>SWACT** and pressing the Enter key.  
**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.
- 6 Confirm the system prompt by typing **>YES** and pressing the Enter key.  
 After both units are in-service, proceed to the next step.
- 7 Place a sign on the *active* unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

---

## NTMX73

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

**At the MAP display**

8 Busy the inactive PM unit by typing

```
>bsy unit unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the unit to be busied (0 or 1)

When both units are in-service, proceed to the next step.

**At the frame**

9

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

10

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

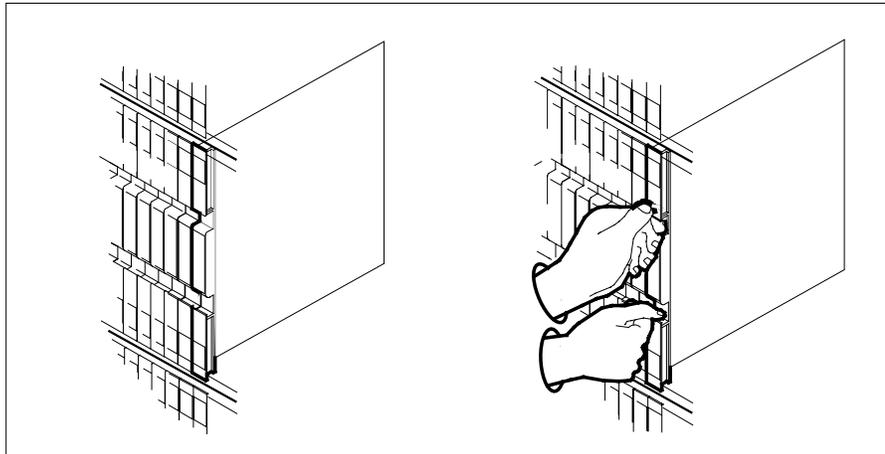
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Remove the NTMX73 card as shown in the following figures.

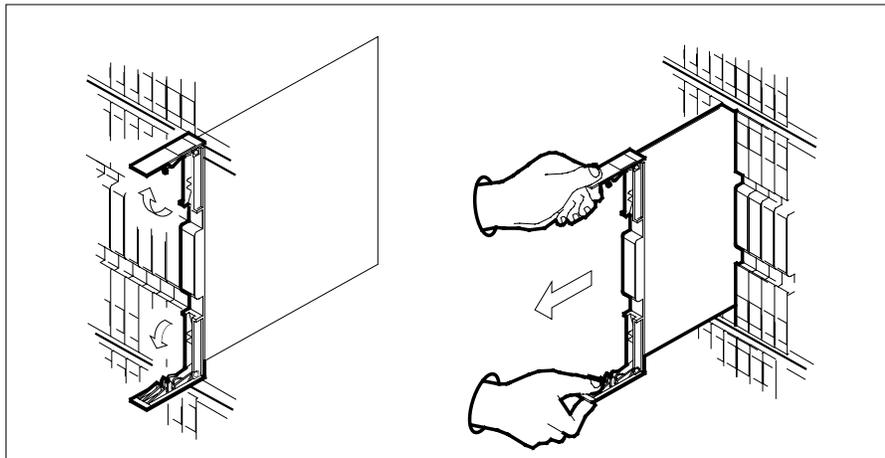
**a** Locate the card to be removed on the appropriate shelf.

**NTMX73**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

---



- b Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



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

**Note:** Set dip switch S1 toward IC U1.

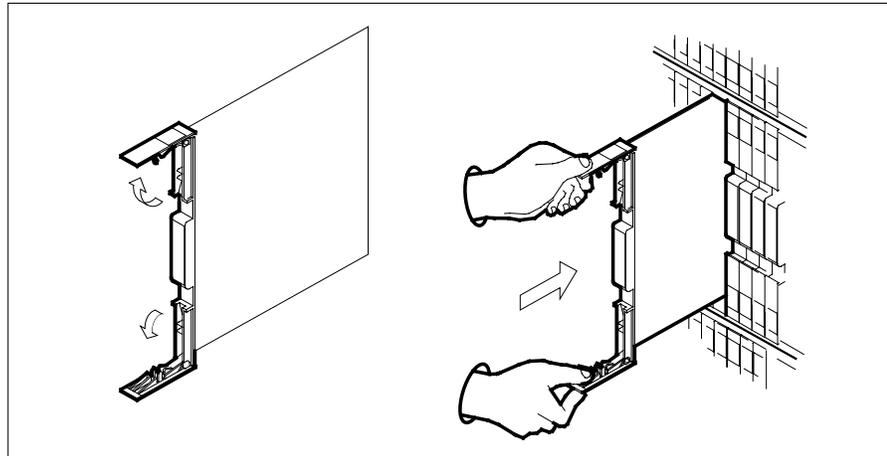
- 11 Open the locking levers on the replacement card.
  - a Align the card with the slots in the shelf.
  - b Gently slide the card into the shelf.

---

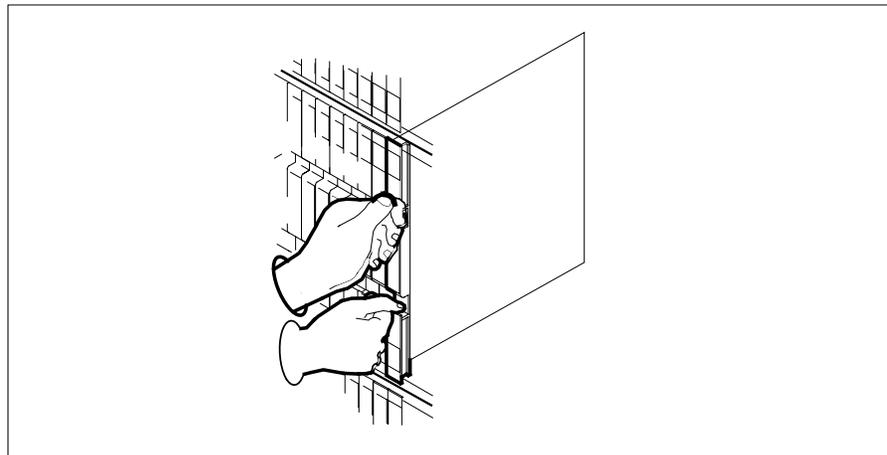
**NTMX73**

**in an RSC-S (PCM-30) Model B RCO2 (continued)**

---



- 12** 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.



**At the MAP display**

- 13** Load the inactive RCO2 unit by typing  
`>loadpm unit unit_no CC`  
and pressing the Enter key.  
*where*

**NTMX73**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

	<p><b>unit_no</b> is the number of the faulty RCO2 unit</p>	
	<b>If LOADPM</b>	<b>Do</b>
	passed	step 14
	failed	step 18
<b>14</b>	<p>Test the inactive unit by typing  <b>&gt;TST UNIT unit_no</b>                      and pressing the Enter key.                      where                          <b>unit_no</b>                          is the number of the faulty RCO2 unit</p>	
	<b>If TST</b>	<b>Do</b>
	passed	step 15
	failed	step 17
<b>15</b>	<p>Use the following information to determine where to proceed.</p>	
	<b>If you entered this procedure from</b>	<b>Do</b>
	alarm clearing procedures	step 17
	other	step 16
<b>16</b>	<p>Return the inactive RCO2 unit to service by typing  <b>&gt;RTS UNIT unit_no</b>                      and pressing the Enter key.                      where                          <b>unit_no</b>                          is the number of the faulty RCO2 unit</p>	
	<b>If RTS</b>	<b>Do</b>
	passed	step 19
	failed	step 18
<b>17</b>	<p>Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.</p>	

**NTMX73**

**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

- 18** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 19** Remove the sign from the active RCO2 unit.
- 20** Send any faulty cards for repair according to local procedure.
- 21** Note in office records the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX73 in an SMA2**

---

### **Application**

Use this procedure to replace an NTMX73 card in an SMA2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX73	BA	PCM Signaling Processor

### **Common procedures**

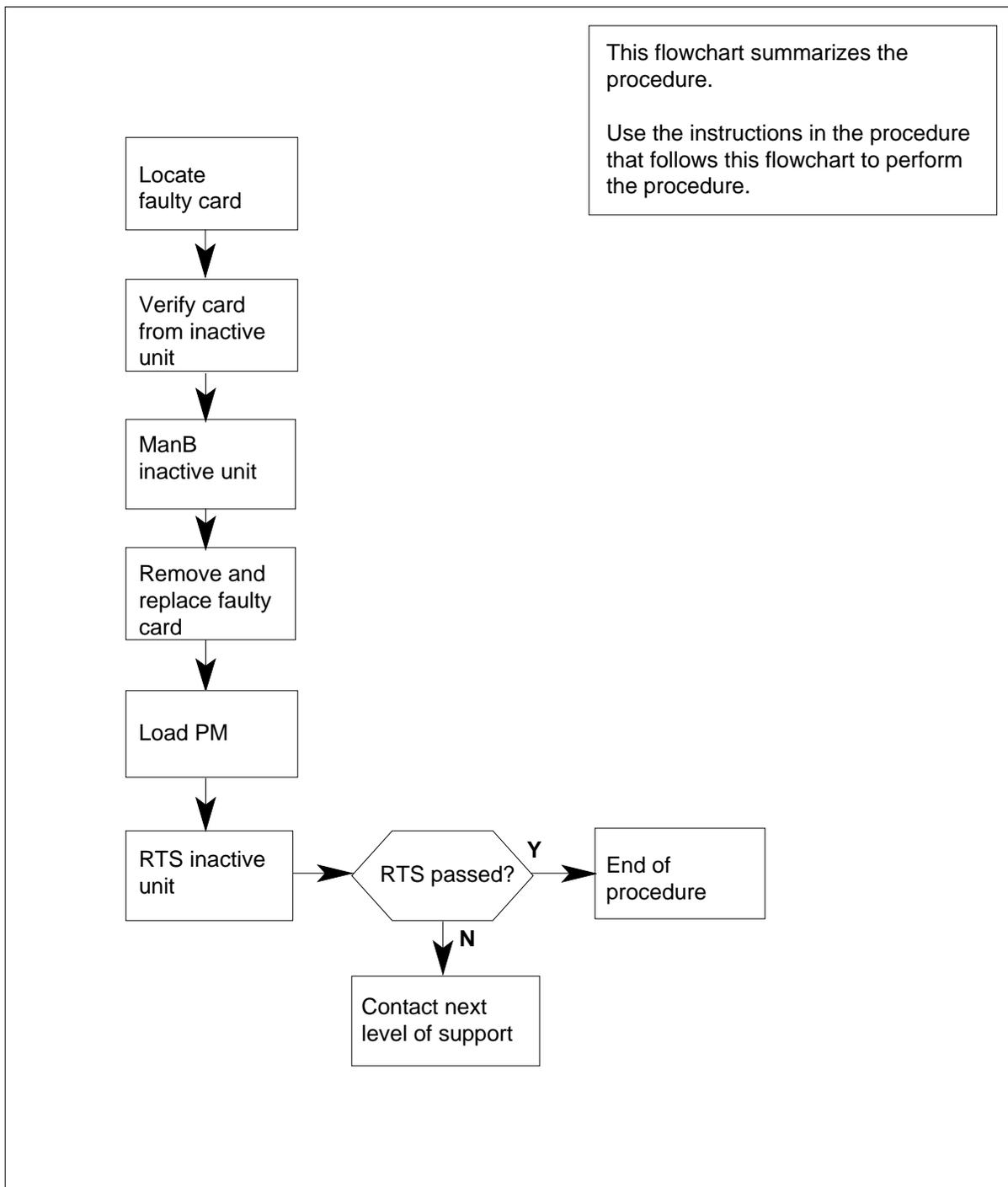
The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- replacing a card
- returning a card

Do not go to a 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.

**NTMX73**  
**in an SMA2** (continued)**Summary of card replacement procedure for an NTMX73 card in an SMA2**

## NTMX73 in an SMA2 (continued)

---

### Replacing an NTMX73 card in an SMA2

#### *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 Ensure you know the physical location of the faulty card.

---

If card location is	Do
known	step 4
unknown	step 3

---

- 3 Perform the procedure "Locating a faulty card in an SMA2."
- 4



#### **CAUTION**

##### **Loss of service**

When replacing a card in the SMA2, ensure the unit in which you are replacing the card is *inactive* and the mate unit is *active*.

Obtain an NTMX73 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card to be removed.

#### *At the MAP display*

- 5 Ensure the current MAP display is at the PM level and post the SMA2 by typing

```
>MAPCI;MTC;PM;POST SMA2 sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 with the faulty card

*Example of a MAP display:*

## NTMX73 in an SMA2 (continued)

SMA2	SysB	ManB	OffL	CBsy	ISTb	InSv
PM	3	0	1	0	2	13
SMA2	0	0	0	0	1	7

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act InSv
Unit1: InAct IsTb
```

- 6** Observe the MAP display and determine if the faulty card is in the active or the inactive unit.

If the faulty card is on the	Do
active unit	step 7
inactive unit	step 11

- 7** Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal.

If prompt indicates	Do
cannot continue at this time	step 8
can continue at this time	step 9

- 8** Reject the prompt to SWACT of the units by typing

>NO

and pressing the Enter key.

The system discontinues the SWACT.

- 9** Confirm the system prompt by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

If the message is	Do
SWACT passed	step 11

## NTMX73 in an SMA2 (continued)

---

	<b>If the message is</b>	<b>Do</b>
	SWACT failed Reason: XPM SWACTback	step 10
	SWACT refused by SWACT Controller	step 10
<b>10</b>	The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit. Go to step 18.	

### **At the frame or cabinet**

- 11** Place a sign on the active unit bearing the words *Active unit-Do not touch*. This sign should not be attached by magnets or tape.

### **At the MAP display**

- 12** Busy the inactive PM unit by typing  
`>bsy unit unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)

### **At the frame or cabinet**

**13**

	<p><b>WARNING</b> <b>Static electricity damage</b> Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.</p>
---	--

Perform the common replacing a card procedure in this document.

### **At the MAP display**

- 14** Load the inactive SMA2 unit by typing  
`>loadpm unit unit_no CC`  
and pressing the Enter key.  
*where*

---

## NTMX73 in an SMA2 (end)

---

- unit\_no**  
is the number of the faulty SMA2 unit
- |  | <b>If load</b> | <b>Do</b> |
|--|----------------|-----------|
|  | passed         | step 15   |
|  | failed         | step 18   |
- 15** Use the following information to determine where to proceed.
- |  | <b>If you entered this procedure from</b> | <b>Do</b> |
|--|---|-----------|
|  | alarm clearing procedures                 | step 17   |
|  | other                                     | step 16   |
- 16** Return the inactive SMA2 unit to service by typing  
>RTS UNIT **unit\_no**  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the faulty SMA2 unit
- |  | <b>If RTS</b> | <b>Do</b> |
|--|---------------|-----------|
|  | passed        | step 19   |
|  | failed        | step 18   |
- 17** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 18** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 19** Remove the sign from the active SMA2 unit.
- 20** Go to the common returning a card procedure in this document.
- 21** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTMX74 in an RSC-M

---

### Application

Use this procedure to replace an NTMX74 card in the Remote Switching Center Multi-Access (RSC-M) shelf.

*Note:* In this section RSC-M is referred to as RCO2 in the examples. When software outputs messages to the MAP terminal the system does not differentiate between the two types of RCO2.

PEC	Suffixes	Name
NTMX74	AB	DS30A Interface

### Common procedures

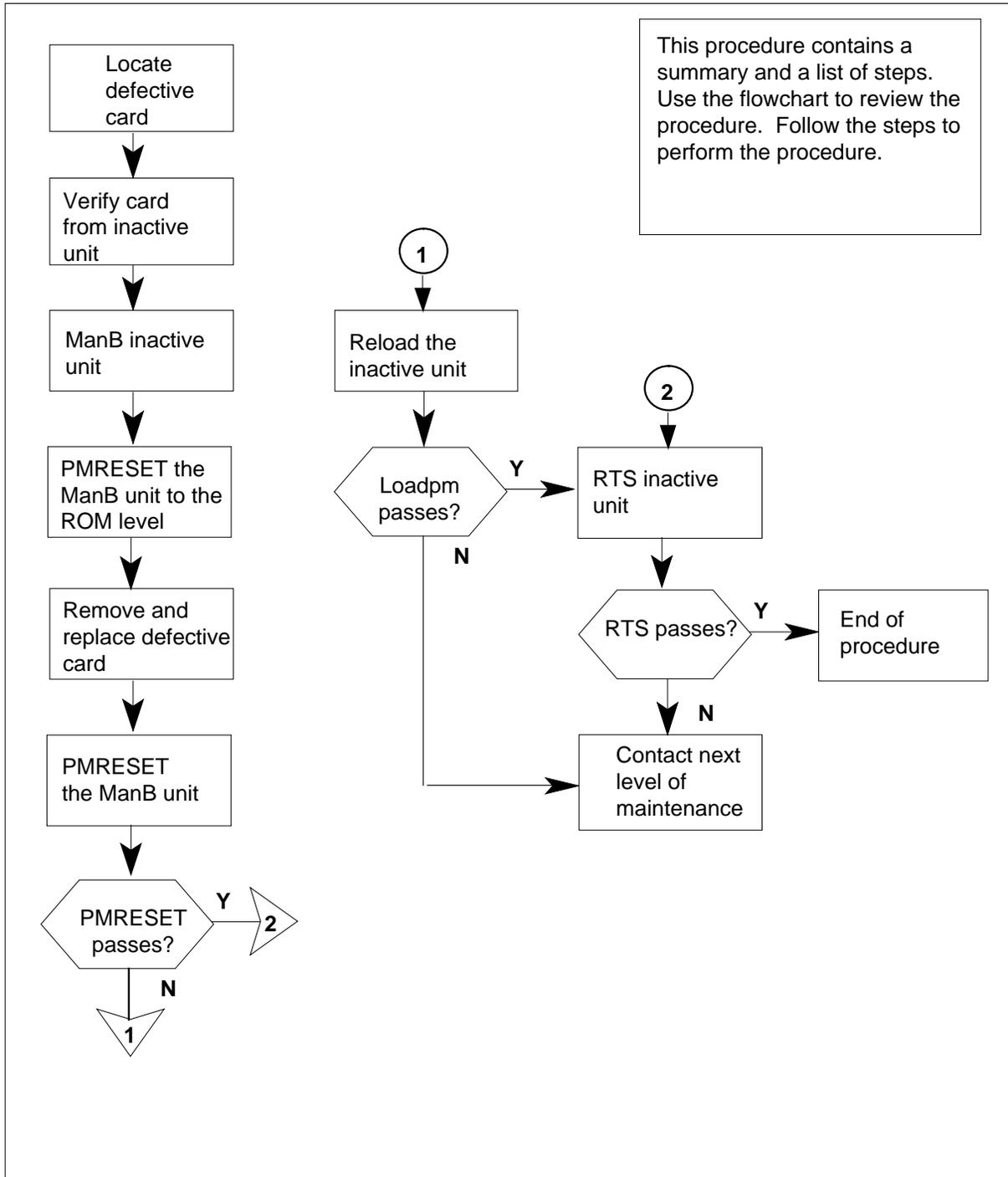
None

### 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.

## NTMX74 in an RSC-M (continued)

### Summary of Replacing an NTMX74 in an RSC-M



## NTMX74 in an RSC-M (continued)

---

### Replacing an NTMX74 in an RSC-M



#### **WARNING**

##### **Loss of service**

When you replace a card in the RSC-M, make sure that the unit in which you replace the card is *inactive*. Make sure that the mate unit is *active*.

#### ***At your current location***

- 1 Proceed if you have been directed to this card replacement procedure:
  - from a step in a maintenance procedure
  - to use the procedure to verify or accept cards
  - by your maintenance support group.

Obtain an NTMX74 replacement card. Verify that the replacement card has the same product engineering code (PEC), and PEC suffix, as the card to remove.

#### ***At the MAP terminal***

- 2 Set the MAP display to the peripheral module (PM) level. To post the RSC-M/RCO2, type:

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the defective card

*Example of a MAP display:*

## NTMX74 in an RSC-M (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0       0       OffL    CBSy    ISTb    InSv
2 Post_     RCO2   0       0       0       0       1       1
3 ListSet
4           RCO2   0 ISTb  Links_OOS: CSide 1, 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 SWACT
14 QueryPM
15
16
17 Perform
18

```

- 3 Observe the MAP display. Make sure that the card you remove is on the inactive unit.

If defective card is on	Do
active unit	step 4
inactive unit	step 6

- 4 To perform a Switch of Activity (SWACT) of the processing activity, to the inactive unit, type:

>SWACT

and press the Enter key.

- 5 To confirm the system prompt, type:

>YES

and press the Enter key.

After the two units are in-service, proceed to the next step.

### **At the RSC-M cabinet**

- 6 Place a sign on the *active* unit that bears the words *Active unit-Do not touch*. Do not use magnets or tape to attach this sign.

## NTMX74 in an RSC-M (continued)

---

### *At the MAP terminal*

7 To busy the inactive PM unit, type:

```
>bsy INACTIVE
```

and press the Enter key.

8 To set the Manual Busy (ManB) RCO2 unit to the ROM level to prevent trapping, type:

```
>PMRESET UNIT unit_no NORUN
```

and press the Enter key.

where

**unit\_no**

is the number of the inactive RCO2 unit busied in step 7

### *At the RSC-M cabinet*

9



#### **WARNING**

##### **Static electricity damage**

Wear a wrist-strap that connects to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. The wrist strap protects the cards against static electricity damage.

Put on a wrist strap.

10



#### **DANGER**

##### **Equipment damage**

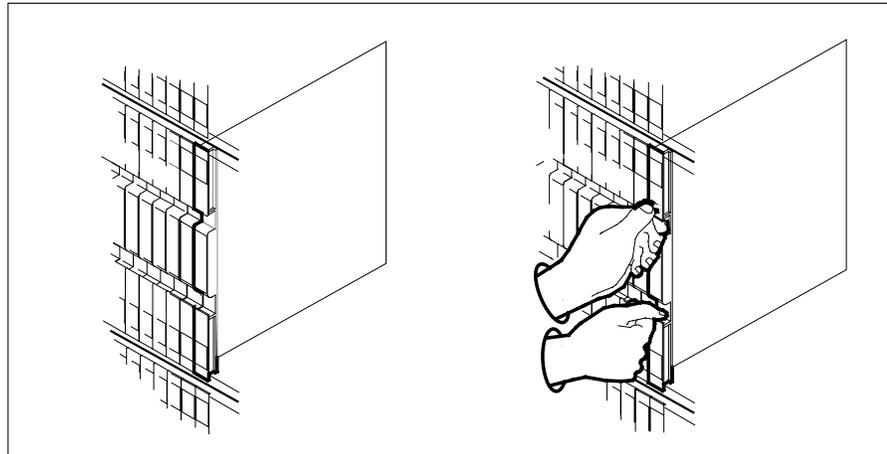
Take the following precautions when you remove or insert a card:

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

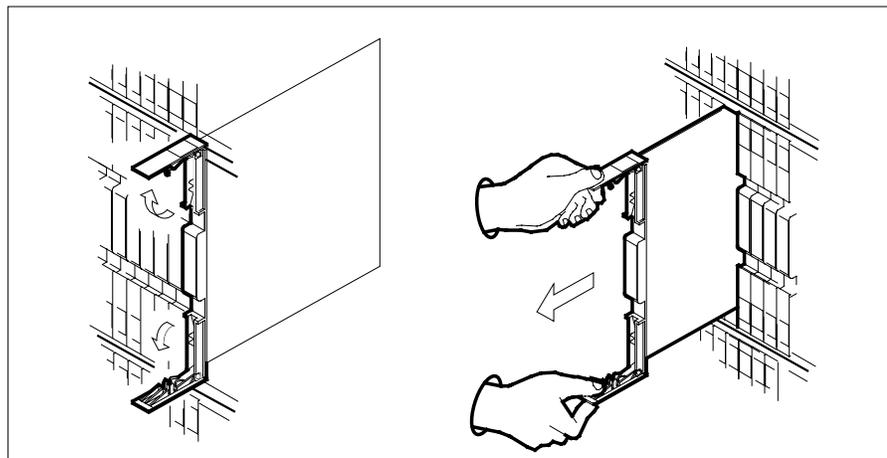
Remove the NTMX74 card as the following figures describe:

- a Locate the card you must remove on the correct shelf.

**NTMX74**  
**in an RSC-M (continued)**



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

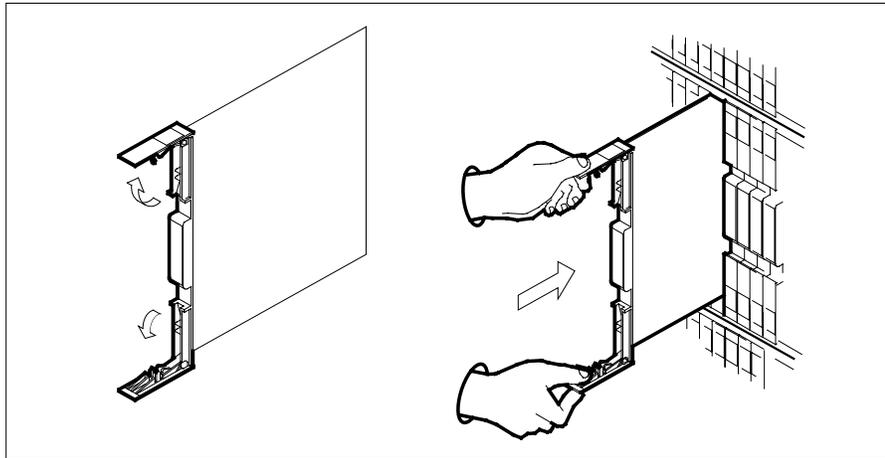


- c** Make sure the replacement card has the same PEC, and PEC suffix, as the card you remove.
- 11** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
- b** Carefully slide the card into the shelf.

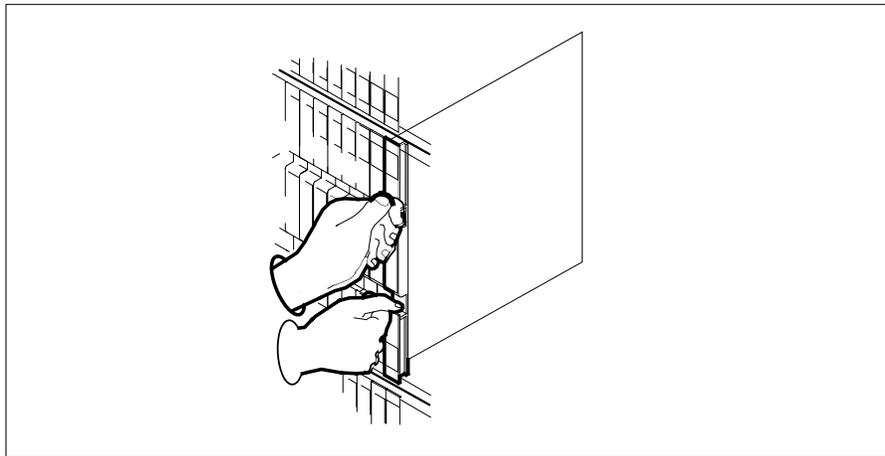
---

## NTMX74 in an RSC-M (continued)

---



- 12** Seat and lock the card.
- a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate. Perform this action to make sure the card is fully seated in the shelf.
  - b** Close the locking levers.



- 13** Refer to the following table to determine the next step:

---

<b>If you enter this procedure from</b>	<b>Do</b>
alarm clearing procedure	step 19
other	step 14

---

- 14** To reset the inactive RCO2 unit, type:  
`>PMRESET UNIT unit_no`

## NTMX74 in an RSC-M (continued)

and press the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCO2 unit zero or one

If the PMRESET command	Do
passes	step 16
fails	step 15

- 15** To reload the inactive RCO2 unit, type:

>LOADPM UNIT **unit\_no**

and press the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCO2 unit zero or one

If the LOADPM command	Do
passes	step 16
fails	step 20

- 16** To return the inactive RCO2 unit to service, type:

>RTS UNIT **unit\_no**

and press the Enter key.

*where*

**unit\_no**  
is the number of the RCO2 unit busied in step 7

If RTS	Do
passes	step 17
fails	step 20

- 17** Send defective cards for repair according to local procedure.
- 18** Record the date the card is replaced. Record the serial number of the card, and the problems that prompt replacement of the card. Go to step 21.
- 19** Return to the procedure that directed you to this procedure. At the point where a defective card list was produced, identify the next defective card on the list. Go to the correct card replacement procedure for that card in this manual.
- 20** For additional help to replace this card, contact the next level of maintenance.

**NTMX74**  
**in an RSC-M** (end)

---

- 21 The procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.

**NTMX74  
in an RSC RCC2**

---

**Application**

Use this procedure to replace an NTMX74 card in an RSCE RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX74	AA	DS30A Interface card

**Common procedures**

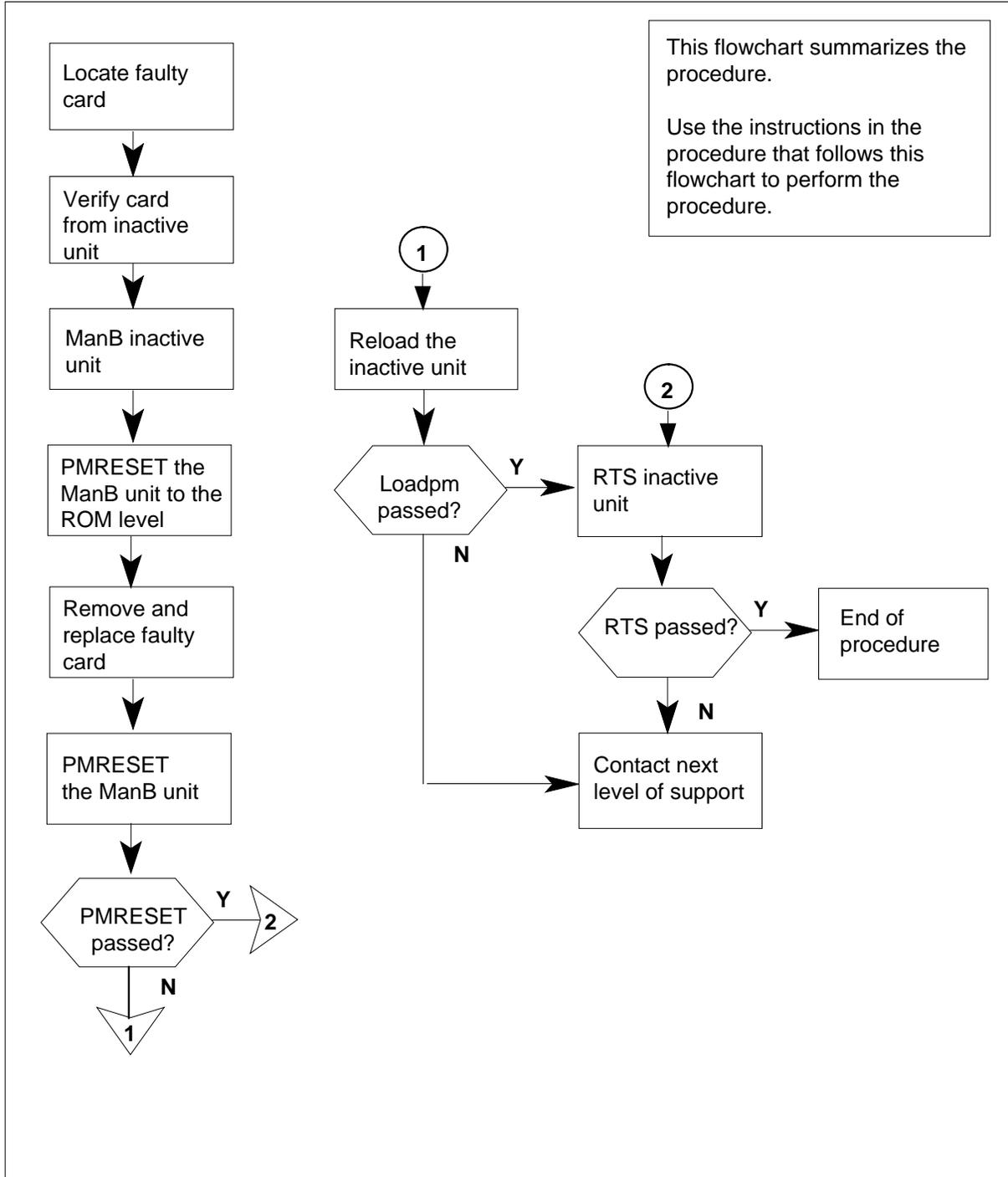
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX74 in an RSC RCC2 (continued)

### Summary of card replacement procedure for an NTMX74 card in RSC RCC2



## NTMX74 in an RSC RCC2 (continued)

---

### Replacing an NTMX74 card in RSC RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX74 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX74 in an RSC RCC2 (continued)

CM	MS	IOD	Net	PM	CCS	LNS	Trks	Ext	Appl
.	.	.	.	1RCC2	.	.	.	.	.
RCC2			SysB	ManB	OffL	CBsy	ISTb	InSv	
0	Quit	PM	0	0	2	0	2	25	
2	Post_	RCC2	0	0	0	0	1	1	
3	ListSet								
4		RCC2	0	ISTb	Links_OOS:	CSide 1, 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									
18									

- 4 By observing the MAP display, ensure that the card to be removed is on the inactive unit.

**At the RSCE frame**

- 5 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**At the MAP terminal**

- 6 Busy the inactive PM unit by typing  
**>bsy INACTIVE**  
and pressing the Enter key.
- 7 Set the ManB RCC2 unit to the ROM level to prevent trapping by typing  
**>PMRESET UNIT unit\_no NORUN**  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the inactive RCC2 unit busied in step 6

**NTMX74**  
**in an RSC RCC2 (continued)**

*At the RCE frame*

8



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

9



**DANGER**

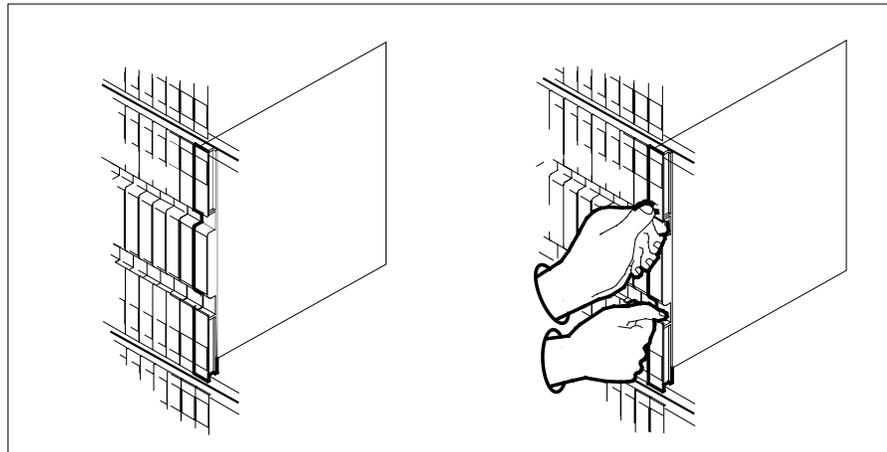
**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX74 card as shown in the following figures.

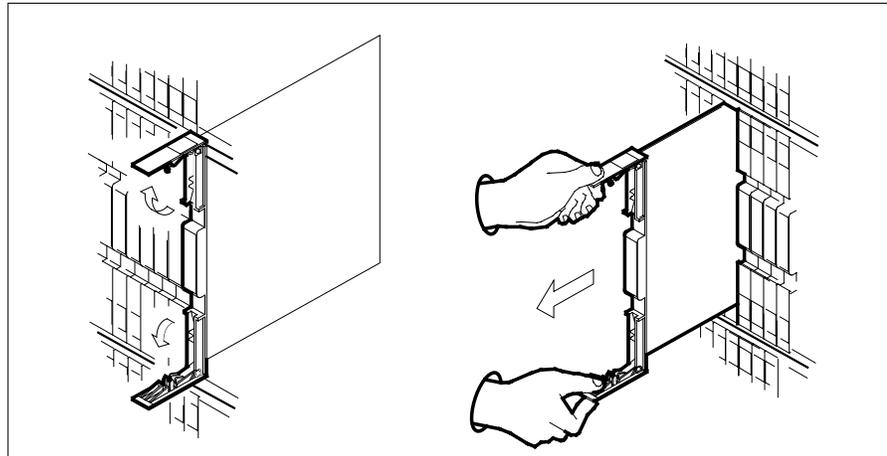
- a** Locate the card to be removed on the appropriate shelf.



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.

## NTMX74 in an RSC RCC2 (continued)

---

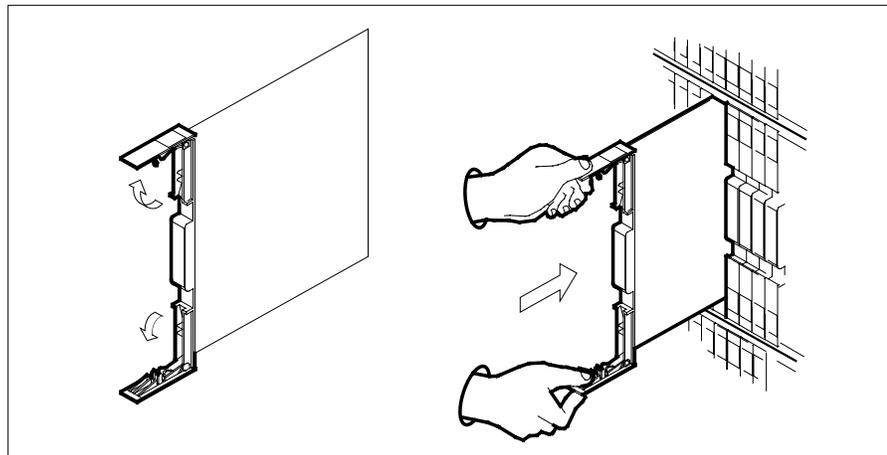


**c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.

**10** Open the locking levers on the replacement card.

**a** Align the card with the slots in the shelf.

**b** Gently slide the card into the shelf.

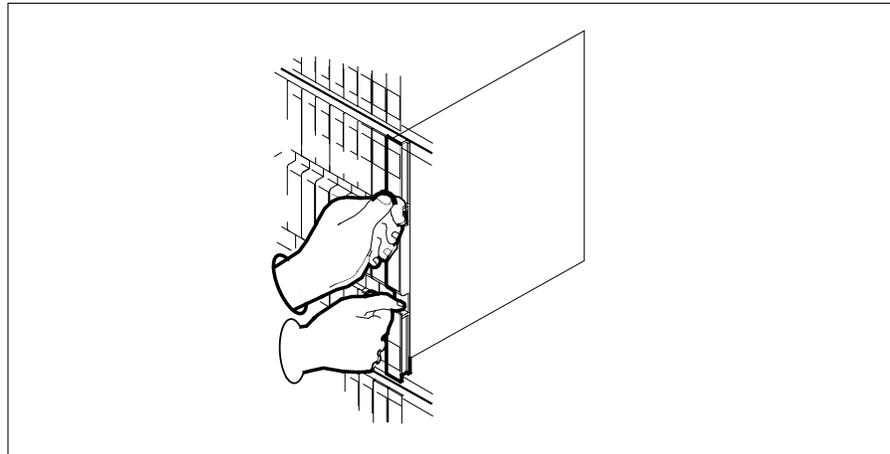


**11** Seat and lock the card.

**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.

## NTMX74 in an RSC RCC2 (continued)



- 12 Refer to the following table to determine the next step

If you entered this procedure from	Do
alarm clearing procedure	step 18
other	step 13

**At the MAP terminal**

- 13 Reset the inactive RCC2 unit by typing  
`>PMRESET UNIT unit_no`  
 and pressing the Enter key.  
*where*  
**unit\_no**  
 is the number of the inactive RCC2 unit (0 or 1)

If the PMRESET command	Do
passed	step 15
failed	step 14

- 14 Reload the inactive RCC2 unit by typing  
`>LOADPM UNIT unit_no`  
 and pressing the Enter key.  
*where*

## NTMX74 in an RSC RCC2 (end)

---

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

<b>If the LOADPM command</b>	<b>Do</b>
passed	step 15
failed	step 19

---

- 15** Return the inactive RCC2 unit to service by typing

**>RTS UNIT unit\_no**

and pressing the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

<b>If the RTS command</b>	<b>Do</b>
passed	step 16
failed	step 19

---

- 16** Send any faulty cards for repair according to local procedure.
- 17** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 20.
- 18** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 19** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 20** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX74  
in an RSC-S (DS-1) Model A RCC2**

---

**Application**

Use this procedure to replace an NTMX74 card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX74	AA	DS30A Interface card

**Common procedures**

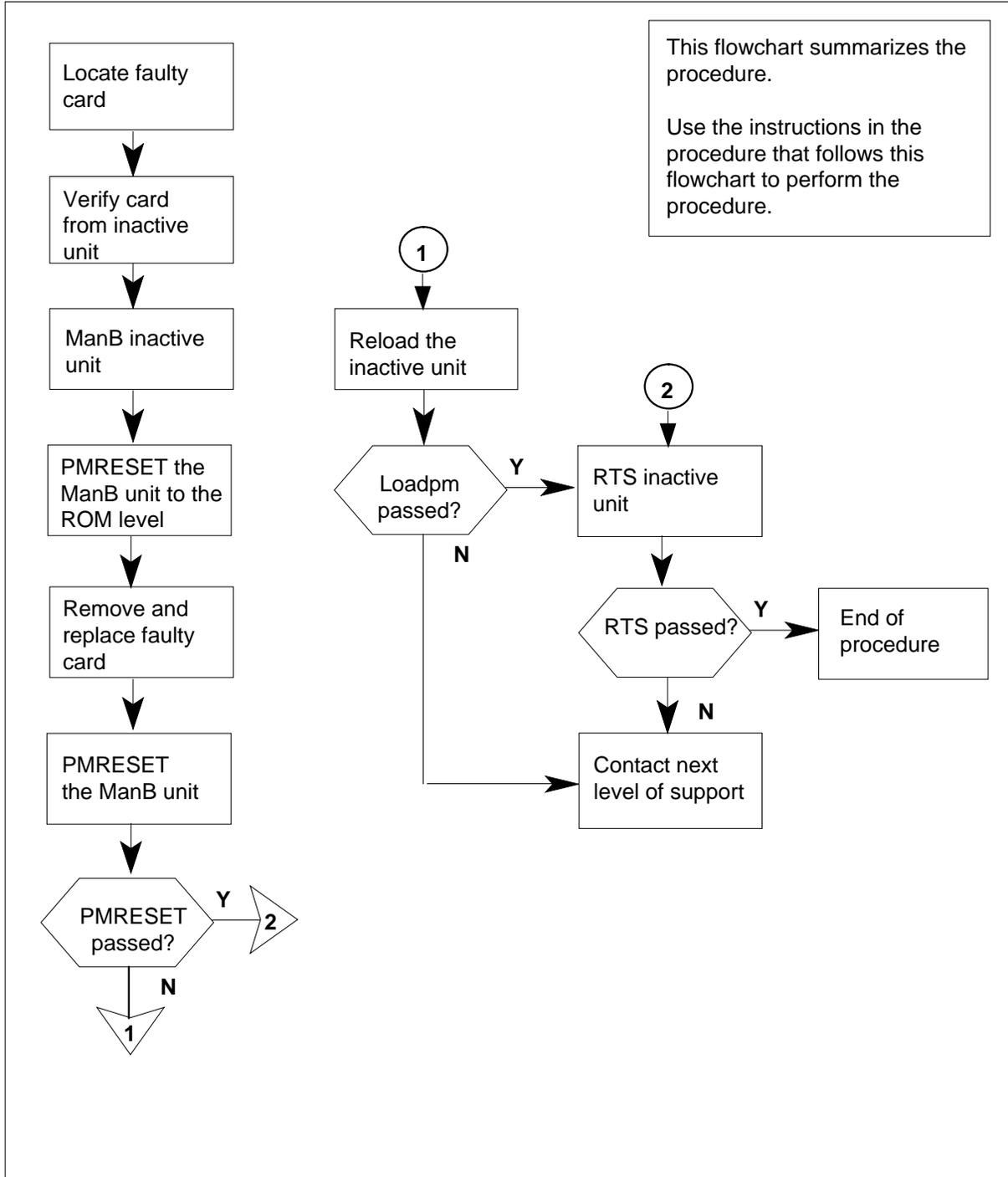
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

# NTMX74 in an RSC-S (DS-1) Model A RCC2 (continued)

## Summary of card replacement procedure for an NTMX74 card in RSC-S RCC2



---

## NTMX74

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

#### Replacing an NTMX74 card in RSC-S RCC2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX74 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

**NTMX74**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM      0       0       OffL    CBSy    ISTb    InSv
2 Post_     RCC2   0       0       2       0       2       25
3 ListSet
4           RCC2   0 ISTb  Links_OOS: CSide 1, 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
18
    
```

- 4 By observing the MAP display, ensure that the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing **>SWACT** and pressing the Enter key.

- 6 Confirm the system prompt by typing **>YES** and pressing the Enter key.  
 After both units are in-service, proceed to the next step.

**At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

---

## NTMX74

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

**At the MAP terminal**

- 8 Busy the inactive PM unit by typing  
`>bsy INACTIVE`  
and pressing the Enter key.
- 9 Set the ManB RCC2 unit to the ROM level to prevent trapping by typing  
`>PMRESET UNIT unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the inactive RCC2 unit busied in step 8

**At the RCE frame**

10

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

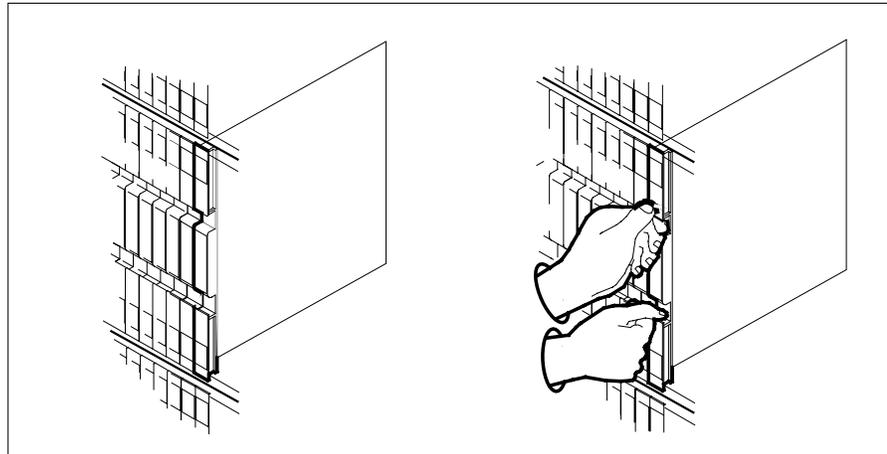
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Remove the NTMX74 card as shown in the following figures.

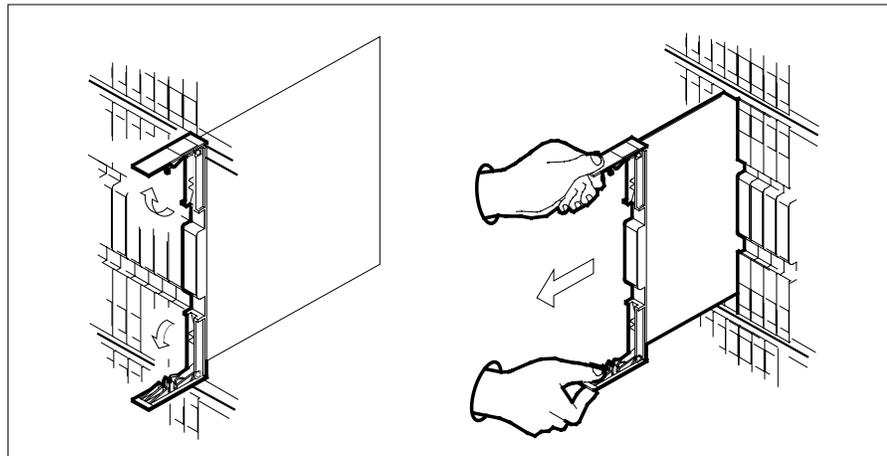
- a** Locate the card to be removed on the appropriate shelf.

**NTMX74**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

---



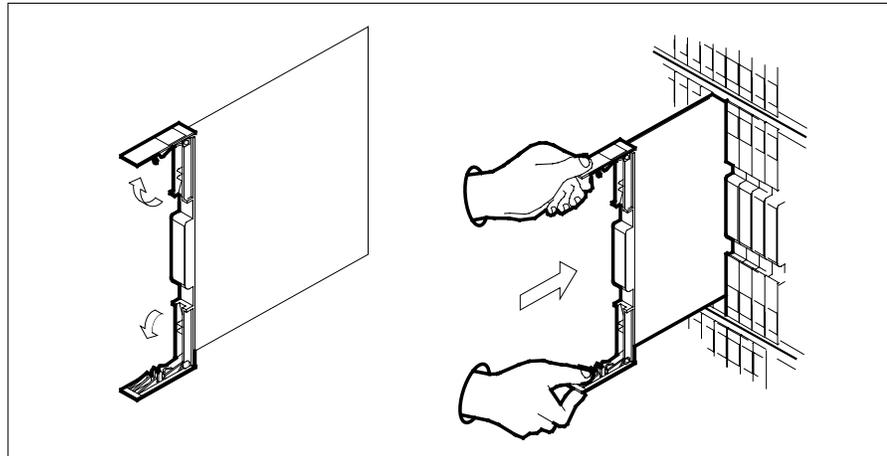
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



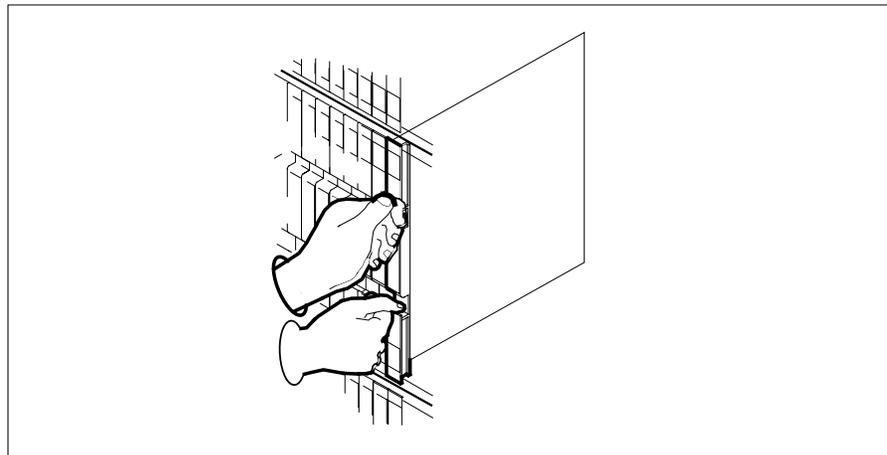
- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

**NTMX74**

**in an RSC-S (DS-1) Model A RCC2 (continued)**



- 13** 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.



- 14** Refer to the following table to determine the next step

If you entered this procedure from	Do
alarm clearing procedure	step 20
other	step 15

- 15** Reset the inactive RCC2 unit by typing  
`>PMRESET UNIT unit_no`

## NTMX74 in an RSC-S (DS-1) Model A RCC2 (continued)

---

and pressing the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

<b>If the PMRESET command</b>	<b>Do</b>
passed	step 17
failed	step 16

---

- 16** Reload the inactive RCC2 unit by typing

**>LOADPM UNIT unit\_no**

and pressing the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

<b>If the LOADPM command</b>	<b>Do</b>
passed	step 17
failed	step 21

---

- 17** Return the inactive RCC2 unit to service by typing

**>RTS UNIT rcc2\_unit\_no**

and pressing the Enter key.

*where*

**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

<b>If the RTS command</b>	<b>Do</b>
passed	step 18
failed	step 21

---

- 18** Send any faulty cards for repair according to local procedure.
- 19** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 22.
- 20** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 21** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX74**  
**in an RSC-S (DS-1) Model A RCC2 (end)**

---

- 22** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX74 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace an NTMX74 card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX74	AA	DS30A Interface card

### **Common procedures**

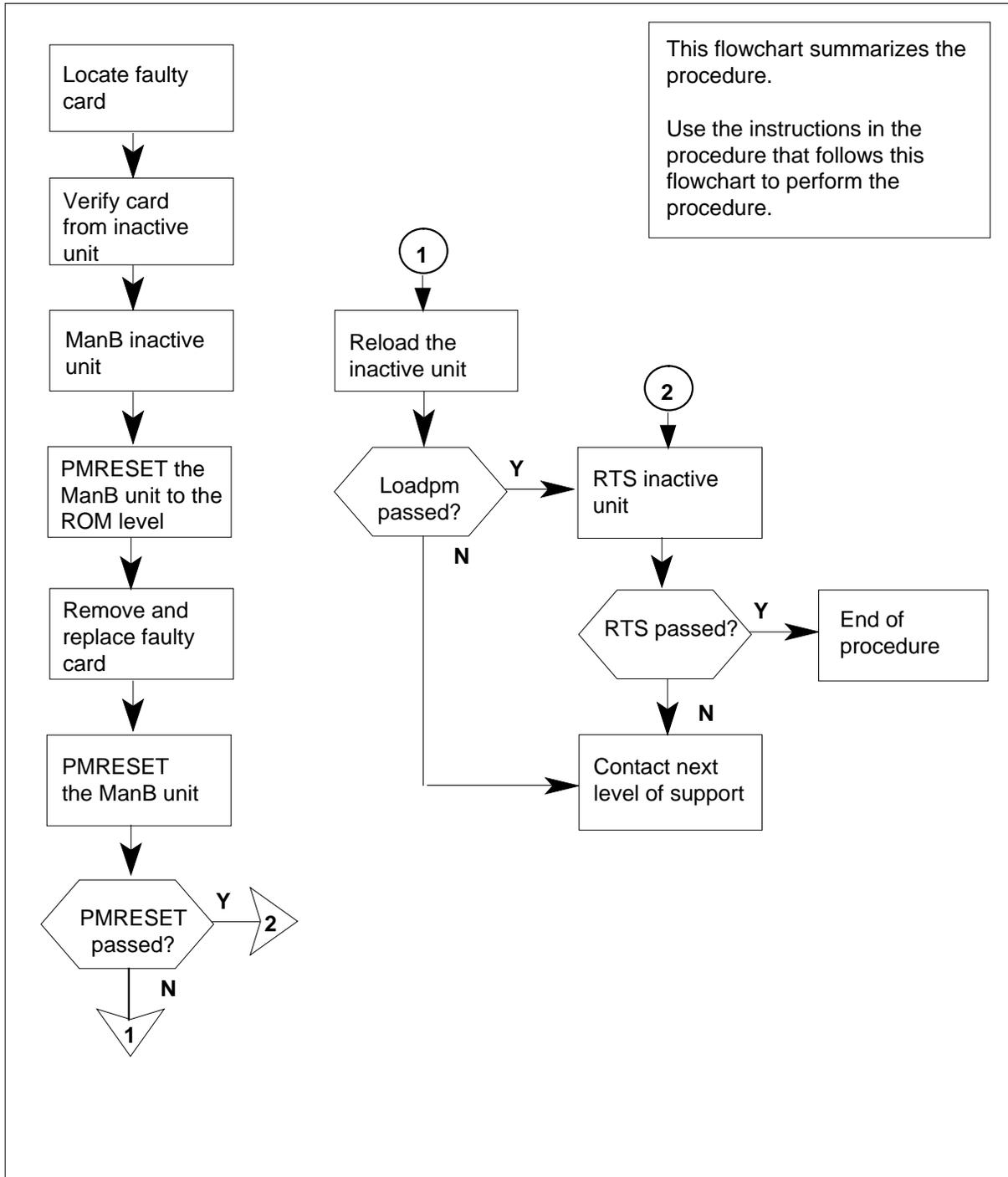
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX74**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

**Summary of card replacement procedure for an NTMX74 card in RSC-S RCC2**



## NTMX74 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### Replacing an NTMX74 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX74 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX74

### in an RSC-S (DS-1) Model B RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          OffL      2          0          2          25
2 Post_     RCC2        0          0          0          0          0          1          1
3 ListSet
4           RCC2      0 ISTb  Links_OOS:  CSide  1, 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
18

```

- 4 By observing the MAP display, ensure that the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

- 6 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

## NTMX74 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>bsy INACTIVE`  
and pressing the Enter key.
- 9 Set the ManB RCC2 unit to the ROM level to prevent trapping by typing  
`>PMRESET UNIT unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the inactive RCC2 unit busied in step 8

### *At the RCE frame*

10



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX74 card as shown in the following figures.

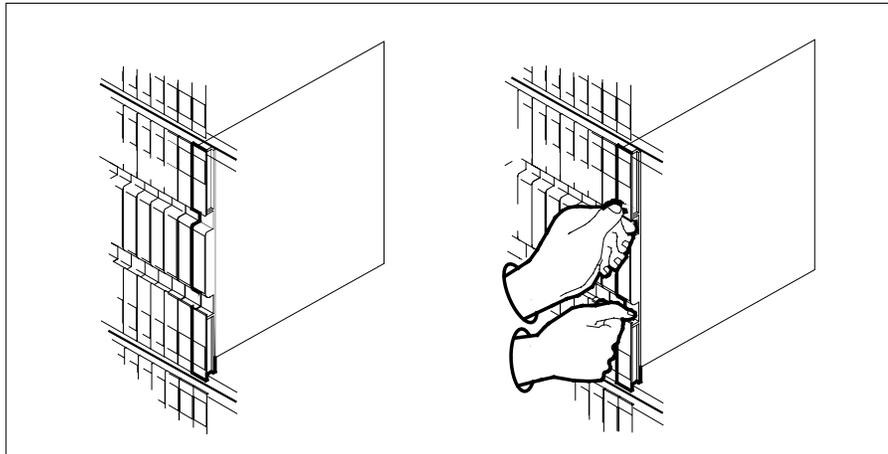
- a Locate the card to be removed on the appropriate shelf.

---

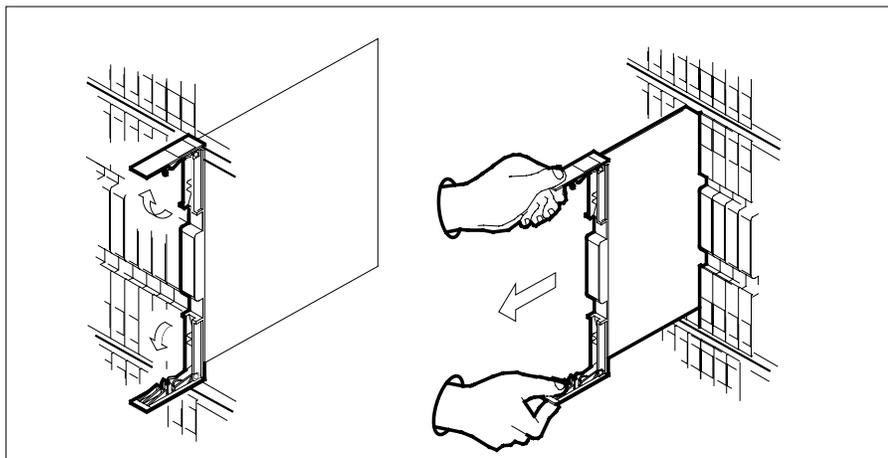
**NTMX74**

**in an RSC-S (DS-1) Model B RCC2 (continued)**

---



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.

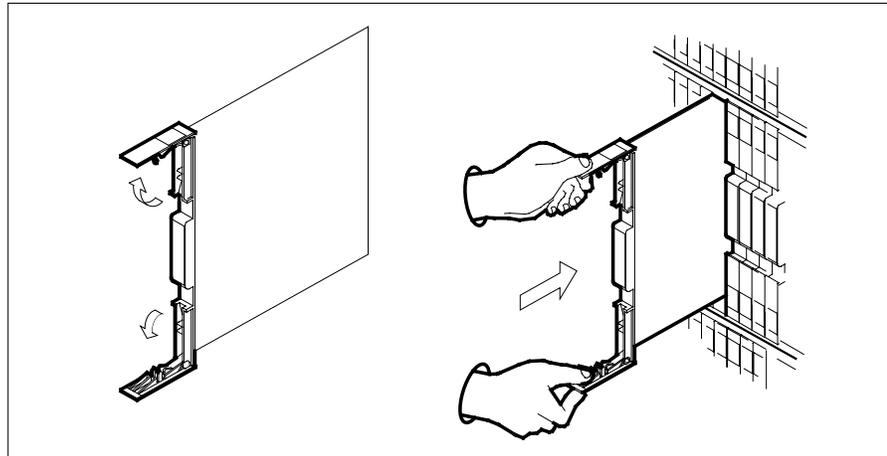


- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

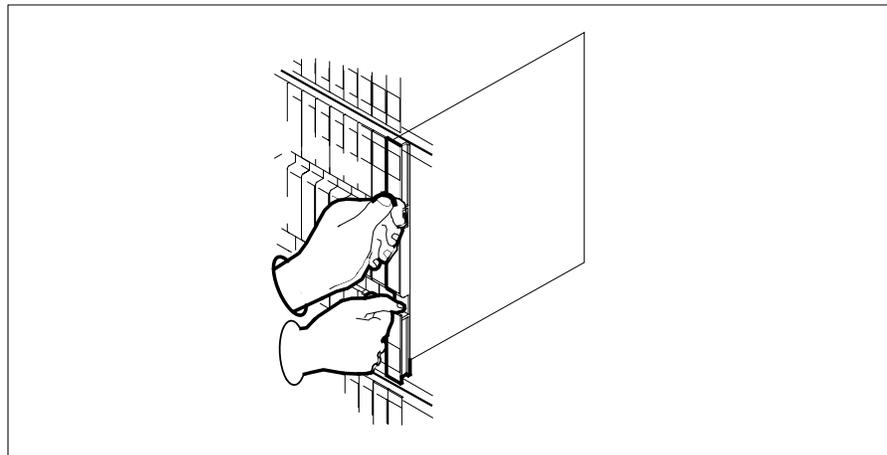
---

**NTMX74**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

---



- 13** 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.



- 14** Refer to the following table to determine the next step

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedure	step 20
other	step 15

- 15** Reset the inactive RCC2 unit by typing  
`>PMRESET UNIT unit_no`

---

**NTMX74**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

and pressing the Enter key.

where

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

If the PMRESET command	Do
passed	step 17
failed	step 16

- 16** Reload the inactive RCC2 unit by typing

>LOADPM UNIT **unit\_no**

and pressing the Enter key.

where

**unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

If the LOADPM command	Do
passed	step 17
failed	step 21

- 17** Return the inactive RCC2 unit to service by typing

>RTS UNIT **rcc2\_unit\_no**

and pressing the Enter key.

where

**rcc2\_unit\_no**  
is the number of the RCC2 unit (0 or 1)

If RTS	Do
passed	step 18
failed	step 21

- 18** Send any faulty cards for repair according to local procedure.
- 19** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 22.
- 20** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 21** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX74**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

- 22 You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX74  
in an RSC-S (PCM-30) Model A RCO2**

---

**Application**

Use this procedure to replace an NTMX74 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX74	AA	DS30A Interface card

**Common procedures**

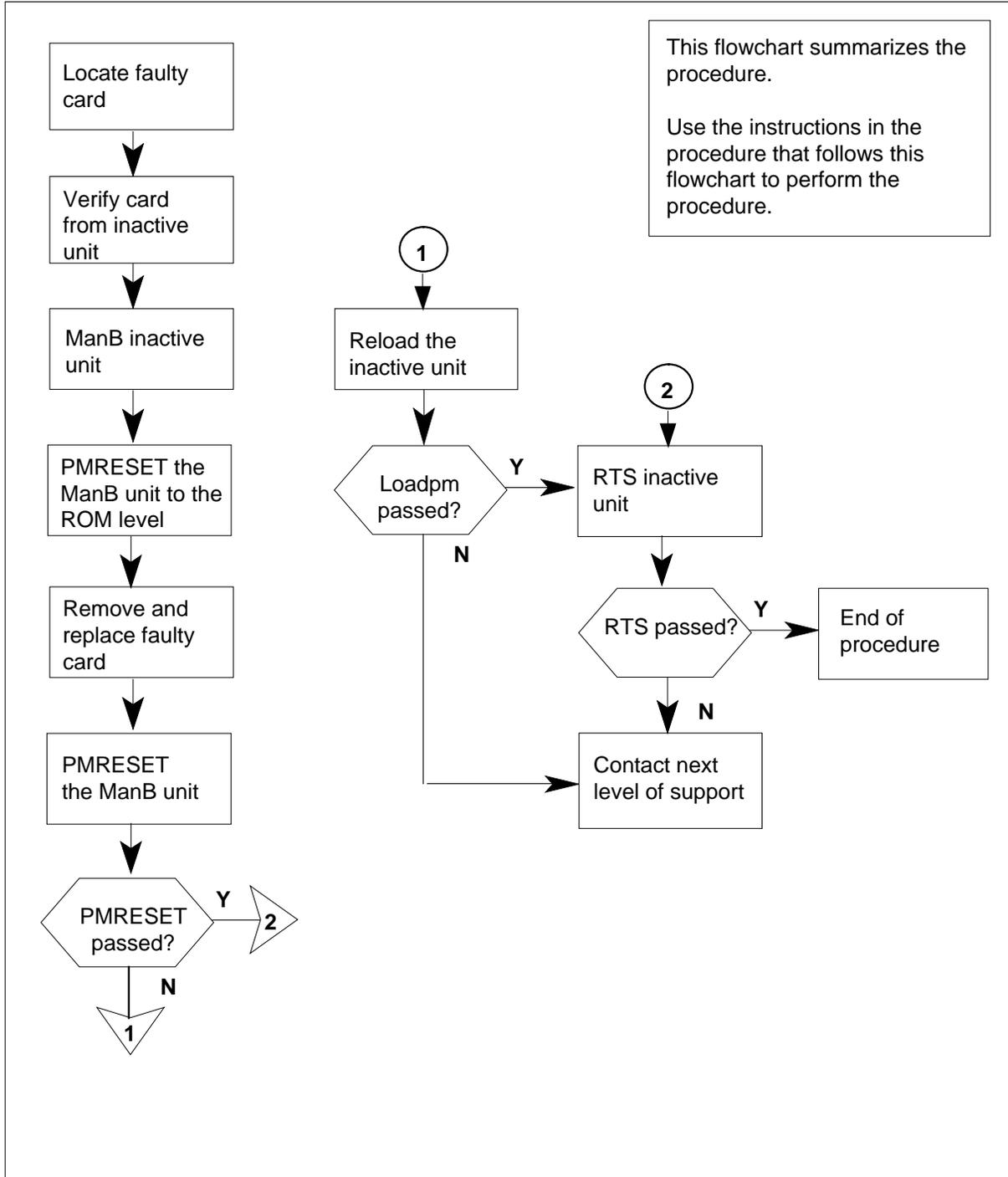
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX74**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

**Summary of card replacement procedure for an NTMX74 card in RSC-S RCO2**



---

## NTMX74

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

#### Replacing an NTMX74 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX74 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

**NTMX74**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0      0      2      0      2      25
2 Post_    RCO2   0      0      0      0      1      1
3 ListSet
4          RCO2   0 ISTb  Links_OOS:  CSide 1, 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
18
    
```

- 4 By observing the MAP display, be sure that the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 6

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

**At the RCE frame**

- 6 Place a sign on the *active* unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

---

## NTMX74

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

**At the MAP terminal**

- 7 Busy the inactive PM unit by typing  
`>bsy INACTIVE`  
and pressing the Enter key.
- 8 Set the ManB RCO2 unit to the ROM level to prevent trapping by typing  
`>PMRESET UNIT unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the inactive RCO2 unit busied in step 7

**At the RCE frame**

9

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

10

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

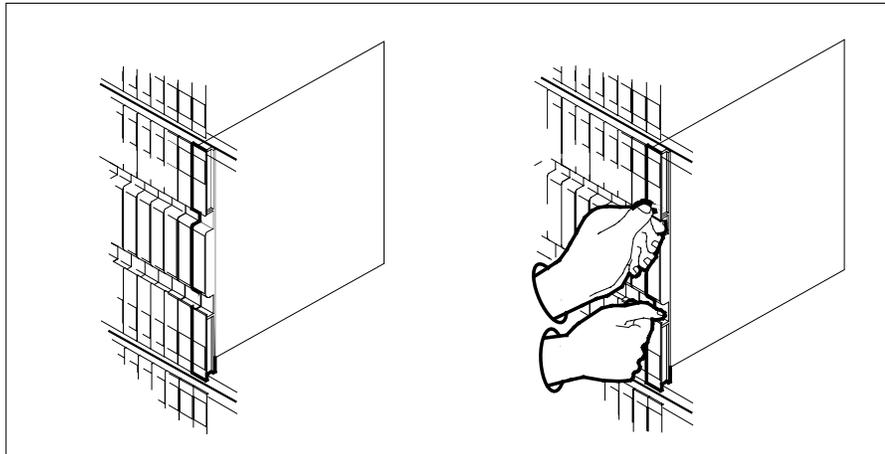
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Remove the NTMX74 card as shown in the following figures.

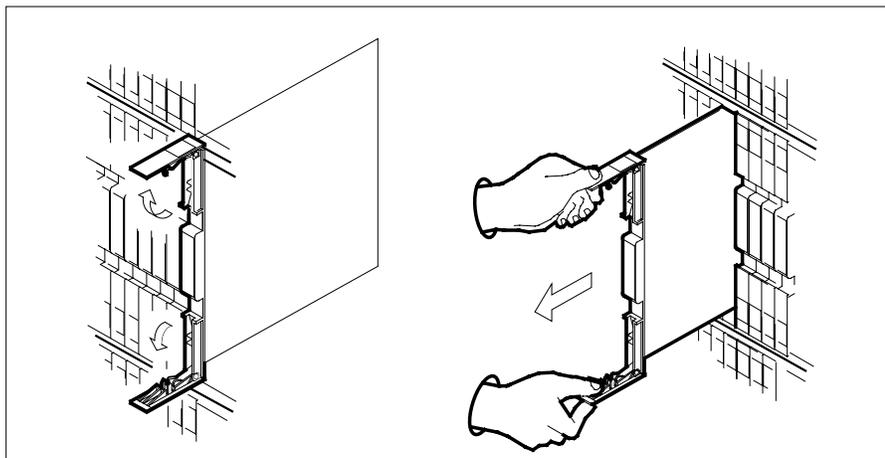
- a** Locate the card to be removed on the appropriate shelf.

**NTMX74**  
**in an RSC-S (PCM-30) Model A RCO2 (continued)**

---



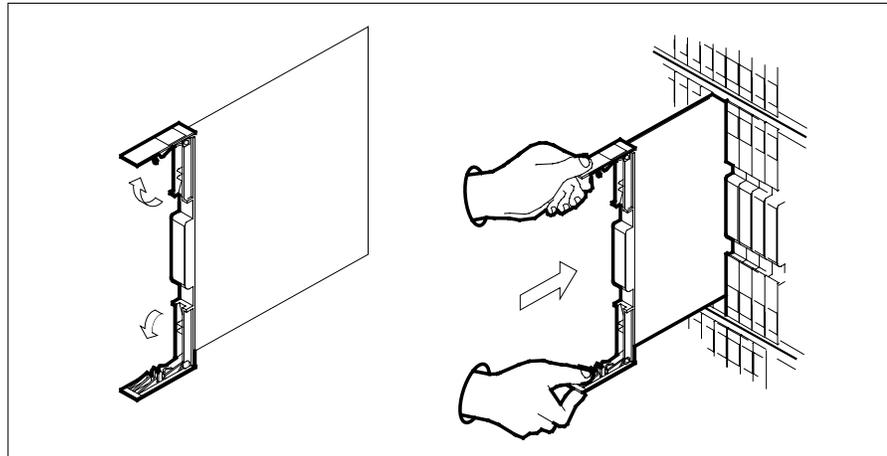
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



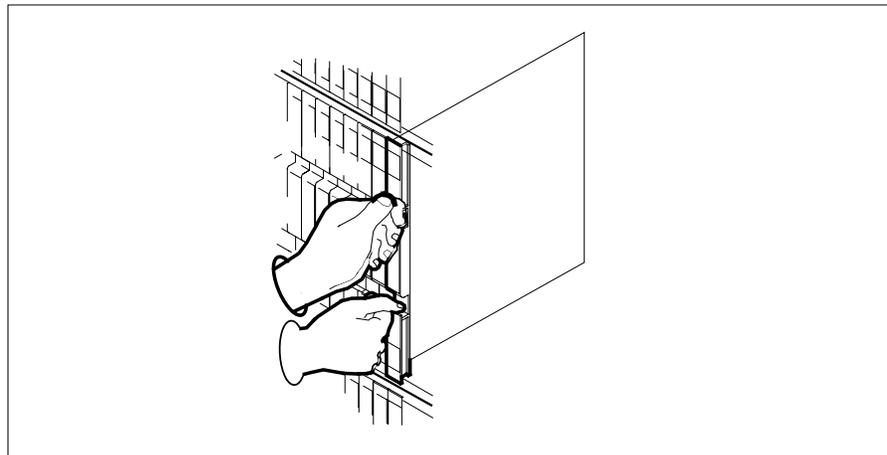
- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 11** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

**NTMX74**

**in an RSC-S (PCM-30) Model A RCO2 (continued)**



- 12** 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.



- 13** Refer to the following table to determine the next step

If you entered this procedure from	Do
alarm clearing procedure	step 19
other	step 14

## NTMX74 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

*At the MAP terminal*

- 14 Reset the inactive RCO2 unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCO2 unit (0 or 1)

---

<b>If the PMRESET command</b>	<b>Do</b>
passed	step 16
failed	step 15

---

- 15 Reload the inactive RCO2 unit by typing

```
>LOADPM UNIT unit_no
```

and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCO2 unit (0 or 1)

---

<b>If the LOADPM command</b>	<b>Do</b>
passed	step 16
failed	step 20

---

- 16 Return the inactive RCO2 unit to service by typing

```
>RTS UNIT rco2_unit_no
```

and pressing the Enter key.

*where*

**rco2\_unit\_no**

is the number of the RCO2 unit (0 or 1)

---

<b>If RTS</b>	<b>Do</b>
passed	step 17
failed	step 20

---

- 17 Send any faulty cards for repair according to local procedure.

- 18 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 21.

- 19 Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list

**NTMX74**

**in an RSC-S (PCM-30) Model A RCO2 (end)**

---

and go to the appropriate card replacement procedure for that card in this manual.

- 20** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 21** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX74**  
**in an RSC-S (PCM-30) Model B RCO2**

---

**Application**

Use this procedure to replace an NTMX74 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX74	AA	DS30A Interface card

**Common procedures**

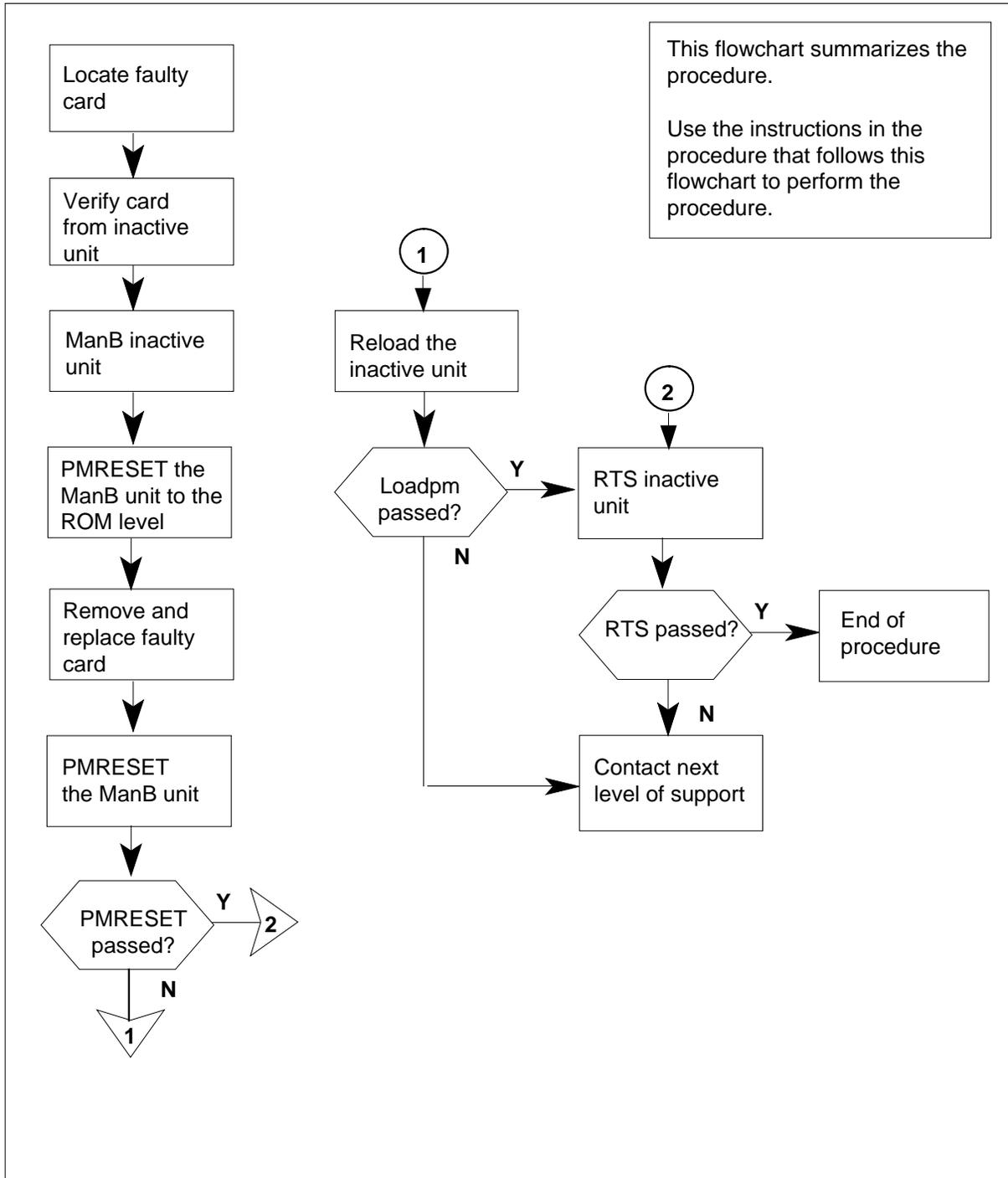
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX74 in an RSC-S (PCM-30) Model B RCO2 (continued)

### Summary of card replacement procedure for an NTMX74 card in RSC-S RCO2



## NTMX74 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

### Replacing an NTMX74 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX74 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

## NTMX74

### in an RSC-S (PCM-30) Model B RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM       0       0       OffL    CBSy    ISTb    InSv
2 Post_    RCO2    0       0       0       0       1       1
3 ListSet
4          RCO2    0 ISTb  Links_OOS: CSide 1, 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
18

```

- 4 By observing the MAP display, be sure that the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

- 6 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 7 Place a sign on the *active* unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

## NTMX74 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>bsy INACTIVE`  
and pressing the Enter key.
- 9 Set the ManB RCO2 unit to the ROM level to prevent trapping by typing  
`>PMRESET UNIT unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the inactive RCO2 unit busied in step 8

### *At the RCE frame*

10



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Remove the NTMX74 card as shown in the following figures.

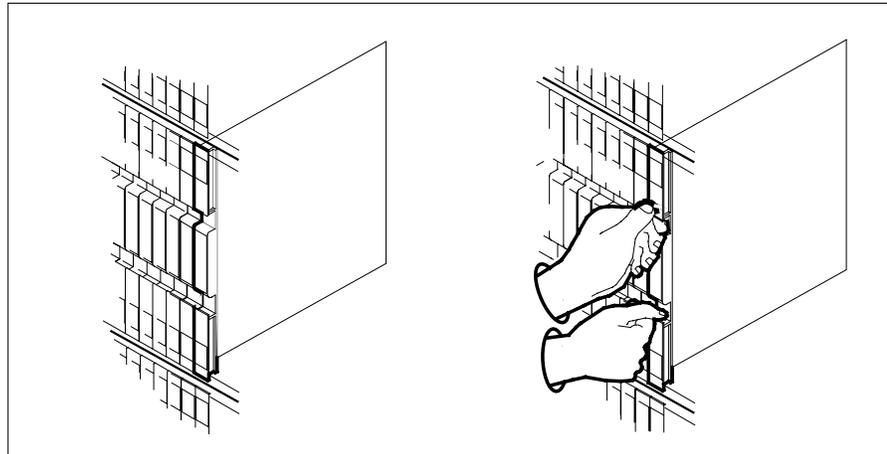
- a** Locate the card to be removed on the appropriate shelf.

---

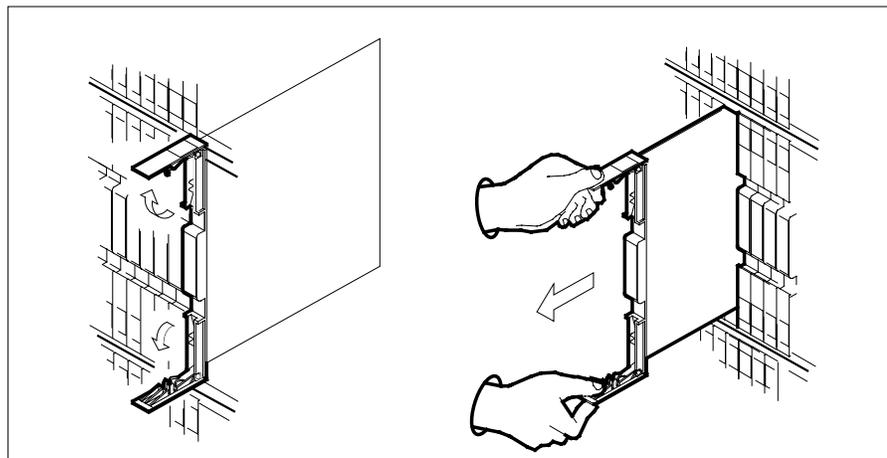
**NTMX74**

**in an RSC-S (PCM-30) Model B RCO2 (continued)**

---



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.

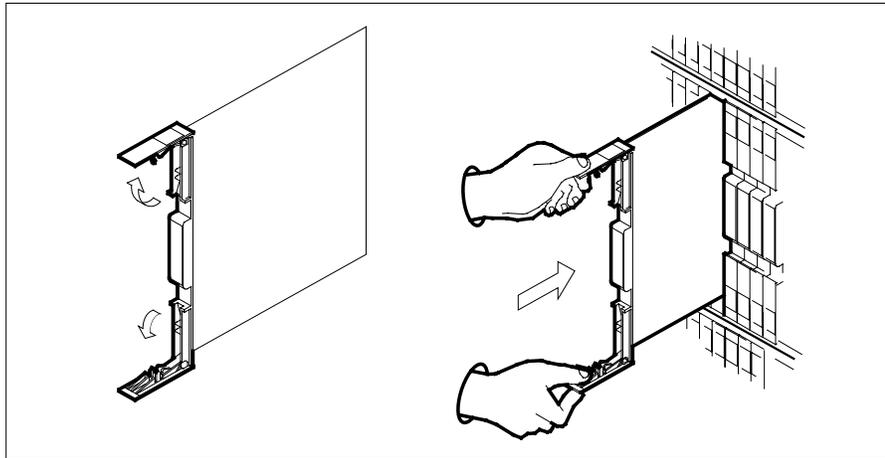


- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
- b** Gently slide the card into the shelf.

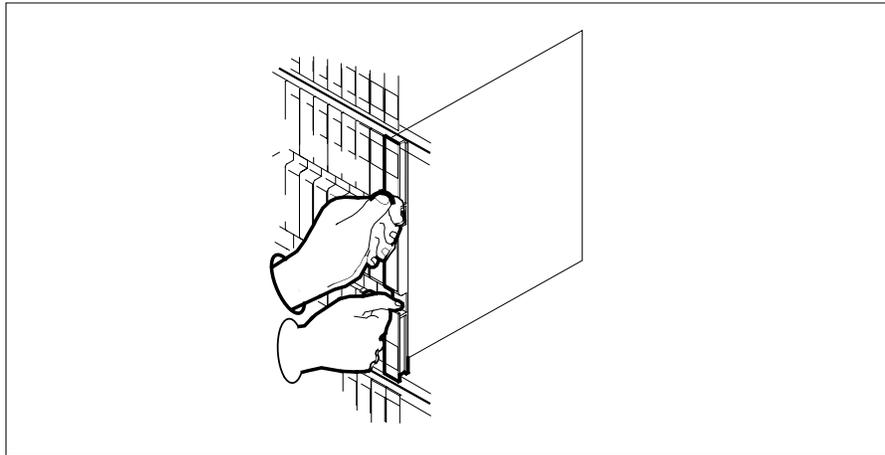
---

**NTMX74**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

---



- 13** 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.



- 14** Refer to the following table to determine the next step

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedure	step 20
other	step 15

- 15** Reset the inactive RCO2 unit by typing  
`>PMRESET UNIT unit_no`

## NTMX74

### in an RSC-S (PCM-30) Model B RCO2 (continued)

and pressing the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCO2 unit (0 or 1)

If the PMRESET command	Do
passed	step 17
failed	step 16

- 16** Reload the inactive RCO2 unit by typing

**>LOADPM UNIT unit\_no**

and pressing the Enter key.

*where*

**unit\_no**  
is the number of the inactive RCO2 unit (0 or 1)

If the LOADPM command	Do
passed	step 17
failed	step 21

- 17** Return the inactive RCO2 unit to service by typing

**>RTS UNIT rco2\_unit\_no**

and pressing the Enter key.

*where*

**rco2\_unit\_no**  
is the number of the RCO2 unit (0 or 1)

If RTS	Do
passed	step 18
failed	step 21

- 18** Send any faulty cards for repair according to local procedure.
- 19** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 22.
- 20** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 21** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX74**  
**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

## NTMX75 in an RSC-M

---

### Application

Use this procedure to replace an NTMX75 circuit card in a Remote Switching Center Multi-access (RSC-M) main shelf.

*Note:* In this section RSC-M is referred to as RCO2 in the examples. When software outputs messages to the MAP terminal, the software does not differentiate between the two types of RCO2.

PEC	Suffixes	Name
NTMX75	AA	Time switch matrix card

### Common procedures

Two common procedures are referenced in this section:

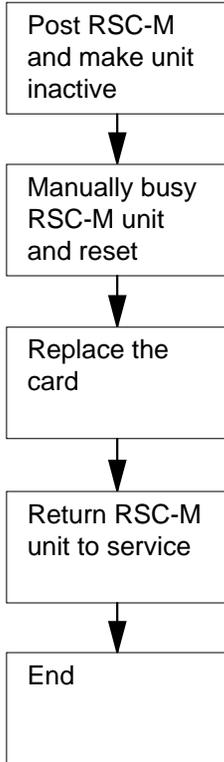
- replacing a card
- returning a card

### 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.

## NTMX75 in an RSC-M (continued)

### Summary of replacing an NTMX75 in an RSC-M



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.

---

## NTMX75 in an RSC-M (continued)

---

### Replacing an NTMX75 in an RSC-M

#### *At the MAP display*

- 1 Proceed if:
  - a step in a maintenance procedure directs 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 RSC-M, make sure the unit in which you replace the card is *inactive*. Make sure the mate unit is *active*.

Obtain an NTMX75 replacement circuit card. Make sure the replacement circuit card has the same product engineering code (PEC), and PEC suffix, as the circuit card you remove.

#### *At the MAP terminal*

- 3 Make sure the peripheral module (PM) appears on the MAP display. To post the RSC-M/RCO2, type:

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the defective card

*Example of a MAP response:*

**NTMX75**  
**in an RSC-M (continued)**

```

RCO2          SysB      ManB      OffL      CBSy      ISTb      InSv
0 Quit      PM          0          0          2          0          2          25
2 Post_    RCO2          0          0          0          0          1          1
3 ListSet
4          RCO2      0 ISTb  Links_OOS:  CSide  1, PSide  1
5 TRNSL    Unit0:      Inact ISTb
6 TST      Unit1:      Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
    
```

- 4 To determine the location of the RCO2 that contains the circuit card you want to replace, type:

**>QUERYPM**

and press the Enter key.

*Example of a MAP response:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname:KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
    
```

- 5 Determine the state of the RCO2 unit that associates with the circuit card to replace.

If the state of the RCO2 unit is	Do
active	step 6
inactive	step 8

- 6 To perform a Switch of Activity (SWACT) of the units, type:

**>SWACT**

and press the Enter key.

*Example of a MAP response:*

---

## NTMX75 in an RSC-M (continued)

---

RCO2 0      A Warm SwAct will be performed after  
                 data sync of active terminals.  
Please confirm ("YES", "Y", "NO", or "N"):

If	Do
the system prompts you to confirm a warm SWACT	step 7
the system rejects the SWACT	step 21

- 7** To confirm the command, type:

**>YES**

and press the Enter key.

*Example of a MAP response:*

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb
```

```
RCO2 0      SwAct Passed
```

If the MAP response is	Do
SWACT passed	step 8
other	step 20

- 8** A maintenance flag (Mtce) can appear, that indicates system-initiated maintenance tasks are in progress. When the flag disappears from the status lines for both RCO2 units you can proceed to the next step.

***At the cabinet***

- 9** Place a sign on the active unit that bears the words *Active unit-Do not touch*. Do not use magnets or tape to attach this sign.

- 10** To manually busy (ManB) the inactive unit, type:

**>BSY INACTIVE**

and press the Enter key.

*Example of a MAP response:*

## NTMX75 in an RSC-M (continued)

```
RCO2      0 ISTb Links_OOS: CSide  0 , PSide  1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

If the BSY command	Do
passes	step 11
fails	step 20

- 11 To reset the inactive RCO2 unit, type:

```
>PMRESET UNIT unit_no NORUN
```

and press the Enter key.

where

**unit\_no**

is the RCO2 unit number zero or one

- 12



**WARNING**  
**Static electricity damage**  
 Wear a wrist strap that connects to the wrist-strap grounding point of the modular supervisory panel (MSP) to handle circuit cards. This protects the cards against static electricity damage.

Locate the circuit card you must replace.

**Note:** The NTMX75 circuit cards, are in slot 10 of unit zero, and slot 18 of unit one.

- 13 To replace the card, use the common replacing a card procedure in this document. When the procedure is complete, return to this point.

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

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

If	Do
a maintenance procedure directs you to this procedure	step 15

---

**NTMX75**  
**in an RSC-M (end)**

---

<b>If</b>	<b>Do</b>
a maintenance procedure does not direct you to this procedure	step 16
<b>15</b> Remove the sign from the active unit. Return to the maintenance procedure that sends you to this procedure. Continue as directed.	

**At the MAP terminal**

- 16** To return the inactive unit to service, type:  
>RTS INACTIVE  
and press the Enter key.

<b>If the RTS command</b>	<b>Do</b>
passes	step 17
fails	step 20
<b>17</b> Remove the sign from the active unit.	
<b>18</b> Go to the common returning a card procedure in this document.	
<b>19</b> The procedure is complete.	
<b>20</b> For additional help, contact the next level of maintenance.	
<b>21</b> For additional help with SWACT, contact the next level of maintenance.	

**Note:** The system can recommend that you use the SWACT command with the FORCE option. Consult office personnel to determine if you must use the FORCE option.

## **NTMX75 in an RSC RCC2**

---

### **Application**

Use this procedure to replace an NTMX75 card in an RSCE RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX75	AA, DA	Enhanced Matrix

### **Common procedures**

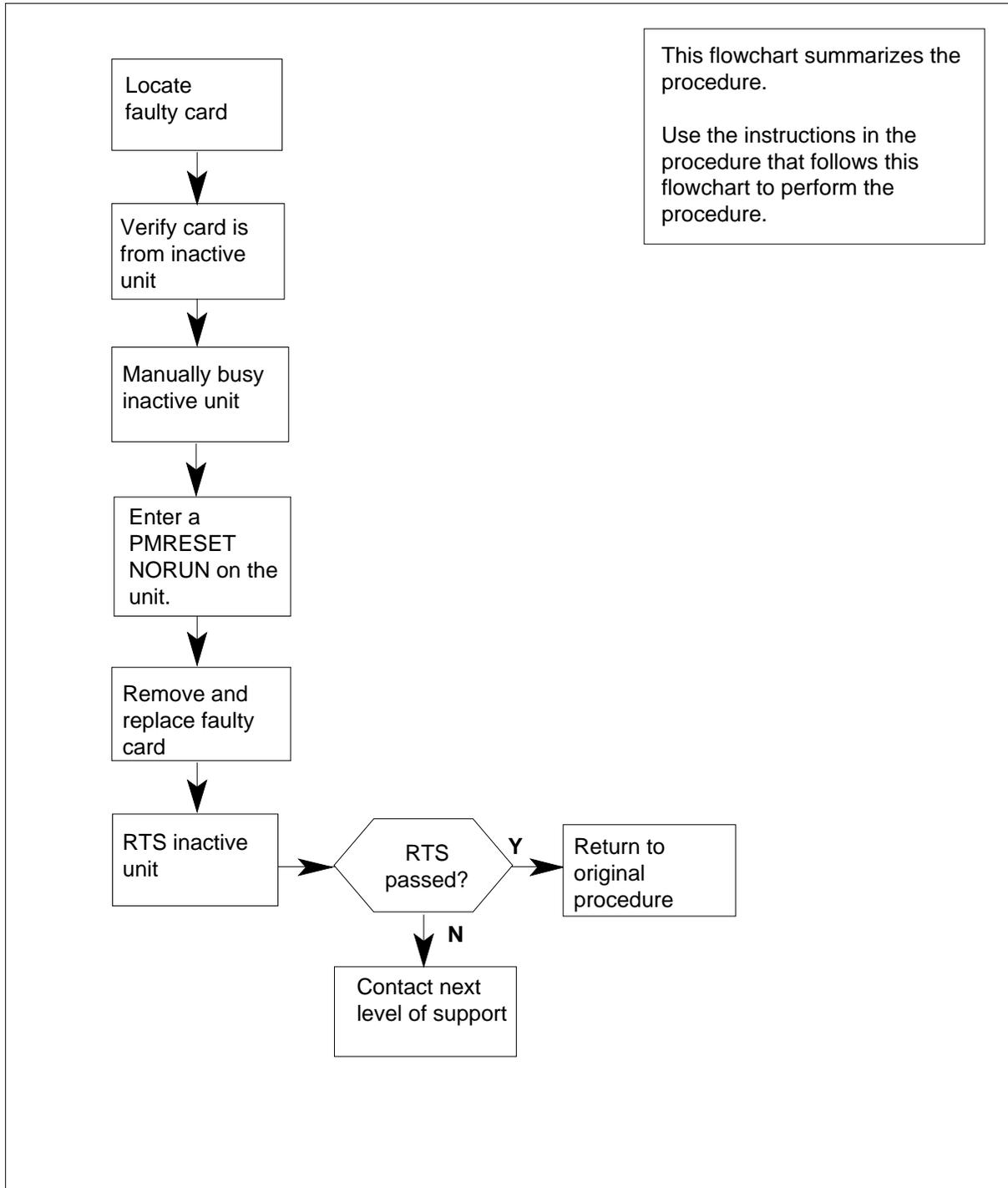
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX75**  
**in an RSC RCC2 (continued)**

**Summary of card replacement procedure for NTMX75 ard in RSC**



## NTMX75 in an RSC RCC2 (continued)

---

### Replacing an NTMX75 card in RSC RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX75 replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  
`>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no`  
and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 to be busied

*Example of a MAP display:*

## NTMX75 in an RSC RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM      0      0      OffL    CBsy    ISTb    InSv
2 Post_    RCC2    0      0      0      0      1      1
3 ListSet
4          RCC2    0 InSv  Links_OOS:  CSide  1, 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
18

```

- 4 Determine from the MAP display if the card that is to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>**SWACT**

and pressing the Enter key.

- 6 Confirm the system prompt by typing

>**YES**

and pressing the Enter key.

After both units are in-service, proceed to the next step.

### **At the RSCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. Place this sign in an electrostatic discharge (ESD) bag. Do not attach the sign with magnets or tape.

## NTMX75 in an RSC RCC2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>bsy unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)
- When both units are in-service, proceed to the next step.
- 9 Reset the inactive unit by typing  
`>PMRESET unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

### *At the RSCE frame*

10



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

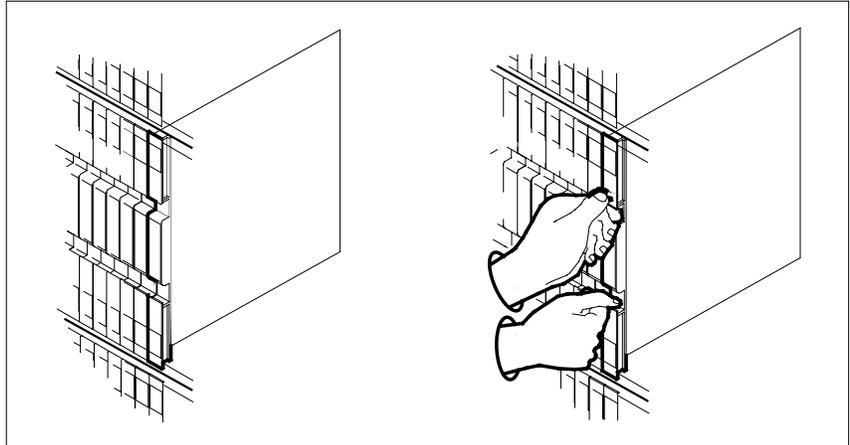
##### **Equipment damage**

Take the following precautions when removing or inserting a card:

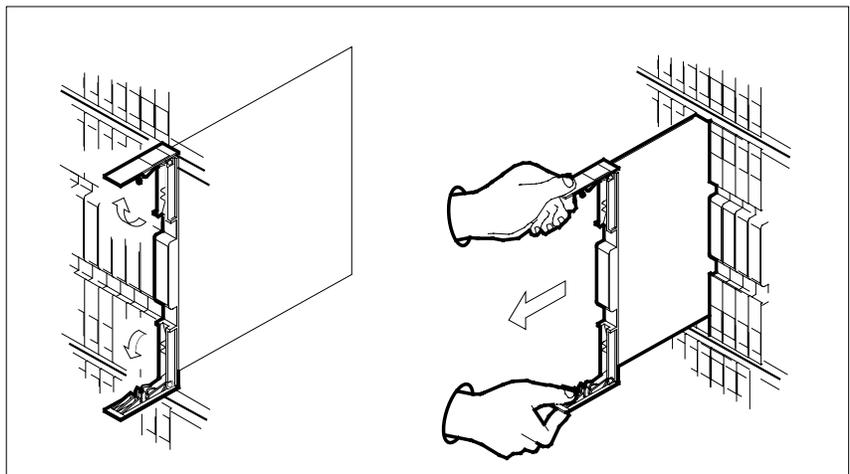
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

- Put on a wrist strap.
- 11 Remove the NTMX75 card as shown in the following figures.
- a Locate the card to be removed on the appropriate shelf.

**NTMX75**  
**in an RSC RCC2 (continued)**



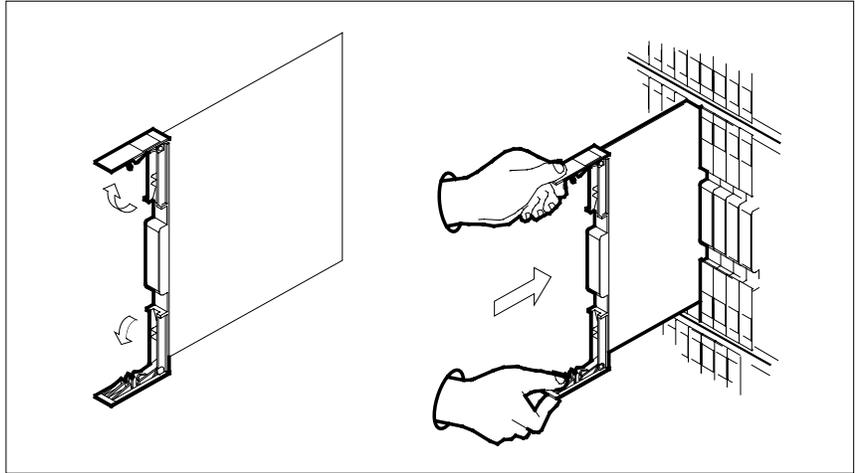
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



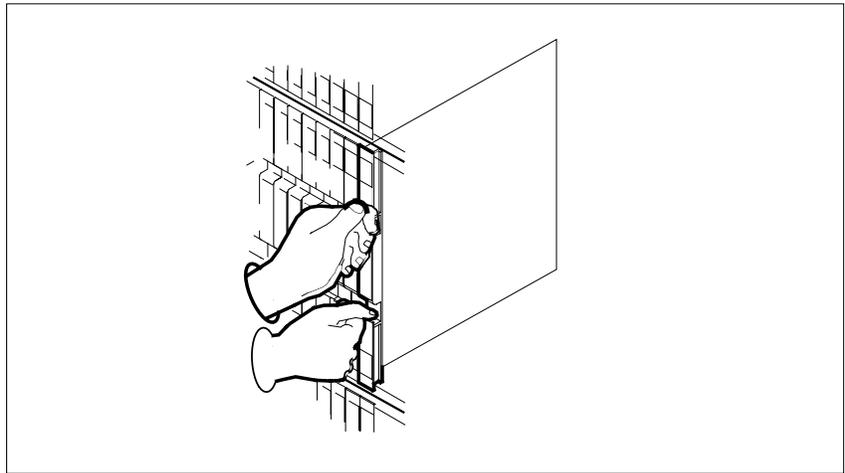
- c** Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
- b** Gently slide the card into the shelf.

## NTMX75 in an RSC RCC2 (continued)

---



- 13** 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.



### ***At the MAP terminal***

- 14** Reset the inactive unit by typing  
`>PMRESET unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

---

**NTMX75**  
**in an RSC RCC2 (end)**

---

- 15** Use the following information to determine what step to go to next in this procedure.
- | <b>If you entered this procedure from</b> | <b>Do</b> |
|---|-----------|
| alarm clearing procedures                 | step 19   |
| other                                     | step 16   |
- 16** Return the inactive RCC2 unit to service by typing  
**>RTS UNIT rcc2\_unit\_no**  
 and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
 is the number of the RCC2 unit being returned to service
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 17   |
| failed        | step 20   |
- 17** Send any faulty cards for repair according to local procedure.
- 18** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 21.
- 19** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 20** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 21** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX75 in an RSC-S (DS-1) Model A RCC2**

---

### **Application**

Use this procedure to replace an NTMX75 card in an RSC-S RCC2.

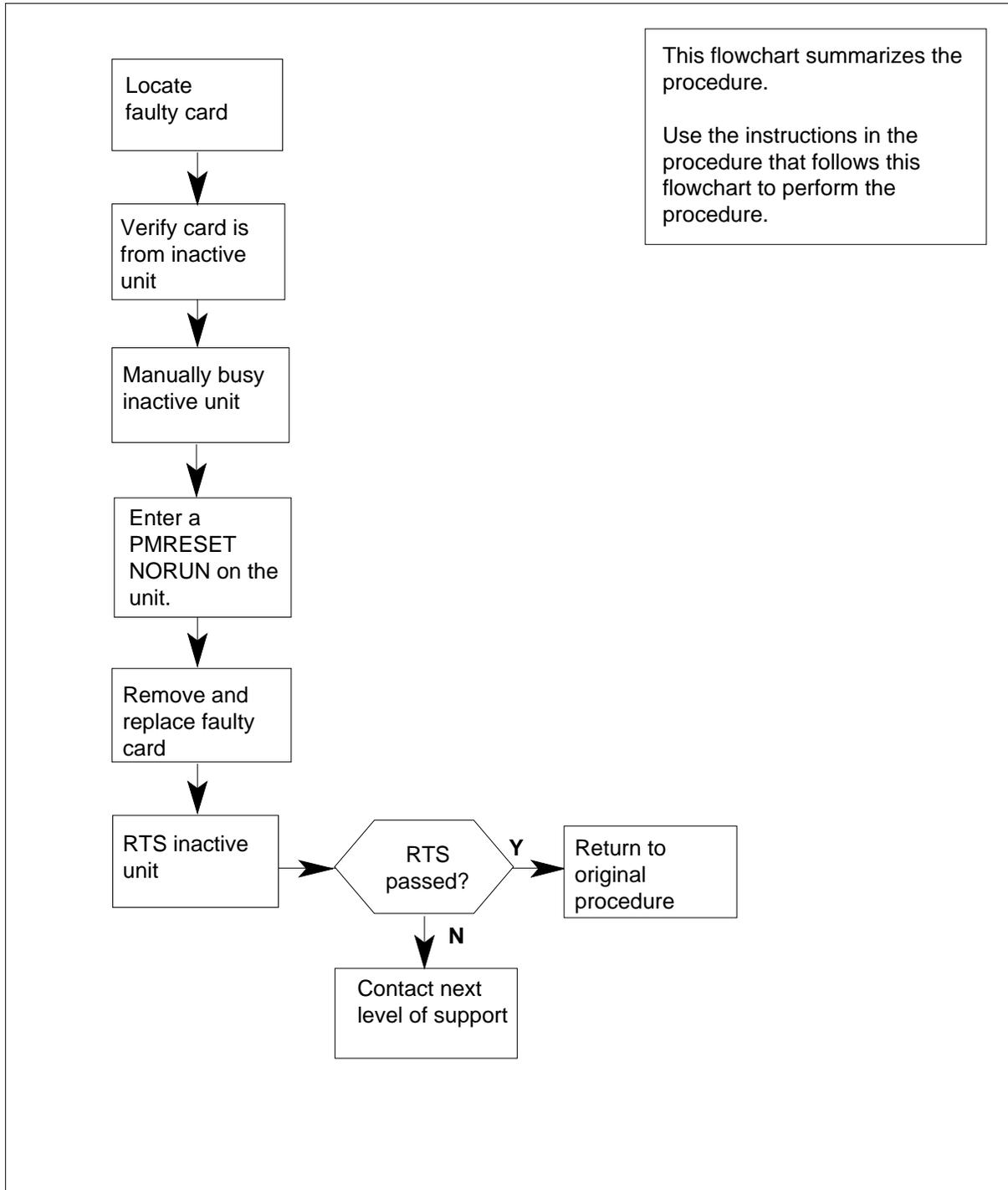
<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX75	AA, DA	Enhanced Matrix

### **Common procedures**

None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX75**  
**in an RSC-S (DS-1) Model A RCC2** (continued)**Summary of card replacement procedure for NTMX75 card in RSC-S RCC2**

## NTMX75 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### Replacing an NTMX75 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX75 replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  
`>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no`  
and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 to be busied

*Example of a MAP display:*

## NTMX75

### in an RSC-S (DS-1) Model A RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCC2        0          0          0          0          1          1
3 ListSet
4           RCC2      0 InSv  Links_OOS: CSide 1, 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
18

```

- 4 Determine from the MAP display if the card that is to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>**SWACT**

and pressing the Enter key.

- 6 Confirm the system prompt by typing

>**YES**

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. Place this sign in an electrostatic discharge (ESD) bag. Do not attach the sign with magnets or tape.

## NTMX75 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>bsy unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)
- When both units are in-service, proceed to the next step.
- 9 Reset the inactive unit by typing  
`>PMRESET unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

### *At the RCE frame*

10



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

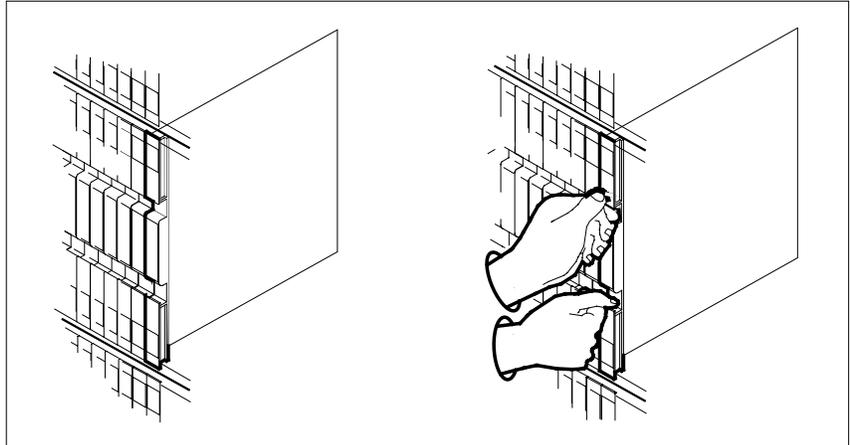
- Put on a wrist strap.
- 11 Remove the NTMX75 card as shown in the following figures.
- a Locate the card to be removed on the appropriate shelf.

---

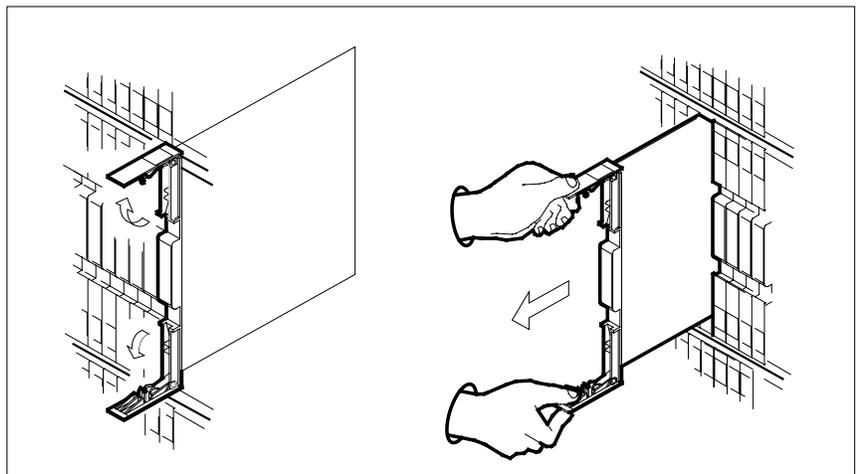
**NTMX75**

**in an RSC-S (DS-1) Model A RCC2 (continued)**

---



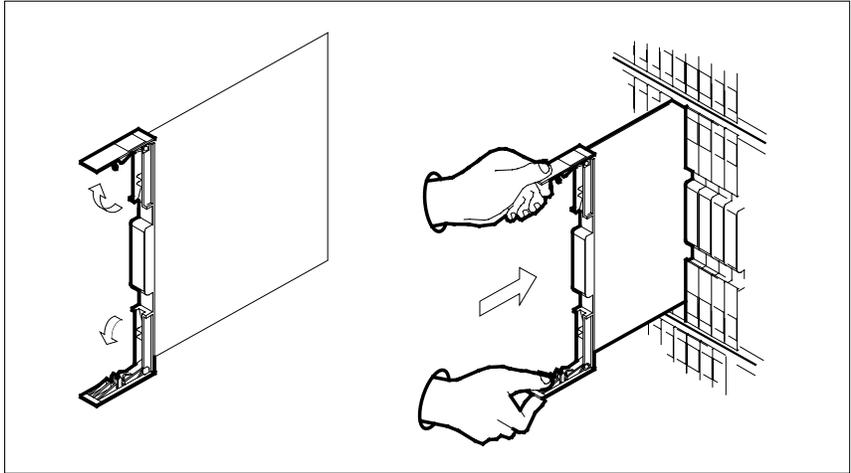
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



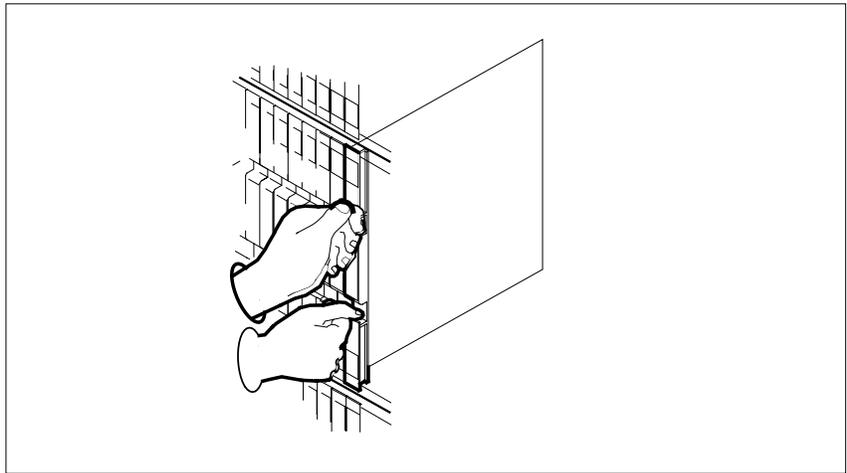
- c** Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

## NTMX75 in an RSC-S (DS-1) Model A RCC2 (continued)

---



- 13** 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.



**At the MAP terminal**

- 14** Reset the inactive unit by typing  
`>PMRESET unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

---

**NTMX75**

**in an RSC-S (DS-1) Model A RCC2 (end)**

---

- 15** Use the following information to determine what step to go to next in this procedure.
- | <b>If you entered this procedure from</b> | <b>Do</b> |
|---|-----------|
| alarm clearing procedures                 | step 19   |
| other                                     | step 16   |
- 16** Return the inactive RCC2 unit to service by typing  
**>RTS UNIT rcc2\_unit\_no**  
 and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
 is the number of the RCC2 unit being returned to service
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 17   |
| failed        | step 19   |
- 17** Send any faulty cards for repair according to local procedure.
- 18** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 21.
- 19** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 20** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 21** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX75 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace an NTMX75 card in an RSC-S RCC2.

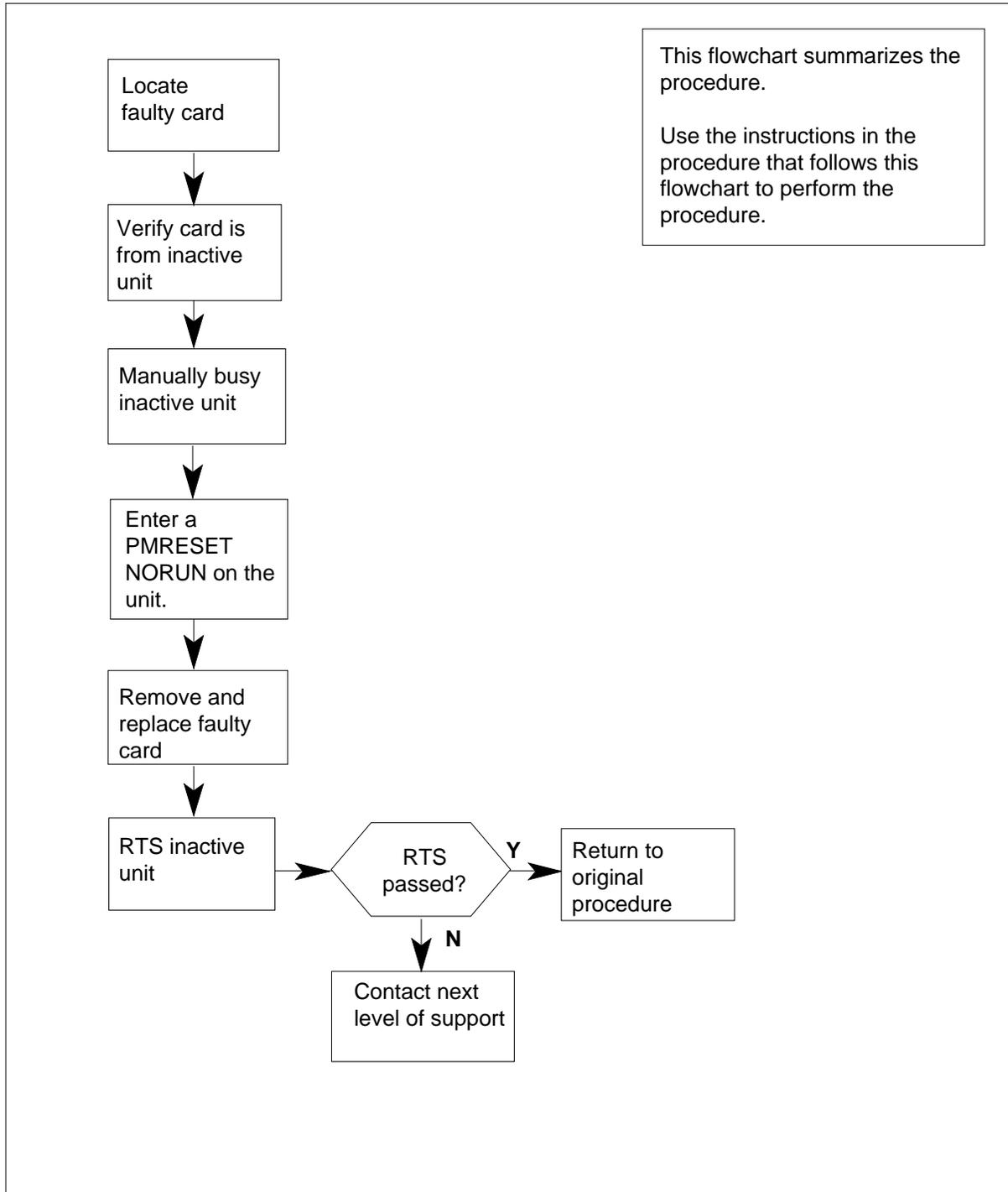
<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX75	AA, DA	Enhanced Matrix

### **Common procedures**

None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX75**  
**in an RSC-S (DS-1) Model B RCC2** (continued)**Summary of card replacement procedure for NTMX75 card in RSC-S RCC2**

## NTMX75 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### Replacing an NTMX75 card in an RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX75 replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  
>MAPCI ;MTC ;PM ;POST RCC2 rcc2\_no  
and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 to be busied

*Example of a MAP display:*

## NTMX75

### in an RSC-S (DS-1) Model B RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCC2        0          0          0          0          1          1
3 ListSet
4           RCC2    0 InSv  Links_OOS:  CSide  1, 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
18

```

- 4** Determine from the MAP display if the card that is to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5** Switch the processing activity (SWACT) to the inactive unit by typing

**>SWACT**

and pressing the Enter key.

- 6** Confirm the system prompt by typing

**>YES**

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 7** Place a sign on the active unit bearing the words *Active unit—Do not touch*. Place this sign in an electrostatic discharge (ESD) bag. Do not attach the sign with magnets or tape.

## NTMX75 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>bsy unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)  
When both units are in-service, proceed to the next step.
- 9 Reset the inactive unit by typing  
`>PMRESET unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

### *At the RCE frame*

10



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

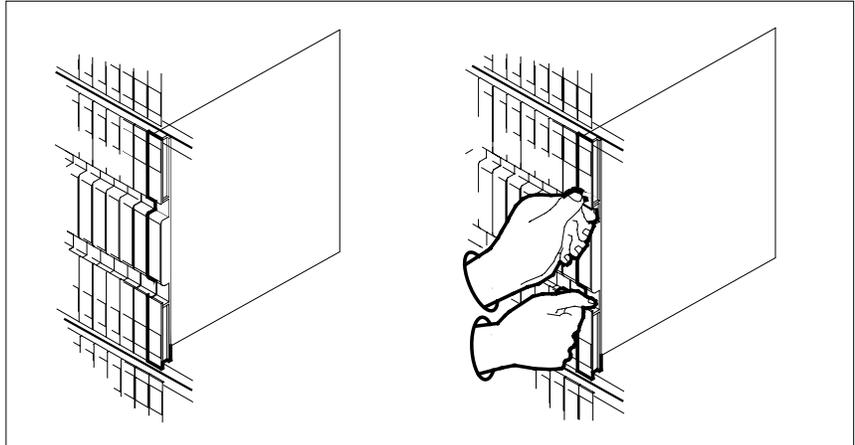
##### **Equipment damage**

Take the following precautions when removing or inserting a card:

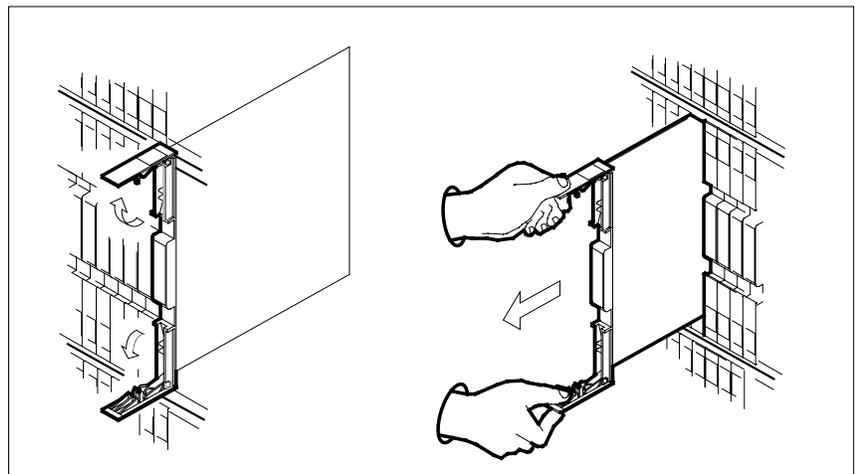
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

- Put on a wrist strap.
- 11 Remove the NTMX75 card as shown in the following figures.
- a Locate the card to be removed on the appropriate shelf.

**NTMX75**  
**in an RSC-S (DS-1) Model B RCC2 (continued)**



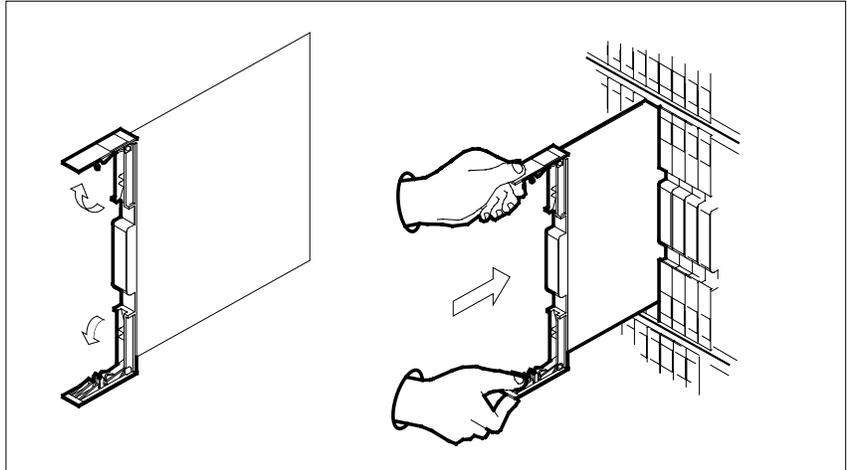
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



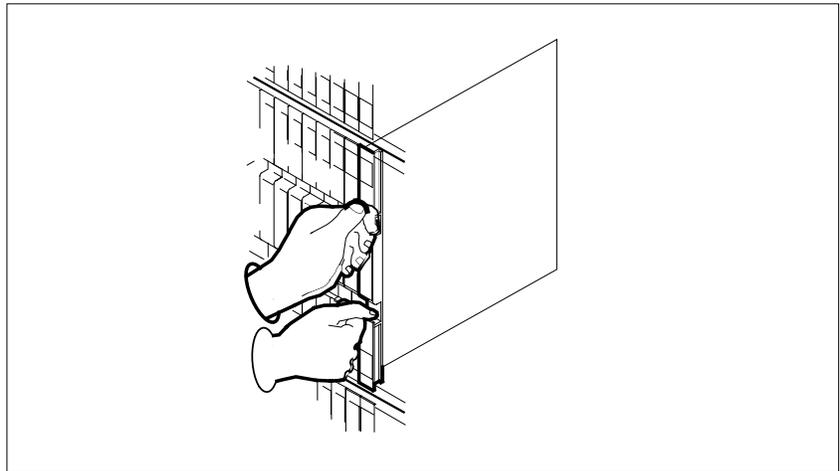
- c** Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

**NTMX75**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

---



- 13** 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.



**At the MAP terminal**

- 14** Reset the inactive unit by typing  
`>PMRESET unit_no`  
and pressing the Enter key.  
where  
**unit\_no**  
is the number of the unit to be reset (0 or 1)

---

**NTMX75**

**in an RSC-S (DS-1) Model B RCC2 (end)**

---

- 15** Use the following information to determine what step to go to next in this procedure.
- | <b>If you entered this procedure from</b> | <b>Do</b> |
|---|-----------|
| alarm clearing procedures                 | step 19   |
| other                                     | step 16   |
- 16** Return the inactive RCC2 unit to service by typing  
**>RTS UNIT rcc2\_unit\_no**  
 and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
 is the number of the RCC2 unit being returned to service
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 17   |
| failed        | step 19   |
- 17** Send any faulty cards for repair according to local procedure.
- 18** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 21.
- 19** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 20** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 21** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX75 in an RSC-S (PCM-30) Model A RCO2**

---

### **Application**

Use this procedure to replace an NTMX75 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX75	AA	Enhanced Matrix

### **Common procedures**

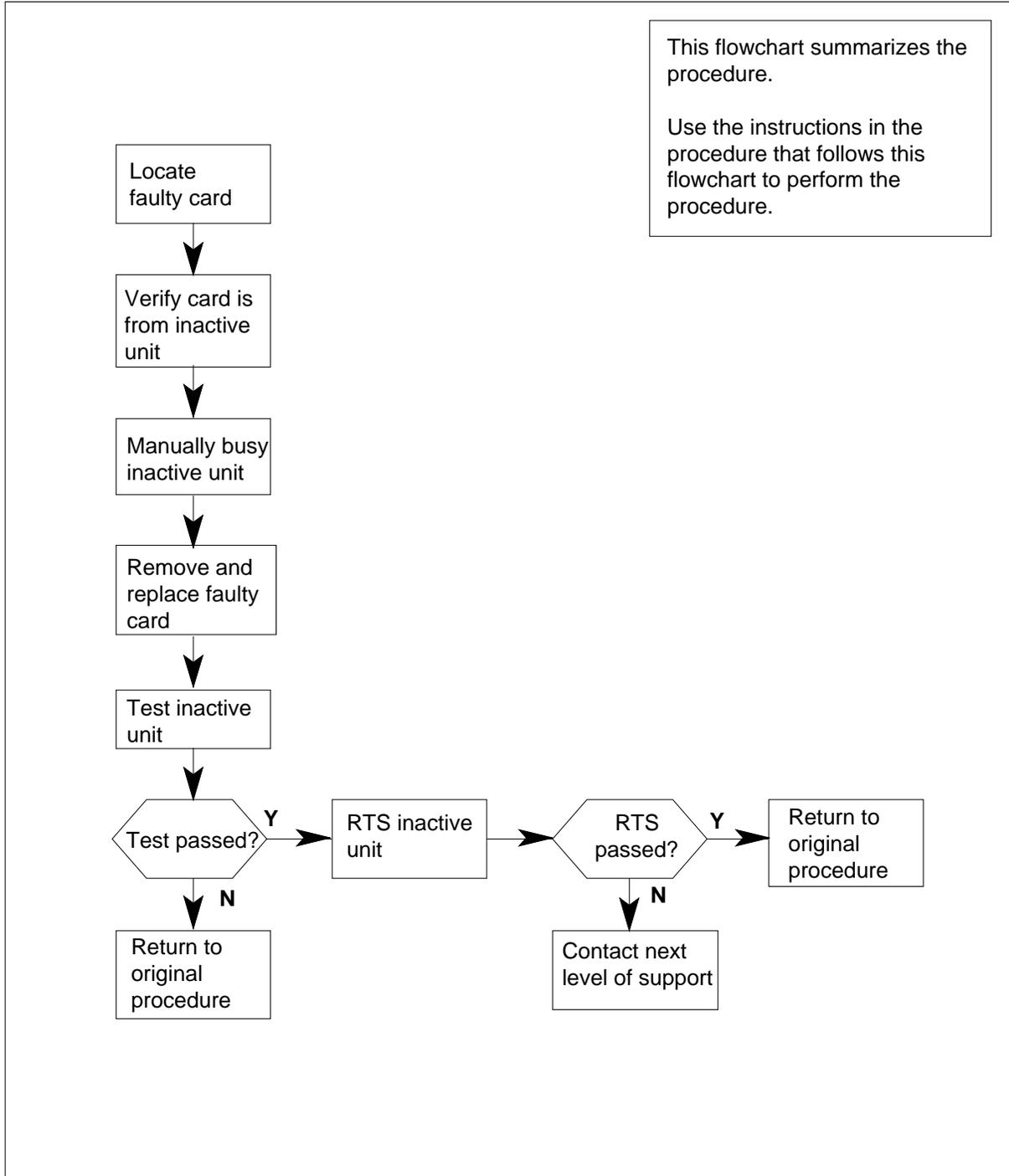
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX75 in an RSC-S (PCM-30) Model A RCO2 (continued)

### Summary of card replacement procedure for an NTMX75 card in RSC-S RCO2



## NTMX75 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### Replacing an NTMX75 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX75 replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 to be busied

*Example of a MAP display:*

## NTMX75

### in an RSC-S (PCM-30) Model A RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0      0      2      0      2      25
2 Post_    RCO2   0      0      0      0      1      1
3 ListSet
4          RCO2   0 InSv  Links_OOS:  CSide 1, 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
18

```

- 4 Determine from the MAP display if the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>**SWACT**

and pressing the Enter key.

**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.

- 6 Confirm the system prompt by typing

>**YES**

and pressing the Enter key.

After both units are in-service, proceed to the next step.

**At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

## NTMX75 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### *At the MAP terminal*

- 8 Busy the inactive PM unit by typing  
`>busy unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)  
When both units are in-service, proceed to the next step.

### *At the RCE frame*

9



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

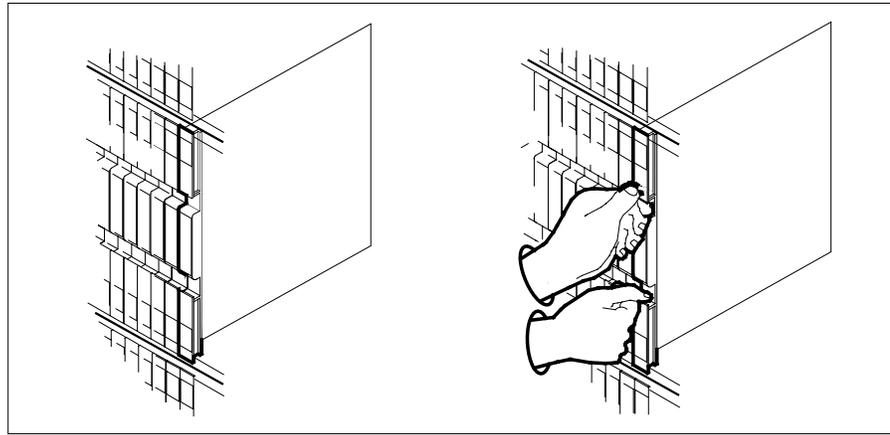
- 10 Unseat the NTMX73 card.
- 11 Remove the NTMX75 card as shown in the following figures.
- a Locate the card to be removed on the appropriate shelf.

---

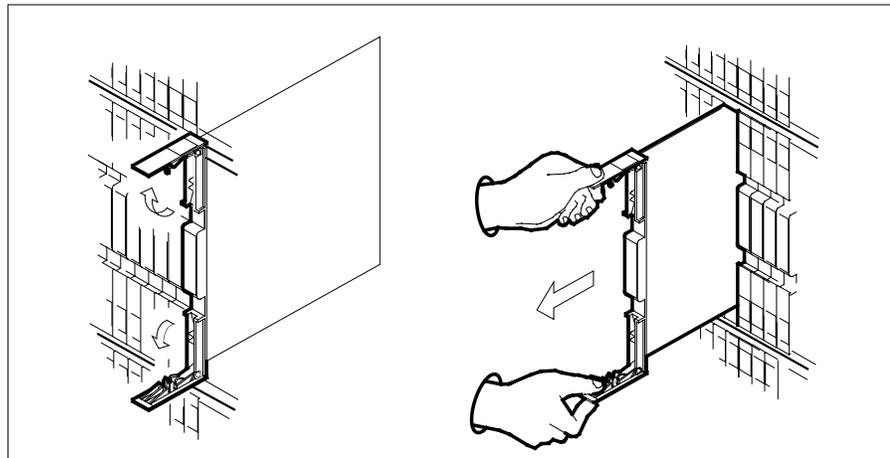
**NTMX75**

**in an RSC-S (PCM-30) Model A RCO2 (continued)**

---



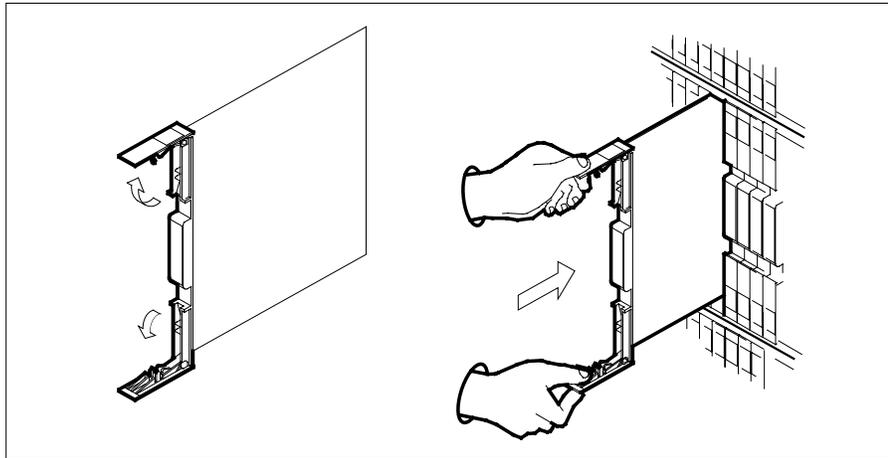
- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



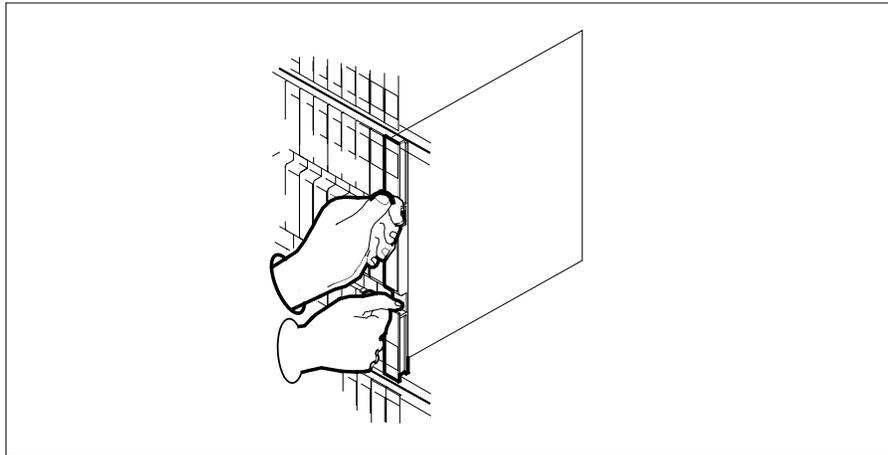
- c** Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

## NTMX75 in an RSC-S (PCM-30) Model A RCO2 (continued)

---



- 13** 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.



- 14** Reseat the NTMX73 card.

**At the MAP terminal**

- 15** Load the inactive RCO2 by typing  
>LOADPM UNIT *unit\_no* CC  
and pressing the Enter key.  
*where*

## NTMX75

### in an RSC-S (PCM-30) Model A RCO2 (continued)

- unit\_no**  
is the number of the RCO2 busied in step 8
- | If LOADPM | Do      |
|-----------|---------|
| passed    | step 16 |
| failed    | step 22 |
- 16** Test the inactive RCO2 unit by typing  
`>TST UNIT unit_no`  
 and pressing the Enter key.  
*where*  
**unit\_no**  
 is the number of the RCO2 unit loaded in step 15
- | If TST | Do      |
|--------|---------|
| passed | step 17 |
| failed | step 21 |
- 17** Use the following information to determine what step to go to next in this procedure.
- | If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 21 |
| other                              | step 18 |
- 18** Return the inactive RCO2 unit to service by typing  
`>RTS UNIT rco2_unit_no`  
 and pressing the Enter key.  
*where*  
**rco2\_unit\_no**  
 is the number of the RCO2 unit being returned to service
- | If RTS | Do      |
|--------|---------|
| passed | step 19 |
| failed | step 21 |
- 19** Send any faulty cards for repair according to local procedure.
- 20** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 23.

## **NTMX75**

### **in an RSC-S (PCM-30) Model A RCO2 (end)**

---

- 21** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 22** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 23** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX75**  
**in an RSC-S (PCM-30) Model B RCO2**

---

**Application**

Use this procedure to replace an NTMX75 card in an RSC-S RCO2.

PEC	Suffixes	Name
NTMX75	AA	Enhanced Matrix

**Common procedures**

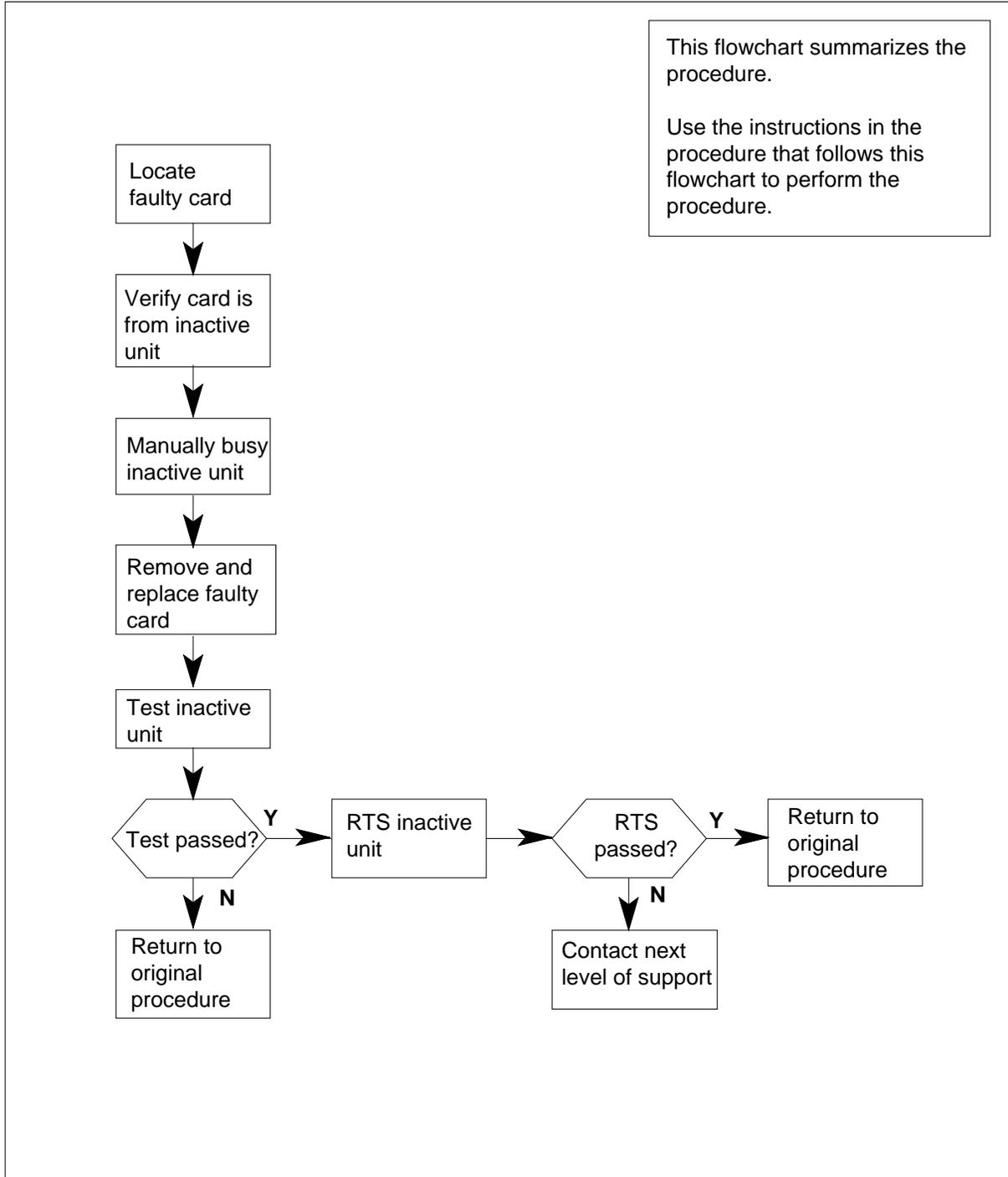
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX75 in an RSC-S (PCM-30) Model B RCO2 (continued)

### Summary of card replacement procedure for an NTMX75 card in RSC-S RCO2



---

## NTMX75

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

#### Replacing an NTMX75 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX75 replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 to be busied

*Example of a MAP display:*

**NTMX75**  
**in an RSC-S (PCM-30) Model B RCO2 (continued)**

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0      0      2      0      2      25
2 Post_    RCO2   0      0      0      0      1      1
3 ListSet
4          RCO2   0 InSv  Links_OOS:  CSide 1, 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
18
    
```

- 4 Determine from the MAP display if the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 5
inactive unit	step 7

- 5 Switch the processing activity (SWACT) to the inactive unit by typing **>SWACT** and pressing the Enter key.  

**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.
- 6 Confirm the system prompt by typing **>YES** and pressing the Enter key.  

After both units are in-service, proceed to the next step.

**At the RCE frame**

- 7 Place a sign on the active unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

---

## NTMX75

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

**At the MAP terminal**

- 8 Busy the inactive PM unit by typing  
`>bsy unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the unit to be busied (0 or 1)  
When both units are in-service, proceed to the next step.

**At the RCE frame**

9

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

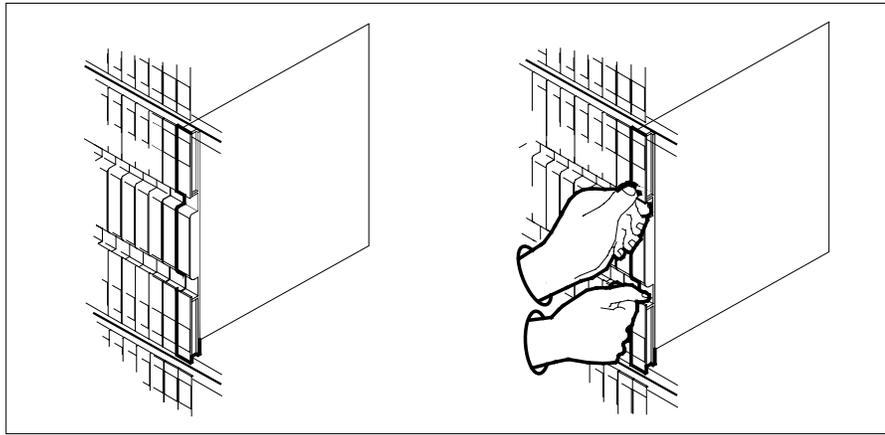
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Put on a wrist strap.

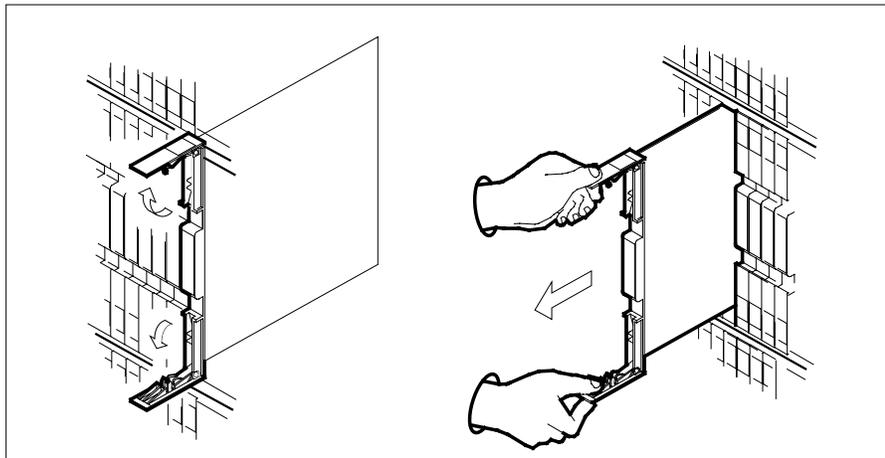
- 10 Unseat the NTMX73 card.
- 11 Remove the NTMX75 card as shown in the following figures.
- a Locate the card to be removed on the appropriate shelf.

**NTMX75**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

---



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



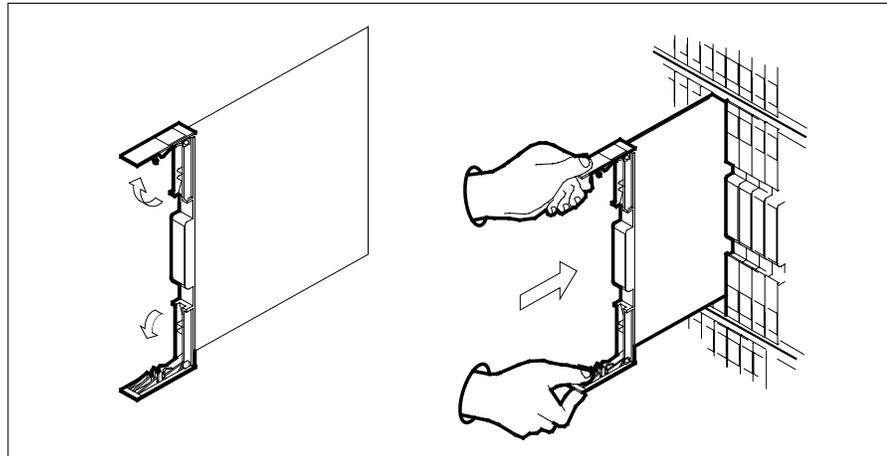
- c** Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 12** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

---

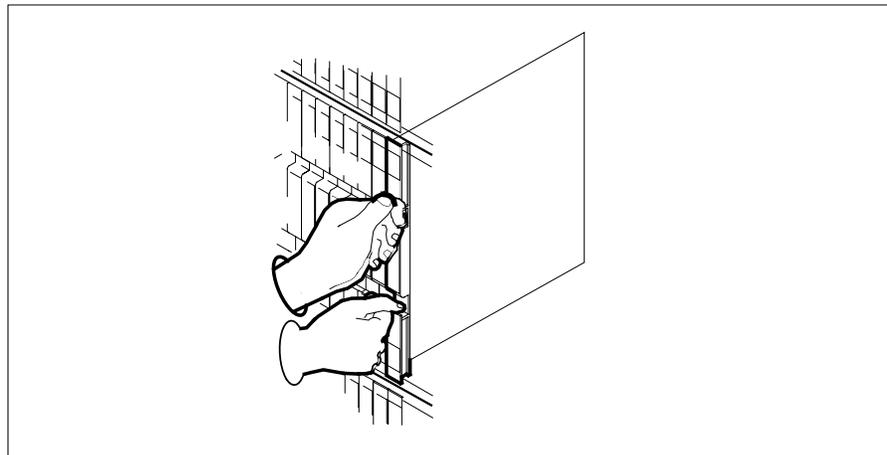
**NTMX75**

**in an RSC-S (PCM-30) Model B RCO2 (continued)**

---



- 13** 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.



- 14** Reseat the NTMX73 card.

**At the MAP terminal**

- 15** Load the inactive RCO2 by typing  
>LOADPM UNIT *unit\_no* CC  
and pressing the Enter key.  
*where*

**NTMX75**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

	<p><b>unit_no</b> is the number of the RCO2 busied in step 8</p>						
	<table border="1"> <thead> <tr> <th>If LOADPM</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>passed</td> <td>step 16</td> </tr> <tr> <td>failed</td> <td>step 22</td> </tr> </tbody> </table>	If LOADPM	Do	passed	step 16	failed	step 22
If LOADPM	Do						
passed	step 16						
failed	step 22						
16	<p>Test the inactive RCO2 unit by typing  <b>&gt;TST UNIT unit_no</b>                      and pressing the Enter key.                      where  <p><b>unit_no</b> is the number of the RCO2 unit loaded in step 15</p> </p>						
	<table border="1"> <thead> <tr> <th>If TST</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>passed</td> <td>step 17</td> </tr> <tr> <td>failed</td> <td>step 21</td> </tr> </tbody> </table>	If TST	Do	passed	step 17	failed	step 21
If TST	Do						
passed	step 17						
failed	step 21						
17	<p>Use the following information to determine what step to go to next in this procedure.</p>						
	<table border="1"> <thead> <tr> <th>If you entered this procedure from</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>alarm clearing procedures</td> <td>step 21</td> </tr> <tr> <td>other</td> <td>step 18</td> </tr> </tbody> </table>	If you entered this procedure from	Do	alarm clearing procedures	step 21	other	step 18
If you entered this procedure from	Do						
alarm clearing procedures	step 21						
other	step 18						
18	<p>Return the inactive RCO2 unit to service by typing  <b>&gt;RTS UNIT rco2_unit_no</b>                      and pressing the Enter key.                      where  <p><b>rco2_unit_no</b> is the number of the RCO2 unit being returned to service</p> </p>						
	<table border="1"> <thead> <tr> <th>If RTS</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>passed</td> <td>step 19</td> </tr> <tr> <td>failed</td> <td>step 21</td> </tr> </tbody> </table>	If RTS	Do	passed	step 19	failed	step 21
If RTS	Do						
passed	step 19						
failed	step 21						
19	<p>Send any faulty cards for repair according to local procedure.</p>						
20	<p>Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 23.</p>						

**NTMX75**

**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

- 21** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 22** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 23** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX75 in an SMA2**

---

### **Application**

Use this procedure to replace an NTMX75 card in an SMA2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX75	BA	Enhanced Matrix

### **Common procedures**

The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- replacing a card
- returning a card

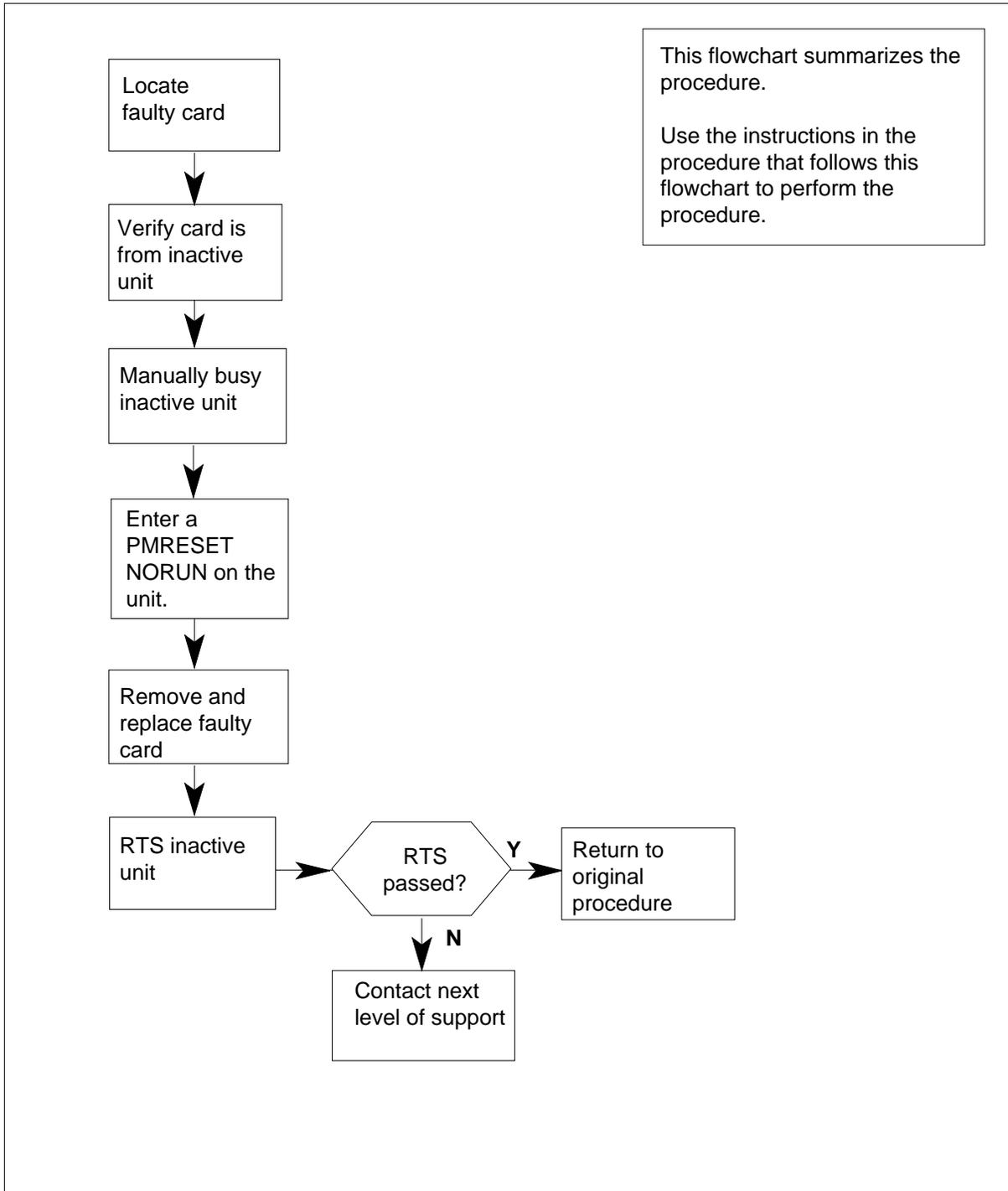
Do not go to a common procedure unless directed to do so in the step-action procedure.

### **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.

## NTMX75 in an SMA2 (continued)

**Summary of card replacement procedure for an NTMX75 card in an SMA2**



## NTMX75 in an SMA2 (continued)

### Replacing an NTMX75 card in an SMA2

#### 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 Ensure you know the physical location of the faulty card.

If card location is	Do
known	step 4
unknown	step 3

- 3 Perform the procedure "Locating a faulty card in an SMA2."
- 4



**CAUTION**  
**Loss of service**  
 When replacing a card in the SMA2, ensure the unit in which you are replacing the card is *inactive* and the mate unit is *active*.

Obtain an NTMX75 replacement card. Ensure the replacement card has the same product engineering code (PEC), including suffix, as the card to be removed.

#### At the MAP terminal

- 5 Set the MAP display to the PM level and post the SMA2 by typing  
`>MAPCI ;MTC ;PM ;POST SMA2 sma2_no`  
 and pressing the Enter key.

where

**sma2\_no**  
 is the number of the SMA2 to be busied

Example of a MAP display:

```

SMA2      SysB      ManB      OffL      Cbsy      ISTb      InSv
   PM         3         0         1         0         2        13
   SMA2       0         0         0         0         1         7

SMA2  0  ISTb  Links_OOS:  CSide  0, PSide  0
Unit0:  Act   InSv
Unit1:  InAct IsTb
  
```

## NTMX75 in an SMA2 (continued)

- 6** Observe the MAP display and determine if the faulty card is in the active or the inactive unit.
- | If faulty card is on | Do      |
|----------------------|---------|
| active unit          | step 7  |
| inactive unit        | step 11 |
- 7** Switch the processing activity (SWACT) to the inactive unit by typing  
>SWACT  
and pressing the Enter key.  
A confirmation prompt for the SWACT command is displayed at the MAP terminal.
- | If prompt indicates          | Do     |
|------------------------------|--------|
| cannot continue at this time | step 8 |
| can continue at this time    | step 9 |
- 8** Reject the prompt to SWACT of the units by typing  
>NO  
and pressing the Enter key.  
The system discontinues the SWACT.
- 9** Confirm the system prompt by typing  
>YES  
and pressing the Enter key.  
The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.
- Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.
- | If the message is                     | Do         |
|---------------------------------------|------------|
| SWACT passed                          | step 11    |
| SWACT failed<br>Reason: XPM SWACTback | step 10    |
| SWACT refused<br>SWACT Controller     | by step 10 |
- 10** The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on

## NTMX75 in an SMA2 (continued)

---

the inactive unit before attempting to clear the alarm condition on the active unit.

Go to step 20.

### **At the frame or cabinet**

- 11 Place a sign on the active unit bearing the words *Active unit—Do not touch*. Place this sign in an electrostatic discharge (ESD) bag. Do not attach the sign with magnets or tape.

### **At the MAP terminal**

- 12 Busy the inactive PM unit by typing

```
>bsy INACTIVE
```

and pressing the Enter key.

- 13 Reset the inactive unit by typing

```
>PMRESET unit_no NORUN
```

and pressing the Enter key.

where

**unit\_no**

is the number of the unit to be reset (0 or 1)

### **At the frame or cabinet**

- 14



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

Perform the common replacing a card procedure in this document.

### **At the MAP terminal**

- 15 Reset the inactive unit by typing

```
>PMRESET unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the unit to be reset (0 or 1)

---

**NTMX75**  
**in an SMA2 (end)**

---

- 16** Use the following information to determine what step to go to next in this procedure.
- | <b>If you entered this procedure from</b> | <b>Do</b> |
|---|-----------|
| alarm clearing procedures                 | step 19   |
| other                                     | step 17   |
- 17** Return the inactive SMA2 unit to service by typing  
**>RTS INACTIVE**  
and pressing the Enter key.
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 18   |
| failed        | step 19   |
- 18** Go to the common returning a card procedure in this document.  
Go to step 21.
- 19** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 20** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level of support.
- 21** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTMX76 in an RSC-M

---

### Application

Use this procedure to replace an NTMX76 circuit card in a Remote Switching Center Multi-access (RSC-M) main shelf.

*Note:* In this section, RSC-M is referred to as RCO2 in the examples. When software outputs messages to the MAP terminal, the software does not differentiate between the two types of RCO2.

PEC	Suffixes	Name
NTMX76	AA, AB	Message and tones card

### Common procedures

Two common procedures are referenced in this section:

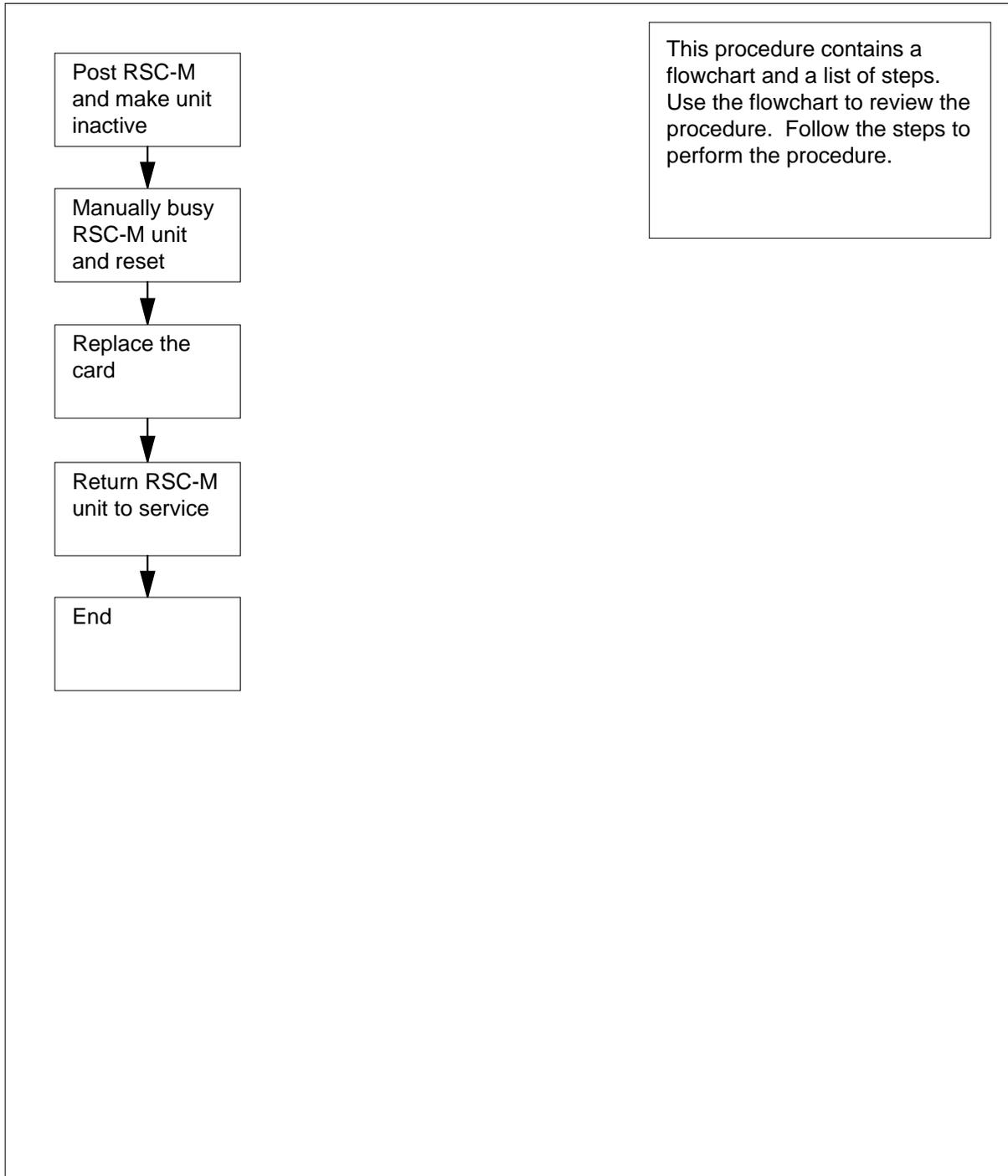
- replacing a card
- returning a card

### 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.

## NTMX76 in an RSC-M (continued)

### Summary of Replacing an NTMX76 in an RSC-M



## NTMX76 in an RSC-M (continued)

---

### Replacing an NTMX76 in an RSC-M

#### At the MAP display

- 1 Proceed if:
  - a step in a maintenance procedure directs you to this card replacement procedure
  - you use the procedure to verify or accept cards
  - your maintenance support group directs you to this procedure.
- 2



#### **WARNING**

##### **Loss of service**

When you replace a card in the RSC-M, make sure the unit in which you replace the card is *inactive*. Make sure that the mate unit is *active*.

Obtain an NTMX76 replacement circuit card. Make sure the replacement circuit card has the same product engineering code (PEC), and PEC suffix, as the circuit card you remove.

#### At the MAP terminal

- 3 Make sure the peripheral module (PM) level appears on the MAP display. To post the RSC-M/RCO2, type:

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 with the defective card(s)

*Example of a MAP response:*

## NTMX76 in an RSC-M (continued)

```

RCO2          SysB      ManB      OffL      CBsy      ISTb      InSv
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCO2          0          0          0          0          1          1
3 ListSet
4           RCO2      0 ISTb  Links_OOS:  CSide  1, PSide  1
5 TRNSL     Unit0:      Inact ISTb
6 TST       Unit1:      Act  InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_

```

- 4** To determine the location of the RCO2, that contains the circuit card to replace, type:

**>QUERYPM**

and press the Enter key.

*Example of a MAP response:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname: UK00ADU6 EEPROM Load:
BNK0N205
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA

```

- 5** Determine the state of the RCO2 unit that associates with the circuit card to replace:

If the state of the RCO2 unit is	Do
active	step 6
inactive	step 8

- 6** To perform a Switch of Activity (SWACT) of the units, type:

**>SWACT**

and press the Enter key.

*Example of a MAP response:*

## NTMX76 in an RSC-M (continued)

---

RCO2 0      A Warm SwAct will be performed after  
                 data sync of active terminals.  
Please confirm ("YES", "Y", "NO", or "N"):

---

<b>If</b>	<b>Do</b>
the system prompts you to confirm a warm SWACT	step 7
the system rejects the SWACT	step 21

---

**7** To confirm the command, type:

>**YES**

and press the Enter key.

*Example of a MAP response:*

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb
```

```
RCO2 0      SwAct Passed
```

---

<b>If the MAP response is</b>	<b>Do</b>
SWACT passed	step 8
other	step 20

---

**8** A maintenance flag (Mtce) can appear, that indicates system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both RCO2 units before you proceed to the next step.

### ***At the cabinet***

**9** Place a sign on the active unit that bears the words *Active unit-Do not touch*. Do not use magnets or tape to attach this sign.

**10** To manually busy (ManB) the inactive unit, type:

>**BSY INACTIVE**

and press the Enter key.

*Example of a MAP response:*

## NTMX76 in an RSC-M (continued)

```
RCO2      0 ISTb Links_OOS: CSide  0 , PSide  1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

If the BSY command	Do
passes	step 11
fails	step 20

- 11 To reset the inactive RCO2 unit, type:  
`>PMRESET UNIT unit_no NORUN`  
 and press the Enter key.  
*where*  
**unit\_no**  
 is the inactive RCO2 unit number zero or one.

### *At the shelf*

12



#### **WARNING**

##### **Static electricity damage**

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

Locate the circuit card you want to replace.

**Note:** The NTMX76 circuit cards are in slot 8 of unit zero, and slot 20 of unit one.

- 13 To replace the card use the common replacing a card procedure in this document. When the procedure is complete, return to this point.  
**Note:** If the circuit card you replace has switches, make sure the switches on the replacement circuit card have the same settings.

### *At the MAP terminal*

- 14 To reset the inactive unit, type:  
`>PMRESET UNIT unit_no`  
 and press the Enter key.  
*where*

## NTMX76 in an RSC-M (end)

---

**unit\_no**  
is the number of the RCO2 unit busied in step 10

	<b>If PMRESET</b>	<b>Do</b>
	passes	step 15
	fails	step 20
<b>15</b>	Use the following information to determine the next step in this procedure.	
	<b>If you enter this procedure from</b>	<b>Do</b>
	alarm clearing procedures	step 19
	other	step 16
<b>16</b>	To return the inactive unit to service, type: >RTS INACTIVE and press the Enter key.	
	<b>If the RTS command</b>	<b>Do</b>
	passes	step 17
	fails	step 20
<b>17</b>	Remove the sign from the active unit.	
<b>18</b>	Go to the common returning a card procedure in this document. Go to step 22.	
<b>19</b>	Return to <i>Alarm Clearing Procedures</i> or other procedure that direct you to this procedure. Continue as directed.	
<b>20</b>	For additional help, contact the next level of maintenance.	
<b>21</b>	For additional help with SWACT, contact the next level of maintenance. <b>Note:</b> The system can recommend that you use the SWACT command with the FORCE option. Consult office personnel to determine if you must use the FORCE option.	
<b>22</b>	The procedure is complete.	

**NTMX76  
in an RSC RCC2**

---

**Application**

Use this procedure to replace the following card in an RSC RCC2.

PEC	Suffixes	Name
NTMX76	AA, AB	Message and Tone card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

**Common procedures**

Two common procedures are referenced in this section:

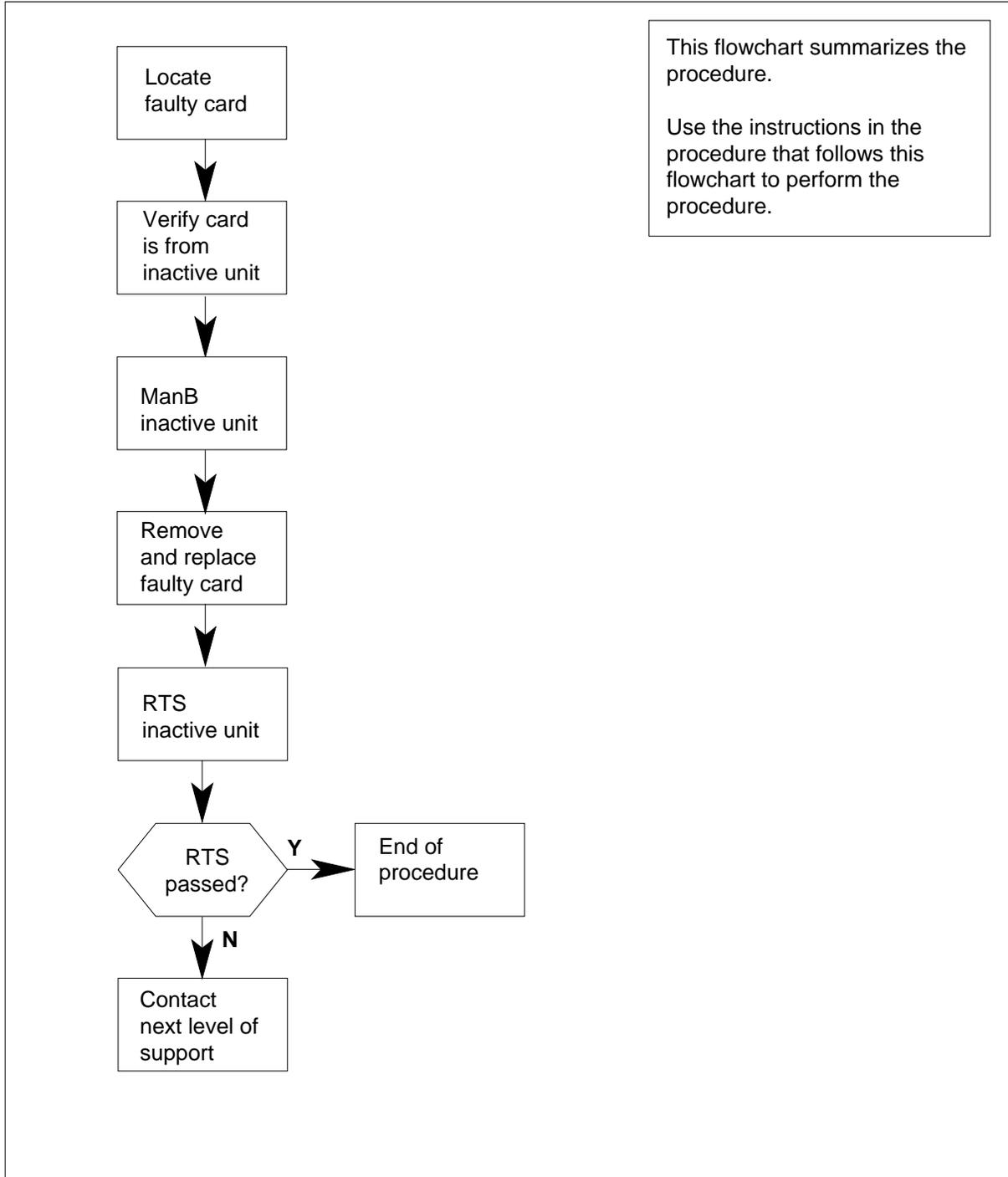
- replacing a card
- returning a card

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX76 in an RSC RCC2 (continued)

### Summary of card replacement procedure for an NTMX76 card in RSC RCC2



## NTMX76 in an RSC RCC2 (continued)

### Replacing an NTMX76 card in RSC RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 to be busied (0 or 1)

*Example of a MAP response:*

```
RCC2 0 ISTb Links_OOS: CSide 1, PSide
Unit0: Inact ISTb
Unit1: Act InSv
```

- 4 Determine the location of the RCC2 containing the faulty NTMX76 card by typing

```
>QUERYPM
```

and pressing the Enter key.

*Example of a MAP response:*

## NTMX76 in an RSC RCC2 (continued)

---

PM Type: RCC2 PM No.: 0 PM Int. No.: 9 Node\_No: 24  
PMs Equipped: 53 Loadname: CRI07BRI1 EEPROM Load:  
MX77NB03

WARM SWACT is supported and available  
RCC2 0 is included in the REX schedule.  
REX on RCC2 0 has not been performed.

Node Status: {OK, FALSE}

Unit 0 Act, Status: {OK, FALSE}

Unit 1 Inact, Status: {OK, FALSE}

Site	Flr	RPos	Bay_id	Shf	Description	Slot	EqPEC
RSC	00	C02	RSC	00 05	RCC2: 000		MX85AA
RSC	00	C02	RSC	00 47	EXT:LEFT	01:13	MX86AA

- 5 Determine the state of the RCC2 unit associated with the faulty NTMX76 card.

---

If the state of the RCC2 unit is	Do
active	step 6
inactive	step 8

---

- 6 Switch activity of the units by typing

>SWACT

and pressing the Enter key.

*Example of a MAP response:*

```
RCC2 0      A Warm SwAct will be performed after
             data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

---

If	Do
you are prompted to confirm a warm SWACT	step 7
the system rejects the SWACT	step 21

---

- 7 Confirm the command by typing

>YES

and pressing the Enter key.

*Example of a MAP response:*

---

## NTMX76 in an RSC RCC2 (continued)

---

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb
```

```
RCC2 0      SwAct Passed
```

---

If the MAP response is	Do
SWACT passed	step 8
anything else	step 20

---

- 8** A maintenance flag (Mtce) may appear, indicating system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both RCC2 units before proceeding to the next step.

**At the RSCE frame**

- 9** Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**At the MAP terminal**

- 10** Busy the inactive PM unit by typing

```
>bsy INACTIVE
```

and pressing the Enter key.

*Example of a MAP response:*

```
RCC2      0 ISTb Links_OOS: CSide 0 , PSide 1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCC2 0 Unit 0      Bsy Passed
```

---

If the BSY command	Do
passed	step 11
failed	step 20

---

- 11** Reset the inactive RCC2 unit to the ROM level by typing

```
>PMRESET UNIT rcc2_unit_no NORUN
```

and pressing the Enter key.

*where*

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit (0 or 1)

## NTMX76 in an RSC RCC2 (continued)

---

### *At the RSCE frame*

12



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the CRSC cabinet. This protects the equipment against damage caused by static electricity.

Locate the circuit card to be replaced.

- 13 Replace the card using the common replacing a card procedure in this document. When you have completed the procedure, return to this point.

**Note:** If the circuit card you are replacing has switches, ensure the switches on the replacement circuit card have the same settings as the card replaced.

### *At the MAP terminal*

- 14 Reset the inactive unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCC2 unit busied in step 10

---

<b>If PMRESET</b>	<b>Do</b>
passed	step 15
failed	step 20

---

- 15 Use the following information to determine what step to go to next in this procedure.

---

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 19
other	step 16

---

- 16 Return the inactive RCC2 unit to service by typing

```
>RTS INACTIVE
```

---

**NTMX76**  
**in an RSC RCC2 (end)**

---

and pressing the Enter key.

If the RTS command	Do
passed	step 17
failed	step 20

- 17** Remove the sign from the active unit.
- 18** Go to the common returning a card procedure in this document.  
Go to step 22.
- 19** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure and continue as directed.
- 20** For further assistance, contact the personnel responsible for the next level of support.
- 21** 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.
- 22** You have successfully completed this procedure.

## **NTMX76 in an RSC-S (DS-1) Model A RCC2**

---

### **Application**

Use this procedure to replace the following card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX76	AA	Message and Tone card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

### **Common procedures**

Two common procedures are referenced in this section:

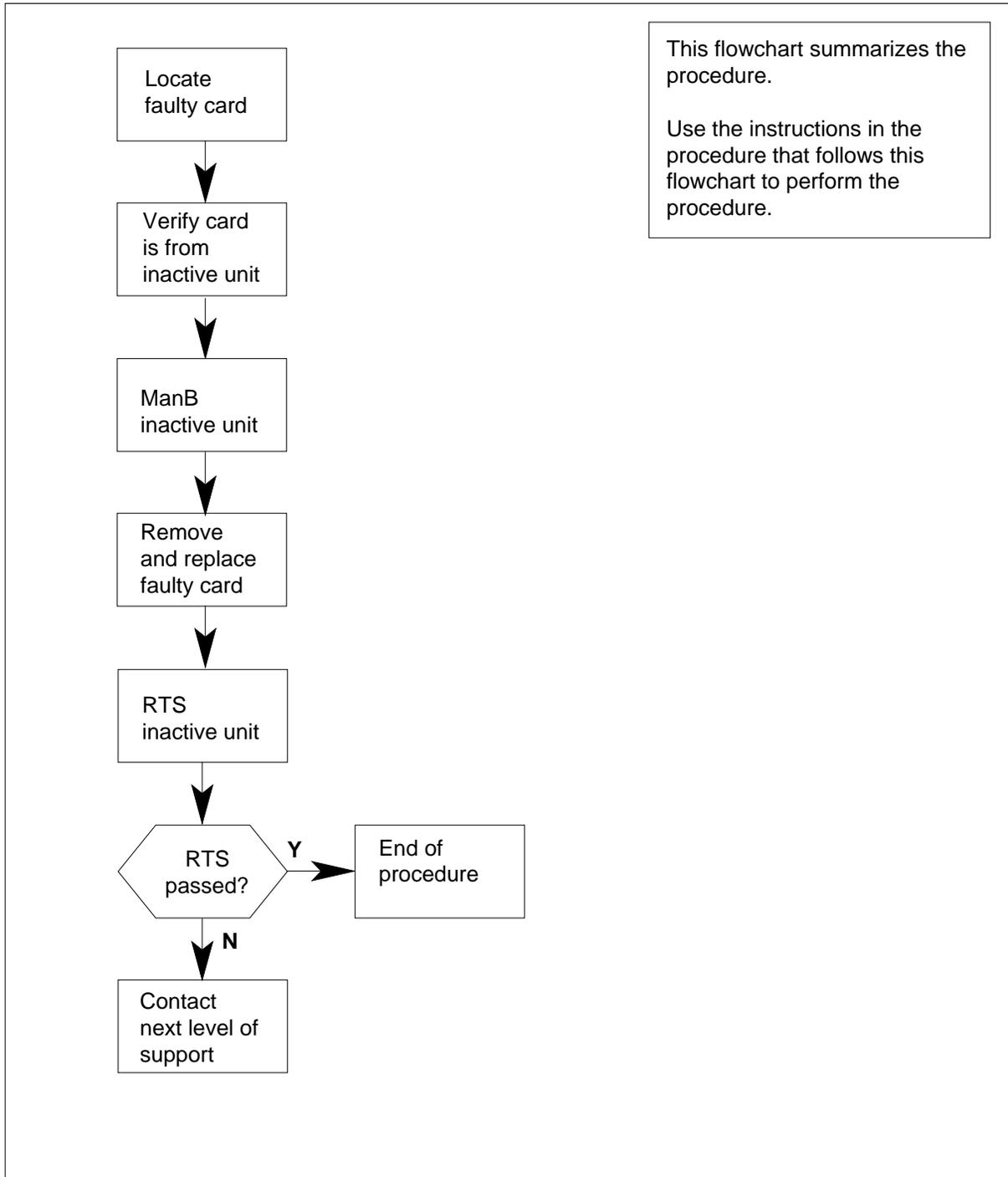
- replacing a card
- returning a card

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX76**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

**Summary of card replacement procedure for an NTMX76 card in RSC-S RCC2**



## NTMX76 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### Replacing an NTMX76 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 to be busied (0 or 1)

*Example of a MAP response:*

```
RCC2  0 ISTb Links_OOS:  CSide  1, PSide  
Unit0:  Inact      ISTb  
Unit1:  Act       InSv
```

- 4 Determine the location of the RCC2 containing the faulty NTMX76 card by typing

```
>QUERYPM
```

and pressing the Enter key.

*Example of a MAP response:*

---

## NTMX76

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

```

PM Type: RCC2 PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname: CRI07BRI1 EEPROM Load:
MX77NB03
WARM SWACT is supported and available
RCC2 0 is included in the REX schedule.
REX on RCC2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC0 00 C02 RSC 00 05 RCC2: 000 MX85AA
RSC0 00 C02 RSC 00 47 EXT:LEFT 01:13 MX86AA

```

- 5 Determine the state of the RCC2 unit associated with the faulty NTMX76 card..

If the RCC2 unit is	Do
active	step 6
inactive	step 8

- 6 Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.  
 and pressing the Enter key.  
*Example of a MAP response:*

```

RCC2 0      A Warm SwAct will be performed after
            data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):

```

If	Do
you are prompted to confirm a warm SWACT	step 7
the system rejects the SWACT	step 20

- 7 Confirm the system prompt by typing  
**>YES**  
 and pressing the Enter key.  
*Example of a MAP response:*

## NTMX76 in an RSC-S (DS-1) Model A RCC2 (continued)

---

```
Unit0:  Inact SysB Mtce  
Unit1:  Act   ISTb
```

```
RCC2 0      SwAct Passed
```

---

If the MAP response is	Do
SWACT passed	step 8
anything else	step 19

---

### At the RCE frame

- 8 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### At the MAP terminal

- 9 Busy the inactive PM unit by typing  

```
>bsy INACTIVE
```

and pressing the Enter key.
- 10 Reset the inactive RCC2 unit to the ROM level by typing  

```
>PMRESET UNIT rcc2_unit_no NORUN
```

and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

### At the RCE frame

11



#### WARNING

##### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Locate the circuit card to be replaced.

- 12 Replace the card using the common replacing a card procedure in this document. When you have completed the procedure, return to this point.

**Note:** If the circuit card you are replacing has switches, ensure the switches on the replacement circuit card have the same settings as the card replaced.

---

**NTMX76**

**in an RSC-S (DS-1) Model A RCC2 (end)**

---

**At the MAP terminal**

- 13** Reset the inactive RCC2 unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCC2 busied in step 9

<b>If PMRESET</b>	<b>Do</b>
passed	step 14
failed	step 19

- 14** Use the following information to determine what step to go to next in this procedure.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 18
other	step 15

- 15** Return the inactive RCC2 unit to service by typing

```
>RTS INACTIVE
```

and pressing the Enter key.

<b>If RTS</b>	<b>Do</b>
passed	step 16
failed	step 19

- 16** Remove the sign from the active unit.

- 17** Go to the common returning a card procedure in this document.

Go to step 21.

- 18** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure and continue as directed.

- 19** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

- 20** For further assistance with switch of activity, contact the personnel responsible for the next level of support.

- 21** You have successfully completed this procedure.

## **NTMX76 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace the following card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX76	AA	Message and Tone card

If you cannot identify the PEC, suffix, and shelf or frame for the card you want to replace, refer to the Index for a list of cards, shelves, and frames documented in this card replacement NTP.

### **Common procedures**

Two common procedures are referenced in this section:

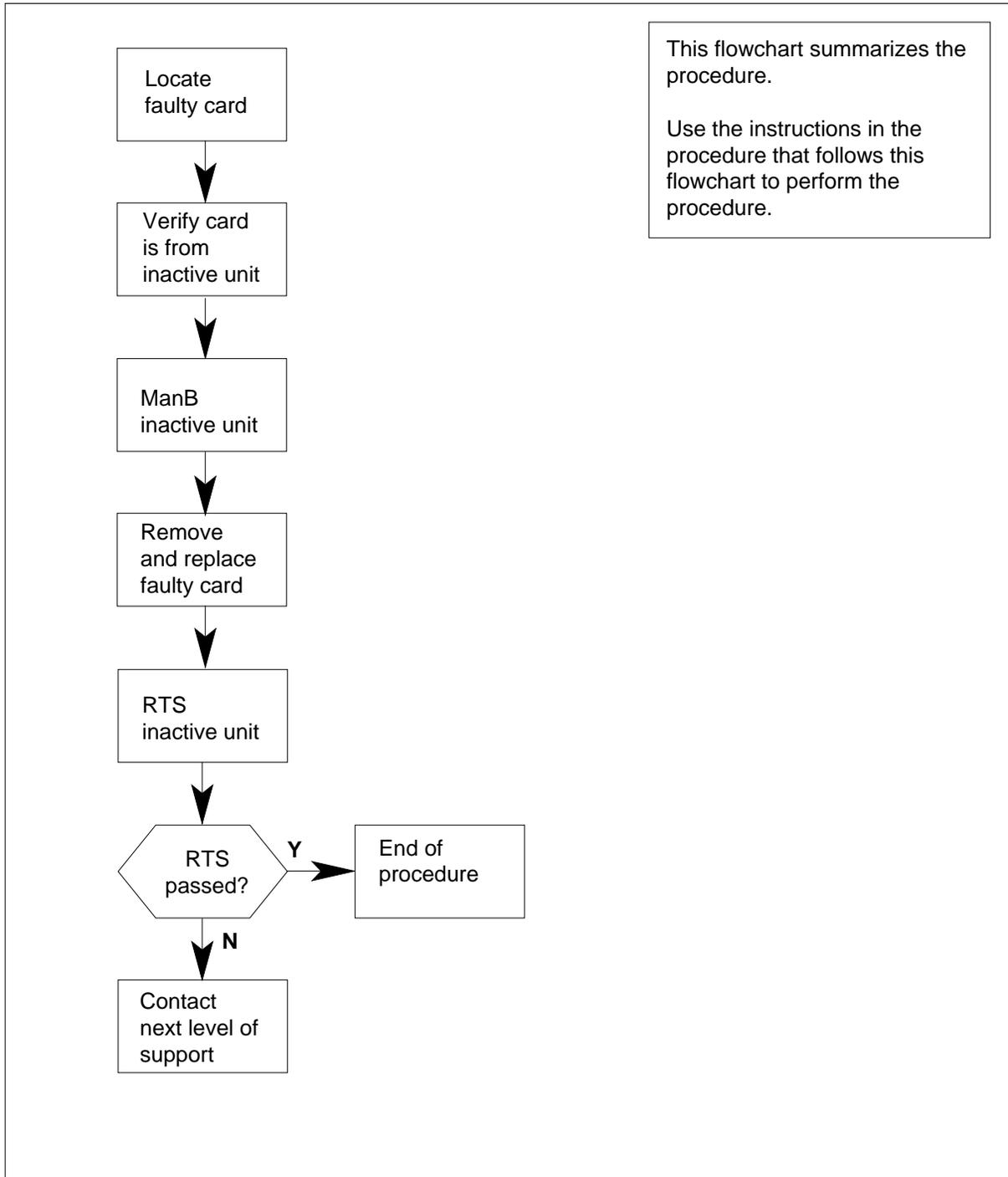
- replacing a card
- returning a card

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX76**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

**Summary of card replacement procedure for an NTMX76 card in RSC-S RCC2**



## NTMX76 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### Replacing an NTMX76 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 to be busied (0 or 1)

*Example of a MAP response:*

```
RCC2 0 ISTb Links_OOS: CSide 1, PSide  
Unit0: Inact ISTb  
Unit1: Act InSv
```

- 4 Determine the location of the RCC2 containing the faulty NTMX76 card by typing

```
>QUERYPM
```

and pressing the Enter key.

*Example of a MAP response:*

---

## NTMX76

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

```

PM Type: RCC2 PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname: CRI07BRI1 EEPROM Load:
MX77NB03
WARM SWACT is supported and available
RCC2 0 is included in the REX schedule.
REX on RCC2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC0 00 C02 RSC 00 05 RCC2: 000 MX85AA
RSC0 00 C02 RSC 00 47 EXT:LEFT 01:13 MX86AA

```

- 5 Determine the state of the RCC2 unit associated with the faulty NTMX76 card..

If the RCC2 unit is	Do
active	step 6
inactive	step 8

- 6 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

and pressing the Enter key.

*Example of a MAP response:*

```

RCC2 0      A Warm SwAct will be performed after
             data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):

```

If	Do
you are prompted to confirm a warm SWACT	step 7
the system rejects the SWACT	step 20

- 7 Confirm the system prompt by typing

>YES

and pressing the Enter key.

*Example of a MAP response:*

---

## NTMX76 in an RSC-S (DS-1) Model B RCC2 (continued)

---

```
Unit0:  Inact SysB Mtce  
Unit1:  Act   ISTb
```

```
RCC2 0      SwAct Passed
```

---

If the MAP response is	Do
SWACT passed	step 8
anything else	step 19

---

### At the RCE frame

- 8 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### At the MAP terminal

- 9 Busy the inactive PM unit by typing  
`>bsy INACTIVE`  
and pressing the Enter key.
- 10 Reset the inactive RCC2 unit to the ROM level by typing  
`>PMRESET UNIT rcc2_unit_no NORUN`  
and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

### At the RCE frame

11



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Locate the circuit card to be replaced.

---

## NTMX76

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

- 12** Replace the card using the common replacing a card procedure in this document. When you have completed the procedure, return to this point.

**Note:** If the circuit card you are replacing has switches, ensure the switches on the replacement circuit card have the same settings as the card replaced.

**At the MAP terminal**

- 13** Reset the inactive RCC2 unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCC2 busied in step 9

If PMRESET	Do
passed	step 14
failed	step 19

- 14** Use the following information to determine what step to go to next in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	step 18
other	step 15

- 15** Return the inactive RCC2 unit to service by typing

```
>RTS INACTIVE
```

and pressing the Enter key.

If RTS	Do
passed	step 16
failed	step 19

- 16** Remove the sign from the active unit.

- 17** Go to the common returning a card procedure in this document.

Go to step 21.

- 18** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure and continue as directed.

- 19** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX76**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

- 20 For further assistance with switch of activity, contact the personnel responsible for the next level of support.
- 21 You have successfully completed this procedure.

**NTMX76**  
**in an RSC-S (PCM-30) Model A RCO2**

---

**Application**

Use this procedure to replace an NTMX76 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX76	AA, AB	Message and Tone card

**Common procedures**

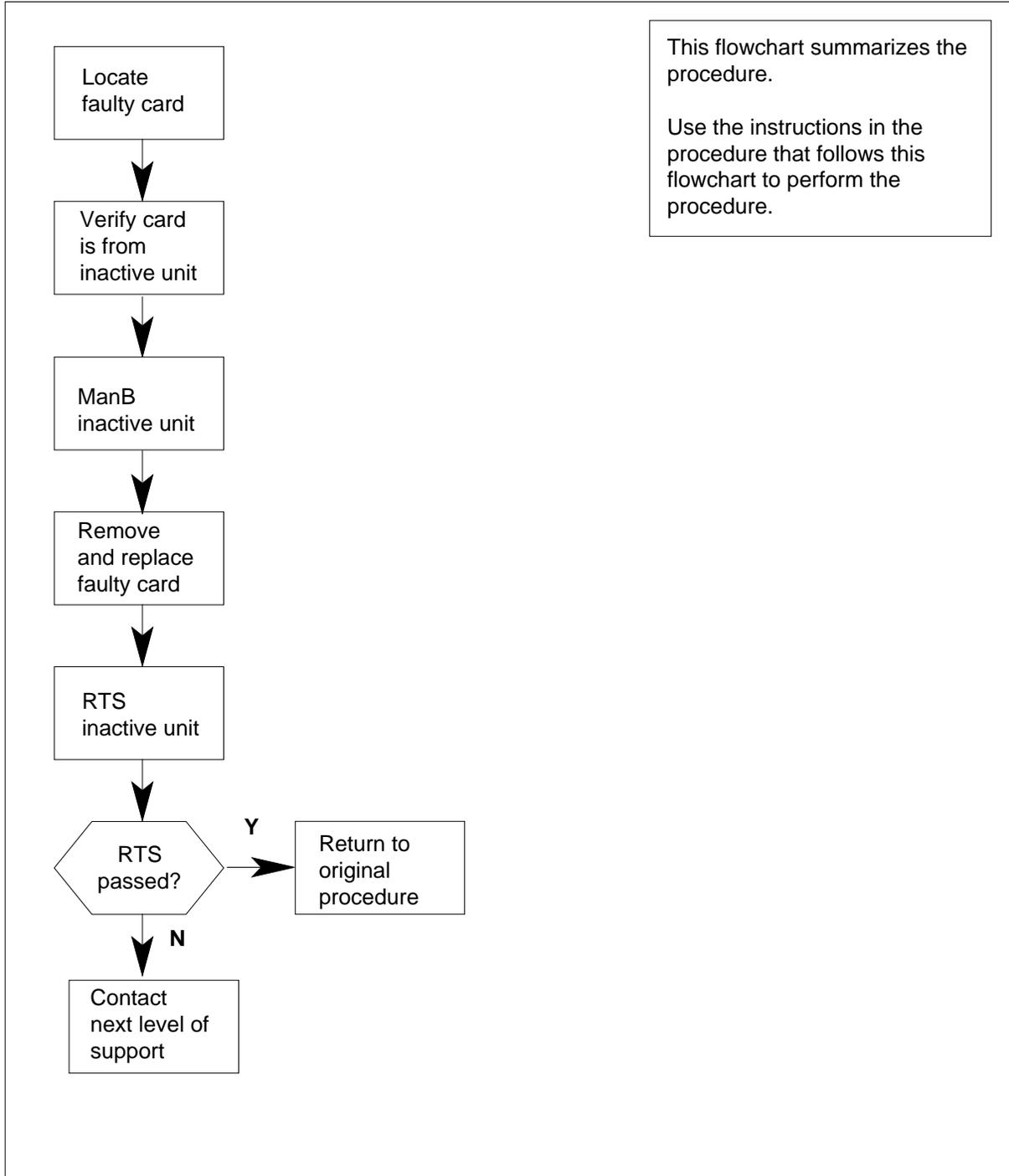
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX76 in an RSC-S (PCM-30) Model A RCO2 (continued)

### Summary of card replacement procedure for an NTMX76 card in RSC-S RCO2



---

## NTMX76

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

#### Replacing an NTMX76 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the faulty card(s)

*Example of a MAP display:*

## NTMX76 in an RSC-S (PCM-30) Model A RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0      0      OffL    CBSy    ISTb    InSv
2 Post_     RCO2   0      0      0      0      1      1
3 ListSet
4           RCO2   0 ISTb Links_OOS: CSide 1, 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
18
    
```

- Determine the location of the RCO2 containing the circuit card you are replacing by typing

**>QUERYPM**

and pressing the Enter key.

*Example of a MAP response:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname: UK00ADU6 EEPROM Load:
BNK0N205
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
    
```

- By observing the MAP display, be sure that the card to be removed is on the inactive unit.

---

**If faulty card is on**

**Do**

---

active unit

step 6

---

---

## NTMX76

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

	<b>If faulty card is on</b>	<b>Do</b>
	inactive unit	step 9
<b>6</b>	<p>Switch the processing activity (SWACT) to the inactive unit by typing &gt;SWACT and pressing the Enter key.</p> <p><i>Example of a MAP response:</i></p> <pre>RCO2 0      A Warm SwAct will be performed after               data sync of active terminals. Please confirm ("YES", "Y", "NO", or "N"):</pre> <p><b>Note:</b> 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.</p>	
<b>7</b>	<p>Confirm the system prompt by typing &gt;YES and pressing the Enter key. and pressing the Enter key.</p> <p><i>Example of a MAP response:</i></p> <pre>Unit0:   Inact SysB Mtce Unit1:   Act   ISTb  RCO2 0      SwAct Passed</pre>	
	<b>If the MAP response is</b>	<b>Do</b>
	SWACT passed	step 8
	anything else	step 24
<b>8</b>	<p>A maintenance flag (Mtce) may appear, indicating system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both RCO2 units before proceeding to the next step.</p>	
<b>At the RCE frame</b>		
<b>9</b>	<p>Put a sign on the active unit bearing the words <i>Active unit—Do not touch</i>. This sign should not be attached by magnets or tape.</p>	

## NTMX76 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

**At the MAP terminal**

- 10 Busy the inactive PM unit by typing

**>bsy INACTIVE**

and pressing the Enter key.

*Example of a MAP response:*

```
RCO2      0 ISTb  Links_OOS: CSide  0 , PSide  1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

---

If the BSY command	Do
passed	step 11
failed	step 24

---

- 11 Reset the inactive RCO2 unit by typing

**>PMRESET UNIT unit\_no NORUN**

and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCO2 unit (0 or 1)

**At the RCE frame**

- 12



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

**NTMX76**  
**in an RSC-S (PCM-30) Model A RCO2 (continued)**

13



**DANGER**

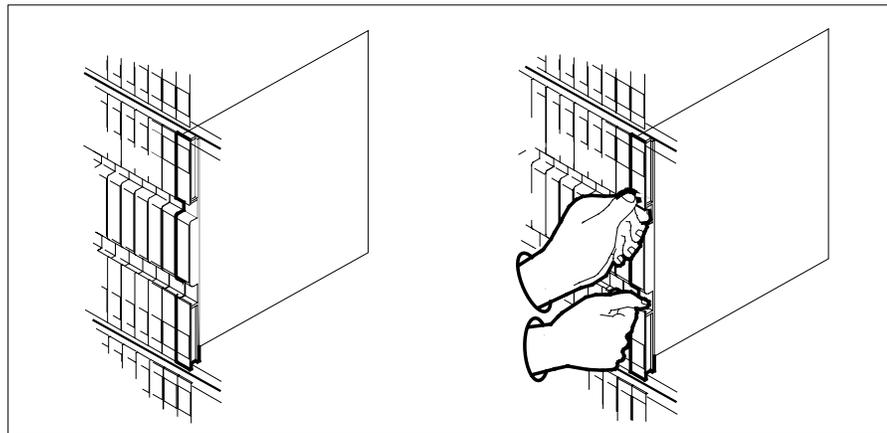
**Equipment damage**

Take the following precautions when removing or inserting a card:

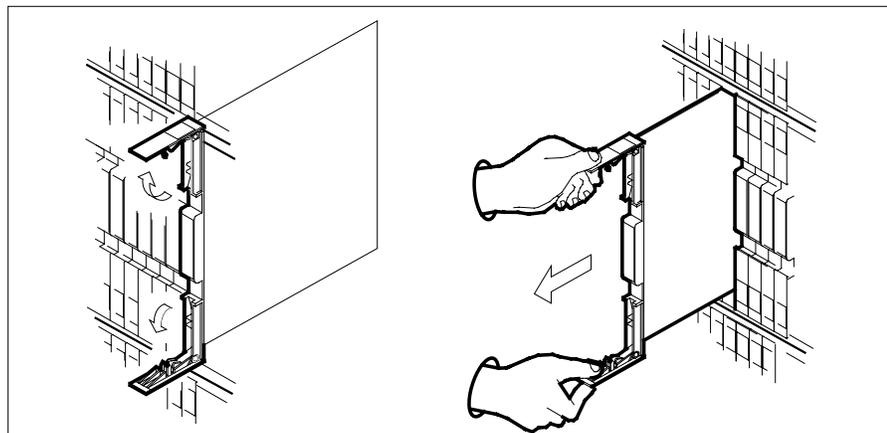
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Remove the NTMX76 card as shown in the following figures.

**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.



## NTMX76 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

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

14



### DANGER

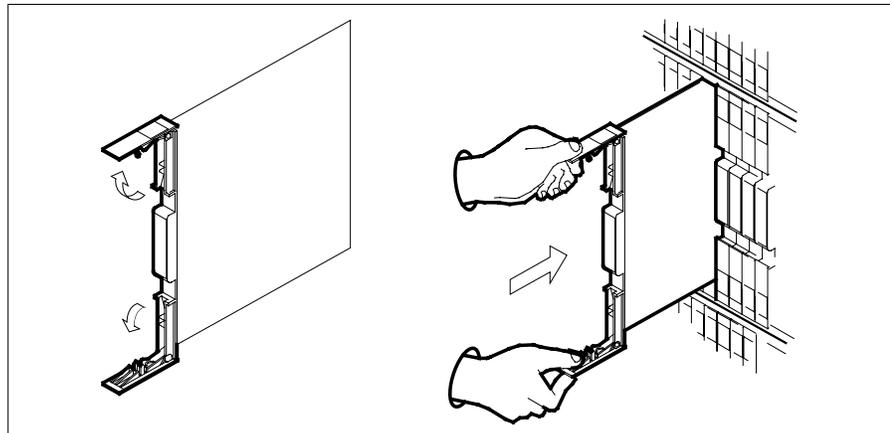
#### Equipment damage

Take these precautions when removing or inserting a card:

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

Open the locking levers on the replacement card.

- a Align the card with the slots in the shelf.
- b Gently slide the card into the shelf.

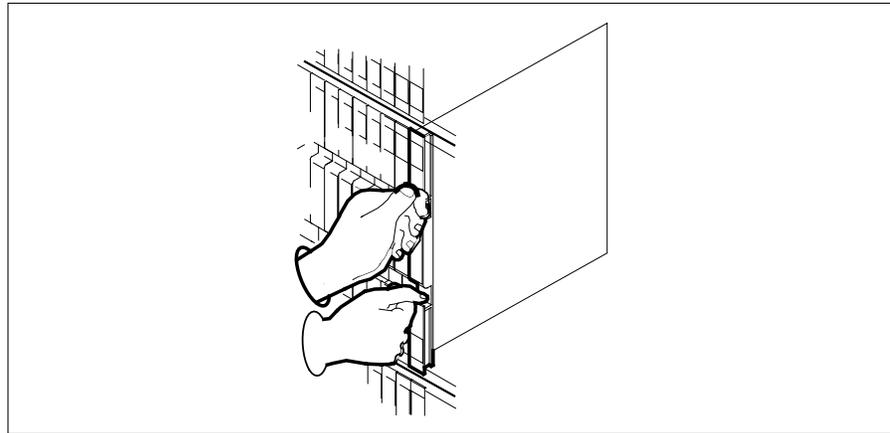


15 Seat and lock the card.

- 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.

## NTMX76

### in an RSC-S (PCM-30) Model A RCO2 (continued)



- 16** Reseat the MX76 card.

**At the MAP terminal**

- 17** Reset the inactive unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCO2 unit busied in step 10

If PMRESET	Do
passed	step 18
failed	step 24

- 18** Use the following information to determine what step to go to next in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	step 23
other	step 19

- 19** Return the inactive RCO2 unit to service by typing

```
>RTS INACTIVE
```

**NTMX76**  
**in an RSC-S (PCM-30) Model A RCO2 (end)**

---

and pressing the Enter key.

<b>If RTS</b>	<b>Do</b>
passed	step 20
failed	step 24

- 20** Remove the sign from the active unit.
- 21** Send any faulty cards for repair according to local procedure.
- 22** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 25.
- 23** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 24** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 25** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX76**  
**in an RSC-S (PCM-30) Model B RCO2**

---

**Application**

Use this procedure to replace an NTMX76 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX76	AA, AB	Message and Tone card

**Common procedures**

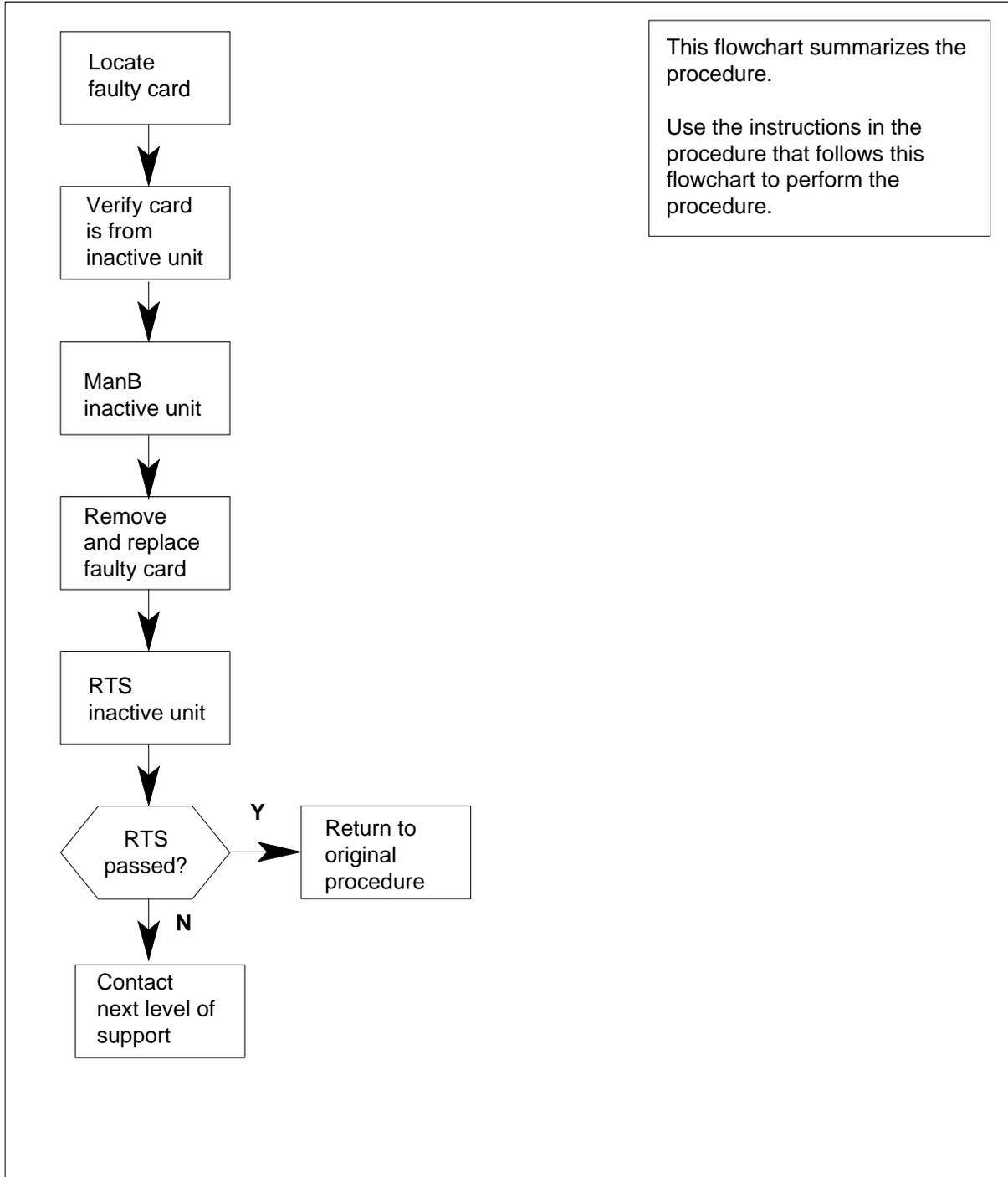
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX76 in an RSC-S (PCM-30) Model B RCO2 (continued)

### Summary of card replacement procedure for an NTMX76 card in RSC-S RCO2



---

## NTMX76

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

#### Replacing an NTMX76 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCO2 by typing

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the faulty card(s)

*Example of a MAP display:*

## NTMX76 in an RSC-S (PCM-30) Model B RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0      0      OffL    CBSy    ISTb    InSv
2 Post_    RCO2    0      0      0      0      1      1
3 ListSet
4          RCO2    0 ISTb Links_OOS: CSide 1, 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
18
    
```

- Determine the location of the RCO2 containing the circuit card you are replacing by typing

**>QUERYPM**

and pressing the Enter key.

*Example of a MAP response:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname: UK00ADU6 EEPROM Load:
BNK0N205
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
    
```

- By observing the MAP display, be sure that the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 6

---

## NTMX76

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

	If faulty card is on	Do
	inactive unit	step 9
6	Switch the processing activity (SWACT) to the inactive unit by typing >SWACT and pressing the Enter key.  <b>Note:</b> 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.	
7	Confirm the system prompt by typing >YES and pressing the Enter key. <i>Example of a MAP response:</i>	
	<pre>Unit0:   Inact SysB Mtce Unit1:   Act   ISTb  RCO2 0      SwAct Passed</pre>	
	If the MAP response is	Do
	SWACT passed	step 8
	anything else	step 22
8	A maintenance flag (Mtce) may appear, indicating system-initiated maintenance tasks are in progress. Wait until the flag disappears from the status lines for both RCO2 units before proceeding to the next step.	

**At the RCE frame**

- 9 Put a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**At the MAP terminal**

- 10 Busy the inactive PM unit by typing  
>*bsy INACTIVE*  
and pressing the Enter key.  
*Example of a MAP response:*

---

## NTMX76 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

```
RCO2      0 ISTb Links_OOS: CSide  0 , PSide  1
Unit0:    Inact ManB
Unit1:    Act  ISTb
Bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

---

If the BSY command	Do
passed	step 11
failed	step 22

---

- 11 Reset the inactive RCO2 unit by typing  
>PMRESET UNIT *unit\_no* NORUN  
and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCO2 unit (0 or 1)

### At the RCE frame

12



#### WARNING

##### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

13



#### DANGER

##### Equipment damage

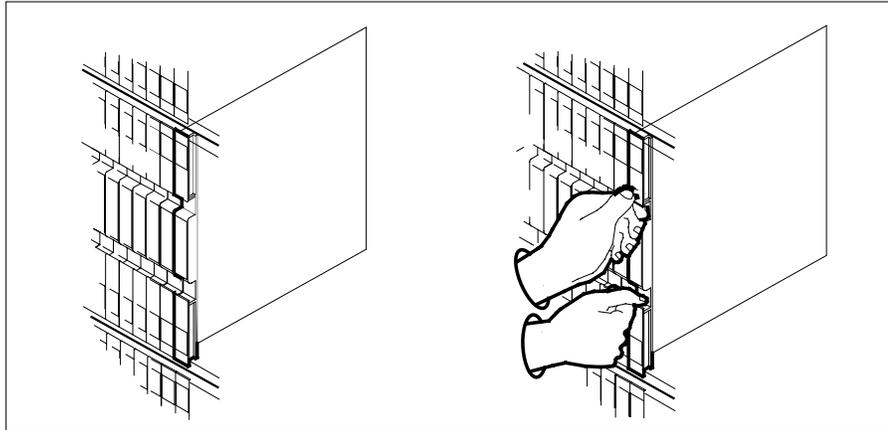
Take the following precautions when removing or inserting a card:

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

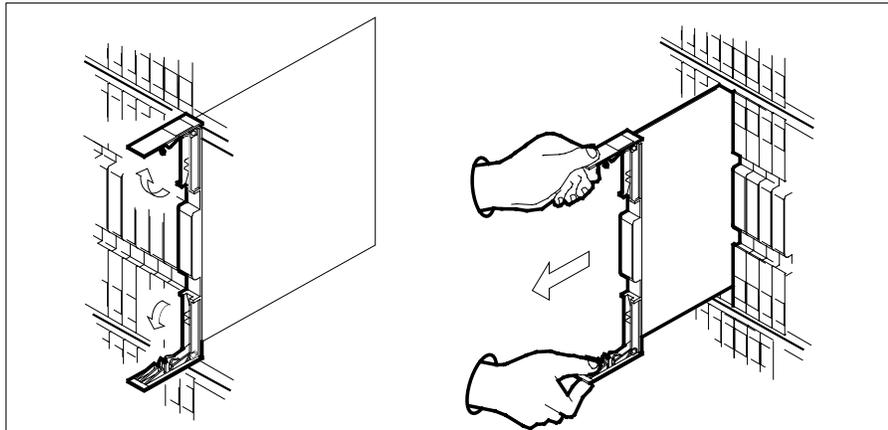
Remove the NTMX76 card as shown in the following figures.

**NTMX76**  
**in an RSC-S (PCM-30) Model B RCO2 (continued)**

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



- b Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.



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

14



**DANGER**

**Equipment damage**

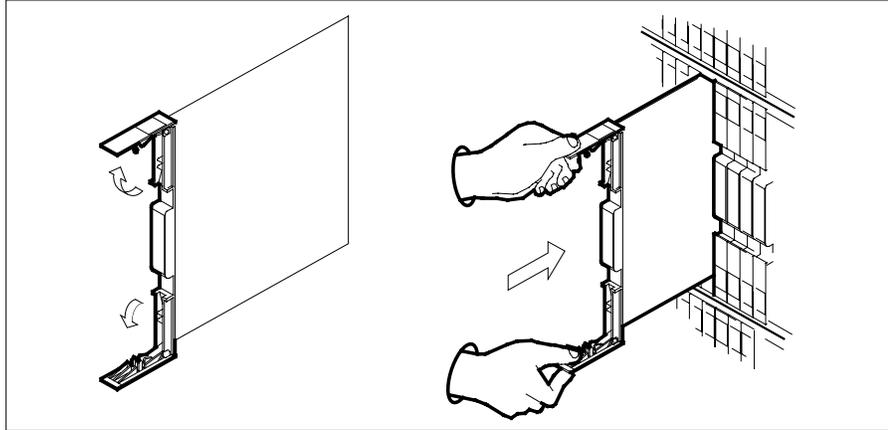
Take these precautions when removing or inserting a card:

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

Open the locking levers on the replacement card.

## NTMX76 in an RSC-S (PCM-30) Model B RCO2 (continued)

- a Align the card with the slots in the shelf.
- b Gently slide the card into the shelf.



15



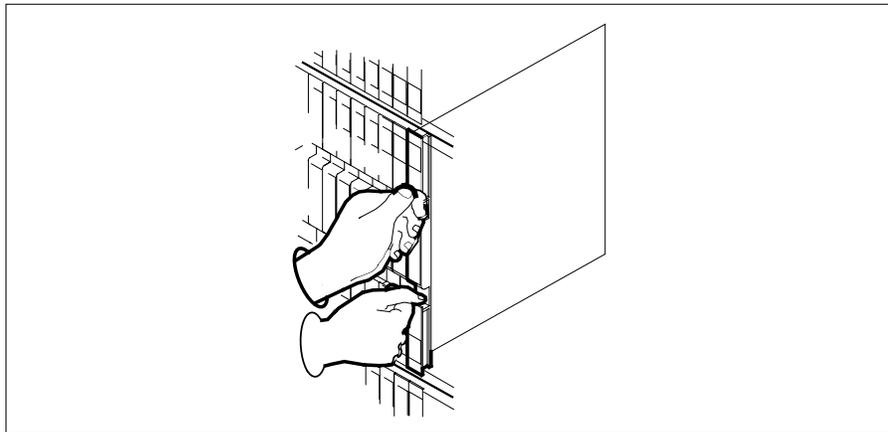
### CAUTION

#### Loss of subscriber service

Subscriber service may be lost in the active unit when reseating the MX76 card. It is recommended that this procedure be performed during low traffic periods.

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.



---

**NTMX76**

**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

**At the MAP terminal**

- 16** Reset the inactive unit by typing

```
>PMRESET UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCO2 unit busied in step 10

---

**If PMRESET**

**Do**

passed

step 17

failed

step 22

- 
- 17** Use the following information to determine what step to go to next in this procedure.

---

**If you entered this procedure from**

**Do**

alarm clearing procedures

step 21

other

step 18

- 
- 18** Return the inactive RCO2 unit to service by typing

```
>RTS INACTIVE
```

and pressing the Enter key.

---

**If RTS**

**Do**

passed

step 19

failed

step 22

- 
- 19** Send any faulty cards for repair according to local procedure.

- 20** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 23.

- 21** Return to *Alarm and Performance Monitoring Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

- 22** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

- 23** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX76 in an SMA2**

---

### **Application**

Use this procedure to replace an NTMX76 card in an SMA2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX76	BA, CA	HDLC/DMSX Messaging Interface Card

### **Common procedures**

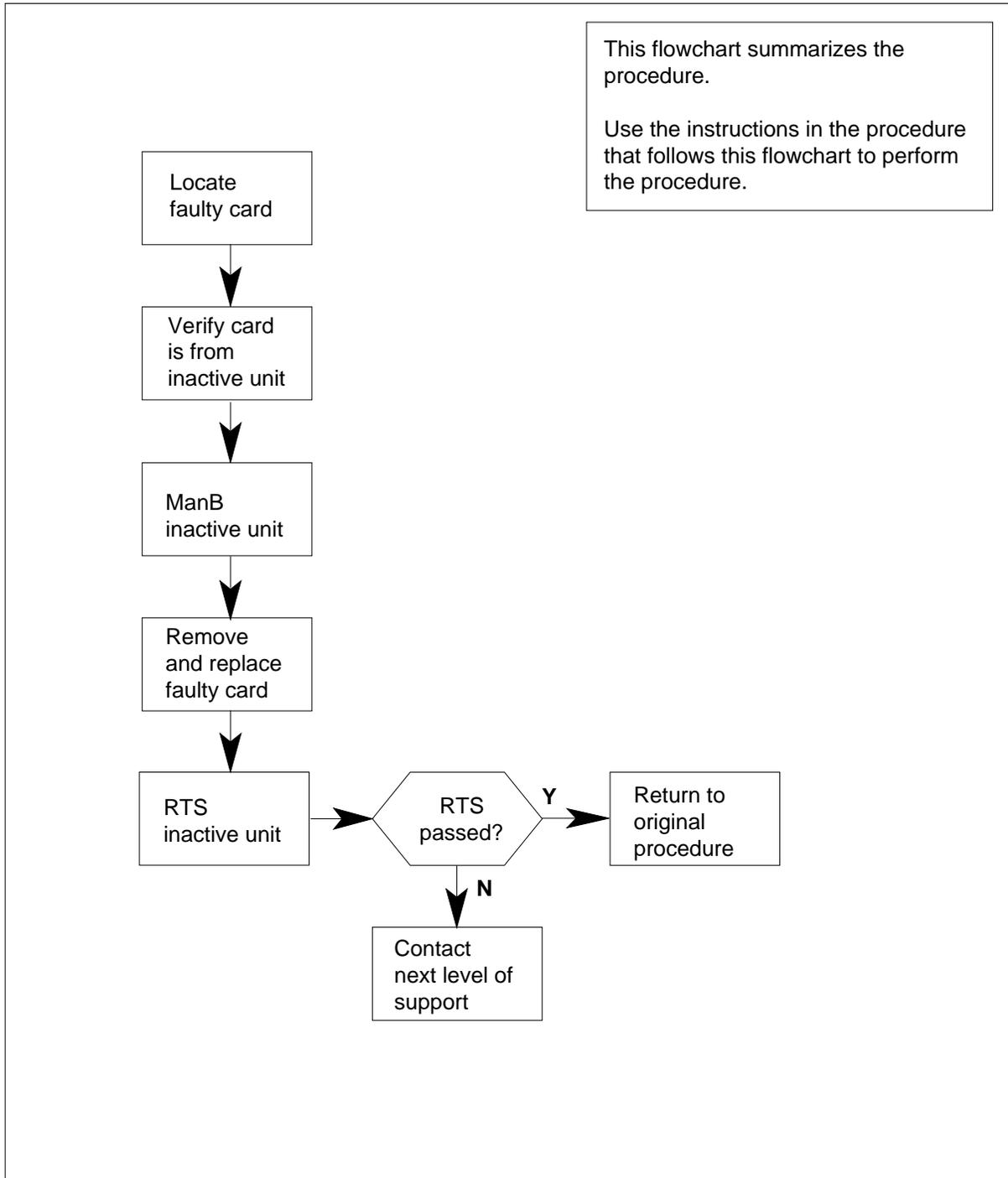
The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- replacing a card
- returning a card

Do not go to a 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.

**NTMX76**  
**in an SMA2** (continued)**Summary of card replacement procedure for an NTMX76 card in an SMA2**

## NTMX76 in an SMA2 (continued)

---

### Replacing an NTMX76 card in an SMA2

#### *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 Ensure you know the physical location of the faulty card.

---

If card location is	Do
known	step 4
unknown	step 3

---

- 3 Perform the procedure "Locating a faulty card in an SMA2."
- 4



#### **CAUTION**

##### **Loss of service**

When replacing a card in the SMA2, ensure the unit in which you are replacing the card is *inactive* and the mate unit is *active*.

Obtain an NTMX76 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card to be removed.

#### *At the MAP terminal*

- 5 Ensure the current MAP display is at the PM level and post the SMA2 by typing

```
>MAPCI;MTC;PM;POST SMA2 sma2_no
```

and pressing the Enter key.

*where*

**sma2\_no**

is the number of the SMA2 to be busied (0 or 1)

*Example of a MAP display:*

## NTMX76 in an SMA2 (continued)

SMA2	SysB	ManB	OffL	CBSy	ISTb	InSv
PM	3	0	1	0	2	13
SMA2	0	0	0	0	1	7

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act InSv
Unit1: InAct IsTb
```

- 6** By observing the MAP display, be sure the card to be removed is on the inactive unit.

If faulty card is on	Do
active unit	step 7
inactive unit	step 11

- 7** Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal.

If prompt indicates	Do
cannot continue at this time	step 8
can continue at this time	step 9

- 8** Reject the prompt to SWACT of the units by typing

>NO

and pressing the Enter key.

The system discontinues the SWACT.

- 9** Confirm the system prompt by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

If the message is	Do
SWACT passed	step 11

## NTMX76 in an SMA2 (continued)

---

	<b>If the message is</b>	<b>Do</b>
	SWACT failed Rea- son: XPM SWACTback	step 10
	SWACT refused by SWACT Controller	step 10
<b>10</b>	The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit. Go to step 19.	
	<b>At the frame or cabinet</b>	
<b>11</b>	Put a sign on the <i>active</i> unit bearing the words <i>Active unit-Do not touch</i> . This sign should not be attached by magnets or tape.	
	<b>At the MAP terminal</b>	
<b>12</b>	Busy the inactive SMA2 unit by typing > <i>bsy unit unit_no</i> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the SMA2 unit to be busied (0 or 1)	
<b>13</b>	Prevent the SMA2 from trapping by typing > <b>PMRESET UNIT unit_no NORUN</b> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the inactive SMA2 unit (0 or 1)	

**NTMX76**  
**in an SMA2** (continued)

**At the frame or cabinet**

14

	<p><b>WARNING</b>  <b>Static electricity damage</b>                  Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.</p>
---	--

	<p><b>CAUTION</b>  <b>Loss of subscriber service</b>                  Subscriber service may be lost in the <i>active</i> unit when reseating the MX76 card. It is recommended this procedure be performed during low traffic periods.</p>
---	--

15 Perform the common replacing a card procedure in this document.  
 Use the following information to determine what step to go to next in this procedure.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 18
other	step 16

16 Return the inactive SMA2 unit to service by typing  
`>RTS UNIT unit_no`  
 and pressing the Enter key.  
*where*  
     **unit\_no**  
     is the number of the SMA2 unit being returned to service (0 or 1)

<b>If RTS</b>	<b>Do</b>
passed	step 17
failed	step 19

17 Go to the common returning a card procedure in this document.  
 Go to step 20.

**NTMX76**  
**in an SMA2** (end)

---

- 18** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 19** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 20** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTMX77  
in an RSC**

---

**Application**

Use this procedure to replace the following card in an RSC RCC or RSCE RCC2.

*Note:* This procedure is used to replace a card in an RCC or RCC2. In this procedure the term RCC refers to both the RCC and RCC2 in an RSC frame, NT6X10.

PEC	Suffixes	Name
NTMX77	AA	Unified processor (UP)

**Common procedures**

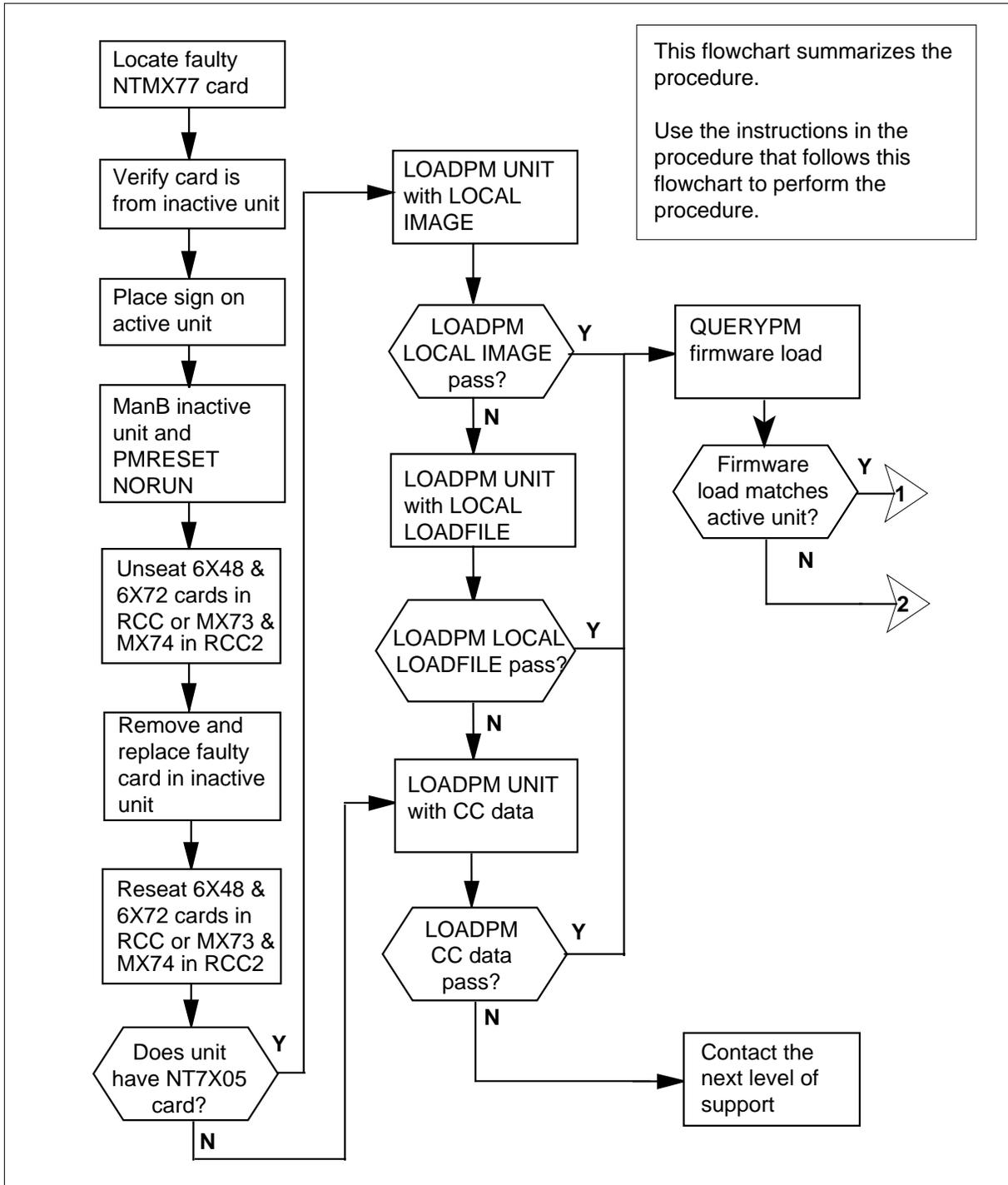
None

**Action**

The following flowchart is a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

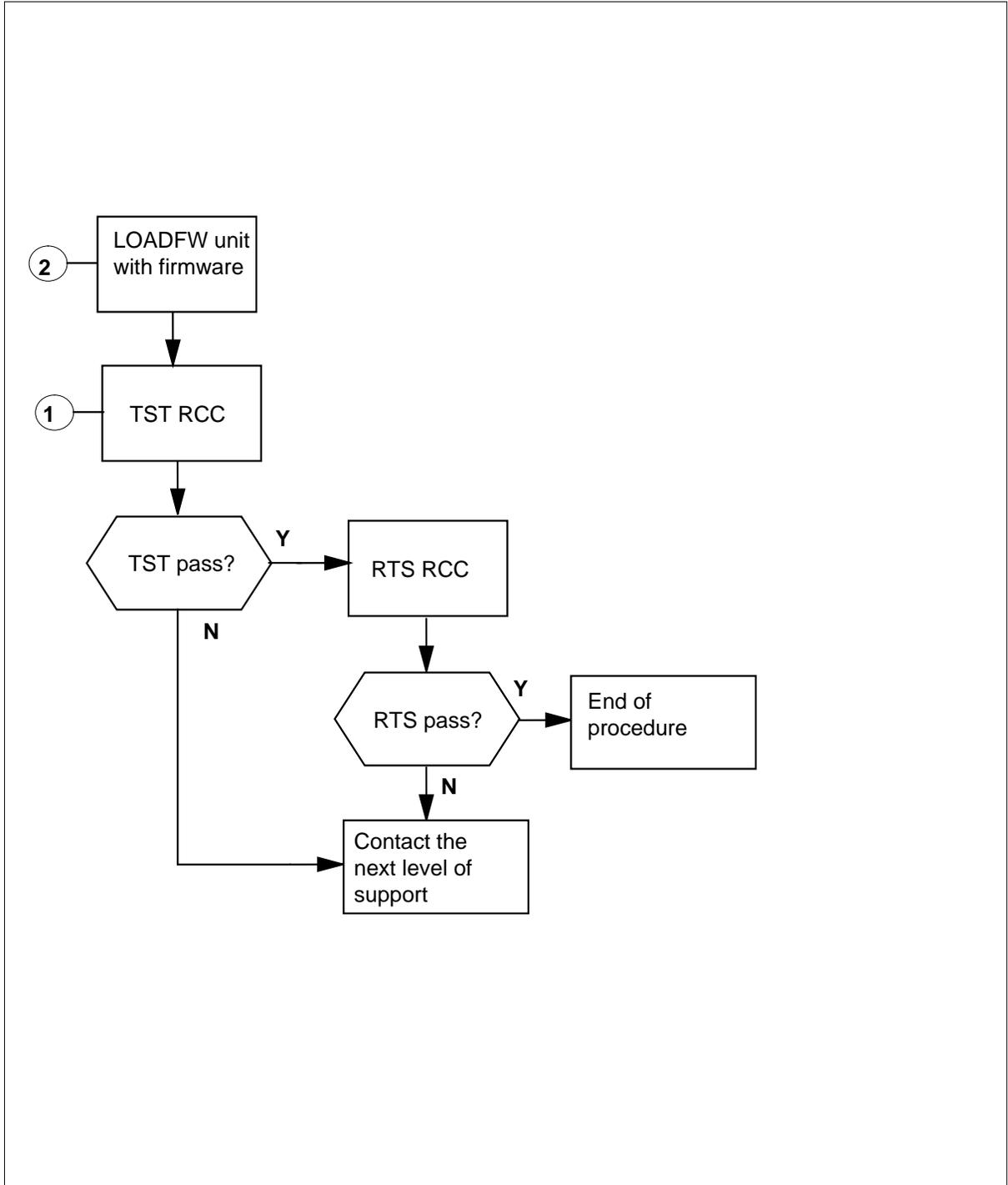
## NTMX77 in an RSC (continued)

### Summary of card replacement procedure for an NTMX77 card in an RCC



**NTMX77**  
**in an RSC** (continued)

**Summary of card replacement procedure for an NTMX77 card in an RCC (continued)**



## NTMX77 in an RSC (continued)

---

### Replacing an NTMX77 card in an RSC RCC

#### *At your Current Location*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to verify or accept cards, or were directed to this procedure by your maintenance support group.
- 2



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC, make sure the unit where you are replacing the card is *inactive* and the mate unit is *active*.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal and post the RCC. To post the RCC, type

```
>MAPCI;MTC;PM;POST RCC rcc_unit_no
```

and press the Enter key.

where

**rcc\_unit\_no**

is the number of the RCC unit to be busied (0 or 1)

*Example of a MAP display:*

**NTMX77**  
**in an RSC** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      APPL
.       .       .       .       1RCC    .       .       .       .       .

RCC
0 Quit      PM      0       0       2       0       2       25
2 Post_     RCC    0       0       0       0       1       1
3 ListSet
4           RCC    0 ISTb  Links_OOS: CSide 0, PSide 0
5 TRNSL_   Unit 0: Inact SysB
6 TST_     Unit 1: Act  InSv
7 BSY_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SwAct
14 QueryPM
15
16 IRLINK
17 Perform
18
    
```

- 4** Check that the NTMX77AA card with faults is in the inactive unit. Make sure the LED labeled ACTIVE is OFF or observe the MAP display.

---

**If the NTMX77AA card with faults is in**      **Do**

active unit	step 5
inactive unit	step 9

- 5** Switch the processing activity (SWACT) to the inactive unit. To SWACT the unit, type

>SWACT  
and press the Enter key.

---

**If SWACT**      **Do**

cannot continue at this time	step 6
can continue at this time	step 7

- 6** Do not switch activity of the units. To reject the SWACT, type

>NO  
and press the Enter key.  
The system discontinues the SWACT.  
Return to step 5 during a period of low traffic.

## NTMX77 in an RSC (continued)

---

- 7 To confirm the system prompt, type  
**>YES**  
and press the Enter key.  
The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding to the next maintenance action.

---

If the message is	Do
SWACT passed	step 9
SWACT failed	step 8
SWACT refused by SWACT controller	step 8

---

- 8 Return to the Alarm Clearing Procedures in this manual to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step 1 of this procedure.

### **At the RCE or RSCE frame**

- 9 Put a sign on the active unit bearing the words *Active unit—Do not touch*.

### **At the MAP terminal**

- 10 Busy the inactive RCC unit. To busy the unit, type  
**>BSY INACTIVE**  
and press the Enter key.
- 11 Set the inactive unit to the ROM level. To set the unit to the ROM level, type  
**>PMRESET UNIT rcc\_unit\_no NORUN**  
and press the Enter key.

where

**rcc\_unit\_no**

is the number of the inactive RCC unit (0 or 1)

**NTMX77**  
**in an RSC** (continued)

**At the RCE or RSCE frame**

12



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

13 Your next step is based on whether the NTMX77 is in an RSC or RCC2.

If the NTMX77 is in an	Do
RCC	step 14
RCC2	step 16

14 Unseat the NT6X48 card in slots 06 and 07.

15 Unseat the NT6X72 card in slot 19.

Go to step 17.

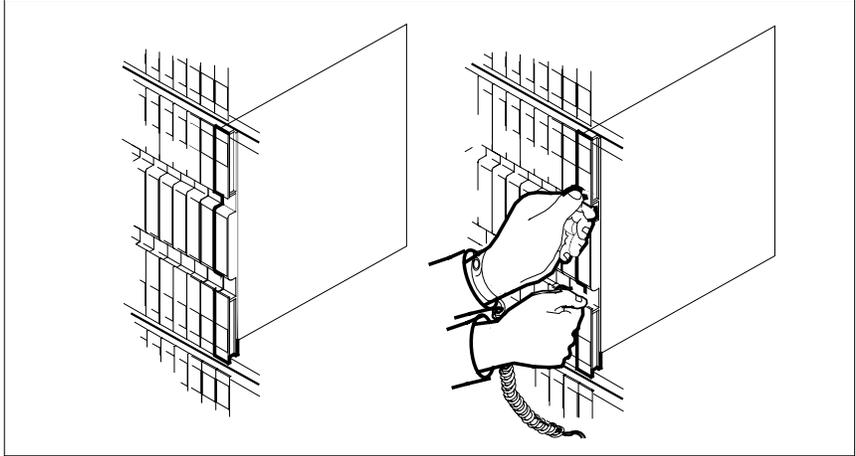
16 Unseat the NTMX73 and NTMX74 circuit cards.

17 Remove the NTMX77 card as shown in the following figures.

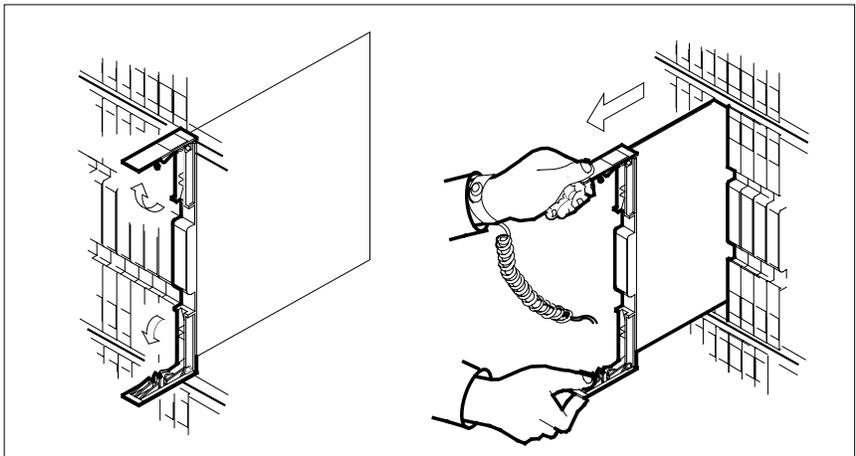
- a Locate the card to be removed on the appropriate shelf.

## NTMX77 in an RSC (continued)

---



- b** Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.

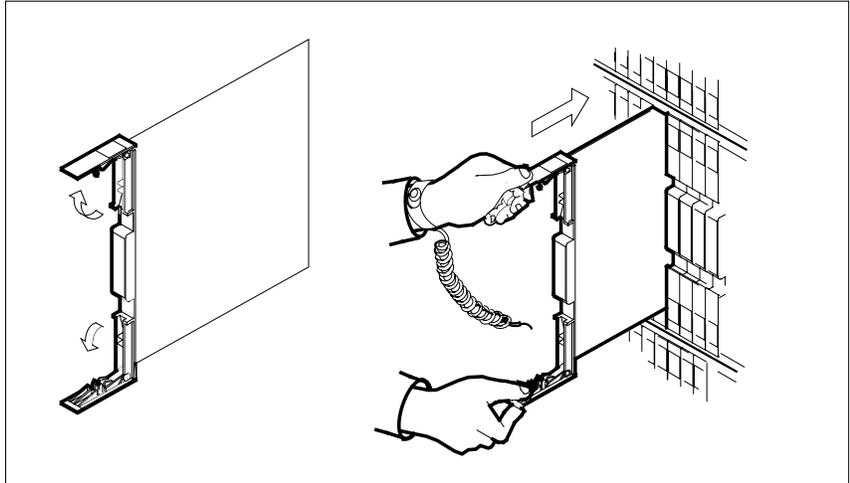


- c** Make sure the replacement card has the same PEC, including suffix, as the card you just removed. Also make sure the DIP switch settings on the replacement card match the settings of the card just removed.

**Note:** If the NTMX77 has DIP switch S1, set DIP switch S1 to XPM.

- 18** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Carefully slide the card into the shelf.

## NTMX77 in an RSC (continued)



19

**DANGER****Possible loss of P-side nodes**

Monitor the LEDs on the faceplate of the replacement NTMX77 circuit card.

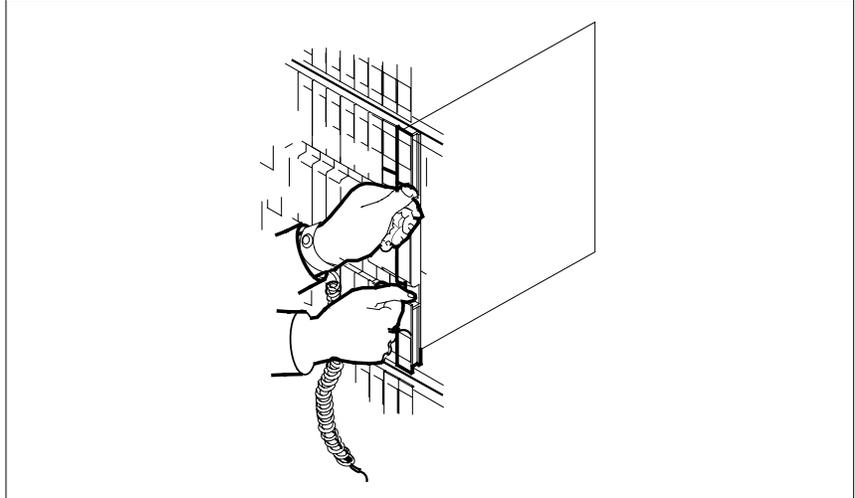
1. The INSV and ESA LEDs may come ON and must go OFF in less than four seconds.
2. The ACT LED may come ON and light for less than one second. If the ACT LED remains ON for more than one second, immediately remove the NTMX77 circuit card, obtain a new NTMX77 circuit card, and return to this step. If the NTMX77 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.

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.

## NTMX77 in an RSC (continued)

---



- 20** Your next step is based on whether the NTMX77 is in an RCC or RCC2.

---

<b>If the NTMX77 is in an</b>	<b>Do</b>
RCC	step 21
RCC2	step 23

---

- 21** Reseat the NT6X72 card in slot 19.  
**22** Reseat the NT6X48 card in slots 06 and 07.  
Go to step 24.  
**23** Reseat the NTMX73 and NTMX74 circuit cards.  
**24** 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 34
other	step 25

---

### **At the MAP terminal**

- 25** The peripheral/remote loader 16 card (NT7X05) allows local loading of RCC data which reduces recovery time. To check if the NT7X05 card is provisioned, type

**>QUERYPM FILES**

and press the Enter key.

*Example of a MAP display:*

**NTMX77**  
**in an RSC (continued)**

```

CM   MS   IOD   Net   PM   CCS   LNS   Trks   Ext   APPL
.    .    .    .    1RCC .    .    .    .    .

RCC          SysB   ManB   OffL   Cbsy   ISTb   InSv
0 Quit      PM      2       0       2       0       25
2 Post      RCC     1       0       0       0       1
3 ListSet
4           RCC     0 ISTb  Links_OOS: CSide 0, PSide 0
5 TRNSL_    Unit 0: Inact ManB
6 TST_      Unit 1: Act   InSv
7 BSY_
8 RTS_      QUERYPM files
9 OffL      Unit 0:
10 LoadPM_  NT7X05 load File: ESR05AY
11 Disp_    NT7X05 Image File: ESR05AY ]
12 Next_    NT7X05 Image File: ESR05AY ] ←
13 SwAct    CMR Load: CMR03A
14 QueryPM  Unit 1:
15          NT7X05 load File: ESR05AY
16 IRLINK   NT7X05 Image File: ESR05AY ] ←
17 Perform  CMR Load: CMR03A
18

```

NT7X05 image file\_name

**Note:** If the NT7X05 card is not provisioned, the MAP response is:  
NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 26
not provisioned	step 27

26



**DANGER**  
**Possible service interruption**  
The LOCAL LOADFILE option of the LOADPM command has a parameter of [<file> string]], if this file\_name parameter is used, the loadfile named in the parameter will be used which is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCC unit from the local loadfile. To load the inactive RCC2 unit from the local loadfile, type

>LOADPM UNIT unit\_no LOCAL LOADFILE

and press the Enter key.

where

**NTMX77**  
**in an RSC** (continued)

**rcc\_unit\_no**  
 is the number of the inactive RCC unit

	<b>If the load</b>	<b>Do</b>
	passed	step 28
	failed	step 27
<b>27</b>	To load the inactive RCC unit, type <b>&gt;LOADPMM INACTIVE</b> and press the Enter key.	
	<b>If</b>	<b>Do</b>
	load passes	step 28
	load fails	step 35
<b>28</b>	Query the XPM counters for the firmware load on the NTMX77. To query XPM counters, type <b>&gt;QUERYPM CNTRS</b> and press the Enter key. <i>Example of a MAP display:</i>	
	<pre>                     Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0                     Unit 0:                     Ram Load: ESR05AY                     EPROM Version: AB02                     EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03                     CMR LOAD: CMR03A                     UP:MX77AA                     Unit 1:                     Ram Load: ESR05AY                     EPROM Version: AB02                     EEPROM Load: Loadable: [MX77NG03] Executable: [MX77NG03]                     CMR LOAD: CMR03A                     UP:MX77AA                     </pre>	
	<b>If firmware is</b>	<b>Do</b>
	valid	step 31
	invalid	step 29
<b>29</b>	To load the NTMX77 firmware into the inactive unit, type <b>&gt;LOADFW INACTIVE</b>	

---

**NTMX77**  
**in an RSC (end)**

---

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 load	Do
passed	step 30
failed	step 35

- 30** To upgrade the firmware in the inactive unit, type  
>LOADFW INACTIVE UPGRADE  
and press the Enter key.

If the LOADFW UPGRADE	Do
passes	step 31
fails	step 35

- 31** Return the inactive RCC unit to service. To RTS the RCC unit, type  
>RTS INACTIVE  
and press the Enter key.

If the RTS	Do
passed	step 32
failed	step 35

- 32** Send any faulty cards for repair according to local procedure.

- 33** Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Go to step 36.

- 34** Return to the alarm clearing procedure that directed you to this procedure. At the point where a card list was produced, identify the next card on the list and go to the appropriate card replacement procedure for that card in this manual.

- 35** Get additional help in replacing this card by contacting operating company maintenance personnel.

- 36** You have correctly completed this procedure. Remove the sign from the active unit. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTMX77 in an RSC-M

---

### Application

Use this procedure to replace an NTMX77 circuit card in a Remote Switching Center Multi-access (RSC-M) main shelf.

*Note:* In this section, RSC-M is known as RCO2 in the examples. When software outputs messages to the MAP terminal, software does not differ between the two RCO2 types.

PEC	Suffixes	Name
NTMX77	AA	Unified Processor card

### Common procedures

Two common procedures are referenced in this section:

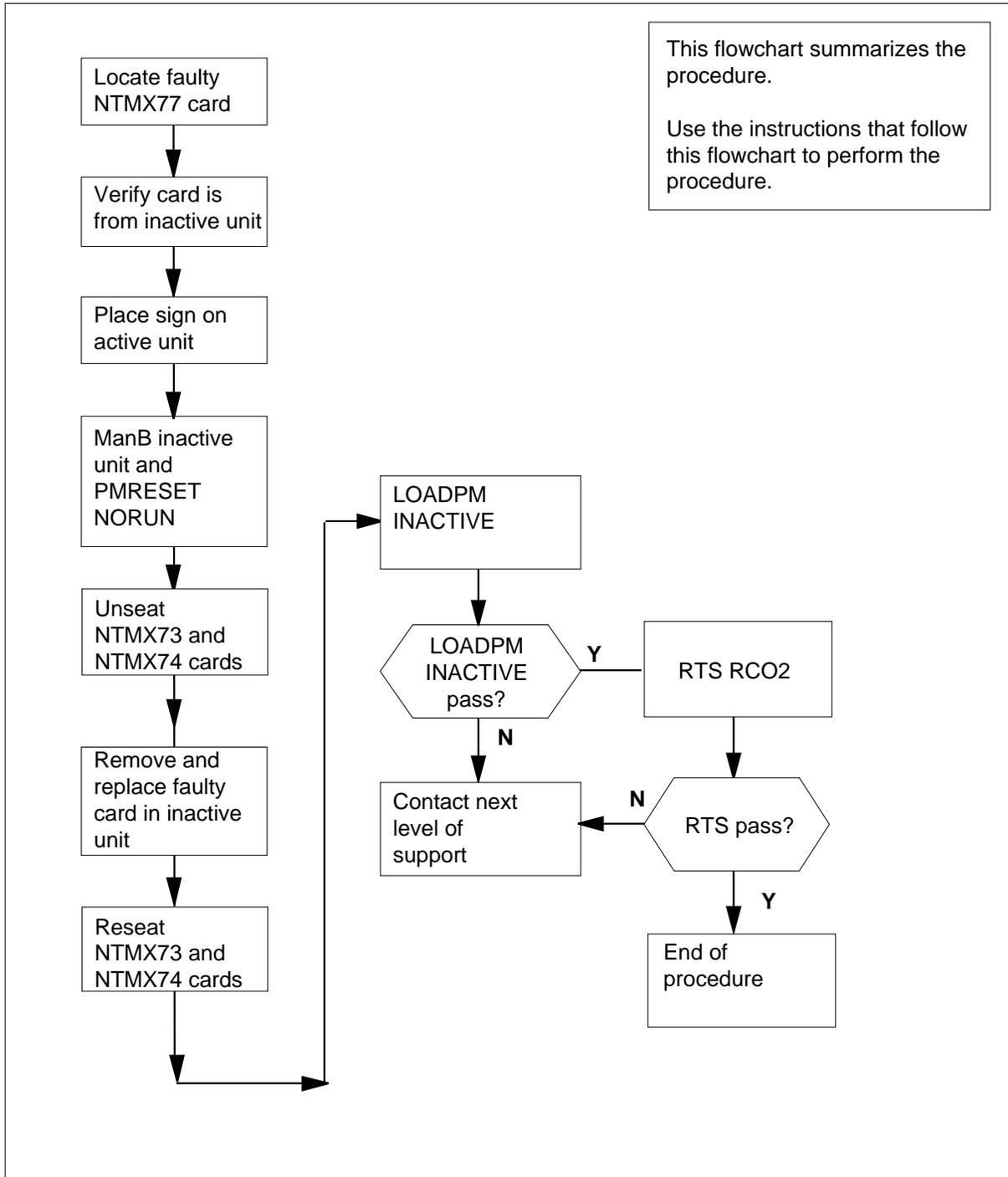
- “Replacing a card”
- “Returning a card”

### Action

This procedure is the procedure to replace the card. 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.

## NTMX77 in an RSC-M (continued)

### Summary of replacing an NTMX77 in an RSC-M



---

## NTMX77 in an RSC-M (continued)

---

### To replace an NTMX77 in an RSC-M

#### At the MAP display

- 1 Proceed only if one of the following conditions apply. The maintenance support group or a step in a maintenance procedure directs you to this card replacement procedure. Use the procedure to verify or accept cards.
- 2



#### **WARNING**

##### **Loss of service**

To replace a card in the RSC-M, make sure the unit in which you replace the card is *inactive* and the mate unit is *active*.

Obtain an NTMX77 replacement circuit card. Make sure the replacement circuit card contains the same product engineering code (PEC) and suffix as the circuit card that you remove.

#### At the MAP terminal

- 3 Make sure the current MAP display is at the peripheral module (PM) level. To post the RSC-M/RCO2, type

```
>MAPCI ;MTC ;PM ;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 that you post.

Example of a MAP response:

```
RCO2          SysB      ManB      OffL      Cbsy      ISTb      InSv
0 Quit      PM          0          0          2          0          25
2 Post_     RCO2        0          0          0          0          1
3 ListSet
4           RCO2      0 ISTb Links_OOS: CSide 1, PSide 1
5 TRNSL     Unit0:    Inact ISTb
6 TST       Unit1:    Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SwAct
14 QueryPM
15
16 IRLINK
17 Perform
18
```

## NTMX77 in an RSC-M (continued)

- 4 To determine the location of the RCO2 that contains the circuit card that you replace, type

>QUERYPM

and press the Enter key.

*Example of a MAP response:*

```
PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped:53 Loadname: KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
```

- 5 Determine the state of the RCO2 unit associated with the circuit card to replace.

If the state of the RCO2 unit	Do
is active	step 6
is inactive	step 8

- 6 To switch activity of the units, type

>SWACT

and press the Enter key.

*Example of a MAP response:*

```
RCO2 0 A Warm SwAct will be performed after
data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

If the system	Do
prompts you to confirm a warm SWACT	step 7
rejects the SWACT	step 24

- 7 To confirm the command, type

>YES

and press the Enter key.

**NTMX77**  
**in an RSC-M** (continued)

*Example of a MAP response:*

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb

RCO2 0      SwAct Passed
```

<b>If the MAP response</b>	<b>Do</b>
is SWACT passed	step 8
is other than listed here	step 23

- 8 A maintenance flag (Mtce) can appear. This flag indicates that maintenance tasks that the system initiates are in progress. Wait until the flag disappears from the status lines for both RCO2 units before you proceed to the next step.

**At the cabinet**

- 9 Place a sign on the active unit with the words *Active unit-Do not touch*. Do not attach this sign with magnets or tape.
- 10 To manually busy (ManB) the inactive unit, type

**>BSY INACTIVE**

and press the Enter key.

*Example of a MAP response:*

```
RCO2      0 ISTb Links_OOS: CSide 0 , PSide 1
Unit0:    Inact ManB
Unit1:    Act   ISTb
bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

<b>If the BSY command</b>	<b>Do</b>
passed	step 11
failed	step 23

- 11 To reset the inactive RCO2 unit, type  
**>PMRESET UNIT unit\_no NORUN**  
and press the Enter key.

*where*

**unit\_no**  
is the rco2 unit number (0 or 1)

## NTMX77 in an RSC-M (continued)

**At the shelf**

12

**WARNING****Static electricity damage**

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

Locate the circuit card to replace.

**Note:** NTMX77 circuit cards reside in slot 3 of unit 0, and slot 25 of unit 1.

13 Unseat the NTMX73 and NTMX74 circuit cards.

14 To replace the card, use the common "Replacing a card" procedure in this document. Complete the procedure and return to this point. Make sure the replacement card has the same PEC, including suffix, as the card you just removed.

**Note:** If the NTMX77 card has a DIP switch, set DIP switch S1 to CPM.

15 Reseat the NTMX73 and NTMX74 circuit cards.

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

If a maintenance procedure	Do
directed you to this procedure	step 17
did not direct you to this procedure	step 18

17 Remove the sign from the active unit. Return to the maintenance procedure that sent you to this procedure. Continue as directed.

**At the MAP terminal**

18 To load the inactive unit, type  
>LOADPDM INACTIVE  
and press the Enter key.

If the LOADPDM command	Do
failed	step 23
passed	step 19

19 To return the inactive unit to service, type  
>RTS INACTIVE

**NTMX77**  
**in an RSC-M** (end)

---

and press the Enter key.

---

<b>If the RTS command</b>	<b>Do</b>
passed	step 20
failed	step 23

---

- 20** Remove the sign from the active unit.
- 21** Go to the common "Returning a card" procedure in this document.
- 22** This procedure is complete.
- 23** For additional help, contact the next level of support.
- 24** For additional help with switch of activity, contact the next level of support.

**Note:** If the system recommends the use of the SWACT command with the FORCE option, consult office personnel. Office personnel can advise you to not use the FORCE option.

**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2**

---

**Application**

Use this procedure to replace an NTMX77 card in an RSC-S RCC2.

PEC	Suffixes	Name
NTMX77	AA	Unified Processor

**Common procedures**

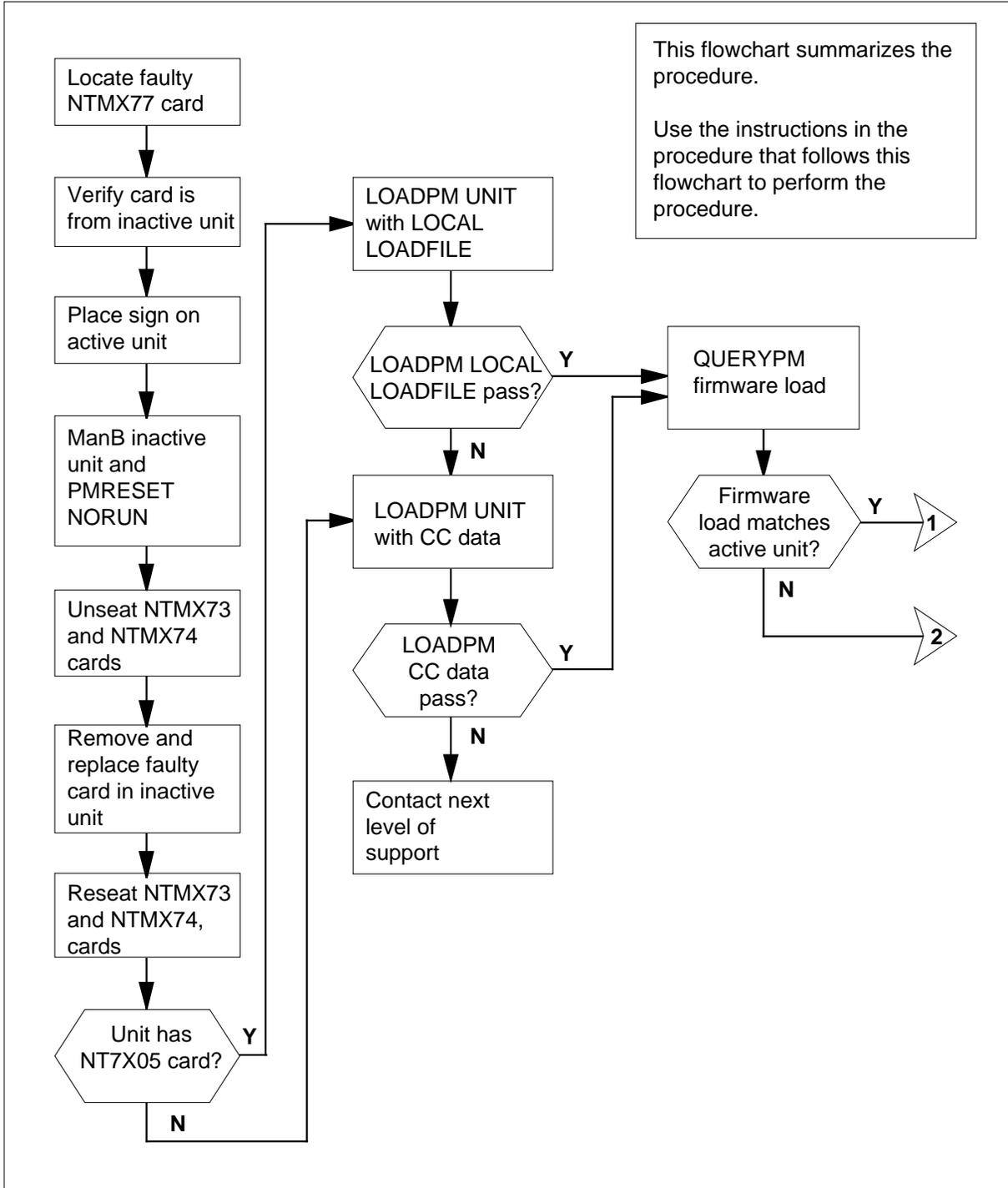
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

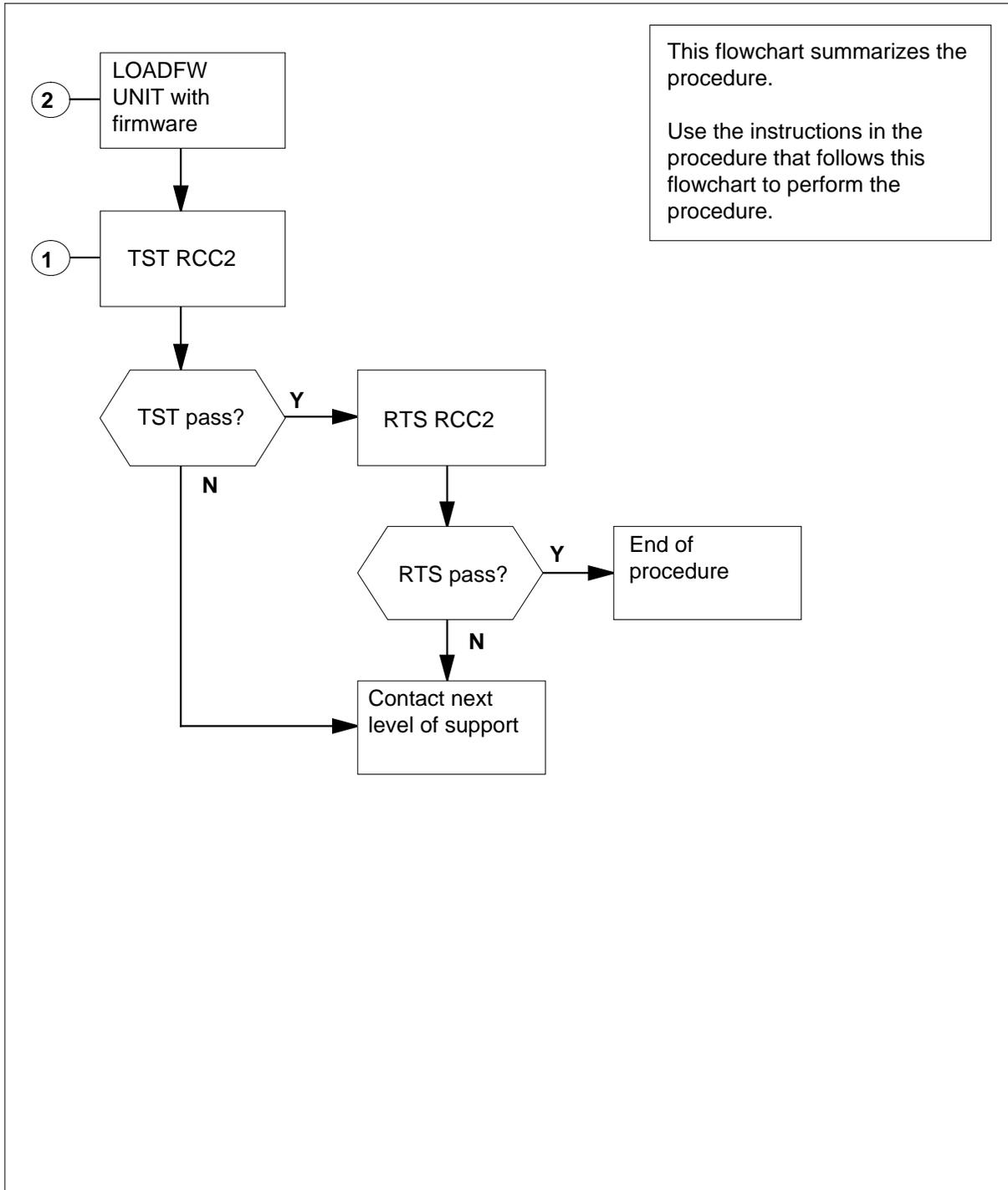
# NTMX77 in an RSC-S (DS-1) Model A RCC2 (continued)

## Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (1 of 2)



**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

**Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (2 of 2)**



## NTMX77 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### Replacing an NTMX77 card in RSC-S RCC2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, make sure the unit in which the card is being replaced is *inactive* and the mate unit is *active*.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal and post the RCC2. To post the RCC2, type

```
>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no
```

and press the Enter key.

where

**rcc2\_no**

is the number of the RCC2 to be busied (0 or 1)

*Example of a MAP display:*

**NTMX77**

**in an RSC-S (DS-1) Model A RCC2 (continued)**

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      APPL
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCC2         0          0          0          0          1          1
3 ListSet
4           RCC2    0 ISTb  Links_OOS: CSide 0, PSide 0
5 TRNSL_   Unit0:      Inact SysB
6 TST_     Unit1:      Act  InSv
7 BSY_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SwAct
14 QueryPM
15
16 IRLINK
17 Perform
18
    
```

- 4** Check that the NTMX77AA card with faults is in the inactive unit. Make sure the LED labeled ACTIVE is OFF or observe the MAP display.

---

**If the NTMX77AA card with faults is in**      **Do**

active unit	step 5
inactive unit	step 9

- 5** Switch the processing activity (SWACT) to the inactive unit. To SWACT the unit, type

>SWACT  
and press the Enter key.

---

**If SWACT**      **Do**

cannot continue now	step 6
can continue now	step 7

- 6** Do not switch activity of the units. To reject the SWACT, type

>NO  
and press the Enter key.  
The system discontinues the SWACT.  
Return to step 5 during a period of low traffic.

## NTMX77

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

- 7 To confirm the system prompt, type  
>YES  
and press the Enter key.  
The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before continuing to the next maintenance action.

---

If the message is	Do
SWACT passed	step 9
SWACT failed	step 8
SWACT not accepted by SWACT controller	step 8

---

- 8 Return to the Alarm Clearing Procedures in this manual to clear the alarm condition on the inactive unit. When the alarm clears, return to step 1 of this procedure.

#### **At the RCE frame**

- 9 Place a sign on the active unit with the words *Active unit—Do not touch*. This sign must not be attached by magnets or tape.

#### **At the MAP terminal**

- 10 Busy the inactive PM unit. To busy the unit, type  
>BSY INACTIVE  
and press the Enter key.
- 11 Set the inactive unit to the ROM level. To set the unit to the ROM level, type  
>PMRESET UNIT rcc2\_unit\_no NORUN  
and press the Enter key.  
*where*  
**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit (0 or 1)

---

**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

---

**At the RCE frame**

12

**DANGER****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

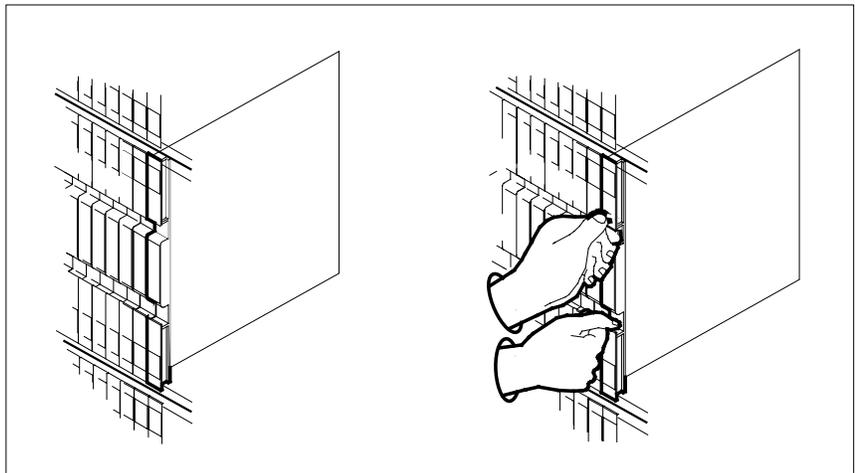
**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

- 13 Unseat the NTMX73 and NTMX74 circuit cards.
- 14 Remove the NTMX77 card as shown in the following figures.
  - a Locate the card to be removed on the appropriate shelf.

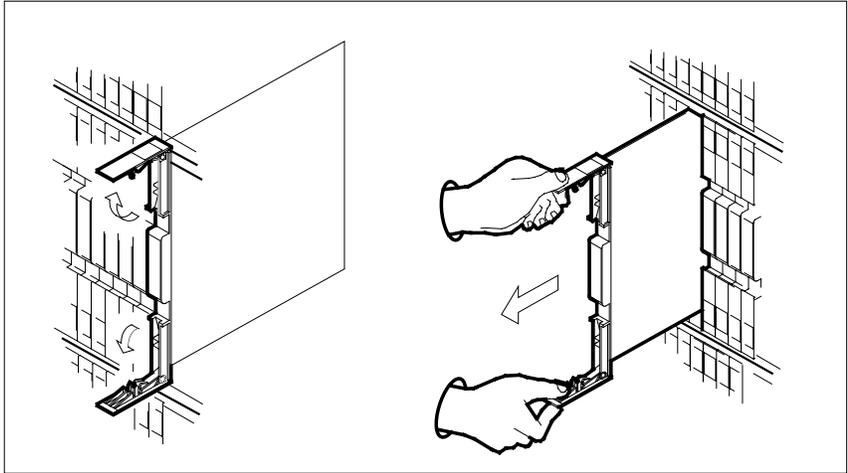


- b Open the locking levers on the card to be replaced. Carefully pull the card toward you until it clears the shelf.

---

## NTMX77 in an RSC-S (DS-1) Model A RCC2 (continued)

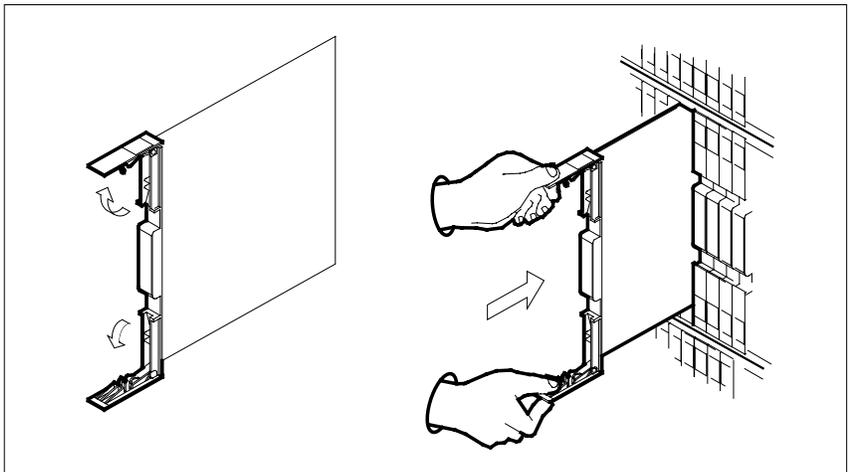
---



- c Make sure the replacement card has the same PEC, including suffix, as the card you just removed. Also make sure the DIP switch settings on the replacement card match the settings of the card just removed.

**Note:** If the NTMX77 card has a DIP switch, set DIP switch S1 to CPM.

- 15 Open the locking levers on the replacement card.
- a Align the card with the slots in the shelf.
  - b Carefully slide the card into the shelf.



**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2 (continued)**

16



**DANGER**

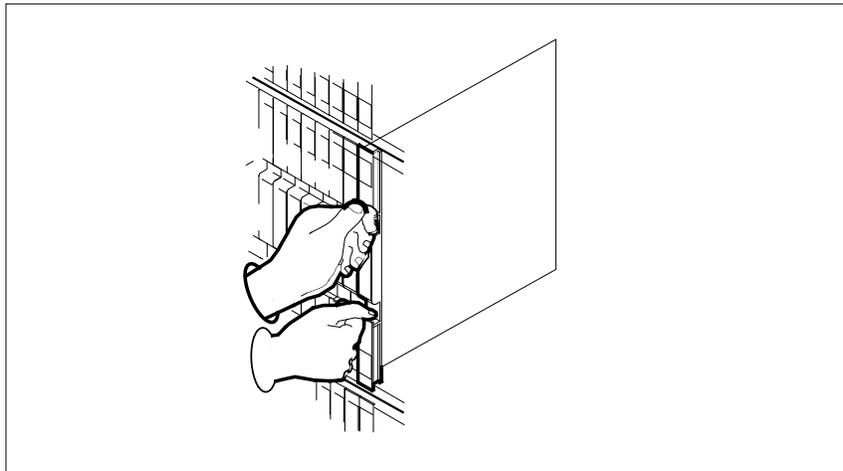
**Possible loss of P-side nodes**

Monitor LEDs on the faceplate of the replacement NTMX77 when installing.

1. INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 14c. with a new NTMX77 card. If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which results in the loss of P-side nodes.

Seat and lock the card.

- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate to make sure the card is fully seated in the shelf.
- b Close the locking levers.



**17** Reseat the NTMX73 and NTMX74 circuit cards..

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

If you entered this procedure from	Do
an alarm clearing procedure	step 28

**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

If you entered this procedure from	Do
other	step 19

**At the MAP terminal**

**19** The peripheral/remote loader-16 card (NT7X05) allows local loading of RCC2 data, which reduces recovery time. To check if the NT7X05 card is provisioned, type

**>QUERYPM FILES**

and press the Enter key.

*Example of a MAP display:*

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.    .    .    .    1RCC2  .    .    .    .    .
      *C*

RCC2          SysB  ManB  OffL  Cbsy  ISTb  InSv
0 Quit      PM    2    0    2    0    25
2 Post     RCC2  1    0    0    1    1
3 ListSet

4          RCC2  0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_   Unit 0: Inact ManB
6 TST_     Unit 1: Act InSv
7 BSY_
8 RTS_     QUERYPM files
9 OffL     Unit 0:
10 LoadPM_ NT7X05 load File: CRI05AW
11 Disp_   NT7X05 Image File:
12 Next_   CMR Load: CMR03A
13 SwAct   Unit 1:
14 QueryPM NT7X05 load File: [CRI05AW]
15         NT7X05 Image File:
16 IRLINK  CMR Load: CMR03A
17 Perform
18

```

(NT7X05 load file name)

**Note:** If the NT7X05 card is not provisioned, the MAP response is:  
NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 20
not provisioned	step 21

## NTMX77

### in an RSC-S (DS-1) Model A RCC2 (continued)

20

**DANGER****Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCC2 unit from the local loadfile. To load the inactive RCC2 unit from the local loadfile, type

```
>LOADPDM UNIT rcc2_unit_no LOCAL LOADFILE
```

and press the Enter key.

where

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

If the load	Do
passed	step 22
failed	step 21

**21** To load the inactive RCC2 unit, type

```
>LOADPDM INACTIVE
```

and press the Enter key.

If load	Do
passed	step 22
failed	step 29

**22** Query the XPM counters for the firmware load on the NTMX77. To query XPM counters, type

```
>QUERYPM CNTRS
```

and press the Enter key.

*Example of a MAP display:*

**NTMX77**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0

Unit 0:

Ram Load: CRI05AW

EPRom Version: AB02

EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03

CMR Load: CMR03A

UP:MX77AA

Unit 1:

Ram Load: CRI05AW

EPRom Version: AB02

EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03

CMR Load: CMR03A

UP:MX77AA

(NTMX77 firmware load name)

If firmware is	Do
valid	step 25
invalid	step 23

**23** To load the firmware on the inactive unit type  
**>LOADFW INACTIVE**  
 and press the Enter key.

If LOADFW	Do
passed	step 24
failed	step 29

**24** To upgrade the firmware on the inactive unit, type  
**>LOADFW INACTIVE UPGRADE**  
 and press the Enter key.

If LOADFW UPGRADE	Do
passed	step 25
failed	step 29

**25** Return the inactive RCC2 unit to service. To RTS the RCC2 unit, type  
**>RTS INACTIVE**

---

**NTMX77**

**in an RSC-S (DS-1) Model A RCC2 (end)**

---

and press the Enter key.

<b>If RTS</b>	<b>Do</b>
passed	step 26
failed	step 29

- 26** Send any cards with faults for repair according to local procedure.
- 27** Record the following information in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 30.
- 28** Return to the alarm clearing procedure that directed you to this procedure. At the point where a card list was produced, identify the next card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 29** Get additional help in replacing this card by contacting operating company maintenance personnel.
- 30** You have correctly completed this procedure. Remove the sign from the active unit. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX77 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace an NTMX77 card in an RSC-S RCC2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX77	AA	Unified Processor

### **Common procedures**

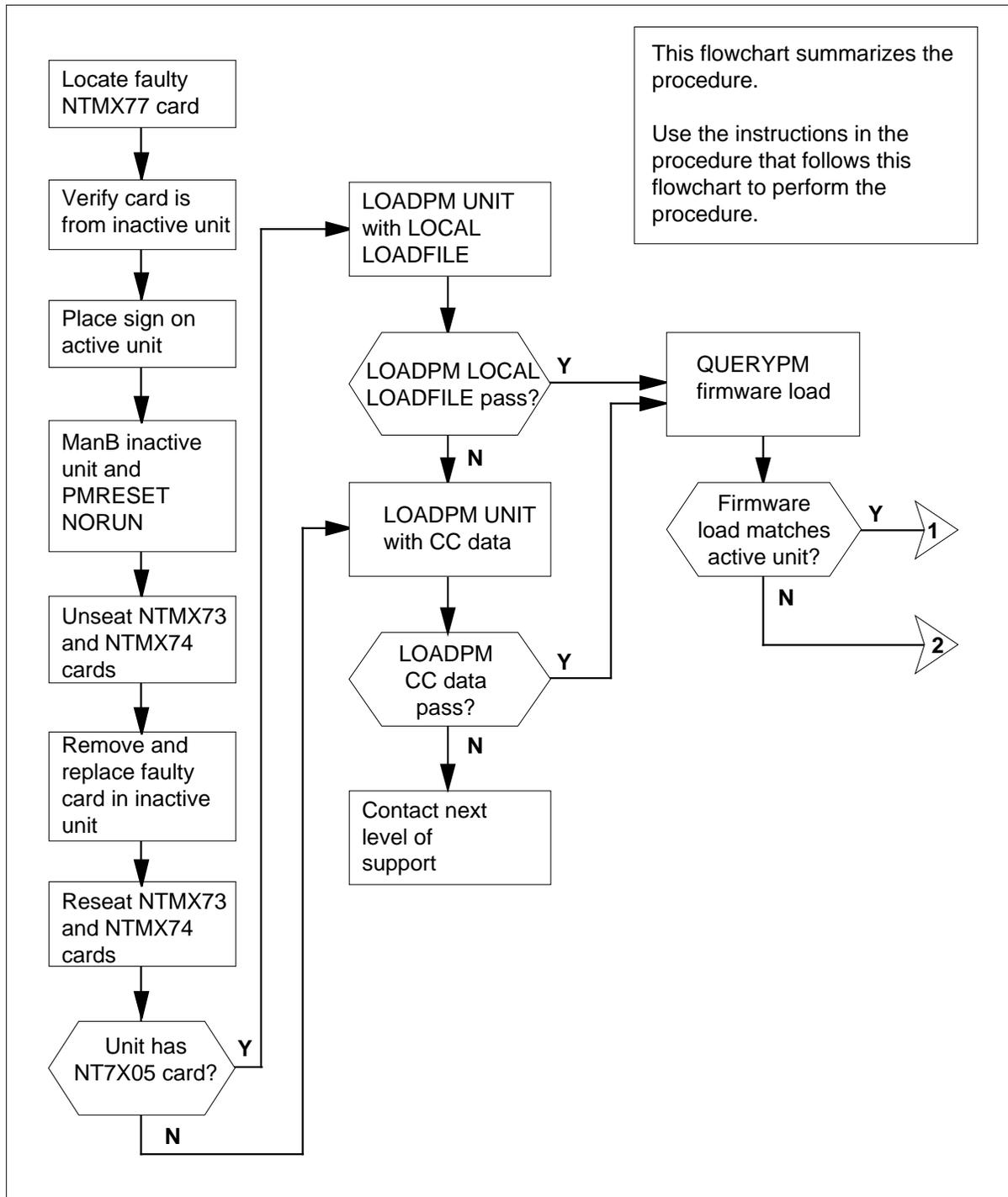
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

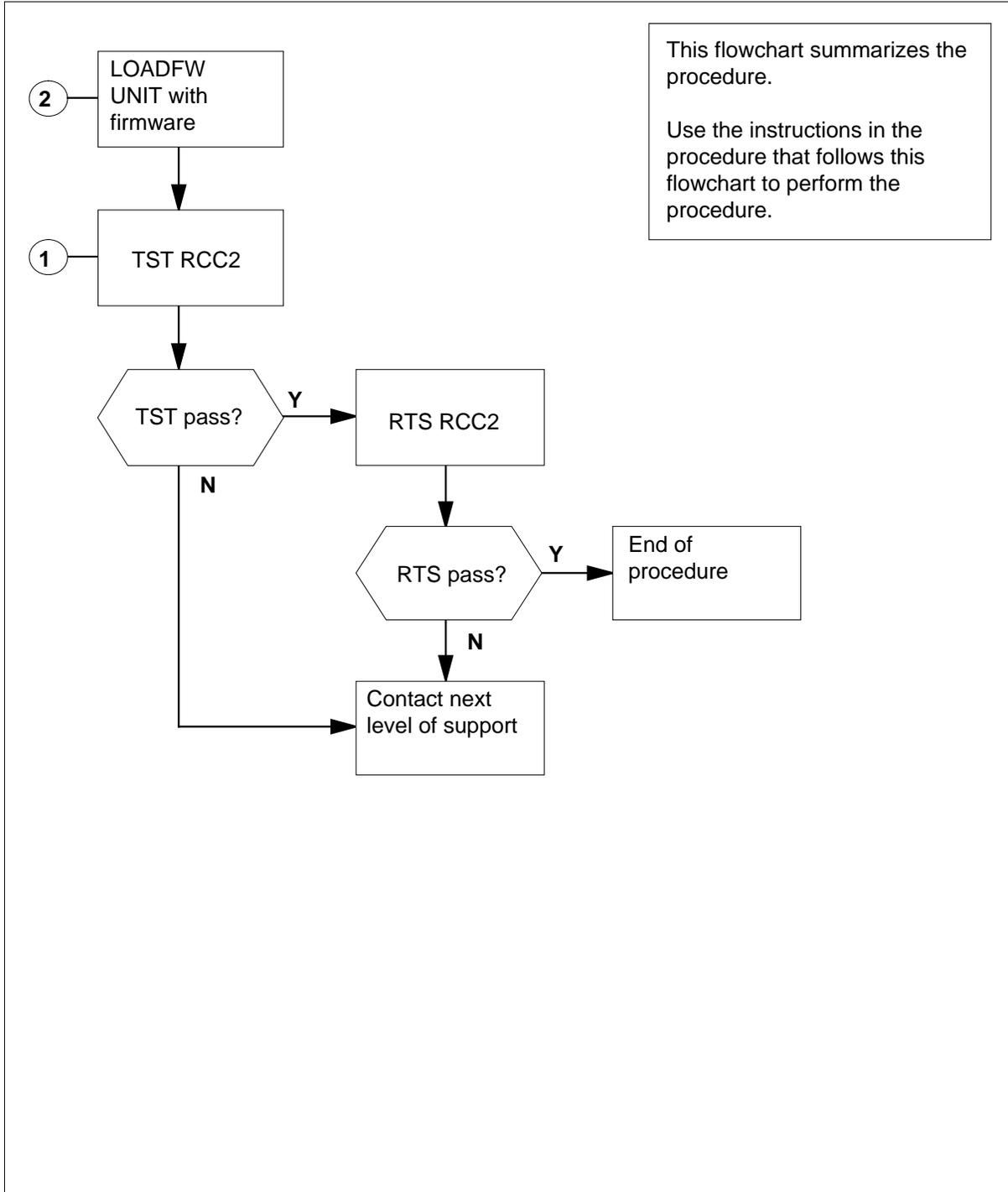
## NTMX77 in an RSC-S (DS-1) Model B RCC2 (continued)

### Summary of card replacement procedure for an NTMX77 card in RSC-S RCC2 (1 of 2)



## NTMX77 in an RSC-S (DS-1) Model B RCC2 (continued)

### Summary of card replacement procedure for an NTMX77 card in RSC-S RCC2 (2 of 2)



---

## NTMX77

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

#### Replacing an NTMX77 card in RSC-S RCC2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCC2, make sure the unit in which the card is being replaced is *inactive* and the mate unit is *active*.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

##### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal and post the RCC2. To post the RCC2, type

```
>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no
```

and press the Enter key.

where

**rcc2\_no**

is the number of the RCC2 to be busied (0 or 1)

*Example of a MAP display:*

**NTMX77**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      APPL
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCC2        0          0          0          0          1          1
3 ListSet
4           RCC2    0 ISTb  Links_OOS:  CSide  0, PSide  0
5 TRNSL_   Unit0:      Inact SysB
6 TST_     Unit1:      Act  InSv
7 BSY_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SwAct
14 QueryPM
15
16 IRLINK
17 Perform
18
    
```

- 4 Check that the NTMX77AA card with faults is in the inactive unit. Make sure the LED labeled ACTIVE is OFF or observe the MAP display.

---

**If the NTMX77AA card with faults is in active unit Do**

active unit	step 5
inactive unit	step 9

- 5 Switch the processing activity (SWACT) to the inactive unit. To SWACT the unit, type

>SWACT  
 and press the Enter key.

---

**If SWACT Do**

cannot continue at this time	step 6
can continue at this time	step 7

- 6 Do not switch activity of the units. To reject the SWACT, type

>NO  
 and press the Enter key.  
 The system discontinues the SWACT.  
 Return to step 5 during a period of low traffic.

---

**NTMX77**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

- 7** To confirm the system prompt, type  
**>YES**  
 and press the Enter key.  
 The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding to the next maintenance action.

If the message is	Do
SWACT passed	step 9
SWACT failed	step 8
SWACT refused by SWACT controller	step 8

- 8** Return to the Alarm Clearing Procedures in this manual to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step 1 of this procedure.

**At the RCE frame**

- 9** Place a sign on the active unit with the words *Active unit—Do not touch*. This sign must not be attached by magnets or tape.

**At the MAP terminal**

- 10** Busy the inactive PM unit. To busy the unit, type  
**>BSY INACTIVE**  
 and press the Enter key.
- 11** Set the inactive unit to the ROM level. To set the unit to the ROM level, type  
**>PMRESET UNIT rcc2\_unit\_no NORUN**  
 and press the Enter key.  
*where*  
**rcc2\_unit\_no**  
 is the number of the inactive RCC2 unit (0 or 1)

## NTMX77 in an RSC-S (DS-1) Model B RCC2 (continued)

---

*At the RCE frame*

12



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.



**DANGER**

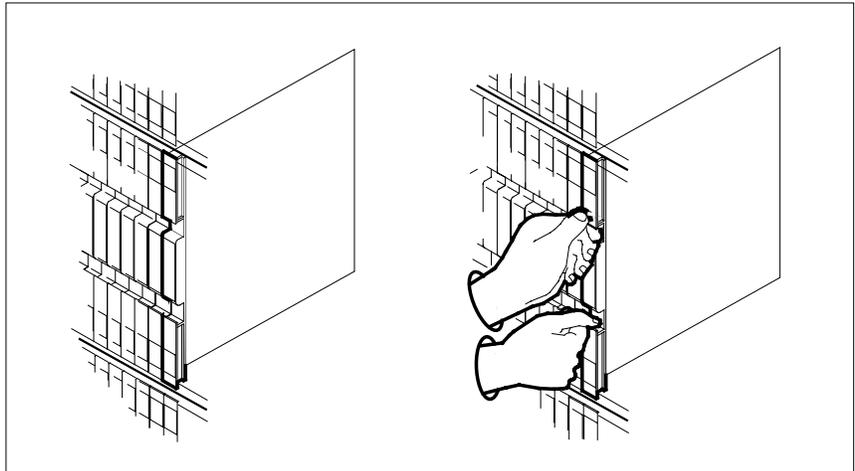
**Equipment damage**

Take the following precautions when removing or inserting a card:

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

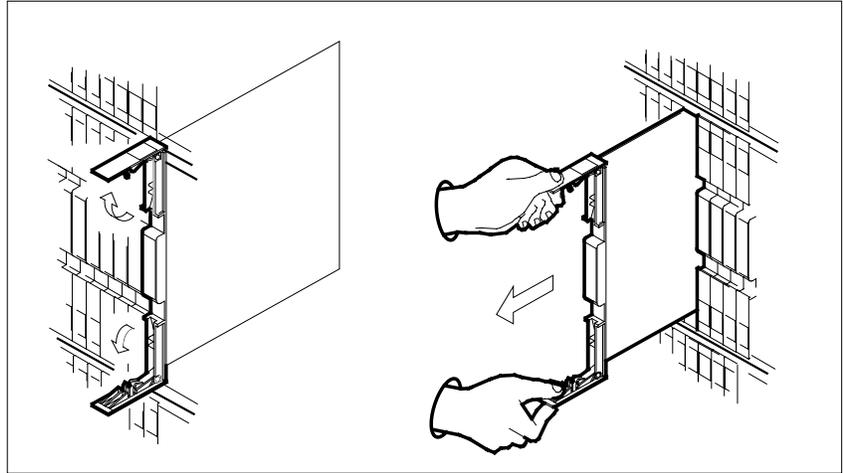
Put on a wrist strap.

- 13 Unseat the NTMX73 and NTMX74 circuit cards.
- 14 Remove the NTMX77 card as shown in the following figures.
  - 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 toward you until it clears the shelf.

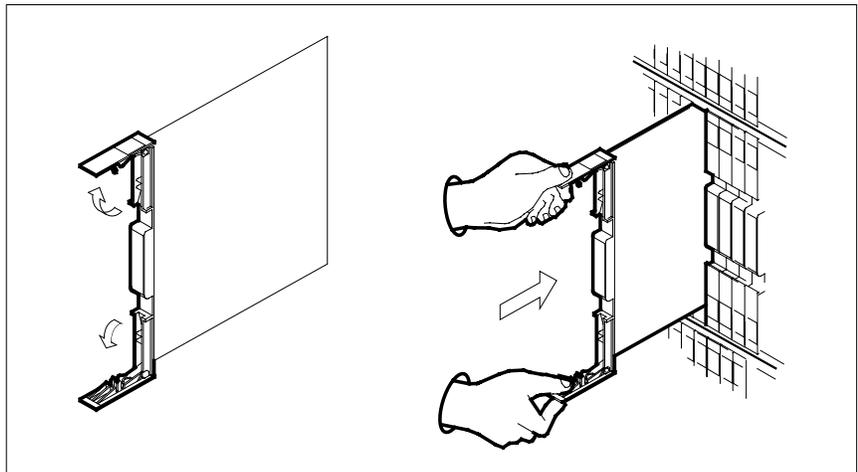
**NTMX77**  
**in an RSC-S (DS-1) Model B RCC2 (continued)**



- c Make sure the replacement card has the same PEC, including suffix, as the card you just removed. Also make sure the DIP switch settings on the replacement card match the settings of the card just removed.

**Note:** If the NTMX77 card has a DIP switch, set DIP switch S1 to CPM.

- 15 Open the locking levers on the replacement card.
  - a Align the card with the slots in the shelf.
  - b Gently slide the card into the shelf.



**NTMX77**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

16



**DANGER**

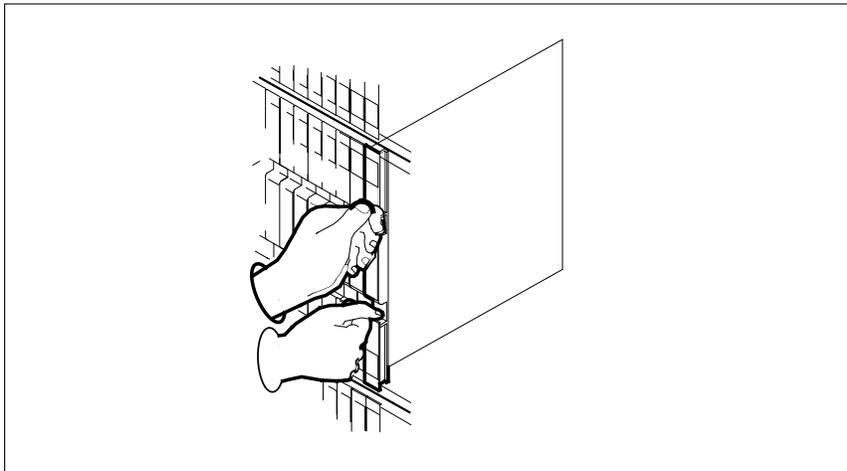
**Possible loss of P-side nodes**

Monitor LEDs on the faceplate of the replacement NTMX77 when installing.

1. INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 14c with a new NTMX77 card. If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which results in the loss of P-side nodes.

Seat and lock the card.

- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate to make sure the card is fully seated in the shelf.
- b Close the locking levers.



17 Reseat the NTMX73 and NTMX74 circuit cards.

18 Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
an alarm clearing procedure	step 28

## NTMX77

### in an RSC-S (DS-1) Model B RCC2 (continued)

If you entered this procedure from	Do
other	step 19

#### At the MAP terminal

- 19** The peripheralremote loader-16 card (NT7X05) allows local loading of RCC2 data, which reduces recovery time. To check if the NT7X05 card is provisioned, type

**>QUERYPM FILES**

and press the Enter key.

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      APPL
.       .       .       .       1RCC2   .       .       .       .       .
          *C*

RCC2          SysB      ManB      OffL      Cbsy      ISTb      InSv
0 Quit        PM          2          0          2          0          25
2 Post        RCC2       1          0          0          1          1
3 ListSet
4             RCC2       0 ISTb  Links_OOS: CSide 0, PSide 0
5 TRNSL_     Unit 0:  Inact ManB
6 TST_       Unit 1:   Act InSv
7 BSY_
8 RTS_       QUERYPM files
9 OffL       Unit 0:
10 LoadPM_   NT7X05 load File: CRI05AW
11 Disp_     NT7X05 Image File:
12 Next_     CMR Load: CMR03A
13 SwAct     Unit 1:
14 QueryPM   NT7X05 load File: [CRI05AW] ←
15           NT7X05 Image File:
16 IRLINK    CMR Load: CMR03A
17 Perform
18

```

*(NT7X05 load file name)*

**Note:** If the NT7X05 card is not provisioned, the MAP response is:  
NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 20
not provisioned	step 21

## NTMX77 in an RSC-S (DS-1) Model B RCC2 (continued)

20



**DANGER**

**Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCC2 unit from the local loadfile. To load the inactive RCC2 unit from the local loadfile, type

**>LOADPDM UNIT rcc2\_unit\_no LOCAL LOADFILE**

and press the Enter key.

*where*

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

**If the load**

**Do**

passed

step 22

failed

step 21

**21** To load the inactive RCC2 unit, type

**>LOADPDM INACTIVE**

and press the Enter key.

**If load**

**Do**

passed

step 22

failed

step 29

**22** Query the XPM counters for the firmware load on the NTMX77. To query the XPM counters, type

**>QUERYPM CNTRS**

and press the Enter key.

*Example of a MAP response*



**NTMX77**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

and press the Enter key.

<b>If RTS</b>	<b>Do</b>
passed	step 26
failed	step 29

- 26** Send any cards with faults for repair according to local procedure.
- 27** Record the following information in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 30.
- 28** Return to the alarm clearing procedure that directed you to this procedure. At the point where a card list was produced, identify the next card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 29** Get additional help in replacing this card by contacting operating company maintenance personnel.
- 30** You have correctly completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX77**  
**in an RSC-S (PCM-30) Model A RCO2**

---

**Application**

Use this procedure to replace an NTMX77 card in an RSC-S RCO2.

PEC	Suffixes	Name
NTMX77	AA	Unified Processor

**Common procedures**

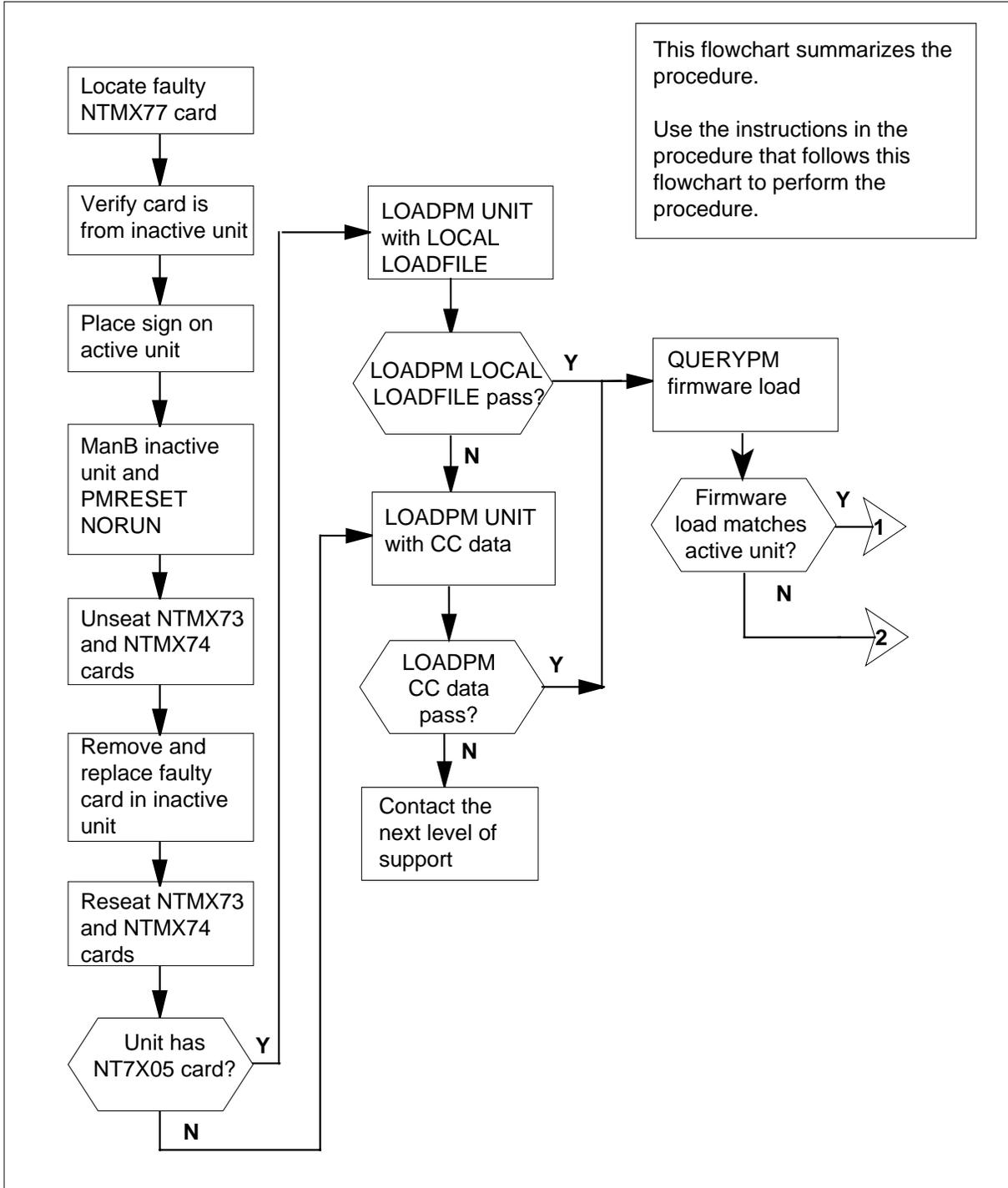
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

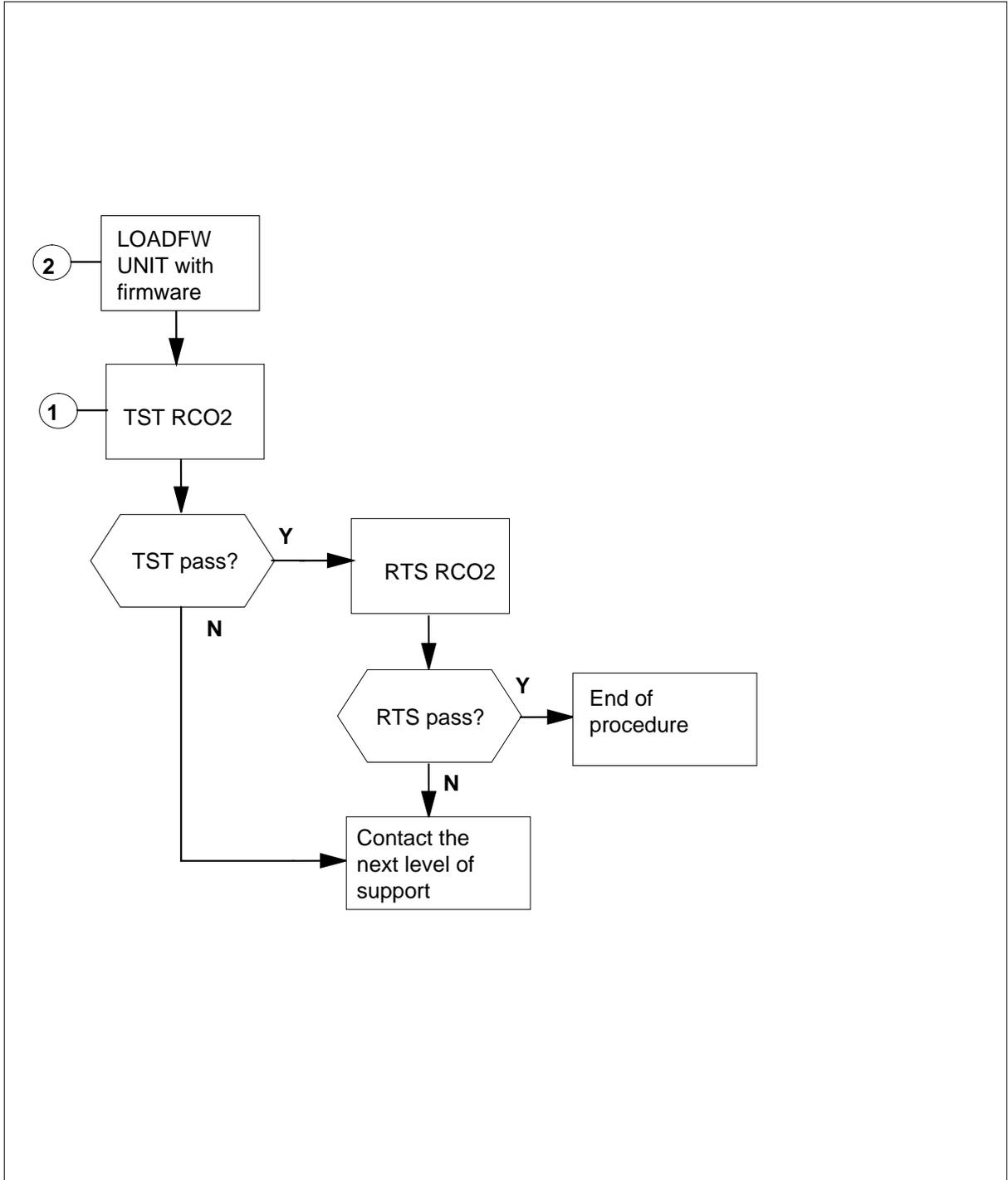
**NTMX77**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

**Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (1 of 2)**



## NTMX77 in an RSC-S (PCM-30) Model A RCO2 (continued)

### Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (2 of 2)



## NTMX77 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### Replacing an NTMX77 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, make sure the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal and post the RCO2. To post the RCO2, type

```
>MAPCI ;MTC ;PM ;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 to be busied (0 or 1)

*Example of a MAP display:*

## NTMX77

### in an RSC-S (PCM-30) Model A RCO2 (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0       0       2       0       2       25
2 Post_    RCO2    0       0       0       0       1       1
3 ListSet
4          RCO2    0 ISTb  Links_OOS:  CSide  1, 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
18

```

- 4 Check that the NTMX77AA card with faults is in the inactive unit. Make sure the LED labeled ACTIVE is OFF or observe the MAP display.

---

<b>If the NTMX77AA card with faults is in</b>	<b>Do</b>
---	-----------

---

active unit	step 5
-------------	--------

inactive unit	step 9
---------------	--------

---

- 5 Switch the processing activity (SWACT) to the inactive unit. To SWACT the unit, type

>SWACT

and press the Enter key.

---

<b>If SWACT</b>	<b>Do</b>
-----------------	-----------

---

cannot continue now	step 6
---------------------	--------

can continue now	step 7
------------------	--------

---

- 6 Do not switch activity of the units. To reject the SWACT, type

>NO

and press the Enter key.

The system discontinues the SWACT.

## NTMX77

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

- 7 Return to step 5 during a period of low traffic.
- To confirm the system prompt, type  
**>YES**  
and press the Enter key.
- The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before continuing to the next maintenance action.

---

If the message is	Do
SWACT passed	step 9
SWACT failed	step 8
SWACT not accepted by SWACT controller	step 8

---

- 8 Return to the Alarm Clearing Procedures in this manual to clear the alarm condition on the inactive unit. When the alarm clears, return to step 1 of this procedure.

#### **At the RCE frame**

- 9 Place a sign on the active unit with the words *Active unit—Do not touch*. This sign must not be attached by magnets or tape.

#### **At the MAP terminal**

- 10 Busy the inactive PM unit. To busy the unit, type  
**>BSY INACTIVE**  
and press the Enter key.
- 11 Set the inactive unit to the ROM level. To set the unit to the ROM level, type  
**>PMRESET UNIT rco2\_unit\_no NORUN**  
and press the Enter key.
- where
- rco2\_unit\_no**  
is the number of the inactive RCO2 unit (0 or 1)

---

**NTMX77**  
**in an RSC-S (PCM-30) Model A RCO2 (continued)**

---

**At the RCE frame**

12

**DANGER****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

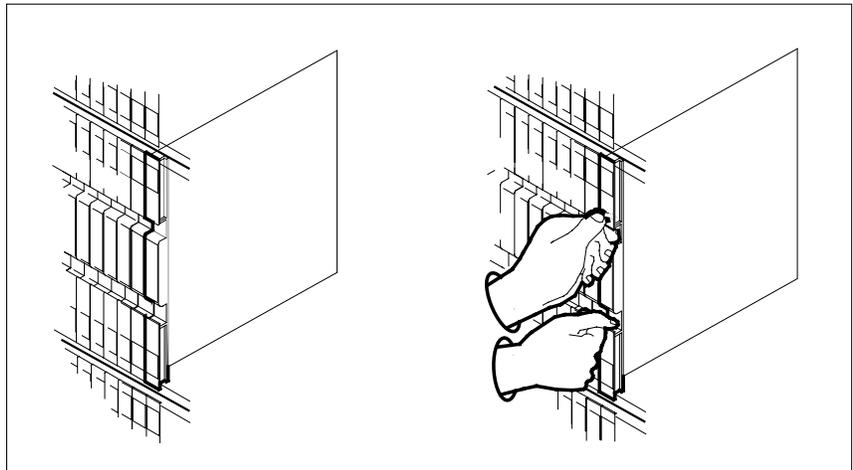
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Put on a wrist strap.

**13** Unseat the NTMX73 and NTMX74 circuit cards..

**14** Remove the NTMX77 card as shown in the following figures.

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

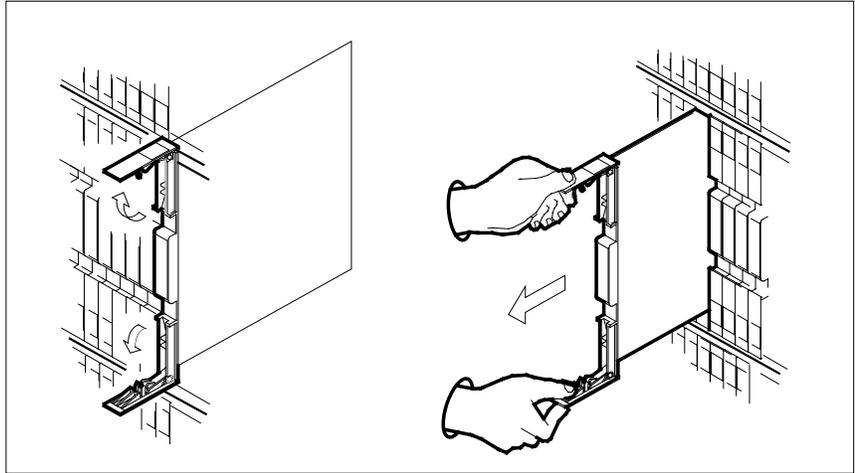


**b** Open the locking levers on the card to be replaced. Carefully pull the card toward you until it clears the shelf.

---

## NTMX77 in an RSC-S (PCM-30) Model A RCO2 (continued)

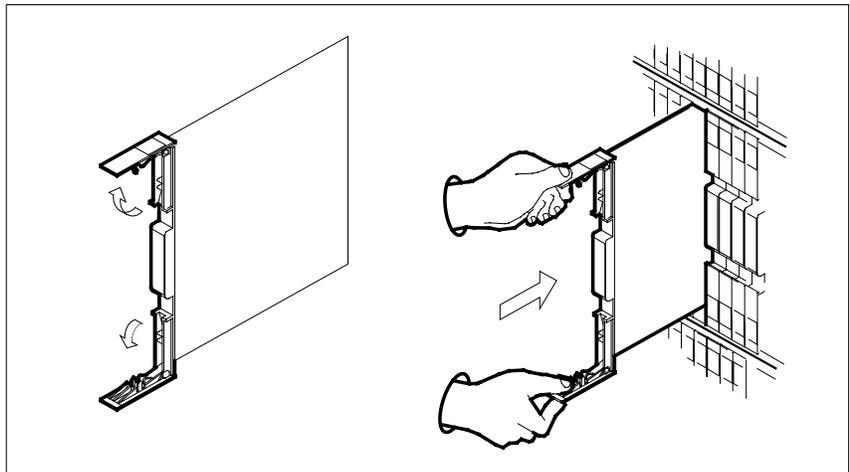
---



- c Make sure the replacement card has the same PEC, including suffix, as the card you just removed. Also make sure the DIP switch settings on the replacement card match the settings of the card just removed.

**Note:** If the NTMX77 circuit card has a DIP switch, set DIP switch S1 to CPM.

- 15 Open the locking levers on the replacement card.
- a Align the card with the slots in the shelf.
  - b Carefully slide the card into the shelf.



**NTMX77**

**in an RSC-S (PCM-30) Model A RCO2 (continued)**

16



**DANGER**

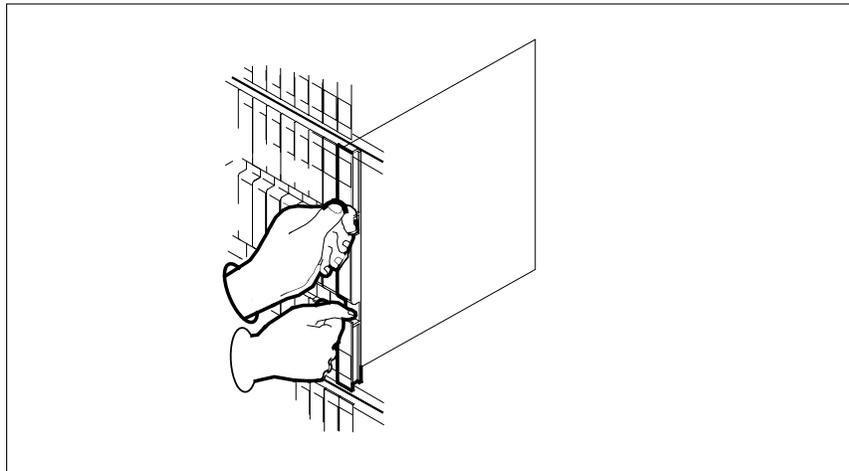
**Possible loss of P-side nodes**

Monitor the LEDs on the faceplate of the replacement NTMX77 when installing.

1. The INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 14 c with a new NTMX77 card. If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which results in the loss of P-side nodes.

Seat and lock the card.

- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate to make sure the card is fully seated in the shelf.
- b Close the locking levers.



**17** Reseat the NTMX73 and NTMX74 circuit cards..

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

If you entered this procedure from	Do
an alarm clearing procedure	step 28

## NTMX77

### in an RSC-S (PCM-30) Model A RCO2 (continued)

If you entered this procedure from	Do
other	step 19

**At the MAP terminal**

- 19** The peripheral/remote loader 16 card (NT7X05) allows local loading of RCO2 data, which reduces recovery time. To check if the NT7X05 card is provisioned, type

**>QUERYPM FILES**

and press the Enter key.

*Example of a MAP display:*

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.   .   .   .   1RCO2  .   .   .   .   .
      *C*
RCO2      SysB  ManB  OffL  Cbsy  ISTb  InSv
0 Quit    PM    2     0     2     0     25
2 Post    RCO2  1     0     0     0     1     1
3 ListSet
4         RCO2      0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_  Unit 0:  Inact ManB
6 TST_    Unit 1:  Inact InSv
7 BSY_
8 RTS_    QUERYPM files
9 OffL    Unit 0:
10 LoadPM_      NT7X05 load File: KRI05AU
11 Disp_      NT7X05 Image File:
12 Next_    Unit 1:
13 SwAct     NT7X05 load File: [KRI05AU]
14 QueryPM   NT7X05 Image File:
15
16 IRLINK
17 Perform
18

```

(NT7X05 load file name)

**Note:** If the NT7X05 card is not provisioned, the MAP response is:  
NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 20
not provisioned	step 21

## NTMX77

### in an RSC-S (PCM-30) Model A RCO2 (continued)

20

**DANGER****Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCO2 unit from the local loadfile. To load the inactive RCO2 unit from the local loadfile, type

```
>LOADPDM UNIT rco2_unit_no LOCAL LOADFILE
```

and press the Enter key.

where

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

If the load	Do
passed	step 22
failed	step 21

**21** To load the inactive RCO2 unit, type

```
>LOADPDM INACTIVE
```

and press the Enter key.

If LOADPDM	Do
passed	step 22
failed	step 29

**22** Query the XPM counters for the firmware load on the NTMX77. To query XPM counters, type

```
>QUERYPM CNTRS
```

and press the Enter key.

*Example of a MAP display:*

**NTMX77**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

```

Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: KRI05AU
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
Unit 1:
Ram Load: KRI05AU
EPRom Version: AB02
EEPROM Load: Loadable: [MX77NG03], Executable: [MX77NG03]
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
    
```

(NTMX77 firmware load name)

If firmware is	Do
valid	step 25
invalid	step 23

- 23** To load the firmware on the inactive unit, type  
**>LOADFW INACTIVE**  
 and press the Enter key.

If the LOADFW	Do
passes	step 24
fails	step 29

- 24** To upgrade the firmware on the inactive unit, type  
**>LOADFW INACTIVE UPGRADE**  
 and press the Enter key.

If the LOADFW UPGRADE	Do
passes	step 25
fails	step 29

- 25** Return the inactive RCO2 unit to service. To RTS the unit, type  
**>RTS INACTIVE**

---

**NTMX77**

**in an RSC-S (PCM-30) Model A RCO2 (end)**

---

and press the Enter key.

<b>If RTS</b>	<b>Do</b>
passed	step 26
failed	step 29

- 26** Send any faulty cards for repair according to local procedure.
- 27** Record the following information in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 30.
- 28** Return to the alarm clearing procedure that directed you to this procedure. At the point where a card list was produced, identify the next card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 29** Get additional help in replacing this card by contacting operating company maintenance personnel.
- 30** You have correctly completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX77 in an RSC-S (PCM-30) Model B RCO2**

---

### **Application**

Use this procedure to replace an NTMX77 card in an RSC-S RCO2.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX77	AA	Unified Processor

### **Common procedures**

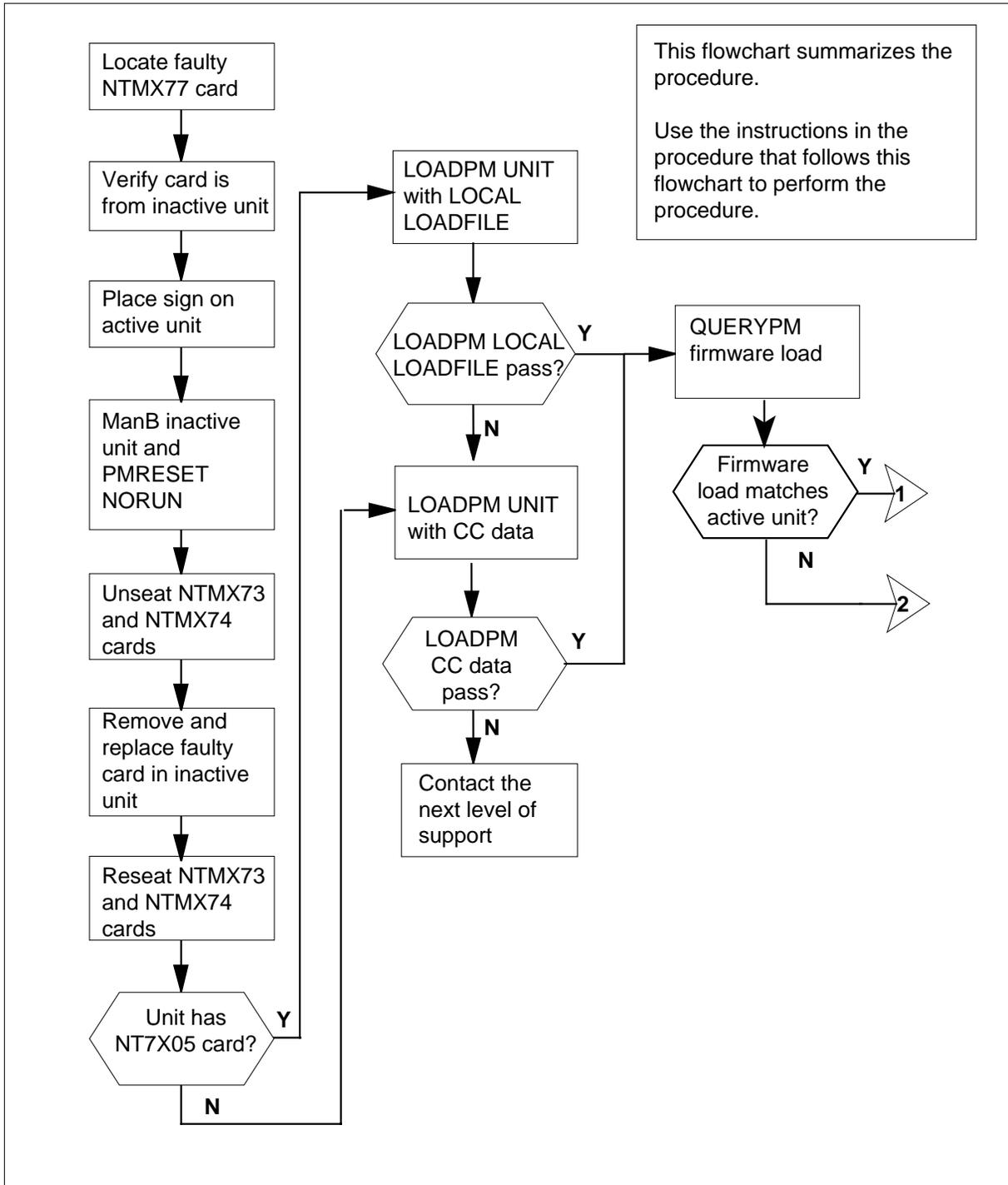
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

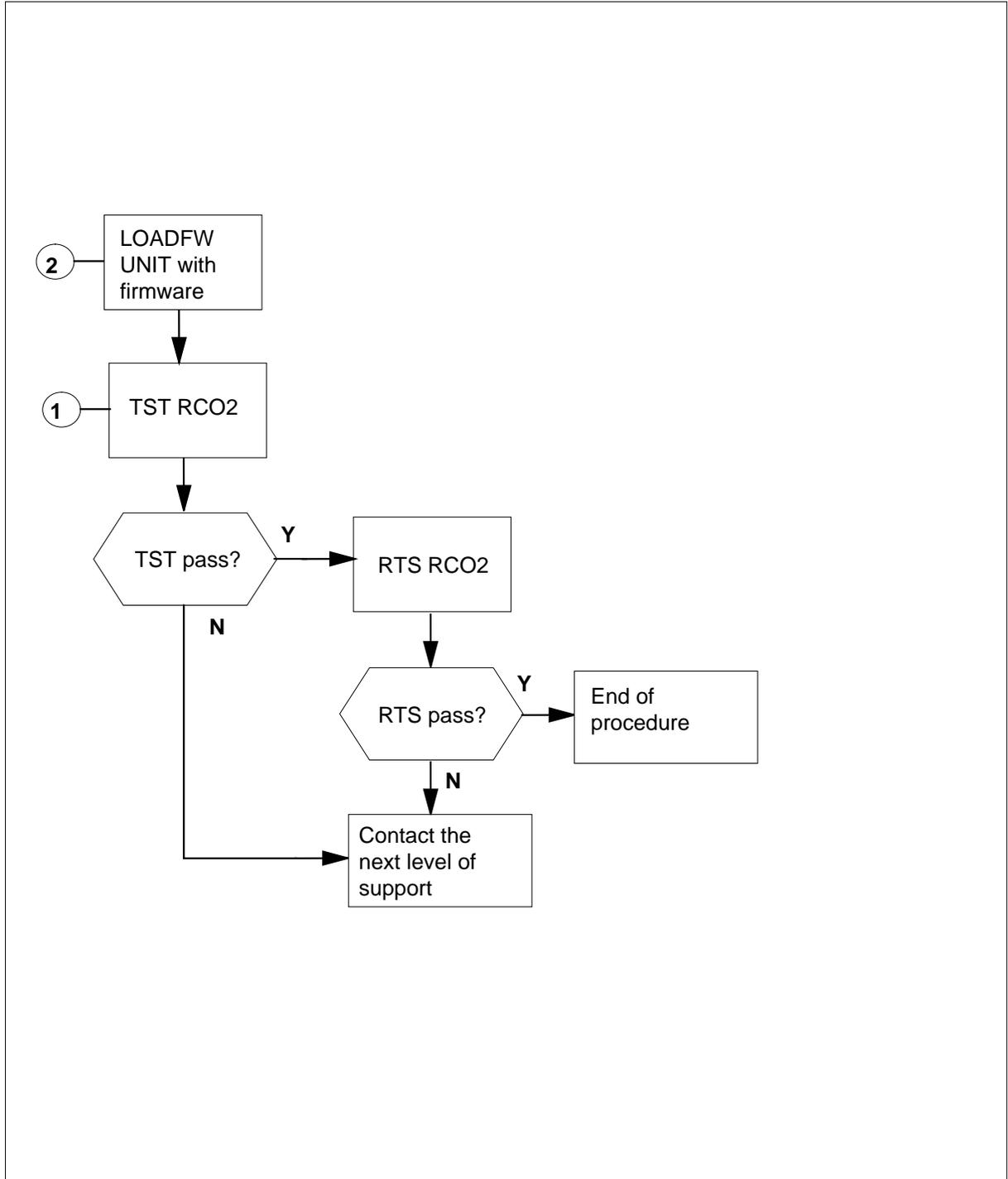
## NTMX77 in an RSC-S (PCM-30) Model B RCO2 (continued)

### Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (1 of 2)



**NTMX77**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

**Summary of card replacement procedure for an NTMX77 card in RSC-S RCO2 (2 of 2)**



---

## NTMX77

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

#### Replacing an NTMX77 card in RSC-S RCO2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCO2, make sure the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

##### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal and post the RCO2. To post the RCO2, type

```
>MAPCI ;MTC ;PM ;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 to be busied (0 or 1)

*Example of a MAP display:*

**NTMX77**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

RCO2
0 Quit      PM      0       0       2       0       2       25
2 Post_    RCO2   0       0       0       0       1       1
3 ListSet
4          RCO2   0 ISTb  Links_OOS:  CSide  1, 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
18
    
```

- 4 Check that the NTMX77AA card with faults is in the inactive unit. Make sure the LED labeled ACTIVE is OFF or observe the MAP display.

---

**If the NTMX77AA card with faults is in**      **Do**

active unit	step 5
inactive unit	step 9

- 5 Switch the processing activity (SWACT) to the inactive unit. To SWACT the unit, type

>SWACT  
and press the Enter key.

---

**If SWACT**      **Do**

cannot continue now	step 6
can continue now	step 7

- 6 Do not switch activity of the units. To reject the SWACT, type

>NO  
and press the Enter key.  
The system discontinues the SWACT.

---

## NTMX77

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

- Return to step 5 during a period of low traffic.
- 7** To confirm the system prompt, type  
**>YES**  
 and press the Enter key.
- The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before continuing to the next maintenance action.

If the message is	Do
SWACT passed	step 9
SWACT failed	step 8
SWACT not accepted by SWACT controller	step 8

- 8** Return to the Alarm Clearing Procedures in this manual to clear the alarm condition on the inactive unit. When the alarm clears, return to step 1 of this procedure.

**At the RCE frame**

- 9** Place a sign on the active unit with the words *Active unit—Do not touch*. This sign must not be attached by magnets or tape.

**At the MAP terminal**

- 10** Busy the inactive PM unit. To busy the unit, type  
**>BSY INACTIVE**  
 and press the Enter key.
- 11** Set the inactive unit to the ROM level. To set the unit to the ROM level, type  
**>PMRESET UNIT rco2\_unit\_no NORUN**  
 and press the Enter key.
- where
- rco2\_unit\_no**  
 is the number of the inactive RCO2 unit (0 or 1)

---

## NTMX77 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

### At the RCE frame

12



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

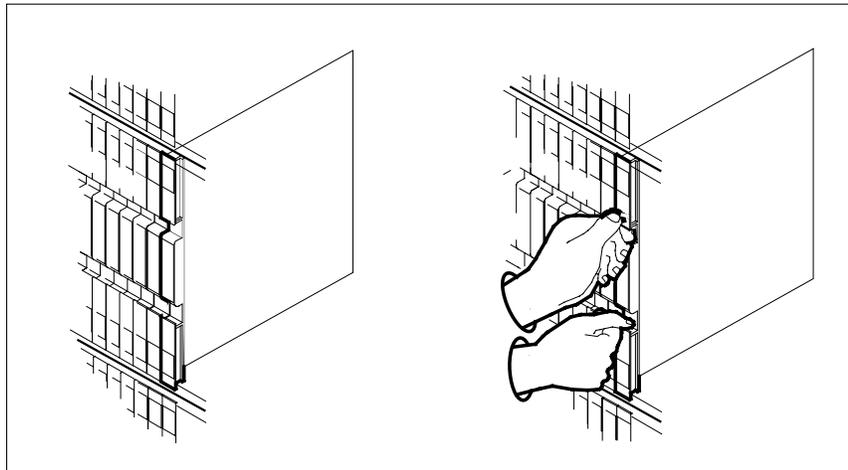
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Put on a wrist strap.

**13** Unseat the NTMX73 and NTMX74 circuit cards.

**14** Remove the NTMX77 card as shown in the following figures.

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



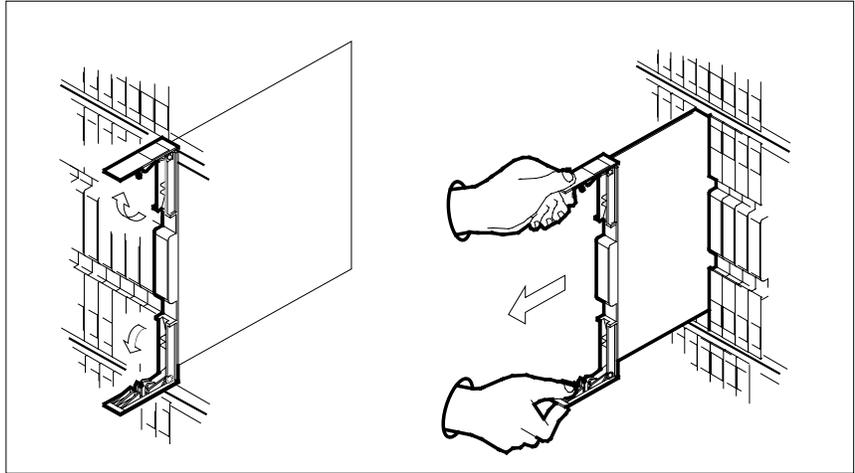
**b** Open the locking levers on the card to be replaced. Carefully pull the card toward you until it clears the shelf.

---

## NTMX77

### in an RSC-S (PCM-30) Model B RCO2 (continued)

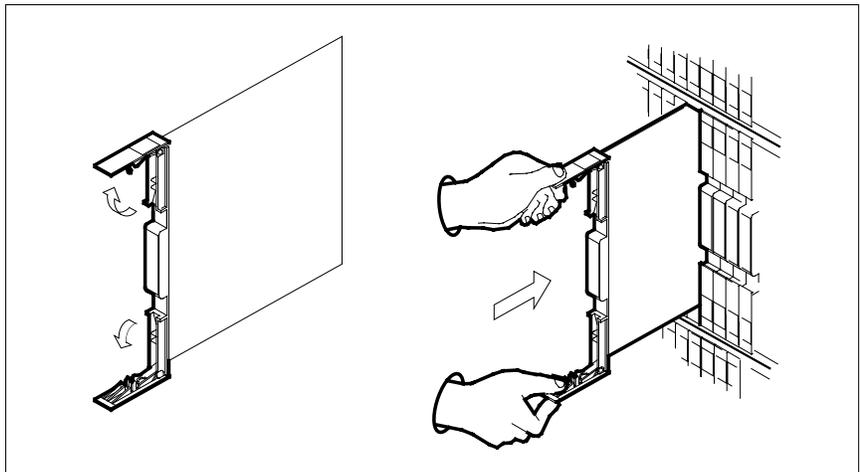
---



- c Make sure the replacement card has the same PEC, including suffix, as the card you just removed. Also make sure the DIP switch settings on the replacement card match the settings of the card just removed.

**Note:** If the NTMX77 circuit card has a DIP switch, set DIP switch S1 to CPM.

- 15 Open the locking levers on the replacement card.
- a Align the card with the slots in the shelf.
  - b Carefully slide the card into the shelf.



---

## NTMX77 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

16



### DANGER

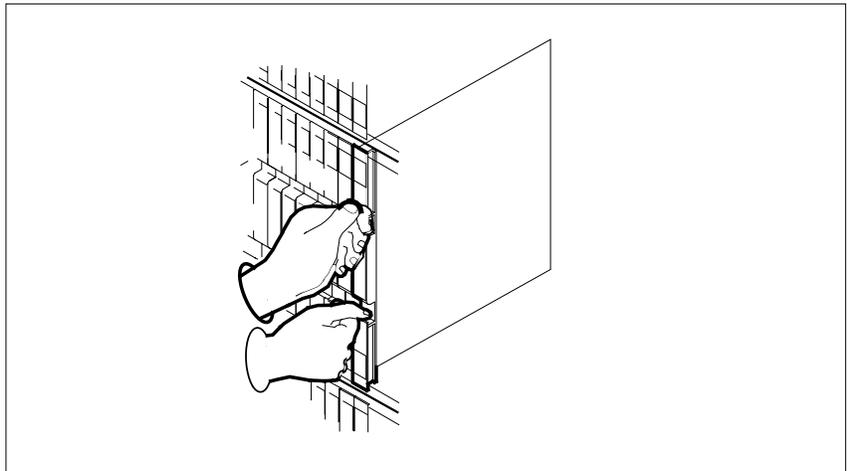
#### Possible loss of P-side nodes

Monitor the LEDs on the faceplate of the replacement NTMX77 when installing.

1. The INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 14 c with a new NTMX77 card. If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which will result in the loss of P-side nodes.

Seat and lock the card.

- a Use your fingers or thumbs to push on the upper and lower edges of the faceplate to make sure the card is fully seated in the shelf.
- b Close the locking levers.



17 Reseat the NTMX73 and NTMX74 circuit cards.

18 Use the following information to determine the next step in this procedure.

---

If you entered this procedure from	Do
an alarm clearing procedure	step 28

---

**NTMX77**

**in an RSC-S (PCM-30) Model B RCO2** (continued)

If you entered this procedure from	Do
other	step 19

**At the MAP terminal**

**19** The peripheral/remote loader 16 card (NT7X05) allows local loading of RCO2 data which reduces recovery time. To check if the NT7X05 card is provisioned, type

**>QUERYPM FILES**

and press the Enter key.

*Example of a MAP display:*

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.    .    .    .    1RCO2  .    .    .    .    .
      *C*
RCO2      SysB  ManB  OffL  CBsy  ISTb  InSv
0 Quit    PM    2    0    2    0    25
2 Post    RCO2  1    0    0    0    1    1
3 ListSet
4          RCO2    0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_  Unit 0:  Inact ManB
6 TST_    Unit 1:  Inact InSv
7 BSY_
8 RTS_    QUERYPM files
9 OffL    Unit 0:
10 LoadPM_      NT7X05 load File: KRI05AU
11 Disp_        NT7X05 Image File:KRI05AU
12 Next_
13 SwAct    Unit 1:
14 QueryPM    NT7X05 load File: [KRI05AU] ←
15            NT7X05 Image File:KRI05AU
16 IRLINK
17 Perform
18

```

(NT7X05 load file name)

**Note:** If the NT7X05 card is not provisioned, the MAP response is:  
NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 20
not provisioned	step 21

**NTMX77**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

20



**DANGER**

**Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCO2 unit from the local loadfile. To load the inactive RCO2 unit from the local loadfile, type

**>LOADPDM UNIT unit\_no LOCAL IMAGE**

and press the Enter key.

*where*

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

<b>If the load</b>	<b>Do</b>
passed	step 22
failed	step 21

**21** To load the inactive RCO2 unit, type

**>LOADPDM INACTIVE**

and press the Enter key.

<b>If the load</b>	<b>Do</b>
passed	step 22
failed	step 29

**22** Query the XPM counters for the firmware load on the NTMX77. To query XPM counters, type

**>QUERYPM CNTRS**

and press the Enter key.

*Example of a MAP display:*

**NTMX77**

**in an RSC-S (PCM-30) Model B RCO2 (continued)**

```

Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: KRI05AU
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
Unit 1:
Ram Load: KRI05AU
EPRom Version: AB02
EEPROM Load: Loadable: [MX77NG03] Executable: [MX77NG03]
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
    
```

(NTMX77 firmware load name)

If firmware is	Do
valid	step 25
invalid	step 23

**23** To load the firmware on the inactive unit, type  
**>LOADFW INACTIVE**  
 and press the Enter key.

If LOADFW	Do
passed	step 24
failed	step 29

**24** To upgrade the firmware on the inactive unit, type  
**>LOADFW INACTIVE UPGRADE**  
 and press the Enter key.

If LOADFW UPGRADE	Do
passed	step 25
failed	step 29

**25** Return the inactive RCO2 unit to service. To RTS the RCO2 unit, type  
**>RTS INACTIVE**

**NTMX77**  
**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

and press the Enter key.

---

<b>If RTS</b>	<b>Do</b>
passed	step 26
failed	step 29

---

- 26** Send any faulty cards for repair according to local procedure.
- 27** Record the following information in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 30.
- 28** Return to the alarm clearing procedure that directed you to this procedure. At the point where a card list was produced, identify the next card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 29** Get additional help in replacing this card by contacting operating company maintenance personnel.
- 30** You have correctly completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX77  
in an SMS**

---

**Application**

Use this procedure to replace an NTMX77 card in an SMS.

PEC	Suffixes	Name
NTMX77	AA	Unified processor (UP)

**Common procedures**

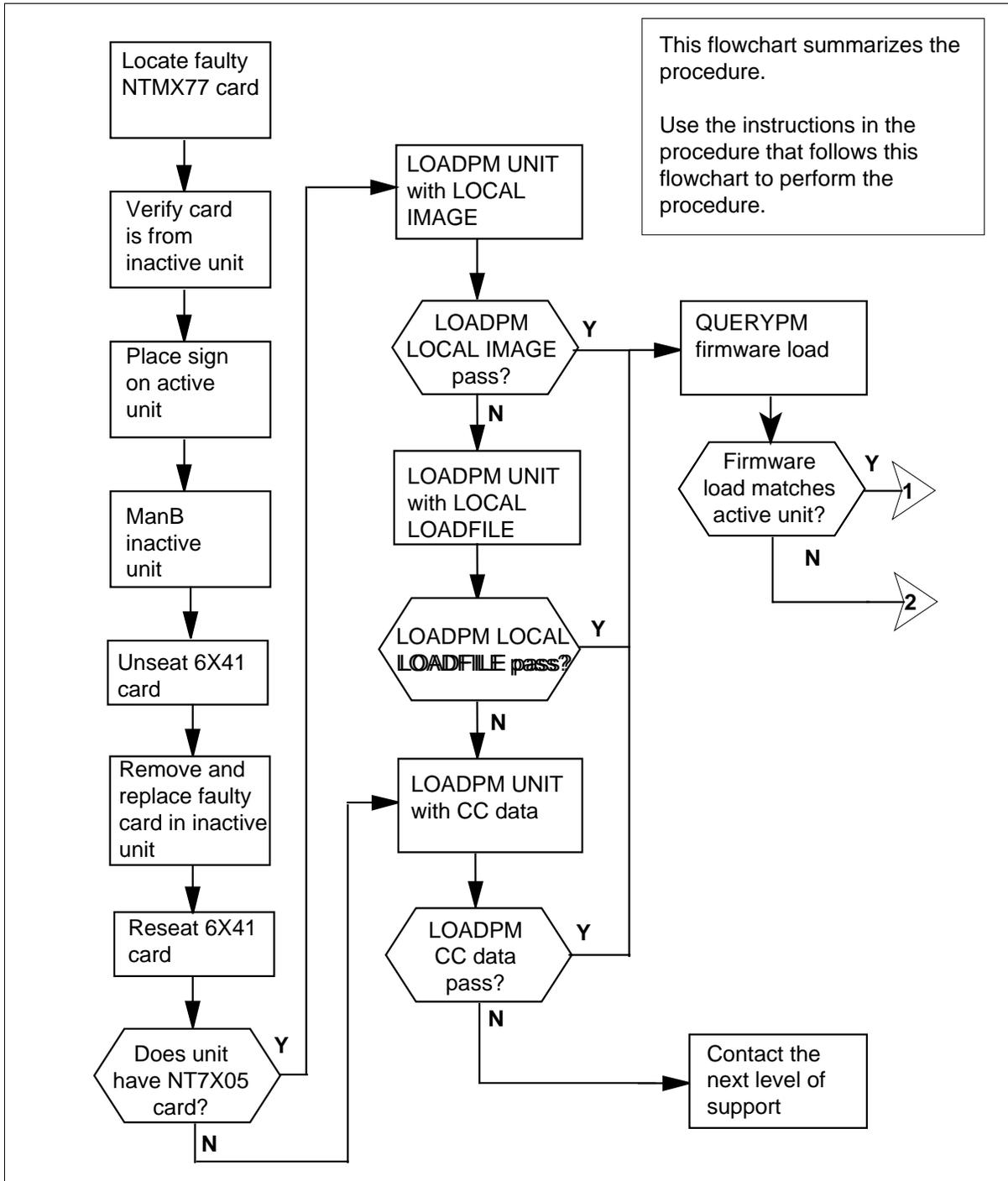
None

**Action**

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

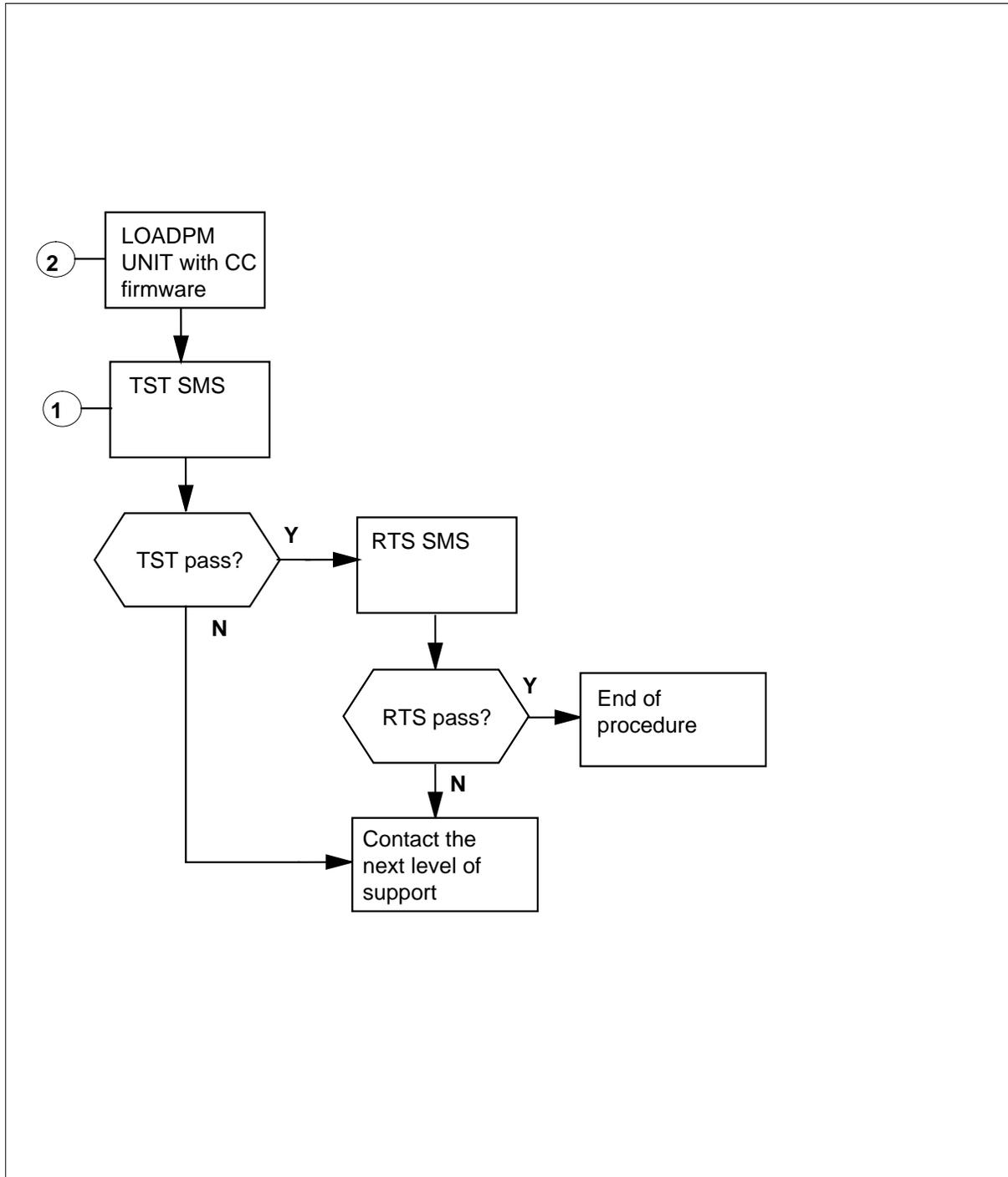
## NTMX77 in an SMS (continued)

### Summary of card replacement procedure for an NTMX77 card in an SMS



**NTMX77**  
**in an SMS** (continued)

**Summary of card replacement procedure for an NTMX77 card in an SMS**



---

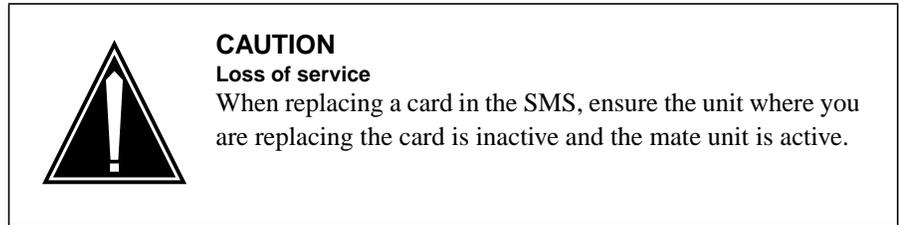
## NTMX77 in an SMS (continued)

---

### Replacing an NTMX77 card in an SMS

#### At your Current Location

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or were directed to this procedure by your maintenance support group.
- 2



Obtain a replacement card. Verify the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At the MAP terminal

- 3 Access the PM level of the MAP terminal by typing

```
>MAPCI;MTC;PM;POST SMS sms_no
```

and pressing the Enter key.

where

**sms\_no**

is the number of the SMS to be posted

*Example of a MAP response*

```
SMS      SysB  ManB  Offl  CBsy  ISTb  InSv
      PM      3      0      1      0      2      13
      SMS     0      0      0      0      1      7
```

```
SMS 0 ISTb Links_OOS: CSide 0, PSide 0
```

```
Unit0: Act  ISTb
```

```
Unit1: Inact InSv
```

- 4 To verify the faulty NTMX77 card is in the inactive unit, ensure the LED labeled *Active* is off or observe the MAP display.

---

<b>If faulty card is on</b>	<b>Do</b>
-----------------------------	-----------

---

active unit	step 5
-------------	--------

---

---

**NTMX77**  
**in an SMS** (continued)

---

	<b>If faulty card is on</b>	<b>Do</b>
	inactive unit	step 8
<b>5</b>	Switch the activity of the units by typing > <b>SWACT</b> and pressing the Enter key. The system determines the type of SWACT it can perform and displays a confirmation prompt for the selected SWACT.	
	<b>If SWACT</b>	<b>Do</b>
	can continue at this time	step 6
	cannot continue at this time	step 30
<b>6</b>	Switch the activity of the unit by typing > <b>YES</b> and pressing the Enter key. The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.  <b>Note:</b> A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.	
	<b>If the message is</b>	<b>Do</b>
	SwAct passed	step 8
	SwAct failed	step 7
	SwAct failedReason: XPM SwActback	step 7
	SwAct refused by SwAct controller	step 7
<b>7</b>	Return to <i>Alarm Clearing Procedures</i> to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step 1 of this procedure.	
	<b>At the frame</b>	
<b>8</b>	Put a sign on the active unit bearing the following words: <i>Active unit—Do not touch</i> . This sign should not be attached with magnets or tape.	

## NTMX77 in an SMS (continued)

---

### *At the MAP terminal*

- 9 Busy the inactive SMS unit by typing  
`>BSY UNIT unit_no`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the faulty SMS unit
- 10 Set the unit to the ROM level by typing  
`>PMRESET UNIT unit_no NORUN`  
and pressing the Enter key.  
*where*  
**unit\_no**  
is the number of the faulty SMS unit

### *At the frame*

11



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel of the SMS. This protects the equipment against damage caused by static electricity. When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

Put on a wrist strap.

12 Unseat the NT6X41 card.

13



#### **CAUTION**

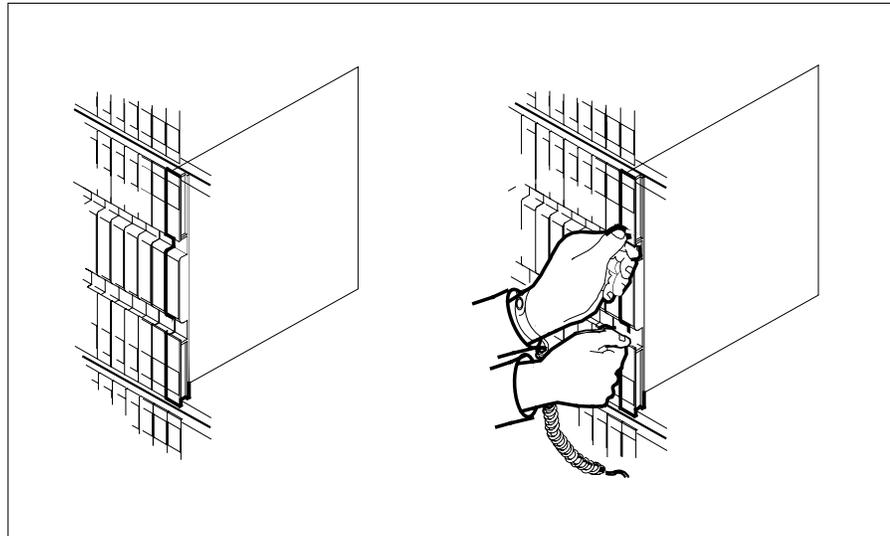
##### **Service disruption**

If the replacement MX77 card you are installing has dip switch S1, ensure dip switch S1 is in the XPM position. If switch S1 is not in the XPM position, the active unit will go out-of-service, thereby interrupting call processing.

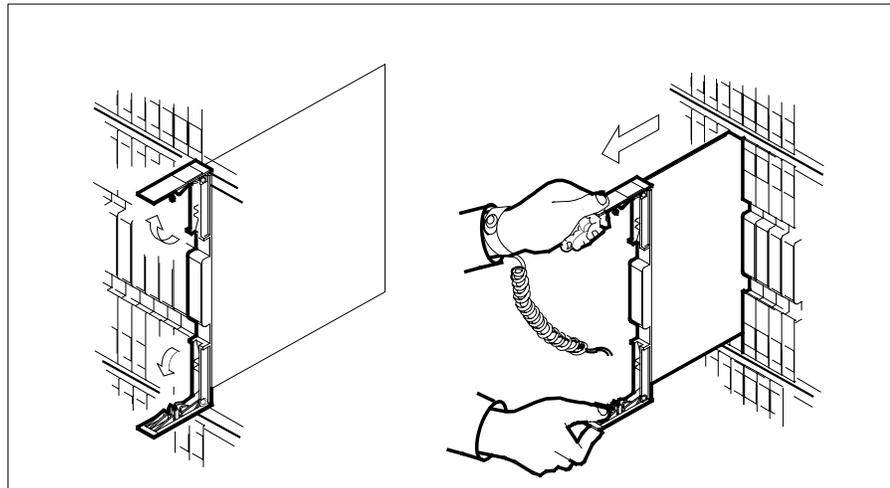
Remove the NTMX77 card as shown in the following figures.

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

**NTMX77**  
**in an SMS** (continued)



- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed. Also ensure that all replacement card dip switch settings match settings of the card just removed. Ensure that dip switch S1 (if equipped) is in the XPM position.

## NTMX77 in an SMS (continued)

14



### **DANGER**

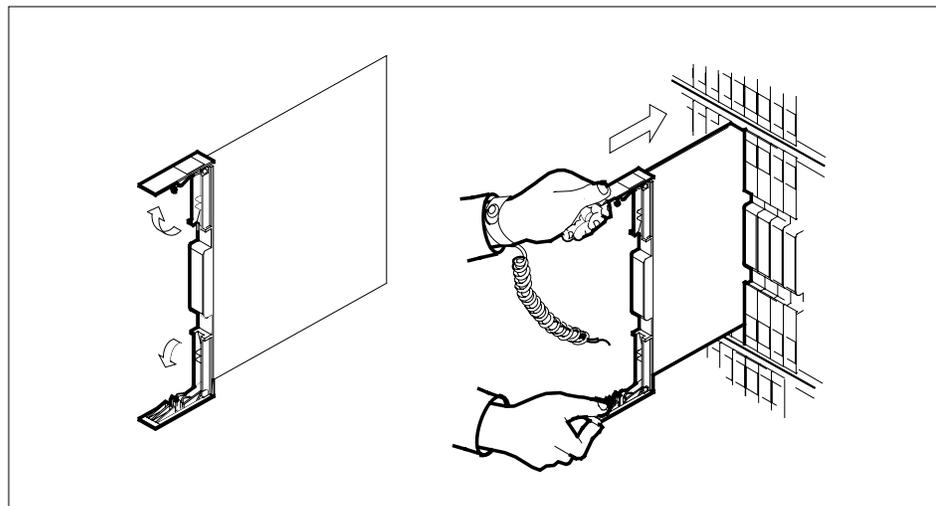
#### **Possible loss of P-side nodes**

Monitor the LEDs on the faceplate of the replacement NTMX77 when installing.

1. The INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 13, Section c, "Ensure the replacement card has the same PEC, including suffix, as the card you just removed. Also ensure that all replacement card dip switch settings match settings of the card just removed. Ensure that dip switch S1 (if equipped) is in the XPM position." on page -299 with a new NTMX77 card.

If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which will result in the loss of P-side nodes. If the switches are set correctly reject the faulty card.

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.

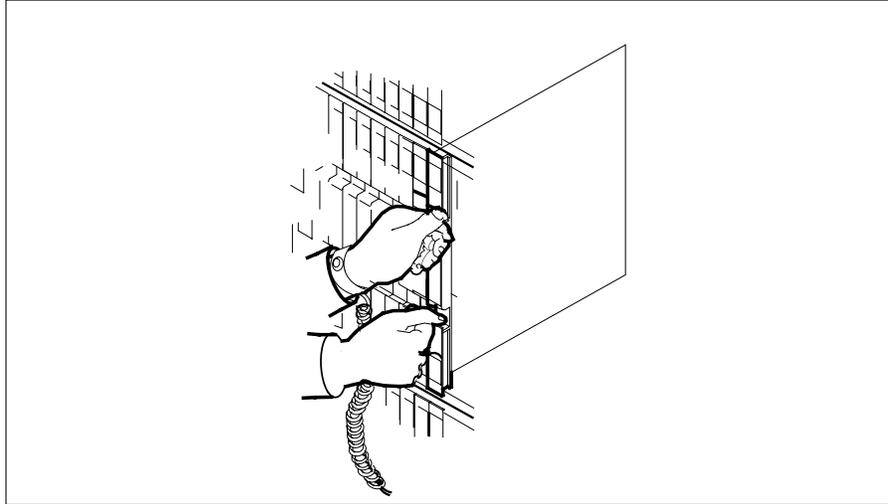


---

**NTMX77**  
**in an SMS** (continued)

---

- 15** 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.



- 16** Reseat the NT6X41 card.

***At the MAP terminal***

- 17** The peripheral loader card (NT7X05) allows local loading of the NTMX77 data. Local data loading reduces recovery time. Check if the NT7X05 card is provisioned by typing:

**>QUERYPM FILES**

and pressing the Enter key.

*Example of a MAP display:*

**NTMX77**  
**in an SMS** (continued)

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.   .   .   .   1RCC  .   .   .   .   .
      *C*
SMS
0  Quit  PM  2  0  2  0  2  25
2  Post  SMS 1  0  0  0  1  1
3  ListSet
4      SMS 0  ISTb  Links_OOS:  CSide 0,  PSide 0
5  TRNSL_ Unit 0:  Inact ManB
6  TST_   Unit 1:  Act   InSv
7  BSY_
8  RTS_   QUERYPM files
9  OffL   Unit 0:
10 LoadPM_ NT7X05 load File: ESS05AW
11 Disp_   NT7X05 Image File:ESS05AW
12 Next_
13 SwAct   Unit 1:
14 QueryPM NT7X05 load File: ESS05AW
15         NT7X05 Image File:ESS05AW
16 IRLINK
17 Perform
18

```

**Note:** If the NT7X05 card is not provisioned the MAP response is:NT 7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 18
not provisioned	step 20

18



**CAUTION**  
**ISDN units can not be loaded by LOCAL IMAGE**  
 Do not LOADPM from the LOCAL IMAGE on units with ISDN capability. The NT7X05 card does not support ISDN, use LOCAL LOADFILE or load from the CC on units with ISDN.

Load the SMS from the local image by typing  
**>LOADPM UNIT unit\_no LOCAL IMAGE**  
 and pressing the Enter key.  
*where*

---

## NTMX77 in an SMS (continued)

---

**rcc\_unit\_no**  
is the number of the inactive RCC unit

If the load	Do
passed	step 22
failed	step 19

- 19** Load the SMS from the local loadfile by typing  
>LOADPDM UNIT **unit\_no** LOCAL LOADFILE  
and pressing the Enter key.

*where*

**rcc\_unit\_no**  
is the number of the inactive RCC unit

If the load	Do
passed	step 22
failed	step 20

- 20** Load the SMS from the CC by typing  
>LOADPDM UNIT **unit\_no** CC  
and pressing the Enter key.

*where*

**unit\_no**  
is the number of the faulty SMS unit busied in step 9

If load	Do
passes	step 22
fails	step 29

- 21** Query the XPM countrs for the firmware load on the NTMX77 by typing:  
>QUERYPM CNTRS  
and pressing the Enter key.

*Example of a MAP display:*

## NTMX77 in an SMS (continued)

---

```

Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: ESS05AW
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA

Unit 1:
Ram Load: ESS05AW
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
    
```

If firmware is	Do
valid	step 23
invalid	step 22

- 22** Load the firmware in the inactive SMS unit by typing  
**>LOADPDM UNIT unit\_no CC FIRMWARE**  
 and pressing the Enter key.  
*where*  
     **unit\_no**  
         is the number of the faulty SMS unit busied in step 9

If load	Do
passes	step 23
fails	step 29

- 23** Test the inactive SMS unit by typing  
**>TST UNIT unit\_no**  
 and pressing the Enter key.  
*where*  
     **unit\_no**  
         is the number of the faulty SMS unit loaded in step 20  
*Example of a MAP response*

---

**NTMX77**  
**in an SMS (end)**

---

Test Passed  
or  
Test Failed

	<b>If TST</b>	<b>Do</b>
	passes	step 24
	fails	step 29
<b>24</b>	Return the inactive SMS unit to service by typing >RTS UNIT <b>unit_no</b> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the faulty SMS unit tested in step 23	
	<b>If RTS</b>	<b>Do</b>
	passes	step 25
	fails	step 29
<b>25</b>	Send any faulty cards for repair according to local procedure.	
<b>26</b>	Remove the sign from the active SMS unit.	
<b>27</b>	Record the following items in office records according to local policy: <ul style="list-style-type: none"> <li>• date the card was replaced</li> <li>• serial number of the card</li> <li>• symptoms that prompted replacement of the card</li> </ul>	
<b>28</b>	You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.	
<b>29</b>	Obtain further assistance in replacing this card by contacting personnel responsible for a higher level of support.	
<b>30</b>	For further assistance with switch of activity, contact the personnel responsible for the next level of support.  <b>Note:</b> 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.	

## **NTMX77 in an SMS-R**

---

### **Application**

Use this procedure to replace the following card in an SMS-R.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX77	AA	Unified Processor (UP)

### **Common procedures**

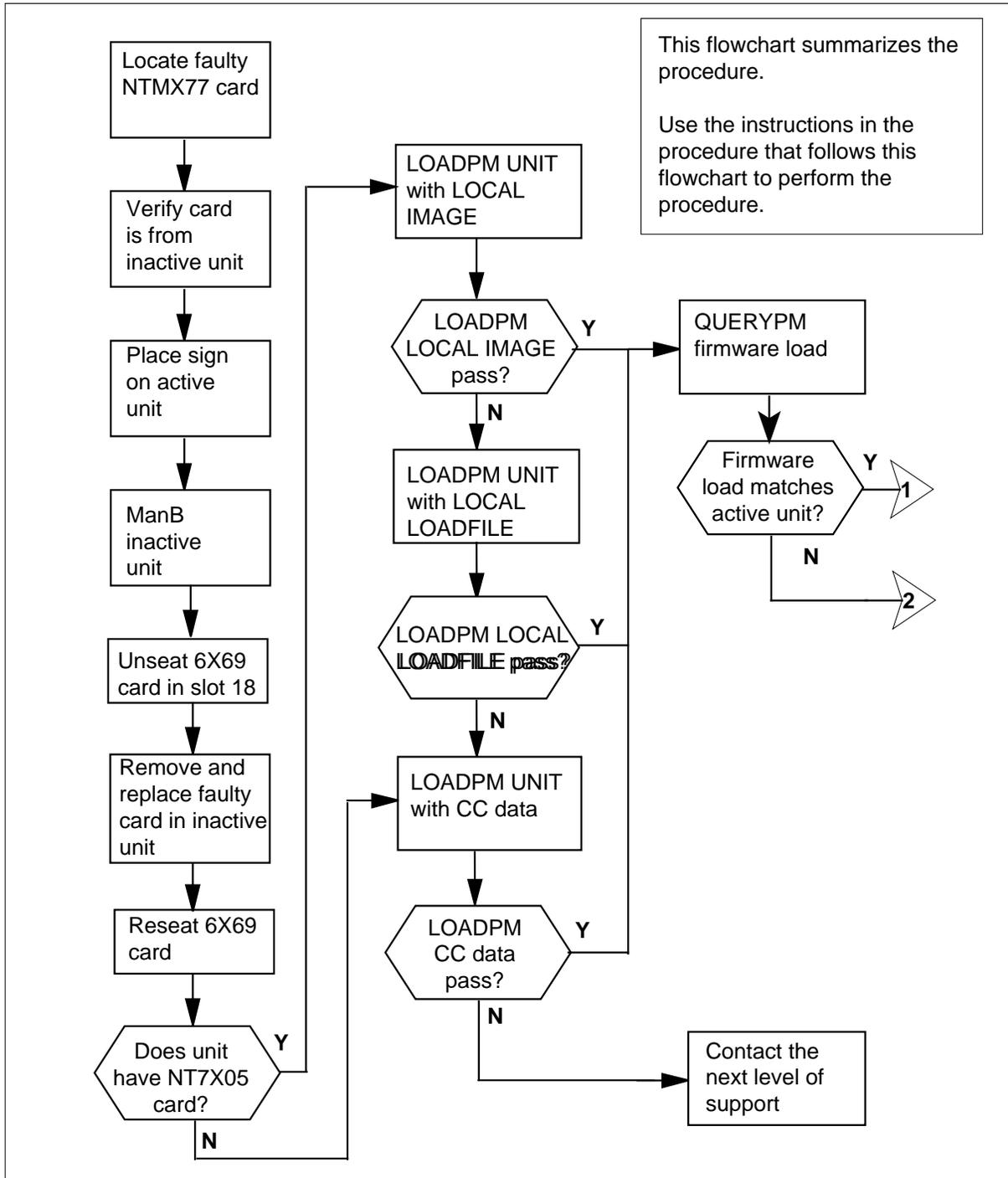
Not applicable

### **Action**

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

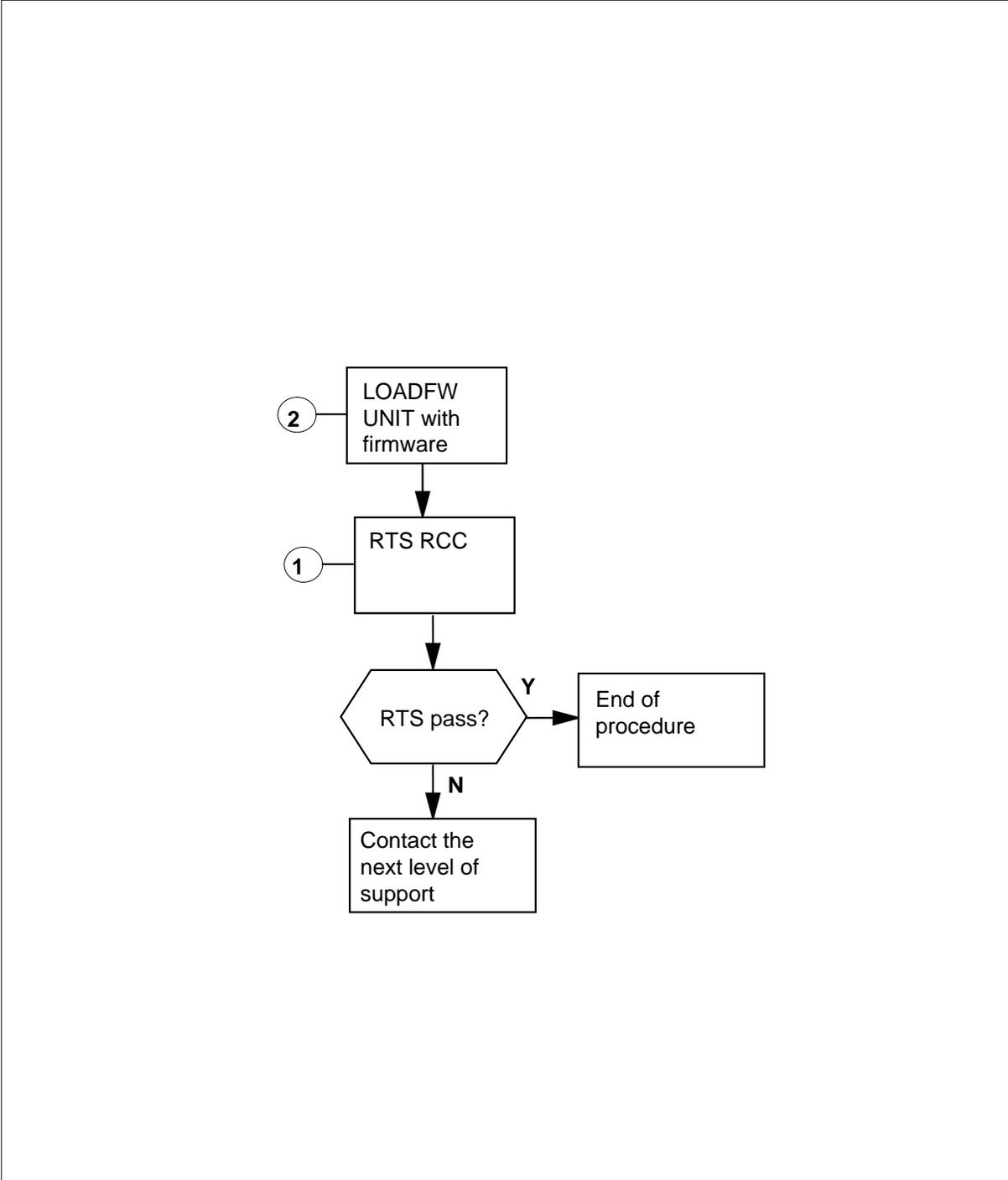
## NTMX77 in an SMS-R (continued)

### Summary of card replacement procedure for an NTMX77 card in an SMS-R



**NTMX77**  
**in an SMS-R** (continued)

**Summary of card replacement procedure for an NTMX77 card in an SMS-R**



## NTMX77 in an SMS-R (continued)

### Replacing an NTMX77 card in an SMS-R

#### *At your Current Location*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or were directed to this procedure by your maintenance support group.

2



#### **CAUTION**

##### **Loss of service**

When replacing a card in the SMS-R, ensure the unit where you are replacing the card is inactive and the mate unit is active.

Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Access the PM level of the MAP terminal by typing  
`>MAPCI;MTC;PM;POST SMSR smsr_no`  
 and pressing the Enter key.

where

##### **smsr\_no**

is the number of the SMS-R to be posted

*Example of a MAP display response*

```
SMSR      SysB  ManB  Offl  Cbsy  ISTb  InSv
PM        3    0    1    0    2    13
SMSR     0    0    0    0    1    7
```

```
SMSR 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act  ISTb
Unit1: Inact InSv
```

- 4 To verify that the faulty NTMX77AA card is in the inactive unit, ensure that the LED labeled Active is off or observe the MAP display.

---

**If faulty card is on**

**Do**

active unit

step 5

inactive unit

step 8

---

## NTMX77 in an SMS-R (continued)

---

- 5 Switch the activity of the units by typing  
>SWACT  
and pressing the Enter key.  
The system determines the type of SWACT it can perform and displays a confirmation prompt for the selected SWACT.
- | If SWACT                     | Do      |
|------------------------------|---------|
| can continue at this time    | step 6  |
| cannot continue at this time | step 32 |
- 6 Switch the activity of the unit by typing  
>YES  
and pressing the Enter key.  
The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.
- Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.
- | If the message is                      | Do     |
|--|--------|
| SwAct passed                           | step 8 |
| SwAct failed                           | step 7 |
| SwAct failed. Reason:<br>XPM SwActback | step 7 |
| SwAct refused by SwAct<br>controller   | step 7 |
- 7 Return to the *Alarm Clearing Procedures* to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step 1 of this procedure.
- At the SMS-R frame**
- 8 Put a sign on the active unit bearing the following words: “**Active unit-Do not touch.**”
- At the MAP terminal**
- 9 Busy the inactive SMS-R unit by typing  
>BSY UNIT unit\_no  
and pressing the Enter key.  
*where*

## NTMX77 in an SMS-R (continued)

**unit\_no**

is the number of the faulty SMS-R unit

- 10** Set the PM to the ROM level by typing  
`>PMRESET UNIT unit_no NORUN`  
 and pressing the Enter key.

where

**unit\_no**

is the number of the faulty SMS-R unit busied in step 9

**At the SME frame**

**11**

**DANGER****Static electricity damage**

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

Put on a wrist strap.

**12**

**DANGER****Equipment damage**

Take these precautions when removing or inserting a card:

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

**CAUTION****Service disruption**

If the message interface card NT6X69 is not unseated, the active unit will go out-of-service, which will interrupt call processing.

Unseat the NT6X69 card in slot 18.

## NTMX77 in an SMS-R (continued)

13



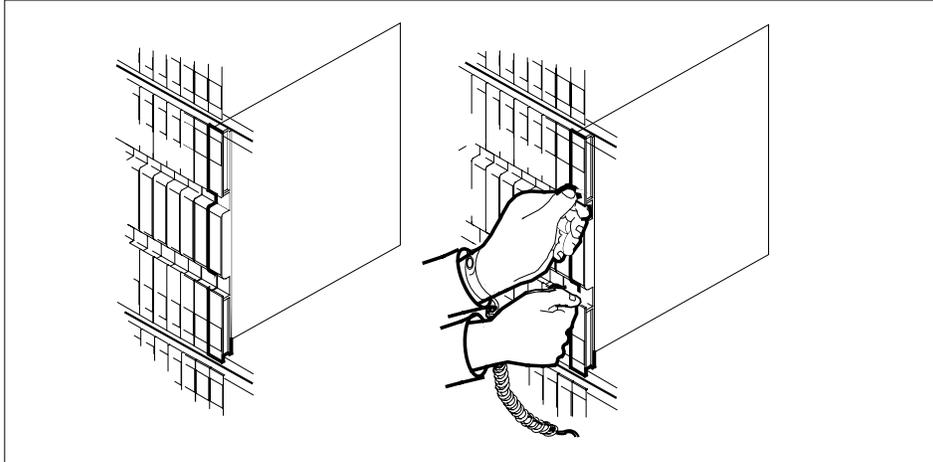
### CAUTION

#### Service disruption

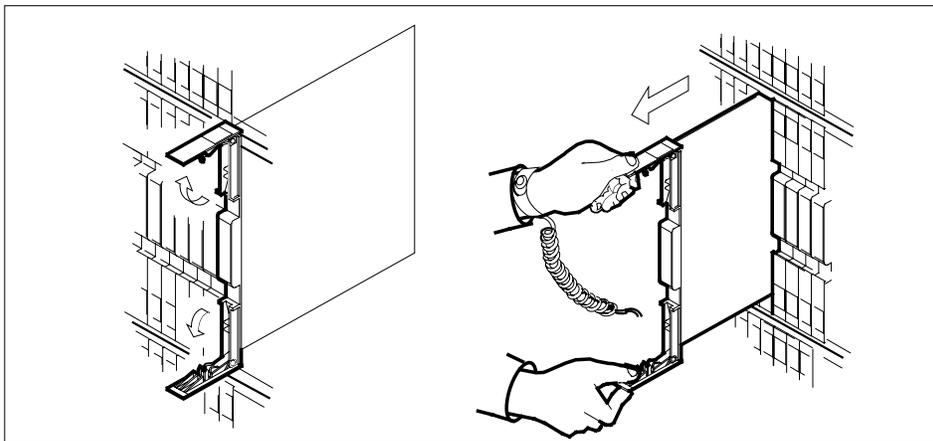
If the replacement MX77 card you are installing has dip switch S1, ensure dip switch S1 is in the XPM position. If switch S1 is not in the XPM position, the active unit will go out-of-service, which will interrupt call processing.

Remove the NTMX77 card as shown in the following figures.

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

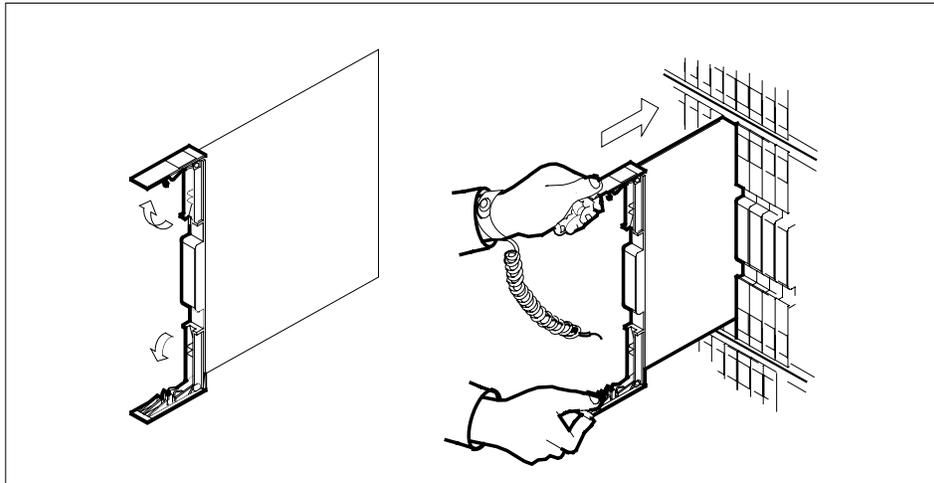


- b Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.

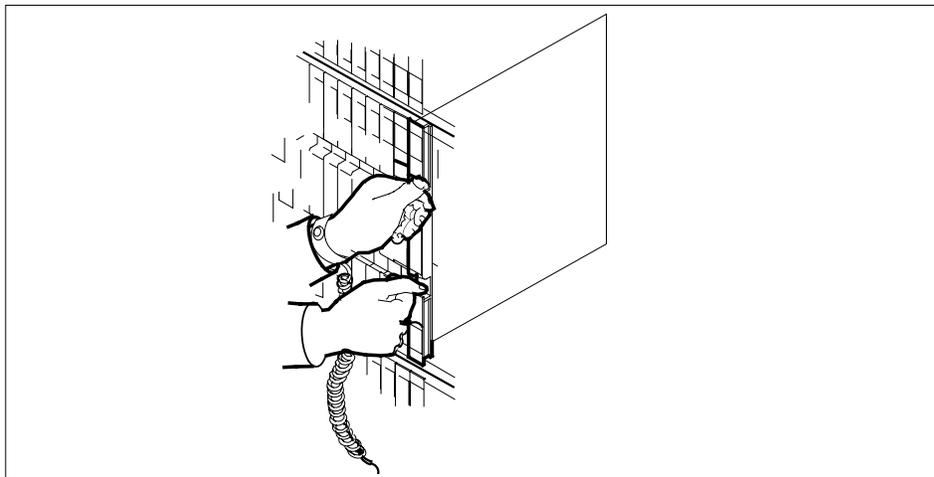


**NTMX77  
in an SMS-R (continued)**

- c Ensure the replacement card has the same PEC, including suffix, as the card you just removed. Also ensure that all replacement card dip switch settings match settings of the card just removed. Ensure that dip switch S1 (if equipped) is in the XPM position.
- 14 Open the locking levers on the replacement card.
  - 15 Align the card with the slots in the shelf and gently slide the card into the shelf.



- 16 Seat and lock the new NTMX77 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.



- 17 Reseat the NT6X69 card in slot 18.

## NTMX77 in an SMS-R (continued)

**At the MAP terminal**

**18** The peripheral remote loader (PRL) card (NT7X05) allows local loading of the SMS-R data. Local data loading reduces recovery time. Check if the NT7X05 card is provisioned by typing:

**>QUERYPM FILES**

and pressing the Enter key.

*Example of a MAP display:*

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.   .   .   .   1SMSR  .   .   .   .   .

SMSR          SysB  ManB  OffL  Cbsy  ISTb  InSv
0 Quit        PM    2      0      2      0      2      25
2 Post        SMSR  1      0      0      0      1      1
3 ListSet
4             SMSR   0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_     Unit 0: Inact ManB
6 TST_       Unit 1: Act  InSv
7 BSY_
8 RTS_       QUERYPM files
9 OffL       Unit 0:
10 LoadPM_   NT7X05 load File: ESR06BD
11 Disp_     NT7X05 Image File: ESR06BD ] ←
12 Next_     CMR Load: CMR03A
13 SwAct
14 QueryPM   Unit 1:
15           NT7X05 load File: ESR06BD
16           NT7X05 Image File: ESR06BD ] ←
17 Perform   CMR LOad: CMR03A ]
18

```

NT7X05 image file\_name

**Note:** If the NT7X05 card is not provisioned the MAP response is:

*Example of a MAP response:*

Nt7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 19
not provisioned	step 21

**19** Load the SMS-R from the local image by typing

**>LOADPM UNIT unit\_no LOCAL IMAGE**

and pressing the Enter key.

*where*

## NTMX77 in an SMS-R (continued)

**smsr\_unit\_no**  
is the number of the inactive SMS-R unit

If the load	Do
passed	step 25
failed	step 20

20

**DANGER****Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [`<file> string`], if this file\_name parameter is used, the loadfile named in the parameter will be used which is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the SMS-R from the local loadfile by typing

```
>LOADPDM UNIT unit_no LOCAL LOADFILE
```

and pressing the Enter key.

where

**smsr\_unit\_no**  
is the number of the inactive SMS-R unit

If the load	Do
passed	step 25
failed	step 21

21 After replacing the faulty card, load the inactive SMS-R unit by typing

```
>LOADPDM UNIT unit_no CC
```

and pressing the Enter key.

where

**unit\_no**  
is the number of the faulty SMS-R unit busied in step 9

If the load	Do
passes	step 22
fails	step 28

## NTMX77 in an SMS-R (continued)

- 22** Query the SMS-R counters for the firmware load on the NTMX77 by typing:

**>QUERYPM CNTRS**

and pressing the Enter key.

*Example of a MAP display:*

```

Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: ECR06BD
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR03A
UP:MX77AA
Unit 1:
Ram Load: ECR06BD
EPRom Version: AB02
EEPROM Load: Loadable: [MX77NH08], Executable: [MX77NH08],
CMR LOAD: CMR03A
UP:MX77AA
    
```

If firmware is	Do
valid	step 25
invalid	step 23

- 23** Load the firmware in the inactive SMS-R unit by typing

**>LOADFW INACTIVE**

and pressing 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 the LOADFW	Do
passes	step 24
fails	step 28

- 24** Update the firmware in the inactive SMS-R unit by typing

**>LOADFW INACTIVE UPGRADE**

and pressing the Enter key.

If the LOADFW UPGRADE	Do
passes	step 25

---

**NTMX77**  
**in an SMS-R (end)**

---

	<b>If the LOADFW UPGRADE</b>	<b>Do</b>
	fails	step 28
<b>25</b>	Return the inactive SMS-R unit to service by typing >RTS UNIT <b>unit_no</b> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the inactive SMS-R unit	
	<b>If the RTS</b>	<b>Do</b>
	passes	step 26
	fails	step 28
<b>26</b>	Send any faulty cards for repair according to local procedure.	
<b>27</b>	Return to <i>Alarm Clearing Procedures</i> section of this manual. At the point where a faulty card list is initiated, identify the next faulty card on the list, and go to the appropriate card replacement procedure for that card in this manual.	
<b>28</b>	Obtain further assistance in replacing this card by contacting personnel responsible for a higher level of support.	
<b>29</b>	Remove the sign from the active SMS-R unit.	
<b>30</b>	Record the following items in office records: <ul style="list-style-type: none"> <li>• date the card was replaced</li> <li>• serial number of the card</li> <li>• symptoms that prompted replacement of the card</li> </ul>	
<b>31</b>	You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.	
<b>32</b>	For further assistance with switch of activity, contact the personnel responsible for the next level of support.  <b>Note:</b> 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.	

## **NTMX77 in an SMU**

---

### **Application**

Use this procedure to replace the following card in a host SMU.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX77	AA	Unified processor (UP)

### **Common procedures**

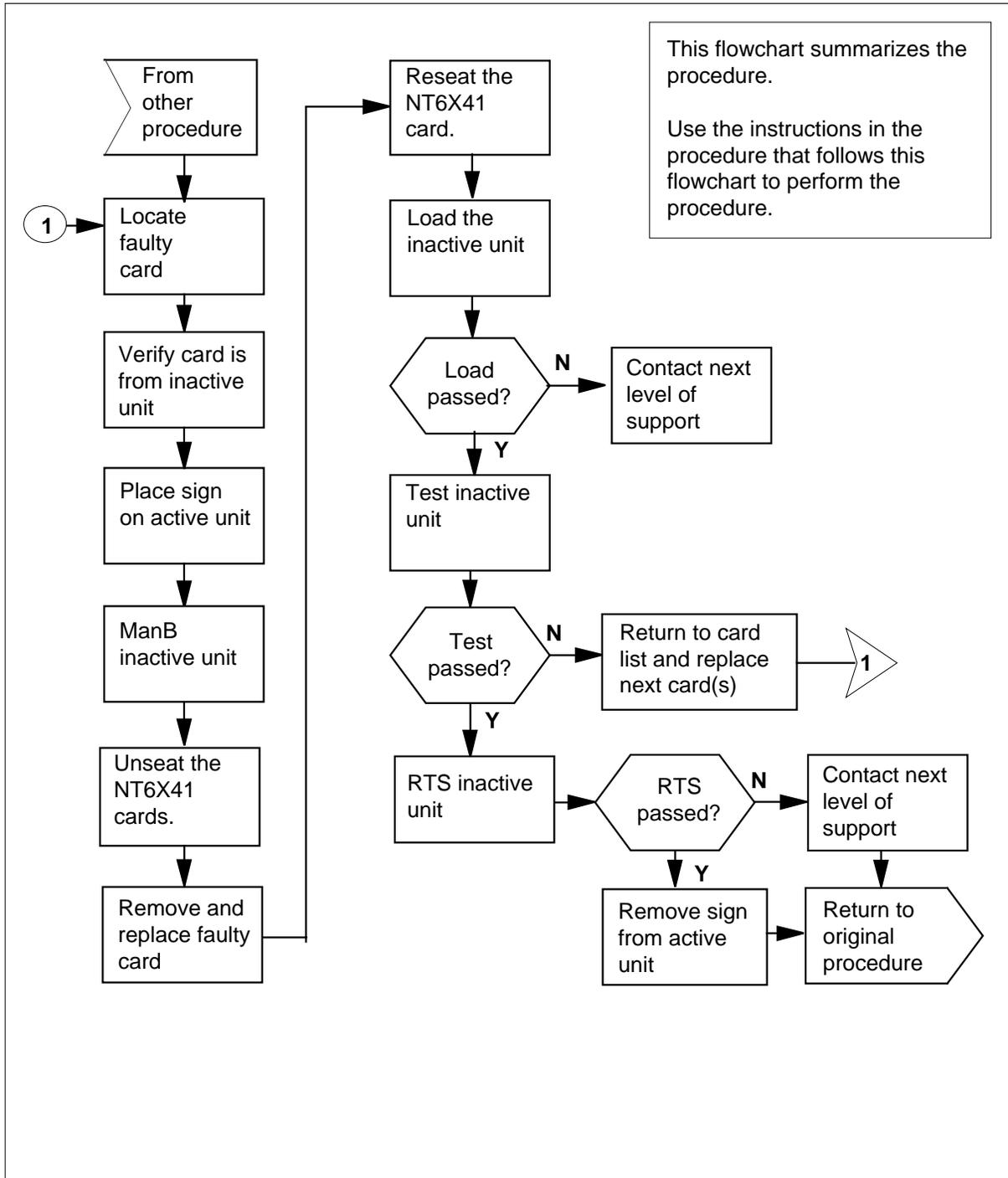
None

### **Action**

The following flowchart is a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX77 in an SMU (continued)

### Summary of card replacement procedure for an NTMX77 card in an SMU



## NTMX77 in an SMU (continued)

---

### Replacing an NTMX77 card in an SMU

#### *At your Current Location*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to verify or accept cards, or were directed to this procedure by your maintenance support group.
- 2



#### **CAUTION**

##### **Loss of service**

When replacing a card in the SMU ensure the unit where you are replacing the card is **INACTIVE** and the mate unit is **ACTIVE**.

Obtain a replacement card. Ensure the replacement card has the same product equipment code (PEC) including suffix, as the card to be removed.

#### *At the MAP terminal*

- 3 Access the PM level and post the SMU by typing  
`>MAPCI;MTC;PM;POST SMU smu_unit_no`  
and pressing the Enter key.  
*where*  
**smu**  
is the number of the host SMU  
**smu\_unit\_no**  
is the number of the host SMU unit to be posted

*Example of a MAP display:*

**NTMX77**  
**in an SMU** (continued)

```

CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
.    .    .    .    .    .    .    .    .    .
SMU          SysB  ManB  OffL  CBsy  ISTb  InSv
0 Quit      PM  0      0      2      0      2      25
2 Post_     SMU 0      0      0      0      0      1
3 ListSet
4          SMU 0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_    Unit 0: Inact SysB
6 TST_      Unit 1: Act  InSv
7 BSY_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next_
13 SWACT
14 QueryPM
15
16
17 Perform
18
    
```

- 4 By observing the MAP display, be sure the card to be removed is on the inactive unit.

If the faulty card is on an	Do
ACTIVE unit	step 5
INACTIVE unit	step 8

- 5 Switch the processing activity to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.  
 The system determines the type of SWACT it can perform and displays a confirmation prompt for the selected SWACT.

If SWACT	Do
can continue at this time	step 6
cannot continue at this time	step 52

- 6 Switch the activity of the unit by typing  
**>YES**  
 and pressing the Enter key.

## NTMX77 in an SMU (continued)

---

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

---

If the message is	Do
SWACT passed	step 8
SWACT failed	step 7
SWACT failedReason: SMU SWACTback	step 7
SWACT refused by SWACT controller	step 7

---

- 7 Return to the *Alarm Clearing Procedure* to clear the alarm condition on the inactive unit. When the alarm is cleared, return to step 1 of this procedure.

### At the SME frame

- 8 Put a sign on the active unit bearing the words **Active unit—Do not touch.**

### At the MAP terminal

- 9 Busy the inactive unit by typing  
>BSY UNIT **smu\_unit\_no**  
and pressing the Enter key.  
*where*  
**smu\_unit\_no**  
is the number of the inactive unit (0 or 1)
- 10 Set the inactive unit to the ROM level by typing  
>PMRESET UNIT **smu\_unit\_no** NORUN  
and pressing the Enter key.  
*where*  
**smu\_unit\_no**  
is the number of the inactive unit (0 or 1)

**NTMX77**  
**in an SMU (continued)****At the SME frame**

11

**DANGER****Static electricity damage**

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

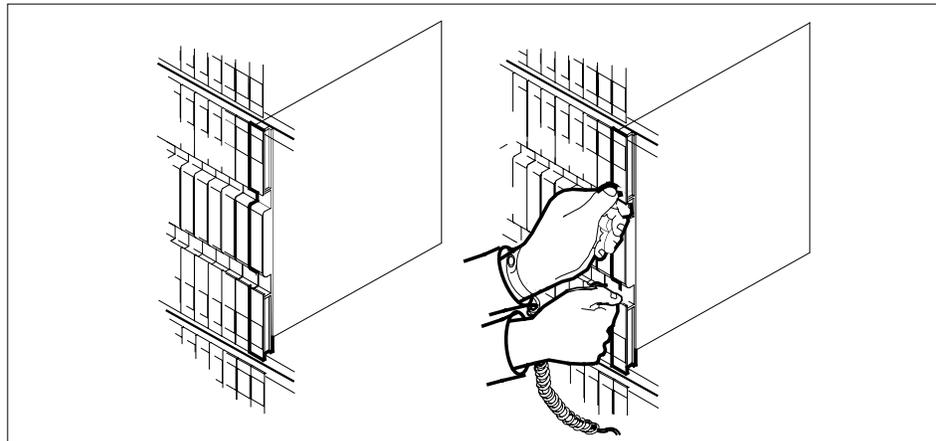
**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

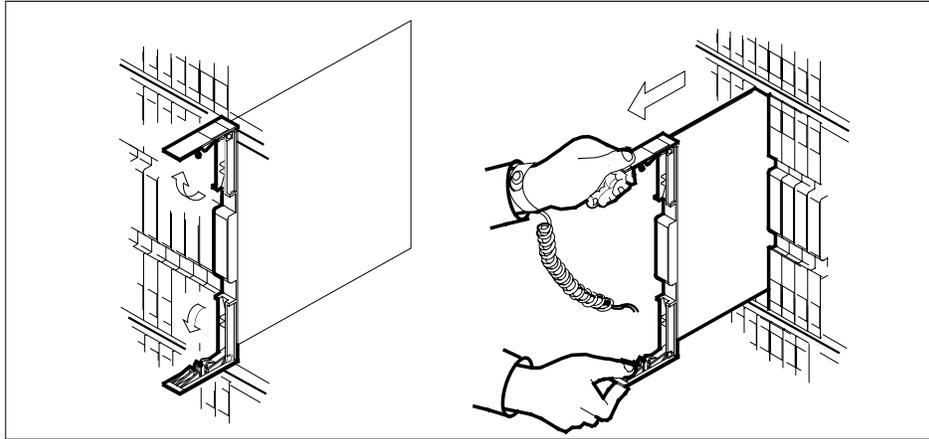
- 12 Unseat the NT6X41 card in slot 21.
- 13 Remove the NTMX77 card as shown in the following figures.
  - a Locate the card to be removed on the appropriate shelf.



- 14 Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.

## NTMX77 in an SMU (continued)

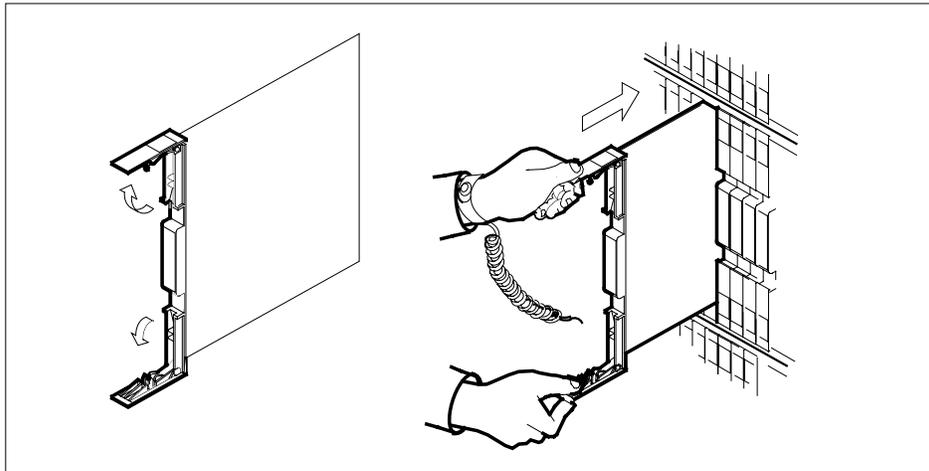
---



- 15 Ensure that the replacement card has the same PEC including suffix, as the card you just removed. Also ensure that all replacement card DIP switch settings match settings of the card just removed.

**Note:** If the NTMX77 has DIP switch S1, set DIP switch S1 to XPM.

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



**NTMX77**  
**in an SMU (continued)**

17

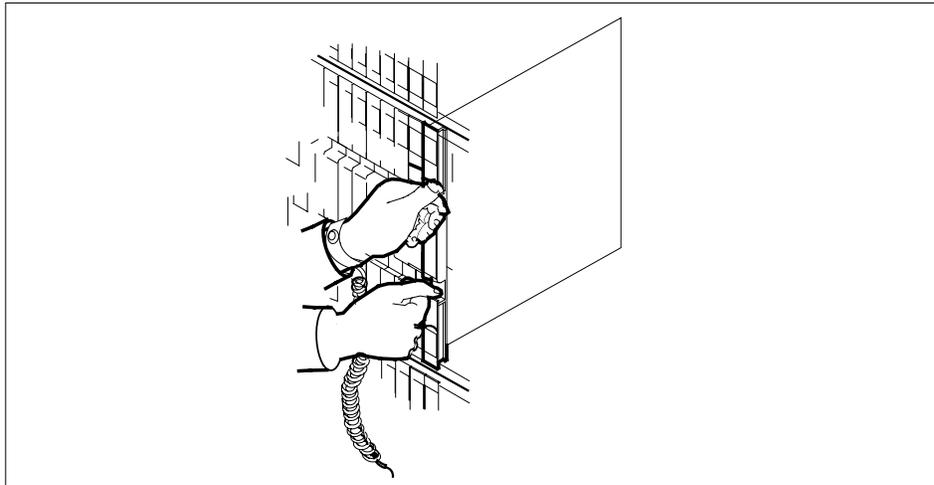
**DANGER****Possible loss of P-side nodes**

Monitor the LEDs on the faceplate of the replacement NTMX77 when installing.

1. The INSV and ESA LEDs may come ON and must go OFF in less than 4 seconds.
2. The ACT LCD 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 card and return to step 13 c. with a new NTMX77 card. If the NTMX77 card is allowed to remain with both units having an active processor, this is a condition of dual activity, which will result in the loss of P-side nodes.

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.



**18** Reseat the NT6X41 card in slot 21.

## NTMX77 in an SMU (continued)

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

If you entered this procedure from	Do
an alarm clearing procedure	step 49
other	step 23

**At the MAP terminal**

- 20** The peripheral loader card (NT7X05) allows local loading of the SMU data. Local data loading reduces recovery time. Determine if an NT7X05 is located in slot 12. Check if the NT7X05 card is provisioned by typing:

>QUERYPM FILES

and pressing the Enter key.

*Example of a MAP display:*

```

CM   MS   IOD   Net   PM   CCS   LNS   Trks   Ext   APPL
.    .    .    .    1SMU .    .    .    .    .
      *C*
SMU
0 Quit      PM    2    0    2    0    2    25
2 Post     SMU    1    0    0    0    1    1
3 ListSet
4          SMU    0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_   Unit 0: Inact ManB
6 TST_     Unit 1: Inact InSv
7 BSY_
8 RTS_     QUERYPM files
9 OffL     Unit 0:
10 LoadPM_ NT7X05 load File: ESU06AZ
11 Disp_   NT7X05 Image File:
12 Next_   Unit 1:
13 SwAct   NT7X05 load File: ESU06AZ
14 QueryPM NT7X05 Image File:
15
16 IRLINK
17 Perform
18
    
```

If the NT7X05 card is	Do
provisioned	step 21
not provisioned	step 23

**Note:** If the NT7X05 card is not provisioned the MAP response is:  
Nt7X05 not datafilled, QueryPm files invalid

## NTMX77 in an SMU (continued)

- 21** Load the SMU from the local image by typing  
>LOADPDM UNIT *unit\_no* LOCAL IMAGE  
and pressing the Enter key.

*where*

**SMU\_unit\_no**  
is the number of the inactive SMU unit

If the load	Do
passed	step 43
failed	step 22

- 22**



### **DANGER**

#### **Possible service interruption**

The LOADPDM command, LOCAL LOADFILE option, parameter [<file> string], will load the file\_name from the parameter. The loadfile name will not be patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

- Load the SMU from the local loadfile by typing  
>LOADPDM UNIT *unit\_no* LOCAL LOADFILE  
and pressing the Enter key.

*where*

**SMU\_unit\_no**  
is the number of the inactive SMU unit

If the load	Do
passed	step 43
failed	step 23

- 23** After replacing the faulty card, load the inactive unit by typing  
>LOADPDM UNIT *smu\_unit\_no* CC  
and pressing the Enter key.

*where*

## NTMX77 in an SMU (continued)

- smu\_unit\_no**  
is the number of the inactive unit
- |           | <b>If</b>   | <b>Do</b> |
|-----------|---|-----------|
|           | message loadfile not found in directory is received   | step 22   |
|           | load passes   | step 43   |
|           | load fails  | step 50   |
| <b>24</b> | Determine the type of device where the PM load files are located.   |           |
|           | <b>If load files are located on</b>   | <b>Do</b> |
|           | tape  | step 25   |
|           | IOC disk  | step 31   |
|           | SLM disk  | step 36   |
| <b>25</b> | Locate the tape that contains the PM load files.  |           |
| <b>26</b> | Mount the tape on a magnetic tape drive.  |           |
|           | <b>At the MAP terminal</b>  |           |
| <b>27</b> | Download the tape by typing<br>>MOUNT <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files                                     |           |
| <b>28</b> | List the contents of the tape in your user directory by typing<br>>LIST T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files |           |
| <b>29</b> | Demount the tape drive by typing<br>>DEMOUNT T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i>  |           |

---

**NTMX77**  
**in an SMU** (continued)

---

- tape\_no**  
is the number of the tape drive containing the PM load files
- 30** Go to step 41.
- 31** From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.
- 32** Access the disk utility level of the MAP display by typing  
**>DSKUT**  
and pressing the Enter key.
- 33** List the IOC file names into your user directory by typing  
**>LISTVOL volume\_name ALL**  
and pressing the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files obtained in step 31.
- 34** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.
- 35** Go to step 41.
- 36** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 37** Access the disk utility level of the MAP display by typing  
**>DISKUT**  
and pressing the Enter key.
- 38** List the SLM disk volumes by typing  
**>LV CM**  
and pressing the Enter key.
- 39** List the SLM file names into your user directory by typing  
**>LISTFL volume\_name**  
and pressing the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 36.
- 40** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.

## NTMX77 in an SMU (continued)

---

- 41 After listing the PM load files, load the inactive SMU unit by typing  
>LOADPM UNIT **smu\_unit\_no**  
and pressing the Enter key.

*where*

**smu\_unit\_no**  
is the number of the inactive unit

---

If load	Do
passed	step 42
failed	step 50

---

- 42 Query the XPM counts for the firmware load on the NTMX77 by typing:  
>QUERYPM CNTRS  
and pressing the Enter key.

*Example of a MAP display:*

```
Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
Ram Load: ESU05AW
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
Unit 1:
Ram Load: ESU05AW
EPRom Version: AB02
EEPROM Load: Loadable: MX77NG03, Executable: MX77NG03
CMR LOAD: CMR33A15
UP:MX77AA
IP:BX01
```

---

If firmware is	Do
valid	step 45
invalid	step 43

---

- 43 To load the firmware on the inactive unit type  
>LOADFW INACTIVE

## NTMX77 in an SMU (continued)

and pressing the Enter key.

**Note:** If the `firmware_file` is not specified with the `LOADFW` command, the command applies the `firmware_file` datafilled in the appropriate inventory table.

	<b>If LOADFW</b>	<b>Do</b>
	passed	step 44
	failed	step 50
<b>44</b>	To upgrade the firmware on the inactive unit type > <b>LOADFW INACTIVE UPGRADE</b> and pressing the Enter key.	
	<b>If LOADFW UPGRADE</b>	<b>Do</b>
	passed	step 45
	failed	step 50
<b>45</b>	Test the inactive unit by typing > <b>TST UNIT smu_unit_no</b> and pressing the Enter key. <i>where</i> <b>smu_unit_no</b> is the number of the inactive unit	
	<b>If TST</b>	<b>Do</b>
	passed	step 46
	failed	step 50
<b>46</b>	Return the inactive unit to service by typing > <b>RTS UNIT smu_unit_no</b> and pressing the Enter key. <i>where</i> <b>smu_unit_no</b> is the number of the inactive unit	
	<b>If the RTS</b>	<b>Do</b>
	passed	step 47
	failed	step 50

## NTMX77 in an SMU (end)

---

- 47** Send any faulty cards for repair according to local procedure.
- 48** Record the following items in office records:
- date the card was replaced
  - serial number of the card
  - symptoms that prompted replacement of the card
- Go to step 51.
- 49** Return to the *Alarm Clearing Procedure* or other procedure that directed you to this procedure. If necessary, go to the point where the faulty card list was produced, identify the next faulty card on the list, and go to the appropriate procedure for that card in this manual.
- 50** Obtain further assistance in replacing this card by contacting personnel responsible for higher level of support.
- 51** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.
- 52** 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.

**NTMX79  
in an RSC EXT**

---

**Application**

Use this procedure to replace an NTMX79 card in an RSCE EXT.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX79	AA	DS60 Extender

**Common procedures**

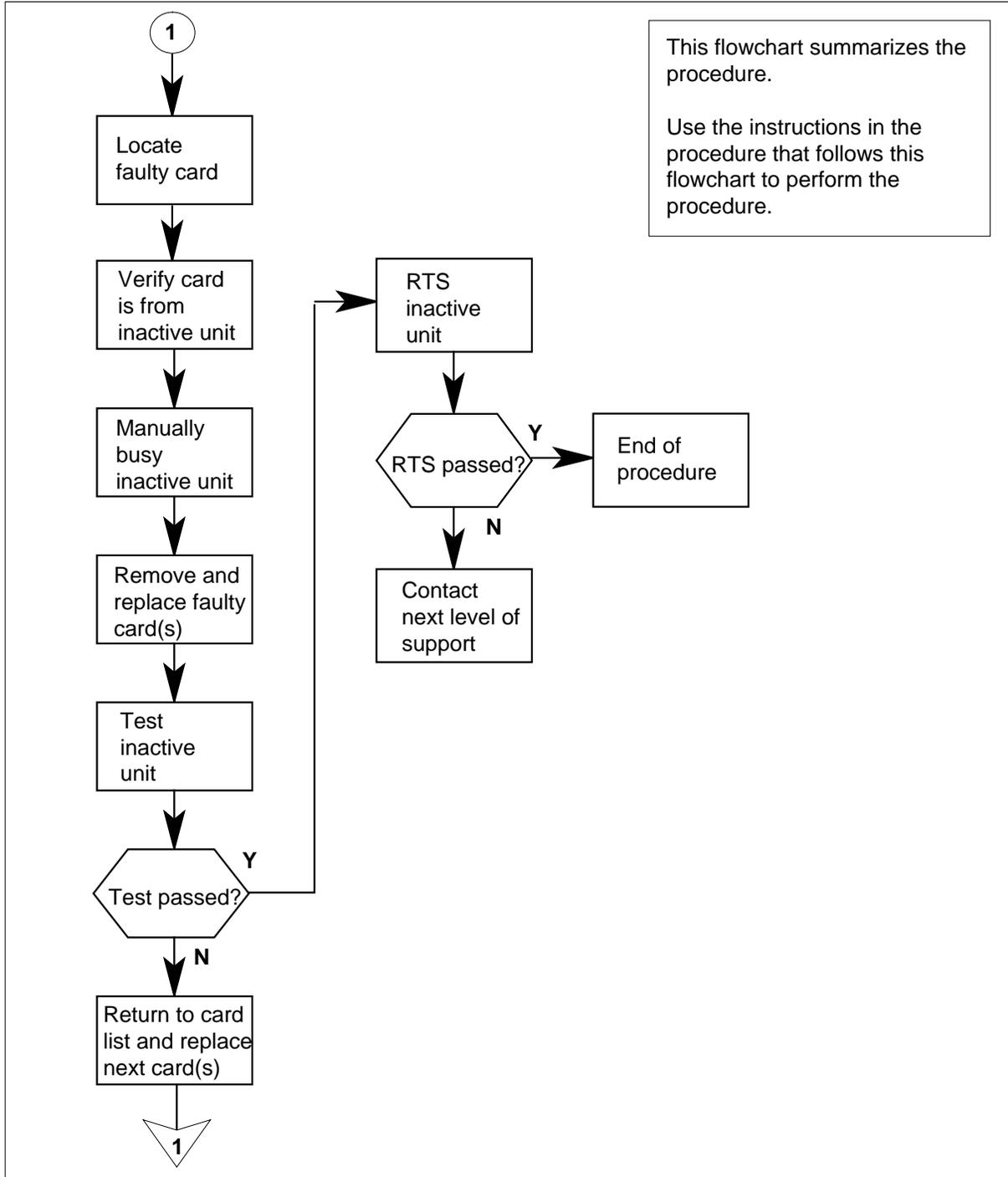
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX79 in an RSC EXT (continued)

### Summary of card replacement procedure for an NTMX79 card in RSC EXT



---

## NTMX79 in an RSC EXT (continued)

---

### Replacing an NTMX79 card in an RSCE EXT

#### *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

**CAUTION****Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  
`>MAPCI;MTC;PM;POST RCC2 rcc2_no`  
and pressing the Enter key.  
*where*  
**rcc2\_no**  
is the number of the RCC2 with the faulty card
- 4 Determine on which side of the extension shelf (right or left side) the faulty card is located by typing  
**QUERYPM**  
and pressing the Enter key.  
*Example of a MAP response:*

## NTMX79 in an RSC EXT (continued)

```
PM Type: RCC2 PM Nol.: 0 PM Int. No.: 2 Node_No.: 126
Pms Equipped: 61 Loadname: CRI05AW
ESA equipped: YES IntraSwitching is ON
WARM SWACT is supported and available.
REX on RCC2 0 is included in the REX schedule.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
R113 01 AA00 CRSC 00 05 RCC2 : 000 MX85AA
R113 01 AA01 CEXT 00 05 EXT : [LEFT] MX86AA
```

(Extension shelf location of faulty card) —┘

- 5 By observing the LED on the extension shelf, be sure that the card to be removed is on the inactive unit. The LED is lit (ON) on the active unit, and not lit (OFF) on the inactive unit.

### At the RSCE frame

- 6 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### At the MAP terminal

- 7 Busy the inactive RCC2 unit by typing

```
>bsy unit rcc2_unit_no
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the RCC2 unit to be busied (0 or 1)

### At the RSCE frame

- 8



#### WARNING

##### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

**NTMX79**  
**in an RSC EXT** (continued)

9



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Power down the NTMX72 card in the inactive RCC2.

10



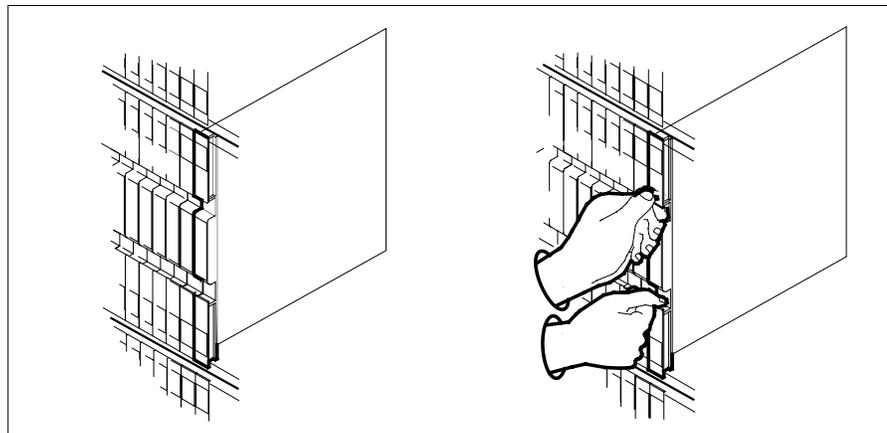
**CAUTION**

**Loss of subscriber service**

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the ON position before removing the NTMX79 card.

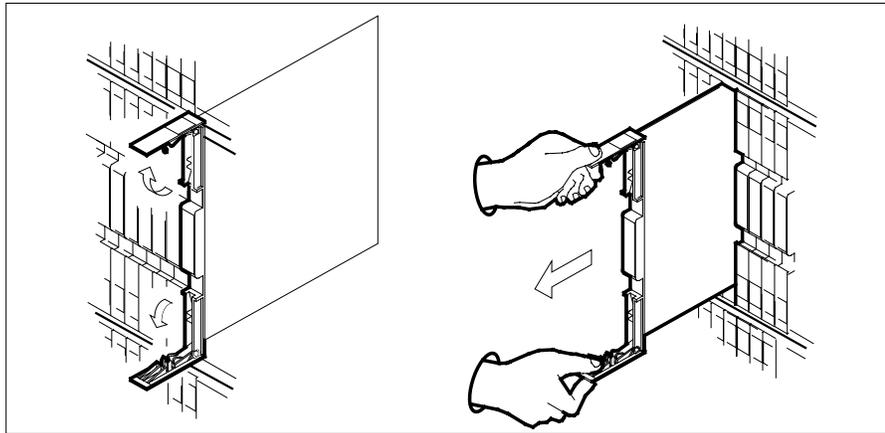
Remove the NTMX79 card as shown in the following figures.

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

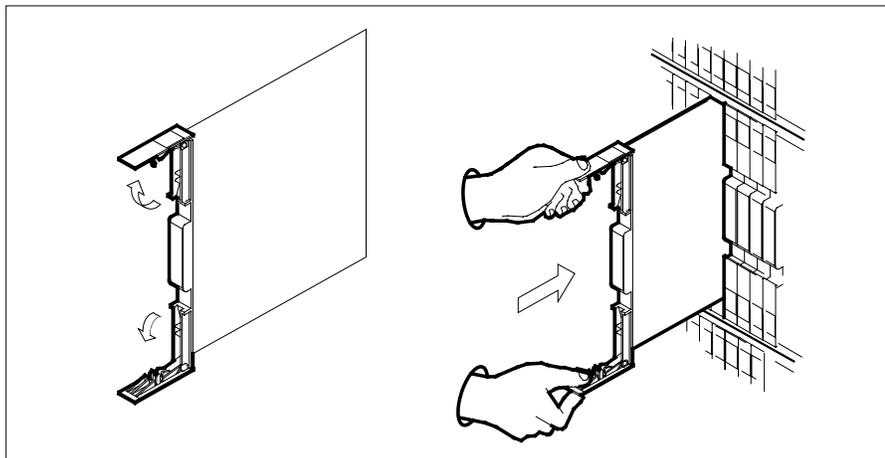


- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.

## NTMX79 in an RSC EXT (continued)



- c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 11 Open the locking levers on the replacement card.
- a Align the card with the slots in the shelf.
  - b Gently slide the card into the shelf.



12



### CAUTION

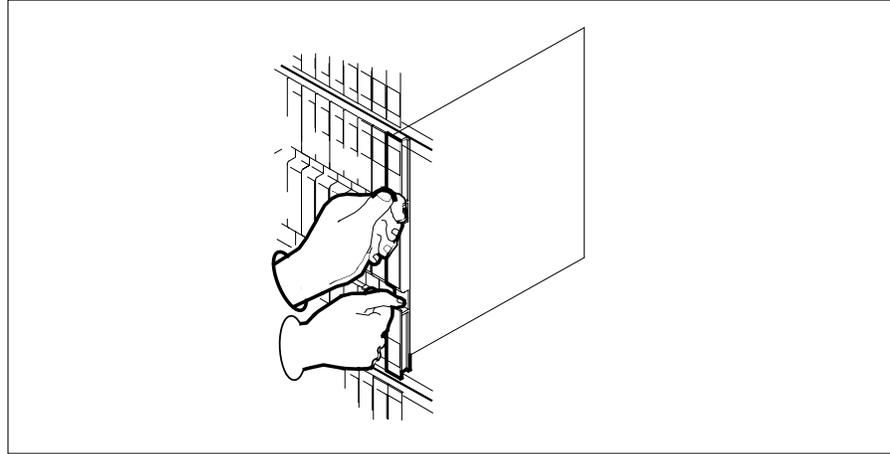
#### Loss of subscriber service

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the OFF position before seating the NTMX79 card.

## NTMX79 in an RSC EXT (continued)

Seat and lock the NTMX79 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.



- 13 Power up the inactive RCC2 unit as follows:
  - a Ensure that the power converter (NTMX72) is fully inserted. A major audible alarm may sound. This alarm is silenced when power is restored to the converter.
 

**Note:** Some release levels of the NTMX72AA do not require the simultaneous operation of the Reset switch on the power converter and the circuit breaker on the MSP. This is reflected in the following step.
  - b If the power converter replaced is an NTMX72AA, set the switch on the power converter to the Reset position. Set the associated circuit breaker on the MSP to the ON position.
 

If both the converter FAIL LED and FRAME FAIL lamp on the MSP go OFF, go to step 14.

If both the converter FAIL LED and FRAME FAIL lamp on the MSP do not go OFF, hold the switch on the NTMX72AA power converter in the Reset position and simultaneously set the associated circuit breaker on the MSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will go OFF. Go to step 14.
  - c If the power converter replaced is an NTMX72AB, set the associated circuit breaker on the MSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will go OFF. Go to step 14.
- 14 The peripheral loader card (NT7X05) allows local loading of RCC2 data, which reduces recovery time. Check if the NT7X05 card is provisioned by typing
 

```
>QUERYPM FILES
```

 and pressing the Enter key.

## NTMX79 in an RSC EXT (continued)

*Example of a MAP display:*

```

CM   MS   IOD   Net   PM   CCS   LNS   Trks   Ext   APPL
.    .    .    .    1RCC2 .    .    .    .    .
      *C*
RCC2      SysB   ManB   OffL   Cbsy   ISTb   InSv
0 Quit    PM      2      0      2      0      25
2 Post    RCC2   1      0      0      0      1  1
3 ListSet
4         RCC2      0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_  Unit 0:  Inact ManB
6 TST_    Unit 1:  ACT InSv
7 BSY_
8 RTS_    QUERYPM files
9 OffL    Unit 0:
10 LoadPM_ NT7X05 load File: CRI05AW
11 Disp_   NT7X05 Image File:
12 Next_   CMR Load: CMR03A
13 SwAct   Unit 1:
14 QueryPM NT7X05 load File: CRI05AW
15         NT7X05 Image File:
16 IRLINK  CMR Load: CMR03A
17 Perform
18

```

**Note:** If the NT7X05 card is not provisioned the MAP response is:NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 15
not provisioned	step 16

- 15** Load the inactive RCC2 unit from the local load file by typing  
**>LOADPM UNIT unit\_no LOCAL LOADFILE**  
 and pressing the Enter key.

where

**rcc2\_unit\_no**  
 is the number of the inactive RCC2 unit

If the load	Do
passed	step 17
failed	step 16

- 16** Load the inactive RCC2 unit (from the CM) by typing  
**>LOADPM UNIT rcc2\_unit\_no**

## NTMX79 in an RSC EXT (continued)

and pressing the Enter key.

*where*

**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit

<b>If load</b>	<b>Do</b>
passed	step 17
failed	step 24

**17** Use the following information to determine what step to go to next in this procedure.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 23
other	step 18

**18** Return the inactive RCC2 unit to service by typing  
>RTS UNIT rcc2\_unit\_no  
and pressing the Enter key.  
*where*  
**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit

**19** Use the following information to determine where to proceed.

<b>If RTS</b>	<b>Do</b>
passed	step 20
failed	step 24

**20** Remove the sign from the active RCC2 unit.

**21** Send any faulty cards for repair according to local procedure.

**22** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 25.

**23** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

**24** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX79**  
**in an RSC EXT (end)**

---

- 25 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

## NTMX79 in an RSC-M

---

### Application

Use this procedure to replace an NTMX79 circuit card in a Remote Switching Center Multi-access (RSC-M) extension (EXT) shelf.

*Note:* In this section, RSC-M is known as RCO2 in the examples. When software outputs messages to the MAP terminal, software does not differ between the two RCO2 types.

PEC	Suffixes	Name
NTMX79	AA	DS60 Extender

### Common procedures

Two common procedures are referenced in this section:

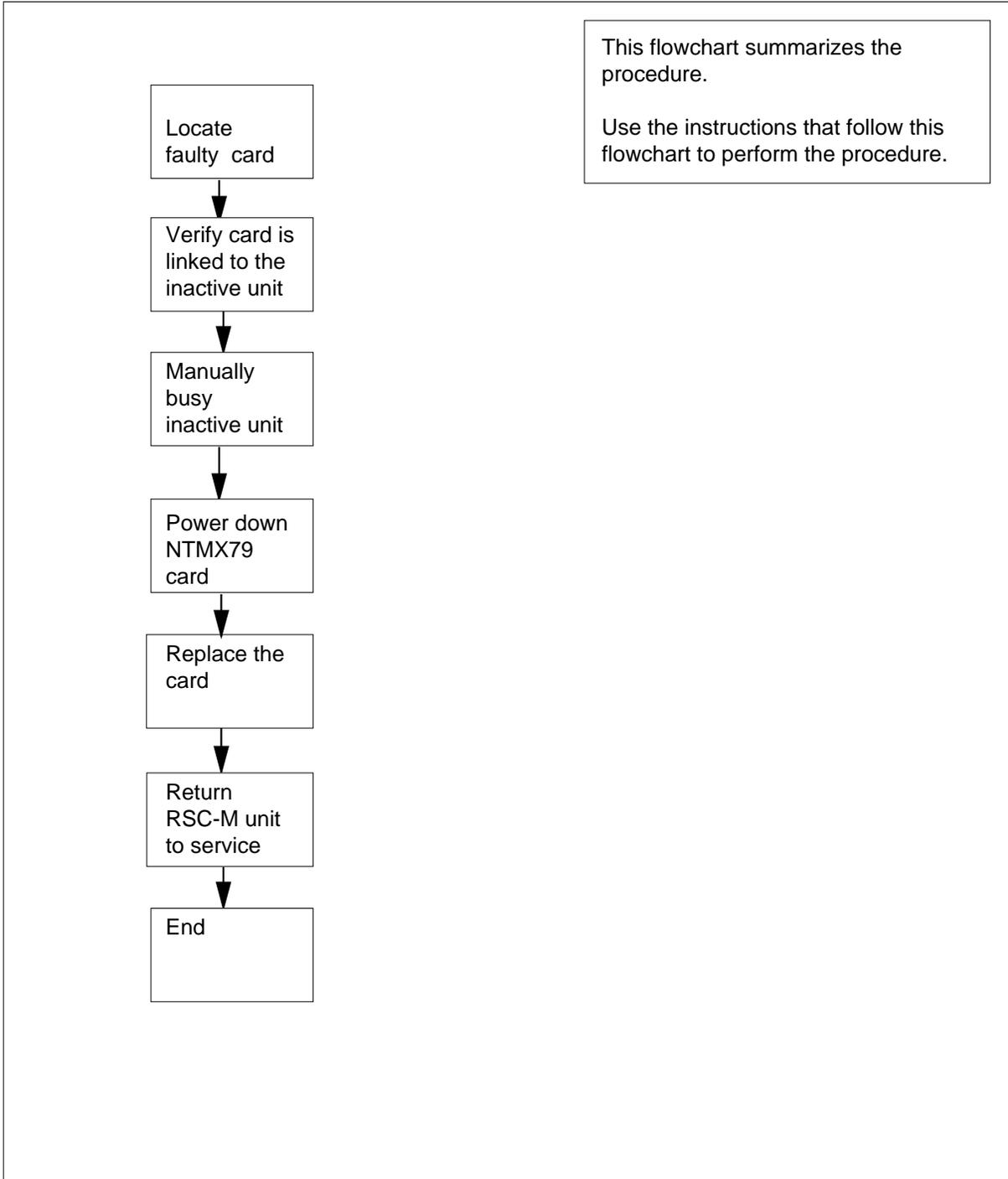
- replacing a card
- returning a card

### Action

This procedure is the procedure to replace the card. 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.

## NTMX79 in an RSC-M (continued)

### Summary of replacing an NTMX79 in an RSC-M



## NTMX79 in an RSC-M (continued)

### To replace an NTMX79 in an RSC-M

#### At the MAP display

- 1 Proceed only if one of the following conditions applies. The maintenance support group or a step in a maintenance procedure directs you to this card replacement procedure. Use the procedure to verify or accept cards.
- 2



#### WARNING

##### Loss of service

To replace a card in the RSC-M, make sure the unit in which you replace the card is *inactive* and the mate unit is *active*.

Obtain an NTMX79 replacement circuit card. Verify the replacement circuit card has the same product engineering code (PEC) and suffix as the old circuit card.

#### At the MAP terminal

- 3 Make sure the system displays the peripheral module (PM) level of the MAP display. To post the RSC-M/RCO2, type

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

where

#### **rco2\_no**

is the number of the RCO2 with the defective card

Example of a MAP response:

```
RCO2          SysB      ManB      OffL      CBsy      ISTb      InSv
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCO2          0          0          0          0          1          1
3 ListSet
4           RCO2      0 ISTb  Links_OOS:  CSide 1, PSide 1
5 TRNSL     Unit0:      Inact ISTb
6 TST       Unit1:      Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
```

## NTMX79 in an RSC-M (continued)

---

- 4 To determine the location of the RCO2 extension half shelf (left or right) that contains the circuit card to replace, type

>QUERYPM

and press the Enter key.

*Example of a MAP response:*

```
PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname: KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
```

- 5 Observe the LED on the defective NTMX79 circuit card. The system removes the LED when the unit to which the LED connects is inactive.

---

If the defective card	Do
connects to the active unit	step 6
connects to the inactive unit	step 8

---

- 6 To switch the processing activity (SWACT) to the inactive unit, type

>SWACT

and press the Enter key.

*Example of a MAP response:*

```
RCO2 0 A Warm SwAct will be performed after
data sync of active terminals.
Please confirm ("YES", "Y", "NO", or "N"):
```

---

If the system	Do
prompts you to confirm a warm SWACT	step 7
rejects the SWACT	step 25

---

- 7 To confirm the command, type

>YES

and press the Enter key.

## NTMX79 in an RSC-M (continued)

*Example of a MAP response:*

```
Unit0:   Inact SysB Mtce
Unit1:   Act   ISTb

RCO2 0   SwAct Passed
```

If the MAP response	Do
is SWACT passed	step 8
is other than listed here	step 24

- 8** A maintenance flag (Mtce) can appear. This flag indicates that maintenance tasks that the system initiates are in progress. Wait until the flag disappears from the status lines for both PM units before you proceed to the next step.

#### **At the cabinet**

- 9** Place a sign on the active unit that bears the words *Active unit-Do not touch*. Do not attach this sign with magnets or tape.

#### **At the MAP terminal**

- 10** To busy the inactive PM unit, type

```
>bsy INACTIVE
```

and press the Enter key.

- 11** Locate the circuit card to replace.

**Note:** The location of NTMX79 circuit cards are in slots 2 and 13 of the extension (EXT) shelf connected to unit 0. The location of these cards are also in slots 14 and 25 of the EXT shelf connected to unit 1.

- 12**



#### **WARNING**

##### **Static electricity damage**

Wear a wrist strap that connects to the wrist-strap grounding point on the left side of the modular supervisory panel (MSP) to remove cards. The wrist strap protects the equipment against static electricity damage.

Power down the NTMX79 circuit card on the extension shelf.

- 13** To replace the card, use the common replacing a card procedure in this document. When the procedure is complete, return to this point.

**Note:** If the circuit card to replace has switches, make sure the switches on the replacement circuit card have the same settings.

- 14** Power up the NTMX79 circuit card as follows:

## NTMX79 in an RSC-M (end)

- a Make sure that insertion of the NTMX79 circuit card is correct..
  - b Set the POWER switch to the ON position.
- 15 To determine the circuit breaker that controls the NTMX79 circuit card that you replace, observe the MSP. Note the circuit breaker that trips.
- 16 Press and hold the circuit breaker on the MSP to the ON position. When the circuit breaker is ON, place the power switch on the NTMX79 circuit card to the RESET position. The CONVERTER FAIL LED on the NTMX79 circuit card, and the FRAME FAIL lamp on the MSP are ON.
- 17 To determine where to proceed next in this procedure, use the following information.
- | If you  | Do      |
|---|---------|
| entered this procedure from alarm clearing procedures | step 18 |
| entered this procedure from other                     | step 19 |
- 18 Remove the sign from the active unit. Return to the procedure that directed you to this procedure. At the point where the system produced a defective card list, identify the next defective card on the list. Go to the correct card replacement procedure for that card in this manual.
- 19 To return the inactive RCO2 unit to service, type  
`>RTS UNIT unit_no`  
 and press the Enter key.  
*where*  
     **unit\_no**  
         is the number of the inactive unit
- 20 Use the following information to determine where to proceed.
- | If RTS | Do      |
|--------|---------|
| passed | step 21 |
| failed | step 24 |
- 21 Remove the sign from the active unit.
- 22 Go to the common returning a card procedure in this document.
- 23 This procedure is complete.
- 24 For additional help to replace this card, contact operating company maintenance personnel.
- 25 For additional help with switch of activity, contact the next level of support.
- Note:** If the system recommends the use of the SWACT command with the FORCE option, consult office personnel. Office personnel can advise you to not use the FORCE option.

**NTMX79**  
**in an RSC-S (DS-1) Model A EXT**

---

**Application**

Use this procedure to replace an NTMX79 card in an RSC-S EXT.

PEC	Suffixes	Name
NTMX79	AA	DS60 Extender

**Common procedures**

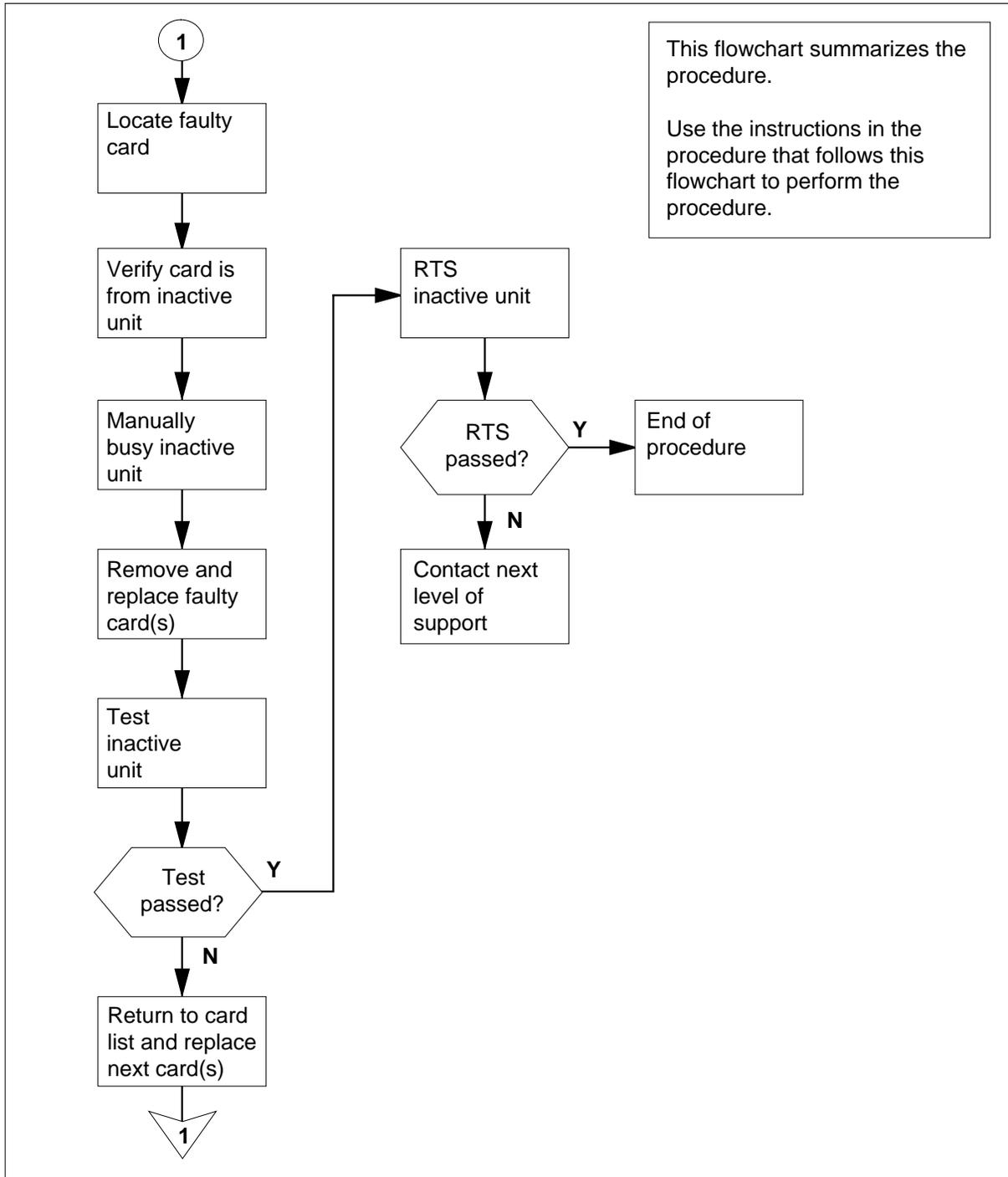
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX79 in an RSC-S (DS-1) Model A EXT (continued)

### Summary of card replacement procedure for an NTMX79 card in RSC-S EXT



---

## NTMX79

### in an RSC-S (DS-1) Model A EXT (continued)

---

#### Replacing an NTMX79 card in an RSC-S EXT

##### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure the unit in which the card is being replaced is *inactive* and the mate unit is *active*.

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

 and pressing the Enter key.  
 where  
     **rcc2\_no**  
     is the number of the RCC2 with the faulty card
- 4 Determine on which side of the extension shelf (right or left side) the faulty card is located by typing  

```
QUERYPM
```

 and pressing the Enter key.  
*Example of a MAP response:*

## NTMX79 in an RSC-S (DS-1) Model A EXT (continued)

```

PM Type: RCC2 PM Nol.: 0 PM Int. No.: 2 Node_No.: 126
Pms Equipped: 61 Loadname: CRI06AY
ESA equipped: YES IntraSwitching is ON
WARM SWACT is supported and available.
REX on RCC2 0 is included in the REX schedule.
Node Status; {OK, FALSE}
Unit 0 Act, Status; {OK, FALSE}
Unit 1 Inact, Status; {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
R113 01 AA00 CRSC 00 05 RCC2 : 000 MX85AA
R113 01 AA01 CEXT 00 05 EXT : [LEFT] MX86AA

```

(Extension shelf location of faulty card) —┐

### At the RCE frame

- By observing the LED on the extension shelf, be sure that the card to be removed is on the inactive unit. The LED is lit (ON) on the active unit, and not lit (OFF) on the inactive unit.

If faulty card is on	Do
active unit	step 6
inactive unit	step 8

### At the MAP display

- Switch the processing activity (SWACT) to the inactive RCC2 unit by typing **>SWACT** and pressing the Enter key.  
**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.
- Confirm the system prompt by typing **>YES** and pressing the Enter key.  
After both units are in service, proceed to the next step.

### At the RCE frame

- Place a sign on the active RCC2 unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

## NTMX79

### in an RSC-S (DS-1) Model A EXT (continued)

#### *At the MAP terminal*

- 9 Busy the inactive RCC2 unit by typing  
`>bsy unit rcc2_unit_no`  
 and pressing the Enter key.  
 where  
**rcc2\_unit\_no**  
 is the number of the RCC2 unit with the faulty card (0 or 1)

#### *At the RCE frame*

10



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Power down the NTMX72 card on the inactive RCC2 unit.

12



#### **CAUTION**

##### **Loss of subscriber service**

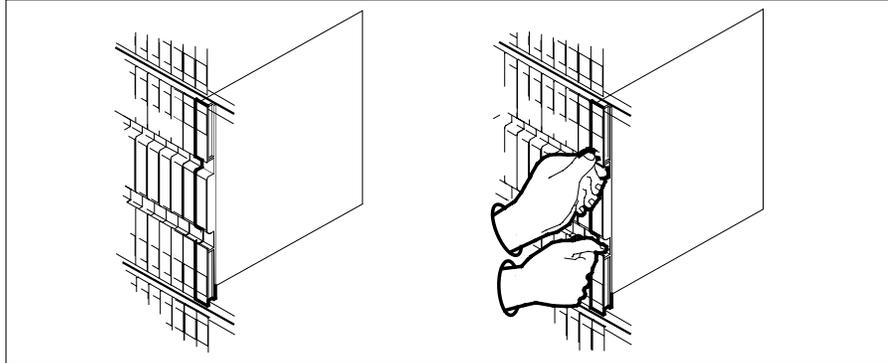
To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the ON position before removing the NTMX79 card.

Remove the NTMX79 card as shown in the following figures.

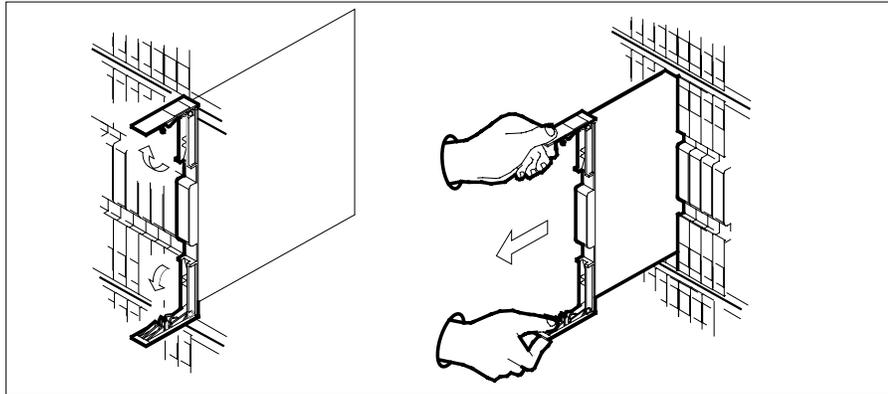
## NTMX79 in an RSC-S (DS-1) Model A EXT (continued)

---

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



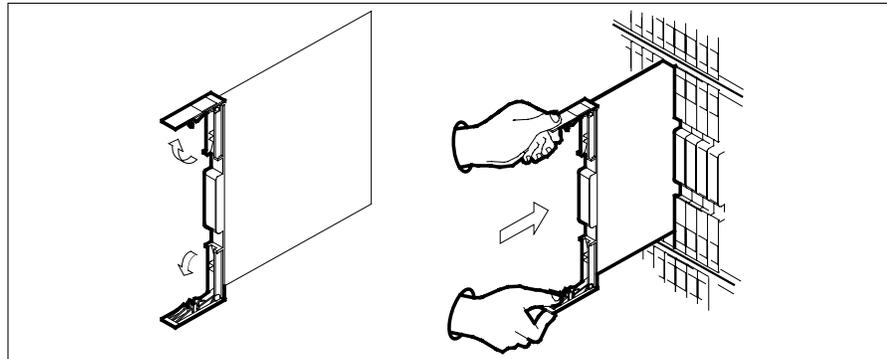
- b Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



- c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 13 Open the locking levers on the replacement card.
- a Align the card with the slots in the shelf.
- b Gently slide the card into the shelf.

## NTMX79

### in an RSC-S (DS-1) Model A EXT (continued)



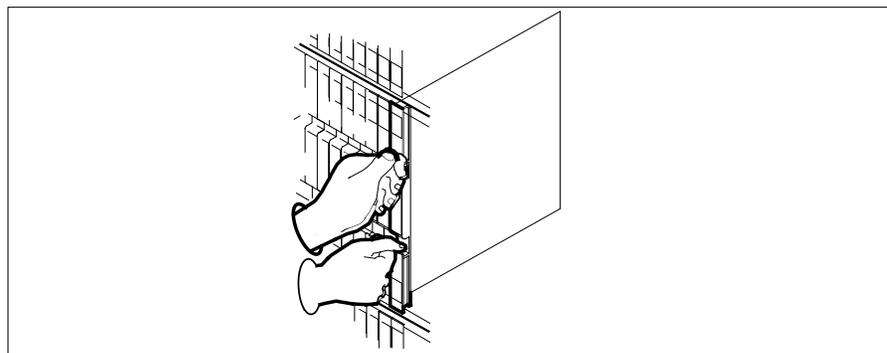
14

**CAUTION****Loss of subscriber service**

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the OFF position before seating the NTMX79 card.

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.



15 Power up the inactive RCC2 unit as follows:

- a Ensure that the power converter (NTMX72) is fully inserted. A major audible alarm may sound. This alarm is silenced when power is restored to the converter.

**Note:**

## NTMX79 in an RSC-S (DS-1) Model A EXT (continued)

- b If the power converter is an NTMX72AA, set the switch on the power converter to the Reset position. Set the associated circuit breaker on the FSP to the ON position.

If both the converter FAIL LED and FRAME FAIL lamp on the FSP go OFF, go to step 16.

If both the converter FAIL LED and FRAME FAIL lamp on the FSP do not go OFF, hold the switch on the NTMX72AA converter in the Reset position and simultaneously set the associated circuit breaker on the FSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the FSP will go OFF. Go to step 16.

- c If the power converter is an NTMX72AB set the associated circuit breaker on the FSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the FSP will go OFF. Go to step 16.

- 16 The peripheral/remote loader-16 card (NT7X05) allows local loading of RCC2 data, which reduces recovery time. Check to see if the NT7X05 card is provisioned by typing

**>QUERYPM FILES**

and pressing the Enter key.

*Example of a MAP display:*

```

      CM   MS   IOD   Net   PM   CCS   LNS   Trks   Ext   APPL
      .    .    .    .    1RCC2 .    .    .    .    .
                *C*
RCC2          SysB   ManB   OffL   CBsy   ISTb   InSv
0 Quit        PM     2       0       2       0       25
2 Post        RCC2   1       0       0       0       1       1
3 ListSet
4             RCC2   0 ISTb  Links_OOS: CSide 0, PSide 0
5 TRNSL_      Unit 0: Inact ManB
6 TST_        Unit 1: Act InSv
7 BSY_
8 RTS_        QUERYPM files
9 OffL        Unit 0:
10 LoadPM_    NT7X05 load File: CRI05AW
11 Disp_      NT7X05 Image File:
12 Next_      CMR Load: CMR03A
13 SwAct      Unit 1:
14 QueryPM    NT7X05 load File: CRI05AW
15           NT7X05 Image File:
16 IRLINK     CMR Load: CMR03A
17 Perform
18
    
```

**Note:** If the NT7X05 card is not provisioned the MAP response is: NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 17

## NTMX79

### in an RSC-S (DS-1) Model A EXT (continued)

If the NT7X05 card is	Do
not provisioned	step 18

17

**DANGER****Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCC2 unit from the local loadfile by typing

```
>LOADPDM UNIT rcc2_unit_no LOCAL LOADFILE
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

If the load	Do
passed	step 19
failed	step 18

18 Load the inactive RCC2 unit (from the CM) by typing

```
>LOADPDM UNIT rcc2_unit_no
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

If load	Do
passed	step 19
failed	step 27

19 Test the inactive RCC2 unit by typing

```
>TST UNIT rcc2_unit_no
```

and pressing the Enter key.

where

**NTMX79**  
**in an RSC-S (DS-1) Model A EXT (end)**

<b>rcc2_unit_no</b> is the number of the inactive RCC2 unit	
<b>If TST</b>	<b>Do</b>
passed	step 20
failed	step 26
<b>20</b>	Use the following information to determine what step to go to next in this procedure.
<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 26
other	step 21
<b>21</b>	Return the inactive RCC2 unit to service by typing <b>&gt;RTS UNIT rcc2_unit_no</b> and pressing the Enter key. <i>where</i> <b>rcc2_unit_no</b> is the number of the inactive RCC2 unit
<b>22</b>	Use the following information to determine where to proceed.
<b>If RTS</b>	<b>Do</b>
passed	step 23
failed	step 27
<b>23</b>	Remove the sign from the active RCC2 unit.
<b>24</b>	Send any faulty cards for repair according to local procedure.
<b>25</b>	Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 28.
<b>26</b>	Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
<b>27</b>	Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
<b>28</b>	You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTMX79**  
**in an RSC-S (DS-1) Model B EXT**

---

**Application**

Use this procedure to replace an NTMX79 card in an RSC-S EXT.

PEC	Suffixes	Name
NTMX79	AA	DS60 Extender

**Common procedures**

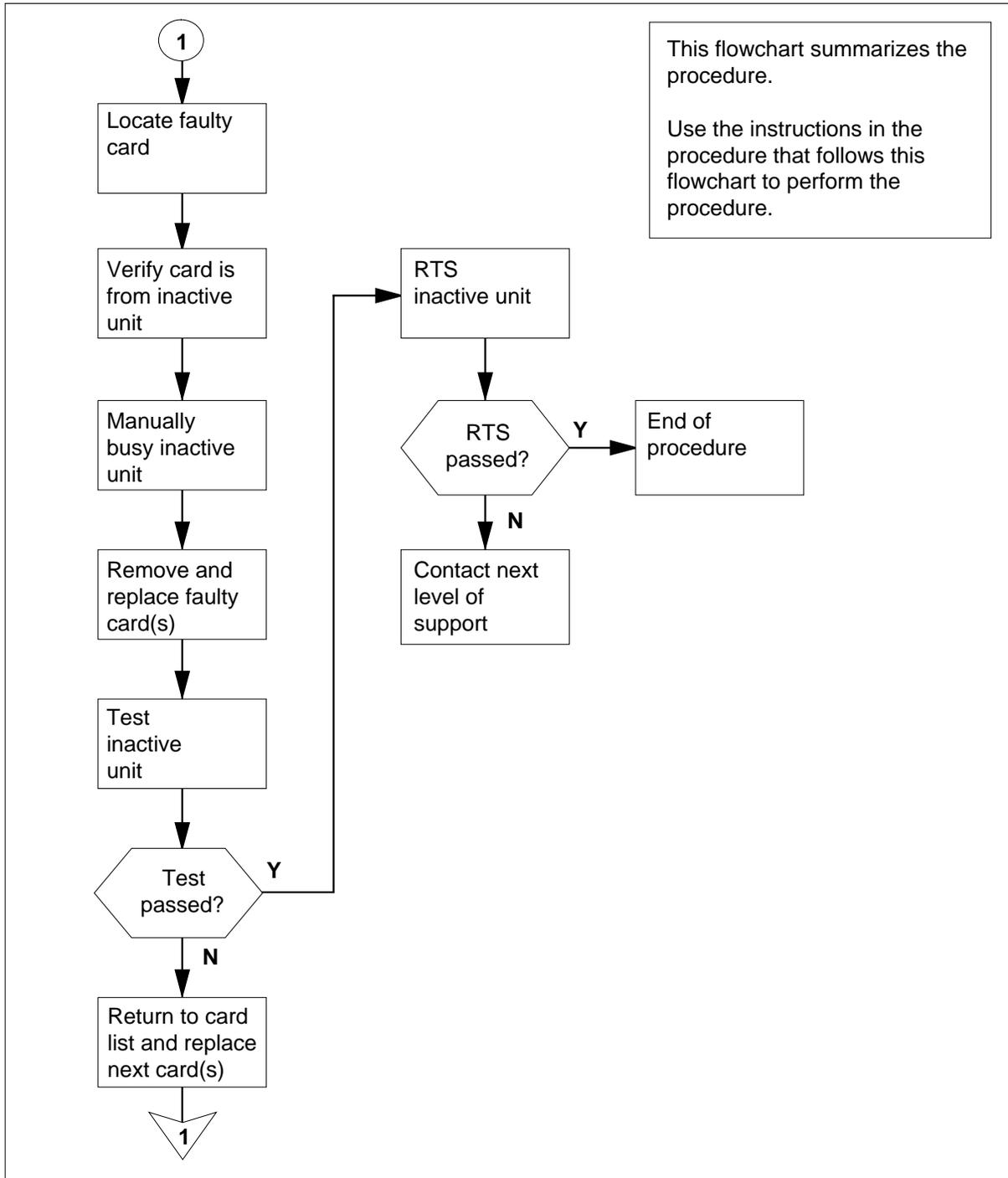
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX79 in an RSC-S (DS-1) Model B EXT (continued)

### Summary of card replacement procedure for an NTMX79 card in RSC-S EXT



---

## NTMX79

### in an RSC-S (DS-1) Model B EXT (continued)

---

#### Replacing an NTMX79 card in an RSC-S EXT

##### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the RCC2 by typing  

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

 and pressing the Enter key.  
 where  
     **rcc2\_no**  
     is the number of the RCC2 with the faulty card
- 4 Determine on which side of the extension shelf (right or left side) the faulty card is located by typing  

```
QUERYPM
```

 and pressing the Enter key.  
*Example of a MAP response:*

## NTMX79 in an RSC-S (DS-1) Model B EXT (continued)

```

PM Type: RCC2 PM Nol.: 0 PM Int. No.: 2 Node_No.: 126
Pms Equipped: 61 Loadname: CRI05AW
ESA equipped: YES IntraSwitching is ON
WARM SWACT is supported and available.
REX on RCC2 0 is included in the REX schedule.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
R113 01 AA00 CRSC 00 05 RCC2 : 000 MX85AA
R113 01 AA01 CEXT 00 05 EXT : [LEFT] MX86AA
    
```

(Extension shelf location of faulty card) —┐

- 5 By observing the LED on the extension shelf, be sure that the card to be removed is on the inactive unit. The LED is lit (ON) on the active unit, and not lit (OFF) on the inactive unit.

If faulty card is on	Do
active unit	step 6
inactive unit	step 8

- 6 Switch the processing activity (SWACT) to the inactive unit by typing

```
>SWACT
```

and pressing the Enter key.

**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.

- 7 Confirm the system prompt by typing

```
>YES
```

and pressing the Enter key.

After both units are in service, proceed to the next step.

### At the RCE frame

- 8 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### At the MAP terminal

- 9 Busy the inactive RCC2 unit by typing

```
>bsy unit rcc2_unit_no
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the RCC2 unit to be busied (0 or 1)

---

**NTMX79**

**in an RSC-S (DS-1) Model B EXT (continued)**

---

*At the RCE frame*

10



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Power down the NTMX72 card in the inactive RCC2.

12



**CAUTION**

**Loss of subscriber service**

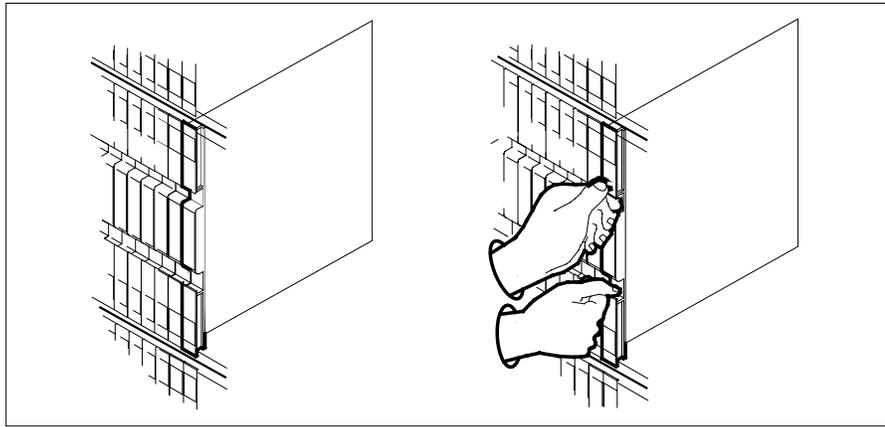
To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the ON position before removing the NTMX79 card.

Remove the NTMX79 card as shown in the following figures.

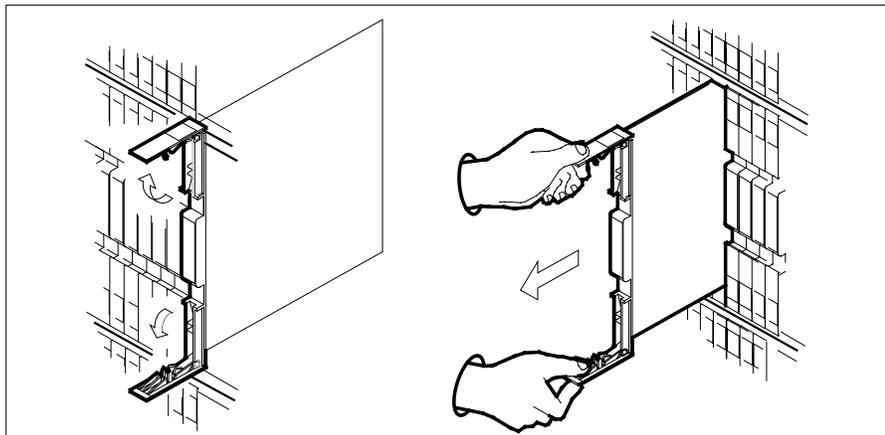
- a Locate the card to be removed on the appropriate shelf.

**NTMX79**  
**in an RSC-S (DS-1) Model B EXT** (continued)

---

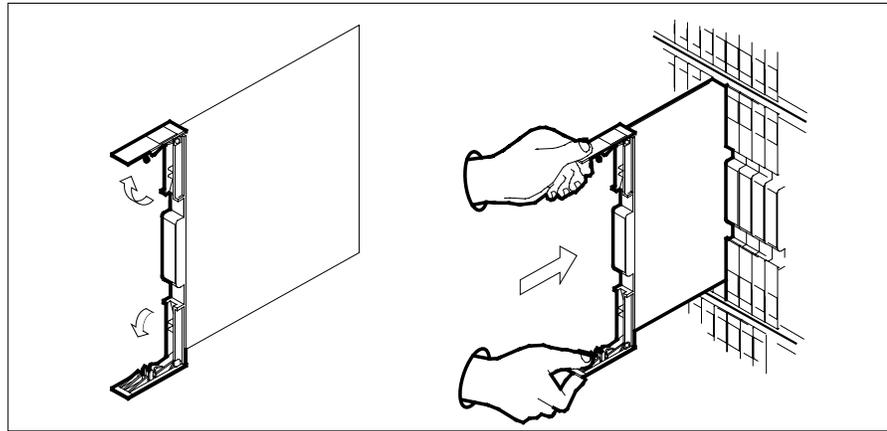


- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 13** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
- b** Gently slide the card into the shelf.

**NTMX79**  
**in an RSC-S (DS-1) Model B EXT (continued)**



14



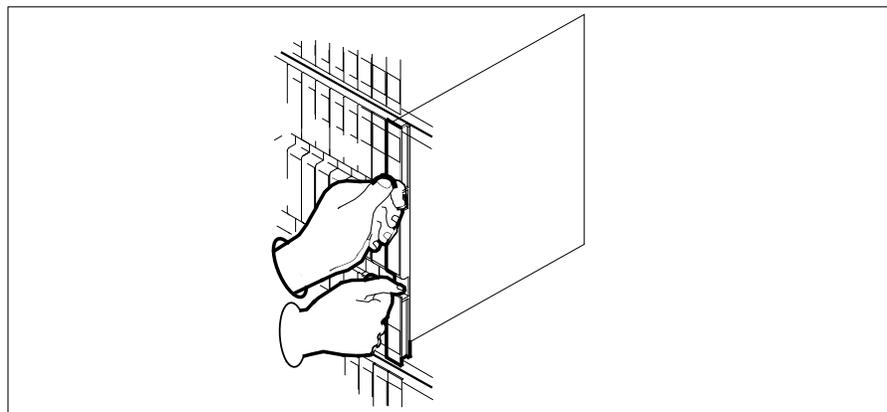
**CAUTION**

**Loss of subscriber service**

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the NTMX79 card is set to the OFF position before seating the NTMX79 card.

Seat and lock the NTMX79 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.



15 Power up the inactive RCC2 unit as follows:

## NTMX79 in an RSC-S (DS-1) Model B EXT (continued)

- a Ensure that the power converter (NTMX72) is fully inserted. A major audible alarm may sound. The alarm is silenced when power is restored to the converter.

**Note:**

- b If the power converter replaced is an NTMX72AA, set the switch on the power converter to the Reset position. Set the associated circuit breaker on the MSP to the ON position.

If both the converter FAIL LED and FRAME FAIL lamp on the MSP go OFF, go to step 16.

If both the converter FAIL LED and FRAME FAIL lamp on the MSP do not go OFF, hold the switch on the NTMX72AA power converter in the Reset position and simultaneously set the associated circuit breaker on the MSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will go OFF. Go to step 16.

- c If the power converter replaced is an NTMX72AB, set the associated circuit breaker on the MSP to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will go OFF. Go to step 16.

- 16** The peripheral/remote loader-16 card (NT7X05) allows local loading of RCC2 data, which reduces recovery time. Check to see if the NT7X05 card is provisioned by typing

>QUERYPM FILES

and pressing the Enter key.

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      APPL
.      .      .      .      1RCC2   .      .      .      .      .
          *C*
RCC2      SysB      ManB      OffL      Cbsy      ISTb      InSv
0 Quit      PM      2      0      2      0      2      25
2 Post      RCC2    1      0      0      0      1      1
3 ListSet
4          RCC2      0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_    Unit 0: Inact ManB
6 TST_     Unit 1: ACT InSv
7 BSY_
8 RTS_     QUERYPM files
9 OffL     Unit 0:
10 LoadPM_ NT7X05 load File: CRI06AY
11 Disp_   NT7X05 Image File:
12 Next_   CMR Load: CMR03A
13 SwAct   Unit 1:
14 QueryPM NT7X05 load File: CRI06AY
15          NT7X05 Image File:
16 IRLINK   CMR Load: CMR03A
17 Perform
18

```

## NTMX79

### in an RSC-S (DS-1) Model B EXT (continued)

**Note:** If the NT7X05 card is not provisioned the MAP response is:NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 17
not provisioned	step 18

17

**DANGER****Possible service interruption**

The LOCAL LOADFILE option of the LOADPDM command has a parameter of [<file> string]]. When this parameter is used, the loadfile named in the parameter is not patched. Do not use this parameter unless the NOPATCH option of the loadfile is desired.

Load the inactive RCC2 unit from the local load file by typing

```
>LOADPDM UNIT unit_no LOCAL LOADFILE
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

If the load	Do
passed	step 19
failed	step 18

18

Load the inactive RCC2 unit (from the CM) by typing

```
>LOADPDM UNIT rcc2_unit_no
```

and pressing the Enter key.

where

**rcc2\_unit\_no**

is the number of the inactive RCC2 unit

If load	Do
passed	step 19
failed	step 27

**NTMX79**  
**in an RSC-S (DS-1) Model B EXT** (continued)

- 19** Test the inactive RCC2 unit by typing  
`>TST UNIT rcc2_unit_no`  
 and pressing the Enter key.  
*where*

**rcc2\_unit\_no**  
 is the number of the inactive RCC2 unit

<b>If TST</b>	<b>Do</b>
passed	step 20
failed	step 26

- 20** Use the following information to determine what step to go to next in this procedure.

<b>If you entered this procedure from</b>	<b>Do</b>
alarm clearing procedures	step 26
other	step 21

- 21** Return the inactive RCC2 unit to service by typing  
`>RTS UNIT rcc2_unit_no`  
 and pressing the Enter key.  
*where*

**rcc2\_unit\_no**  
 is the number of the inactive RCC2 unit

- 22** Use the following information to determine where to proceed.

<b>If RTS</b>	<b>Do</b>
passed	step 23
failed	step 27

- 23** Remove the sign from the active RCC2 unit.
- 24** Send any faulty cards for repair according to local procedure.
- 25** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 28.
- 26** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 27** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.

**NTMX79**  
**in an RSC-S (DS-1) Model B EXT (end)**

---

- 28** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX79 in an RSC-S (PCM-30) Model A EXT**

---

### **Application**

Use this procedure to replace an NTMX79 card in an RSC-S EXT.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX79	AA	DS60 Extender

### **Common procedures**

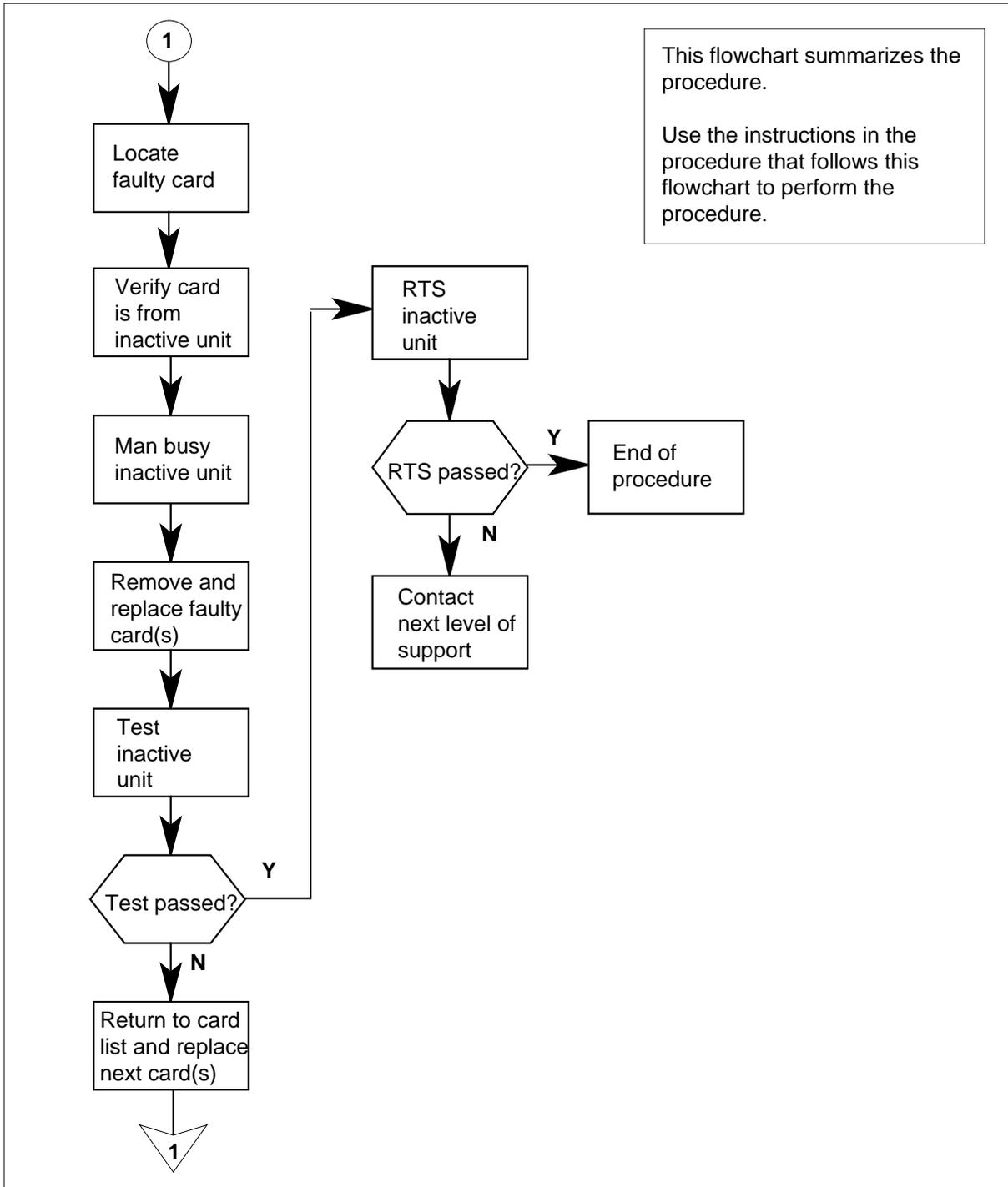
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX79**  
**in an RSC-S (PCM-30) Model A EXT** (continued)

**Summary of card replacement procedure for an NTMX79 card in RSC-S EXT**



## NTMX79 in an RSC-S (PCM-30) Model A EXT (continued)

### Replacing an NTMX79 card in an RSC-S EXT

- 1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.

2



#### CAUTION

##### Loss of service

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### At the MAP terminal

- 3 Set the MAP display to the PM level and post the RCO2 by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.

where

#### rco2\_no

is the number of the RCO2 with the faulty card

- 4 Determine on which side of the extension shelf (right or left side) the faulty card is located by typing

#### QUERYPM

and pressing the Enter key.

*Example of a MAP response:*

```
PM Type: RCO2 PM Nol.: 0 PM Int. No.: 2 Node_No.: 126
Pms Equipped: 61 Loadname: KRI05AU
ESA equipped: YES IntraSwitching is ON
WARM SWACT is supported and available.
REX on RCO2 0 is included in the REX schedule.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
R113 01 AA00 CRSC 00 05 RCO2 : 000 MX85AA
R113 01 AA01 CEXT 00 05 EXT : [LEFT] MX86AA
```

(Extension shelf location of faulty card) —┘

## NTMX79

### in an RSC-S (PCM-30) Model A EXT (continued)

- 5 By observing the LED on the extension shelf, be sure that the card to be removed is on the inactive unit. The LED is lit (ON) on the active unit, and not lit (OFF) on the inactive unit.

If faulty card is on	Do
active unit	step 6
inactive unit	step 9

- 6 Switch the processing activity (SWACT) to the inactive unit by typing  
>SWACT  
and pressing the Enter key.

If prompt indicates a	Do
warm SWACT will be performed	step 8
cold SWACT will be performed	step 7

7



#### CAUTION

##### Loss of service

All calls being handled by this PM will be lost, including data calls. Perform the next step during a period of low traffic only.

- 8 Confirm the system prompt by typing  
>YES  
and pressing the Enter key.  
After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 9 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

#### **At the MAP terminal**

- 10 Busy the inactive PM unit by typing  
>bsy unit unit\_no  
and pressing the Enter key.  
*where*

## NTMX79 in an RSC-S (PCM-30) Model A EXT (continued)

---

**unit\_no**  
is the number of the unit to be busied (0 or 1)

### *At the RCE frame*

11



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

12



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card:

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

Power down the NTMX72 card in the inactive RCO2.

13



#### **CAUTION**

##### **Loss of subscriber service**

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the MX79 card is set to the ON position before removing the NTMX79 card.

Remove the NTMX79 card as shown in the following figures.

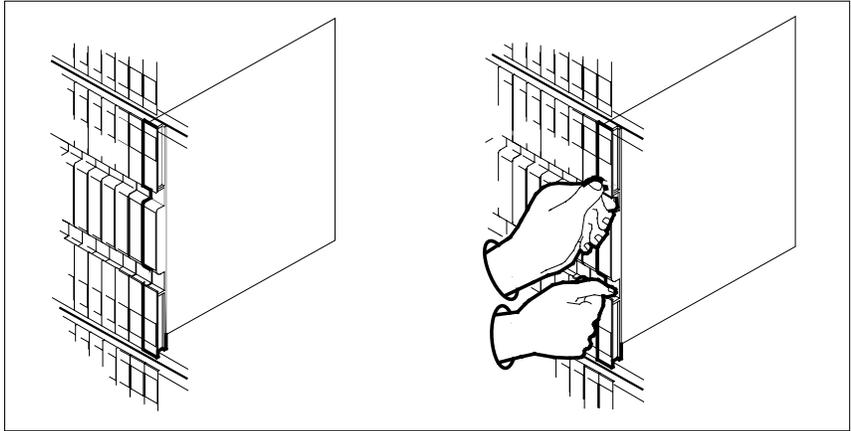
- a Locate the card to be removed on the appropriate shelf.

---

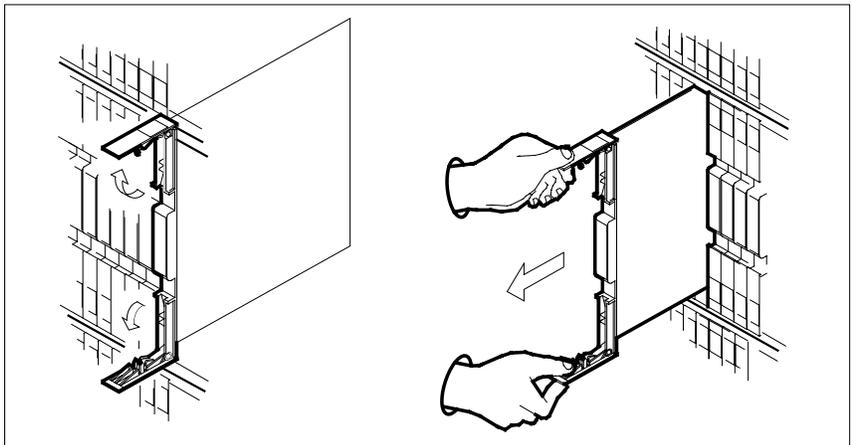
**NTMX79**

**in an RSC-S (PCM-30) Model A EXT (continued)**

---

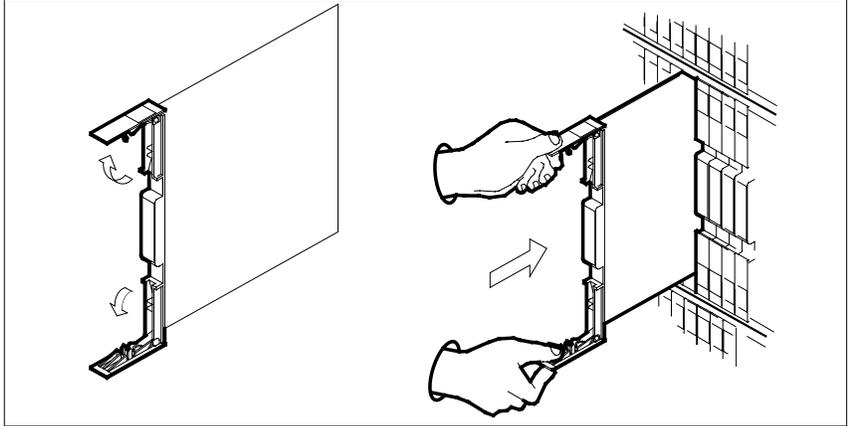


- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 14** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

## NTMX79 in an RSC-S (PCM-30) Model A EXT (continued)



15



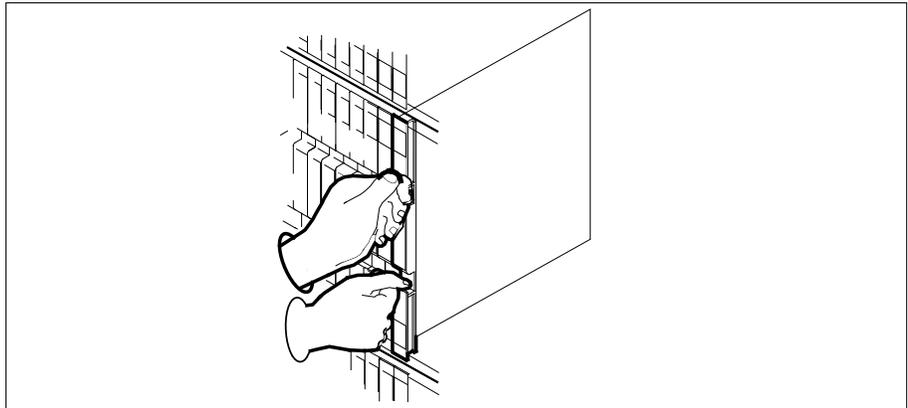
### CAUTION

#### Loss of subscriber service

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the MX79 card is set to the OFF position before seating the NTMX79 card.

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.



16 Power up the inactive RCO2 unit as follows:

## NTMX79

### in an RSC-S (PCM-30) Model A EXT (continued)

- a Ensure that the power converter (NTMX72) is inserted. A major audible alarm may sound. This alarm is silenced when power is restored to the converter.
  - b Set the POWER switch of the inactive unit to the ON position.
- 17 Press the RESET button while setting the circuit breaker to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON.
- 18 The peripheral loader card (NT7X05) allows local loading of the RCO2 data. Local data loading reduces recovery time. Determine if an NT7X05 is located in slot 12. Check if the NT7X05 card is provisioned by typing

>QUERYPM FILES

and pressing the Enter key.

*Example of a MAP display:*

```

      CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
      .   .   .   .   1RCO2 .   .   .   .   .
      *C*
RCO2          SysB  ManB  OffL  Cbsy  ISTb  InSv
0 Quit      PM    2     0     2     0     2     25
2 Post     RCO2  1     0     0     0     1     1
3 ListSet
4          RCO2    0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_   Unit 0: Inact ManB
6 TST_    Unit 1: Inact InSv
7 BSY_
8 RTS_    QUERYPM files
9 OffL    Unit 0:
10 LoadPM_ NT7X05 load File: KRI05AU
11 Disp_   NT7X05 Image File:KRI05AU
12 Next_
13 SwAct   Unit 1:
14 QueryPM NT7X05 load File: KRI05AU
15         NT7X05 Image File:KRI05AU
16 IRLINK
17 Perform
18
    
```

**Note:** If the NT7X05 card is not provisioned the MAP response is:NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 19
not provisioned	step 21

- 19 Load the inactive RCO2 unit from the local image by typing
- >LOADPM UNIT rco2\_unit\_no LOCAL IMAGE
- and pressing the Enter key.

## NTMX79

### in an RSC-S (PCM-30) Model A EXT (continued)

---

*where*

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

---

**If the load**

**Do**

---

passed

step 22

failed

step 20

---

- 20** Load the inactive RCO2 unit from the local loadfile by typing  
>LOADPMT UNIT **unit\_no** LOCAL LOADFILE  
and pressing the Enter key.

*where*

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

---

**If the load**

**Do**

---

passed

step 22

failed

step 21

---

- 21** After replacing the faulty card, load the inactive unit by typing  
>LOADPMT UNIT **unit\_no** CC  
and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive unit

---

**If LOAD**

**Do**

---

passed

step 22

failed

step 30

---

- 22** Test the inactive unit by typing  
>TST UNIT **unit\_no**  
and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCO2 unit

---

**If TST**

**Do**

---

passed

step 23

---

---

**NTMX79**

**in an RSC-S (PCM-30) Model A EXT (end)**

---

	<b>If TST</b>	<b>Do</b>
	failed	step 29
<b>23</b>	Use the following information to determine what step to go to next in this procedure.	
	<b>If you entered this procedure from</b>	<b>Do</b>
	alarm clearing procedures	step 29
	other	step 24
<b>24</b>	Return the inactive RCO2 unit to service by typing >RTS UNIT <b>unit_no</b> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the inactive RCO2 unit	
<b>25</b>	Use the following information to determine where to proceed.	
	<b>If RTS</b>	<b>Do</b>
	passed	step 26
	failed	step 30
<b>26</b>	Remove the sign from the active RCO2 unit.	
<b>27</b>	Send any faulty cards for repair according to local procedure.	
<b>28</b>	Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 31.	
<b>29</b>	Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.	
<b>30</b>	Obtain further assistance in replacing this card by contacting operating company maintenance personnel.	
<b>31</b>	You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.	

## **NTMX79 in an RSC-S (PCM-30) Model B EXT**

---

### **Application**

Use this procedure to replace an NTMX79 card in an RSC-S EXT.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX79	AA	DS60 Extender

### **Common procedures**

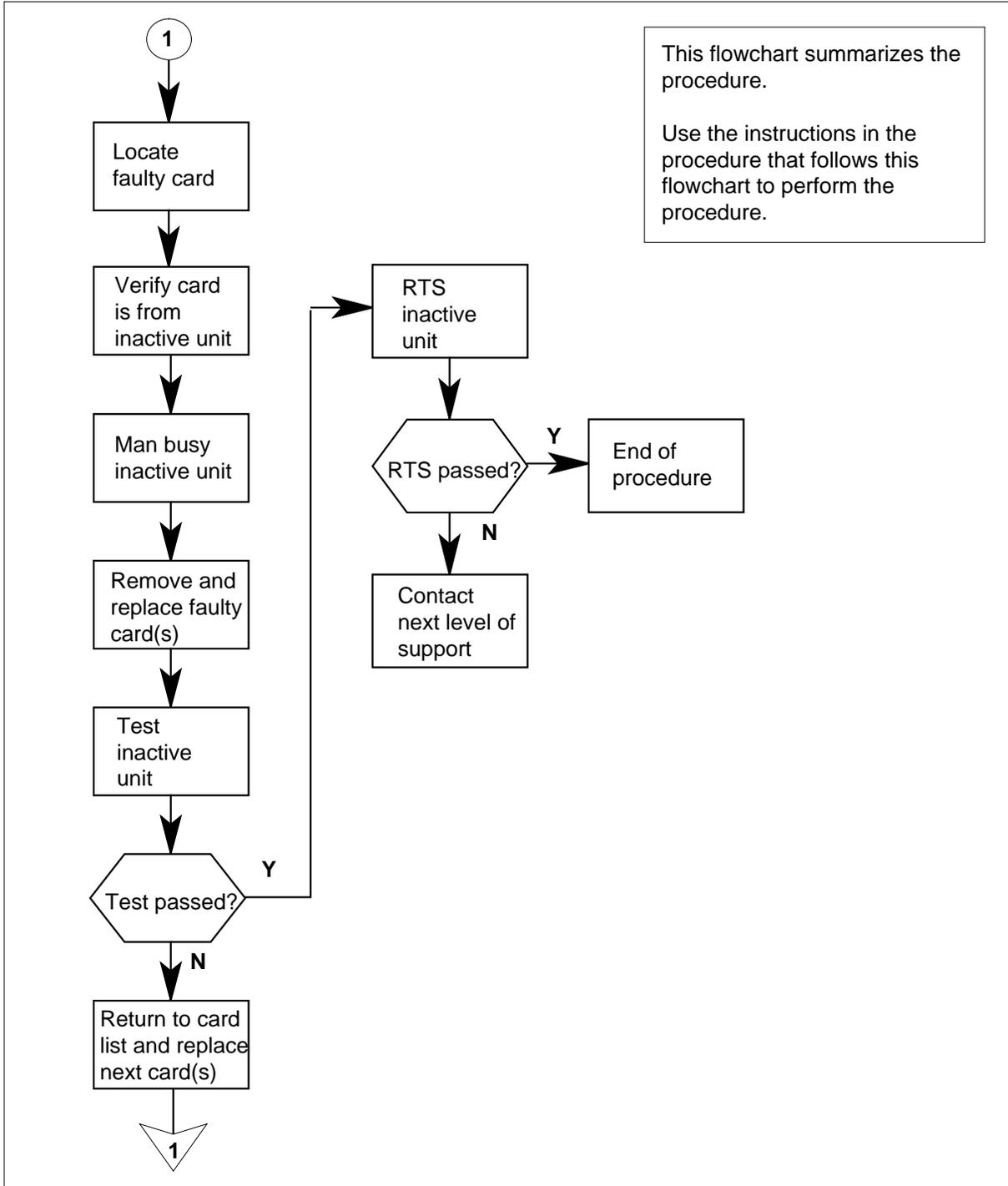
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX79 in an RSC-S (PCM-30) Model B EXT (continued)

### Summary of card replacement for an NTMX79 card in RSC-S-EXT



## NTMX79 in an RSC-S (PCM-30) Model B EXT (continued)

### Replacing an NTMX79 card in an RSC-S EXT

#### 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

	<p><b>CAUTION</b>  <b>Loss of service</b>          When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is <i>inactive</i> and that the mate unit is <i>active</i>.</p>
---	--

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card that is to be removed.

#### At the MAP terminal

- 3 Set the MAP display to the PM level and post the RCO2 by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
 and pressing the Enter key.

where

**rco2\_no**  
 is the number of the RCO2 with the faulty card

- 4 Determine on which side of the extension shelf (right or left side) the faulty card is located by typing

**QUERYPM**

and pressing the Enter key.

*Example of a MAP response:*

```

PM Type: RCO2 PM Nol.: 0 PM Int. No.: 2 Node_No.: 126
PMs Equipped: 61 Loadname: KRI05AU
ESA equipped: YES IntraSwitching is ON
WARM SWACT is supported and available.
REX on RCO2 0 is included in the REX schedule.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
R113 01 AA00 CRSC 00 05 RCO2 : 000 MX85AA
R113 01 AA01 CEXT 00 05 EXT : [LEFT] MX86AA

```

(Extension shelf location of faulty card) —┘

---

## NTMX79

### in an RSC-S (PCM-30) Model B EXT (continued)

---

- 5 By observing the LED on the extension shelf, be sure that the card to be removed is on the inactive unit. The LED is lit (ON) on the active unit, and not lit (OFF) on the inactive unit.

If faulty card is on	Do
active unit	step 6
inactive unit	step 8

- 6 Switch the processing activity (SWACT) to the inactive unit by typing  
>SWACT  
and pressing the Enter key.
- 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.
- 7 Confirm the system prompt by typing  
>YES  
and pressing the Enter key.
- After both units are in-service, proceed to the next step.

**At the RCE frame**

- 8 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**At the MAP terminal**

- 9 Busy the inactive PM unit by typing  
>bsy unit unit\_no  
and pressing the Enter key.
- where
- unit\_no**  
is the number of the unit to be busied (0 or 1)

## NTMX79 in an RSC-S (PCM-30) Model B EXT (continued)

---

*At the RCE frame*

10



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Put on a wrist strap.

11



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Power down the NTMX72 card in the inactive RCO2.

12



**CAUTION**

**Loss of subscriber service**

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the MX79 card is set to the ON position before removing the NTMX79 card.

Remove the NTMX79 card as shown in the following figures.

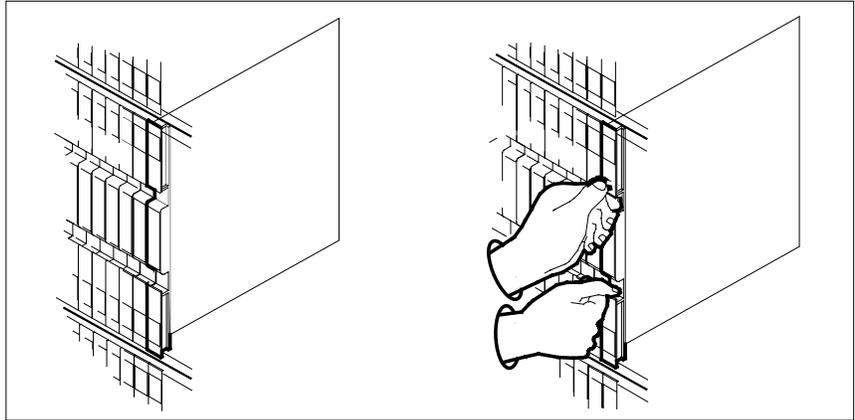
- a Locate the card to be removed on the appropriate shelf.

---

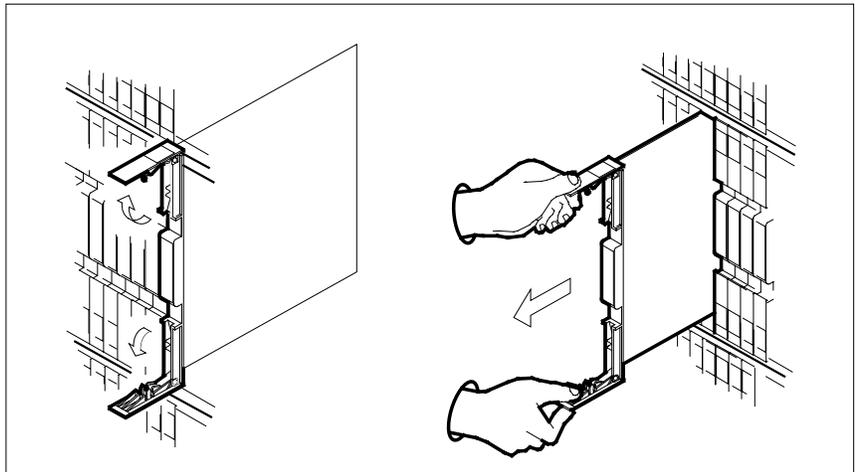
**NTMX79**

**in an RSC-S (PCM-30) Model B EXT (continued)**

---

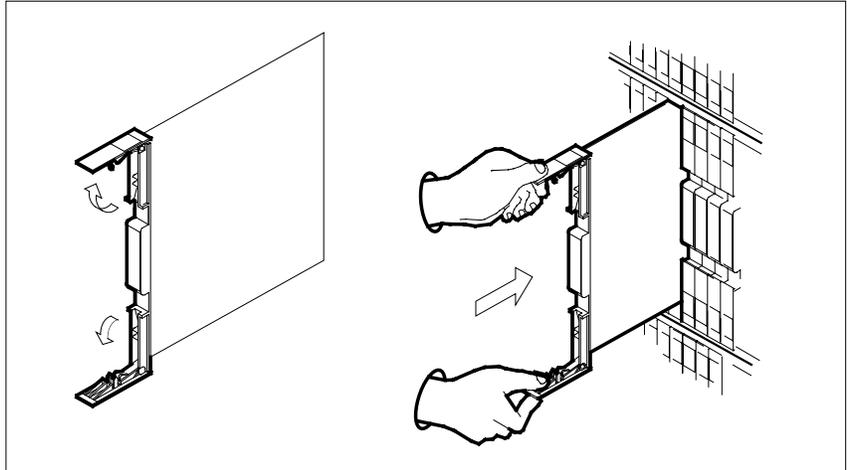


- b** Open the locking levers on the card to be replaced and gently pull the card toward you until it clears the shelf.



- c** Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
- 13** Open the locking levers on the replacement card.
- a** Align the card with the slots in the shelf.
  - b** Gently slide the card into the shelf.

## NTMX79 in an RSC-S (PCM-30) Model B EXT (continued)



14



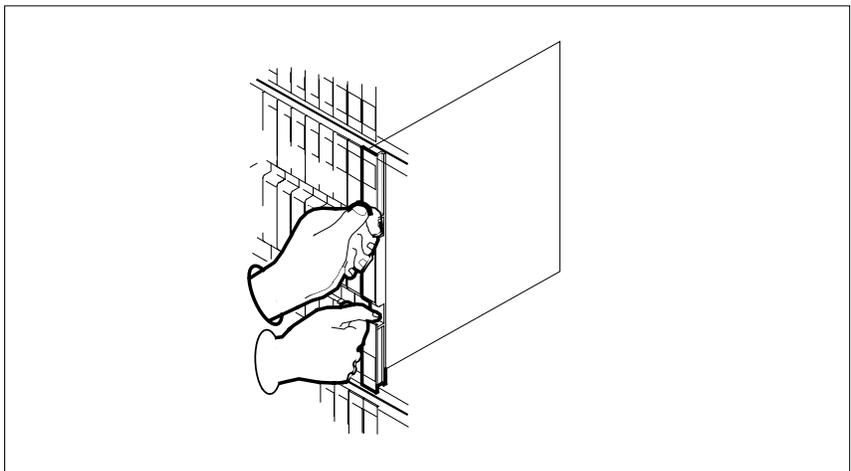
### CAUTION

#### Loss of subscriber service

To prevent the D-channel handler (DCH) card from being set system busy (SysB), which causes a loss of subscriber service, make sure the toggle switch on the MX79 card is set to the OFF position before seating the NTMX79 card.

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.



## NTMX79

### in an RSC-S (PCM-30) Model B EXT (continued)

- 15** Power up the inactive RCO2 unit as follows:
- a** Ensure that the power converter (NTMX72) is inserted. A major audible alarm may sound. This alarm is silenced when power is restored to the converter.
  - b** Set the POWER switch of the inactive unit to the ON position.
- 16** Press the RESET button while setting the circuit breaker to the ON position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON.
- 17** The peripheral loader card (NT7X05) allows local loading of the RCO2 data. Local data loading reduces recovery time. Determine if an NT7X05 is located in slot 12. Check if the NT7X05 card is provisioned by typing

**>QUERYPM FILES**

and pressing the Enter key.

*Example of a MAP display:*

```

      CM  MS  IOD  Net  PM  CCS  LNS  Trks  Ext  APPL
      .   .   .   .   .   .   .   .   .   .
      RCO2          SysB  ManB  OffL  Cbsy  ISTb  InSv
0 Quit      PM      2      0      2      0      2      25
2 Post      RCO2    1      0      0      0      1      1
3 ListSet
4           RCO2      0 ISTb Links_OOS: CSide 0, PSide 0
5 TRNSL_    Unit 0:  Inact ManB
6 TST_      Unit 1:  Inact InSv
7 BSY_
8 RTS_      QUERYPM files
9 OffL      Unit 0:
10 LoadPM_  NT7X05 load File: KRI05AU
11 Disp_    NT7X05 Image File:KRI05AU
12 Next_
13 SwAct    Unit 1:
14 QueryPM  NT7X05 load File: KRI05AU
15          NT7X05 Image File:KRI05AU
16 IRLINK
17 Perform
18

```

**Note:** If the NT7X05 card is not provisioned the MAP response is:NT7X05 not datafilled, QueryPm files invalid

If the NT7X05 card is	Do
provisioned	step 18
not provisioned	step 20

- 18** Load the inactive RCO2 unit from the local image by typing
- >LOADPM UNIT rco2\_unit\_no LOCAL IMAGE**

## NTMX79

### in an RSC-S (PCM-30) Model B EXT (continued)

---

and pressing the Enter key.

*where*

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

---

<b>If the load</b>	<b>Do</b>
passed	step 21
failed	step 19

---

- 19** Load the inactive RCO2 unit from the local loadfile by typing  
>LOADPDM UNIT **unit\_no** LOCAL LOADFILE  
and pressing the Enter key.

*where*

**rco2\_unit\_no**

is the number of the inactive RCO2 unit

---

<b>If the load</b>	<b>Do</b>
passed	step 21
failed	step 20

---

- 20** After replacing the faulty card, load the inactive unit by typing  
>LOADPDM UNIT **unit\_no** CC  
and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive unit

---

<b>If LOAD</b>	<b>Do</b>
passed	step 21
failed	step 29

---

- 21** Test the inactive unit by typing  
>TST UNIT **unit\_no**  
and pressing the Enter key.

*where*

---

**NTMX79**

**in an RSC-S (PCM-30) Model B EXT (end)**

---

- unit\_no**  
is the number of the inactive RCO2 unit
- |  | <b>If TST</b> | <b>Do</b> |
|--|---------------|-----------|
|  | passed        | step 22   |
|  | failed        | step 28   |
- 22** Use the following information to determine what step to go to next in this procedure.
- |  | <b>If you entered this procedure from</b> | <b>Do</b> |
|--|---|-----------|
|  | alarm clearing procedures                 | step 28   |
|  | other                                     | step 23   |
- 23** Return the inactive RCO2 unit to service by typing  
`>RTS UNIT unit_no`  
 and pressing the Enter key.  
*where*  
**unit\_no**  
 is the number of the inactive RCO2 unit
- 24** Use the following information to determine where to proceed.
- |  | <b>If RTS</b> | <b>Do</b> |
|--|---------------|-----------|
|  | passed        | step 25   |
|  | failed        | step 29   |
- 25** Remove the sign from the active RCO2 unit.
- 26** Send any faulty cards for repair according to local procedure.
- 27** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 30.
- 28** Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 29** Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 30** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX79 in an SMA2**

---

### **Application**

Use this procedure to replace an NTMX79 card in an SMA2 extension shelf (CMVI and MVIE frame).

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTMX79	AB	DS60 Extender

### **Common procedures**

The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- replacing a card
- returning a card

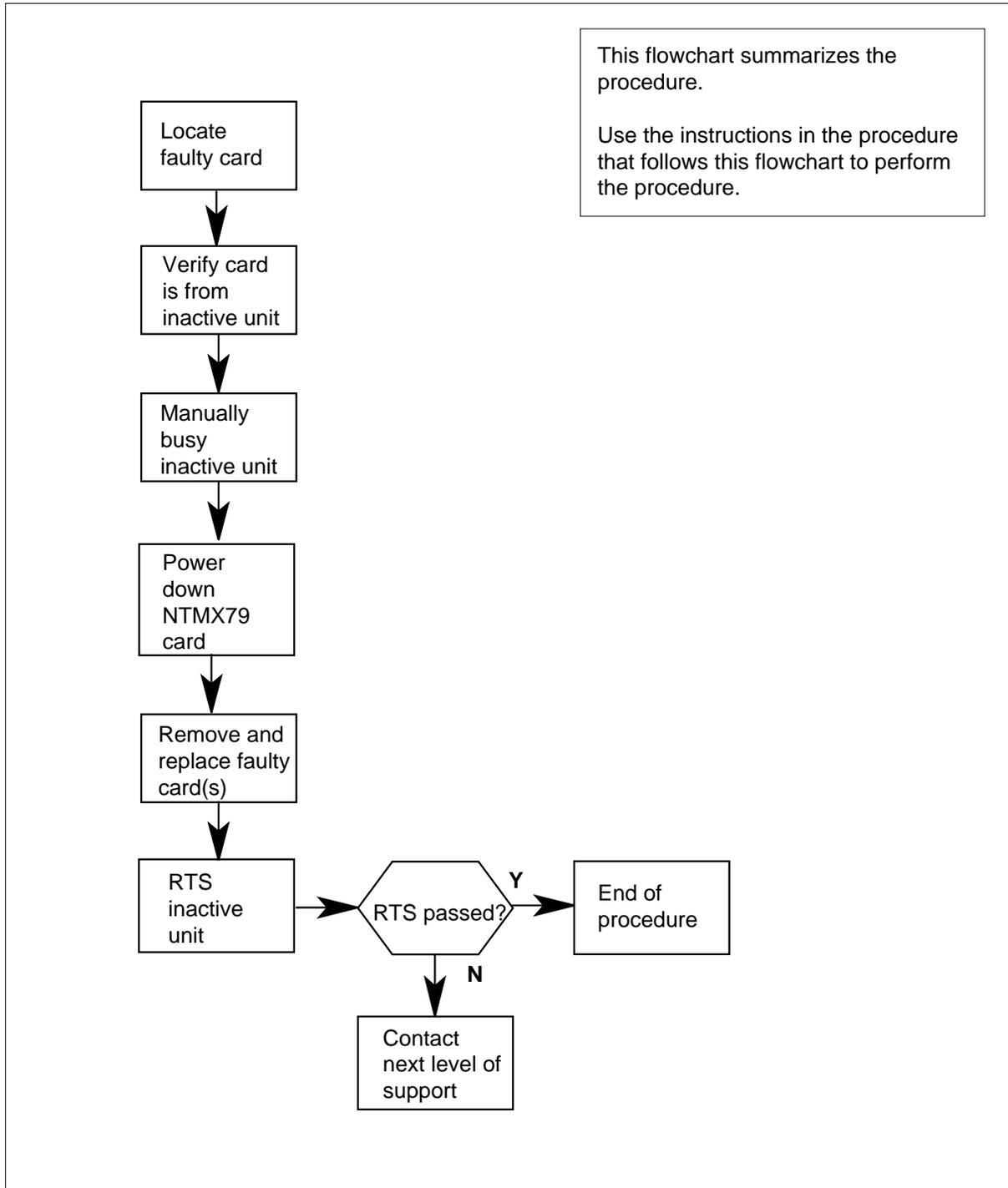
Do not go to a common procedure unless directed to do so in the step-action procedure.

### **Action**

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

**NTMX79**  
**in an SMA2** (continued)

**Summary of card replacement procedure for an NTMX79 card in an SMA2**



## NTMX79 in an SMA2 (continued)

### Replacing an NTMX79 card in an SMA2

#### 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 Ensure you know the physical location of the faulty card.

If card location is	Do
known	step 4
unknown	step 3

- 3 Perform the procedure "Locating a faulty card in an SMA2."
- 4



**CAUTION**  
**Loss of service**  
 When replacing a card in the SMA2, ensure the unit in which you are replacing the card is *inactive* and the mate unit is *active*.

Obtain an NTMX79 replacement card. Verify the replacement card has the same product engineering code (PEC), including suffix, as the card to be removed.

#### At the MAP terminal

- 5 Set the MAP display to the PM level and post the SMA2 by typing  
`>MAPCI ;MTC ;PM ;POST SMA2 sma2_no`  
 and pressing the Enter key.

where

**sma2\_no**  
 is the number of the SMA2 with the faulty card

Example of a MAP display:

```

          SysB      ManB      OffL      Cbsy      ISTb      InSv
    PM          3          0          1          0          2          13
    SMA2         0          0          0          0          1          7

SMA2   0 ISTb  Links_OOS:  CSide  0, PSide  0
Unit0:  Act   InSv
Unit1:  InAct IsTb
  
```

## NTMX79 in an SMA2 (continued)

- 6** Observe the MAP display and determine if the faulty card is in the active or the inactive unit.
- | If faulty card is on | Do      |
|----------------------|---------|
| active unit          | step 7  |
| inactive unit        | step 11 |
- 7** Switch the processing activity (SWACT) to the inactive unit by typing  
>SWACT  
and pressing the Enter key.  
A confirmation prompt for the SWACT command is displayed at the MAP terminal.
- | If prompt indicates          | Do     |
|------------------------------|--------|
| cannot continue at this time | step 8 |
| can continue at this time    | step 9 |
- 8** Reject the prompt to SWACT of the units by typing  
>NO  
and pressing the Enter key.  
The system discontinues the SWACT.
- 9** Confirm the system prompt by typing  
>YES  
and pressing the Enter key.  
The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.
- Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.
- | If the message is                     | Do      |
|---------------------------------------|---------|
| SWACT passed                          | step 11 |
| SWACT failed<br>Reason: XPM SWACTback | step 10 |
| SWACT refused by<br>SWACT Controller  | step 10 |
- 10** The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on

## NTMX79 in an SMA2 (continued)

---

the inactive unit before attempting to clear the alarm condition on the active unit.

Go to step 23.

### **At the frame or cabinet**

- 11 Place a sign on the active unit bearing the words *Active unit-Do not touch*. This sign should not be attached by magnets or tape.

### **At the MAP terminal**

- 12 Busy the inactive PM unit by typing  
*>bsy INACTIVE*  
and pressing the Enter key.

### **At the frame or cabinet**

13



#### **WARNING**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

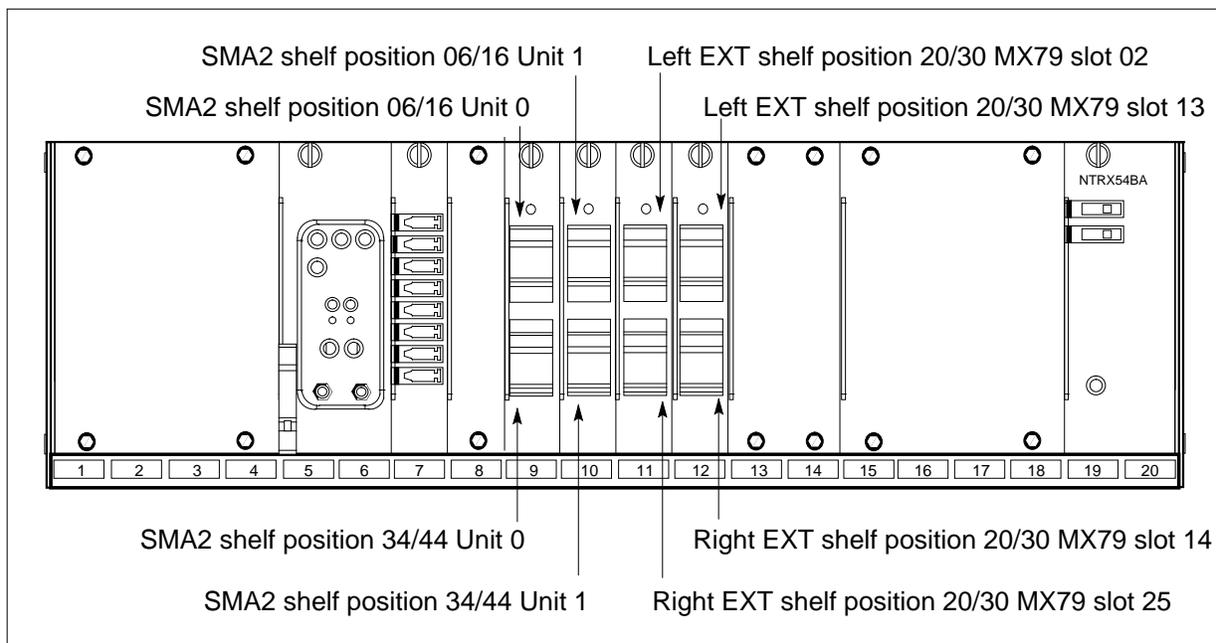
Power down the NTMX79 card on the extension shelf.

Perform the common replacing a card procedure in this document.

- 14 Power up the NTMX79 as follows:
- a Ensure the NTMX79 is inserted.
  - b Set the POWER switch to the ON position.
- 15 Determine which circuit breaker controls the NTMX79 being replaced by observing the MSP and noting the circuit breaker that is tripped. In addition, verify that you are selecting the correct circuit breaker based on the figure that follows.

## NTMX79 in an SMA2 (continued)

### MSP (CMVI and MVIE with an extension shelf)



- 16** Press and hold the circuit breaker on the MSP to the ON position while placing the power switch on the NTMX79 card to the RESET position. Both the CONVERTER FAIL LED on the NTMX79 card and the FRAME FAIL lamp on the MSP will be ON.
- 17** Use the following information to determine what step to go to next in this procedure.

If you entered this procedure from	Do
------------------------------------	----

alarm clearing procedures	step 22
---------------------------	---------

other	step 18
-------	---------

- 18** Return the inactive SMA2 unit to service by typing  
**>RTS INACTIVE**  
and pressing the Enter key.

- 19** Use the following information to determine where to proceed.

If RTS	Do
--------	----

passed	step 20
--------	---------

failed	step 23
--------	---------

- 20** Remove the sign from the active unit.

**NTMX79**  
**in an SMA2** (end)

---

- 21 Go to the common returning a card procedure in this document.  
Go to step 24.
- 22 Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 23 Obtain further assistance in replacing this card by contacting operating company maintenance personnel.
- 24 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX81  
in an RSC RCC2**

---

**Application**

Use this procedure to replace an NTMX81 card in an RSC RCC2.

PEC	Suffixes	Name
NTMX81	AA, BA	Dual DS-1 Interface

**Common procedures**

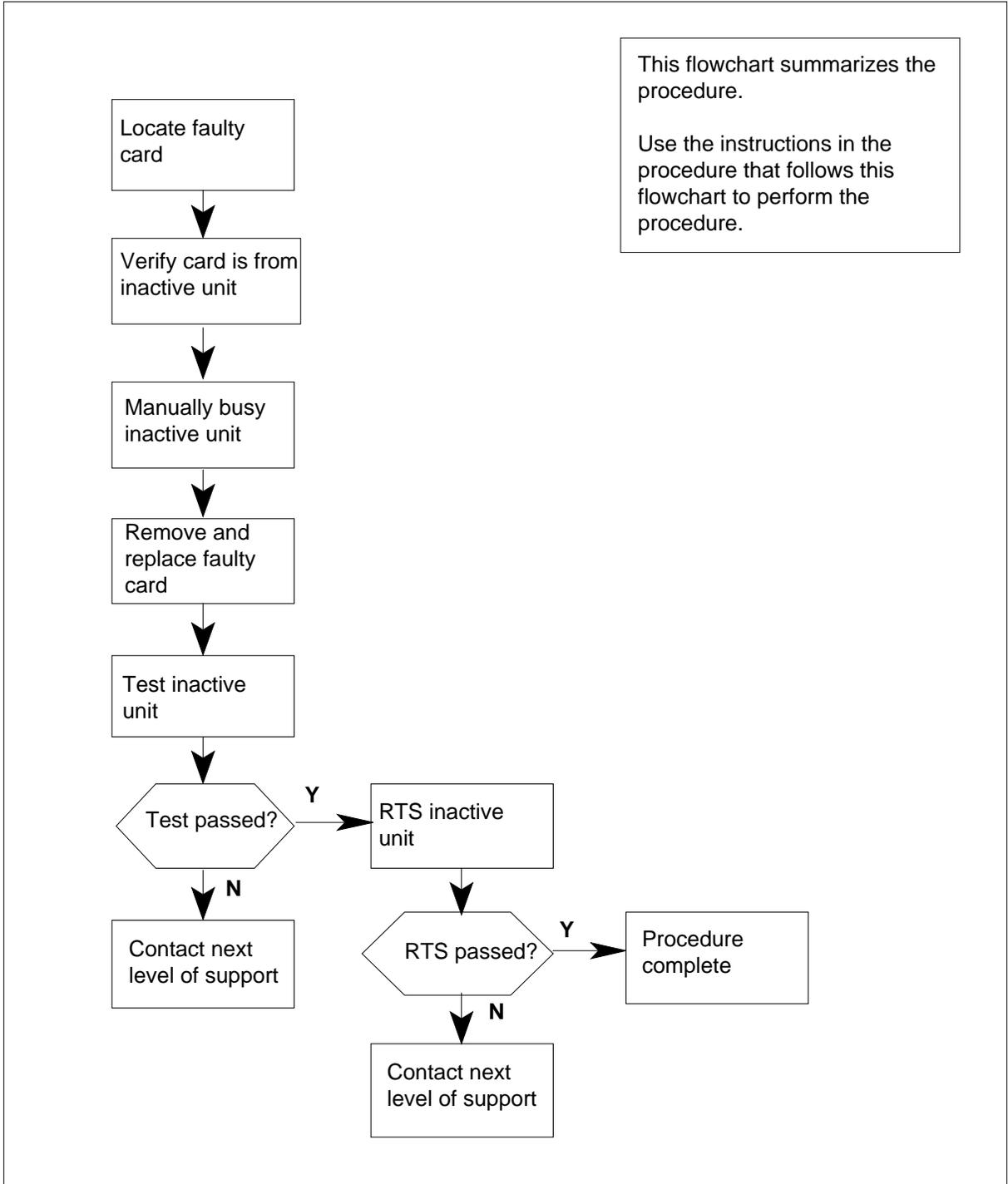
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX81 in an RSC RCC2 (continued)

### Summary of card replacement procedure for an NTMX81 card in RSC RCC2



---

## NTMX81 in an RSC RCC2 (continued)

---

### Replacing an NTMX81 card in RSC RCC2

#### *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

**CAUTION****Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX81 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no`  
and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX81 in an RSC RCC2 (continued)

CM	MS	IOD	Net	PM	CCS	LNS	Trks	Ext	Appl
.	.	.	.	1RCC2	.	.	.	.	.
RCC2		SysB	ManB	OffL	CBSy	ISTb	InSv		
0	Quit	PM	0	0	2	0	2	25	
2	Post_	RCC2	0	0	0	0	1	1	
3	ListSet								
4		RCC2	0	ISTb	Links_OOS:	CSide	1, 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									
18									

- 4 By observing the MAP display, be sure the card to be removed is in the inactive unit.

### At the RSCE frame

- 5 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

If faulty card is	Do
C-side of RCC2	step 11
P-side faulty	step 17

### At the MAP terminal

- 6 Determine if the RCC2 is in a single or dual configuration by typing

```
>POST RCC2 rcc2_no ;IRLINK
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system will respond with the following message:

## NTMX81 in an RSC RCC2 (continued)

NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.

If the RCC2 is in a	Do
single configuration	step 9
dual configuration	step 7

- 7 Translate the dual RCC2s IRLINKS by typing

>TRNSL

and pressing the Enter key.

*Example of a MAP response*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

IRLINK
0 Quit      PM      0      0      2      0      2      25
2          RCC2   0      0      0      0      1      1
3
4          RCC2   0 ISTb Links_OOS: CSide 1, PSide 1
5 TRNSL    Unit0:  Inact InSv
6 TST_     Unit1:  Act  InSv
7 BSY_
8 RTS_
9
10
11          IR      From      To      CAP      STATE      MSGCOND
12          0 RCC2 0, 0 RCC2 1, 0 MS      OK      OPN
13          1 RCC2 0, 8 Rcc2 1, 8 MS      OK      OPN
14          2 RCC2 0, 12 RCC2 1, 12 S      OK
14 QueryIR  3 RCC2 0, 13 RCC2 1, 13 S      OK
15
16
17
18

```

- 8 Busy IRLINKS in the faulty NTMX87 circuit card by typing

>BSY irlink\_no

and pressing the Enter key.

*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 16 for the main shelf.

- 9 Busy the inactive PM unit by typing

>bsy unit unit\_no

**NTMX81**  
**in an RSC RCC2** (continued)

and pressing the Enter key.

where

**unit\_no**

is the number of the inactive RCC2 unit (unit 0 or 1)

When both units are in-service, proceed to next step.

- 10** Display the C-side links associated with the DS-1 card by typing

>TRNSL C

and pressing the Enter key.

*Example of a MAP response*

LINK 0	LTC 0	0;CAP	MS:STATUS OK	MSGCOND	OPN
LINK 1	LTC 0	1;CAP	S:STATUS SBsy		
LINK 2	LTC 0	2;CAP	MS:STATUS OK	MSGCOND	OPN
LINK 3	LTC 0	3;CAP	S:STATUS OK		
LINK 4	LTC 0	4;CAP	S:STATUS OK		
LINK 5	LTC 0	5;CAP	S:STATUS SBsy		

**If C-side links are**

**Do**

faulty

step 14

not faulty

step 11

- 11** Display the P-side links associated with the DS-1 card by typing

>TRNSL P

and pressing the Enter key.

*Example of a MAP response*

LINK 0	RCC2 0 5	27;CAP	MS:STATUS OK	MSGCOND	OPN
LINK 1	RCC2 1 5	27;CAP	MS:STATUS SBsy	MSGCOND	CLS
LINK 2	RCC2 0 7	47;CAP	MS:STATUS OK		
LINK 3	RCC2 1 7	47;CAP	MS:STATUS OK		
LINK 4	RCC2 0 5	50;CAP	MS:STATUS OK	MSGCOND	OPN
LINK 5	RCC2 1 5	50;CAP	MS:STATUS SBsy	MSGCOND	CLS

**If P-side links are**

**Do**

faulty

step 14

not faulty

step 28

- 12** Busy the links associated with the RCC2 by typing

>BSY LINK 0

and pressing the Enter key.

## NTMX81 in an RSC RCC2 (continued)

*Example of a MAP response:*

Please confirm ("Yes" or "No")

Confirm by typing

>YES

and pressing the Enter key.

*Example of a MAP response:*

LTC 0 LINK 0 Bsy Passed

**Note:** To busy the other links associated with the RCC2, execute the procedures in this step for each link until all links are busy.

### 13 Post the host PM by typing

>POST **host\_pm** **host\_pm\_no**

and pressing the Enter key.

*where*

#### **host\_pm**

is either a line group controller (LGC), a line group controller with ISDN (LGCI), a line trunk controller (LTC), or a line trunk controller with ISDN (LTCI)

#### **host\_pm\_no**

is the number of either an LGC, LGCI, LTC, or LTCI

*Example of a MAP display:*

CM	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	Appl
.	.	.	.	1RCC2	.	.	.	.	.
LTC		SysB	ManB	OffL	CBsy	ISTb	InSv		
0	Quit	PM	0	0	1	0	4	12	
2	Post_	LTC	0	0	2	0	2	9	
3	ListSet								
4		LTC	1	ISTb	Links_OOS:	Cside	0, Pside	1	
5	Trnsl_	Unit0:	Act	InSv					
6	Tst_	Unit1:	Inact	InSv					
7	Bsy_								
8	RTS_								
9	OffL								
10	LoadPM_								
11	Disp_								
12	Next								
13	SwAct								
14	QueryPM								
15									
16									
17	Perform								
18									

## NTMX81 in an RSC RCC2 (continued)

---

- 14 Manually busy the links connected to the faulty card by typing

```
>BSY LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty MX81 card, from step 11

**Note:** Each NTMX81 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; or 6,7.

### At the RCE frame

- 15



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

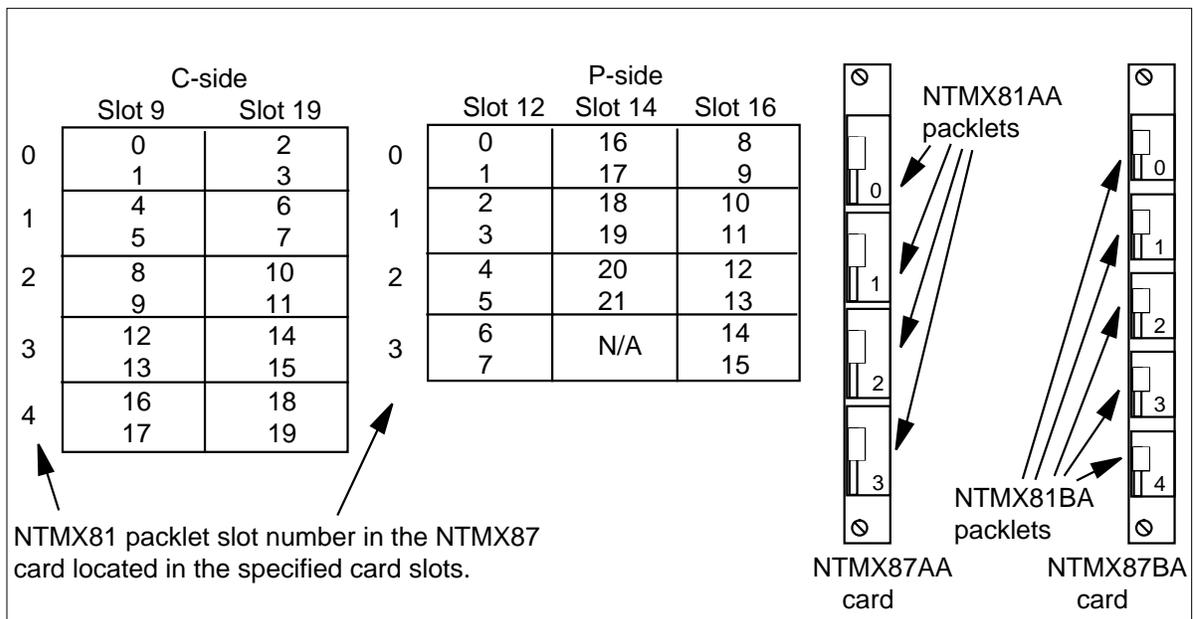
Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

- 16 After identifying the faulty link, use the following charts to determine which NTMX81 is to be removed by first identifying whether the link is a C-side or P-side link then by matching the link number with the slot number and the packet number to the left of each respective table.

## NTMX81 in an RSC RCC2 (continued)



Remove the NTMX81 card as described in the following steps:

- a Locate the packet to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 17 Before inserting the replacement card, set the DS-1 switch settings according to the following table.

(Sheet 1 of 2)

Distance to cross connect				
Feet	Meters	S3/6	S2/5	S1/4
0-133	0-41	On	Off	Off
133-266	41-81	Off	On	On
266-399	81-122	Off	On	Off

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1-S3 belong to even port, and S4-S6 belong to odd port.

## NTMX81 in an RSC RCC2 (continued)

(Sheet 2 of 2)

Distance to cross connect				
Feet	Meters	S3/6	S2/5	S1/4
399-533	122-163	Off	Off	On
533-655	163-200	Off	Off	Off

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1-S3 belong to even port, and S4-S6 belong to odd port.

- 18** Open the locking lever on the replacement packlet.
- a** Align the packlet with the slots in the shelf.
  - b** Gently slide the packlet into the card slot in the NTMX87 card.
- 19** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 20** Use the following information to determine what step to go to next in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	step 27
other	step 21

### At the MAP terminal

- 21** Test the busied network links from step 12 by typing
- ```
>TST LINK link_no
```
- and pressing the Enter key
- where
- link\_no**  
is the number of the link that was manually busied in step 14. This step must be performed for each link that is manually busied.
- Note:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 22 |

## NTMX81 in an RSC RCC2 (continued)

|           | If TST                                                                                                                                                                                                                                                                              | Do      |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|           | failed                                                                                                                                                                                                                                                                              | step 28 |
| <b>22</b> | Return to service the P-side links by typing<br>>RTS LINK 0<br>and pressing the Enter key.<br><b>Note:</b> To RTS the other links associated with the RCC2, execute this step for each link until all links are returned to service.                                                |         |
|           |                                                                                                                                                                                                                                                                                     |         |
|           | If RTS                                                                                                                                                                                                                                                                              | Do      |
|           | passed                                                                                                                                                                                                                                                                              | step 23 |
|           | failed                                                                                                                                                                                                                                                                              | step 28 |
| <b>23</b> | Post the inactive RCC2 in which the NTMX81 card is located by typing<br>>POST RCC2 rcc2_no<br>and pressing the Enter key.<br><i>where</i><br><b>rcc2_no</b><br>is the number of the RCC2 associated with the faulty card                                                            |         |
| <b>24</b> | Return the inactive RCC2 unit to service by typing<br>>RTS UNIT unit_no<br>and pressing the Enter key.<br><i>where</i><br><b>unit_no</b><br>is the number of the RCC2 unit posted in step 23                                                                                        |         |
|           |                                                                                                                                                                                                                                                                                     |         |
|           | If RTS                                                                                                                                                                                                                                                                              | Do      |
|           | passes                                                                                                                                                                                                                                                                              | step 25 |
|           | fails                                                                                                                                                                                                                                                                               | step 28 |
| <b>25</b> | Send any faulty cards for repair according to local procedure.                                                                                                                                                                                                                      |         |
| <b>26</b> | Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 29.                                                                                                                                        |         |
| <b>27</b> | Return to <i>Alarm Clearing Procedures</i> or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual. |         |
| <b>28</b> | Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.                                                                                                                                                                  |         |

**NTMX81**  
**in an RSC RCC2 (end)**

---

- 29 You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTMX81**  
**in an RSC-S (DS-1) Model A RCC2**

---

**Application**

Use this procedure to replace an NTMX81 card in an RSC-S RCC2.

| PEC    | Suffixes | Name                |
|--------|----------|---------------------|
| NTMX81 | AA, BA   | Dual DS-1 Interface |

**Common procedures**

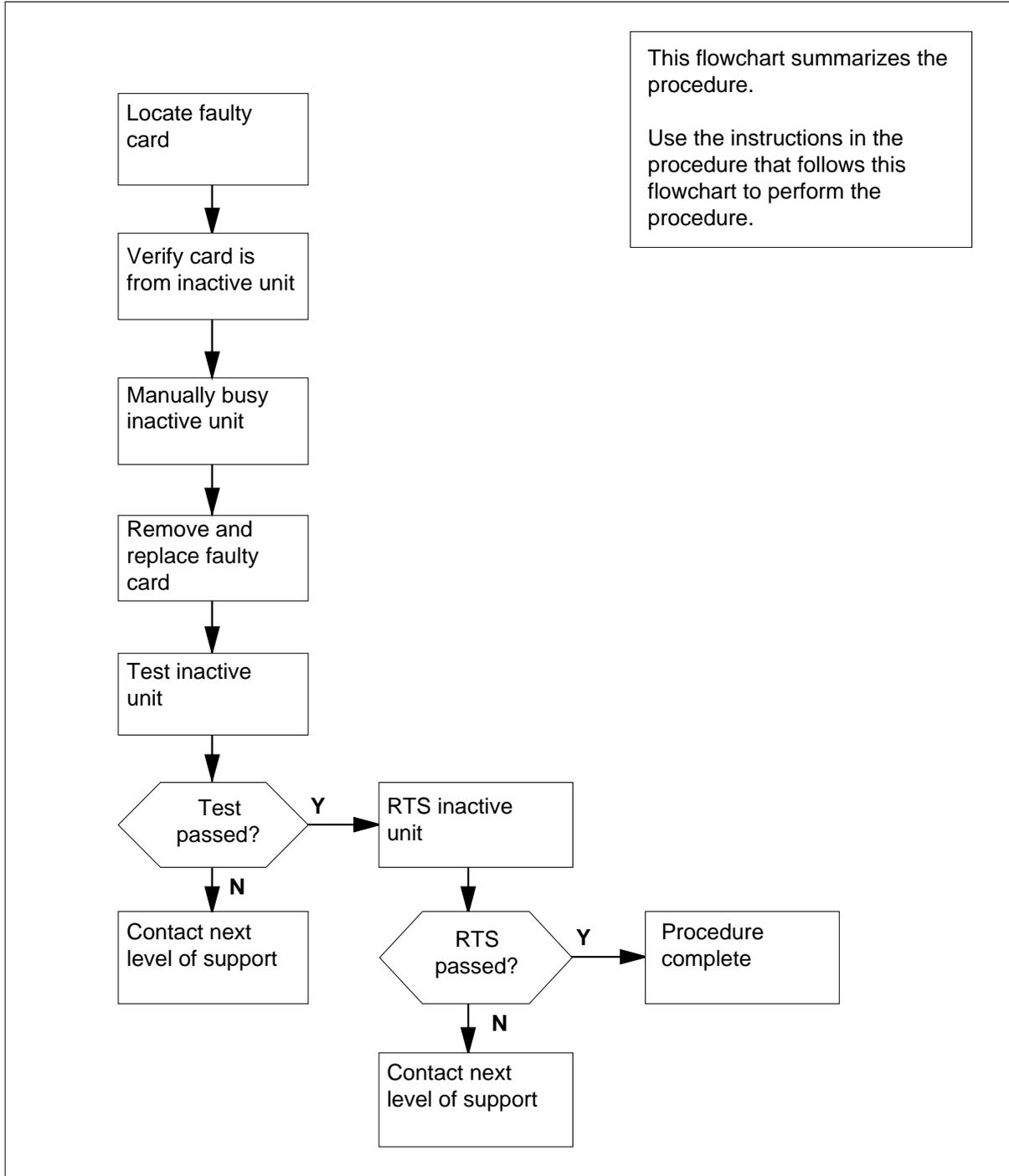
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX81 in an RSC-S (DS-1) Model A RCC2 (continued)

### Summary of card replacement procedure for an NTMX81 card in RSC-S RCC2



**NTMX81**

**in an RSC-S (DS-1) Model A RCC2** (continued)

---

**Replacing an NTMX81 card in RSC-S RCC2**

**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



**CAUTION**

**Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX81 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

**At the MAP terminal**

- 3 Ensure the PM level of the MAP display is currently displayed by typing

```
>MAPCI;MTC;PM;POST RCC2 rcc2_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

**NTMX81**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS   | Trks     | Ext  | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|------|------|
| .    | .       | .      | .     | 1RCC2 | .          | .     | .        | .    | .    |
| RCC2 |         |        | SysB  | ManB  | OffL       | CBsy  | ISTb     | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0     | 2        | 25   |      |
| 2    | Post_   | RCC2   | 0     | 0     | 0          | 0     | 1        | 1    |      |
| 3    | ListSet |        |       |       |            |       |          |      |      |
| 4    |         | RCC2   | 0     | ISTb  | Links_OOS: | CSide | 1, 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   |         |        |       |       |            |       |          |      |      |
| 18   |         |        |       |       |            |       |          |      |      |

- 4 By observing the MAP display, be sure the card to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 5 |
| inactive unit            | step 7 |

- 5 Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.

- 6 Confirm the system prompt by typing  
**>YES**  
 and pressing the Enter key.  
 After both units are in-service, proceed to the next step.

**At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCC2    | step 11 |

---

**NTMX81**

**in an RSC-S (DS-1) Model A RCC2** (continued)

---

| If faulty card is | Do     |
|-------------------|--------|
| P-side faulty     | step 8 |

---

**At the MAP terminal**

- 8** Determine if the RCC2 is in a single or dual configuration by typing

```
>POST RCC2 rcc2_no ;IRLINK
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system will respond with the following message:

```
NO IRLINKS DATA FILLED, IRLINK LEVEL CANNOT BE ENTERED.
```

| If the RCC2 is in a  | Do      |
|----------------------|---------|
| single configuration | step 11 |
| dual configuration   | step 9  |

---

- 9** Translate the dual RCC2s IRLINKS by typing

```
>TRNSL
```

and pressing the Enter key.

*Example of a MAP response*

## NTMX81 in an RSC-S (DS-1) Model A RCC2 (continued)

| CM     | MS      | IOD    | Net        | PM         | CCS        | LNS   | Trks     | Ext  | Appl |
|--------|---------|--------|------------|------------|------------|-------|----------|------|------|
| .      | .       | .      | .          | 1RCC2      | .          | .     | .        | .    | .    |
| IRLINK |         |        |            |            |            |       |          |      |      |
| 0      | Quit    |        | SysB       | ManB       | OffL       | CBSy  | ISTb     | InSv |      |
|        |         | PM     | 0          | 0          | 2          | 0     | 2        | 25   |      |
| 2      |         | RCC2   | 0          | 0          | 0          | 0     | 1        | 1    |      |
| 3      |         |        |            |            |            |       |          |      |      |
| 4      |         | RCC2   | 0          | ISTb       | Links_OOS: | CSide | 1, PSide | 1    |      |
| 5      | TRNSL   | Unit0: | Inact      | InSv       |            |       |          |      |      |
| 6      | TST_    | Unit1: | Act        | InSv       |            |       |          |      |      |
| 7      | BSY_    |        |            |            |            |       |          |      |      |
| 8      | RTS_    |        |            |            |            |       |          |      |      |
| 9      |         |        |            |            |            |       |          |      |      |
| 10     |         | IR     | From       | To         | CAP        | STATE | MSGCOND  |      |      |
| 11     |         | 0      | RCC2 0, 0  | RCC2 1, 0  | MS         | OK    | OPN      |      |      |
| 12     |         | 1      | RCC2 0, 8  | Rcc2 1, 8  | MS         | OK    | OPN      |      |      |
| 13     |         | 2      | RCC2 0, 12 | RCC2 1, 12 | S          | OK    |          |      |      |
| 14     | QueryIR | 3      | RCC2 0, 13 | RCC2 1, 13 | S          | OK    |          |      |      |
| 15     |         |        |            |            |            |       |          |      |      |
| 16     |         |        |            |            |            |       |          |      |      |
| 17     |         |        |            |            |            |       |          |      |      |
| 18     |         |        |            |            |            |       |          |      |      |

- 10** Busy IRLINKS in the faulty NTMX87 circuit card by typing  
**>BSY irlink\_no**  
 and pressing the Enter key.  
*where*  
**irlink\_no**  
 is the number of the irlink that must be busied  
**Note 1:** This step must be performed for each provisioned link in the slot position.  
**Note 2:** For link-to-slot assignments, reference step 18 for the main shelf.
- 11** Busy the inactive PM unit by typing  
**>bsy unit unit\_no**  
 and pressing the Enter key.  
*where*  
**unit\_no**  
 is the number of the inactive RCC2 unit (unit 0 or 1)
- 12** Display the C-side links associated with the DS-1 card by typing  
**>TRNSL C**  
 and pressing the Enter key.  
*Example of a MAP response*

---

## NTMX81

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

|        |       |       |               |         |     |
|--------|-------|-------|---------------|---------|-----|
| LINK 0 | LTC 0 | 0;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 1 | LTC 0 | 1;CAP | S:STATUS SBsy |         |     |
| LINK 2 | LTC 0 | 2;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 3 | LTC 0 | 3;CAP | S:STATUS OK   |         |     |
| LINK 4 | LTC 0 | 4;CAP | S:STATUS OK   |         |     |
| LINK 5 | LTC 0 | 5;CAP | S:STATUS SBsy |         |     |

---

|                            |           |
|----------------------------|-----------|
| <b>If C-side links are</b> | <b>Do</b> |
| faulty                     | step 14   |
| not faulty                 | step 11   |

---

- 13** Display the P-side links associated with the DS-1 card by typing  
**>TRNSL P**  
 and pressing the Enter key.

*Example of a MAP response*

|        |          |        |                |         |     |
|--------|----------|--------|----------------|---------|-----|
| LINK 0 | RCC2 0 5 | 27;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 1 | RCC2 1 5 | 27;CAP | MS:STATUS SBsy | MSGCOND | CLS |
| LINK 2 | RCC2 0 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 3 | RCC2 1 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 4 | RCC2 0 5 | 50;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 5 | RCC2 1 5 | 50;CAP | MS:STATUS SBsy | MSGCOND | CLS |

---

|                            |           |
|----------------------------|-----------|
| <b>If P-side links are</b> | <b>Do</b> |
| faulty                     | step 14   |
| not faulty                 | step 28   |

---

- 14** Busy the links associated with the RCC2 by typing  
**>BSY LINK 0**  
 and pressing the Enter key.

*Example of a MAP response:*

Please confirm ("Yes" or "No")

Confirm by typing

**>YES**

and pressing the Enter key.

*Example of a MAP response:*

LTC 0 LINK 0 Bsy Passed

## NTMX81 in an RSC-S (DS-1) Model A RCC2 (continued)

**Note:** To busy the other links associated with the RCC2, execute the procedures in this step for each link until all links are busied.

- 15 Post the host PM by typing

>POST host\_pm host\_pm\_no

and pressing the Enter key.

where

**host\_pm**

is either a line group controller (LGC), a line group controller with ISDN (LGCI), a line trunk controller (LTC), or a line trunk controller with ISDN (LTCI)

**host\_pm\_no**

is the number of either an LGC, LGCI, LTC, or LTCI

Example of a MAP display:

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

LTC
0 Quit      PM          0          0          1          0          4          12
2 Post_     LTC         0          0          2          0          2          9
3 ListSet
4           LTC    1 ISTb  Links_OOS:  CSide  0, PSide  1
5 Trnsl_    Unit0:    Act InSv
6 Tst_      Unit1:    Inact InSv
7 Bsy_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next
13 SwAct
14 QueryPM
15
16
17 Perform
18

```

- 16 Manually busy the links connected to the faulty card by typing

>BSY LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty MX81 card, from step 11

**Note:** Each NTMX81 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; or 6,7.

## NTMX81 in an RSC-S (DS-1) Model A RCC2 (continued)

**At the RCE frame**

17



**WARNING**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

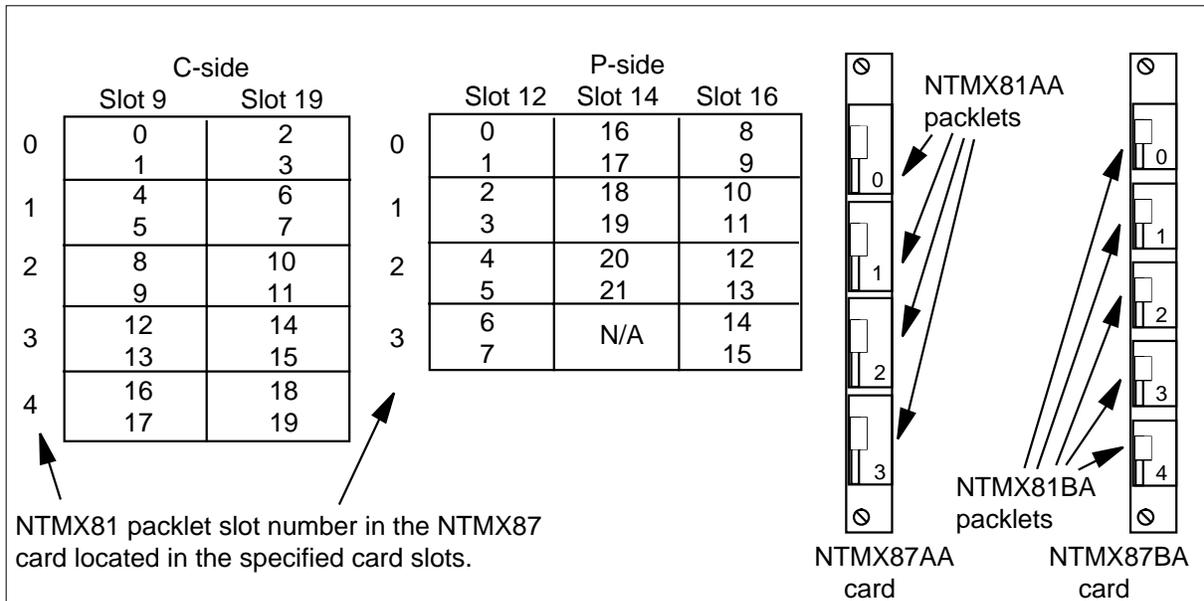
Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

18

After identifying the faulty link, use the following charts to determine which NTMX81 is to be removed by first identifying whether the link is a C-side or P-side link then by matching the link number with the slot number and the packet number to the left of each respective table.



**NTMX81**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

Remove the NTMX81 card as described in the following steps:

- a Locate the packlet to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packlet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 19** Before inserting the replacement card, set the DS-1 switch settings according to the following table.

| Distance to cross connect |         | Dip switch settings |      |      |
|---------------------------|---------|---------------------|------|------|
| Feet                      | Meters  | S3/6                | S2/5 | S1/4 |
| 0-133                     | 0-41    | On                  | Off  | Off  |
| 133-266                   | 41-81   | Off                 | On   | On   |
| 266-399                   | 81-122  | Off                 | On   | Off  |
| 399-533                   | 122-163 | Off                 | Off  | On   |
| 533-655                   | 163-200 | Off                 | Off  | Off  |

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1-S3 belong to even port, and S4-S6 belong to odd port.

- 20** Open the locking lever on the replacement packlet.
- a Align the packlet with the slots in the shelf.
  - b Gently slide the packlet into the card slot in the NTMX87 card.
- 21** Seat and lock the packlet.
- a Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b Close the locking lever.
- 22** Use the following information to determine what step to go to next in this procedure.

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 29 |
| other                              | step 23 |

---

## NTMX81

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

**At the MAP terminal**

- 23** Test the busied network links from step 12 by typing

```
>TST LINK link_no
```

and pressing the Enter key

where

**link\_no**

is the number of the link that was manually busied in step 14. This step must be performed for each link that is manually busied.

**Note:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 24 |
| failed | step 30 |

- 24** Return to service the P-side links by typing

```
>RTS LINK 0
```

and pressing the Enter key.

**Note:** To RTS the other links associated with the RCC2, execute this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 25 |
| failed | step 30 |

- 25** Post the inactive RCC2 unit in which the NTMX81 card is located by typing

```
>POST RCC2 UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCC2 unit associated with the faulty card

- 26** Return the inactive RCC2 unit to service by typing

```
>RTS UNIT unit_no
```

and pressing the Enter key.

where

**NTMX81**  
**in an RSC-S (DS-1) Model A RCC2 (end)**

---

**unit\_no**  
is the number of the RCC2 unit posted in step 25

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passes        | step 27   |
| fails         | step 30   |

---

- 27** Send any faulty cards for repair according to local procedure.
- 28** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 29.
- 29** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 30** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 31** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX81**  
**in an RSC-S (DS-1) Model B RCC2**

---

**Application**

Use this procedure to replace the following card in an RSC-S RCC2.

| PEC    | Suffixes | Name                |
|--------|----------|---------------------|
| NTMX81 | AA, BA   | Dual DS-1 Interface |

**Common procedures**

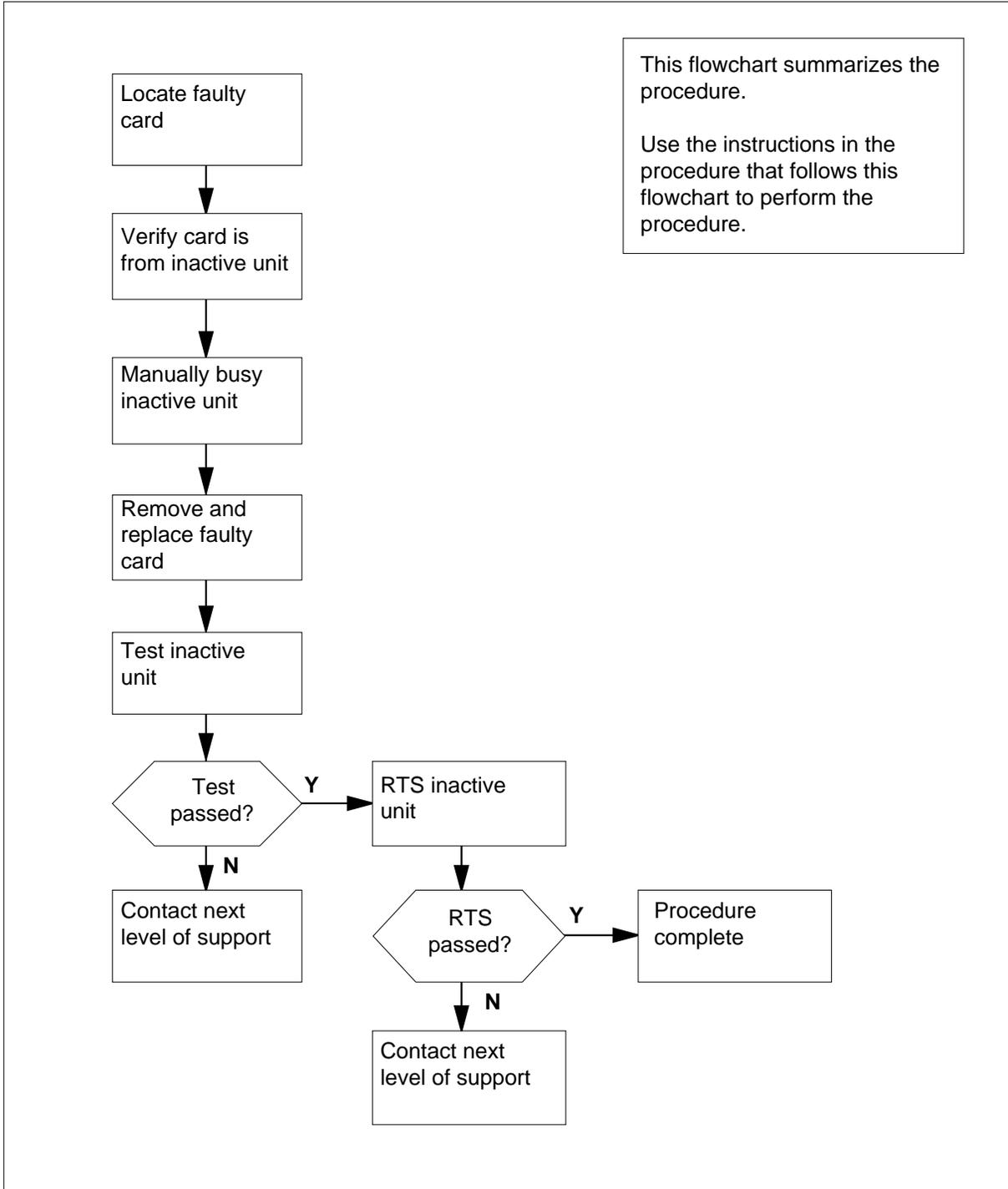
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

# NTMX81 in an RSC-S (DS-1) Model B RCC2 (continued)

## Summary of card replacement procedure for an NTMX81 card in RSC-S RCC2



---

## NTMX81

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

#### Replacing an NTMX81 card in RSC-S RCC2

##### *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

**CAUTION****Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX81 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI ;MTC ;PM ;POST RCC2 rcc2_no`  
and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

**NTMX81**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS            | Trks | Ext  | Appl |
|------|---------|--------|-------|-------|------------|----------------|------|------|------|
| .    | .       | .      | .     | 1RCC2 | .          | .              | .    | .    | .    |
| RCC2 |         |        | SysB  | ManB  | OffL       | CBsy           | ISTb | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0              | 2    | 25   |      |
| 2    | Post_   | RCC2   | 0     | 0     | 0          | 0              | 1    | 1    |      |
| 3    | ListSet |        |       |       |            |                |      |      |      |
| 4    |         | RCC2   | 0     | ISTb  | Links_OOS: | Cside 1, 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   |         |        |       |       |            |                |      |      |      |
| 18   |         |        |       |       |            |                |      |      |      |

- 4 By observing the MAP display, be sure the card to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 5 |
| inactive unit            | step 7 |

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

- 6 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

**At the RCE frame**

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCC2    | step 21 |

## NTMX81

### in an RSC-S (DS-1) Model B RCC2 (continued)

| If faulty card is | Do     |
|-------------------|--------|
| P-side faulty     | step 8 |

#### At the MAP terminal

- 8** Determine if the RCC2 is in a single or dual configuration by typing

```
>POST RCC2 rcc2_no ;IRLINK
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system responds with:

```
NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.
```

- 9** Before reconfiguring (adding, removing, or moving) interlinks of a posted RCC2 of a DRCC2, enter the following command from the IRLINK MAP level to disable interswitching capability:

```
>INTERSW DISABLE
```

**Note:** If the INTERSW DISABLE command is not entered before an attempt is made to busy (BSY) a specified IRLINK, the MAP terminal displays the following response:

```
interswitched calls should be disabled before an
interlink is busied.
```

- 10** To confirm that interswitching is disabled, enter the QUERYIR command. The QUERYIR command displays the status of interswitching capability for the posted RCC2:

```
>QUERYIR
```

*Example of a MAP display*

```
Interswitching is DISABLED
IR  FROM      TO          C  ALRM SLIP FRME BER STATE
0  RCC2  0, 0    RCC2  1, 0    .      0  0      OK
1  RCC2  0, 8    RCC2  1, 8    .      0  0      OK
2  RCC2  0, 4    RCC2  1, 7    .      0  0      OK
3  RCC2  0, 9    RCC2  1, 12  .      0  0      OK
```

- 11** When the interswitching capability has been disabled, begin reconfiguring the IRLINKS by entering the BSY command with the IRLINK number(s), to be reconfigured. The BSY command is enhanced to display the number of interswitched calls that will be reverted to the network using available C-side channels, as seen in the following example:

```
>BSY 3
```

## NTMX81 in an RSC-S (DS-1) Model B RCC2 (continued)

*Example of a MAP response*

67 interswitched calls will be reverted to the network. Potential loss of calls on the interlink if there are no available C-side channels.

- 12 Since the C-side channels of the RCC2 is a limited resource, reconfiguring IRLINKS should only be performed during periods of low traffic, otherwise some interswitched calls can be lost if there is an insufficient number of available C-side channels.
- 13 With the IRLINKS manually-busied (ManB), enter table IRLNKINV and make link changes for the desired IRLINK configuration. Static data is immediately downloaded to both units of both RCC2s of the DRCC2, if the units are InSv.
- 14 After DRCC2 IRLINKS are reconfigured, return to service the IRLINKS by entering the enhanced RTS command. The MAP terminal displays the following response to indicate interswitching is disabled.

>RTS 3

*Example of a MAP response*

Be aware that Interswitching is Disabled.

- 15 To enable interswitching, enter the following command from the IRLINK MAP level:
- 16 To confirm interswitching is enabled for the posted RCC2, enter the QUERYIR command from the IRLINK MAP level:

>INTERSW ENABLE

>QUERYIR

*Example of a MAP display*

| Interswitching is ENABLED |           |           |   |      |      |      |     |       |  |
|---------------------------|-----------|-----------|---|------|------|------|-----|-------|--|
| IR                        | FROM      | TO        | C | ALRM | SLIP | FRME | BER | STATE |  |
| 0                         | RCC2 0, 0 | RCC2 1, 0 | . |      | 0    | 0    |     | OK    |  |
| 1                         | RCC2 0, 8 | RCC2 1, 8 | . |      | 0    | 0    |     | OK    |  |
| 2                         | RCC2 0, 4 | RCC2 1, 7 | . |      | 0    | 0    |     | OK    |  |
| 3                         | RCC2 0, 6 | RCC2 1, 6 | . |      | 0    | 0    |     | OK    |  |

- 17 IRLINKS and ForceESA static data are dynamically downloaded to both RCC2s of the DRCC2. However, the ESA lines, trunks and ESA table control data, components of the ESA static data for both RCC2s must also be downloaded. For this reason, the units of both RCC2s are set to in-service trouble (ISTb) with the reason ESA STATIC DATA MISMATCH.
- 18 ESA static data can be manually downloaded at the PM Level of the MAP display with the RCC2s posted, by entering the LOADPM command with the source of CC . and file of ESADATA. ESA static data can also be updated at

## NTMX81

### in an RSC-S (DS-1) Model B RCC2 (continued)

the automatic nightly static data updates as defined in table OFCENG tuples RSC\_XPMESASDUPD\_BOOL and RSC\_XPMESASDUPD\_HOUR.

**Note:** To load ESADATA the RCC2 units must be in service.

| If the RCC2 is in a  | Do      |
|----------------------|---------|
| single configuration | step 21 |
| dual configuration   | step 19 |

- 19** Translate the dual RCC2s IRLINKS by typing

>TRNSL

and pressing the Enter key.

*Example of a MAP response*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

IRLINK
0 Quit      PM      0      0      2      0      2      25
2           RCC2   0      0      0      0      1      1
3
4           RCC2   0 ISTb Links_OOS: CSide 1, PSide 1
5 TRNSL     Unit0:  Inact InSv
6 TST_     Unit1:  Act  InSv
7 BSY_
8 RTS_
9
10          IR      From      To      CAP      STATE      MSGCOND
11          0      RCC2 0, 0  RCC2 1, 0  MS      OK      OPN
12          1      RCC2 0, 8  Rcc2 1, 8  MS      OK      OPN
13          2      RCC2 0, 12 RCC2 1, 12  S      OK
14 QueryIR  3      RCC2 0, 13 RCC2 1, 13  S      OK
15
16
17
18

```

- 20** Busy IRLINKS in the faulty NTMX87 circuit card by typing

>BSY irlink\_no

and pressing the Enter key.

*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 28 for the main shelf.

---

## NTMX81 in an RSC-S (DS-1) Model B RCC2 (continued)

---

- 21 Busy the inactive PM unit by typing

>*bsy unit unit\_no*

and pressing the Enter key.

*where*

**unit\_no**

is the number of the inactive RCC2 unit (unit 0 or 1)

When both units are in-service, proceed to next step.

- 22 Display the C-side links associated with the DS-1 card by typing

>**TRNSL C**

and pressing the Enter key.

*Example of a MAP response*

|        |       |       |               |         |     |
|--------|-------|-------|---------------|---------|-----|
| LINK 0 | LTC 0 | 0;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 1 | LTC 0 | 1;CAP | S:STATUS SBsy |         |     |
| LINK 2 | LTC 0 | 2;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 3 | LTC 0 | 3;CAP | S:STATUS OK   |         |     |
| LINK 4 | LTC 0 | 4;CAP | S:STATUS OK   |         |     |
| LINK 5 | LTC 0 | 5;CAP | S:STATUS SBsy |         |     |

---

**If C-side links are**

**Do**

faulty

step 24

not faulty

step 21

- 
- 23 Display the P-side links associated with the DS-1 card by typing

>**TRNSL P**

and pressing the Enter key.

*Example of a MAP response*

|        |          |        |                |         |     |
|--------|----------|--------|----------------|---------|-----|
| LINK 0 | RCC2 0 5 | 27;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 1 | RCC2 1 5 | 27;CAP | MS:STATUS SBsy | MSGCOND | CLS |
| LINK 2 | RCC2 0 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 3 | RCC2 1 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 4 | RCC2 0 5 | 50;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 5 | RCC2 1 5 | 50;CAP | MS:STATUS SBsy | MSGCOND | CLS |

---

**If P-side links are**

**Do**

faulty

step 24

not faulty

step 38

- 
- 24 Busy the links associated with the RCC2 by typing

>**BSY LINK 0**

and pressing the Enter key.

## NTMX81

### in an RSC-S (DS-1) Model B RCC2 (continued)

*Example of a MAP response:*

Please confirm ("Yes" or "No")

Confirm by typing

>YES

and pressing the Enter key.

*Example of a MAP response:*

LTC 0 LINK 0 Bsy Passed

**Note:** To busy the other links associated with the RCC2, execute the procedures in this step for each link until all links are busied.

**25** Post the host PM by typing

>POST **host\_pm** **host\_pm\_no**

and pressing the Enter key.

where

**host\_pm**

is either a line group controller (LGC), a line group controller with ISDN (LGCI), a line trunk controller (LTC), or a line trunk controller with ISDN (LTCI)

**host\_pm\_no**

is the number of either an LGC, LGCI, LTC, or LTCI

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

LTC
0 Quit      PM          0          0          1          0          4          12
2 Post_    LTC          0          0          2          0          2          9
3 ListSet
4          LTC      1 ISTb  Links_OOS:  CSide  0, PSide  1
5 Trnsl_   Unit0:      Act InSv
6 Tst_     Unit1:      Inact InSv
7 Bsy_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next
13 SwAct
14 QueryPM
15
16
17 Perform
18

```

## NTMX81 in an RSC-S (DS-1) Model B RCC2 (continued)

---

- 26 Manually busy the links connected to the faulty card by typing

```
>BSY LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty MX81 card, from step 21

**Note:** Each NTMX81 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; or 6,7.

### At the RCE frame

- 27



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

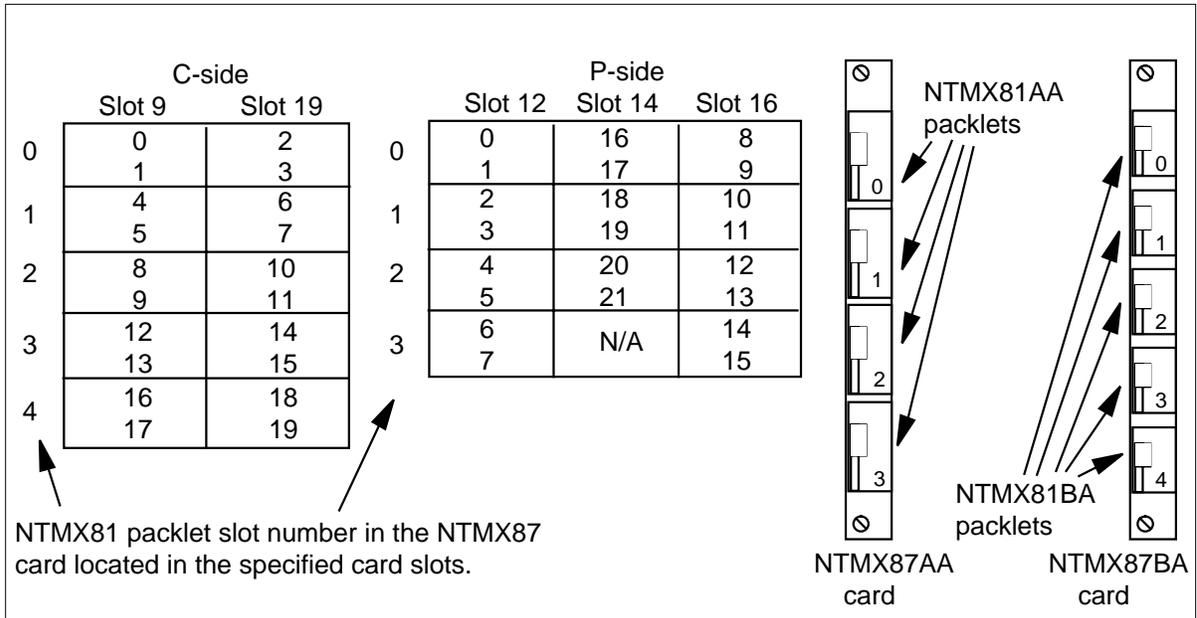
Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

- 28 After identifying the faulty link, use the following charts to determine which NTMX81 is to be removed. First identify whether the link is a C-side or P-side link, then by matching the link number with the slot number and packet number to the left of each respective table.

## NTMX81 in an RSC-S (DS-1) Model B RCC2 (continued)



Remove the NTMX81 card as described in the following steps:

- a Locate the packet to be removed on the appropriate NTMX87 card slot.
- b Open the locking lever on the packet to be replaced and gently pull the card toward you until it clears the shelf.
- c Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.

**29** Before inserting the replacement card, set the DS-1 switch settings according to the following table.

(Sheet 1 of 2)

| Distance to cross connect |        | Dip switch settings |      |      |
|---------------------------|--------|---------------------|------|------|
| Feet                      | Meters | S3/6                | S2/5 | S1/4 |
| 0—133                     | 0—41   | On                  | Off  | Off  |
| 133—266                   | 41—81  | Off                 | On   | On   |
| 266—399                   | 81—122 | Off                 | On   | Off  |

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1—S3 belong to even port, and S4—S6 belong to odd port.

**NTMX81**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

(Sheet 2 of 2)

| Distance to cross connect |         | Dip switch settings |      |      |
|---------------------------|---------|---------------------|------|------|
| Feet                      | Meters  | S3/6                | S2/5 | S1/4 |
| 399—533                   | 122—163 | Off                 | Off  | On   |
| 533—655                   | 163—200 | Off                 | Off  | Off  |

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1—S3 belong to even port, and S4—S6 belong to odd port.

- 30** Open the locking lever on the replacement packlet.
- a** Align the packlet with the slots in the shelf.
  - b** Gently slide the packlet into the card slot in the NTMX87 card.
- 31** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 32** Use the following information to determine what step to go to next in this procedure.

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 39 |
| other                              | step 33 |

**At the MAP terminal**

- 33** Test the busied network links from step 22 by typing
- ```
>TST LINK link_no
```
- and pressing the Enter key
- where
- link\_no**  
 is the number of the link that was manually busied in step 24. This step must be performed for each link that is manually busied.
- Note:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

If TST	Do
passed	step 34

---

**NTMX81**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

	<b>If TST</b>	<b>Do</b>
	failed	step 40
<b>34</b>	Return to service the P-side links by typing >RTS LINK 0 and pressing the Enter key. <b>Note:</b> To RTS the other links associated with the RCC2, execute this step for each link until all links are returned to service.	
	<b>If RTS</b>	<b>Do</b>
	passed	step 35
	failed	step 40
<b>35</b>	Post the inactive RCC2 unit in which the NTMX81 card is located by typing >POST RCC2 UNIT <i>unit_no</i> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the RCC2 unit associated with the faulty card	
<b>36</b>	Return the inactive RCC2 unit to service by typing >RTS UNIT <i>unit_no</i> and pressing the Enter key. <i>where</i> <b>unit_no</b> is the number of the RCC2 unit posted in step 35	
	<b>If RTS</b>	<b>Do</b>
	passes	step 37
	fails	step 40
<b>37</b>	Send any faulty cards for repair according to local procedure.	
<b>38</b>	Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 39.	
<b>39</b>	Return to <i>Alarm Clearing Procedures</i> or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.	
<b>40</b>	Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.	

**NTMX81**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

- 41 You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTMX81  
in an SMA2**

---

**Application**

Use this procedure to replace an NTMX81 card in an SMA2.

PEC	Suffixes	Name
NTMX81	AA	Dual DS-1 Interface

**Common procedures**

The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- returning a card

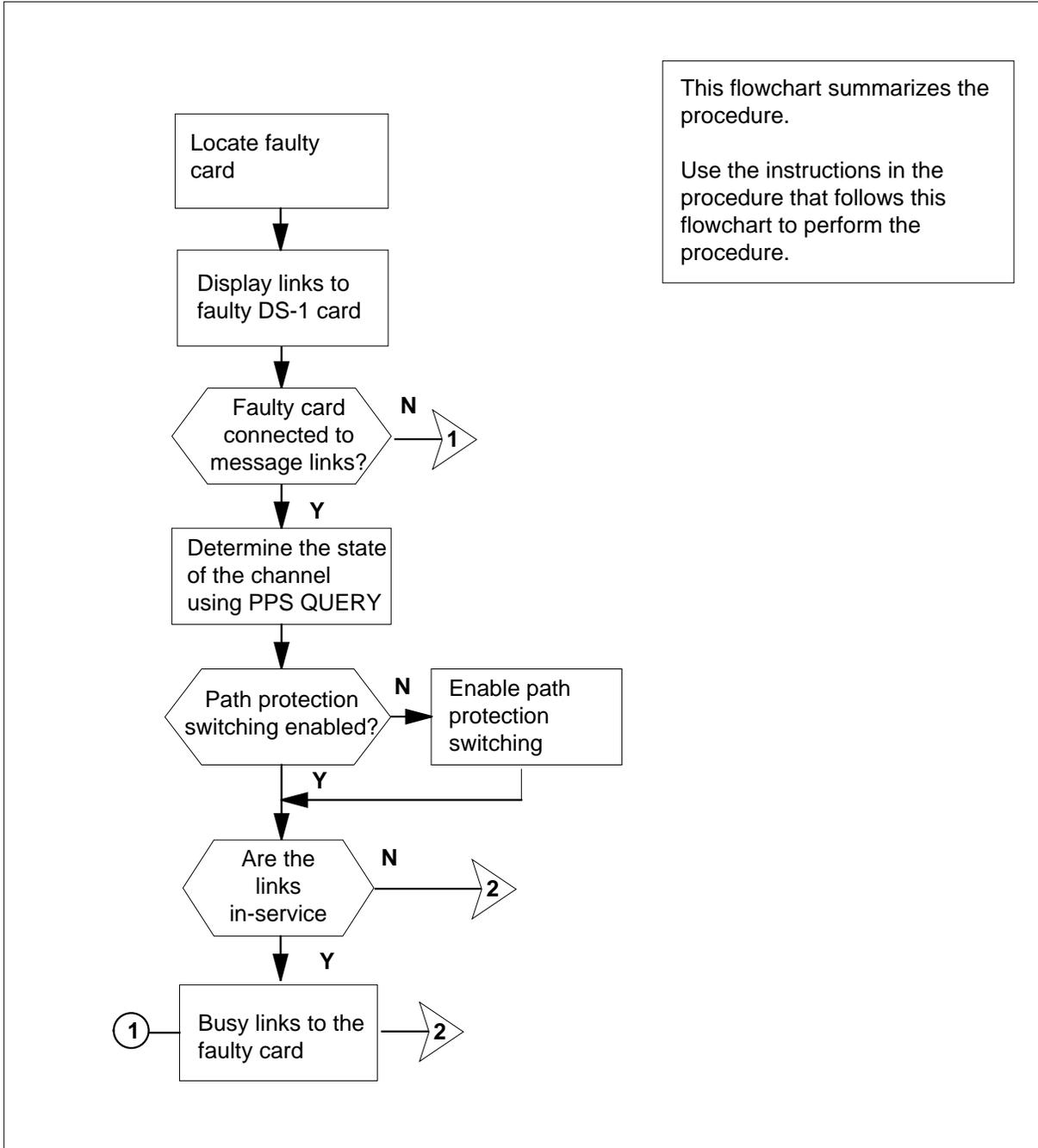
Do not go to a common procedure unless directed to do so in the step-action procedure.

**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.

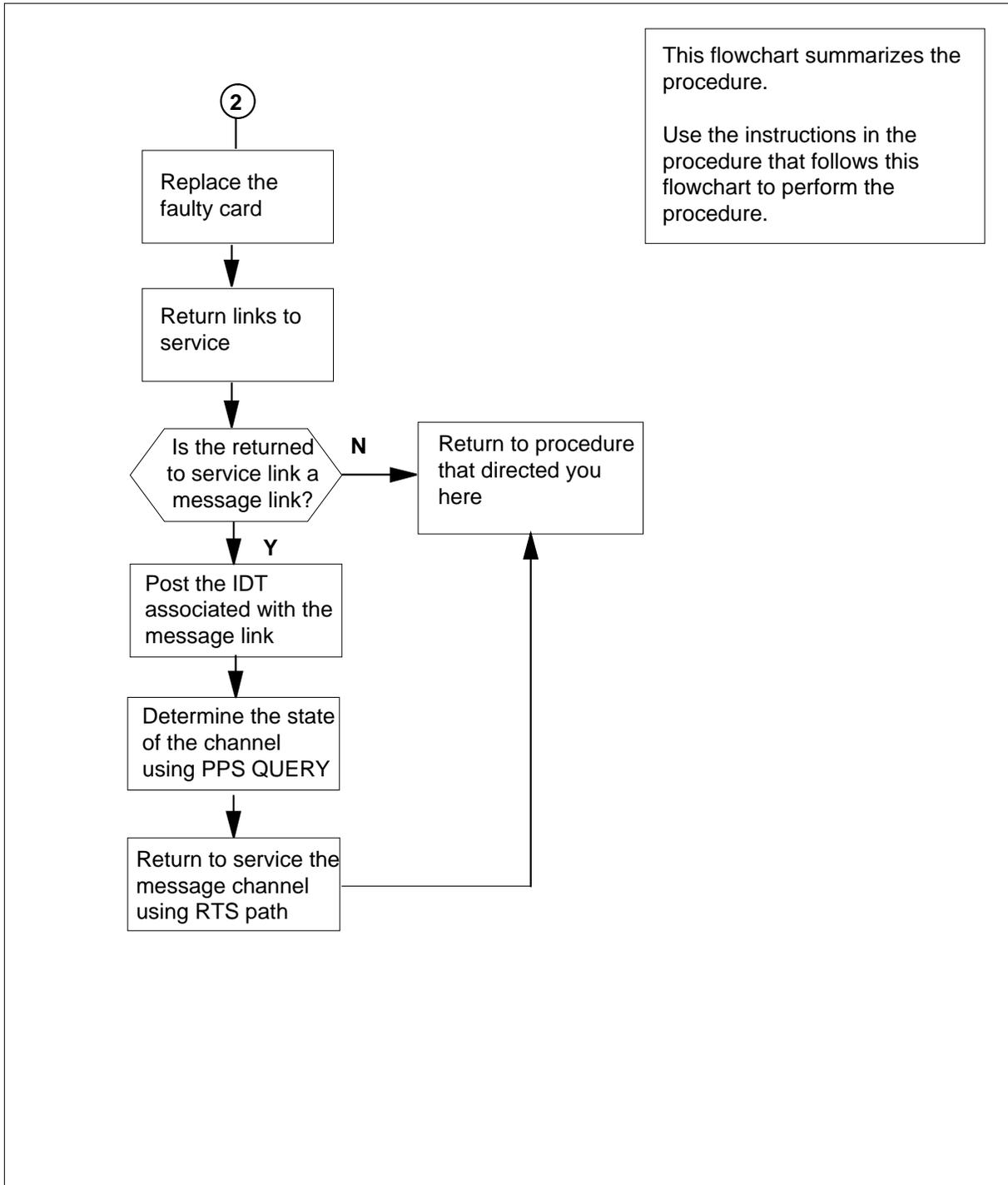
## NTMX81 in an SMA2 (continued)

### Summary of card replacement procedure for an NTMX81 card in an SMA2



**NTMX81**  
**in an SMA2 (continued)**

**Summary of card replacement procedure for an NTMX81 card in an SMA2 (continued)**



## NTMX81 in an SMA2 (continued)

---

### Replacing an NTMX81 card in an SMA2



#### **CAUTION**

##### **Service disruption: calls may be dropped!**

Perform this card replacement activity only during a period of low traffic. All calls being handled by the links connected to the DS-1 interface card being replaced will be dropped.

#### ***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 Ensure you know the physical location of the faulty card. If card location is known continue to step 3, if card location is unknown refer to "Locating a faulty card in an SMA2".
- 3



#### **CAUTION**

##### **Loss of service**

Ensure that you replace the card in the inactive unit and verify the mate unit is active.

Obtain an NTMX81 replacement card. Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### ***At the MAP terminal***

- 4 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST SMA2 sma2_no`  
and pressing the Enter key.

*where*

**sma2\_no**

is the number of the SMA2 with the faulty card

*Example of a MAP display:*

## NTMX81 in an SMA2 (continued)

SMA2	SysB	ManB	OffL	CBSy	ISTb	InSv
PM	3	0	1	0	2	13
SMA2	0	0	0	0	1	7

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act InSv
Unit1: InAct IsTb
```

- 5** Observe the MAP display and determine if the faulty card is in the active or the inactive unit.

If the faulty card is in the	Do
active unit	step 6
inactive unit	step 10

- 6** SWACT the units by typing

>SWACT

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal.

If SWACT	Do
cannot continue at this time	step 7
can continue at this time	step 8

- 7** Reject the prompt to SWACT the units by typing

>NO

and pressing the Enter key.

The system discontinues the SWACT. Go to step 48.

- 8** Confirm the system prompt by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

If the message is	Do
SWACT passed	step 10

## NTMX81 in an SMA2 (continued)

---

If the message is	Do
SWACT failed Reason: XPM SWACTback	step 9
SWACT refused by SWACT Controller	step 9

---

- 9 The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit.  
Go to step 48.

### **At the equipment frame**

- 10 Hang a sign on the active unit bearing the words: *Active unit—Do not touch.* This sign should not be attached by magnets or tape.

### **At the MAP terminal**

- 11 Display the P-side links associated with the DS-1 card by typing  
>TRNSL P  
and pressing the Enter key.

#### *Example of a MAP response*

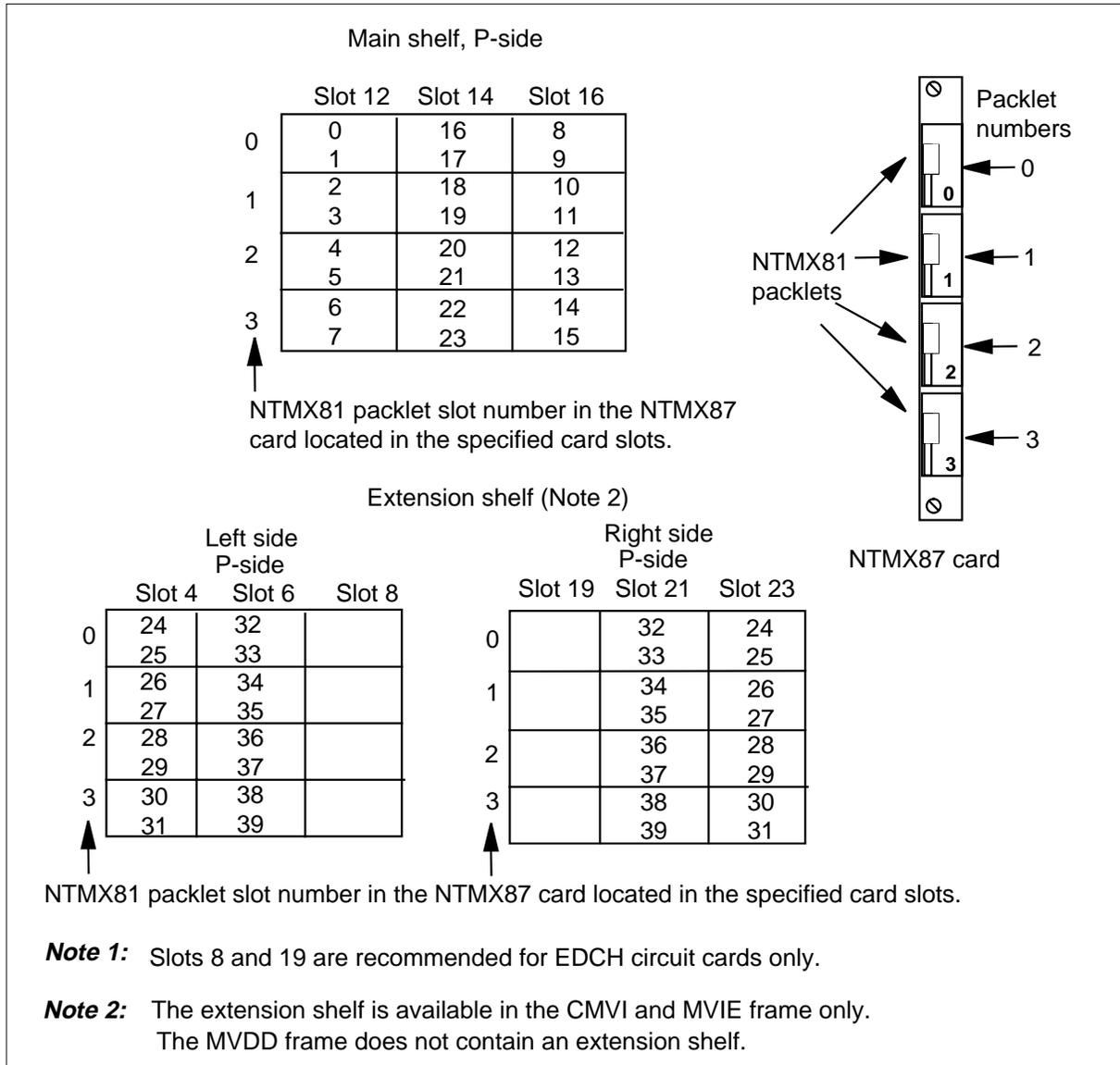
```
Link 1 IDT 1 0;Cap: MS;Status:OK ;MsgCond;OPN
Link 2 IDT 1 1;Cap MS;Status:OK ;MsgCond;CLS
Link 3 IDT 1 2;Cap S;Status:OK
Link 4 IDT 1 3;Cap S;Status:SysB
```

The first line indicates that DS-1 link 1 is connected to IDT1 at C-side link 0.  
Record the link numbers, IDT number, and capability (CAP) of the links connected to the NTMX81 card to be replaced.

**Note:** Each NTMX81 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; 6,7; and so forth.

- 12 After identifying the faulty link, use the following figure to determine which NTMX81 is to be removed in the main or extension shelf. The extension shelf is available only in the CMVI and MVIE frame or cabinet. In the MVDD frame the NTMX81 is found in the main shelf. Match the link number with the slot number and the packlet number to the left of the table. Each NTMX81 packlet is connected to two DS-1 links.

## NTMX81 in an SMA2 (continued)



**13** If the NTMX81 to be replaced is connected to IDT message links, then the appropriate message channels (TMC or CSC and EOC) must be busied.

If the link has a CAP of	Do
MS, as identified in step 11	step 14
S, as identified in step 11	step 22

## NTMX81 in an SMA2 (continued)

---

- 14** Post the IDT associated with the DS-1 link to be taken out of service, as recorded in step 11, by typing

```
>POST IDT idt_no
```

and pressing the Enter key.

where

**idt\_no**

is the number of the IDT being posted

*Example of a MAP response:*

```
IDT      SysB  ManB  Offl  Cbsy  ISTb  InSv
  PM      3     0     1     0     2    13
  IDT     0     0     0     0     1     7
```

```
IDT 2 ISTb Links_OOS:1
```

- 15** Display information about the state of the channels between the IDT and the RDT by typing

```
>PPS QUERY
```

and pressing the Enter key

*Example of a MAP response:*

```
TMC1: SMA2 7 7 24; OOS;Standby;Enable
EOC1: SMA2 7 7 12; OOS;Standby ;Enable
TMC2: SMA2 7 8 24; InSv;Active;Enable
EOC2: SMA2 7 8 12; InSv;Active;Enable
```

Determine if path protection is enabled for all channels.

---

<b>If one or both TMC, CSC, or EOC channels are</b>	<b>Do</b>
---	-----------

---

inhibited	step 16
-----------	---------

enabled	step 18
---------	---------

---

- 16** Enable path protection on an inhibited TMC, CSC, or EOC message channel by typing

```
>PPS ENA path
```

and pressing the Enter key.

where

**path**

is the inhibited TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2

## NTMX81 in an SMA2 (continued)

- |           |   |           |  |
|-----------|---|-----------|--|
| <b>17</b> | Determine if path protection switching must be enabled on additional TMC, CSC, or EOC message channels.   |           |  |
|           | <b>If</b>   | <b>Do</b> |  |
|           | additional channels must be enabled   | step 16   |  |
|           | all channels are enabled  | step 18   |  |
| <b>18</b> | Determine if the TMC, CSC, or EOC message channels for the link to be taken out of service are in-service.  |           |  |
|           | <b>If TMC, CSC, or EOC channels are</b>   | <b>Do</b> |  |
|           | in-service  | step 19   |  |
|           | out-of-service (OOS)  | step 21   |  |
| <b>19</b> | Busy the TMC, CSC, or EOC message channel associated with the link to be taken out of service by typing<br><b>&gt;BSY path</b><br><i>where</i><br><b>path</b><br>is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2 |           |  |
| <b>20</b> | Determine if there are additional TMC, CSC, or EOC message channels to be taken out of service.   |           |  |
|           | <b>If</b>   | <b>Do</b> |  |
|           | more channels must be taken out of service  | step 19   |  |
|           | no more channels are to be taken out of service   | step 21   |  |
| <b>21</b> | Determine if an additional link, as recorded in step 11, must be taken out of service associated with the NTMX81 to be replaced.  |           |  |
|           | <b>If</b>   | <b>Do</b> |  |
|           | an additional link must be taken out of service   | step 13   |  |
|           | no more links are to be taken out of service  | step 22   |  |

## NTMX81 in an SMA2 (continued)

**22** Post the SMA2 identified in step 4 by typing

```
>POST SMA2 sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 being posted

Example of a MAP response:

SMA2	SysB	ManB	Offl	CBsy	ISTb	InSv
PM	3	0	1	0	2	13
SMA2	0	0	0	0	1	7

```
SMA2 7 ISTb Links_OOS: CSide 0, PSide 1
Unit0: Act InSv
Unit1: Inact InSv
```

**23**



### CAUTION

**Service disruption: calls may be dropped!**

If you are prompted to confirm a BSY LINK command, perform this activity only during a period of low traffic. All calls being handled by the busied link will be dropped.

Busy one of the links connected to the faulty NTMX81, as recorded in step 11, by typing

```
>BSY LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link connected to the faulty NTMX81 card

A confirmation prompt for the BSY command is displayed at the MAP terminal

Example of a MAP response:

```
bsy link 0
Any active call may be lost
Please confirm ("Yes", "Y", "No", or "N"):
```

If	Do
cannot continue at this time	step 24
can continue at this time	step 31

## NTMX81 in an SMA2 (continued)

- 24** Reject the prompt to BSY the link by typing

>NO

and pressing the Enter key.

The system discontinues the BSY command.

- 25** Determine if the link is a message link

If the link has a CAP of	Do
MS	step 26
S	step 48

- 26** Post the IDT associated with the link by typing

>POST IDT *idt\_no*

and pressing the Enter key.

where

**idt\_no**

is the number of the IDT being posted

*Example of a MAP response:*

```

IDT      SysB  ManB  Offl  CBSy  ISTb  InSv
   PM      3    0    1     0    2    13
   IDT     0    0    0     0    1     7

```

```
IDT 2 ISTb Links_OOS:1
```

- 27** Display information about the state of the channels between the IDT and the RDT by typing

>PPS QUERY

and pressing the Enter key

*Example of a MAP response:*

```

TMC1: SMA2 7 7 24; OOS;Standby;Enable
EOC1: SMA2 7 7 12; 00S;Active ;Enable
TMC2: SMA2 7 8 24; InSv;Standby;Enable
EOC2: SMA2 7 8 12; InSv;Standby;Enable

```

- 28** Determine if there are any TMC, CSC, or EOC message channels for the link to be returned to service.

If TMC, CSC, or EOC channels are	Do
all in-service	step 48
out-of-service (OOS)	step 29

## NTMX81 in an SMA2 (continued)

---

- 29** Return to service the message channels which were taken out of service in step 19 by typing  
**>RTS path**  
*where*  
**path**  
is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2

- 30** Determine if there are additional TMC, CSC, or EOC message channels to be returned to service.

---

<b>If there are</b>	<b>Do</b>
more channels to be returned to service	step 29
no more channels to be returned to service	step 48

---

- 31** Confirm the system prompt by typing  
**>YES**  
and pressing the Enter key.  
Go to step 32.

- 32** Determine if there are additional links on the NTMX81 to be taken out of service.

**Note:** Remember that there two links connected to each NTMX81 card.

---

<b>If</b>	<b>Do</b>
there is another link to be taken out of service with a CAP of S	step 23
there is another link to be taken out of service with a CAP of MS and the associated IDT message channel has not been taken out of service	step 14
all links have been taken out of service	step 33
there is another link to be taken out of service with a CAP of MS and the associated IDT message channel has been taken out of service	step 23

---

## NTMX81 in an SMA2 (continued)

33

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

Remove the NTMX81 card as described in the following steps:

- a Locate the packlet to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packlet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
  - d Go to step 34.
- 34** Ensure the switches on the replacement card are set to the same settings as those on the card you have just removed.

Refer to the following table for information on correct DS-1 switch settings.

Distance to cross connect				
Feet	Meters	S3/6	S2/5	S1/4
0-133	0-41	On	Off	Off
133-266	41-81	Off	On	On
266-399	81-122	Off	On	Off
399-533	122-163	Off	Off	On
533-655	163-200	Off	Off	Off

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1-S3 belong to even port, and S4-S6 belong to odd port.

- 35** Open the locking lever on the replacement packlet.
- a Align the packlet with the slots in the shelf.
  - b Gently slide the packlet into the card slot in the NTMX87 card.
- 36** Seat and lock the packlet.
- a Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure the packlet is fully seated in the slot.

## NTMX81 in an SMA2 (continued)

---

- b Close the locking lever.
- c Go to step 38.

**At the MAP terminal**

- 37** Post the SMA2 identified in step 4 by typing

```
>POST SMA2 sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 being posted

Example of a MAP response:

```
SMA2    SysB  ManB  Offl  CBSy  ISTb  InSv
      PM    3     0     1     0     2    13
      SMA2  0     0     0     0     1     7
```

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act  InSv
Unit1: Inact ISTb
```

- 38** Return to service the P-side links by typing

```
>RTS LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link connected to the NTMX81 card

**Note:** To RTS the other links associated with the SMA2, execute this step for each link until all links are returned to service.

---

If RTS	Do
passed	step 39
failed	step 48

---

- 39** Determine if the link that was returned to service is a messaging link.

---

If the link has a CAP of	Do
MS, as identified in step 11	step 41
S, as identified in step 11	step 40

---

---

**NTMX81**  
**in an SMA2** (continued)

---

- 40** Determine if additional links are to be returned to service
- | <b>If</b>   | <b>Do</b> |
|---|-----------|
| an additional link must be re-<br>turned to service | step 38   |
| no more links are to be returned<br>to service      | step 46   |
- 
- 41** Post the IDT associated with the DS-1 link that has been returned to service by typing
- ```
>POST IDT idt_no
```
- and pressing the Enter key.
- where
- idt\_no**  
is the number of the IDT being posted
- Example of a MAP response:*
- | IDT | SysB | ManB | Offl | CBsy | ISTb | InSv |
|-----|------|------|------|------|------|------|
| PM  | 3    | 0    | 1    | 0    | 2    | 13   |
| IDT | 0    | 0    | 0    | 0    | 1    | 7    |
- IDT 1 SysB Links\_OOS:0
- 
- 42** Display information about the state of the channels between the IDT and the RDT by typing
- ```
>PPS QUERY
```
- and pressing the Enter key
- Example of a MAP response:*
- ```
TMC1: SMA2 7 7 24; OOS;Standby;Enable
EOC1: SMA2 7 7 12; InSv;Active;Enable
TMC2: SMA2 7 8 24; OOS;Standby;Enable
EOC2: SMA2 7 8 12; OOS;Standby;Enable
```
- 
- 43** Return to service the message channels which were taken out of service in step 19 by typing
- ```
>RTS path
```
- where
- path**  
is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2

**NTMX81**  
**in an SMA2** (end)

---

- 44** Determine if there are additional TMC, CSC, or EOC message channels to be returned to service.

---

**If there are**

**Do**

---

more channels to be returned to service      step 43

no more channels to be returned to service      step 45

- 
- 45** Determine if there are additional links on the NTMX81 to be returned service.

---

**If**

**Do**

---

there is another link to be returned to service      step 37

all links have been returned to service      step 46

---

***At the equipment frame***

- 46** Remove the sign from the active SMA2 unit.
- 47** Go to the common returning a card procedure in this document.  
Go to step 49.
- 48** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 49** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX81  
in a STAR**

---

**Application**

Use this procedure to replace an NTMX81 card in a STAR.

PEC	Suffixes	Name
NTMX81	AA	Dual DS-1 Interface

**Common procedures**

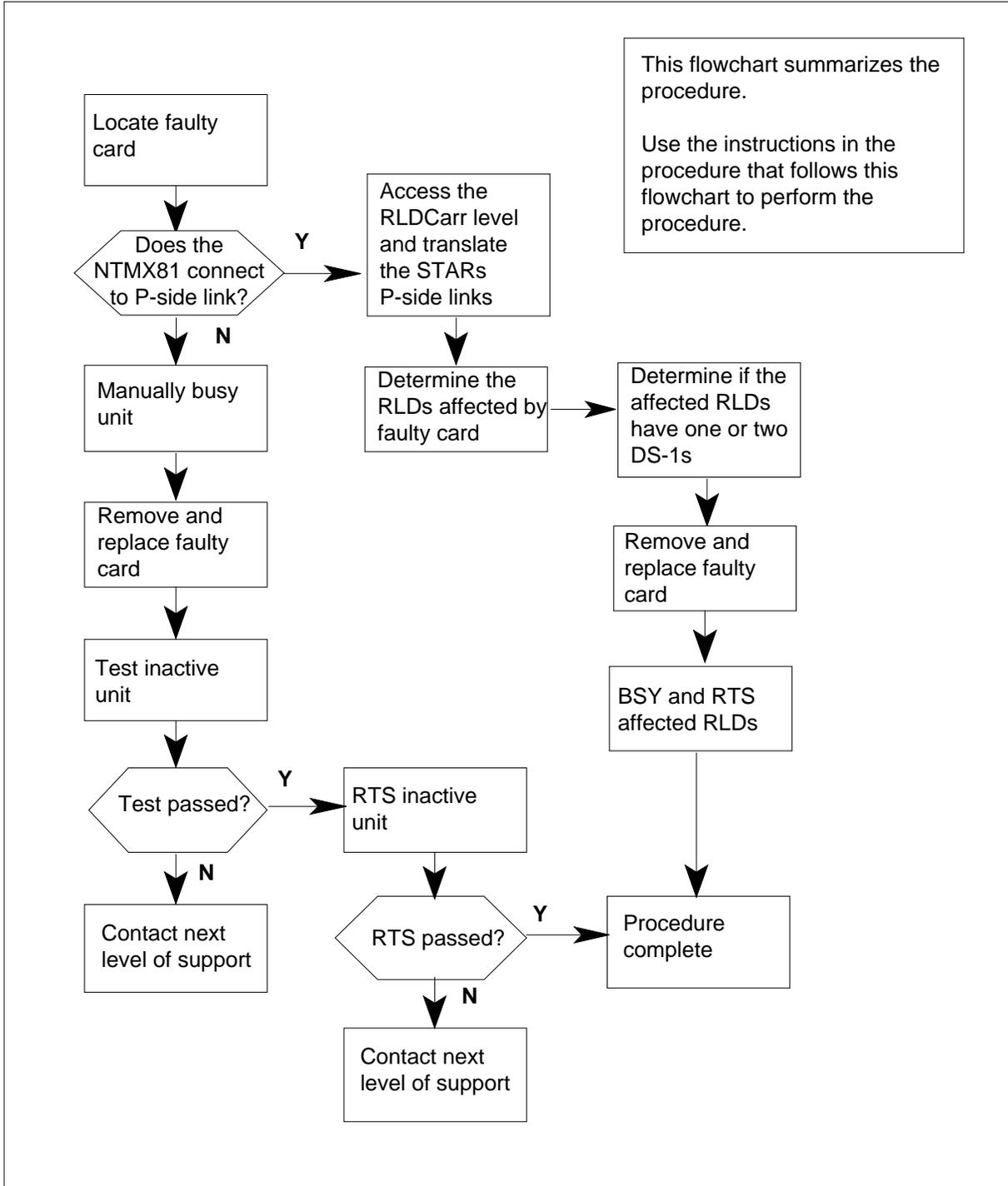
None

**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.

# NTMX81 in a STAR (continued)

## Summary of card replacement procedure for an NTMX81 card in a STAR



## NTMX81 in a STAR (continued)

### Replacing an NTMX81 card in a STAR

#### *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 checking or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 To access the PM level and post the STAR, type  
**>MAPCI;MTC;PM;POST STAR site frame unit**  
 and press the Enter key.

*where*

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the faulty card (0 to 511)

**unit**

is 0 for the STAR

*Example of a MAP response:*

```

SysB      ManB      OffL      CBSy      ISTb      InSv
PM         0         0         2         0         1         12
STAR      0         0         2         0         1         9

STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb      /RG: 0
Unit 1:  InSv     /RG: 0
Drwr:      11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
. . . . .

```

- 4 Determine the slot location of the NTMX81 with faults.

---

**If the NTMX81 is in an NTTR87 in slot Do**

---

8 or 16 (C-side DS-1 links to host PM) step 5

9, 10, 14, or 15 (P-side DS-1 links to Star Module) step 11

---

## NTMX81 in a STAR (continued)

---

- 5 To display the C-side link information, type

>TRNSL C

and press the Enter key.

*Example of a MAP response*

```
LINK 0 LTC 0 0;CAP MS:STATUS OK MSGCOND OPN
LINK 1 LTC 0 1;CAP S:STATUS SBsy
LINK 2 LTC 0 2;CAP MS:STATUS OK MSGCOND OPN
LINK 3 LTC 0 3;CAP S:STATUS OK
LINK 4 LTC 0 4;CAP S:STATUS OK
LINK 5 LTC 0 5;CAP S:STATUS SBsy
```

- 6 To busy the inactive STAR unit, type

>bsy unit unit\_no

and press the Enter key.

*where*

**unit\_no**

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

- 7 From the display in step 5, determine the C-side host PM where the STAR is connected. To post the host PM, type

>POST pm\_type pm\_no

and press the Enter key.

*where*

**pm\_type**

is the host PM type, such as LTC, LGC, RCC2

**pm\_no**

is the number of the host PM

*Example of a MAP display:*

```
PM      SysB      ManB      OffL      CBsy      ISTb      InSv
LTC     0          0          1          0          4          12
LTC     0          0          2          0          2          9
LTC 0 ISTb Links_OOS: CSide 0, PSide 4
Unit0:  Act InSv
Unit1:  Inact InSv
```

- 8 To display the P-side link information for the host PM, type

>TRNSL P

and press the Enter key.

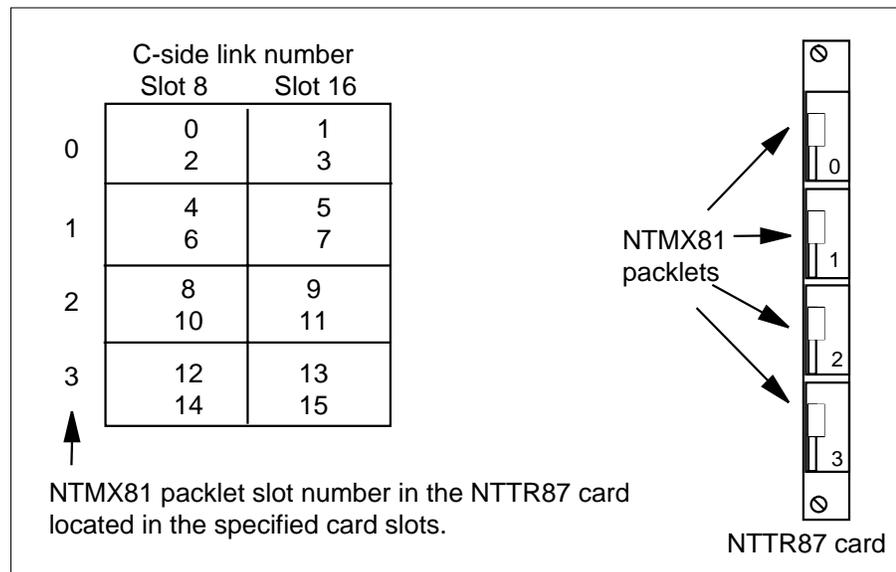
*Example of a MAP response*

## NTMX81 in a STAR (continued)

```
LINK 0: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 1: STAR REM1 00 0 1;CAP MS:STATUS SBSy MSGCOND: CLS
LINK 2: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 3: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
LINK 4: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 5: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
LINK 6: STAR REM1 00 0 0;CAP MS:STATUS SBSy MSGCOND: CLS
LINK 7: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
```

**9** Record the numbers of the links with status not OK.

After identifying the link with faults, use the following chart to determine which NTMX81 to remove by matching the STAR link number with the slot number and the packet number to the left of the table.



**10** To manually busy the links connected to the card with faults, type

>BSY LINK link\_no

and press the Enter key.

where

**link\_no**

is the number of the link connected with the NTMX81 card with faults, from step 9

**Note:** Each NTMX81 card has two links connected to it. Each link must be manually busied. Possible link number pairs are as follows: 0,2; 1,3; 4,6; 5,7; 8,10; 9,11; 12,14; or 13,15.

Go to step 17.

# NTMX81 in a STAR (continued)

**At the MAP terminal**

**11** To access the RLDCarr level and display the C-side links from all RLDs to the posted STAR, type

**>RLDCARR ;TRNSL**

and press the Enter key.

*Example of a MAP display:*

```

Port 0: Unit 0 RLD 0 0;CAP MS;STATUS: InSv
Port 1: Unit 1 RLD 0 1;CAP MS;STATUS: InSv
Port 2: Unit 0 RLD 1 0;CAP MS;STATUS: InSv
Port 3: Unit 1 RLD 1 1;CAP MS;STATUS: InSv

Port 14: Unit 0 RLD 7 0;CAP MS;STATUS: InSv
Port 15: Unit 1 RLD 7 1;CAP MS;STATUS: InSV
Port 16: Unit 0 RLD 8 0;CAP MS;STATUS: SysB
Port 17: Unit 1 RLD 8 1;CAP MS;STATUS: InSv
Port 18: Unit 0 RLD 9 0;CAP MS;STATUS: SysB
Port 19: Unit 1 RLD 9 1;CAP MS;STATUS: InSv

```

Record the RLDs with link faults that connect to the STAR posted in step 3.

**12** To access the RLD MAP level, type

**>RLD**

and press the Enter key.

**13** Post the RLD. To post the RLD, type

**>POST rld\_no**

and press the Enter key.

*where*

**rld\_no**

is the number of the RLD with the C-side link that has faults

*Example of a MAP display:*

```

          SysB      ManB      OffL      CBSy      ISTb      InSv
PM          4          0          10          3          3          3
STAR        0          0          0          0          1          1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb          /RG: 0
Unit 1:  ManB          /RG: 0
Drwr:          11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -o ss -- -- -- -- -- -- -- -- --

REM9 RLD DRWR 8 SYSB          LogDrwr: 16 17
BANK_0: Active          Links_OOS: 1
BANK_1: Stby          RLD BDch: -

```

**14** To display the posted RLDs C-side links, type

**>TRNSL**

## NTMX81 in a STAR (continued)

and press the Enter key.

*Example of a MAP response*

```
Port 16: HUB Owner Unit 0 RLD 8 Link 0; Cap MS; Status: SysB
Port 17: HUB Owner Unit 1 RLD 8 Link 1; Cap MS; Status: InSv
```

- 15** Use the following table and figure to determine which NTMX81 card to remove by matching the provisioned link number with the slot number.

**Note:** When replacing an NTMX81 card at the Star Hub, determine if the RLDs affected by the card change have one or two DS-1 links. If the RLDs have one link, then each RLD must be posted, busied, and returned to service. If the RLD has two DS-1 links, the system automatically returns to service the DS-1 link.

### Mapping Star Module ports to DS-1 slot and port numbers (Sheet 1 of 2)

Star Module and link numbers	Star Hub DS-1 slot and port numbers	Star Hub P-side port numbers	Star Module and link numbers	Star Hub DS-1 slot and port numbers	Star Hub P-side port numbers
Module 0 link 0	Slot 9, port 0	0	Module 8 link 0	Slot 10, port 8	16
Module 0 link 1	Slot 15, port 0	1	Module 8 link 1	Slot 14, port 8	17
Module 1 link 0	Slot 9, port 1	2	Module 9 link 0	Slot 10, port 9	18
Module 1 link 1	Slot 15, port 1	3	Module 9 link 1	Slot 14, port 9	19
Module 2 link 0	Slot 9, port 2	4	Module 10 link 0	Slot 10, port 10	20
Module 2 link 1	Slot 15, port 2	5	Module 10 link 1	Slot 14, port 10	21
Module 3 link 0	Slot 9, port 3	6	Module 11 link 0	Slot 10, port 11	22
Module 3 link 1	Slot 15, port 3	7	Module 11 link 1	Slot 14, port 11	23
Module 4 link 0	Slot 9, port 4	8	Module 12 link 0	Slot 10, port 12	24
Module 4 link 1	Slot 15, port 4	9	Module 12 link 1	Slot 14, port 12	25
Module 5 link 0	Slot 9, port 5	10	Module 13 link 0	Slot 10, port 13	26
Module 5 link 1	Slot 15, port 5	11	Module 13 link 1	Slot 14, port 13	27
Module 6 link 0	Slot 9, port 6	12	Module 14 link 0	Slot 10, port 14	28
Module 6 link 1	Slot 15, port 6	13	Module 14 link 1	Slot 14, port 14	29

**NTMX81**  
**in a STAR** (continued)

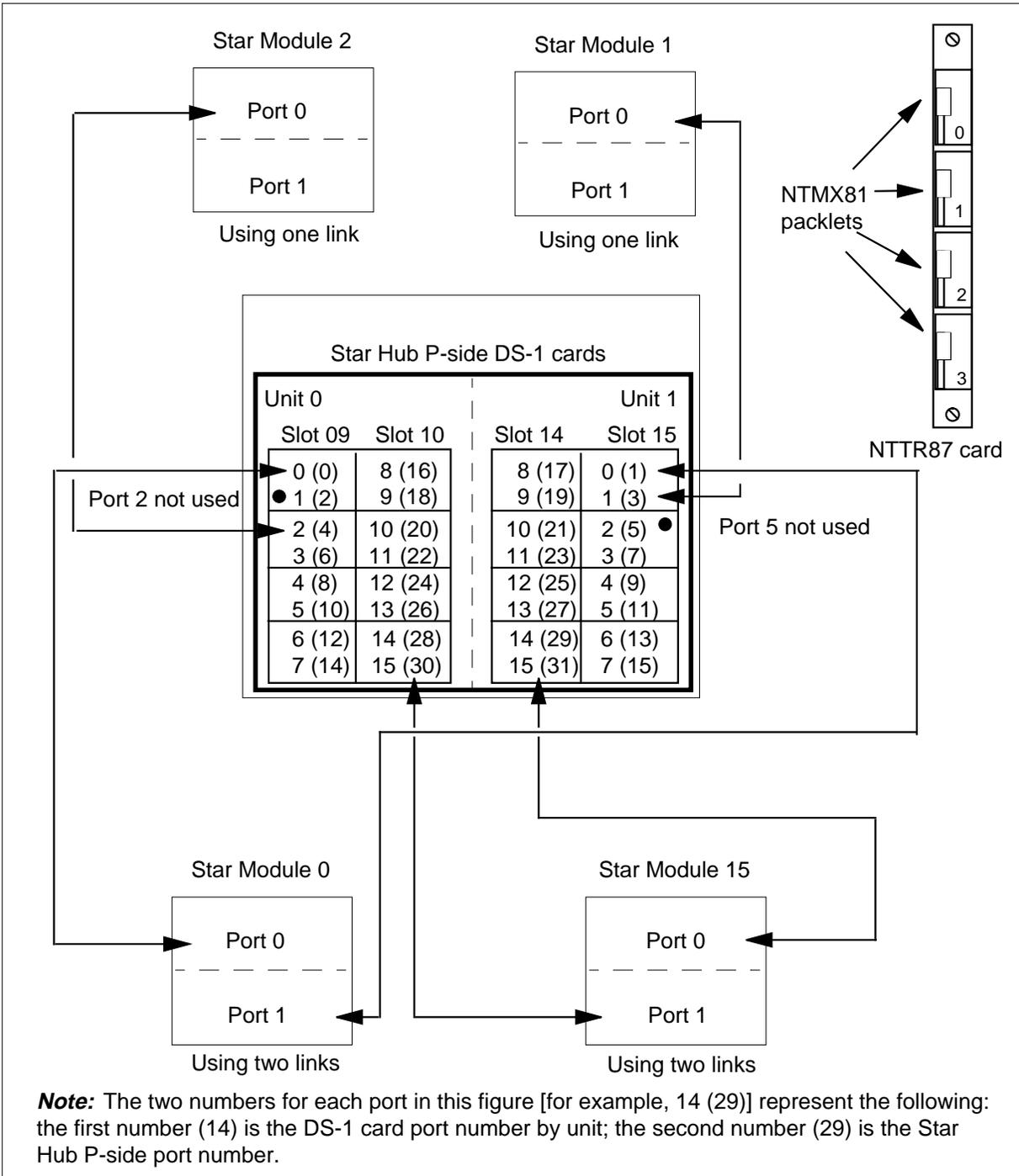
---

**Mapping Star Module ports to DS-1 slot and port numbers (Sheet 2 of 2)**

<b>Star Module and link numbers</b>	<b>Star Hub DS-1 slot and port numbers</b>	<b>Star Hub P-side port numbers</b>	<b>Star Module and link numbers</b>	<b>Star Hub DS-1 slot and port numbers</b>	<b>Star Hub P-side port numbers</b>
Module 7 link 0	Slot 9, port 7	14	Module 15 link 0	Slot 10, port 15	30
Module 7 link 1	Slot 15, port 7	15	Module 15 link 1	Slot 14, port 15	31

## NTMX81 in a STAR (continued)

### Star Hub P-side links mapping



## NTMX81 in a STAR (continued)

---

- 16 Determine if an additional RLD connects to the NTMX81 card.

If an additional RLD is	Do
connected	step 13
not connected	step 17

---

### At the SRHE frame

17



#### WARNING

##### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP). This protects the equipment against damage caused by static electricity.



#### WARNING

##### Equipment damage

Take the following precautions when removing or inserting a card.

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

Put on a wrist strap.

Remove the NTMX81 card as described in the following steps:

- a Locate the packlet to be removed on the appropriate NTTR87 card slot.
- b Open the locking lever on the packlet to be replaced. Carefully pull the card toward you until it clears the shelf.
- c Make sure the replacement card has the same PEC, including suffix, as the card you just removed.

## NTMX81 in a STAR (continued)

- 18** Before inserting the replacement card, set the DS-1 switch settings according to the following table.

Distance to cross connect				
Feet	Meters	S3/6	S2/5	S1/4
0-133	0-41	On	Off	Off
133-266	41-81	Off	On	On
266-399	81-122	Off	On	Off
399-533	122-163	Off	Off	On
533-655	163-200	Off	Off	Off

**Note:** S indicates switch number(s). On S1 dip switch (6 position): S1-S3 belong to even port, and S4-S6 belong to odd port.

- 19** Open the locking lever on the replacement packetlet.
- a** Align the packetlet with the slots in the shelf.
  - b** Carefully slide the packetlet into the card slot in the NTTR87 card.
- 20** Seat and lock the packetlet.
- a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate of the packetlet to make sure the packetlet is fully seated in the slot.
  - b** Close the locking lever.
- 21** Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	step 33
other	step 22

- 22** Use the following table to determine the next step in this procedure.

If you replaced an NTMX81 that connects DS-1 links for the	Do
Star Hub C-side	step 23
Star Hub P-side	step 27

## NTMX81 in a STAR (continued)

---

### *At the MAP terminal*

**23** To test the busied links from step 10, type

**>TST LINK link\_no**

and press the Enter key

where

**link\_no**

is the number of the link that was manually busied in step 10.

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To test the other links connected to the STAR, execute this step for each link until all links are tested.

---

<b>If TST</b>	<b>Do</b>
passes	step 24
fails	step 34

---

**24** To return to service the P-side links, type

**>RTS LINK link\_no**

and press the Enter key.

where

**link\_no**

is the number of the link that was tested in step 23.

**Note:** To RTS the other links connected to the STAR, perform this step for each link until all links are returned to service.

---

<b>If RTS</b>	<b>Do</b>
passes	step 25
fails	step 34

---

**25** To post the STAR where the NTMX81 card is located, type

**>POST STAR site frame unit**

and press the Enter key.

where

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the card with faults (0 to 511)

**unit**

is 0 for the STAR

---

## NTMX81 in a STAR (continued)

---

- 26** To return the inactive STAR unit to service, type

**>RTS UNIT unit\_no**

and press the Enter key.

*where*

**unit\_no**

is the number of the STAR unit busied in step 6

If RTS	Do
passes	step 31
fails	step 34

- 27** Determine how many DS-1 links connect to the RLD affected by the NTMX81 card replacement.

If the RLD affected by the card replacement has	Do
one DS-1 link	step 28
two DS-1 links, the affected link returns to service automatically	step 31

**Note:** If there are two RLDs, each with one DS-1 link affected by this card replacement, both RLDs must be busied and returned to service.

- 28** To busy the posted RLD, type

**>BSY DRWR**

and press the Enter key.

*Example of a MAP display:*

```
Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
```

- 29** To respond affirmatively to the confirmation request, type

**>Y**

and press the Enter key.

- 30** To return the RLD to service, type

**>RTS DRWR**

**NTMX81**  
**in a STAR** (end)

---

and press the Enter key.

---

<b>If RTS</b>	<b>Do</b>
passes and there are no more RLDs to RTS	step 31
passes and there is another RLD to return to service	step 28
fails	step 34

---

- 31** Send any cards with faults for repair according to local procedure.
- 32** Record the following items in office records
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 35.
- 33** Return to "Star Remote System alarm clearing procedures" in this manual or another procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 34** Get additional help replacing this card by contacting the personnel responsible for a higher level support.
- 35** You have correctly completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTMX82 in a DTCO2**

---

**Application**

Use this procedure to replace an NTMX82 circuit card in a Digital Trunk Controller Offshore (DTCO2).

PEC	Suffixes	Name
NTMX82	AA	Dual PCM30 Interface

**Common procedures**

Two common procedures are referenced in this section

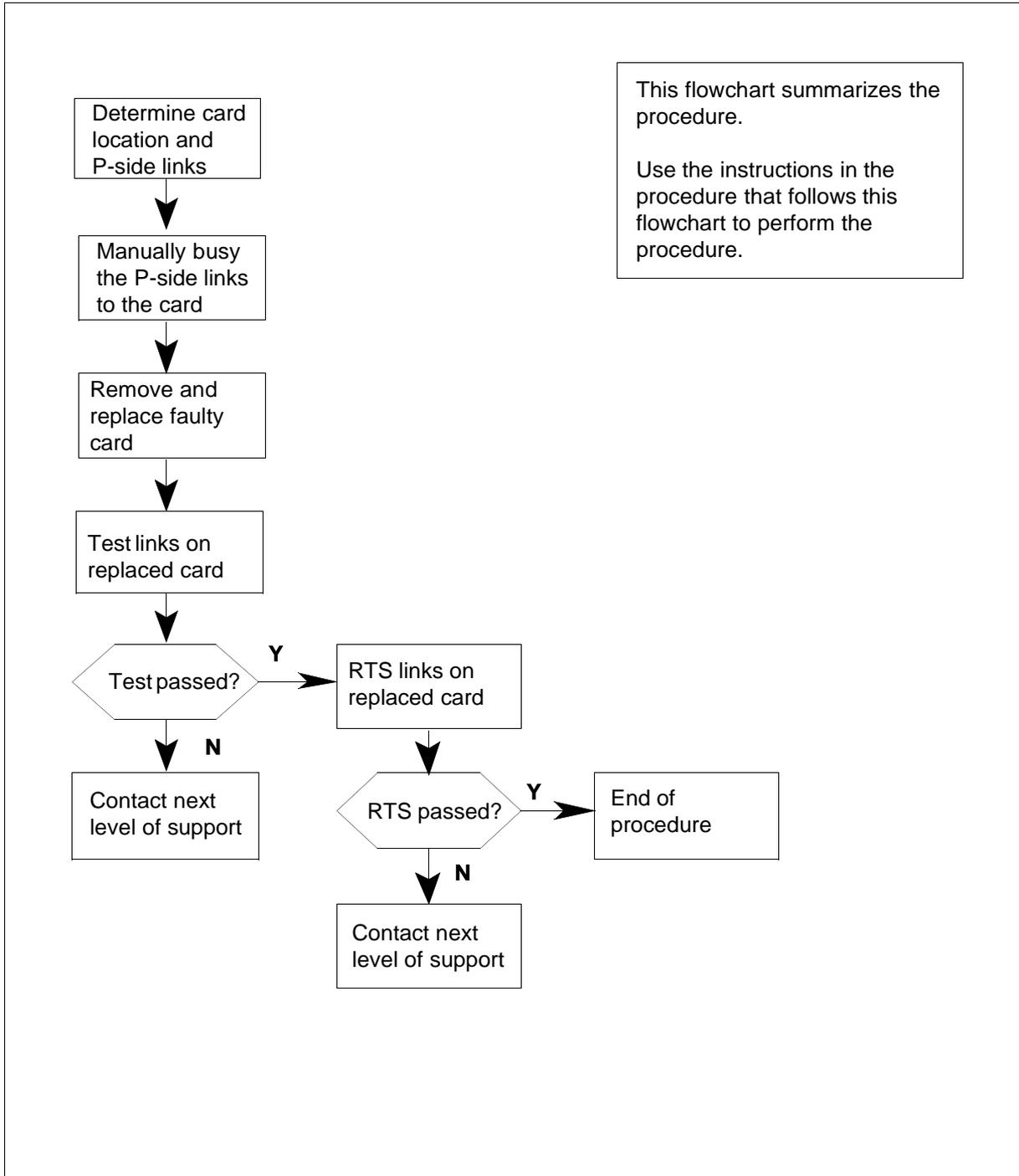
- Removing and replacing a card
- Returning a card for repair or replacement

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX82 in a DTCO2 (continued)

### Summary of card replacement procedure for an NTMX82 card in a DTCO2



**NTMX82 in a DTCO2** (continued)**CAUTION****Loss of service**

When replacing an NTMX82 circuit card in the DTCO2 both links served by that card must be BSYed. All active calls on the affected links are lost. Execute this procedure only during periods of low traffic.

**WARNING****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the DTCO2. This protects the equipment against damage caused by static electricity.

**DANGER****Equipment damage**

Take the following precautions when removing or inserting a card:

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

**Replacing an NTMX82 card in a DTCO2*****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 Obtain an NTMX82 replacement circuit card. Ensure the replacement circuit card has the same product equipment code (PEC), including suffix, as the circuit card to be removed.

***At the MAP terminal***

- 3 Post the DTCO2 with the faulty card(s) by typing  
`>MAPCI;MTC;PM;POST DTCO2 dtco_no`  
 and pressing the Enter key.  
*where*

---

**NTMX82 in a DTCO2 (continued)**

---

**dtco\_no**

is the number of the DTCO2 with the faulty card(s)

*Example of a MAP response:*

```

DTCO2          SysB   ManB   OffL   CBsy   ISTb
InSv
0 Quit    PM      0      0      2      0      2      25
2 Post_   DTCO2   0      0      0      0      1      1
3 ListSet
4          DTCO2   0 ISTb  Links_OOS:  CSide 1, PSide 1
5 TRNSL   Unit0:   Inact ISTb
6 TST     Unit1:   Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
    
```

- 4 Determine the location of the DTCO2 or extension half shelf (left or right) containing the circuit card you are replacing by typing

**>QUERYPM**

and pressing the Enter key.

*Example of a MAP display:*

```

PM Type: DTCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname: UK00ADU6 EEPROM Load: BNK0N205
WARM SWACT is supported and available
DTCO2 0 is included in the REX schedule.
REX on DTCO2 0 has not been performed.
Node Status: FALSE
Unit 0 Act, Status: FALSE
Unit 1 Inact, Status: FALSE
Site Flr RPos Bay_id Shf Description Slot EqPEC
HOST 00 C02 CDTCO2 00 05 DTCO2: 000 MX85AA
HOST 00 C02 CEXT 00 47 EXT:LEFT 01:13 MX86AA
    
```

- 5 Display the peripheral-side (P-side) links associated with the NTMX82 circuit card by typing

**>TRNSL P**

and pressing the Enter key.

*Example of a MAP response*

```

Link 0:  REM1 11 0 0;Cap MS;Status:OK ;MsgCond:OPN
Link 1:  Carrier of Class - Trunk ;Status:OK
Link 2:  Carrier of Class - Trunk ;Status:SBsy
Link 3:  Carrier of Class - Trunk ;Status:SBsy
Link 4:  Carrier of Class - Trunk ;Status:SBsy
Link 5:  Carrier of Class - Trunk ;Status:OK
Link 6:  Carrier of Class - Trunk ;Status:OK
Link 7:  Carrier of Class - Trunk ;Status:OK
Link 8:  REM1 11 1 0;Cap MS;Status:OK; MsgCond:OPN
    
```

**NTMX82 in a DTCO2 (continued)**

The following table shows the P-side link configuration for a DTCO2 cabinet provisioned with three DTCO2 main shelves and two extension half shelves.

**Note 1:** Other configurations such as two DTCO2 main shelves and four extension half shelves, may be provisioned in a DTCO2 cabinet. Consult office administration or review office records, for P-side link configurations other than the one represented in the following table.

**Note 2:** If the DTCO2 has an associated extension half shelf, consult office administration or review office records for the P-side link configuration for the extension half shelf.

**Note 3:** NTMX82 packets are numbered from 0 to 3 starting at the top of each NTMX87 circuit card.

**DTCO2 P-side link connections**

Card Location	MX87 Slot No.	Links for MX82 Card 0	Links for MX82 Card 1	Links for MX82 Card 2	Links for MX82 Card 3
DTCO2 main, shelf, pos. 05	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23
Left ext. half shelf	4	24, 25	26, 27	28, 29	30, 31
	6	32, 33	34, 35	36, 37	38, 39
	8	40, 41	42, 43	44, 45	46, 47
DTCO2 main shelf, pos. 19 (optional)	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23
Right ext. half shelf	19	40, 41	42, 43	44, 45	46, 47
	21	32, 33	34, 35	36, 37	38, 39
	23	24, 25	26, 27	28, 29	30, 31

**NTMX82 in a DTCO2** (continued)**DTCO2 P-side link connections**

<b>Card Location</b>	<b>MX87 Slot No.</b>	<b>Links for MX82 Card 0</b>	<b>Links for MX82 Card 1</b>	<b>Links for MX82 Card 2</b>	<b>Links for MX82 Card 3</b>
Prov. DTCO2 shelf, pos. 33	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23

**6** If you have not done so, record the DTCO2 number, shelf location, slot number, and numbers of the associated P-side links for the circuit card you are replacing.

**7** Manually busy (ManB) the links connected to the faulty circuit card by typing `>BSY LINK link_no` and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty NTMX82 circuit card

**Note 1:** Each NTMX82 circuit card has two links associated with it. Therefore, each link must be ManB. Possible link number pairs are as follows: 0 & 1; 2 & 3; 4 & 5; or 6 & 7.

**Note 2:** To busy the other links associated with the DTCO2, execute this step for each link until all links are busied.

**At the cabinet**

**8** Put on a wrist strap.

Remove the NTMX82 packlet(s) as described in the following steps:

- a** Locate the packlet to be removed on the appropriate NTMX87 circuit card slot.
- b** Open the locking lever on the packlet to be replaced, and gently pull the circuit card toward you until it clears the shelf.
- c** Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.

**NTMX82 in a DTCO2 (continued)**

- 9** Before inserting the replacement circuit card ensure the switch settings are the same as on the circuit card that was removed. The next table describes the PCM30 DIP switch settings on the NTMX82 circuit card.

**NTMX82 switch settings**

Port	Impedance	Output
Even port	75 OHM	Switch S3 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF
Even port	120 OHM	Switch S3 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF
Odd port	75 OHM	Switch S1 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF
Odd port	120 OHM	Switch S1 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF

- 10** Open the locking lever on the replacement packet.
- a** Align the packet with the slots in the shelf.
  - b** Gently slide the packet into the circuit card slot in the NTMX87 circuit card.
- 11** Seat and lock the packet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packet to ensure the packet is fully seated in the slot.
  - b** Close the locking lever.
- 12** Use the following information to determine what step to go to next in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	Step 13
other	Step 14

- 13** Remove the sign from the active unit. Return to the procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

## NTMX82 in a DTCO2 (end)

---

### *At the MAP terminal*

- 14** Test the busied network links from Step 7 by typing

>TST LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link ManB in Step 7

**Note 1:** This step must be performed for each link ManB.

**Note 2:** To test the other links associated with the DTCO2, execute the procedures in this step for each link until all links are tested.

---

<b>If the test of the link(s)</b>	<b>Do</b>
passed	Step 15
failed	Step 18

---

- 15** Return to service (RTS) the P-side links by typing

>RTS Link\_number

and pressing the Enter key.

where

**link\_number**

is the number of the link tested in Step 14.

**Note:** To RTS the other links associated with the DTCO2, execute the procedures in this step for each link until all links are RTS.

---

<b>If RTS</b>	<b>Do</b>
passed on all links	Step 16
failed	Step 18

---

- 16** Go to the common procedure "Returning a card for repair or replacement" in this section.

- 17** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

- 18** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.

**NTMX82  
in an RSC-M**

---

**Application**

Use this procedure to replace an NTMX82 circuit card in a Remote Switching Center Multi-access (RSC-M) main or extension (EXT) shelf.

*Note:* In this section, the examples refer to RSC-M as RCO2. When software outputs messages to the MAP terminal, the software does not differentiate between the two types of RCO2.

PEC	Suffixes	Name
NTMX82	AA	Dual PCM30 interface

**Common procedures**

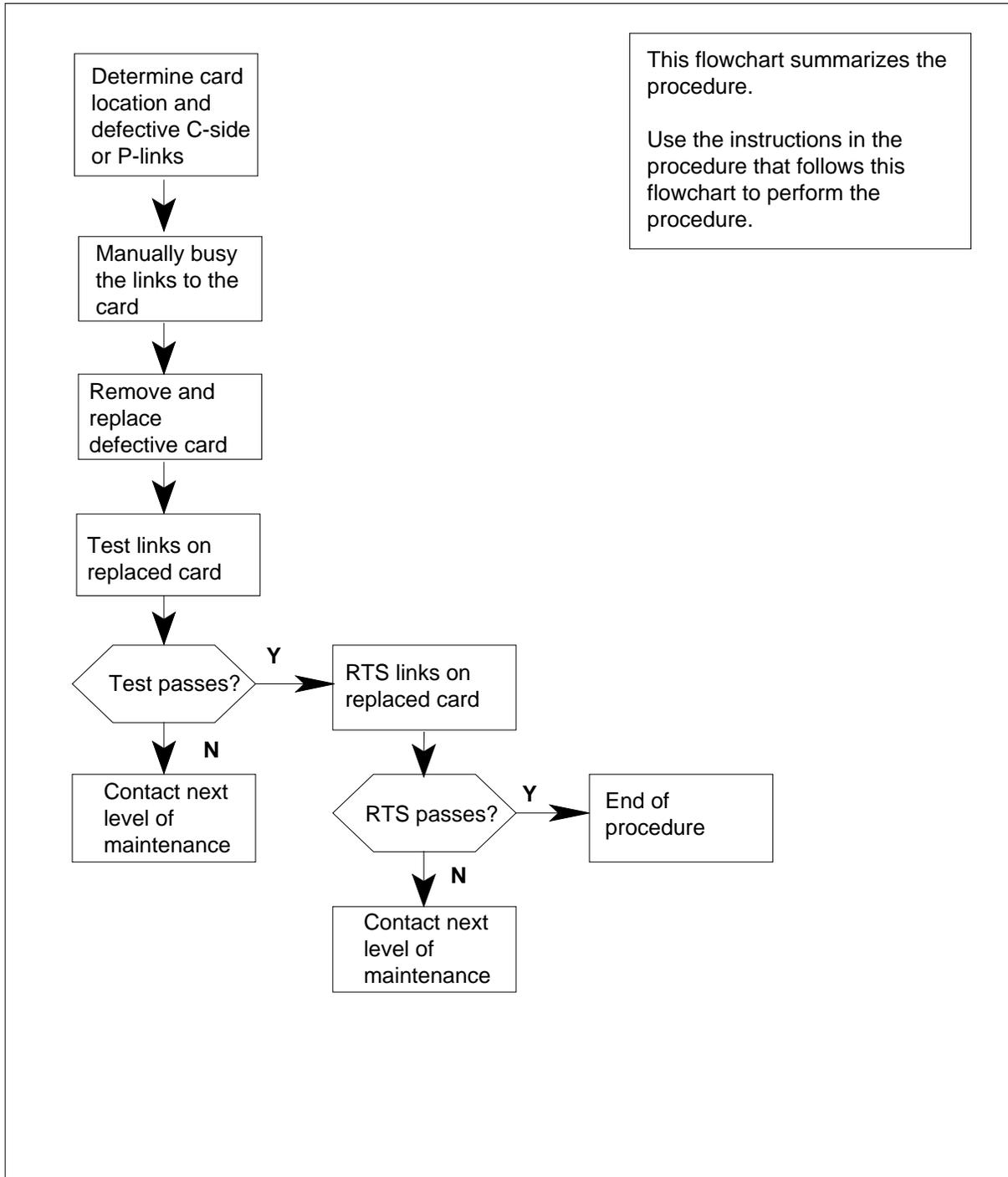
The common returning a card procedure is referenced in this procedure.

**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.

## NTMX82 in an RSC-M (continued)

### Summary of replacing an NTMX82 in an RSC-M



---

## NTMX82 in an RSC-M (continued)

---

### Replacing an NTMX82 in an RSC-M

#### *At the MAP display*

- 1 Proceed to step 2 if one of the following conditions applies:
  - another 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 an NTMX82 circuit card in RSC-M, both links that the circuit card serves must be BSY. Active calls on the affected links are lost. Execute this procedure in periods of low traffic.

Obtain an NTMX82 replacement circuit card. Make sure the replacement circuit card has the same product equipment code (PEC) and PEC suffix as the circuit card to remove.

#### *At the MAP terminal*

- 3 To post the RSC-M/RCO2 with the defective card(s), type  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and press the Enter key.  
*where*  
`rco2_no`  
is the number of the RCO2 with the defective card(s)  
*Example of a MAP response:*

## NTMX82 in an RSC-M (continued)

```

RCO2
0 Quit      PM      0      0      2      0      2      25
2 Post_    RCO2    0      0      0      0      1      1
3 ListSet
4           RCO2    0 ISTb  Links_OOS: CSide 1, PSide 1
5 TRNSL    Unit0:  Inact ISTb
6 TST      Unit1:  Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
    
```

- 4 To determine the location of the RCO2 main or extension half shelf (left or right) with the circuit card to replace, type

**>QUERYPM**

and press the Enter key.

*Example of a MAP display:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname:KRI07BI1 EEPROM Load:MX77MNG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA
    
```

- 5 To display defective C-side links, type

**>TRNSL C**

and press the Enter key.

*Example of a MAP response:*

```

LINK 0 PLGC 0 0;CAP MS:STATUS OK MSGCOND OPN
LINK 1 PLGC 0 1;CAP S:STATUS SBsy
LINK 2 PLGC 0 2;CAP MS:STATUS OK MSGCOND OPN
LINK 3 PLGC 0 3;CAP S:STATUS OK
LINK 4 PLGC 0 4;CAP S:STATUS OK
LINK 5 PLGC 0 5;CAP S:STATUS SBsy
    
```

---

**If C-side links**

**Do**

---

are defective

step 7

---

## NTMX82 in an RSC-M (continued)

If C-side links	Do
are not defective	step 6

- 6 To display the peripheral-side (P-side) links that associate with the NTMX82 circuit card, type

>TRNSL P

and press the Enter key.

*Example of a MAP response*

```
Link 0:  REM1 11 0 0;Cap MS;Status:OK      ;MsgCond:OPN
Link 1:  Carrier of Class - Trunk ;Status:OK
Link 2:  Carrier of Class - Trunk ;Status:SBSy
Link 3:  Carrier of Class - Trunk ;Status:SBSy
Link 4:  Carrier of Class - Trunk ;Status:SBSy
Link 5:  Carrier of Class - Trunk ;Status:OK
Link 6:  Carrier of Class - Trunk ;Status:OK
Link 7:  Carrier of Class - Trunk ;Status:OK
Link 8:  REM1 11 1 0;Cap MS;Status:OK;    MsgCond:OPN
```

The following table displays the P-side link configuration for an RSC-M cabinet. The cabinet has three RCO2 main shelves and two extension half shelves.

**Note 1:** Other configurations, like two RCO2 main shelves and four extension half shelves, can be provisioned in an RCO2 cabinet. For P-side link configurations other than the link that the following table describes, consult office administration, or review office records.

**Note 2:** The RCO2 can have an associated extension half shelf. Consult office administration, or review office records for the P-side link configuration for the extension half shelf.

**Note 3:** The NTMX82 packetlets bear the numbers 0 through 3 from the top of each NTMX87 circuit card.

### RCO2 P-side link connections (Sheet 1 of 2)

Card Location	MX87 Slot No.	Links for MX82 Card 0	Links for MX82 Card 1	Links for MX82 Card 2	Links for MX82 Card 3
RCO2 main, shelf, pos. 05	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23
Left extension half shelf	4	24, 25	26, 27	28, 29	30, 31

## NTMX82 in an RSC-M (continued)

### RCO2 P-side link connections (Sheet 2 of 2)

Card Location	MX87 Slot No.	Links for MX82 Card 0	Links for MX82 Card 1	Links for MX82 Card 2	Links for MX82 Card 3
	6	32, 33	34, 35	36, 37	38, 39
	8	40, 41	42, 43	44, 45	46, 47
RCO2 main shelf, position 19 (optional)	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23
Right extension half shelf	19	40, 41	42, 43	44, 45	46, 47
	21	32, 33	34, 35	36, 37	38, 39
	23	24, 25	26, 27	28, 29	30, 31
Provisioned RCO2 shelf, position 33	12	0, 1	2, 3	4, 5	6, 7
	16	8, 9	10, 11	12, 13	14, 15
	14	16, 17	18, 19	20, 21	22, 23

**Note:** Proceed to step 10.

- 7** To post the host PM, type  
**>POST host\_pm host\_pm\_no**  
 and press the Enter key.  
*where*  
**host\_pm**  
 is a PCM-30 line group controller (PLGC)  
**host\_pm\_no**  
 is the number of the PLGC that connects to the defective card  
*Example of a MAP display:*

**NTMX82**  
**in an RSC-M (continued)**

CM	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	Appl
.	.	.	.	1RCO2	.	.	.	.	.
PLGC			SysB	ManB	OffL	CBsy	ISTb	InSv	
0	Quit	PM	0	0	1	0	4	12	
2	Post_	PLGC	0	0	2	0	2	9	
3	ListSet								
4		PLGC	1	ISTb	Links_OOS:	CSide	0, PSide	1	
5	Trnsl_	Unit0:	Act	InSv					
6	Tst_	Unit1:	Inact	InSv					
7	Bsy_								
8	RTS_								
9	OffL								
10	LoadPM_								
11	Disp_								
12	Next								
13	SwAct								
14	QueryPM								
15									
16									
17	Perform								
18									

- 8** To display the P-side links that associate with the NTMX82 card, type  
**>TRNSL P**  
 and press the Enter key.

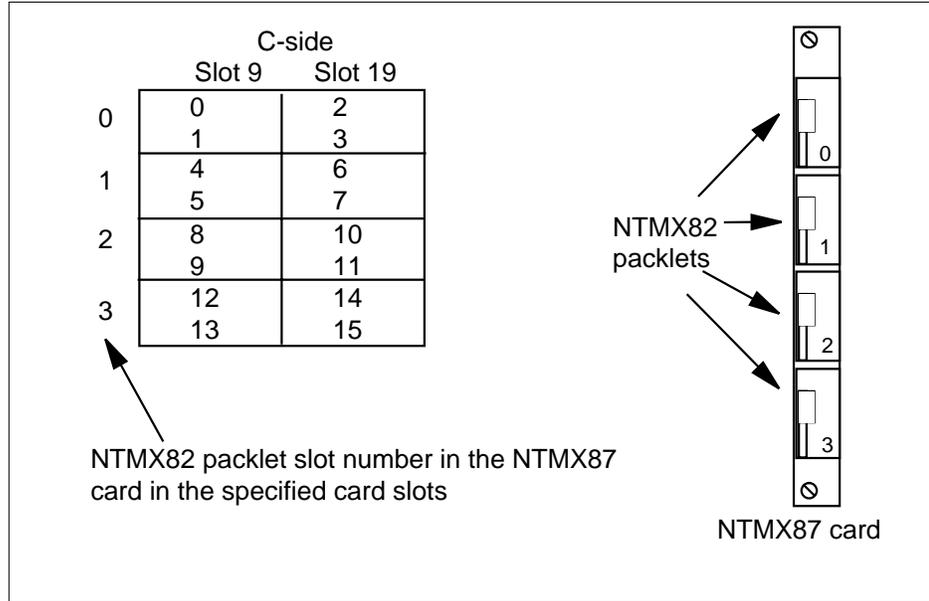
*Example of a MAP response:*

```
LINK 0   RCO2 0 RMIO 1 0;CAP   MS:STATUS OK   MSGCOND OPN
LINK 1   RCO2 1 RMIO 0 0;CAP   MS:STATUS SBsy MSGCOND CLS
LINK 2   RCO2 0 RMIO 1 1;CAP   MS:STATUS OK
LINK 3   RCO2 1 RMIO 0 1;CAP   MS:STATUS OK
LINK 4   RCO2 0 RMIO 2 0;CAP   MS:STATUS OK   MSGCOND OPN
LINK 5   RCO2 1 RMIO 2 1;CAP   MS:STATUS SBsy MSGCOND CLS
```

- 9** After you identify the defective C-side link, use the following chart to determine which NTMX82 card you remove. Match the link number with the slot number and the packet number to the left of each table.

## NTMX82 in an RSC-M (continued)

### RCO2 C-side link connections



- 10 Record the RCO2 number, shelf location, slot number, and numbers of the associated links for the circuit card you want to replace.
- 11 To manually busy (ManB) the links that connect to the defective circuit card, type

`>BSY LINK link_no`

and press the Enter key.

where

**link\_no**

is the number of the link that associate with the defective NTMX82 circuit card

**Note 1:** Each NTMX82 circuit card has two associated links. Each link must be ManB. Possible link number pairs are as follows: 0 & 1; 2 & 3; 4 & 5; or 6 & 7.

**Note 2:** To busy the other links that associate with the RCO2, execute this step for each link until all links are busy.

**NTMX82**  
**in an RSC-M (continued)**

**At the cabinet**

12



**WARNING**

**Static electricity damage**

Wear a wrist strap that connects to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. The wrist strap protects the equipment against static electricity damage.



**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 cards into the slots.

Put on a wrist strap.

Remove the NTMX82 packet(s) as described in the following steps:

- a Locate the packet to remove on the appropriate NTMX87 circuit card slot.
- b Open the locking lever on the packet you replace. Carefully pull the circuit card toward you until the card clears the shelf.
- c Make sure the replacement circuit card has the same PEC and PEC suffix as the circuit card you remove.

13 Before you insert the replacement circuit card, make sure the switch settings match the settings on the circuit card that you remove. The next table describes the PCM30 DIP switch settings on the NTMX82 circuit card.

**NTMX82 switch settings (Sheet 1 of 2)**

Port	Impedance	Output
Even port	75 OHM	Switch S3 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF
Even port	120 OHM	Switch S3 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF
<b>Note:</b> Set switch S2 positions 1 & 2 to ON to enable messaging.		

## NTMX82 in an RSC-M (continued)

### NTMX82 switch settings (Sheet 2 of 2)

Port	Impedance	Output
Odd port	75 OHM	Switch S1 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF
Odd port	120 OHM	Switch S1 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF
<b>Note:</b> Set switch S2 positions 1 & 2 to ON to enable messaging.		

- 14** Open the locking lever on the replacement packlet.
- a** Align the packlet with the slots in the shelf.
  - b** Carefully slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 15** Seat and lock the packlet.
- a** Use your fingers to push on the upper and lower edges of the faceplate of the packlet. Perform this action to make sure the packlet is seated in the slot.
  - b** Close the locking lever.
- 16** Use the following information to determine your next action in this procedure.

If the procedure you followed previous to this procedure	Do
is alarm clearing procedures	step 17
is other than listed here	step 18

- 17** Return to the procedure that directed you to this procedure. At the point where the system produces a defective card list, identify the next defective card on the list. Proceed to the corresponding card replacement procedure for the card in this manual.

#### **At the MAP terminal**

- 18** To test the busied links from step 11, type
- ```
>TST LINK link_no
```
- and press the Enter key.
- where

---

## NTMX82 in an RSC-M (end)

---

**link\_no**

is the number of the link ManB in step 11

**Note 1:** Perform this step for each link ManB.

**Note 2:** To test the other links that associate with the RCO2, execute the procedures in this step. Execute the procedures for each link until all links are tested.

| If the test of the link(s) | Do      |
|----------------------------|---------|
| passes                     | step 19 |
| fails                      | step 22 |

**19** To return to service (RTS) the links, type

```
>RTS LINK link_no
```

and press the Enter key.

where

**link\_no**

is the number of the link tested in step 18

**Note:** To RTS the other links that associate with the RCO2, execute the procedures in this step. Execute the procedures for each link until all links are RTS.

| If RTS              | Do      |
|---------------------|---------|
| passes on all links | step 20 |
| fails               | step 22 |

**20** Proceed to the common returning a card procedure in this document.

**21** The procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.

**22** For additional help, contact the next level of maintenance.

## **NTMX82 in an RSC-S (PCM-30) Model A RCO2**

---

### **Application**

Use this procedure to replace an NTMX82 card in an RSC-S RCO2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>           |
|------------|-----------------|-----------------------|
| NTMX82     | AA              | Dual PCM-30 Interface |

### **Common procedures**

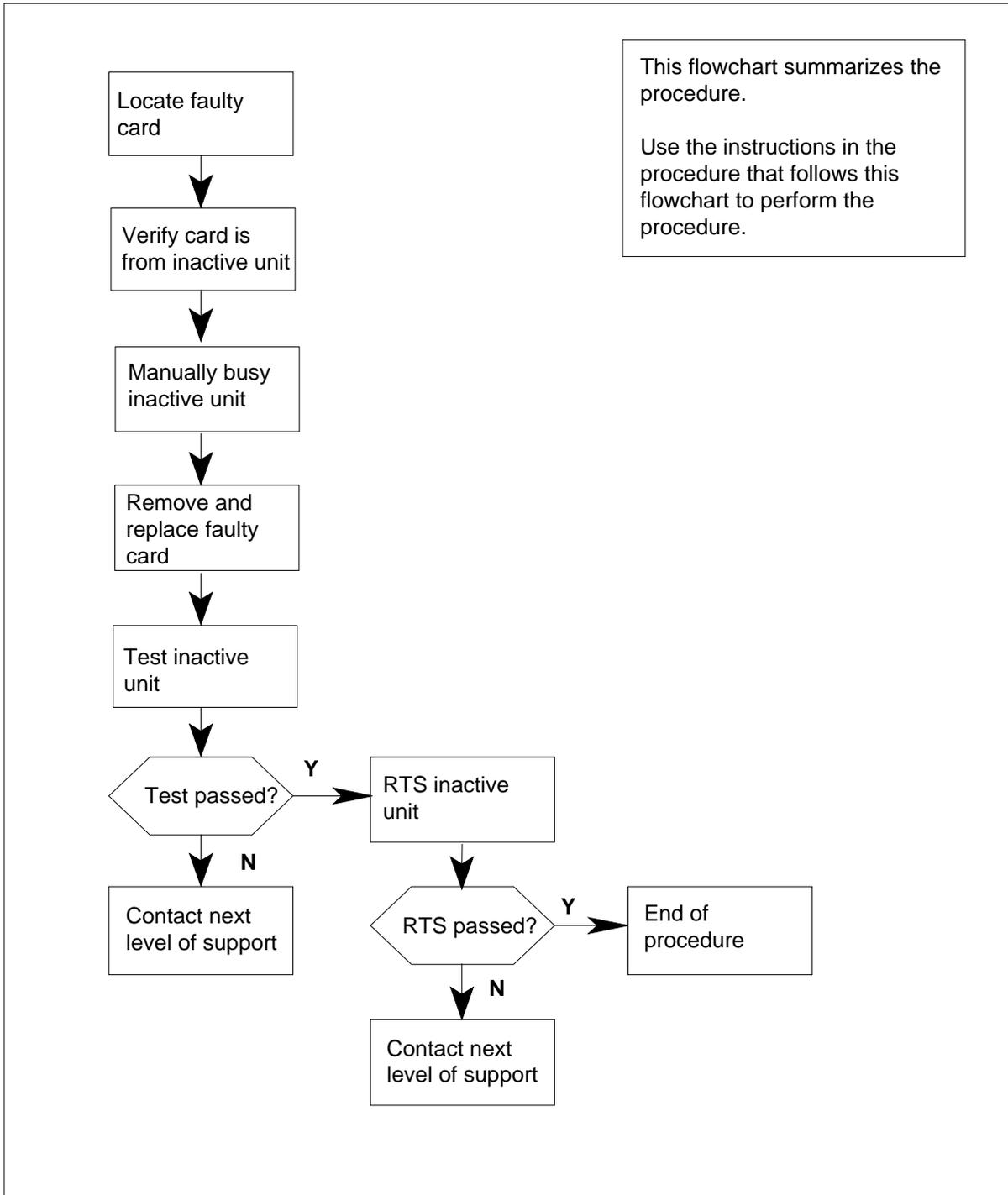
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

## NTMX82 in an RSC-S (PCM-30) Model A RCO2 (continued)

### Summary of card replacement procedure for an NTMX82 card in RSC-S RC02



## NTMX82 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

### Replacing an NTMX82 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX82 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

## NTMX82

### in an RSC-S (PCM-30) Model A RCO2 (continued)

| CM   | MS      | IOD    | Net   | PM           | CCS        | LNS   | Trks     | Ext | Appl |
|------|---------|--------|-------|--------------|------------|-------|----------|-----|------|
| .    | .       | .      | .     | <b>1RCO2</b> | .          | .     | .        | .   | .    |
| RCO2 |         | SysB   | ManB  | OffL         | CBsy       | ISTb  | InSv     |     |      |
| 0    | Quit    | PM     | 0     | 0            | 2          | 0     | 2        | 25  |      |
| 2    | Post_   | RCO2   | 0     | 0            | 0          | 0     | 1        | 1   |      |
| 3    | ListSet |        |       |              |            |       |          |     |      |
| 4    |         | RCO2   | 0     | ISTb         | Links_OOS: | CSide | 1, 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   |         |        |       |              |            |       |          |     |      |
| 18   |         |        |       |              |            |       |          |     |      |

- 4 By observing the MAP display, be sure that the card to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 5 |
| inactive unit            | step 7 |

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

- 6 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### At the RCE frame

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

**NTMX82**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

*At the MAP terminal*

8 Busy the inactive PM unit by typing

`>bsy unit unit_no`

and pressing the Enter key.

where

**unit\_no**

is the number of the inactive RCO2 unit (unit 0 or 1)

When both units are in-service, proceed to the next step.

9 Display the C-side links associated with the DS-1 card by typing

`>TRNSL C`

and pressing the Enter key.

*Example of a MAP response:*

|        |        |       |               |         |     |
|--------|--------|-------|---------------|---------|-----|
| LINK 0 | PLGC 0 | 0;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 1 | PLGC 0 | 1;CAP | S:STATUS SBsy |         |     |
| LINK 2 | PLGC 0 | 2;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 3 | PLGC 0 | 3;CAP | S:STATUS OK   |         |     |
| LINK 4 | PLGC 0 | 4;CAP | S:STATUS OK   |         |     |
| LINK 5 | PLGC 0 | 5;CAP | S:STATUS SBsy |         |     |

**If C-side links are**

**Do**

faulty

step 11

not faulty

step 10

10 Display the P-side links associated with the DS-1 card by typing

`>TRNSL P`

and pressing the Enter key.

*Example of a MAP response*

|        |          |        |                |         |     |
|--------|----------|--------|----------------|---------|-----|
| LINK 0 | RCO2 0 5 | 27;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 1 | RCO2 1 5 | 27;CAP | MS:STATUS SBsy | MSGCOND | CLS |
| LINK 2 | RCO2 0 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 3 | RCO2 1 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 4 | RCO2 0 5 | 50;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 5 | RCO2 1 5 | 50;CAP | MS:STATUS SBsy | MSGCOND | CLS |

**If P-side links are**

**Do**

faulty

step 12

not faulty

step 26

11 Post the host PM by typing

`>POST host_pm host_pm_no`

## NTMX82

### in an RSC-S (PCM-30) Model A RCO2 (continued)

and pressing the Enter key.

where

**host\_pm**

is a PCM-30 line group controller (PLGC)

**host\_pm\_no**

is the number of the PLGC with the faulty card

Example of a MAP display:

| CM   | MS      | IOD    | Net   | PM    | CCS        | Lns   | Trks     | Ext  | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|------|------|
| .    | .       | .      | .     | 1RCO2 | .          | .     | .        | .    | .    |
| PLGC |         |        | SysB  | ManB  | OffL       | CBsy  | ISTb     | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 1          | 0     | 4        | 12   |      |
| 2    | Post_   | PLGC   | 0     | 0     | 2          | 0     | 2        | 9    |      |
| 3    | ListSet |        |       |       |            |       |          |      |      |
| 4    |         | PLGC   | 1     | ISTb  | Links_OOS: | CSide | 0, PSide | 1    |      |
| 5    | Trnsl_  | Unit0: | Act   | InSv  |            |       |          |      |      |
| 6    | Tst_    | Unit1: | Inact | InSv  |            |       |          |      |      |
| 7    | Bsy_    |        |       |       |            |       |          |      |      |
| 8    | RTS_    |        |       |       |            |       |          |      |      |
| 9    | OffL    |        |       |       |            |       |          |      |      |
| 10   | LoadPM_ |        |       |       |            |       |          |      |      |
| 11   | Disp_   |        |       |       |            |       |          |      |      |
| 12   | Next    |        |       |       |            |       |          |      |      |
| 13   | SwAct   |        |       |       |            |       |          |      |      |
| 14   | QueryPM |        |       |       |            |       |          |      |      |
| 15   |         |        |       |       |            |       |          |      |      |
| 16   |         |        |       |       |            |       |          |      |      |
| 17   | Perform |        |       |       |            |       |          |      |      |
| 18   |         |        |       |       |            |       |          |      |      |

- 12** Manually busy the links connected to the faulty card by typing

>**BSY LINK link\_no**

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty MX82 card

**Note 1:** Each NTMX82 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; or 6,7.

**Note 2:** To busy the other links associated with the RCO2, execute this step for each link until all links are busied.

## NTMX82 in an RSC-S (PCM-30) Model A RCO2 (continued)

*At the RCE frame*

13



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

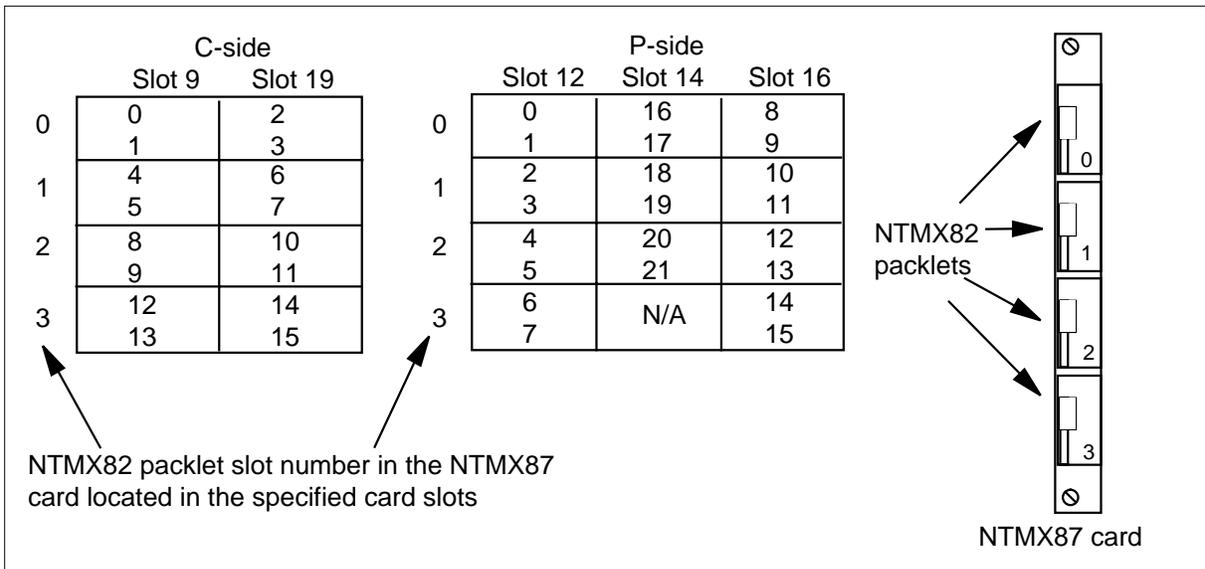
Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

14

After identifying the faulty link, use the following charts to determine which NTMX82 is to be removed by first identifying whether the link is a C-side or P-side link, then by matching the link number with the slot number and the packet number to the left of each respective table.



## NTMX82

### in an RSC-S (PCM-30) Model A RCO2 (continued)

Remove the NTMX82 card as described in the following steps:

- a Locate the packlet to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packlet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 15** Before inserting the replacement card ensure the switch settings are the same as on the card that was removed. The following table describes the PCM-30 DIP switch settings on the NTMX82. Set switch S2 positions 1 & 2 on to enable messaging.

| Port      | Impedance | Input                                  | Output                                          |
|-----------|-----------|----------------------------------------|-------------------------------------------------|
| Even port | 75 OHM    | Switch S3<br>pos 1,2, & 3 ON           | Switch S3<br>pos 4 ON<br>Switch S3<br>pos 5 OFF |
| Even port | 120 OHM   | Switch S3<br>pos 1 ON<br>pos 2 & 3 OFF | Switch S3<br>pos 4 OFF<br>Switch S3<br>pos 5 ON |
| Odd port  | 75 OHM    | Switch S1<br>pos 1,2, & 3 ON           | Switch S1<br>pos 4 ON<br>Switch S1<br>pos 5 OFF |
| Odd port  | 120 OHM   | Switch S1<br>pos 1 ON<br>pos 2 & 3 OFF | Switch S1<br>pos 4 OFF<br>Switch S1<br>pos 5 ON |

**Note:** Switch position 6 of both switches is not used and should be set to OFF.

- 16** Open the locking lever on the replacement packlet.
  - a Align the packlet with the slots in the shelf.
  - b Gently slide the packlet into the card slot in the NTMX87 card.
- 17** Seat and lock the packlet.
  - a Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b Close the locking lever.

---

## NTMX82 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

- 18 Use the following information to determine what step to go to next in this procedure.

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 25 |
| other                              | step 19 |

**At the MAP terminal**

- 19 Test the busied network links from step 12 by typing

>TST LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link that was manually busied in step 12

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To test the other links associated with the RCO2, execute the procedures in this step for each link until all links are tested.

| If the test of the link(s) | Do      |
|----------------------------|---------|
| passed                     | step 20 |
| failed                     | step 26 |

- 20 Return to service the P-side links by typing

>RTS Link 0

and pressing the Enter key.

**Note:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 21 |
| failed | step 26 |

- 21 Post the inactive RCO2 in which the NTMX82 card is located by typing

>POST RCO2 rco2\_no

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty card

---

**NTMX82**

**in an RSC-S (PCM-30) Model A RCO2 (end)**

---

- 22** Return the inactive RCO2 unit to service by typing

`>RTS UNIT unit_no`

and pressing the Enter key.

where

**unit\_no**

is the number of the RCO2 unit posted in step 21

---

| If RTS | Do      |
|--------|---------|
| passed | step 23 |
| failed | step 26 |

---

- 23** Send any faulty cards for repair according to local procedure.
- 24** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 27.
- 25** Return to the *Alarm Clearing Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 26** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 27** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX82 in an RSC-S (PCM-30) Model B RCO2**

---

### **Application**

Use this procedure to replace an NTMX82 card in an RSC-S RCO2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>           |
|------------|-----------------|-----------------------|
| NTMX82     | AA              | Dual PCM-30 Interface |

### **Common procedures**

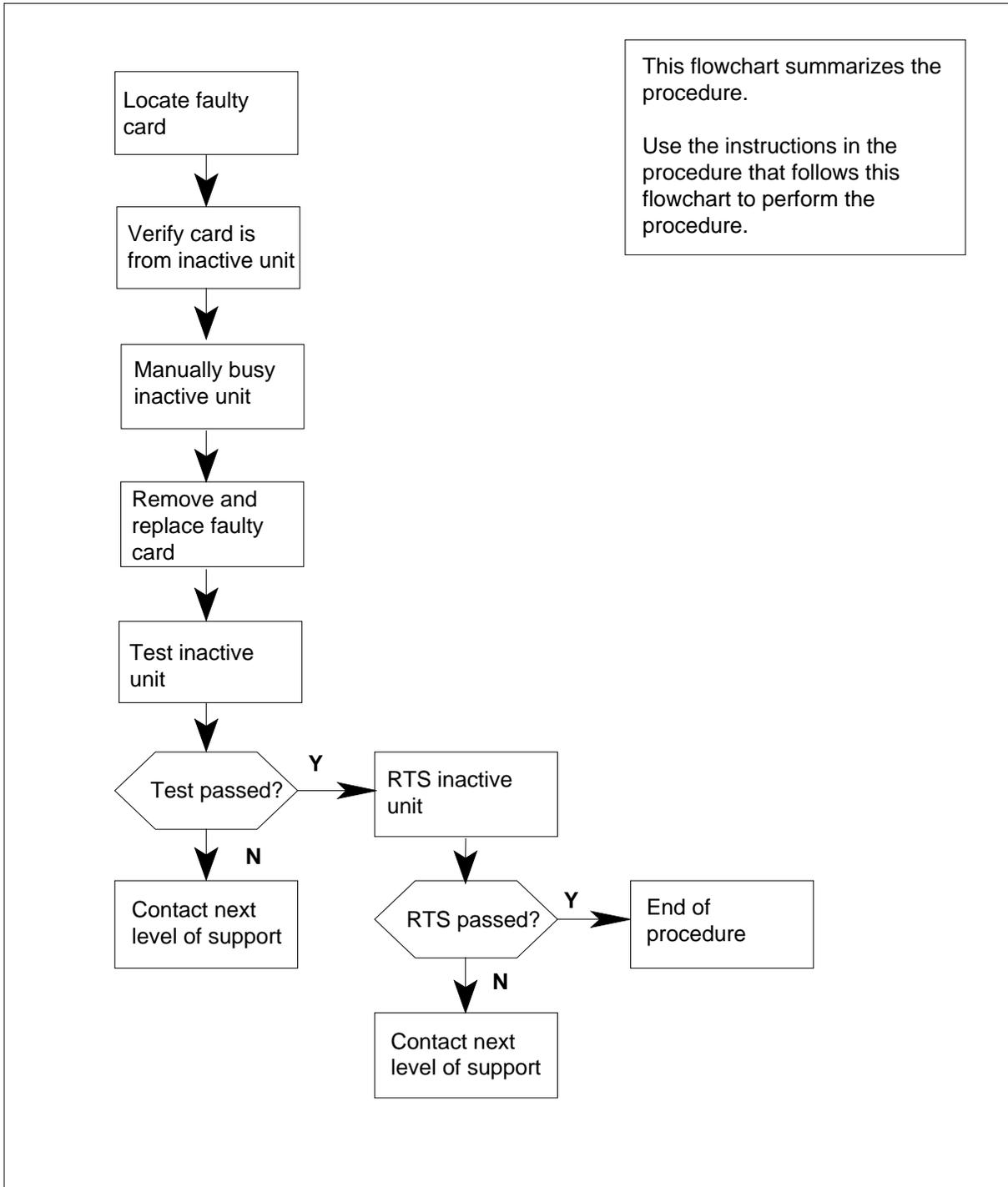
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX82**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

**Summary of card replacement procedure for an NTMX82 card in RSC-S RCO2**



## NTMX82 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

### Replacing an NTMX82 card in RSC-S RCO2

#### *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



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX82 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.

*where*

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

## NTMX82

### in an RSC-S (PCM-30) Model B RCO2 (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS   | Trks     | Ext | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|-----|------|
| .    | .       | .      | .     | 1RCO2 | .          | .     | .        | .   | .    |
| RCO2 |         | SysB   | ManB  | OffL  | CBsy       | ISTb  | InSv     |     |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0     | 2        | 25  |      |
| 2    | Post_   | RCO2   | 0     | 0     | 0          | 0     | 1        | 1   |      |
| 3    | ListSet |        |       |       |            |       |          |     |      |
| 4    |         | RCO2   | 0     | ISTb  | Links_OOS: | CSide | 1, 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   |         |        |       |       |            |       |          |     |      |
| 18   |         |        |       |       |            |       |          |     |      |

- 4 By observing the MAP display, be sure that the card to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 5 |
| inactive unit            | step 7 |

- 5 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

- 6 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### At the RCE frame

- 7 Place a sign on the active unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

## NTMX82 in an RSC-S (PCM-30) Model B RCO2 (continued)

**At the MAP terminal**

- 8** Busy the inactive PM unit by typing

`>bsy unit unit_no`

and pressing the Enter key.

where

**unit\_no**

is the number of the inactive RCO2 unit (unit 0 or 1)

When both units are in-service, proceed to the next step.

- 9** Display the C-side links associated with the DS-1 card by typing

`>TRNSL C`

and pressing the Enter key.

*Example of a MAP response:*

|        |        |       |               |         |     |
|--------|--------|-------|---------------|---------|-----|
| LINK 0 | PLGC 0 | 0;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 1 | PLGC 0 | 1;CAP | S:STATUS SBsy |         |     |
| LINK 2 | PLGC 0 | 2;CAP | MS:STATUS OK  | MSGCOND | OPN |
| LINK 3 | PLGC 0 | 3;CAP | S:STATUS OK   |         |     |
| LINK 4 | PLGC 0 | 4;CAP | S:STATUS OK   |         |     |
| LINK 5 | PLGC 0 | 5;CAP | S:STATUS SBsy |         |     |

**If C-side links are**

**Do**

faulty

step 11

not faulty

step 10

- 10** Display the P-side links associated with the DS-1 card by typing

`>TRNSL P`

and pressing the Enter key.

*Example of a MAP response*

|        |          |        |                |         |     |
|--------|----------|--------|----------------|---------|-----|
| LINK 0 | RCO2 0 5 | 27;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 1 | RCO2 1 5 | 27;CAP | MS:STATUS SBsy | MSGCOND | CLS |
| LINK 2 | RCO2 0 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 3 | RCO2 1 7 | 47;CAP | MS:STATUS OK   |         |     |
| LINK 4 | RCO2 0 5 | 50;CAP | MS:STATUS OK   | MSGCOND | OPN |
| LINK 5 | RCO2 1 5 | 50;CAP | MS:STATUS SBsy | MSGCOND | CLS |

**If P-side links are**

**Do**

faulty

step 12

not faulty

step 26

- 11** Post the host PM by typing

`>POST host_pm host_pm_no`

## NTMX82

### in an RSC-S (PCM-30) Model B RCO2 (continued)

and pressing the Enter key.

where

**host\_pm**

is a PCM-30 line group controller (PLGC)

**host\_pm\_no**

is the number of the PLGC with the faulty card

Example of a MAP display:

| CM   | MS      | IOD    | Net   | PM    | CCS        | Lns   | Trks     | Ext  | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|------|------|
| .    | .       | .      | .     | 1RCO2 | .          | .     | .        | .    | .    |
| PLGC |         |        | SysB  | ManB  | OffL       | CBsy  | ISTb     | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 1          | 0     | 4        | 12   |      |
| 2    | Post_   | PLGC   | 0     | 0     | 2          | 0     | 2        | 9    |      |
| 3    | ListSet |        |       |       |            |       |          |      |      |
| 4    |         | PLGC   | 1     | ISTb  | Links_OOS: | CSide | 0, PSide | 1    |      |
| 5    | Trnsl_  | Unit0: | Act   | InSv  |            |       |          |      |      |
| 6    | Tst_    | Unit1: | Inact | InSv  |            |       |          |      |      |
| 7    | Bsy_    |        |       |       |            |       |          |      |      |
| 8    | RTS_    |        |       |       |            |       |          |      |      |
| 9    | OffL    |        |       |       |            |       |          |      |      |
| 10   | LoadPM_ |        |       |       |            |       |          |      |      |
| 11   | Disp_   |        |       |       |            |       |          |      |      |
| 12   | Next    |        |       |       |            |       |          |      |      |
| 13   | SwAct   |        |       |       |            |       |          |      |      |
| 14   | QueryPM |        |       |       |            |       |          |      |      |
| 15   |         |        |       |       |            |       |          |      |      |
| 16   |         |        |       |       |            |       |          |      |      |
| 17   | Perform |        |       |       |            |       |          |      |      |
| 18   |         |        |       |       |            |       |          |      |      |

- 12** Manually busy the links connected to the faulty card by typing

>**BSY LINK link\_no**

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty MX82 card

**Note 1:** Each NTMX82 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; or 6,7.

**Note 2:** To busy the other links associated with the RCO2, execute this step for each link until all links are busied.

## NTMX82 in an RSC-S (PCM-30) Model B RCO2 (continued)

*At the RCE frame*

13



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

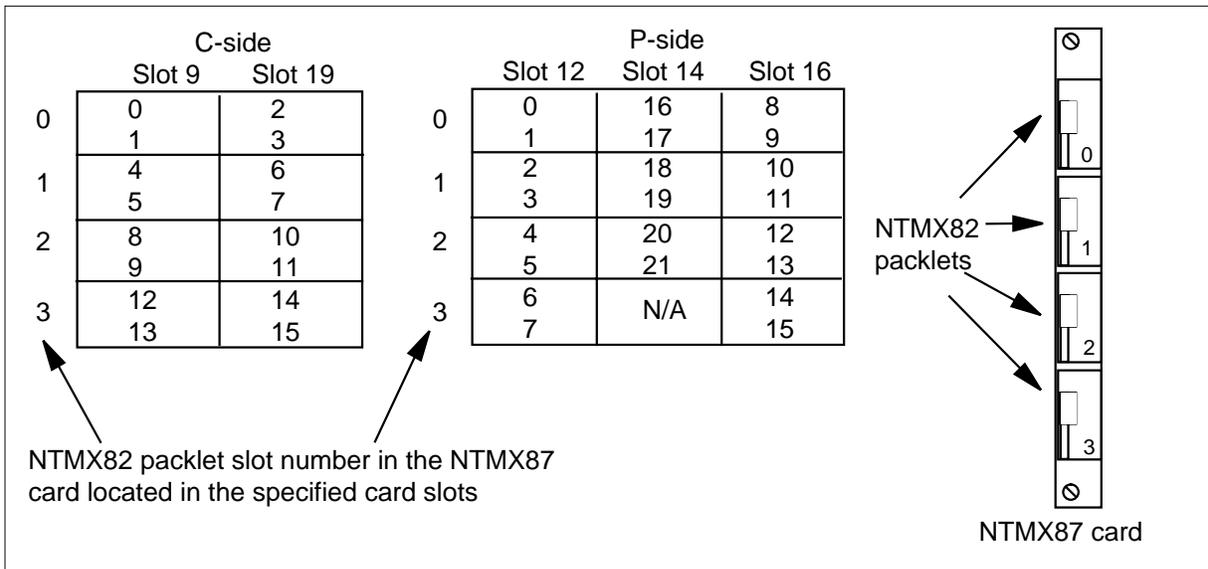
Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

14

After identifying the faulty link, use the following charts to determine which NTMX82 is to be removed by first identifying whether the link is a C-side or P-side link, then by matching the link number with the slot number and the packet number to the left of each respective table.



## NTMX82

### in an RSC-S (PCM-30) Model B RCO2 (continued)

Remove the NTMX82 card as described in the following steps:

- a Locate the packlet to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packlet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure that the replacement card has the same PEC, including suffix, as the card you just removed.
- 15** Before inserting the replacement card ensure the switch settings are the same as on the card that was removed. The following table describes the PCM-30 DIP switch settings on the NTMX82. Set switch S2 positions 1 & 2 on to enable messaging.

| Port      | Impedance | Input                                  | Output                                          |
|-----------|-----------|----------------------------------------|-------------------------------------------------|
| Even port | 75 OHM    | Switch S3<br>pos 1,2, & 3 ON           | Switch S3<br>pos 4 ON<br>Switch S3<br>pos 5 OFF |
| Even port | 120 OHM   | Switch S3<br>pos 1 ON<br>pos 2 & 3 OFF | Switch S3<br>pos 4 OFF<br>Switch S3<br>pos 5 ON |
| Odd port  | 75 OHM    | Switch S1<br>pos 1,2, & 3 ON           | Switch S1 pos 4<br>ON Switch S1<br>pos 5 OFF    |
| Odd port  | 120 OHM   | Switch S1<br>pos 1 ON<br>pos 2 & 3 OFF | Switch S1<br>pos 4 OFF<br>Switch S1<br>pos 5 ON |

**Note:** Switch position 6 of both switches is not used and should be set to OFF.

- 16** Open the locking lever on the replacement packlet.
  - a Align the packlet with the slots in the shelf.
  - b Gently slide the packlet into the card slot in the NTMX87 card.
- 17** Seat and lock the packlet.
  - a Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b Close the locking lever.

---

## NTMX82 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

- 18 Use the following information to determine what step to go to next in this procedure.

---

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 25 |
| other                              | step 19 |

---

**At the MAP terminal**

- 19 Test the busied network links from step 12 by typing

>TST LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link that was manually busied in step 12

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To test the other links associated with the RCO2, execute the procedures in this step for each link until all links are tested.

---

| If the test of the link(s) | Do      |
|----------------------------|---------|
| passed                     | step 20 |
| failed                     | step 26 |

---

- 20 Return to service the P-side links by typing

>RTS Link 0

and pressing the Enter key.

**Note:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link until all links are returned to service.

---

| If RTS | Do      |
|--------|---------|
| passed | step 21 |
| failed | step 26 |

---

- 21 Post the inactive RCO2 in which the NTMX82 card is located by typing

>POST RCO2 rco2\_no

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty card

---

**NTMX82**

**in an RSC-S (PCM-30) Model B RCO2 (end)**

---

- 22** Return the inactive RCO2 unit to service by typing

```
>RTS UNIT unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the RCO2 unit posted in step 21

---

| If RTS | Do      |
|--------|---------|
| passed | step 23 |
| failed | step 26 |

---

- 23** Send any faulty cards for repair according to local procedure.
- 24** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 27.
- 25** Return to *Alarm Clearing Procedures* or other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 26** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 27** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTMX87 in an RSC-M

---

### Application

Use this procedure to replace an NTMX87 circuit card in a Remote Switching Center Multi-access (RSC-M) main or extension (EXT) shelf.

*Note:* In this section this manual refers to RSC-M as RCO2 in the examples. When software outputs messages to the MAP terminal, software does not differentiate between the two types of RCO2.

| PEC    | Suffixes | Name               |
|--------|----------|--------------------|
| NTMX87 | AA       | Quad Frame Carrier |

### Common procedures

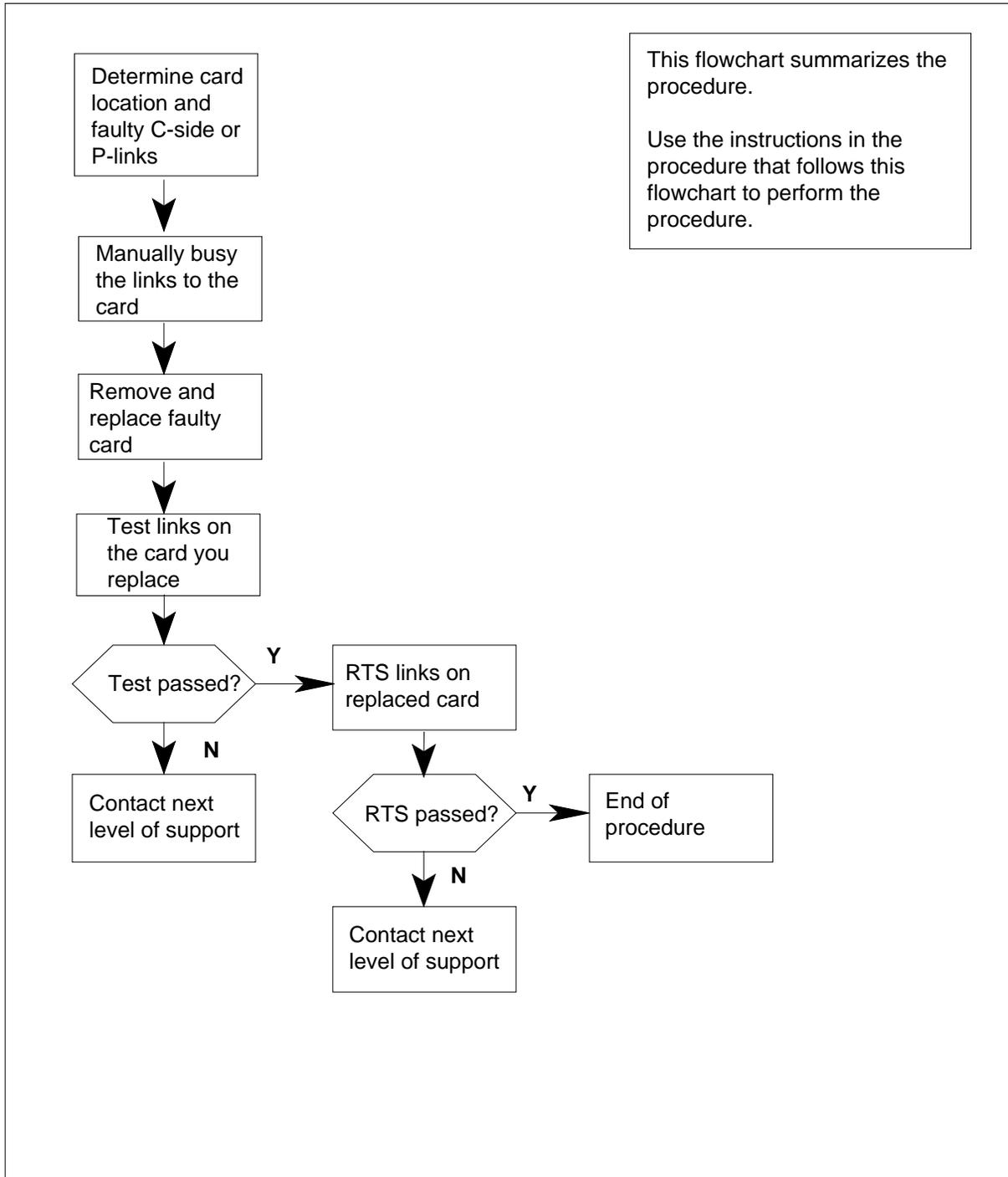
The common returning a card procedure is referenced in this procedure.

### Action

The following flowchart is a summary of the procedure. Use the instructions in the step-action procedure that follows the flowchart to replace the card.

**NTMX87**  
**in an RSC-M** (continued)

**Summary of replacing an NTMX87 in an RSC-M**



## NTMX87 in an RSC-M (continued)

---

### Replacing an NTMX87 in an RSC-M

#### At the MAP display

- 1 Proceed only under the following conditions:
  - a step in a maintenance procedure directed you to this card replacement procedure
  - you are using the procedure to verify or to accept cards
  - your maintenance support group directed you to this procedure
- 2



#### **WARNING**

##### **Loss of service**

When you replace an NTMX87 circuit card in the RSC-M all links served by that card must be BSYed. All active calls on the affected links are lost. Make sure to perform this procedure only during periods of low traffic.

Obtain an NTMX87 replacement circuit card. The replacement circuit card must have the same product equipment code (PEC), including suffix, as the circuit card you must remove.

#### At the MAP terminal

- 3 To post the RSC-M/RCO2 with the defective card(s), type  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and press the Enter key.  
*where*  
`rco2_no`  
is the number of the RCO2 with the defective card(s)

*Example of a MAP response:*

## NTMX87 in an RSC-M (continued)

```

RCO2
0 Quit      PM      0      0      2      0      2      25
2 Post_    RCO2    0      0      0      0      1      1
3 ListSet
4          RCO2    0 ISTb  Links_OOS: CSide 1, PSide 1
5 TRNSL    Unit0:   Inact ISTb
6 TST      Unit1:   Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_

```

- 4** To determine the location of the RCO2 main or extension half shelf (left or right) that contains the circuit card you must replace, type

**>QUERYPM**

and press the Enter key.

*Example of a MAP display:*

```

PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
Pms Equipped: 53 Loadname:KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
RSC-M 00 C02 RSC-M 00 05 RCO2: 000 MX85AA
RSC-M 00 C02 RSC-M 00 47 EXT:LEFT 01:13 MX86AA

```

- 5** To display any defective central side (C-side) links, type

**>TRNSL C**

and press the Enter key.

*Example of a MAP response:*

```

LINK 0 PLGC 0 0;CAP MS:STATUS OK MSGCOND OPN
LINK 1 PLGC 0 1;CAP S:STATUS SBsy
LINK 2 PLGC 0 2;CAP MS:STATUS OK MSGCOND OPN
LINK 3 PLGC 0 3;CAP S:STATUS OK
LINK 4 PLGC 0 4;CAP S:STATUS OK
LINK 5 PLGC 0 5;CAP S:STATUS SBsy

```

**If C-side links are**

**Do**

defective

step 7

**NTMX87**  
**in an RSC-M** (continued)

| If C-side links are | Do     |
|---------------------|--------|
| not defective       | step 6 |

6 To display the peripheral-side (P-side) links associated with the NTMX87 circuit card, type

>TRNSL P

and press the Enter key.

*Example of a MAP response*

```
Link 0:  REM1 11 0 0;Cap MS;Status:OK      ;MsgCond:OPN
Link 1:  Carrier of Class - Trunk ;Status:OK
Link 2:  Carrier of Class - Trunk ;Status:SBsy
Link 3:  Carrier of Class - Trunk ;Status:SBsy
Link 4:  Carrier of Class - Trunk ;Status:SBsy
Link 5:  Carrier of Class - Trunk ;Status:OK
Link 6:  Carrier of Class - Trunk ;Status:OK
Link 7:  Carrier of Class - Trunk ;Status:OK
Link 8:  REM1 11 1 0;Cap MS;Status:OK;    MsgCond:OPN
```

The following table shows the P-side link configuration for an RSC-M cabinet. The cabinet has three RCO2 main shelves and two extension half shelves.

**Note 1:** A RCO2 cabinet can include other configurations like two RCO2 main shelves and four extension half shelves. Consult office administration or review office records for P-side link configurations other than the configurations mentioned in the following table.

**Note 2:** If the RCO2 has an associated extension half shelf, consult office administration or review office records for the P-side link configuration.

**Note 3:** NTMX82 packets number from 0 to 3 starting at the top of each NTMX87 circuit card.

**RCO2 P-side link connections (Sheet 1 of 2)**

| Card Location             | MX87 Slot No. | Links for MX82 Card 0 | Links for MX82 Card 1 | Links for MX82 Card 2 | Links for MX82 Card 3 |
|---------------------------|---------------|-----------------------|-----------------------|-----------------------|-----------------------|
| RCO2 main, shelf, pos. 05 | 12            | 0, 1                  | 2, 3                  | 4, 5                  | 6, 7                  |
|                           | 16            | 8, 9                  | 10, 11                | 12, 13                | 14, 15                |
|                           | 14            | 16, 17                | 18, 19                | 20, 21                | 22, 23                |
| Left ext. half shelf      | 4             | 24, 25                | 26, 27                | 28, 29                | 30, 31                |
|                           | 6             | 32, 33                | 34, 35                | 36, 37                | 38, 39                |

## NTMX87 in an RSC-M (continued)

### RCO2 P-side link connections (Sheet 2 of 2)

| Card Location                       | MX87 Slot No. | Links for MX82 Card 0 | Links for MX82 Card 1 | Links for MX82 Card 2 | Links for MX82 Card 3 |
|-------------------------------------|---------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                     | 8             | 40, 41                | 42, 43                | 44, 45                | 46, 47                |
| RCO2 main shelf, pos. 19 (optional) | 12            | 0, 1                  | 2, 3                  | 4, 5                  | 6, 7                  |
|                                     | 16            | 8, 9                  | 10, 11                | 12, 13                | 14, 15                |
|                                     | 14            | 16, 17                | 18, 19                | 20, 21                | 22, 23                |
| Right ext. half shelf               | 19            | 40, 41                | 42, 43                | 44, 45                | 46, 47                |
|                                     | 21            | 32, 33                | 34, 35                | 36, 37                | 38, 39                |
|                                     | 23            | 24, 25                | 26, 27                | 28, 29                | 30, 31                |
| Prov. RCO2 shelf, pos. 33           | 12            | 0, 1                  | 2, 3                  | 4, 5                  | 6, 7                  |
|                                     | 16            | 8, 9                  | 10, 11                | 12, 13                | 14, 15                |
|                                     | 14            | 16, 17                | 18, 19                | 20, 21                | 22, 23                |

**Note:** Go to step 10.

- 7** To post the host peripheral module (PM), type

```
>POST host_pm host_pm_no
```

and press the Enter key.

where

**host\_pm**

is a PCM-30 line group controller (PLGC)

**host\_pm\_no**

is the number of the PLGC connected to the defective card

*Example of a MAP display:*

## NTMX87 in an RSC-M (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | Lns            | Trks | Ext  | Appl |
|------|---------|--------|-------|-------|------------|----------------|------|------|------|
| .    | .       | .      | .     | 1RCO2 | .          | .              | .    | .    | .    |
| PLGC |         |        | SysB  | ManB  | OffL       | CBsy           | ISTb | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 1          | 0              | 4    | 12   |      |
| 2    | Post_   | PLGC   | 0     | 0     | 2          | 0              | 2    | 9    |      |
| 3    | ListSet |        |       |       |            |                |      |      |      |
| 4    |         | PLGC   | 1     | ISTb  | Links_OOS: | CSide 0, PSide | 1    |      |      |
| 5    | Trnsl_  | Unit0: | Act   | InSv  |            |                |      |      |      |
| 6    | Tst_    | Unit1: | Inact | InSv  |            |                |      |      |      |
| 7    | Bsy_    |        |       |       |            |                |      |      |      |
| 8    | RTS_    |        |       |       |            |                |      |      |      |
| 9    | OffL    |        |       |       |            |                |      |      |      |
| 10   | LoadPM_ |        |       |       |            |                |      |      |      |
| 11   | Disp_   |        |       |       |            |                |      |      |      |
| 12   | Next    |        |       |       |            |                |      |      |      |
| 13   | SwAct   |        |       |       |            |                |      |      |      |
| 14   | QueryPM |        |       |       |            |                |      |      |      |
| 15   |         |        |       |       |            |                |      |      |      |
| 16   |         |        |       |       |            |                |      |      |      |
| 17   | Perform |        |       |       |            |                |      |      |      |
| 18   |         |        |       |       |            |                |      |      |      |

- 8** To display the P-side links associated with the NTMX87 card, type  
**>TRNSL P**  
 and press the Enter key.

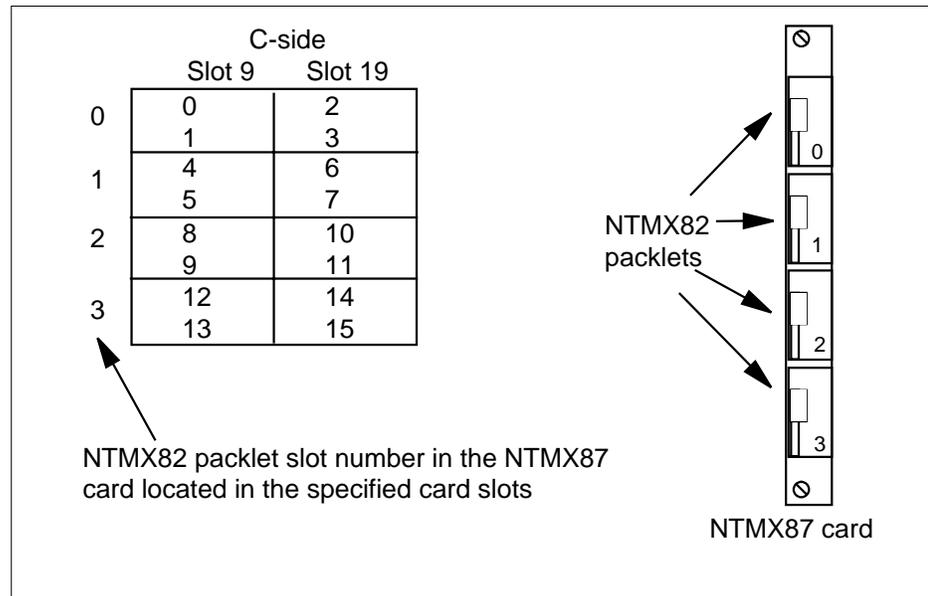
*Example of a MAP response*

```
LINK 0   RCO2 0 5 27;CAP   MS:STATUS OK   MSGCOND OPN
LINK 1   RCO2 1 5 27;CAP   MS:STATUS SBsy  MSGCOND CLS
LINK 2   RCO2 0 7 47;CAP   MS:STATUS OK
LINK 3   RCO2 1 7 47;CAP   MS:STATUS OK
LINK 4   RCO2 0 5 50;CAP   MS:STATUS OK   MSGCOND OPN
LINK 5   RCO2 1 5 50;CAP   MS:STATUS SBsy  MSGCOND CLS
```

- 9** After you identify the defective C-side link, determine which NTMX87 to remove by using the following chart. Match the link number with the slot number and the packet number to the left of each correct table.

## NTMX87 in an RSC-M (continued)

### RCO2 C-side link connections



- 10 Record the RCO2 number, shelf location, slot number, and numbers of the associated links for the circuit card you replace.
- 11 To manually busy (ManB) the links that connect to the defective NTMX87 circuit card, type

>BSY LINK link\_no

and press the Enter key.

where

**link\_no**

is the number of the link associated with the defective NTMX87 circuit card

**Note 1:** Each NTMX87 circuit card has eight links associated with it. Each link must be ManB. Possible link number pairs are as follows: 0 to 7; 8 to 15; 16 to 23.

**Note 2:** To busy the other links for the RCO2, perform this step for each link until all links are busy.

## NTMX87 in an RSC-M (continued)

---

### *At the cabinet*

12



#### **WARNING**

##### **Static electricity damage**

When you handle circuit cards, make sure wear a wrist strap that connects to the wrist strap grounding point. The grounding point is on the left side of the modular supervisory panel (MSP) of the RCO2. The wrist strap protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

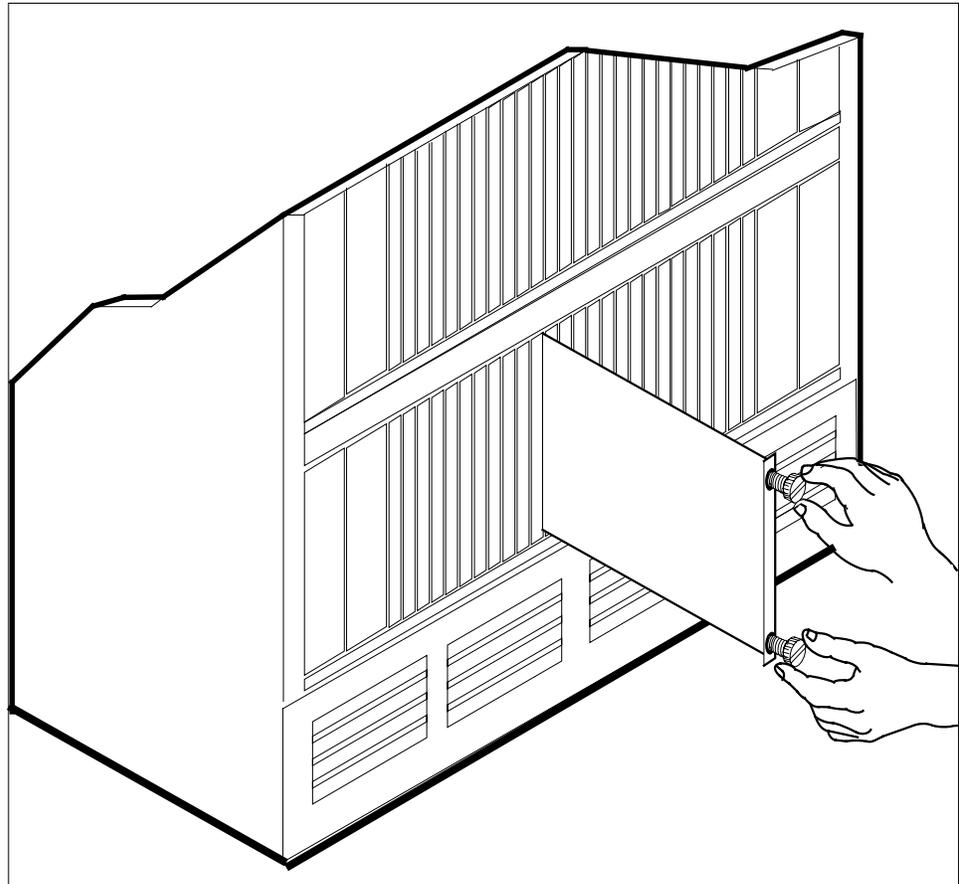
Take the following precautions when you remove or insert a card:

1. Make sure you do not apply direct pressure to the components.
2. Make sure you do not force the cards into the slots.

Put on a wrist strap.

- 13** Remove the NTMX82 packlet(s) as described in the following steps:
- a** Locate the packlet you must remove on the correct NTMX87 circuit card slot.
  - b** Open the locking lever on the packlet you must replace. Carefully pull the circuit card toward you until the circuit card clears the shelf.
  - c** Make sure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- 14** Use the T9908 wrist grounding strap and a T1324 screwdriver to remove the NTMX87 quad frame carrier circuit card.

**NTMX87**  
**in an RSC-M (continued)**



- 15** Before you insert the replacement NTMX82 circuit card, make sure the switch settings are identical to the switch settings on the circuit card you removed. The next table describes the PCM30 DIP switch settings on the NTMX82 circuit card.

**NTMX82 switch settings (Sheet 1 of 2)**

| Port                                                              | Impedance | Output                                            |
|-------------------------------------------------------------------|-----------|---------------------------------------------------|
| Even port                                                         | 75 OHM    | Switch S3 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF |
| Even port                                                         | 120 OHM   | Switch S3 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF  |
| <b>Note:</b> Set switch S2 positions 1 & 2 ON to allow messaging. |           |                                                   |

## NTMX87 in an RSC-M (continued)

### NTMX82 switch settings (Sheet 2 of 2)

| Port                                                              | Impedance | Output                                            |
|-------------------------------------------------------------------|-----------|---------------------------------------------------|
| Odd port                                                          | 75 OHM    | Switch S1 pos 1, 2, 3, and 4 ON , pos 5 and 6 OFF |
| Odd port                                                          | 120 OHM   | Switch S1 pos 1 and 5 ON, pos 2, 3, 4, and 6 OFF  |
| <b>Note:</b> Set switch S2 positions 1 & 2 ON to allow messaging. |           |                                                   |

- 16 Open the locking lever on the replacement packlet.
  - a Align the packlet with the slots in the shelf.
  - b Carefully slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 17 Seat and lock the packlet.
  - a Use your fingers to push on the upper and lower edges of the faceplate of the packlet. Make sure the packlet is fully seated in the slot.
  - b Close the locking lever.
- 18 Insert and secure the new NTMX87 quad frame carrier card. Remove wrist strap.
- 19 Use the following information to determine the next step in this procedure.

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 20 |
| other                              | step 21 |

- 20 Return to the procedure that directed you to this procedure. At the point where the system produced a defective card list, identify the next defective card on the list. Go to the correct card replacement procedure for that card in this manual.

#### **At the MAP terminal**

- 21 To test the busied links from step, type  
`>TST LINK link_no`  
 and press the Enter key.  
*where*

---

## NTMX87 in an RSC-M (end)

---

**link\_no**

is the number of the link ManB in step 11

**Note 1:** Perform this step for each link ManB.

**Note 2:** To test the other links associated with the RCO2, execute the procedures in this step for each link. Continue until all links are tested.

| If the test of the link(s) | Do      |
|----------------------------|---------|
| passed                     | step 22 |
| failed                     | step 25 |

**22** To return to service (RTS) the links, type

>RTS **link\_number**

and press the Enter key.

where

**link\_number**

is the number of the link tested in step 21

**Note:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link. Continue until all links are RTS.

| If RTS              | Do      |
|---------------------|---------|
| passed on all links | step 23 |
| failed              | step 25 |

**23** Go to the common returning a card procedure in this document.

**24** You have completed this procedure. Remove the sign from the active unit. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.

**25** Contact the personnel responsible for higher level support for additional help to replace this card.

## **NTMX87 in an RSC RCC2**

---

### **Application**

Use this procedure to replace an NTMX87 card in an RSC RCC2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>                |
|------------|-----------------|----------------------------|
| NTMX87     | AA, AB          | Quad Frame Carrier         |
|            | BA              | Penta DS-1 Packlet Carrier |

### **Common procedures**

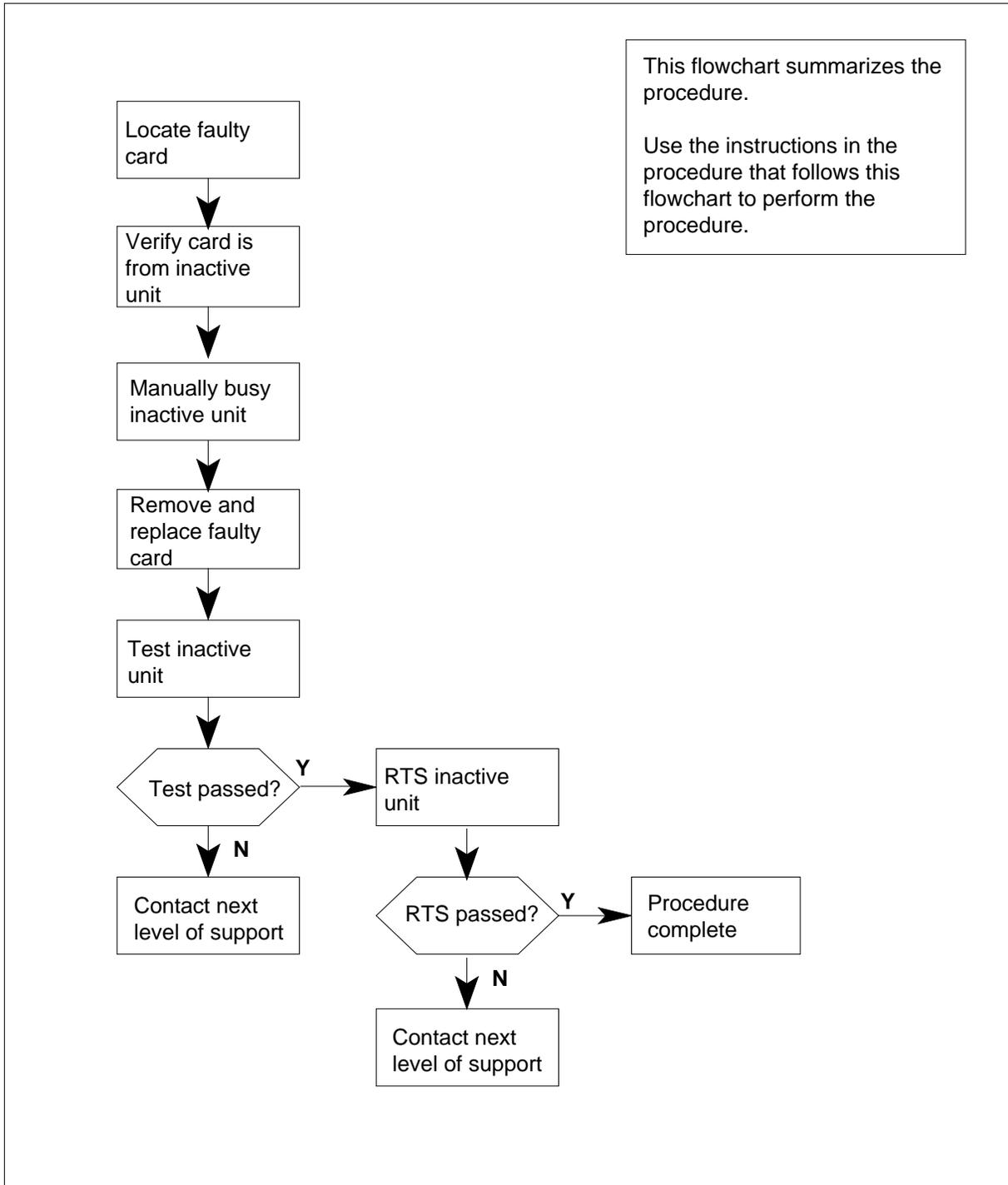
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX87**  
**in an RSC RCC2** (continued)

**Summary of card replacement procedure for an NTMX87 card in RSC RCC2**



## NTMX87 in an RSC RCC2 (continued)

---

### Replacing an NTMX87 card in RSC RCC2

#### *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



#### **CAUTION**

Several configurations of the NTMX87 carrier card are detailed in this procedure.

Be sure you are using the steps for the configuration of your RCC2, such as a single or dual RCC2 (DRCC2), main or extension shelf, or links versus carrier trunks.



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX87 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCC2 rcc2_no`  
and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX87 in an RSC RCC2 (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS            | Trks | Ext | Appl |
|------|---------|--------|-------|-------|------------|----------------|------|-----|------|
| .    | .       | .      | .     | 1RCC2 | .          | .              | .    | .   | .    |
| RCC2 |         | SysB   | ManB  | OffL  | CBsy       | ISTb           | InSv |     |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0              | 2    | 25  |      |
| 2    | Post_   | RCC2   | 0     | 0     | 0          | 0              | 1    | 1   |      |
| 3    | ListSet |        |       |       |            |                |      |     |      |
| 4    |         | RCC2   | 0     | ISTb  | Links_OOS: | CSide 1, 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   |         |        |       |       |            |                |      |     |      |
| 18   |         |        |       |       |            |                |      |     |      |

- 4 Display and record the C-side link status of the posted RCC2 associated with the faulty NTMX87 carrier card by typing

>TRNSL C

and pressing the Enter key.

*Example of a MAP response*

```
LINK 0 LTC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1 LTC 0 1;CAP S: STATUS SysB
LINK 2 LTC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 LTC 0 3;CAP S: STATUS OK
LINK 4 LTC 0 4;CAP S: STATUS SysB
LINK 5 LTC 0 5;CAP S: STATUS SysB
```

- 5 Display and record the P-side link status of the posted RCC2 associated with the faulty NTMX87 carrier card by typing

>TRNSL P

and pressing the Enter key.

*Example of a MAP response*

## NTMX87 in an RSC RCC2 (continued)

---

```
LINK 1   Carrier of Class - Trunk      ;Status:OK
LINK 2   Carrier of Class - Trunk      ;Status:OK
LINK 3   Carrier of Class - Trunk      ;Status:OK
LINK 10  DCH 6; Status :OK
LINK 13  DCH 7; Status :OK
LINK 17  DCH 4; Status :OK
LINK 22  RMM 6          0;CAP MS;Status OK MSGCOND OPN
LINK 24  LCME RSCS 00 0 0;CAP MS;Status OK MSGCOND OPN
LINK 25  LCME RSCS 00 0 1;CAP MS;Status OK MSGCOND OPN
LINK 26  LCME RSCS 00 0 2;CAP S;Status OK
```

- 6 By observing the MAP display, be sure the card that is to be removed is in the inactive unit.

### At the RSCE frame

- 7 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

---

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCC2    | step 8  |
| P-side faulty     | step 14 |

---

### At the MAP terminal

- 8 Busy the inactive PM unit by typing

```
>bsy unit unit_no
```

and pressing the Enter key.

where

**unit\_no**

is the number of the inactive RCC2 unit (unit 0 or 1)

- 9 Post the host PM by typing

```
>POST host_pm host_pm_no
```

and pressing the Enter key.

where

**host\_pm**

is either a line group controller (LGC), a line group controller with ISDN (LGCI), a line trunk controller (LTC), or a line trunk controller with ISDN (LTCI)

**host\_pm\_no**

is the number of either an LGC, LGCI, LTC, or LTCI

Example of a MAP display:

## NTMX87 in an RSC RCC2 (continued)

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

LTC
0 Quit      PM          0          0          1          0          4          12
2 Post_     LTC         0          0          2          0          2          9
3 ListSet
4           LTC      1 ISTb  Links_OOS:  CSide  0, PSide  1
5 Trnsl_    Unit0:      Act InSv
6 Tst_      Unit1:      Inact InSv
7 Bsy_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next
13 SwAct
14 QueryPM
15
16
17 Perform
18

```

- 10** Display the host peripherals P-side links associated with the RCC2 by typing

```
>TRNSL P
```

and pressing the Enter key.

*Example of a MAP response*

```

LINK 0 RCC2 0 0;CAP MS:STATUS SysB MSGCOND CLS RESTRICT
LINK 1 RCC2 0 1;CAP S:STATUS SBsy
LINK 2 RCC2 0 2;CAP MS:STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 RCC2 0 3;CAP S:STATUS OK
LINK 4 RCC2 0 4;CAP S:STATUS SysB
LINK 5 RCC2 0 5;CAP S:STATUS Sysb

```

- 11** Manually busy the links connected to the faulty NTMX87 card by typing

```
>BSY LINK link_no
```

and pressing the Enter key.

*where*

**link\_no**

is the number of the link associated with the faulty NTMX87 card

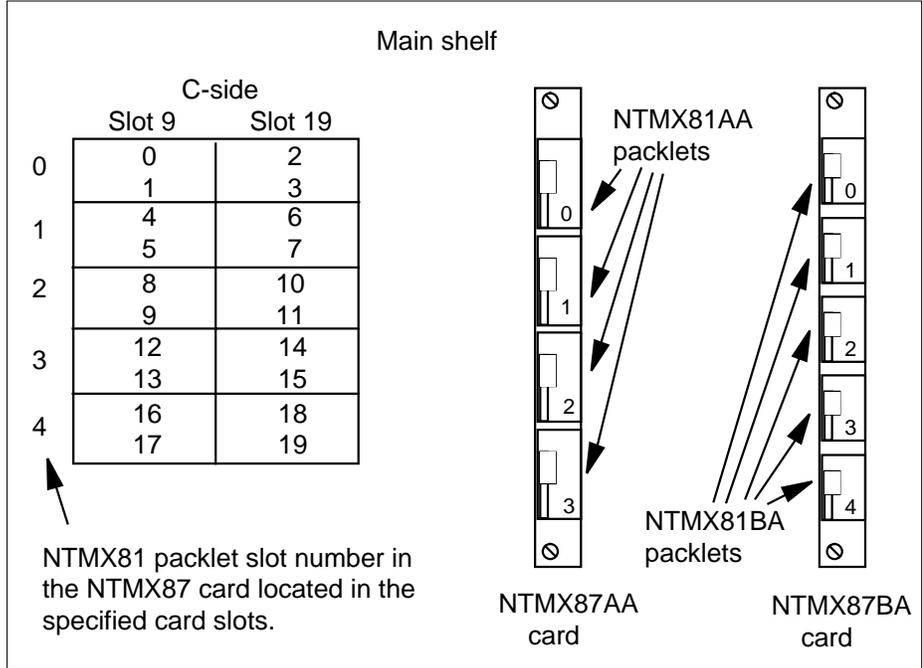
**Note 1:** All provisioned links in the slot must be busied.

**Note 2:** Reference the chart in step 12 for the RCC2 C-side link-to-slot assignments.

## NTMX87 in an RSC RCC2 (continued)

**At the RCE frame**

- 12 Use the following charts to determine which NTMX87 card is to be removed by matching the provisioned link number with the slot number and the packet number to the left of each respective table.



- 13

**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

- Remove the NTMX81 packet as described in the following steps:
- a Locate the NTMX81 packet to be removed on the appropriate NTMX87 carrier card slot.
  - b Open the locking lever on the NTMX81 packet and gently pull the packet toward you until it clears the shelf.
  - c Ensure the NTMX81 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.

---

## NTMX87 in an RSC RCC2 (continued)

---

d Go to step 30.

### **At the MAP terminal**

- 14** Determine if the RCC2 is in a single or dual configuration by typing  
>POST RCC2 rcc2\_no ;IRLINK  
and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system will respnd with the following message:  
NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.

| If the RCC2 is in a  | Do      |
|----------------------|---------|
| single configuration | step 15 |
| dual configuration   | step 28 |

- 15** Determine if P-side ports are links or carrier trunks by observing the information obtained in step 5.

| If P-side port is | Do      |
|-------------------|---------|
| links             | step 16 |
| trunks            | step 18 |

- 16** Manually busy all provisioned links connected to the faulty NTMX87 circuit card by typing

>bsy link link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty NTMX87 circuit card

**Note 1:** Each NTMX81 card has two links, and each link must be manually busied. Possible link pairs are 0 and 1, 2 and 3, 4 and 5, 6 and 7. This pair relationship continues throughout all 54 P-side links.

**Note 2:** Reference the charts in steps 24 and 26 for P-side link-to-slot assignments. All provisioned links in the slot must be busied.

---

## NTMX87 in an RSC RCC2 (continued)

---

- 17 Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

---

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 24 |
| extension shelf                | step 26 |

---

- 18 Access the TRKS;TTP MAP display level, and busy the trunks assigned to the P-side carriers associated with the faulty NTMX87 by typing  
>TRKS;TTP;POST D RCC2 rcc2\_no carrier\_no  
and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED

POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCC2 0 1 WADEOUT796 11 LO
```

- 19 Busy the trunks associated with the faulty NTMX87 circuit card by typing  
>BSY ALL  
and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** To busy other carriers associated with the faulty NTMX87 circuit card, reference the link-to-slot assignment charts in steps 24 and 26.

- 20 Installation busy all the trunks to prevent carrier alarms by typing  
>BSY INB ALL  
and pressing the Enter key.

- 21 Access the CARRIER level and post the P-side carriers associated with the faulty NTMX87 circuit card by typing  
>CARRIER;POST RCC2 rcc2\_no carrier\_no  
and pressing the Enter key.

---

## NTMX87 in an RSC RCC2 (continued)

---

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

- 22** Busy and offline the P-side carriers associated with the faulty NTMX87 circuit card by typing

```
>BSY carrier_no ;OFFL carrier_no
```

and pressing the Enter key.

where

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

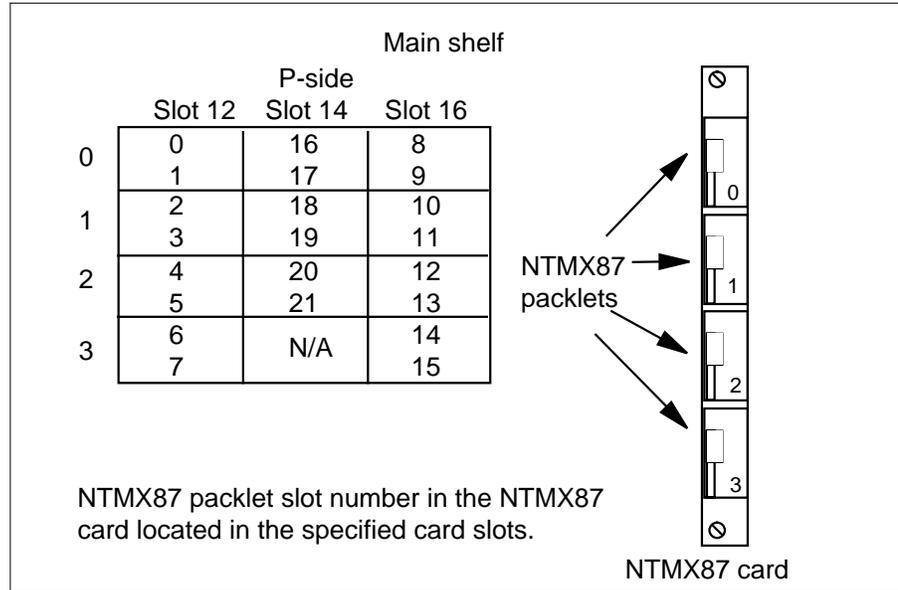
- 23** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 24 |
| extension shelf                | step 26 |

**At the RSCE frame**

- 24** Use the following figure to determine slot assignments on the P-side of the main shelf.

## NTMX87 in an RSC RCC2 (continued)



25



### DANGER

#### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

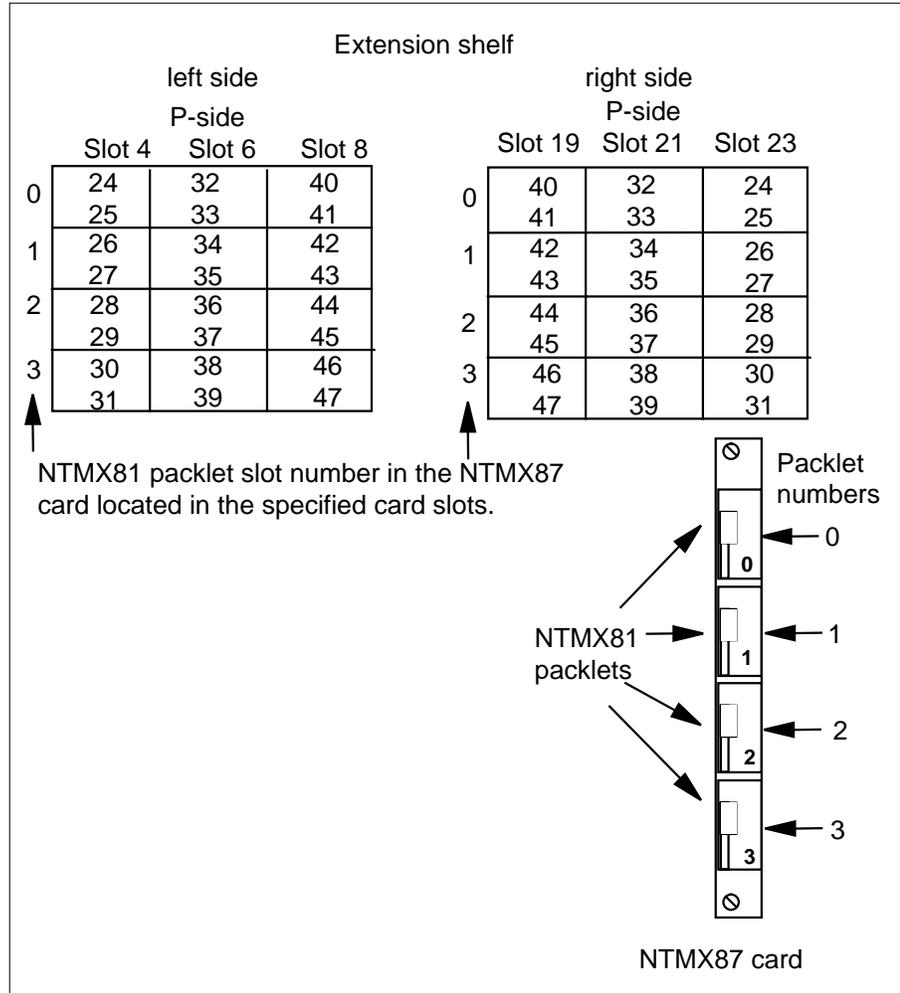
Remove the NTMX81 packet as described in the following steps:

- a Locate the NTMX81 packet to be removed on the appropriate NTMX87 carrier card slot.
- b Open the locking lever on the NTMX81 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX81 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.
- d Go to step 30.

#### At the RSCE frame

- 26 Determine which side of the extension shelf the faulty NTMX87 circuit card is located by referencing field SIDE of table RCCINV.

**NTMX87**  
**in an RSC RCC2 (continued)**



27



**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Remove the NTMX81 packet as described in the following steps:

- a Locate the NTMX81 packet to be removed on the appropriate NTMX87 carrier card slot.

**NTMX87**  
**in an RSC RCC2** (continued)

- b Open the locking lever on the NTMX81 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX81 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.
- d Go to step 30.

**28** Translate the dual RCC2s IRLINKS by typing

**>TRNSL**

and pressing the Enter key.

*Example of a MAP response*

| CM     | MS      | IOD    | Net        | PM         | CCS        | LNS   | Trks     | Ext | Appl |
|--------|---------|--------|------------|------------|------------|-------|----------|-----|------|
| .      | .       | .      | .          | 1RCC2      | .          | .     | .        | .   | .    |
| IRLINK |         | SysB   | ManB       | OffL       | CBsy       | ISTb  | InSv     |     |      |
| 0      | Quit    | PM     | 0          | 0          | 2          | 0     | 2        | 25  |      |
| 2      |         | RCC2   | 0          | 0          | 0          | 0     | 1        | 1   |      |
| 3      |         |        |            |            |            |       |          |     |      |
| 4      |         | RCC2   | 0          | ISTb       | Links_OOS: | Cside | 1, Pside | 1   |      |
| 5      | TRNSL   | Unit0: | Inact      | InSv       |            |       |          |     |      |
| 6      | TST_    | Unit1: | Act        | InSv       |            |       |          |     |      |
| 7      | BSY_    |        |            |            |            |       |          |     |      |
| 8      | RTS_    |        |            |            |            |       |          |     |      |
| 9      |         |        |            |            |            |       |          |     |      |
| 10     |         | IR     | From       | To         | CAP        | STATE | MSGCOND  |     |      |
| 11     |         | 0      | RCC2 0, 0  | RCC2 1, 0  | MS         | OK    | OPN      |     |      |
| 12     |         | 1      | RCC2 0, 8  | Rcc2 1, 8  | MS         | OK    | OPN      |     |      |
| 13     |         | 2      | RCC2 0, 12 | RCC2 1, 12 | S          | OK    |          |     |      |
| 14     | QueryIR | 3      | RCC2 0, 13 | RCC2 1, 13 | S          | OK    |          |     |      |
| 15     |         |        |            |            |            |       |          |     |      |
| 16     |         |        |            |            |            |       |          |     |      |
| 17     |         |        |            |            |            |       |          |     |      |
| 18     |         |        |            |            |            |       |          |     |      |

**29** Busy IRLINKS in the faulty NTMX87 circuit card by typing

**>BSY irlink\_no**

and pressing the Enter key.

*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 24 for the main shelf, and step 26 for the extension shelf.

---

**NTMX87**  
**in an RSC RCC2** (continued)

---

**At the RSCE frame**

**30**



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

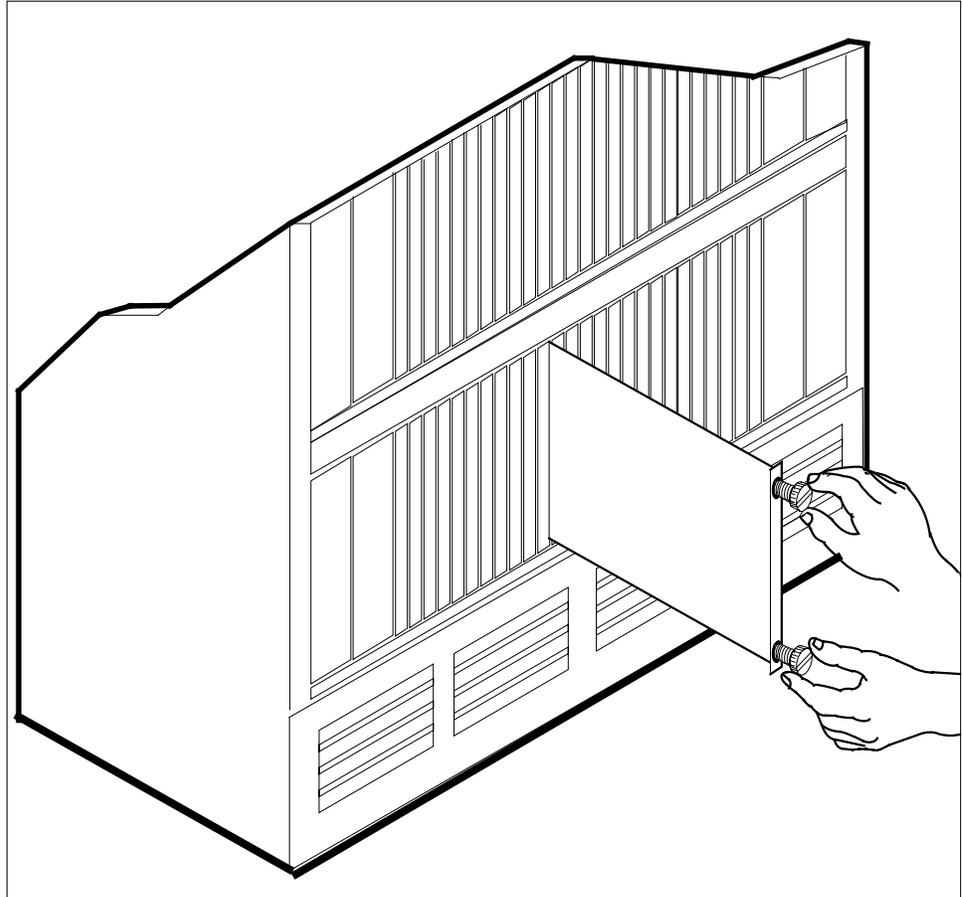
Put on a wrist strap.

**31**

Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTMX87 carrier circuit card. Insert the new carrier card and secure.

## NTMX87 in an RSC RCC2 (continued)

---



- 32** Replace the NTMX81 packlets previously removed. Align the packlet with the slots in the shelf and gently slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 33** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 34** Use the following information to determine what step to go to next in this procedure.

---

| <b>If you entered this procedure from</b> | <b>Do</b> |
|-------------------------------------------|-----------|
| alarm clearing procedures                 | step 51   |
| other                                     | step 35   |

---

## NTMX87 in an RSC RCC2 (continued)

- 35** Use the following information to determine what step to go to next in this procedure.

| <b>If you entered this section of the procedure from</b>    | <b>Do</b> |
|-------------------------------------------------------------|-----------|
| step 13 for a single RCC2 with C-side links affected        | step 36   |
| step 25 or 27 for an RCC2 with P-side trunks affected       | step 44   |
| step 25 or 27, for a single RCC2 with P-side links affected | step 40   |
| step 29 for a DRCC2 with irlinks affected                   | step 42   |

### ***At the MAP terminal***

- 36** Test the busied network links from step 11 by typing

```
>TST LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the new NTMX87 carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 37   |
| failed        | step 52   |

- 37** Return to service the P-side links by typing

```
>RTS LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 11

**Note 1:** This step must be performed for each link that is manually busied.

## NTMX87 in an RSC RCC2 (continued)

**Note 2:** To RTS the other links associated with the RCC2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 38 |
| failed | step 52 |

- 38** Post the inactive RCC2 in which the NTMX87 card is located by typing  
**>POST RCC2 rcc2\_no**  
 and pressing the Enter key.  
*where*

**rcc2\_no**  
 is the number of the RCC2 associated with the faulty card

- 39** Return the inactive RCC2 unit to service by typing  
**>RTS UNIT unit\_no**  
 and pressing the Enter key.  
*where*

**unit\_no**  
 is the number of the RCC2 unit posted in step 38

| If RTS | Do      |
|--------|---------|
| passes | step 49 |
| fails  | step 52 |

### **At the MAP terminal**

- 40** Test the busied links from step 16 by typing  
**>TST LINK link\_no**  
 and pressing the Enter key.  
*where*

**link\_no**  
 is the number of the link associated with the new NTMX87 carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 41 |
| failed | step 52 |

---

**NTMX87**  
**in an RSC RCC2** (continued)

---

- 41** Return to service the P-side links by typing

>RTS LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 11

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To RTS the other links associated with the RCC2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 49 |
| failed | step 52 |

**At the MAP terminal**

- 42** Test the IRLINKS by typing

>TST irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link busied in step 29

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other irlinks associated with the RCC2, execute this step for each irlink until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 43 |
| failed | step 52 |

- 43** Return to service the IRLINKS by typing

>RTS irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link manually busied in step 29

**Note 1:** This step must be performed for each irlink that is manually busied.

## NTMX87 in an RSC RCC2 (continued)

**Note 2:** To RTS the other links associated with the RCC2, execute this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 49 |
| failed | step 52 |

### At the MAP terminal

- 44** Busy and return to service P-side carriers that were offlined in step 22 by typing

```
>BSY carrier_no; RTS carrier_no
```

and pressing the Enter key.

where

**carrier\_no**

is the number of the P-side carrier assigned

| If carrier RTS | Do      |
|----------------|---------|
| passed         | step 45 |
| failed         | step 52 |

- 45** Access the TTP MAP level to post the P-side links associated with the new NTMX87 circuit card by typing

```
>TTP;POST D RCC2 rcc2_no carrier_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the new NTMX87 circuit card

**carrier\_no**

is the number of the P-side link trunks are assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCC2 0 1 WADEOUT796 11 INB
```

## NTMX87 in an RSC RCC2 (end)

- 46** Busy the trunks associated with the new NTMX87 circuit card by typing  
**>BSY ALL**  
 and pressing the Enter key.  
**Note 1:** Wait for the busy queue to clear.  
**Note 2:** Busy the other carriers associated with the faulty NTMX87 circuit card. Reference the link-to-slot assignment charts in steps 24 and 26 .
- 47** Test the trunks associated with the new NTMX87 circuit card by typing  
**>TST ;NEXT**  
 and pressing the Enter key.  
**Note:** Perform this step for each carrier span associated with the new NTMX87 circuit card.
- | If trunks TST | Do      |
|---------------|---------|
| passed        | step 48 |
| failed        | step 52 |
- 48** Return-to-service trunks assigned to links on the new NTMX87 circuit card by typing  
**>RTS ALL**  
 and pressing the Enter key.
- | If RTS | Do      |
|--------|---------|
| passed | step 49 |
| failed | step 52 |
- 49** Send any faulty cards for repair according to local procedure.
- 50** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 53.
- 51** Return to *Alarm Clearing Procedures* or the other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 52** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 53** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX87  
in an RSC-S (DS-1) Model A RCC2**

---

**Application**

Use this procedure to replace an NTMX87 card in an RSC-S RCC2.

| PEC    | Suffixes | Name                       |
|--------|----------|----------------------------|
| NTMX87 | AA, AB   | Quad Frame Carrier         |
|        | BA       | Penta DS-1 Packlet Carrier |

**Common procedures**

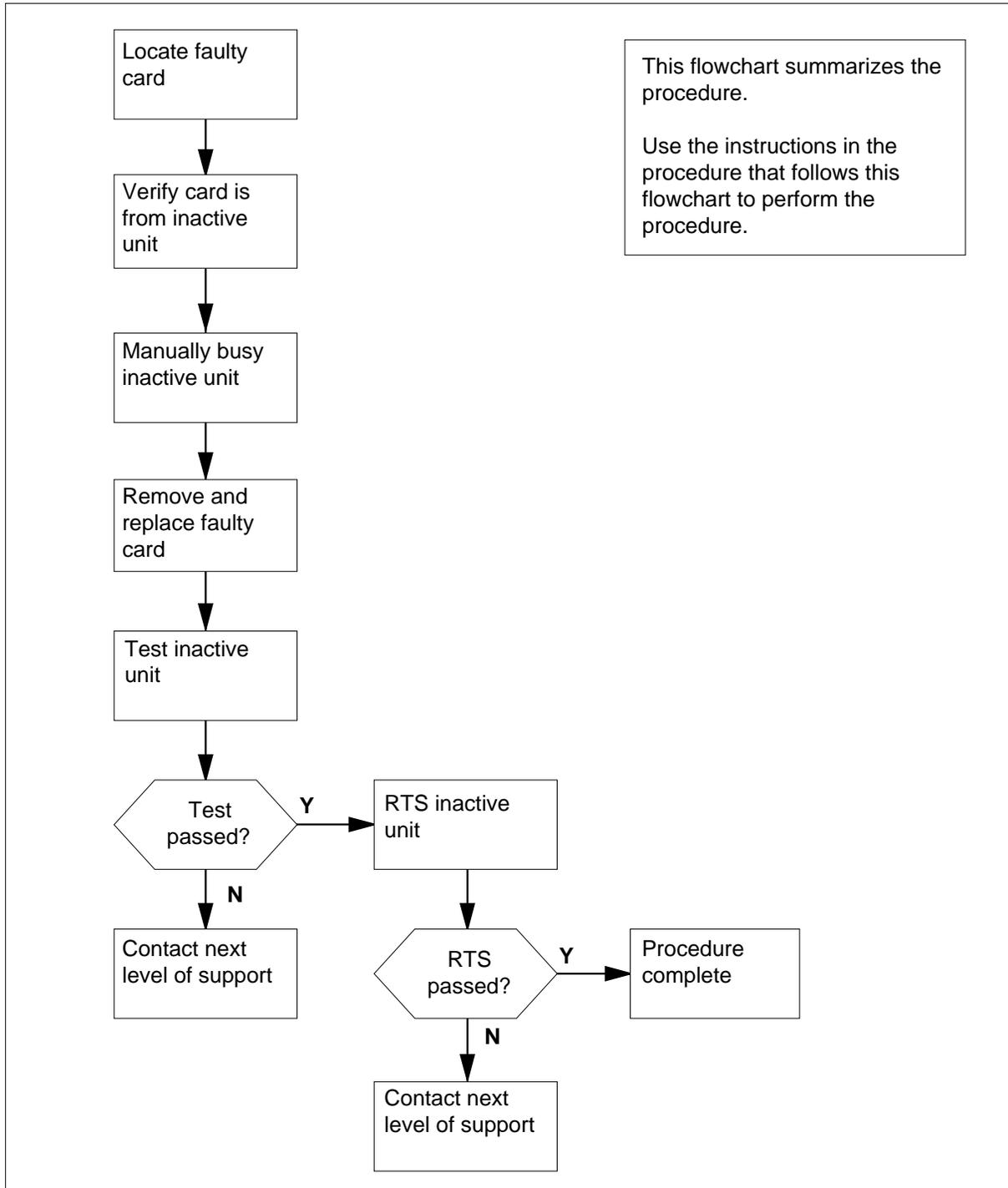
None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

**Summary of card replacement procedure for an NTMX87 card in RSC RCC2**



## NTMX87 in an RSC-S (DS-1) Model A RCC2 (continued)

---

### Replacing an NTMX87 card in RSC-S RCC2

#### *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



#### **CAUTION**

Several configurations of the NTMX87 quad frame carrier card are detailed in this procedure.

Be sure you are using the steps for the configuration of your RCC2, such as a single or dual RCC2 (DRCC2), main or extension shelf, or links versus carrier trunks.



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCC2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX87 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCC2 rcc2_no`  
and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 with the faulty card

*Example of a MAP display:*

## NTMX87

### in an RSC-S (DS-1) Model A RCC2 (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS   | Trks     | Ext | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|-----|------|
| .    | .       | .      | .     | 1RCC2 | .          | .     | .        | .   | .    |
| RCC2 |         |        | SysB  | ManB  | OffL       | CBsy  | ISTb     |     | InSv |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0     | 2        |     | 25   |
| 2    | Post_   | RCC2   | 0     | 0     | 0          | 0     | 1        |     | 1    |
| 3    | ListSet |        |       |       |            |       |          |     |      |
| 4    |         | RCC2   | 0     | ISTb  | Links_OOS: | CSide | 1, 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   |         |        |       |       |            |       |          |     |      |
| 18   |         |        |       |       |            |       |          |     |      |

- 4 Display and record the C-side link status of the posted RCC2 associated with the faulty NTMX87 carrier card by typing

>TRNSL C

and pressing the Enter key.

*Example of a MAP response*

```
LINK 0 LTC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1 LTC 0 1;CAP S: STATUS SysB
LINK 2 LTC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 LTC 0 3;CAP S: STATUS OK
LINK 4 LTC 0 4;CAP S: STATUS SysB
LINK 5 LTC 0 5;CAP S: STATUS SysB
```

- 5 Display and record the P-side link status of the posted RCC2 associated with the faulty NTMX87 carrier card by typing

>TRNSL P

and pressing the Enter key.

*Example of a MAP response*

**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

```
LINK 1   Carrier of Class - Trunk           ;Status:OK
LINK 2   Carrier of Class - Trunk           ;Status:OK
LINK 3   Carrier of Class - Trunk           ;Status:OK
LINK 10  DCH 6; Status :OK
LINK 13  DCH 7; Status :OK
LINK 17  DCH 4; Status :OK
LINK 22  RMM 6                             0;CAP MS;Status OK MSGCOND OPN
LINK 24  LCME RSCS 00 0 0;CAP MS;Status OK MSGCOND OPN
LINK 25  LCME RSCS 00 0 1;CAP MS;Status OK MSGCOND OPN
LINK 26  LCME RSCS 00 0 2;CAP S;Status OK
```

- 6 By observing the MAP display, be sure the card that is to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 7 |
| inactive unit            | step 9 |

- 7 Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.

- 8 Confirm the system prompt by typing  
**>YES**  
 and pressing the Enter key.  
 After both units are in-service, proceed to the next step.

**At the RCE frame**

- 9 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCC2    | step 10 |
| P-side faulty     | step 16 |

**At the MAP terminal**

- 10 Busy the inactive PM unit by typing  
**>bsy unit unit\_no**  
 and pressing the Enter key.  
*where*  
     **unit\_no**  
         is the number of the inactive RCC2 unit (unit 0 or 1)

## NTMX87

### in an RSC-S (DS-1) Model A RCC2 (continued)

- 11 Post the host PM by typing  
**>POST host\_pm host\_pm\_no**  
 and pressing the Enter key.

where

**host\_pm**

is either a line group controller (LGC), a line group controller with ISDN (LGCI), a line trunk controller (LTC), or a line trunk controller with ISDN (LTCI)

**host\_pm\_no**

is the number of either an LGC, LGCI, LTC, or LTCI

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

LTC
0 Quit   PM      0      0      1      0      4      12
2 Post_  LTC      0      0      2      0      2      9
3 ListSet
4        LTC  1 ISTb  Links_OOS:  CSide 0, PSide 1
5 Trnsl_ Unit0:  Act InSv
6 Tst_   Unit1:  Inact InSv
7 Bsy_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next
13 SwAct
14 QueryPM
15
16
17 Perform
18

```

- 12 Display the host peripherals P-side links associated with the RCC2 by typing  
**>TRNSL P**  
 and pressing the Enter key.

*Example of a MAP response*

```

LINK 0 RCC2 0 0;CAP MS:STATUS SysB MSGCOND CLS RESTRICT
LINK 1 RCC2 0 1;CAP S:STATUS SBsy
LINK 2 RCC2 0 2;CAP MS:STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 RCC2 0 3;CAP S:STATUS OK
LINK 4 RCC2 0 4;CAP S:STATUS SysB
LINK 5 RCC2 0 5;CAP S:STATUS Sysb

```

- 13 Manually busy the links connected to the faulty NTMX87 card by typing  
**>BSY LINK link\_no**

## NTMX87 in an RSC-S (DS-1) Model A RCC2 (continued)

and pressing the Enter key.

where

**link\_no**

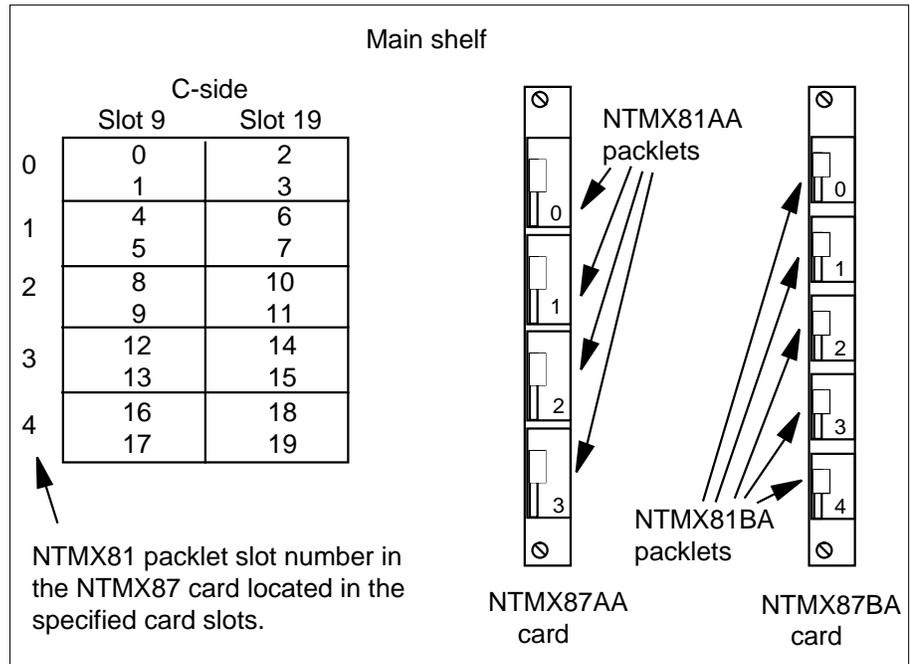
is the number of the link associated with the faulty NTMX87 card

**Note 1:** All provisioned links in the slot must be busied.

**Note 2:** Reference the chart in step 14 for the RCC2 C-side link-to-slot assignments.

### At the RCE frame

- 14 Use the following charts to determine which NTMX87 card is to be removed by matching the provisioned link number with the slot number and the packet number to the left of each respective table.



15

**DANGER**  
**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (FSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Remove the NTMX81 packet as described in the following steps:

---

## NTMX87

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

- a Locate the NTMX81 packet to be removed on the appropriate NTMX87 carrier card slot.
- b Open the locking lever on the NTMX81 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX81 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.
- d Go to step 32.

#### **At the MAP terminal**

- 16** Determine if the RCC2 is in a single or dual configuration by typing

```
>POST RCC2 rcc2_no ;IRLINK
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system will respond with the following message:  
NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.

| If the RCC2 is in a  | Do      |
|----------------------|---------|
| single configuration | step 17 |
| dual configuration   | step 30 |

- 17** Determine if P-side ports are links or carrier trunks by observing the information obtained in step 5.

| If P-side port is | Do      |
|-------------------|---------|
| links             | step 18 |
| trunks            | step 20 |

- 18** Manually busy all provisioned links connected to the faulty NTMX87 circuit card by typing

```
>bsy link link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty NTMX87 circuit card

**Note 1:** Each NTMX81 card has two links, and each link must be manually busied. Possible link pairs are 0 and 1, 2 and 3, 4 and 5, 6 and 7. This pair relationship continues throughout all 54 P-side links.

---

## NTMX87 in an RSC-S (DS-1) Model A RCC2 (continued)

---

**Note 2:** Reference the charts in steps 26 and 28 for P-side link-to-slot assignments. All provisioned links in the slot must be busied.

- 19** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

---

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 26 |
| extension shelf                | step 28 |

---

- 20** Access the TRKS;TTP MAP display level, and busy the trunks assigned to the P-side carriers associated with the faulty NTMX87 by typing

```
>TRKS;TTP;POST D RCC2 rcc2_no carrier_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27  
POST CKT IDLED  
SHORT CLLI IS: 1125  
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG  
TTP 6-006  
CKT TYPE PM NO. COM LANG STA S R DOT TE R  
OG RCC2 0 1 WADEOUT796 11 LO
```

- 21** Busy the trunks associated with the faulty NTMX87 circuit card by typing

```
>BSY ALL
```

and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** To busy other carriers associated with the faulty NTMX87 circuit card, reference the link-to-slot assignment charts in steps 26 and 28.

- 22** Installation busy all the trunks to prevent carrier alarms by typing

```
>BSY INB ALL
```

and pressing the Enter key.

---

## NTMX87

### in an RSC-S (DS-1) Model A RCC2 (continued)

---

- 23** Access the CARRIER level and post the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>CARRIER;POST RCC2 rcc2_no carrier_no
```
- and pressing the Enter key.

*where*

**rcc2\_no**

is the number of the RCC2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

- 24** Busy and offline the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>BSY carrier_no ;OFFL carrier_no
```
- and pressing the Enter key.

*where*

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

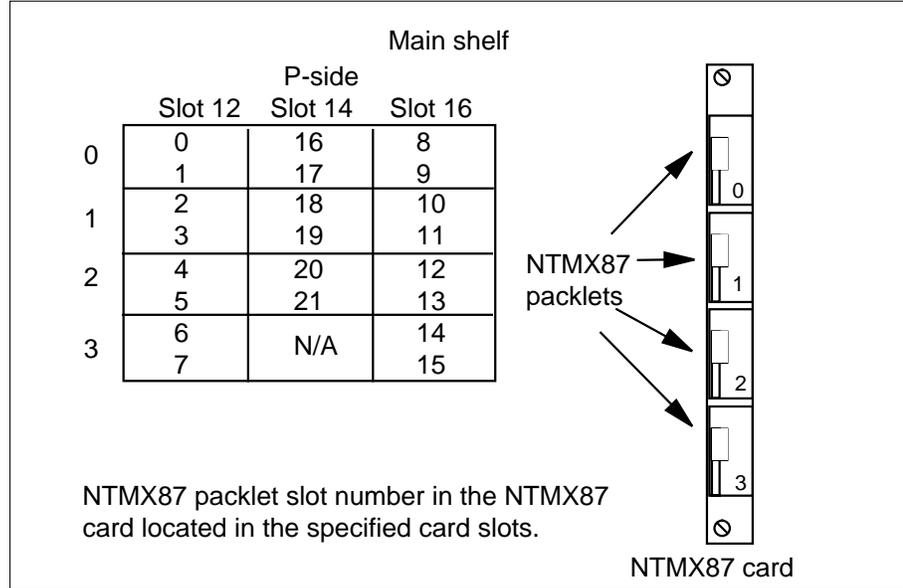
- 25** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 26 |
| extension shelf                | step 28 |

**At the RCE frame**

- 26** Use the following figure to determine slot assignments on the P-side of the main shelf.

**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)



27

**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.

Remove the NTMX81 packlet as described in the following steps:

- a Locate the NTMX81 packlet to be removed on the appropriate NTMX87 carrier card slot.
- b Open the locking lever on the NTMX81 packlet and gently pull the packlet toward you until it clears the shelf.
- c Ensure the NTMX81 packlets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.
- d Go to step 32.

**At the RCE frame**

- 28 Determine which side of the extension shelf the faulty NTMX87 circuit card is located by referencing field SIDE of table RCCINV.



**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

- b Open the locking lever on the NTMX81 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX81 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 carrier card.
- d Go to step 32.

**30** Translate the dual RCC2s IRLINKS by typing

**>TRNSL**

and pressing the Enter key.

*Example of a MAP response*

| CM     | MS      | IOD    | Net        | PM         | CCS        | LNS   | Trks     | Ext  | Appl |
|--------|---------|--------|------------|------------|------------|-------|----------|------|------|
| .      | .       | .      | .          | 1RCC2      | .          | .     | .        | .    | .    |
| IRLINK |         |        |            |            |            |       |          |      |      |
| 0      | Quit    | PM     | SysB       | ManB       | OffL       | CBsy  | ISTb     | InSv |      |
| 2      |         | RCC2   | 0          | 0          | 2          | 0     | 2        | 25   |      |
| 3      |         |        | 0          | 0          | 0          | 0     | 1        | 1    |      |
| 4      |         | RCC2   | 0          | ISTb       | Links_OOS: | Cside | 1, Pside | 1    |      |
| 5      | TRNSL   | Unit0: | Inact      | InSv       |            |       |          |      |      |
| 6      | TST_    | Unit1: | Act        | InSv       |            |       |          |      |      |
| 7      | BSY_    |        |            |            |            |       |          |      |      |
| 8      | RTS_    |        |            |            |            |       |          |      |      |
| 9      |         |        |            |            |            |       |          |      |      |
| 10     |         | IR     | From       | To         | CAP        | STATE | MSGCOND  |      |      |
| 11     |         | 0      | RCC2 0, 0  | RCC2 1, 0  | MS         | OK    | OPN      |      |      |
| 12     |         | 1      | RCC2 0, 8  | Rcc2 1, 8  | MS         | OK    | OPN      |      |      |
| 13     |         | 2      | RCC2 0, 12 | RCC2 1, 12 | S          | OK    |          |      |      |
| 14     | QueryIR | 3      | RCC2 0, 13 | RCC2 1, 13 | S          | OK    |          |      |      |
| 15     |         |        |            |            |            |       |          |      |      |
| 16     |         |        |            |            |            |       |          |      |      |
| 17     |         |        |            |            |            |       |          |      |      |
| 18     |         |        |            |            |            |       |          |      |      |

**31** Busy IRLINKS in the faulty NTMX87 circuit card by typing

**>BSY irlink\_no**

and pressing the Enter key.

*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 26 for the main shelf, and step 28 for the extension shelf.

---

**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

---

*At the RCE frame*

32



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCC2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

Put on a wrist strap.

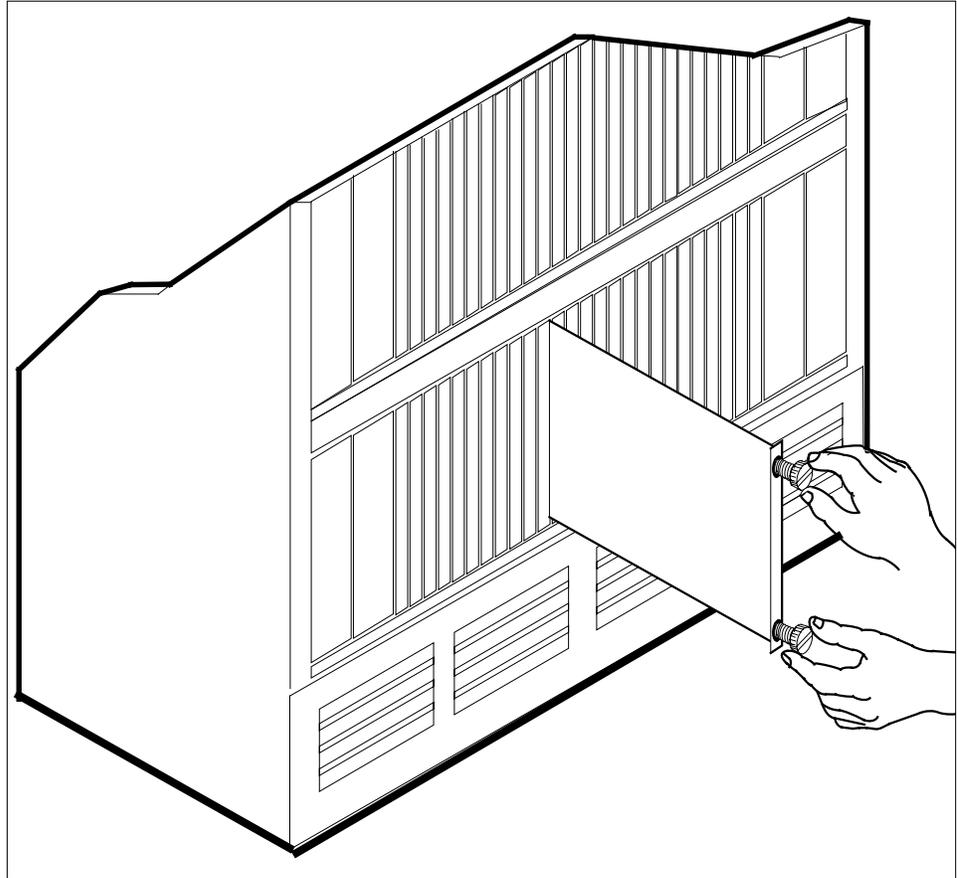
33

Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTMX87 carrier circuit card. Insert the new carrier card and secure.

---

**NTMX87**  
**in an RSC-S (DS-1) Model A RCC2** (continued)

---



- 34 Replace the NTMX81 packlets previously removed. Align the packlet with the slots in the shelf and gently slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 35 Seat and lock the packlet.
  - a Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b Close the locking lever.
- 36 Use the following information to determine what step to go to next in this procedure.

---

| <b>If you entered this procedure from</b> | <b>Do</b> |
|-------------------------------------------|-----------|
| alarm clearing procedures                 | step 53   |
| other                                     | step 37   |

---

---

**NTMX87**

**in an RSC-S (DS-1) Model A RCC2 (continued)**

---

- 37** Use the following information to determine what step to go to next in this procedure.

| <b>If you entered this section of the procedure from</b>    | <b>Do</b> |
|-------------------------------------------------------------|-----------|
| step 15 for a single RCC2 with C-side links affected        | step 38   |
| step 27 or 29 for an RCC2 with P-side trunks affected       | step 46   |
| step 27 or 29, for a single RCC2 with P-side links affected | step 42   |
| step 31 for a DRCC2 with irlinks affected                   | step 44   |

**At the MAP terminal**

- 38** Test the busied network links from step 13 by typing

**>TST LINK link\_no**

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the new NTMX87 carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 39   |
| failed        | step 53   |

- 39** Return to service the P-side links by typing

**>RTS LINK link\_no**

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** This step must be performed for each link that is manually busied.

## NTMX87 in an RSC-S (DS-1) Model A RCC2 (continued)

**Note 2:** To RTS the other links associated with the RCC2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 40 |
| failed | step 53 |

- 40** Post the inactive RCC2 in which the NTMX87 card is located by typing  
**>POST RCC2 rcc2\_no**  
 and pressing the Enter key.  
*where*

**rcc2\_no**  
 is the number of the RCC2 associated with the faulty card

- 41** Return the inactive RCC2 unit to service by typing  
**>RTS UNIT unit\_no**  
 and pressing the Enter key.  
*where*

**unit\_no**  
 is the number of the RCC2 unit posted in step 40

| If RTS | Do      |
|--------|---------|
| passes | step 51 |
| fails  | step 53 |

**At the MAP terminal**

- 42** Test the busied links from step 18 by typing  
**>TST LINK link\_no**  
 and pressing the Enter key.  
*where*

**link\_no**  
 is the number of the link associated with the new NTMX87 carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCC2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 43 |
| failed | step 53 |

---

**NTMX87**

**in an RSC-S (DS-1) Model A RCC2** (continued)

---

- 43** Return to service the P-side links by typing

>RTS LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To RTS the other links associated with the RCC2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

**At the MAP terminal**

- 44** Test the IRLINKS by typing

>TST irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link busied in step 31

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other irlinks associated with the RCC2, execute this step for each irlink until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 45 |
| failed | step 53 |

- 45** Return to service the IRLINKS by typing

>RTS irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link manually busied in step 31

**Note 1:** This step must be performed for each irlink that is manually busied.

---

## NTMX87 in an RSC-S (DS-1) Model A RCC2 (continued)

---

**Note 2:** To RTS the other links associated with the RCC2, execute this step for each link until all links are returned to service.

---

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

---

**At the MAP terminal**

**46** Busy and return to service P-side carriers that were offlined in step 24 by typing

```
>BSY carrier_no; RTS carrier_no
```

and pressing the Enter key.

where

**carrier\_no**

is the number of the P-side carrier assigned

---

| If carrier RTS | Do      |
|----------------|---------|
| passed         | step 47 |
| failed         | step 53 |

---

**47** Access the TTP MAP level to post the P-side links associated with the new NTMX87 circuit card by typing

```
>TTP;POST D RCC2 rcc2_no carrier_no
```

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the new NTMX87 circuit card

**carrier\_no**

is the number of the P-side link trunks are assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27  
POST CKT IDLED  
SHORT CLLI IS: 1125  
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG  
TTP 6-006  
CKT TYPE PM NO. COM LANG STA S R DOT TE R  
OG RCC2 0 1 WADEOUT796 11 INB
```

---

## NTMX87

### in an RSC-S (DS-1) Model A RCC2 (end)

---

- 48** Busy the trunks associated with the new NTMX87 circuit card by typing  
**>BSY ALL**  
 and pressing the Enter key.  
**Note 1:** Wait for the busy queue to clear.  
**Note 2:** Busy the other carriers associated with the faulty NTMX87 circuit card. Reference the link-to-slot assignment charts in steps 26 and 28 .
- 49** Test the trunks associated with the new NTMX87 circuit card by typing  
**>TST ;NEXT**  
 and pressing the Enter key.  
**Note:** Perform this step for each carrier span associated with the new NTMX87 circuit card.
- | If trunks TST | Do      |
|---------------|---------|
| passed        | step 50 |
| failed        | step 53 |
- 50** Return-to-service trunks assigned to links on the new NTMX87 circuit card by typing  
**>RTS ALL**  
 and pressing the Enter key.
- | If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |
- 51** Send any faulty cards for repair according to local procedure.
- 52** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 55.
- 53** Return to *Alarm Clearing Procedures* or the other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.
- 54** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 55** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX87 in an RSC-S (DS-1) Model B RCC2**

---

### **Application**

Use this procedure to replace an NTMX87 card in an RSC-S RCC2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>                |
|------------|-----------------|----------------------------|
| NTMX87     | AA, AB          | Quad Frame Carrier         |
|            | BA              | Penta DS-1 Packlet Carrier |

### **Common procedures**

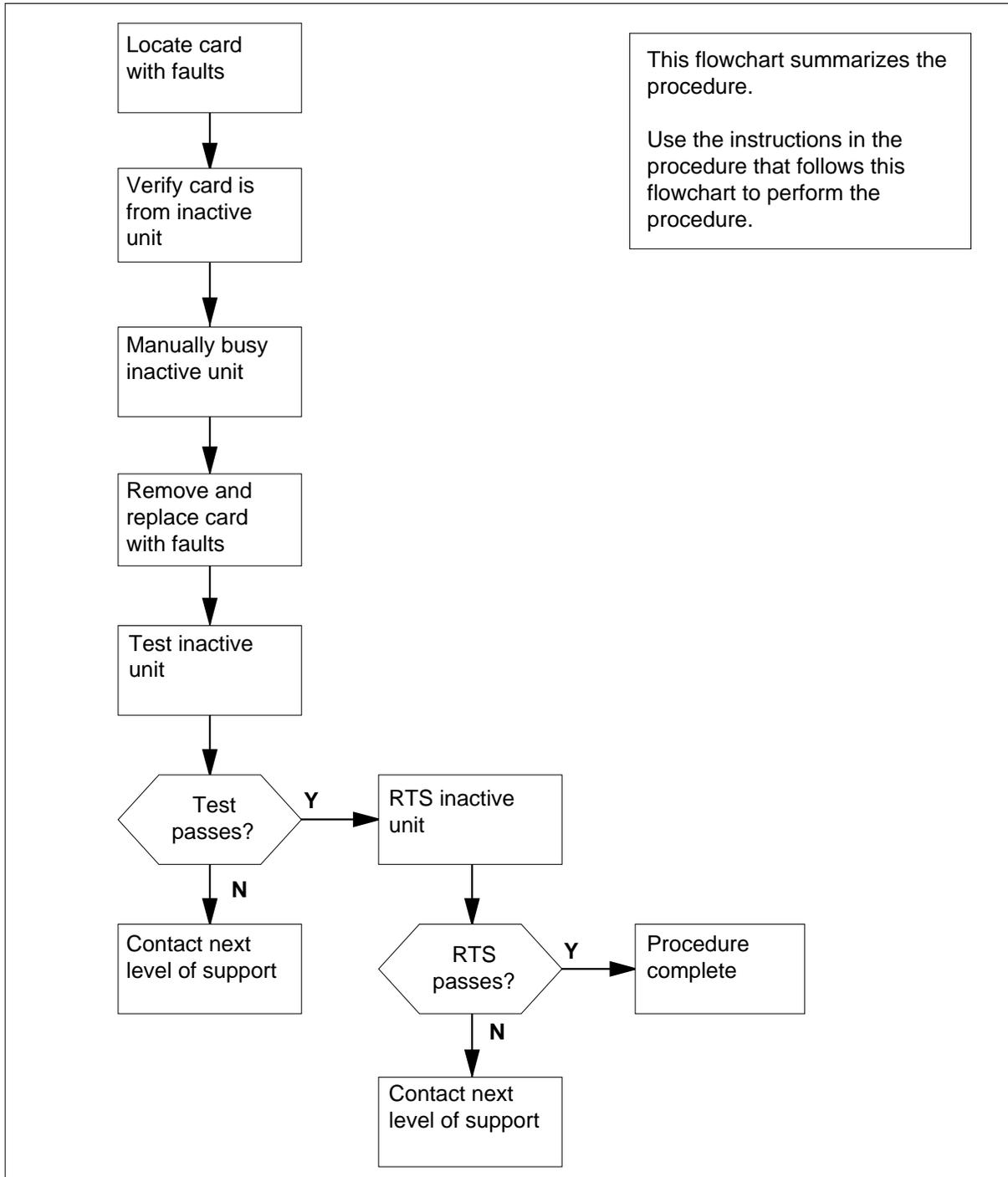
There are no common procedures.

### **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.

**NTMX87**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

**Summary of card replacement procedure for an NTMX87 card in RSC-S RCC2**



## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)

---

### Replacing an NTMX87 card in RSC-S RCC2

#### *At the 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**

This procedure describes several configurations of the NTMX87 carrier card.

Make sure you use the steps for the configuration of your RCC2. These steps include a single or dual RCC2 (DRCC2), main or extension shelf, or links compared to carrier trunks.



#### **WARNING**

##### **Loss of service**

When you replace a card in the RCC2, make sure the unit that contains the card you want to replace is *inactive*. Make sure the mate unit is *active*.

Obtain an NTMX87 replacement card. Make sure the replacement card has the same product equipment code (PEC) and suffix, as the card you want to remove.

#### *At the MAP terminal*

- 3 To view the PM level of the MAP display, type  
`>MAPCI;MTC;PM;POST RCC2 rcc2_no`  
and press the Enter key.  
*where*  
**rcc2\_no**  
is the number of the RCC2 with the card with faults  
*Example of a MAP display:*

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS      | Trks    | Ext  | Appl |
|------|---------|--------|-------|-------|------------|----------|---------|------|------|
| .    | .       | .      | .     | 1RCC2 | .          | .        | .       | .    | .    |
| RCC2 |         |        | SysB  | ManB  | OffL       | CBsy     | ISTb    | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0        | 2       | 25   |      |
| 2    | Post_   | RCC2   | 0     | 0     | 0          | 0        | 1       | 1    |      |
| 3    | ListSet |        |       |       |            |          |         |      |      |
| 4    |         | RCC2   | 0     | ISTb  | Links_OOS: | CSide 1, | 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   |         |        |       |       |            |          |         |      |      |
| 18   |         |        |       |       |            |          |         |      |      |

- 4** To display and record the central-side (C-side) link status of the posted RCC2 associated with the NTMX87 carrier card with faults, type

**>TRNSL C**

and press the Enter key.

*Example of a MAP response*

```
LINK 0 LTC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1 LTC 0 1;CAP S: STATUS SysB
LINK 2 LTC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 LTC 0 3;CAP S: STATUS OK
LINK 4 LTC 0 4;CAP S: STATUS SysB
LINK 5 LTC 0 5;CAP S: STATUS SysB
```

- 5** To display and record the P-side link status of the posted RCC2 associated with the NTMX87 carrier card that has faults, type

**>TRNSL P**

and press the Enter key.

*Example of a MAP response*

**NTMX87**

**in an RSC-S (DS-1) Model B RCC2 (continued)**

```

LINK 1   Carrier of Class - Trunk      ;Status;OK
LINK 2   Carrier of Class - Trunk      ;Status;OK
LINK 3   Carrier of Class - Trunk      ;Status;OK
LINK 10  DCH 6; Status :OK
LINK 13  DCH 7; Status :OK
LINK 17  DCH 4; Status :OK
LINK 22  RMM 6          0;CAP MS;Status OK MSGCOND OPN
LINK 24  LCME RSCS 00 0 0;CAP MS;Status OK MSGCOND OPN
LINK 25  LCME RSCS 00 0 1;CAP MS;Status OK MSGCOND OPN
LINK 26  LCME RSCS 00 0 2;CAP S;Status OK
    
```

- 6 Check the MAP display to make sure the card you want to remove is in the inactive unit.

| <b>If the card with faults</b> | <b>Do</b> |
|--------------------------------|-----------|
| is in the active unit          | step 7    |
| is in the inactive unit        | step 9    |

- 7 To switch the processing activity (SWACT) to the inactive unit, type  
**>SWACT**  
 and press the Enter key.

- 8 To confirm the system prompt, type  
**>YES**  
 and press the Enter key.  
 When both units are in-service, proceed to the next step.

**At the RCE frame**

- 9 Place a sign on the active unit that bears the words *Active unit - Do not touch*. Do not attach this sign by magnets or tape.

| <b>If defective card</b> | <b>Do</b> |
|--------------------------|-----------|
| is C-side of RCC2        | step 10   |
| is P-side defective      | step 16   |

**At the MAP terminal**

- 10 To busy the inactive PM unit, type  
**>bsy unit unit\_no**  
 and press the Enter key.  
*where*  
     **unit\_no**  
         is the number of the inactive RCC2 unit (unit 0 or 1)

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

- 11 To post the host PM, type  
**>POST host\_pm host\_pm\_no**  
 and press the Enter key.

where

**host\_pm**

is a line group controller (LGC) or a line controller

with ISDN (LGCI), a line trunk controller (LTC), or a line trunk

controller with ISDN (LTCI)

**host\_pm\_no**

is the number of an LGC, LGCI, LTC, or LTCI

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

LTC
0 Quit      PM          0          0          1          0          4          12
2 Post_     LTC         0          0          2          0          2          9
3 ListSet
4          LTC    1 ISTb  Links_OOS:  CSide  0, PSide  1
5 Trnsl_   Unit0:    Act InSv
6 Tst_     Unit1:    Inact InSv
7 Bsy_
8 RTS_
9 OffL
10 LoadPM_
11 Disp_
12 Next
13 SwAct
14 QueryPM
15
16
17 Perform
18

```

- 12 To display the P-side links of the host peripheral associated with the RCC2, type

**>TRNSL P**

and press the Enter key.

*Example of a MAP response*

## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)

```
LINK 0 RCC2 0 0;CAP MS:STATUS SysB MSGCOND CLS RESTRICT
LINK 1 RCC2 0 1;CAP S:STATUS SBsy
LINK 2 RCC2 0 2;CAP MS:STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 RCC2 0 3;CAP S:STATUS OK
LINK 4 RCC2 0 4;CAP S:STATUS SysB
LINK 5 RCC2 0 5;CAP S:STATUS Sysb
```

- 13** To manually busy the links connected to the defective NTMX87 card, type  
**>BSY LINK link\_no**  
 and press the Enter key.  
 where

**link\_no**

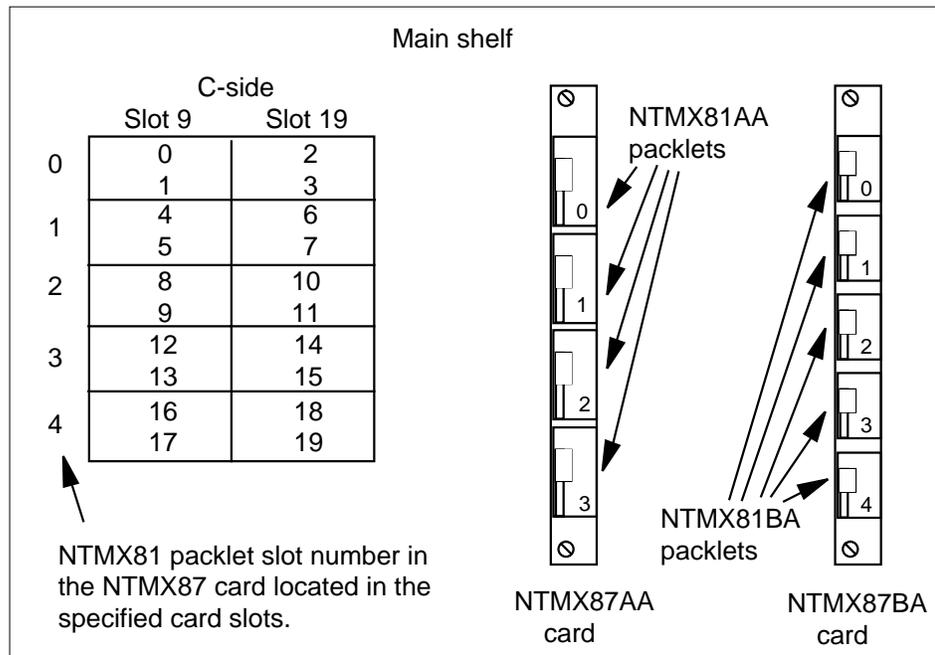
is the number of the link associated with the defective NTMX87 card

**Note 1:** You must busy all provisioned links in the slot.

**Note 2:** Refer to the chart in step 14 for the RCC2 C-side link-to-slot assignments.

**At the RCE frame**

- 14** Use the following charts to determine which NTMX87 card you must remove. Match the provisioned link number with the slot number and the packet number to the left of each table.



## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

**At the MAP terminal**

15

**WARNING****Static electricity damage**

Put on a wrist strap before you remove any cards. Connect the wrist strap to the wrist strap grounding point. This point is on the left side of the modular supervisory panel (MSP) of the RCC2. This action protects the equipment against damage from static electricity.

Use the following steps to remove the NTMX81 packet:

- a Locate the NTMX81 packet you want to remove on the correct NTMX87 carrier card slot.
- b Open the locking lever on the NTMX81 packet. Carefully pull the packet toward you until the packet clears the shelf.
- c Make sure the NTMX81 packets are stored in an electrostatic discharge (ESD) container. This container protects the circuit card until you reinstall the packet in the NTMX87 carrier card.
- d Go to step 42.

**At the MAP terminal**

16 To determine if the RCC2 is in a single or dual configuration, type

```
>POST RCC2 rcc2_no ;IRLINK
```

and press the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the defective NTMX87 card

**Note:** If the posted RCC2 is in a single RCC2 configuration, the system responds with:  
NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.

17 Before you add, remove, or move interlinks of a posted RCC2 of a DRCC2, enter the following command. Enter this command from the IRLINK MAP level. This command disables interswitching capability.

```
>INTERSW DISABLE
```

**Note:** If you do not enter the INTERSW DISABLE command before you attempt to busy (BSY) a specified IRLINK, the MAP terminal displays the following response:

```
interswitched calls should be disabled before an
interlink is busied.
```

## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)

- 18** To confirm that the system disabled interswitching, enter the QUERYIR command. The QUERYIR command displays the status of interswitching capability for the posted RCC2:

**>QUERYIR**

*Example of a MAP display*

```
Interswitching is DISABLED
IR   FROM      TO           C  ALRM SLIP FRME BER STATE
0   RCC2  0, 0   RCC2  1, 0   .      0  0      OK
1   RCC2  0, 8   RCC2  1, 8   .      0  0      OK
2   RCC2  0, 4   RCC2  1, 7   .      0  0      OK
3   RCC2  0, 9   RCC2  1, 12  .      0  0      OK
```

- 19** When the system disables interswitching capability, reconfigure the IRLINKS. Enter the BSY command with the IRLINK number(s) to reconfigure. This action enhances the BSY command. The BSY command can display the number of interswitched calls. These calls use available C-side channels to revert to the network. The following example describes this process.

**>BSY 3**

*Example of a MAP response*

```
67 interswitched calls will be reverted to the network.
Potential loss of calls on the interlink if there are no
available C-side channels.
```

- 20** The C-side channels of the RCC2 are a limited resource. To prevent the loss of some interswitched calls, reconfigure IRLINKS only during periods of low traffic. The system can lose interswitched calls if not enough C-side channels are available.
- 21** Manually busy (ManB) the IRLINKS. Enter table IRLNKINV and make link changes for the required IRLINK configuration. The system downloads static data to both units of both RCC2s of the DRCC2. This action can only occur if the units are InSv.
- 22** When you reconfigured the DRCC2 IRLINKS, enter the enhanced RTS command to return to service the IRLINKS. The MAP terminal displays the following response to indicate that the system disabled interswitching.

**>RTS 3**

*Example of a MAP response*

```
Be aware that Interswitching is Disabled.
```

- 23** To enable interswitching, enter the following command from the IRLINK MAP level:

**>INTERSW ENABLE**

- 24** To confirm interswitching is enabled for the posted RCC2, enter the QUERYIR command from the IRLINK MAP level:

**>QUERYIR**

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

#### Example of a MAP display

```

Interswitching is ENABLED
IR  FROM      TO      C  ALRM SLIP FRME BER STATE
0   RCC2 0, 0  RCC2 1, 0  .   .   0   0   OK
1   RCC2 0, 8  RCC2 1, 8  .   .   0   0   OK
2   RCC2 0, 4  RCC2 1, 7  .   .   0   0   OK
3   RCC2 0, 6  RCC2 1, 6  .   .   0   0   OK

```

- 25** The system downloads RLINKS and ForceESA static data to both RCC2s of the DRCC2. The system must download the components of the ESA static data for both RCC2s. These components include the ESA lines, trunks and ESA table control data. The system sets the units of both RCC2s to in-service trouble (ISTb) with the reason ESA STATIC DATA MISMATCH.

- 26** You can download ESA static data at the PM Level of the MAP display with the RCC2s posted. To download this data, enter the LOADPM command with the source of CC. and file of ESADATA. You can update ESA static data at the automatic nightly static data updates. The table OFCENG tuples RSC\_XPMESASDUPD\_BOOL and RSC\_XPMESASDUPD\_HOUR define these updates.

**Note:** To load ESADATA the RCC2 units must be in service.

| If the RCC2                  | Do      |
|------------------------------|---------|
| is in a single configuration | step 27 |
| is in a dual configuration   | step 40 |

- 27** To determine if P-side ports are links or carrier trunks, refer to the information obtained in step 5.

| If P-side port | Do      |
|----------------|---------|
| is links       | step 28 |
| is trunks      | step 30 |

- 28** To manually busy all provisioned links connected to the defective NTMX87 circuit card, type

```
>bsy link link_no
```

and press the Enter key.

where

**link\_no**

is the number of the link associated with the defective NTMX87 circuit card

**Note 1:** Each NTMX81 card has two links. The user must busy each link. Possible link pairs are 0 and 1, 2 and 3, 4 and 5, 6 and 7. This pair relationship continues in all 54 P-side links.

## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)

**Note 2:** Refer to the charts in steps 36 and 38 for P-side link-to-slot assignments. You must busy all provisioned links in the slot.

- 29** Determine if the NTMX87 circuit card that has faults is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

| If the defective NTMX87   | Do      |
|---------------------------|---------|
| is on the main shelf      | step 36 |
| is on the extension shelf | step 38 |

- 30** Access the TRKS;TTP MAP display level. Busy the trunks assigned to the P-side carriers associated with the defective NTMX87. To perform these actions, type

```
>TRKS;TTP;POST D RCC2 rcc2_no carrier_no
```

and press the Enter key.

where

**rcc2\_no**

is the number of the RCC2 associated with the NTMX87 that

has faults

**carrier\_no**

is the number of the P-side carrier assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCC2 0 1 WADEOUT796 11 LO
```

- 31** To busy the trunks associated with the NTMX87 circuit card that has faults, type

```
>BSY ALL
```

and press the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** To busy other carriers associated with the NTMX87 circuit card that has faults, refer to the link-to-slot assignment charts. These charts appear in steps 36 and 38.

- 32** To installation busy all the trunks to prevent carrier alarms, type

```
>BSY INB ALL
```

---

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

- and press the Enter key.
- 33** To access the CARRIER level and post the P-side carriers associated with the NTMX87 circuit card that has faults, type
- ```
>CARRIER;POST RCC2 rcc2_no carrier_no
```
- and press the Enter key.
- where*
- rcc2\_no**  
is the number of the RCC2 associated with the NTMX87 that
- has faults
- carrier\_no**  
is the number of the P-side carrier assigned
- Note:** Perform this step for each carrier span in the defective NTMX87 circuit card.
- 34** To busy and offline the P-side carriers associated with the NTMX87 circuit card that has faults, type
- ```
>BSY carrier_no ;OFFL carrier_no
```
- and press the Enter key.
- where*
- carrier\_no**  
is the number of the P-side carrier assigned
- Note:** Perform this step for each carrier span in the NTMX87 circuit card that has faults.
- 35** Determine if the NTMX87 circuit card that has faults is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

---

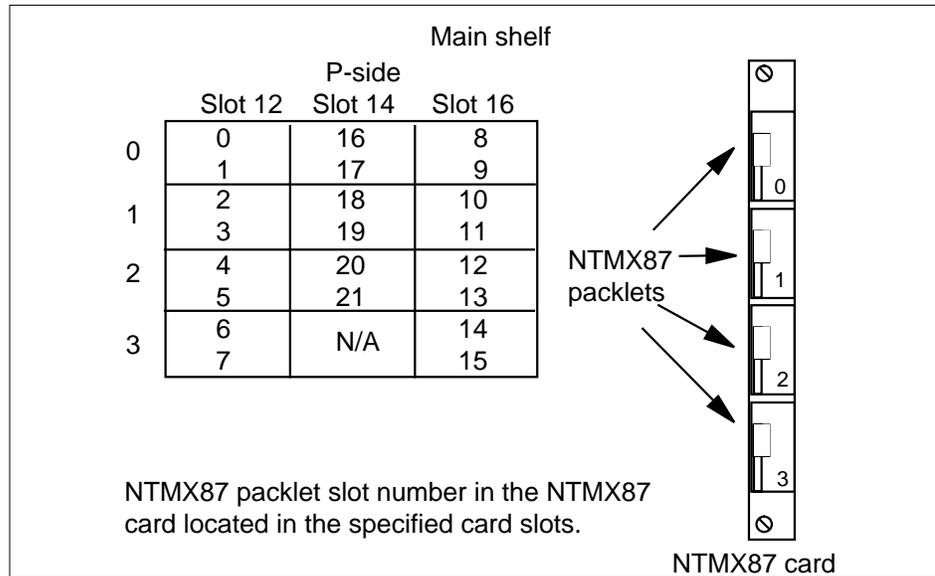
| If the NTMX87 that has faults | Do      |
|-------------------------------|---------|
| is on the main shelf          | step 36 |
| is on the extension shelf     | step 38 |

---

#### **At the RCE frame**

- 36** Use the following figure to determine slot assignments on the P-side of the main shelf.

**NTMX87**  
**in an RSC-S (DS-1) Model B RCC2** (continued)



37



**WARNING**  
**Static electricity damage**  
 Before you remove any cards, put on a wrist strap and connect the wrist strap to the wrist strap grounding point. This point is on the left side of the modular supervisory panel (MSP) of the RCC2. This action protects the equipment against damage from static electricity.

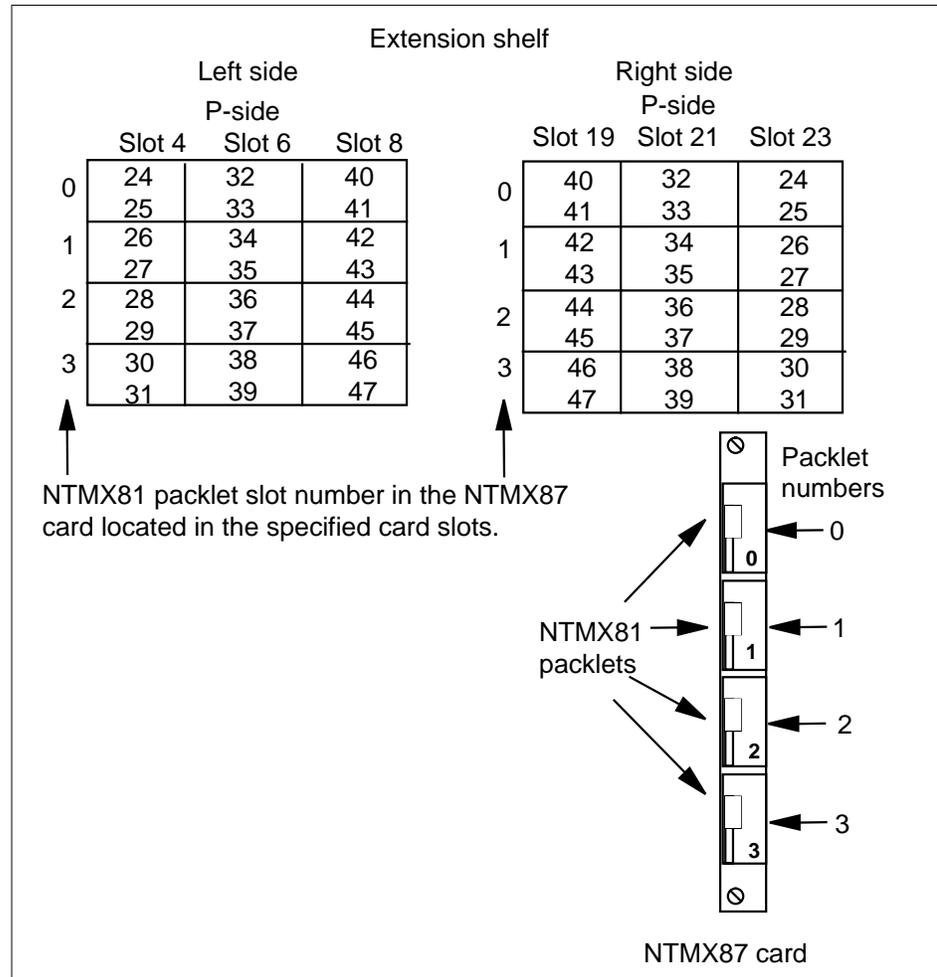
Remove the NTMX81 packlet as described in the following steps:

- a Locate the NTMX81 packlet you want to remove on the correct NTMX87 carrier card slot.
- b Open the locking lever on the NTMX81 packlet. Carefully pull the packlet toward you until the packlet clears the shelf.
- c Make sure the NTMX81 packlets are stored in an electrostatic discharge (ESD) container. This container protects the circuit card until you reinstall the packlet in the NTMX87 carrier card.
- d Go to step 42.

**At the RCE frame**

- 38 Refer to field SIDE of table RCCINV to determine which side of the extension shelf contains the NTMX87 circuit card that has faults

## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)



39



**WARNING**

**Static electricity damage**

Before you remove any cards, put on a wrist strap and connect the wrist strap to the wrist strap grounding point. This point is on the left side of the modular supervisory panel (MSP) of the RCC2. This action protects the equipment against damage from static electricity.

Remove the NTMX81 packet as described in the following steps:

- a Locate the NTMX81 packet you want to remove on the correct NTMX87 carrier card slot.

**NTMX87**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

- b Open the locking lever on the NTMX81 packet. Carefully pull the packet toward you until the packet clears the shelf.
- c Make sure the NTMX81 packets are stored in an electrostatic discharge (ESD) container. This container protects the circuit card until you reinstall the packet in the NTMX87 carrier card.
- d Go to step 42.

**40** To translate the dual RCC2s IRLINKS, type  
**>TRNSL**  
 and press the Enter key.

*Example of a MAP response*

```

      CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
      .      .      .      .      1RCC2      .      .      .      .      .

IRLINK
0 Quit      PM      0      0      2      0      2      25
2          RCC2      0      0      0      0      1      1
3
4          RCC2      0 ISTb Links_OOS: CSide 1, PSide 1
5 TRNSL      Unit0:      Inact InSv
6 TST_      Unit1:      Act InSv
7 BSY_
8 RTS_
9
10          IR      From      To      CAP      STATE      MSGCOND
11          0      RCC2 0, 0      RCC2 1, 0      MS      OK      OPN
12          1      RCC2 0, 8      Rcc2 1, 8      MS      OK      OPN
13          2      RCC2 0, 12      RCC2 1, 12      S      OK
14 QueryIR      3      RCC2 0, 13      RCC2 1, 13      S      OK
15
16
17
18
    
```

**41** To busy IRLINKS in the NTMX87 circuit card that has faults, type  
**>BSY irlink\_no**  
 and press the Enter key.

*where*

**irlink\_no**  
 is the number of the irlink that must be busied

**Note 1:** You must perform this step for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, refer to step 36 for the main shelf, and step 38 for the extension shelf.

---

**NTMX87**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

*At the RCE frame*

42



**WARNING**

**Static electricity damage**

Before you remove any cards, put on a wrist strap and connect the wrist strap to the wrist strap grounding point. This point is on the left side of the modular supervisory panel (MSP) of the RCC2. This action protects the equipment against damage from static electricity.



**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 cards in the slots.

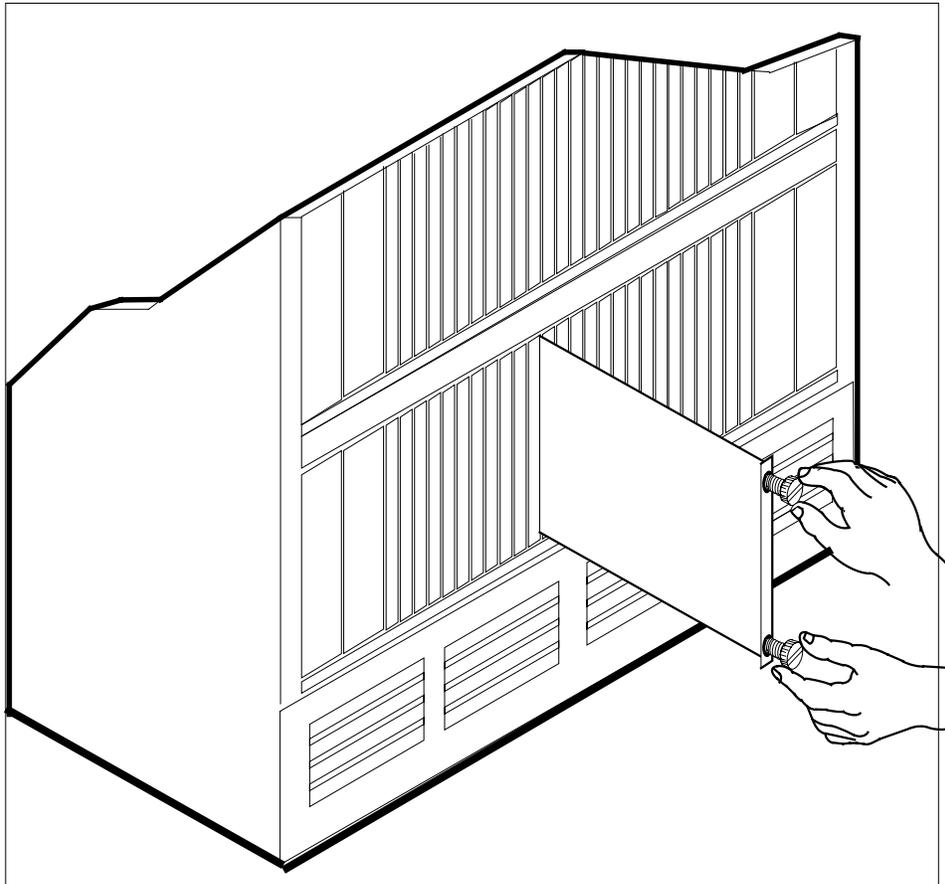
Put on a wrist strap.

43

Use the T9908 wrist grounding strap and a T1324 screwdriver to remove the NTMX87 frame carrier circuit card. Insert the new carrier card and secure the card.

**NTMX87**  
**in an RSC-S (DS-1) Model B RCC2** (continued)

---



- 44** Replace the NTMX81 packlets you removed. Align the packlet with the slots in the shelf. Carefully slide the packlet in the circuit card slot in the NTMX87 circuit card.
- 45** Seat and lock the packlet.
- a** Use your fingers or thumbs to push on the upper and lower edges of the faceplate of the packlet. This method makes sure the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 46** Use the following information to determine the next step in this procedure.

---

| <b>If</b>                                                 | <b>Do</b> |
|-----------------------------------------------------------|-----------|
| you entered this procedure from alarm clearing procedures | step 63   |
| you entered this procedure from another point             | step 47   |

---

---

**NTMX87**

**in an RSC-S (DS-1) Model B RCC2** (continued)

---

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

| <b>If</b>                                                                                  | <b>Do</b> |
|--------------------------------------------------------------------------------------------|-----------|
| you entered this procedure from step 15 for a single RCC2 with C-side links affected       | step 48   |
| you entered this procedure from step 37 or 39 for an RCC2 with P-side trunks affected      | step 56   |
| you entered this procedure from step 37 or 39 for a single RCC2 with P-side links affected | step 52   |
| you entered this procedure from step 41 for a DRCC2 with irlinks affected                  | step 54   |

**At the MAP terminal**

- 48** To test the busied network links from step 13, type

>TST LINK link\_no

and press the Enter key.

where

**link\_no**

is the number of the link associated with the new NTMX87

carrier card

**Note 1:** You must perform this step for each manually busied link.

**Note 2:** Test the other links associated with the RCC2. Perform this step for each link until the system tested all links.

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passes        | step 49   |
| fails         | step 64   |

- 49** To return to service the P-side links, type

>RTS LINK link\_no

and press the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** You must perform this step for each link that is manually busied.

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

**Note 2:** RTS the other links associated with the RCC2. To RTS these links, perform the procedures in this step for each link until all links return to service.

---

| If RTS | Do      |
|--------|---------|
| passes | step 50 |
| fails  | step 64 |

---

- 50** To post the inactive RCC2 that contains the NTMX87 card, type  
>POST RCC2 rcc2\_no  
and press the Enter key.  
*where*  
    **rcc2\_no**  
    is the number of the RCC2 associated with the card that has faults

- 51** To return the inactive RCC2 unit to service, type  
>RTS UNIT unit\_no  
and press the Enter key.  
*where*  
    **unit\_no**  
    is the number of the RCC2 unit posted in step 50

---

| If RTS | Do      |
|--------|---------|
| passes | step 61 |
| fails  | step 64 |

---

**At the MAP terminal**

- 52** To test the busied links from step 28, type  
>TST LINK link\_no  
and press the Enter key.  
*where*  
    **link\_no**  
    is the number of the link associated with the new NTMX87

---

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

carrier card

**Note 1:** You must perform this step for each manually busied link.

**Note 2:** To test the other links associated with the RCC2, perform this step for each link until you tested all links.

| If TST | Do      |
|--------|---------|
| passes | step 53 |
| fails  | step 64 |

**53** To return to service the P-side links, type

`>RTS LINK link_no`

and press the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** You must perform this step for each link that is manually busied.

**Note 2:** RTS the other links associated with the RCC2. To RTS these links, perform the procedures in this step for each link until all links return to service.

| If RTS | Do      |
|--------|---------|
| passes | step 61 |
| fails  | step 64 |

#### **At the MAP terminal**

**54** To test the IRLINKS, type

`>TST irlink_no`

and press the Enter key.

where

**irlink\_no**

is the number of the link busied in step 41

**Note 1:** You must perform this step for each manually busied link.

**Note 2:** To test the other irlinks associated with the RCC2, perform this step for each irlink until you tested all links.

| If TST | Do      |
|--------|---------|
| passes | step 55 |
| fails  | step 64 |

## NTMX87 in an RSC-S (DS-1) Model B RCC2 (continued)

---

- 55 To return to service the IRLINKS, type  
>RTS irlink\_no  
and press the Enter key.  
where  
**irlink\_no**  
is the number of the link manually busied in step 41  
**Note 1:** You must perform this step for each irlink that is manually busied.  
**Note 2:** RTS the other links associated with the RCC2. To RTS these links, perform this step for each link until all links return to service.

---

| If RTS | Do      |
|--------|---------|
| passes | step 61 |
| fails  | step 64 |

---

### At the MAP terminal

- 56 To busy and return to service P-side carriers offlined in step 34, type  
>BSY carrier\_no; RTS carrier\_no  
and press the Enter key.  
where  
**carrier\_no**  
is the number of the P-side carrier assigned

---

| If carrier RTS | Do      |
|----------------|---------|
| passes         | step 57 |
| fails          | step 64 |

---

- 57 To access the TTP MAP level to post the P-side links associated with the new NTMX87 circuit card, type  
>TTP;POST D RCC2 rcc2\_no carrier\_no  
and press the Enter key.  
where  
**rcc2\_no**  
is the number of the RCC2 associated with the new NTMX87  
circuit card  
**carrier\_no**  
is the number of the P-side link trunks assigned  
*Example of a MAP response*

---

## NTMX87

### in an RSC-S (DS-1) Model B RCC2 (continued)

---

```

LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED

```

```

POST 18   DELQ           BUSY Q           DIG
TTP 6-006
CKT TYPE  PM NO.        COM LANG           STA S R DOT TE R
OG        RCC2    0 1    WADEOUT796 11    INB

```

- 58** To busy the trunks associated with the new NTMX87 circuit card, type

>**BSY ALL**

and press the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** Busy the other carriers associated with the NTMX87 circuit card that has faults. Refer to the link-to-slot assignment charts in steps 36 and 38.

- 59** To test the trunks associated with the new NTMX87 circuit card, type

>**TST;NEXT**

and press the Enter key.

**Note:** Perform this step for each carrier span associated with the new NTMX87 circuit card.

| If trunks TST | Do      |
|---------------|---------|
| passes        | step 60 |
| fails         | step 64 |

- 60** To return to service trunks assigned to links on the new NTMX87 circuit card, type

>**RTS ALL**

and press the Enter key.

| If RTS | Do      |
|--------|---------|
| passes | step 61 |
| fails  | step 64 |

- 61** Send any cards that have faults for repair according to local procedure.
- 62** Record the date card replaced, the serial number of the card, and the reason you performed card replacement. Go to step 65.
- 63** Return to *Alarm Clearing Procedures* or the procedure that directed you to this procedure. At the point where a list of card that have faults appeared,

**NTMX87**  
**in an RSC-S (DS-1) Model B RCC2 (end)**

---

identify the next card on the list. Refer to the correct card replacement procedure for that card in this manual.

- 64** To replace this card, contact the next level of maintenance for help.
- 65** This procedure is complete. Remove the sign from the active unit. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.

**NTMX87**  
**in an RSC-S (PCM-30) Model A RCO2**

---

**Application**

Use this procedure to replace an NTMX87 card in an RSC-S RCO2.

| PEC    | Suffixes | Name               |
|--------|----------|--------------------|
| NTMX87 | AA       | Quad Frame Carrier |

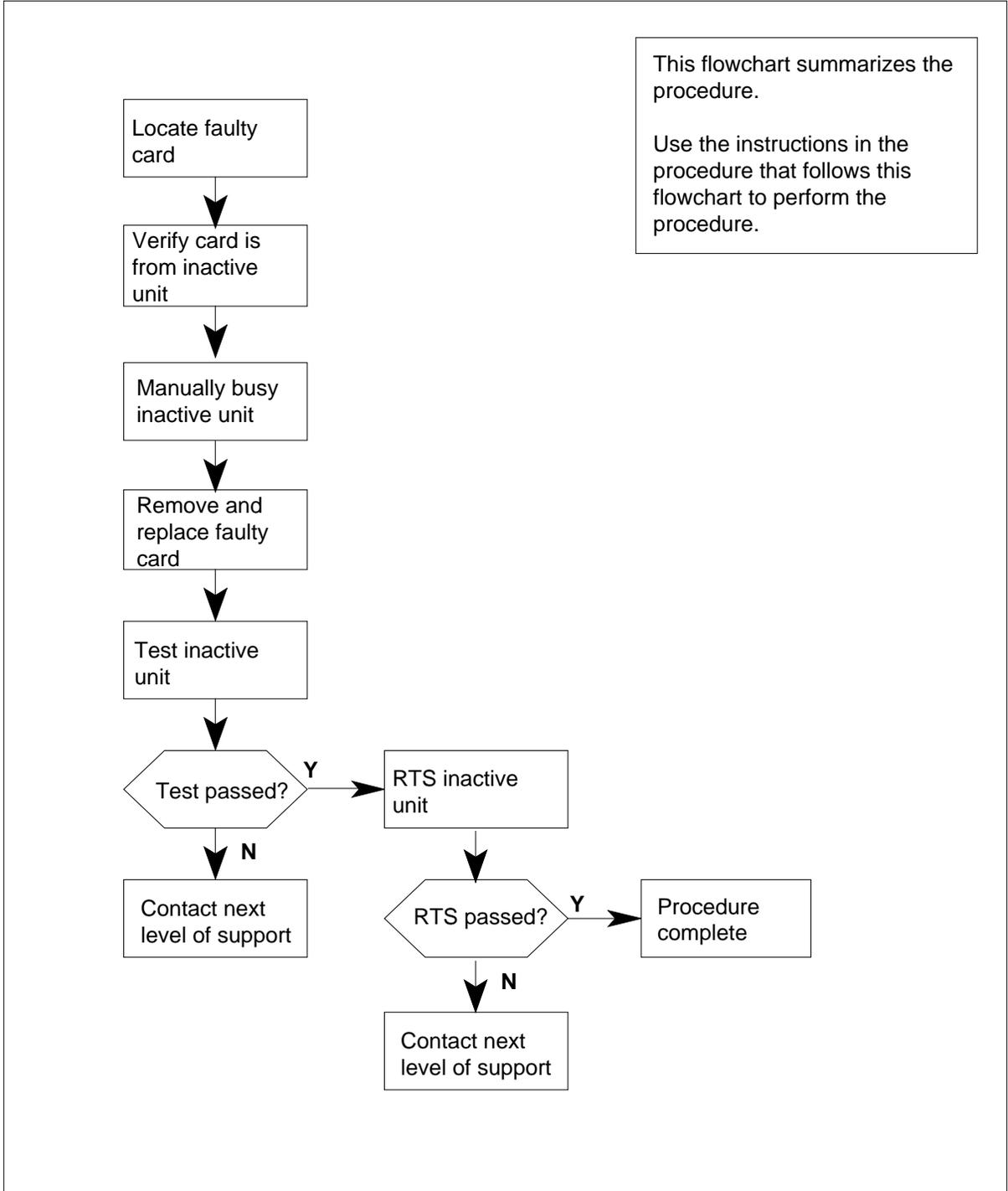
**Common procedures**

None

**Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX87**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)



## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

#### Replacing an NTMX87 card in RSC-S RCO2

##### *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



#### **CAUTION**

Several configurations of the NTMX87 quad frame carrier card are detailed in this procedure.

Be sure you are using the steps for the configuration of your RCO2, such as a single or dual RCO2 (DRCO2), main or extension shelf, or links versus carrier trunks.



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX87 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

**Note:** The dual RCO2 configuration for the international RSC-S will be available in a future release.

##### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
 and pressing the Enter key.  
*where*

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

| CM   | MS      | IOD    | Net   | PM           | CCS        | LNS   | Trks     | Ext | Appl |
|------|---------|--------|-------|--------------|------------|-------|----------|-----|------|
| .    | .       | .      | .     | <b>1RCO2</b> | .          | .     | .        | .   | .    |
| RCO2 |         | SysB   | ManB  | OffL         | CBsy       | ISTb  | InSv     |     |      |
| 0    | Quit    | PM     | 0     | 0            | 2          | 0     | 2        | 25  |      |
| 2    | Post_   | RCO2   | 0     | 0            | 0          | 0     | 1        | 1   |      |
| 3    | ListSet |        |       |              |            |       |          |     |      |
| 4    |         | RCO2   | 0     | ISTb         | Links_OOS: | CSide | 1, 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   |         |        |       |              |            |       |          |     |      |
| 18   |         |        |       |              |            |       |          |     |      |

- 4 Display and record the C-side link status of the posted RCO2 associated with the faulty NTMX87 quad carrier card by typing

**>TRNSL C**

and pressing the Enter key.

*Example of a MAP response*

```
LINK 0 PLGC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1 PLGC 0 1;CAP S: STATUS SysB
LINK 2 PLGC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 PLGC 0 3;CAP S: STATUS OK
LINK 4 PLGC 0 4;CAP S: STATUS SysB
LINK 5 PLGC 0 5;CAP S: STATUS SysB
```

- 5 Display and record the P-side link status of the posted RCO2 associated with the faulty NTMX87 quad carrier card by typing

**>TRNSL P**

and pressing the Enter key.

*Example of a MAP response*

---

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

```
LINK 1   Carrier of Class - Trunk           ;Status;OK
LINK 2   Carrier of Class - Trunk           ;Status;OK
LINK 3   Carrier of Class - Trunk           ;Status;OK
LINK 10  DCH 6; Status :OK
LINK 13  DCH 7; Status :OK
LINK 17  DCH 4; Status :OK
LINK 22  RMM 6                             0;CAP MS;Status OK MSGCOND OPN
LINK 24  LCME RSCS 00 0 0;CAP MS;Status OK MSGCOND OPN
LINK 25  LCME RSCS 00 0 1;CAP MS;Status OK MSGCOND OPN
LINK 26  LCME RSCS 00 0 2;CAP S;Status OK
```

- 6 By observing the MAP display, be sure the card that is to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 7 |
| inactive unit            | step 9 |

- 7 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

- 8 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### **At the RCE frame**

- 9 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCO2    | step 10 |
| P-side faulty     | step 16 |

#### **At the MAP terminal**

- 10 Busy the inactive PM unit by typing

>bsy unit unit\_no

and pressing the Enter key.

where

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

**unit\_no**

is the number of the inactive RCO2 unit (unit 0 or 1)

- 11 Post the host PM by typing  
>POST host\_pm host\_pm\_no  
and pressing the Enter key.

where

**host\_pm**

is a PCM-30 line group controller (PLGC)

**host\_pm\_no**

is the number of a PLGC

Example of a MAP display:

| CM   | MS      | IOD    | Net   | PM    | CCS        | Lns            | Trks | Ext  | Appl |
|------|---------|--------|-------|-------|------------|----------------|------|------|------|
| .    | .       | .      | .     | 1RCO2 | .          | .              | .    | .    | .    |
| PLGC |         |        | SysB  | ManB  | OffL       | CBsy           | ISTb | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 1          | 0              | 4    | 12   |      |
| 2    | Post_   | PLGC   | 0     | 0     | 2          | 0              | 2    | 9    |      |
| 3    | ListSet |        |       |       |            |                |      |      |      |
| 4    |         | PLGC   | 1     | ISTb  | Links_OOS: | Cside 0, Pside | 1    |      |      |
| 5    | Trnsl_  | Unit0: | Act   | InSv  |            |                |      |      |      |
| 6    | Tst_    | Unit1: | Inact | InSv  |            |                |      |      |      |
| 7    | Bsy_    |        |       |       |            |                |      |      |      |
| 8    | RTS_    |        |       |       |            |                |      |      |      |
| 9    | OffL    |        |       |       |            |                |      |      |      |
| 10   | LoadPM_ |        |       |       |            |                |      |      |      |
| 11   | Disp_   |        |       |       |            |                |      |      |      |
| 12   | Next    |        |       |       |            |                |      |      |      |
| 13   | SwAct   |        |       |       |            |                |      |      |      |
| 14   | QueryPM |        |       |       |            |                |      |      |      |
| 15   |         |        |       |       |            |                |      |      |      |
| 16   |         |        |       |       |            |                |      |      |      |
| 17   | Perform |        |       |       |            |                |      |      |      |
| 18   |         |        |       |       |            |                |      |      |      |

- 12 Display the host peripherals P-side links associated with the RCO2 by typing  
>TRNSL P  
and pressing the Enter key.

Example of a MAP response

```
LINK 0 RCO2 0 0;CAP MS:STATUS SysB MSGCOND CLS RESTRICT
LINK 1 RCO2 0 1;CAP S:STATUS SBsy
LINK 2 RCO2 0 2;CAP MS:STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 RCO2 0 3;CAP S:STATUS OK
LINK 4 RCO2 0 4;CAP S:STATUS SysB
LINK 5 RCO2 0 5;CAP S:STATUS Sysb
```

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

- 13** Manually busy the links connected to the faulty NTMX87 card by typing  
`>BSY LINK link_no`  
 and pressing the Enter key.

where

**link\_no**

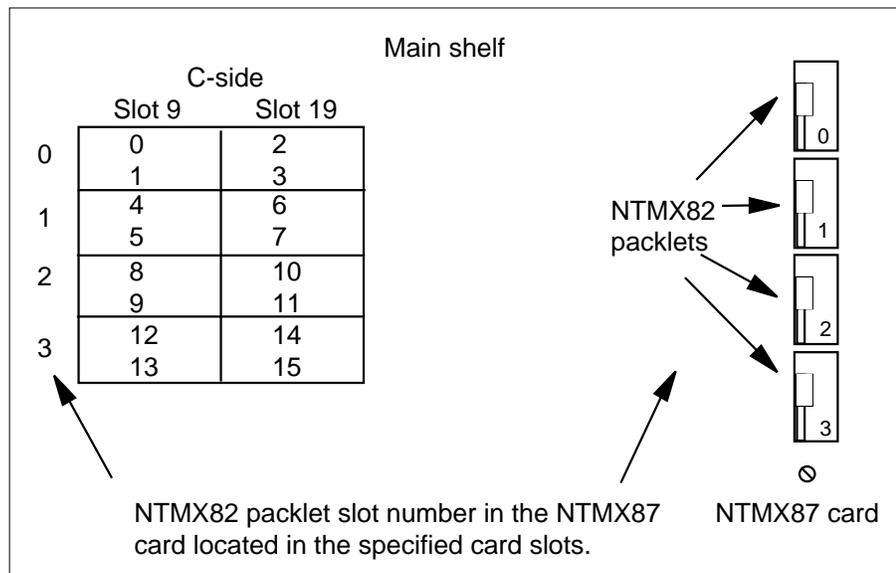
is the number of the link associated with the faulty NTMX87 card

**Note 1:** All provisioned links in the slot must be busied.

**Note 2:** Reference the chart in step 14 for the RCO2 C-side link-to-slot assignments.

**At the RCE frame**

- 14** Use the following charts to determine which NTMX87 card is to be removed by matching the provisioned link number with the slot number and the packet number to the left of each respective table.



- 15**

**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Remove the NTMX82 packet as described in the following steps:

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

- a Locate the NTMX82 packet to be removed on the appropriate NTMX87 quad carrier card slot.
- b Open the locking lever on the NTMX82 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX82 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d Go to step 32.

#### **At the MAP terminal**

- 16** Determine if the RCO2 is in a single or dual configuration by typing

```
>POST RCO2 rco2_no ;IRLINK
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty NTMX87 card

**Note:** If the posted RCO2 is in a single RCO2 configuration, the system will respond with the following message:  
NO IRLINKS DATAFILLED, IRLINK LEVEL CANNOT BE ENTERED.

---

| <b>If the RCO2 is in a</b> | <b>Do</b> |
|----------------------------|-----------|
| single configuration       | step 17   |
| dual configuration         | step 30   |

---

- 17** Determine if P-side ports are links or carrier trunks by observing the information obtained in step 5.

---

| <b>If P-side port is</b> | <b>Do</b> |
|--------------------------|-----------|
| links                    | step 18   |
| trunks                   | step 20   |

---

- 18** Manually busy all provisioned links connected to the faulty NTMX87 circuit card by typing

```
>bsy link link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty NTMX87 circuit card

**Note 1:** Each NTMX82 card has two links, and each link must be manually busied. Possible link pairs are 0 and 1, 2 and 3, 4 and 5, 6 and 7. This pair relationship continues throughout all 54 P-side links.

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

**Note 2:** Reference the charts in steps 26 and 28 for P-side link-to-slot assignments. All provisioned links in the slot must be busied.

- 19** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 26 |
| extension shelf                | step 28 |

- 20** Access the TRKS;TTP MAP display level, and busy the trunks assigned to the P-side carriers associated with the faulty NTMX87 by typing

```
>TRKS;TTP;POST D RCO2 rco2_no carrier_no
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED

POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCO2 0 1 WADEOUT796 11 LO
```

- 21** Busy the trunks associated with the faulty NTMX87 circuit card by typing

```
>BSY ALL
```

and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** To busy other carriers associated with the faulty NTMX87 circuit card, reference the link-to-slot assignment charts in steps 26 and 28.

- 22** Installation busy all the trunks to prevent carrier alarms by typing

```
>BSY INB ALL
```

and pressing the Enter key.

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

- 23 Access the CARRIER level and post the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>CARRIER;POST RCO2 rco2_no carrier_no
```
- and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

- 24 Busy and offline the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>BSY carrier_no ;OFFL carrier_no
```
- and pressing the Enter key.

where

**carrier\_no**

is the number of the P-side carrier assigned

**Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.

- 25 Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

---

| <b>If the faulty NTMX87 is on the</b> | <b>Do</b> |
|---------------------------------------|-----------|
| main shelf                            | step 26   |
| extension shelf                       | step 28   |

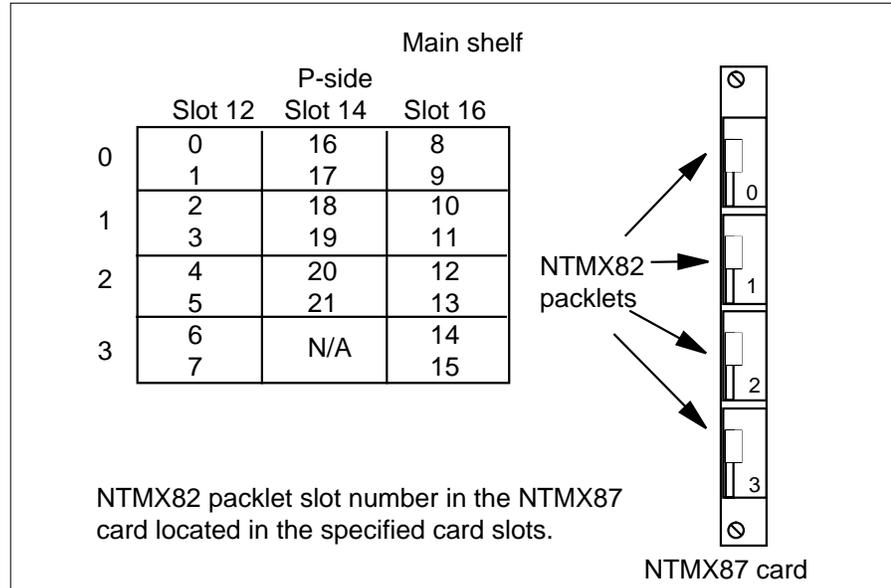
---

### **At the RCE frame**

- 26 Use the following figure to determine slot assignments on the P-side of the main shelf.

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)



27

**DANGER****Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

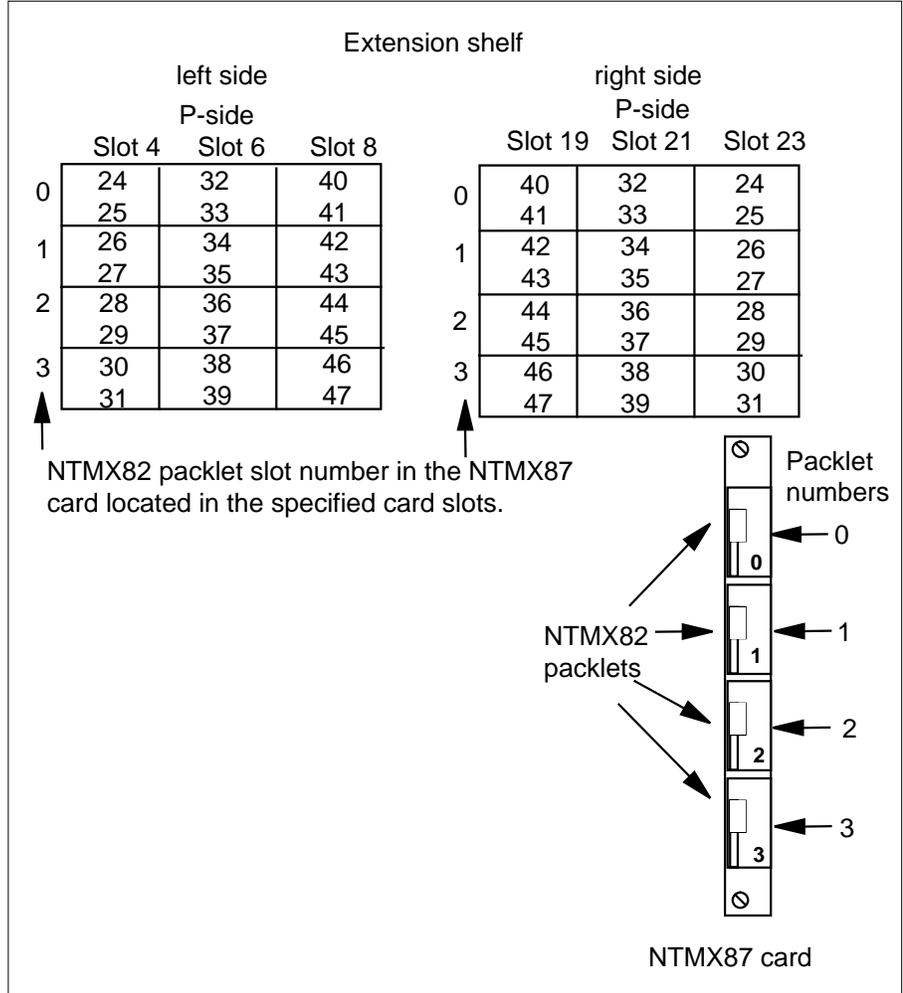
Remove the NTMX82 packlet as described in the following steps:

- a Locate the NTMX82 packlet to be removed on the appropriate NTMX87 quad carrier card slot.
- b Open the locking lever on the NTMX82 packlet and gently pull the packlet toward you until it clears the shelf.
- c Ensure the NTMX82 packlets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d Go to step 32.

**At the RCE frame**

- 28 Determine which side of the extension shelf the faulty NTMX87 circuit card is located by referencing field SIDE of table RCCINV.

**NTMX87**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)



29



**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Remove the NTMX82 packet as described in the following steps:

- a Locate the NTMX82 packet to be removed on the appropriate NTMX87 quad carrier card slot.

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

- b** Open the locking lever on the NTMX82 packet and gently pull the packet toward you until it clears the shelf.
- c** Ensure the NTMX82 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d** Go to step 32.
- 30** Translate the dual RCO2s IRLINKS by typing  
**>TRNSL**  
 and pressing the Enter key.  
*Example of a MAP response*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCO2   .       .       .       .       .

IRLINK
0 Quit      PM      0      0      2      0      2      25
2           RCO2   0      0      0      0      1      1
3
4           RCO2   0 ISTb  Links_OOS: CSide 1, PSide 1
5 TRNSL     Unit0:  Inact InSv
6 TST_      Unit1:  Act  InSv
7 BSY_
8 RTS_
9
10          IR      From      To      CAP      STATE      MSGCOND
11          0 RCO2 0, 0 RCO2 1, 0 MS      OK      OPN
12          1 RCO2 0, 8 Rcc2 1, 8 MS      OK      OPN
13          2 RCO2 0, 12 RCO2 1, 12 S      OK
14 QueryIR  3 RCO2 0, 13 RCO2 1, 13 S      OK
15
16
17
18

```

- 31** Busy IRLINKS in the faulty NTMX87 circuit card by typing  
**>BSY irlink\_no**  
 and pressing the Enter key.  
*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 26 for the main shelf, and step 28 for the extension shelf.

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

*At the RCE frame*

32



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

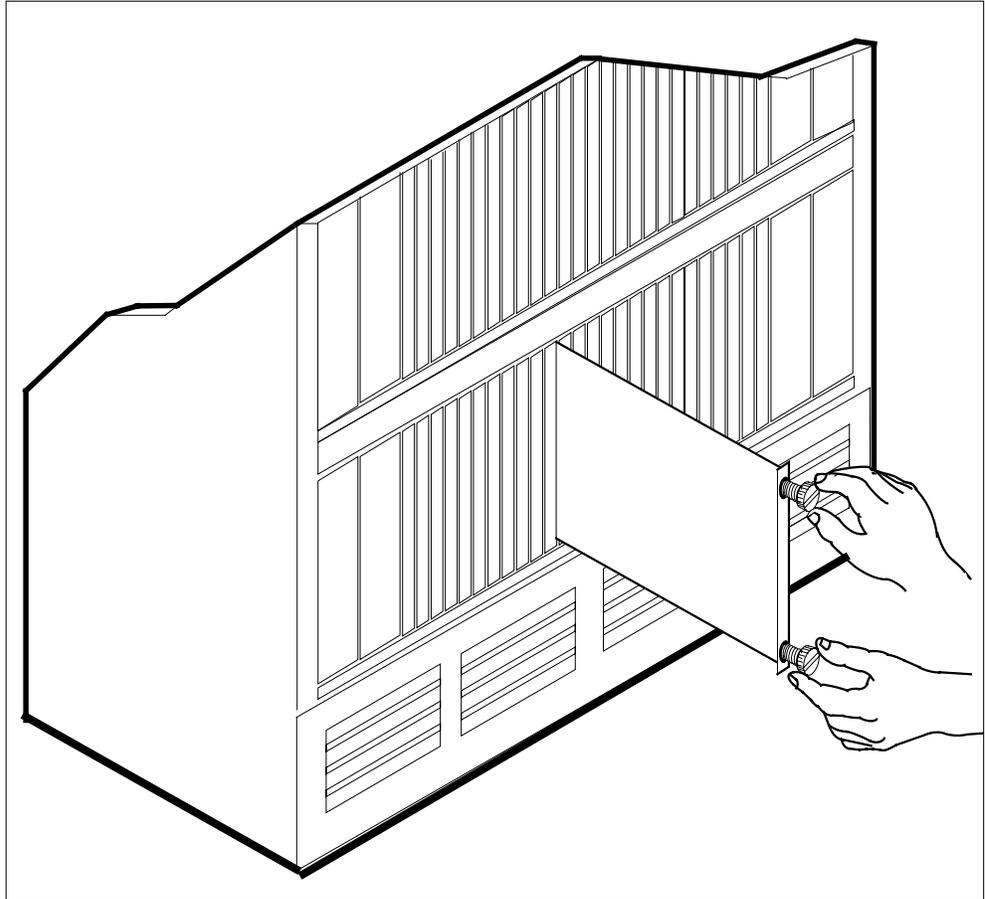
Put on a wrist strap.

33

Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTMX87 quad frame carrier circuit card. Insert the new quad frame carrier card and secure.

**NTMX87**

**in an RSC-S (PCM-30) Model A RCO2 (continued)**



- 34** Replace the NTMX82 packlets previously removed. Align the packlet with the slots in the shelf and gently slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 35** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 36** Use the following information to determine what step to go to next in this procedure.

| If you entered this procedure from | Do      |
|------------------------------------|---------|
| alarm clearing procedures          | step 53 |
| other                              | step 37 |

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

- 37 Use the following information to determine what step to go to next in this procedure.

| <b>If you entered this section of the procedure from</b>    | <b>Do</b> |
|-------------------------------------------------------------|-----------|
| step 15 for a single RCO2 with C-side links affected        | step 38   |
| step 27 or 29 for an RCO2 with P-side trunks affected       | step 46   |
| step 27 or 29, for a single RCO2 with P-side links affected | step 42   |
| step 31 for a DRCO2 with irlinks affected                   | step 44   |

### **At the MAP terminal**

- 38 Test the busied network links from step 13 by typing

```
>TST LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the new NTMX87 quad frame carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCO2, execute this step for each link until all links are tested.

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 39   |
| failed        | step 53   |

- 39 Return to service the P-side links by typing

```
>RTS LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** This step must be performed for each link that is manually busied.

---

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

**Note 2:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 40 |
| failed | step 53 |

- 40** Post the inactive RCO2 in which the NTMX87 card is located by typing  
**>POST RCO2 rco2\_no**  
 and pressing the Enter key.  
*where*

**rco2\_no**  
 is the number of the RCO2 associated with the faulty card

- 41** Return the inactive RCO2 unit to service by typing  
**>RTS UNIT unit\_no**  
 and pressing the Enter key.  
*where*

**unit\_no**  
 is the number of the RCO2 unit posted in step 40

| If RTS | Do      |
|--------|---------|
| passes | step 51 |
| fails  | step 53 |

**At the MAP terminal**

- 42** Test the busied links from step 18 by typing  
**>TST LINK link\_no**  
 and pressing the Enter key.  
*where*

**link\_no**  
 is the number of the link associated with the new NTMX87 quad frame carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCO2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 43 |

---

**NTMX87**  
**in an RSC-S (PCM-30) Model A RCO2** (continued)

---

|           | <b>If TST</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Do</b> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | failed                                                                                                                                                                                                                                                                                                                                                                                                                                           | step 53   |
| <b>43</b> | Return to service the P-side links by typing<br>>RTS LINK link_no<br>and pressing the Enter key.<br><i>where</i><br><b>link_no</b><br>is the number of the link manually busied in step 13<br><b>Note 1:</b> This step must be performed for each link that is manually busied.<br><b>Note 2:</b> To RTS the other links associated with the RCO2, execute the<br>procedures in this step for each link until all links are returned to service. |           |
|           | <b>If RTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Do</b> |
|           | passed                                                                                                                                                                                                                                                                                                                                                                                                                                           | step 51   |
|           | failed                                                                                                                                                                                                                                                                                                                                                                                                                                           | step 53   |

**At the MAP terminal**

- 44** Test the IRLINKS by typing  
 >TST irlink\_no  
 and pressing the Enter key.  
*where*  
     **irlink\_no**  
     is the number of the link busied in step 31  
**Note 1:** This step must be performed for each manually busied link.  
**Note 2:** To test the other irlinks associated with the RCO2, execute this  
 step for each irlink until all links are tested.

|  | <b>If TST</b> | <b>Do</b> |
|--|---------------|-----------|
|  | passed        | step 45   |
|  | failed        | step 53   |

- 45** Return to service the IRLINKS by typing  
 >RTS irlink\_no  
 and pressing the Enter key.  
*where*  
     **irlink\_no**  
     is the number of the link manually busied in step 31

---

## NTMX87

### in an RSC-S (PCM-30) Model A RCO2 (continued)

---

**Note 1:** This step must be performed for each irlink that is manually busied.

**Note 2:** To RTS the other links associated with the RCO2, execute this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

#### **At the MAP terminal**

- 46** Busy and return to service P-side carriers that were offlined in step 24 by typing

```
>BSY carrier_no; RTS carrier_no
```

and pressing the Enter key.

where

**carrier\_no**  
is the number of the P-side carrier assigned

| If carrier RTS | Do      |
|----------------|---------|
| passed         | step 47 |
| failed         | step 53 |

- 47** Access the TTP MAP level to post the P-side links associated with the new NTMX87 circuit card by typing

```
>TTP;POST D RCO2 rco2_no carrier_no
```

and pressing the Enter key.

where

**rco2\_no**  
is the number of the RCO2 associated with the new NTMX87 circuit card

**carrier\_no**  
is the number of the P-side link trunks are assigned

*Example of a MAP response*

---

## NTMX87 in an RSC-S (PCM-30) Model A RCO2 (continued)

---

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCO2 0 1 WADEOUT796 11 INB
```

- 48** Busy the trunks associated with the new NTMX87 circuit card by typing

>**BSY ALL**

and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** Busy the other carriers associated with the faulty NTMX87 circuit card. Reference the link-to-slot assignment charts in steps 26 and 28 .

- 49** Test the trunks associated with the new NTMX87 circuit card by typing

>**TST ;NEXT**

and pressing the Enter key.

**Note:** Perform this step for each carrier span associated with the new NTMX87 circuit card.

---

| If trunks TST | Do      |
|---------------|---------|
| passed        | step 50 |
| failed        | step 53 |

---

- 50** Return-to-service trunks assigned to links on the new NTMX87 circuit card by typing

>**RTS ALL**

and pressing the Enter key.

---

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

---

- 51** Send any faulty cards for repair according to local procedure.

- 52** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 55.

- 53** Return to *Alarm Clearing Procedures* or the other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify

**NTMX87**

**in an RSC-S (PCM-30) Model A RCO2 (end)**

---

the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

- 54** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 55** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTMX87 in an RSC-S (PCM-30) Model B RCO2**

---

### **Application**

Use this procedure to replace an NTMX87 card in an RSC-S RCO2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>        |
|------------|-----------------|--------------------|
| NTMX87     | AA              | Quad Frame Carrier |

### **Common procedures**

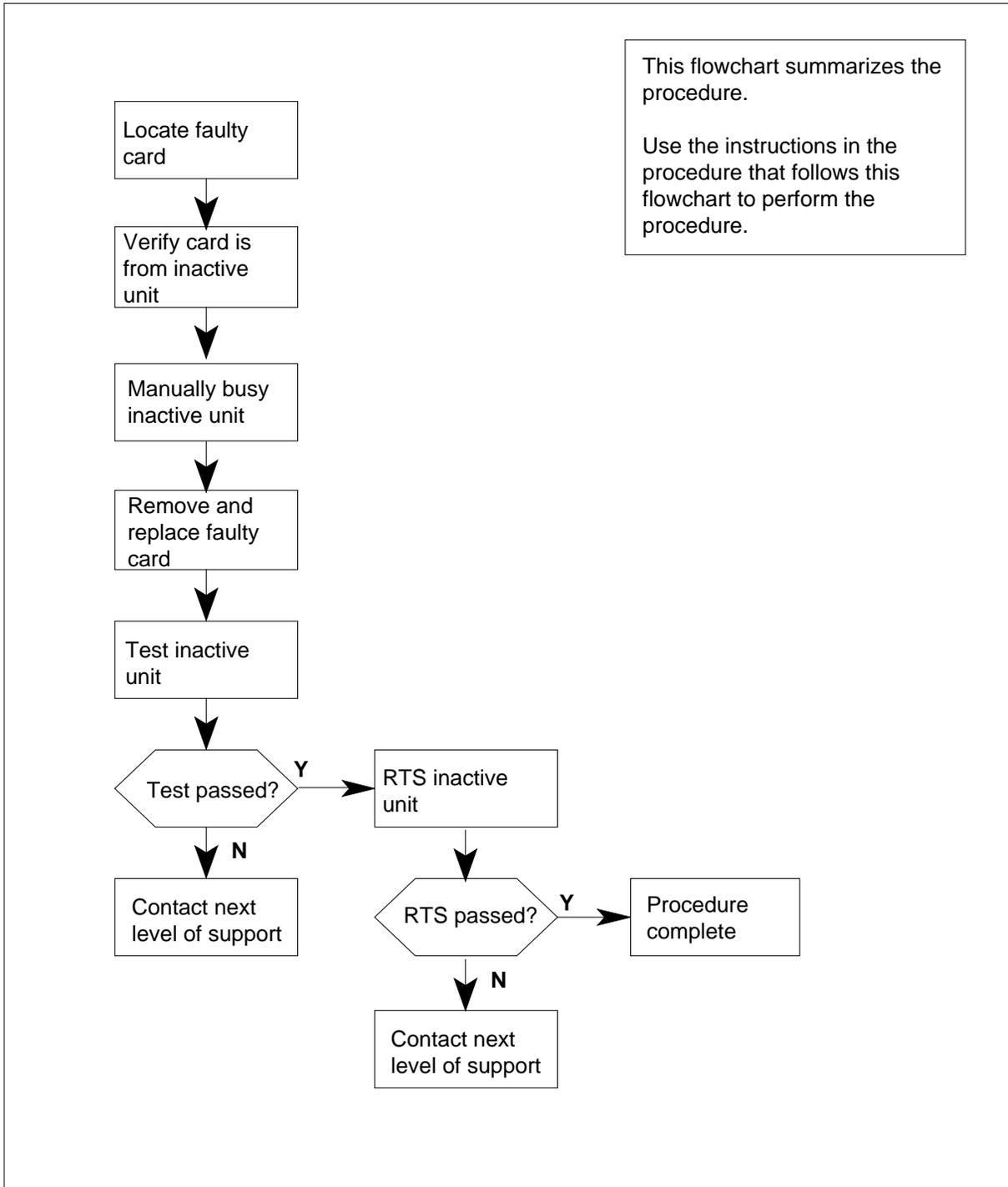
None

### **Action**

The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the procedure that follows the flowchart.

**NTMX87**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

**Summary of card replacement procedure for an NTMX87 card in RSC-S RCO2**



## NTMX87 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

### Replacing an NTMX87 card in RSC-S RCO2

#### *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



#### **CAUTION**

Several configurations of the NTMX87 quad frame carrier card are detailed in this procedure.

Be sure you are using the steps for the configuration of your RCO2, such as a single or dual RCO2 (DRCO2), main or extension shelf, or links versus carrier trunks.



#### **CAUTION**

##### **Loss of service**

When replacing a card in the RCO2, ensure that the unit in which you are replacing the card is *inactive* and that the mate unit is *active*.

Obtain an NTMX87 replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

**Note:** The dual RCO2 configuration for the international RSC-S will be available in a future release.

#### *At the MAP terminal*

- 3 Ensure the PM level of the MAP display is currently displayed by typing  
`>MAPCI;MTC;PM;POST RCO2 rco2_no`  
and pressing the Enter key.  
*where*

**rco2\_no**

is the number of the RCO2 with the faulty card

*Example of a MAP display:*

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

| CM   | MS      | IOD    | Net   | PM    | CCS        | LNS            | Trks | Ext | Appl |
|------|---------|--------|-------|-------|------------|----------------|------|-----|------|
| .    | .       | .      | .     | 1RCO2 | .          | .              | .    | .   | .    |
| RCO2 |         | SysB   | ManB  | OffL  | CBsy       | ISTb           | InSv |     |      |
| 0    | Quit    | PM     | 0     | 0     | 2          | 0              | 2    | 25  |      |
| 2    | Post_   | RCO2   | 0     | 0     | 0          | 0              | 1    | 1   |      |
| 3    | ListSet |        |       |       |            |                |      |     |      |
| 4    |         | RCO2   | 0     | ISTb  | Links_OOS: | CSide 1, 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   |         |        |       |       |            |                |      |     |      |
| 18   |         |        |       |       |            |                |      |     |      |

- 4 Display and record the C-side link status of the posted RCO2 associated with the faulty NTMX87 quad carrier card by typing

>TRNSL C

and pressing the Enter key.

*Example of a MAP response*

```
LINK 0 PLGC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1 PLGC 0 1;CAP S: STATUS SysB
LINK 2 PLGC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 PLGC 0 3;CAP S: STATUS OK
LINK 4 PLGC 0 4;CAP S: STATUS SysB
LINK 5 PLGC 0 5;CAP S: STATUS SysB
```

- 5 Display and record the P-side link status of the posted RCO2 associated with the faulty NTMX87 quad carrier card by typing

>TRNSL P

and pressing the Enter key.

*Example of a MAP response*

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

```
LINK 1   Carrier of Class - Trunk      ;Status;OK
LINK 2   Carrier of Class - Trunk      ;Status;OK
LINK 3   Carrier of Class - Trunk      ;Status;OK
LINK 10  DCH 6; Status :OK
LINK 13  DCH 7; Status :OK
LINK 17  DCH 4; Status :OK
LINK 22  RMM 6          0;CAP MS;Status OK MSGCOND OPN
LINK 24  LCME RSCS 00 0 0;CAP MS;Status OK MSGCOND OPN
LINK 25  LCME RSCS 00 0 1;CAP MS;Status OK MSGCOND OPN
LINK 26  LCME RSCS 00 0 2;CAP S;Status OK
```

- 6 By observing the MAP display, be sure the card that is to be removed is in the inactive unit.

| If faulty card is in the | Do     |
|--------------------------|--------|
| active unit              | step 7 |
| inactive unit            | step 9 |

- 7 Switch the processing activity (SWACT) to the inactive unit by typing

>SWACT

and pressing the Enter key.

**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.

- 8 Confirm the system prompt by typing

>YES

and pressing the Enter key.

After both units are in-service, proceed to the next step.

#### At the RCE frame

- 9 Place a sign on the active unit bearing the words "Active unit—Do not touch." This sign should not be attached by magnets or tape.

| If faulty card is | Do      |
|-------------------|---------|
| C-side of RCO2    | step 10 |
| P-side faulty     | step 16 |

#### At the MAP terminal

- 10 Busy the inactive PM unit by typing

>bsy unit unit\_no

and pressing the Enter key.

where

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

**unit\_no**

is the number of the inactive RCO2 unit (unit 0 or 1)

- 11** Post the host PM by typing  
**>POST host\_pm host\_pm\_no**  
 and pressing the Enter key.

*where***host\_pm**

is a PCM-30 line group controller (PLGC)

**host\_pm\_no**

is the number of a PLGC

*Example of a MAP display:*

| CM   | MS      | IOD    | Net   | PM    | CCS        | Lns   | Trks     | Ext  | Appl |
|------|---------|--------|-------|-------|------------|-------|----------|------|------|
| .    | .       | .      | .     | 1RCO2 | .          | .     | .        | .    | .    |
| PLGC |         |        | SysB  | ManB  | OffL       | CBsy  | ISTb     | InSv |      |
| 0    | Quit    | PM     | 0     | 0     | 1          | 0     | 4        | 12   |      |
| 2    | Post_   | PLGC   | 0     | 0     | 2          | 0     | 2        | 9    |      |
| 3    | ListSet |        |       |       |            |       |          |      |      |
| 4    |         | PLGC   | 1     | ISTb  | Links_OOS: | Cside | 0, Pside | 1    |      |
| 5    | Trnsl_  | Unit0: | Act   | InSv  |            |       |          |      |      |
| 6    | Tst_    | Unit1: | Inact | InSv  |            |       |          |      |      |
| 7    | Bsy_    |        |       |       |            |       |          |      |      |
| 8    | RTS_    |        |       |       |            |       |          |      |      |
| 9    | OffL    |        |       |       |            |       |          |      |      |
| 10   | LoadPM_ |        |       |       |            |       |          |      |      |
| 11   | Disp_   |        |       |       |            |       |          |      |      |
| 12   | Next    |        |       |       |            |       |          |      |      |
| 13   | SwAct   |        |       |       |            |       |          |      |      |
| 14   | QueryPM |        |       |       |            |       |          |      |      |
| 15   |         |        |       |       |            |       |          |      |      |
| 16   |         |        |       |       |            |       |          |      |      |
| 17   | Perform |        |       |       |            |       |          |      |      |
| 18   |         |        |       |       |            |       |          |      |      |

- 12** Display the host peripherals P-side links associated with the RCO2 by typing  
**>TRNSL P**  
 and pressing the Enter key.

*Example of a MAP response*

```
LINK 0 RCO2 0 0;CAP MS:STATUS SysB MSGCOND CLS RESTRICT
LINK 1 RCO2 0 1;CAP S:STATUS SBsy
LINK 2 RCO2 0 2;CAP MS:STATUS OK MSGCOND OPN UNRESTRICT
LINK 3 RCO2 0 3;CAP S:STATUS OK
LINK 4 RCO2 0 4;CAP S:STATUS SysB
LINK 5 RCO2 0 5;CAP S:STATUS Sysb
```

## NTMX87 in an RSC-S (PCM-30) Model B RCO2 (continued)

- 13 Manually busy the links connected to the faulty NTMX87 card by typing  
>BSY LINK link\_no  
and pressing the Enter key.

where

**link\_no**

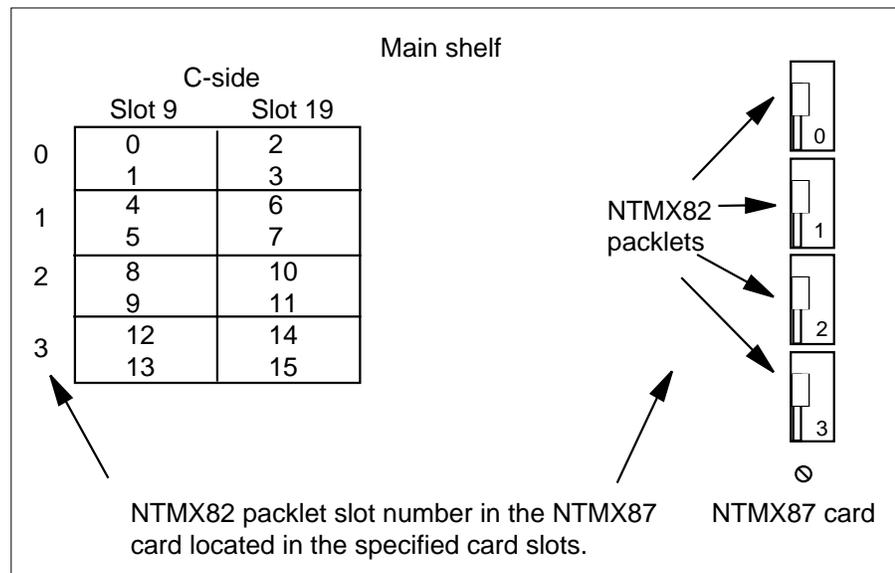
is the number of the link associated with the faulty NTMX87 card

**Note 1:** All provisioned links in the slot must be busied.

**Note 2:** Reference the chart in step 14 for the RCO2 C-side link-to-slot assignments.

### At the RCE frame

- 14 Use the following charts to determine which NTMX87 card is to be removed by matching the provisioned link number with the slot number and the packet number to the left of each respective table.



- 15

**DANGER**  
**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Remove the NTMX82 packet as described in the following steps:

---

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

- a Locate the NTMX82 packet to be removed on the appropriate NTMX87 quad carrier card slot.
- b Open the locking lever on the NTMX82 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX82 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d Go to step 32.

#### **At the MAP terminal**

- 16** Determine if the RCO2 is in a single or dual configuration by typing

```
>POST RCO2 rco2_no ;IRLINK
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty NTMX87 card

**Note:** If the posted RCO2 is in a single RCO2 configuration, the system will respond with the following message:

```
NO IRLINKS DATAFILED, IRLINK LEVEL CANNOT BE ENTERED.
```

| If the RCO2 is in a  | Do      |
|----------------------|---------|
| single configuration | step 17 |
| dual configuration   | step 30 |

- 17** Determine if P-side ports are links or carrier trunks by observing the information obtained in step 5.

| If P-side port is | Do      |
|-------------------|---------|
| links             | step 18 |
| trunks            | step 20 |

- 18** Manually busy all provisioned links connected to the faulty NTMX87 circuit card by typing

```
>bsy link link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the faulty NTMX87 circuit card

**Note 1:** Each NTMX82 card has two links, and each link must be manually busied. Possible link pairs are 0 and 1, 2 and 3, 4 and 5, 6 and 7. This pair relationship continues throughout all 54 P-side links.

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

**Note 2:** Reference the charts in steps 26 and 28 for P-side link-to-slot assignments. All provisioned links in the slot must be busied.

- 19** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 26 |
| extension shelf                | step 28 |

- 20** Access the TRKS;TTP MAP display level, and busy the trunks assigned to the P-side carriers associated with the faulty NTMX87 by typing

```
>TRKS;TTP;POST D RCO2 rco2_no carrier_no
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the faulty NTMX87

**carrier\_no**

is the number of the P-side carrier assigned

*Example of a MAP response*

```
LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED
```

```
POST 18 DELQ BUSY Q DIG
TTP 6-006
CKT TYPE PM NO. COM LANG STA S R DOT TE R
OG RCO2 0 1 WADEOUT796 11 LO
```

- 21** Busy the trunks associated with the faulty NTMX87 circuit card by typing

```
>BSY ALL
```

and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** To busy other carriers associated with the faulty NTMX87 circuit card, reference the link-to-slot assignment charts in steps 26 and 28.

- 22** Installation busy all the trunks to prevent carrier alarms by typing

```
>BSY INB ALL
```

and pressing the Enter key.

---

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

- 23** Access the CARRIER level and post the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>CARRIER;POST RCO2 rco2_no carrier_no
```
- and pressing the Enter key.
- where*
- rco2\_no**  
is the number of the RCO2 associated with the faulty NTMX87
- carrier\_no**  
is the number of the P-side carrier assigned
- Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.
- 24** Busy and offline the P-side carriers associated with the faulty NTMX87 circuit card by typing
- ```
>BSY carrier_no ;OFFL carrier_no
```
- and pressing the Enter key.
- where*
- carrier\_no**  
is the number of the P-side carrier assigned
- Note:** Perform this step for each carrier span in the faulty NTMX87 circuit card.
- 25** Determine if the faulty NTMX87 circuit card is on the main or extension shelf. P-side ports 0 to 23, and 48 to 54 are on the main shelf. Ports 24 to 47 are on the extension shelf.

---

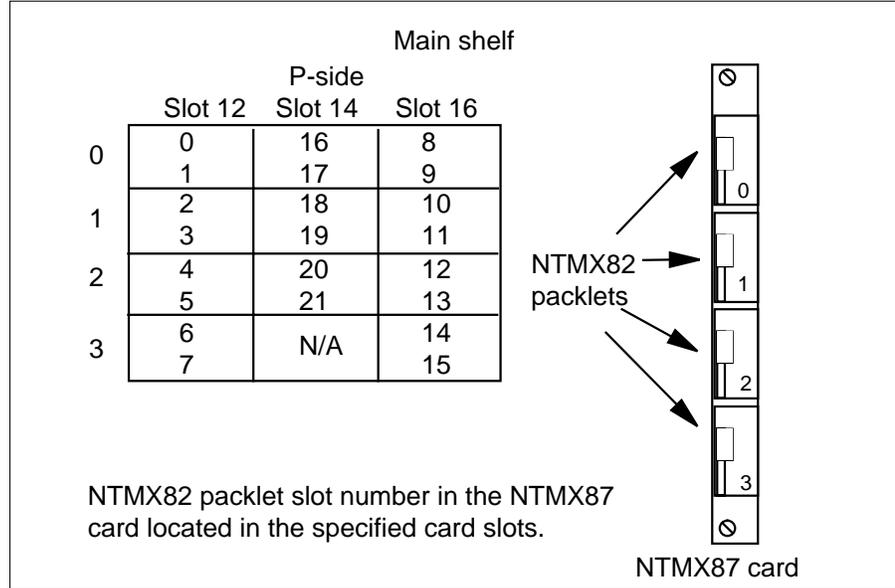
| If the faulty NTMX87 is on the | Do      |
|--------------------------------|---------|
| main shelf                     | step 26 |
| extension shelf                | step 28 |

---

**At the RCE frame**

- 26** Use the following figure to determine slot assignments on the P-side of the main shelf.

**NTMX87**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)



27

**DANGER**  
**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Remove the NTMX82 packlet as described in the following steps:

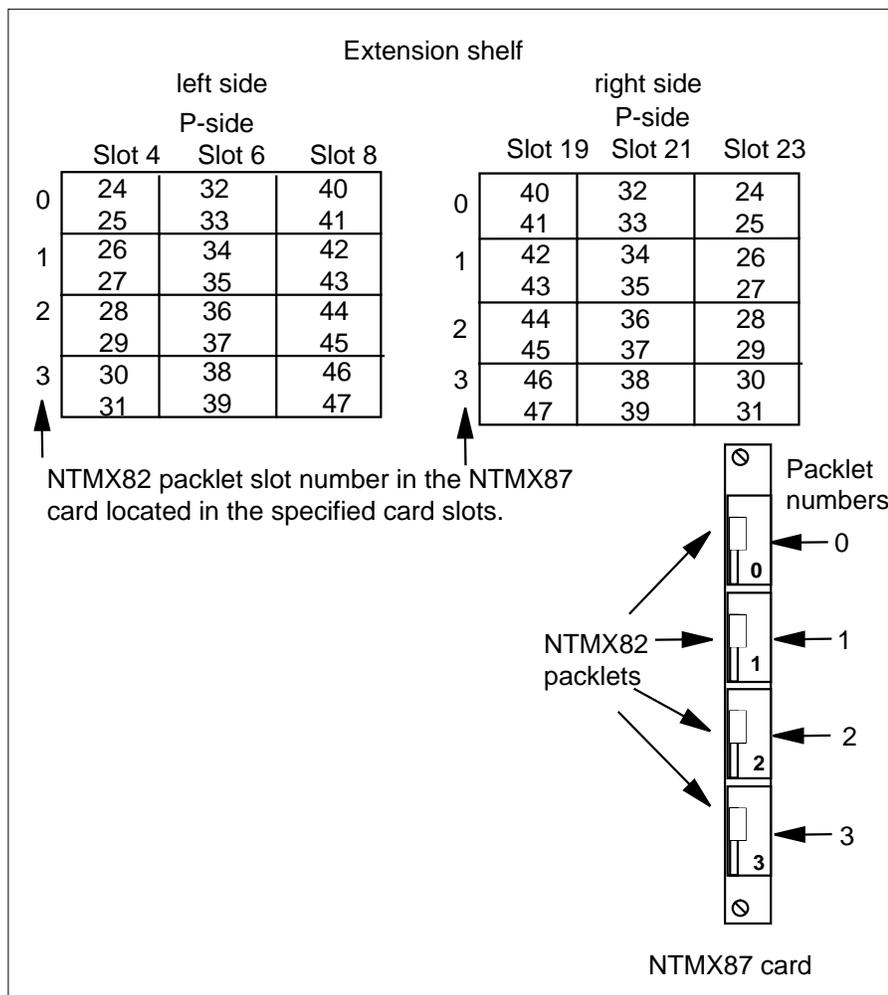
- a Locate the NTMX82 packlet to be removed on the appropriate NTMX87 quad carrier card slot.
- b Open the locking lever on the NTMX82 packlet and gently pull the packlet toward you until it clears the shelf.
- c Ensure the NTMX82 packlets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d Go to step 32.

**At the RCE frame**

- 28 Determine which side of the extension shelf the faulty NTMX87 circuit card is located by referencing field SIDE of table RCCINV.

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)



29



**DANGER**  
**Static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.

Remove the NTMX82 packet as described in the following steps:

- a Locate the NTMX82 packet to be removed on the appropriate NTMX87 quad carrier card slot.

**NTMX87**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

- b Open the locking lever on the NTMX82 packet and gently pull the packet toward you until it clears the shelf.
- c Ensure the NTMX82 packets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until it is reinstalled in the NTMX87 quad carrier card.
- d Go to step 32.

**30** Translate the dual RCO2s IRLINKS by typing

**>TRNSL**

and pressing the Enter key.

*Example of a MAP response*

| CM     | MS      | IOD    | Net        | PM         | CCS        | LNS   | Trks     | Ext | Appl |
|--------|---------|--------|------------|------------|------------|-------|----------|-----|------|
| .      | .       | .      | .          | 1RCO2      | .          | .     | .        | .   | .    |
| IRLINK |         | SysB   | ManB       | OffL       | CBsy       | ISTb  | InSv     |     |      |
| 0      | Quit    | PM     | 0          | 0          | 2          | 0     | 2        | 25  |      |
| 2      |         | RCO2   | 0          | 0          | 0          | 0     | 1        | 1   |      |
| 3      |         |        |            |            |            |       |          |     |      |
| 4      |         | RCO2   | 0          | ISTb       | Links_OOS: | CSide | 1, PSide | 1   |      |
| 5      | TRNSL   | Unit0: | Inact      | InSv       |            |       |          |     |      |
| 6      | TST_    | Unit1: | Act        | InSv       |            |       |          |     |      |
| 7      | BSY_    |        |            |            |            |       |          |     |      |
| 8      | RTS_    |        |            |            |            |       |          |     |      |
| 9      |         |        |            |            |            |       |          |     |      |
| 10     |         | IR     | From       | To         | CAP        | STATE | MSGCOND  |     |      |
| 11     |         | 0      | RCO2 0, 0  | RCO2 1, 0  | MS         | OK    | OPN      |     |      |
| 12     |         | 1      | RCO2 0, 8  | Rcc2 1, 8  | MS         | OK    | OPN      |     |      |
| 13     |         | 2      | RCO2 0, 12 | RCO2 1, 12 | S          | OK    |          |     |      |
| 14     | QueryIR | 3      | RCO2 0, 13 | RCO2 1, 13 | S          | OK    |          |     |      |
| 15     |         |        |            |            |            |       |          |     |      |
| 16     |         |        |            |            |            |       |          |     |      |
| 17     |         |        |            |            |            |       |          |     |      |
| 18     |         |        |            |            |            |       |          |     |      |

**31** Busy IRLINKS in the faulty NTMX87 circuit card by typing

**>BSY irlink\_no**

and pressing the Enter key.

*where*

**irlink\_no**

is the number of the irlink that must be busied

**Note 1:** This step must be performed for each provisioned link in the slot position.

**Note 2:** For link-to-slot assignments, reference step 26 for the main shelf, and step 28 for the extension shelf.

---

**NTMX87**

**in an RSC-S (PCM-30) Model B RCO2** (continued)

---

*At the RCE frame*

32



**DANGER**

**Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP) of the RCO2. This protects the equipment against damage caused by static electricity.



**DANGER**

**Equipment damage**

Take the following precautions when removing or inserting a card:

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

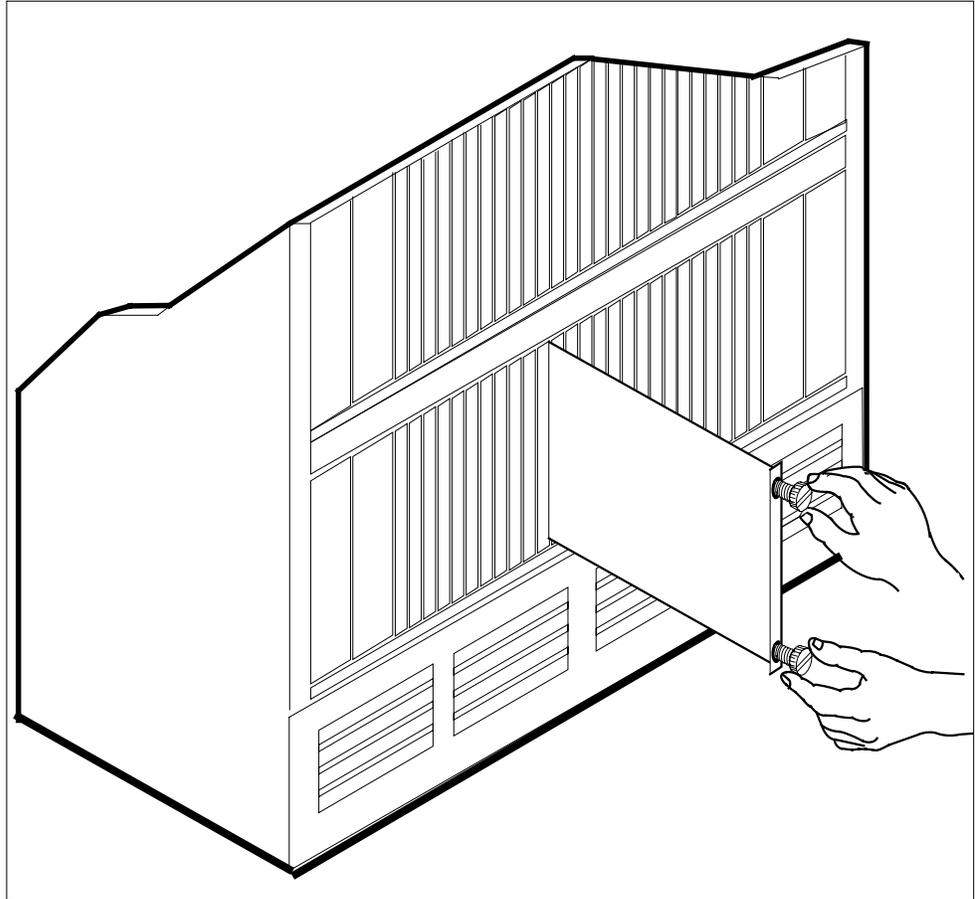
Put on a wrist strap.

33

Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTMX87 quad frame carrier circuit card. Insert the new quad frame carrier card and secure.

**NTMX87**  
**in an RSC-S (PCM-30) Model B RCO2** (continued)

---



- 34** Replace the NTMX82 packlets previously removed. Align the packlet with the slots in the shelf and gently slide the packlet into the circuit card slot in the NTMX87 circuit card.
- 35** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure that the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 36** Use the following information to determine what step to go to next in this procedure.

---

| <b>If you entered this procedure from</b> | <b>Do</b> |
|-------------------------------------------|-----------|
| alarm clearing procedures                 | step 53   |
| other                                     | step 37   |

---

---

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

- 37** Use the following information to determine what step to go to next in this procedure.

| If you entered this section of the procedure from           | Do      |
|-------------------------------------------------------------|---------|
| step 15 for a single RCO2 with C-side links affected        | step 38 |
| step 27 or 29 for an RCO2 with P-side trunks affected       | step 46 |
| step 27 or 29, for a single RCO2 with P-side links affected | step 42 |
| step 31 for a DRCO2 with irlinks affected                   | step 44 |

#### **At the MAP terminal**

- 38** Test the busied network links from step 13 by typing

```
>TST LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link associated with the new NTMX87 quad frame carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCO2, execute this step for each link until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 39 |
| failed | step 53 |

- 39** Return to service the P-side links by typing

```
>RTS LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** This step must be performed for each link that is manually busied.

---

## NTMX87 in an RSC-S (PCM-30) Model B RCO2 (continued)

---

**Note 2:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link until all links are returned to service.

---

| If RTS | Do      |
|--------|---------|
| passed | step 40 |
| failed | step 53 |

---

- 40** Post the inactive RCO2 in which the NTMX87 card is located by typing  
>POST RCO2 rco2\_no  
and pressing the Enter key.  
where

**rco2\_no**  
is the number of the RCO2 associated with the faulty card

- 41** Return the inactive RCO2 unit to service by typing  
>RTS UNIT unit\_no  
and pressing the Enter key.  
where

**unit\_no**  
is the number of the RCO2 unit posted in step 40

---

| If RTS | Do      |
|--------|---------|
| passes | step 51 |
| fails  | step 53 |

---

**At the MAP terminal**

- 42** Test the busied links from step 18 by typing  
>TST LINK link\_no  
and pressing the Enter key.  
where

**link\_no**  
is the number of the link associated with the new NTMX87 quad frame carrier card

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links associated with the RCO2, execute this step for each link until all links are tested.

---

| If TST | Do      |
|--------|---------|
| passed | step 43 |

---

---

**NTMX87**

**in an RSC-S (PCM-30) Model B RCO2** (continued)

---

| If TST | Do      |
|--------|---------|
| failed | step 53 |

- 43** Return to service the P-side links by typing

>RTS LINK link\_no

and pressing the Enter key.

where

**link\_no**

is the number of the link manually busied in step 13

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To RTS the other links associated with the RCO2, execute the procedures in this step for each link until all links are returned to service.

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

**At the MAP terminal**

- 44** Test the IRLINKS by typing

>TST irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link busied in step 31

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other irlinks associated with the RCO2, execute this step for each irlink until all links are tested.

| If TST | Do      |
|--------|---------|
| passed | step 45 |
| failed | step 53 |

- 45** Return to service the IRLINKS by typing

>RTS irlink\_no

and pressing the Enter key.

where

**irlink\_no**

is the number of the link manually busied in step 31

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

---

**Note 1:** This step must be performed for each irlink that is manually busied.

**Note 2:** To RTS the other links associated with the RCO2, execute this step for each link until all links are returned to service.

---

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

---

#### **At the MAP terminal**

- 46** Busy and return to service P-side carriers that were offlined in step 24 by typing

```
>BSY carrier_no; RTS carrier_no
```

and pressing the Enter key.

where

**carrier\_no**

is the number of the P-side carrier assigned

---

| If carrier RTS | Do      |
|----------------|---------|
| passed         | step 47 |
| failed         | step 53 |

---

- 47** Access the TTP MAP level to post the P-side links associated with the new NTMX87 circuit card by typing

```
>TTP;POST D RCO2 rco2_no carrier_no
```

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 associated with the new NTMX87 circuit card

**carrier\_no**

is the number of the P-side link trunks are assigned

*Example of a MAP response*

## NTMX87

### in an RSC-S (PCM-30) Model B RCO2 (continued)

```

LAST CIRCUIT = 27
POST CKT IDLED
SHORT CLLI IS: 1125
OK, CLLI POSTED

```

```

POST 18   DELQ           BUSY Q           DIG
TTP 6-006
CKT TYPE  PM NO.        COM LANG           STA S R DOT TE R
OG   RCO2   0 1         WADEOUT796 11     INB

```

- 48** Busy the trunks associated with the new NTMX87 circuit card by typing

>**BSY ALL**

and pressing the Enter key.

**Note 1:** Wait for the busy queue to clear.

**Note 2:** Busy the other carriers associated with the faulty NTMX87 circuit card. Reference the link-to-slot assignment charts in steps 26 and 28 .

- 49** Test the trunks associated with the new NTMX87 circuit card by typing

>**TST ;NEXT**

and pressing the Enter key.

**Note:** Perform this step for each carrier span associated with the new NTMX87 circuit card.

| If trunks TST | Do      |
|---------------|---------|
| passed        | step 50 |
| failed        | step 53 |

- 50** Return-to-service trunks assigned to links on the new NTMX87 circuit card by typing

>**RTS ALL**

and pressing the Enter key.

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 53 |

- 51** Send any faulty cards for repair according to local procedure.

- 52** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 55.

- 53** Return to *Alarm and Performance Monitoring Procedures* or the other procedure that directed you to this procedure. At the point where a faulty card

## **NTMX87**

### **in an RSC-S (PCM-30) Model B RCO2 (end)**

---

list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

- 54** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 55** You have successfully completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTMX87  
in an SMA2**

---

**Common procedures**

The following procedures are referenced in this procedure:

- “Locating a faulty card in an SMA2”
- returning a card

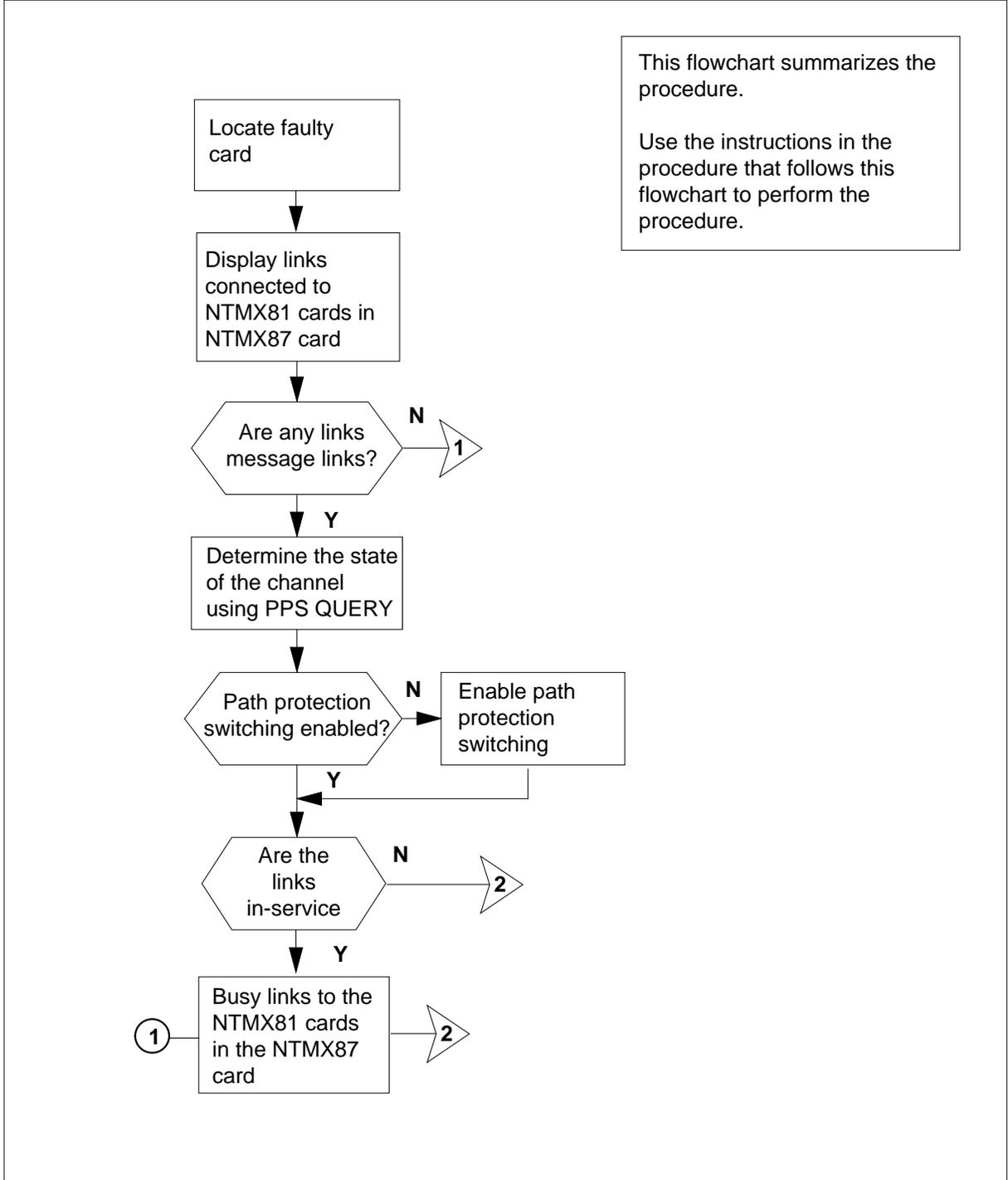
Do not go to a common procedure unless directed to do so in the step-action procedure.

**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.

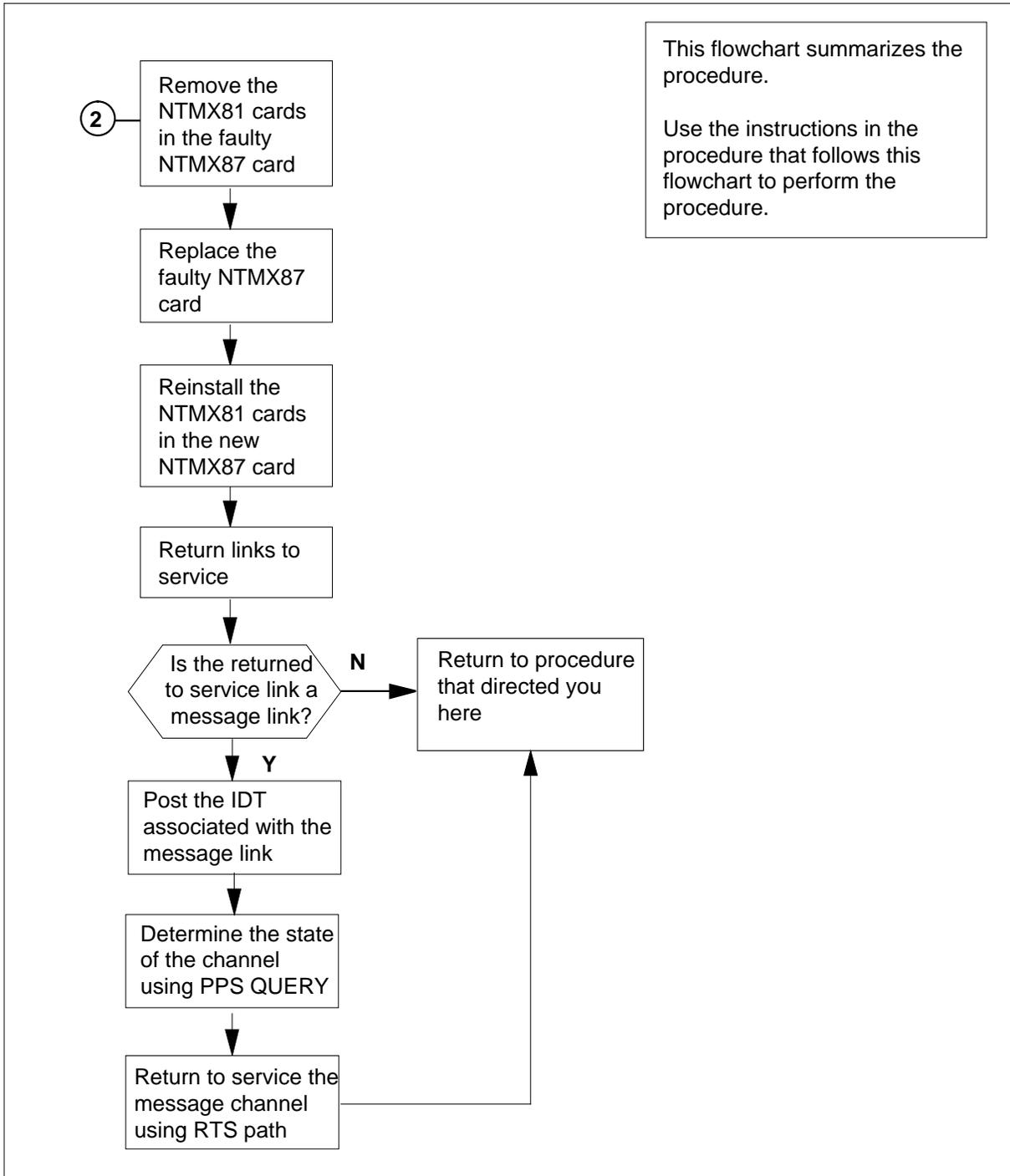
## NTMX87 in an SMA2 (continued)

### Summary of card replacement procedure for an NTMX87 card in an SMA2



## NTMX87 in an SMA2 (continued)

### Summary of card replacement procedure for an NTMX87 card in an SMA2 (continued)



## NTMX87 in an SMA2 (continued)

---

### Replacing an NTMX87 card in an SMA2



#### CAUTION

##### Service disruption: calls may be dropped!

Perform this card replacement activity only during a period of low traffic. All calls being handled by the links connected to the DS-1 interface cards housed in the NTMX87 card being replaced will be dropped.

#### *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 Ensure you know the physical location of the faulty card. If card location is known continue to step 3, if card location is unknown refer to "Locating a faulty card in an SMA2".
- 3



#### CAUTION

##### Loss of service

Ensure that you replace the card in the inactive unit and verify the mate unit is active.

Obtain an NTMX87 replacement card. Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### *At the MAP terminal*

- 4 Ensure the PM level of the MAP display is currently displayed by typing

```
>MAPCI;MTC;PM;POST SMA2 sma2_no
```

and pressing the Enter key.

*where*

**sma2\_no**

is the number of the SMA2 with the faulty card

*Example of a MAP display:*

## NTMX87 in an SMA2 (continued)

|      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|
| SMA2 | SysB | ManB | OffL | CBSy | ISTb | InSv |
| PM   | 3    | 0    | 1    | 0    | 2    | 13   |
| SMA2 | 0    | 0    | 0    | 0    | 1    | 7    |

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
Unit0: Act InSv
Unit1: InAct IsTb
```

- 5** Observe the MAP display and determine if the faulty card is in the active or the inactive unit.

| If the faulty card is in the | Do      |
|------------------------------|---------|
| active unit                  | step 6  |
| inactive unit                | step 10 |

- 6** SWACT the units by typing

>SWACT

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal.

| If SWACT                     | Do     |
|------------------------------|--------|
| cannot continue at this time | step 7 |
| can continue at this time    | step 8 |

- 7** Reject the prompt to SWACT the units by typing

>NO

and pressing the Enter key.

The system discontinues the SWACT. Go to step 47.

- 8** Confirm the system prompt by typing

>YES

and pressing the Enter key.

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

| If the message is | Do      |
|-------------------|---------|
| SWACT passed      | step 10 |

## NTMX87 in an SMA2 (continued)

|          | <b>If the message is</b>                                                                                                                                                                                                                                              | <b>Do</b> |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|          | SWACT failed<br>Reason: XPM SWACTback                                                                                                                                                                                                                                 | step 9    |
|          | SWACT refused by SWACT Controller                                                                                                                                                                                                                                     | step 9    |
| <b>9</b> | The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit.<br>Go to step 47. |           |

### **At the equipment frame**

- 10** Hang a sign on the active unit bearing the words: *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### **At the MAP terminal**

- 11** Display and record the P-side link status of the posted SMA2 associated with the faulty NTMX87 quad carrier card by typing

**>TRNSL P**

and pressing the Enter key.

*Example of a MAP response*

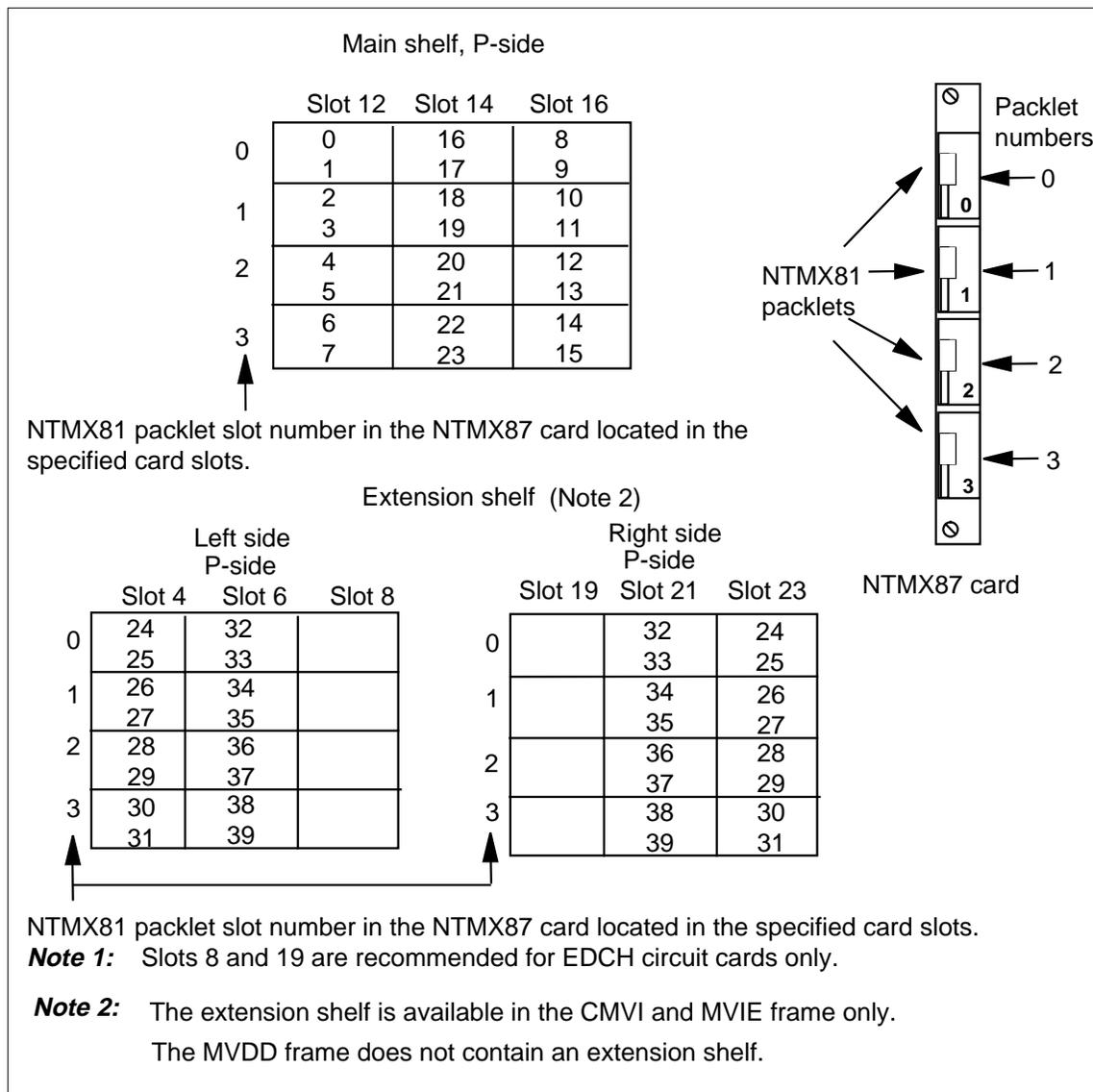
```
LINK1: IDT 1 3;CAP: MS; STATUS:OK; MSGCOND OPN
LINK2: IDT 1 4;CAP: MS; STATUS:OK; MSGCOND OPN
LINK3: IDT 1 Carrier of CLASS - Trunk;Status:OK
LINK4: IDT 1 Carrier of CLASS - Trunk;Status:SysB
```

The first line indicates that DS-1 link 1 is connected to IDT1 at C-side link 0. Record the link numbers, IDT number, and capability (CAP) of the links connected to the NTMX81 cards housed in the NTMX87 card to be replaced.

**Note:** Each NTMX81 card has two links associated with it. Therefore, each link must be manually busied. Possible link number pairs are as follows: 0,1; 2,3; 4,5; 6,7; and so forth.

- 12** After identifying the links connected to NTMX81s in the faulty NTMX87, use the following figure to determine which NTMX81s are to be removed in the main or extension shelf. Match the link number with the slot number and the packet number to the left of the table. Each NTMX81 packet is connected to two DS-1 links.

## NTMX87 in an SMA2 (continued)



- 13** If any NTMX81s in an NTMX87 to be replaced are connected to IDT message links, then the appropriate message channels (TMC or CSC and EOC) must be busied.

| If the link has a CAP of     | Do      |
|------------------------------|---------|
| MS, as identified in step 11 | step 14 |
| S, as identified in step 11  | step 22 |

## NTMX87 in an SMA2 (continued)

---

- 14 Post the IDT associated with the DS-1 link to be taken out of service, as recorded in step 11, by typing

```
>POST IDT idt_no
```

and pressing the Enter key.

where

**idt\_no**

is the number of the IDT being posted

*Example of a MAP response:*

```
IDT      SysB  ManB  Offl  CBsy  ISTb  InSv
  PM      3     0     1     0     2     13
  IDT     0     0     0     0     1     7
```

```
IDT 2 ISTb Links_OOS:1
```

- 15 Display information about the state of the channels between the IDT and the RDT by typing

```
>PPS QUERY
```

and pressing the Enter key

*Example of a MAP response:*

```
TMC1: SMA2 7 7 24; OOS;Standby;Enable
EOC1: SMA2 7 7 12; OOS;Standby ;Enable
TMC2: SMA2 7 8 24; InSv;Active;Enable
EOC2: SMA2 7 8 12; InSv;Active;Enable
```

Determine if path protection is enabled for all channels.

---

|                                                     |           |
|-----------------------------------------------------|-----------|
| <b>If one or both TMC, CSC, or EOC channels are</b> | <b>Do</b> |
|-----------------------------------------------------|-----------|

---

|           |         |
|-----------|---------|
| inhibited | step 16 |
|-----------|---------|

|         |         |
|---------|---------|
| enabled | step 18 |
|---------|---------|

---

- 16 Enable path protection on an inhibited TMC, CSC, or EOC message channel by typing

```
>PPS ENA path
```

and pressing the Enter key.

where

**path**

is the inhibited TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2

---

**NTMX87**  
**in an SMA2** (continued)

---

- |                                         |                                                                                                                                                                                                           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>17</b>                               | Determine if path protection switching must be enabled on additional TMC, CSC, or EOC message channels.                                                                                                   |
| <b>If</b>                               | <b>Do</b>                                                                                                                                                                                                 |
|                                         | additional channels must be enabled      step 16                                                                                                                                                          |
|                                         | all channels are enabled      step 18                                                                                                                                                                     |
| <b>18</b>                               | Determine if the TMC, CSC, or EOC message channels for the link to be taken out of service are in-service.                                                                                                |
| <b>If TMC, CSC, or EOC channels are</b> | <b>Do</b>                                                                                                                                                                                                 |
|                                         | in-service      step 19                                                                                                                                                                                   |
|                                         | out-of-service (OOS)      step 21                                                                                                                                                                         |
| <b>19</b>                               | Busy the TMC, CSC, or EOC message channel associated with the link to be taken out of service by typing<br><b>&gt;BSY path</b><br><i>where</i><br><b>path</b><br>is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2 |
| <b>20</b>                               | Determine if there are additional TMC, CSC, or EOC message channels to be taken out of service.                                                                                                           |
| <b>If</b>                               | <b>Do</b>                                                                                                                                                                                                 |
|                                         | more channels must be taken out of service      step 19                                                                                                                                                   |
|                                         | no more channels are to be taken out of service      step 21                                                                                                                                              |
| <b>21</b>                               | Determine if an additional link, as recorded in step 11, must be taken out of service associated with the NTMX81 to be replaced.                                                                          |
| <b>If</b>                               | <b>Do</b>                                                                                                                                                                                                 |
|                                         | an additional link must be taken out of service      step 13                                                                                                                                              |
|                                         | no more links are to be taken out of service      step 22                                                                                                                                                 |
-

---

## NTMX87 in an SMA2 (continued)

---

**22** Post the SMA2 identified in step 4 by typing

```
>POST SMA2 sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 being posted

Example of a MAP response:

```
SMA2      SysB  ManB  Offl  CBsy  ISTb  InSv
  PM       3     0     1     0     2     13
  SMA2     0     0     0     0     1     7
```

```
SMA2 7 ISTb Links_OOS: CSide 0, PSide 1
Unit0: Act   InSv
Unit1: Inact InSv
```

**23**



### CAUTION

**Service disruption: calls may be dropped!**

If you are prompted to confirm a BSY LINK command, perform this activity only during a period of low traffic. All calls being handled by the busied link will be dropped.

Busy one of the links connected to the faulty NTMX81, as recorded in step 11, by typing

```
>BSY LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link connected to the faulty NTMX81 card

A confirmation prompt for the BSY command is displayed at the MAP terminal

Example of a MAP response:

```
bsy link 0
Any active call may be lost
Please confirm ("Yes", "Y", "No", or "N"):
```

---

| If                           | Do      |
|------------------------------|---------|
| cannot continue at this time | step 24 |
| can continue at this time    | step 31 |

---

## NTMX87 in an SMA2 (continued)

- 24** Reject the prompt to BSY the link by typing

>NO

and pressing the Enter key.

The system discontinues the BSY command.

- 25** Determine if the link is a message link

| If the link has a CAP of | Do      |
|--------------------------|---------|
| MS                       | step 26 |
| S                        | step 47 |

- 26** Post the IDT associated with the link by typing

>POST IDT *idt\_no*

and pressing the Enter key.

where

**idt\_no**

is the number of the IDT being posted

*Example of a MAP response:*

|     |      |      |      |      |      |      |
|-----|------|------|------|------|------|------|
| IDT | SysB | ManB | Offl | CBsy | ISTb | InSv |
| PM  | 3    | 0    | 1    | 0    | 2    | 13   |
| IDT | 0    | 0    | 0    | 0    | 1    | 7    |

IDT 2 ISTb Links\_OOS:1

- 27** Display information about the state of the channels between the IDT and the RDT by typing

>PPS QUERY

and pressing the Enter key

*Example of a MAP response:*

```
TMC1: SMA2 7 7 24; OOS;Standby;Enable
EOC1: SMA2 7 7 12; 00S;Active ;Enable
TMC2: SMA2 7 8 24; InSv;Standby;Enable
EOC2: SMA2 7 8 12; InSv;Standby;Enable
```

- 28** Determine if there are any TMC, CSC, or EOC message channels for the link to be returned to service.

| If TMC, CSC, or EOC channels are | Do      |
|----------------------------------|---------|
| all in-service                   | step 47 |

**NTMX87**  
**in an SMA2** (continued)

|           | <b>If TMC, CSC, or EOC channels are</b>                                                                                                                                                       | <b>Do</b> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | out-of-service (OOS)                                                                                                                                                                          | step 29   |
| <b>29</b> | Return to service the message channels which were taken out of service in step 19 by typing<br><b>&gt;RTS path</b><br><i>where</i><br><b>path</b><br>is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2 |           |
| <b>30</b> | Determine if there are additional TMC, CSC, or EOC message channels to be returned to service.                                                                                                |           |
|           | <b>If there are</b>                                                                                                                                                                           | <b>Do</b> |
|           | more channels to be returned to service                                                                                                                                                       | step 29   |
|           | no more channels to be returned to service                                                                                                                                                    | step 47   |
| <b>31</b> | Confirm the system prompt by typing<br><b>&gt;YES</b><br>and pressing the Enter key.<br>Go to step 32.                                                                                        |           |
| <b>32</b> | Determine if there are additional links on the NTMX81 to be taken out of service.<br><b>Note:</b> Remember, all eight links on the NTMX87 need to be made manually busy.                      |           |
|           | <b>If</b>                                                                                                                                                                                     | <b>Do</b> |
|           | there is another link to be taken out of service with a CAP of S                                                                                                                              | step 23   |
|           | there is another link to be taken out of service with a CAP of MS and the associated IDT message channel has not been taken out of service                                                    | step 14   |
|           | all links have been taken out of service                                                                                                                                                      | step 33   |

---

**NTMX87**  
**in an SMA2** (continued)

---

| <b>If</b>                                                                                                                              | <b>Do</b> |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------|
| there is another link to be taken out of service with a CAP of MS and the associated IDT message channel has been taken out of service | step 23   |

---

**At the frame or cabinet****33****WARNING****Static electricity damage**

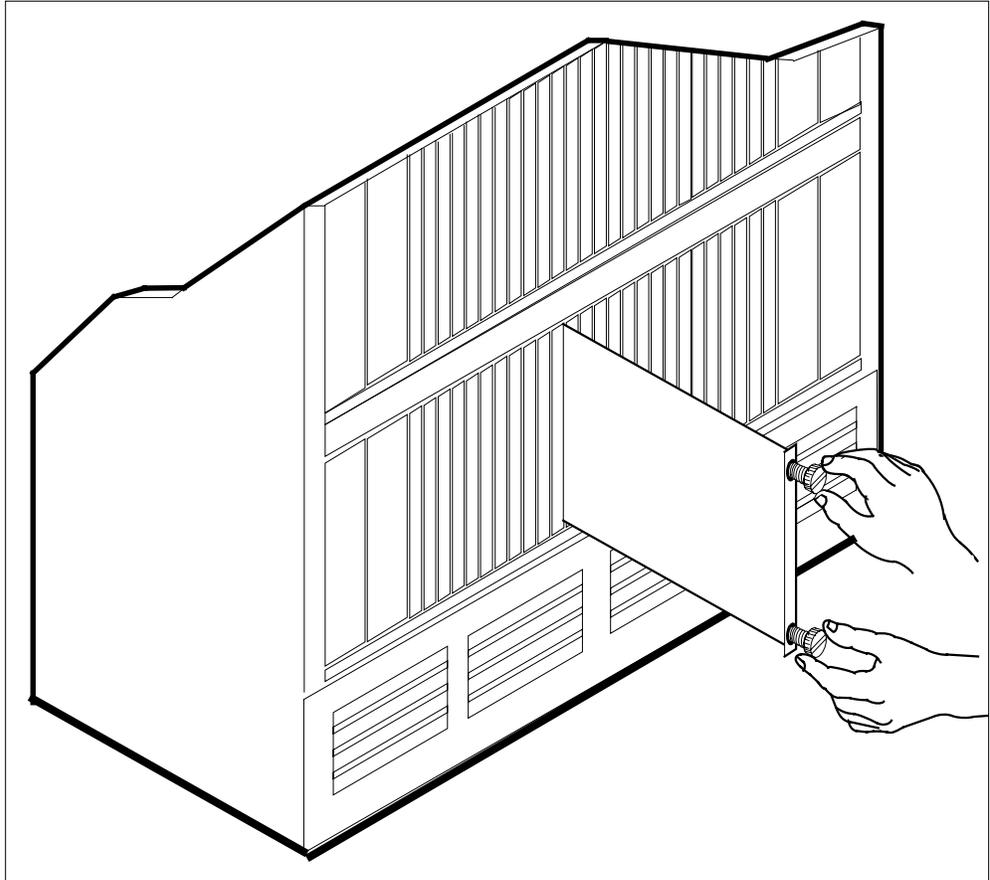
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

Remove the NTMX81 packlets from the NTMX87 quad frame carrier card as described in the following steps:

- a Locate the packlets to be removed on the appropriate NTMX87 card slot.
  - b Open the locking lever on the packlet to be replaced and gently pull the card toward you until it clears the shelf.
  - c Ensure the replacement card has the same PEC, including suffix, as the card you just removed.
  - d Repeat these steps for all four NTMX81 packlets.
  - e Go to step 34.
- 34** Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTMX87 quad frame carrier circuit card. Insert the new quad frame carrier card and secure.

## **NTMX87** in an **SMA2** (continued)

---



- 35** Replace the NTMX81 packlets removed in step 33 using the following steps:
- a** Open the locking lever on the NTMX81 packlets to be inserted in the new NTMX87 card.
  - b** Align the packlet with the slots in the new NTMX87 card installed in step 34.
  - c** Gently slide the packlet into the card slot in the new NTMX87 card.
  - d** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure the packlet is fully seated in the slot.
  - e** Close the locking lever.
  - f** Repeat these steps for all four NTMX81 packlets.

## NTMX87 in an SMA2 (continued)

### At the MAP terminal

- 36** Post the SMA2 identified in step 4 by typing

```
>POST SMA2 sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 being posted

Example of a MAP response:

```
SMA2      SysB  ManB  Offl  CBSy  ISTb  InSv
      PM      3      0      1      0      2      13
      SMA2    0      0      0      0      1      7
```

```
SMA2 0 ISTb Links_OOS: CSide 0, PSide 0
```

```
Unit0: Act InSv
```

```
Unit1: Inact ISTb
```

- 37** Return to service the P-side links by typing

```
>RTS LINK link_no
```

and pressing the Enter key.

where

**link\_no**

is the number of the link connected to the NTMX81 card

**Note:** To RTS the other links associated with the SMA2, execute this step for each link until all links are returned to service.

---

**If RTS**

**Do**

passed

step 38

failed

step 47

- 38** Determine if the link that was returned to service is a messaging link.

---

**If the link has a CAP of**

**Do**

MS, as identified in step

step 40

S, as identified in step

step 39

- 39** Determine if additional links are to be returned to service

---

**If**

**Do**

an additional link must be  
returned to service

step 37

**NTMX87**  
**in an SMA2** (continued)

|           | <b>If</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Do</b> |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | no more links are to be returned to service                                                                                                                                                                                                                                                                                                                                                                                                                                                              | step 45   |
| <b>40</b> | <p>Post the IDT associated with the DS-1 link that has been returned to service by typing</p> <p><b>&gt;POST IDT idt_no</b></p> <p>and pressing the Enter key.</p> <p>where</p> <p style="padding-left: 40px;"><b>idt_no</b><br/>is the number of the IDT being posted</p> <p><i>Example of a MAP response:</i></p> <pre> IDT      SysB  ManB  Offl  CBsy  ISTb  InSv   PM      3     0     1     0     2    13   IDT     0     0     0     0     1     7           </pre> <p>IDT 1 SysB Links_OOS:0</p> |           |
| <b>41</b> | <p>Display information about the state of the channels between the IDT and the RDT by typing</p> <p><b>&gt;PPS QUERY</b></p> <p>and pressing the Enter key</p> <p><i>Example of a MAP response:</i></p> <pre> TMC1: SMA2 7 7 24; OOS;Standby;Enable EOC1: SMA2 7 7 12; InSv;Active ;Enable TMC2: SMA2 7 8 24; OOS;Standby;Enable EOC2: SMA2 7 8 12; OOS;Standby;Enable           </pre>                                                                                                                  |           |
| <b>42</b> | <p>Return to service the message channels which were taken out of service in step 19 by typing</p> <p><b>&gt;RTS path</b></p> <p>where</p> <p style="padding-left: 40px;"><b>path</b><br/>is TMC1, TMC2, CSC1, CSC2, EOC1, or EOC2</p>                                                                                                                                                                                                                                                                   |           |
| <b>43</b> | <p>Determine if there are additional TMC, CSC, or EOC message channels to be returned to service.</p>                                                                                                                                                                                                                                                                                                                                                                                                    |           |
|           | <b>If there are</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Do</b> |
|           | more channels to be returned to service                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | step 42   |

---

**NTMX87**  
**in an SMA2 (end)**

---

| <b>If there are</b>                                                                                                                                                          | <b>Do</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| no more channels to be returned to service                                                                                                                                   | step 44   |
| <b>44</b> Determine if there are additional links on the NTMX81 to be returned service.<br><b>Note:</b> Remember, all eight links on the NTMX87 need to returned to service. |           |
| <b>If</b>                                                                                                                                                                    | <b>Do</b> |
| there is another link to be returned to service                                                                                                                              | step 36   |
| all links have been returned to service                                                                                                                                      | step 45   |

**At the equipment frame**

- 45** Remove the sign from the active SMA2 unit.
- 46** Go to the common returning a card procedure in this document.  
Go to step 48.
- 47** Obtain further assistance in replacing this card by contacting the personnel responsible for higher level support.
- 48** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTRX4002  
in NTRX40AA**

---

**Application**

Use this procedure to replace the back plane described, in the shelf listed.

| PEC      | Suffix | Name       | Shelf name                         |
|----------|--------|------------|------------------------------------|
| NTRX4002 | -      | Back plane | NTRX40AA modular supervisory panel |

**Common procedures**

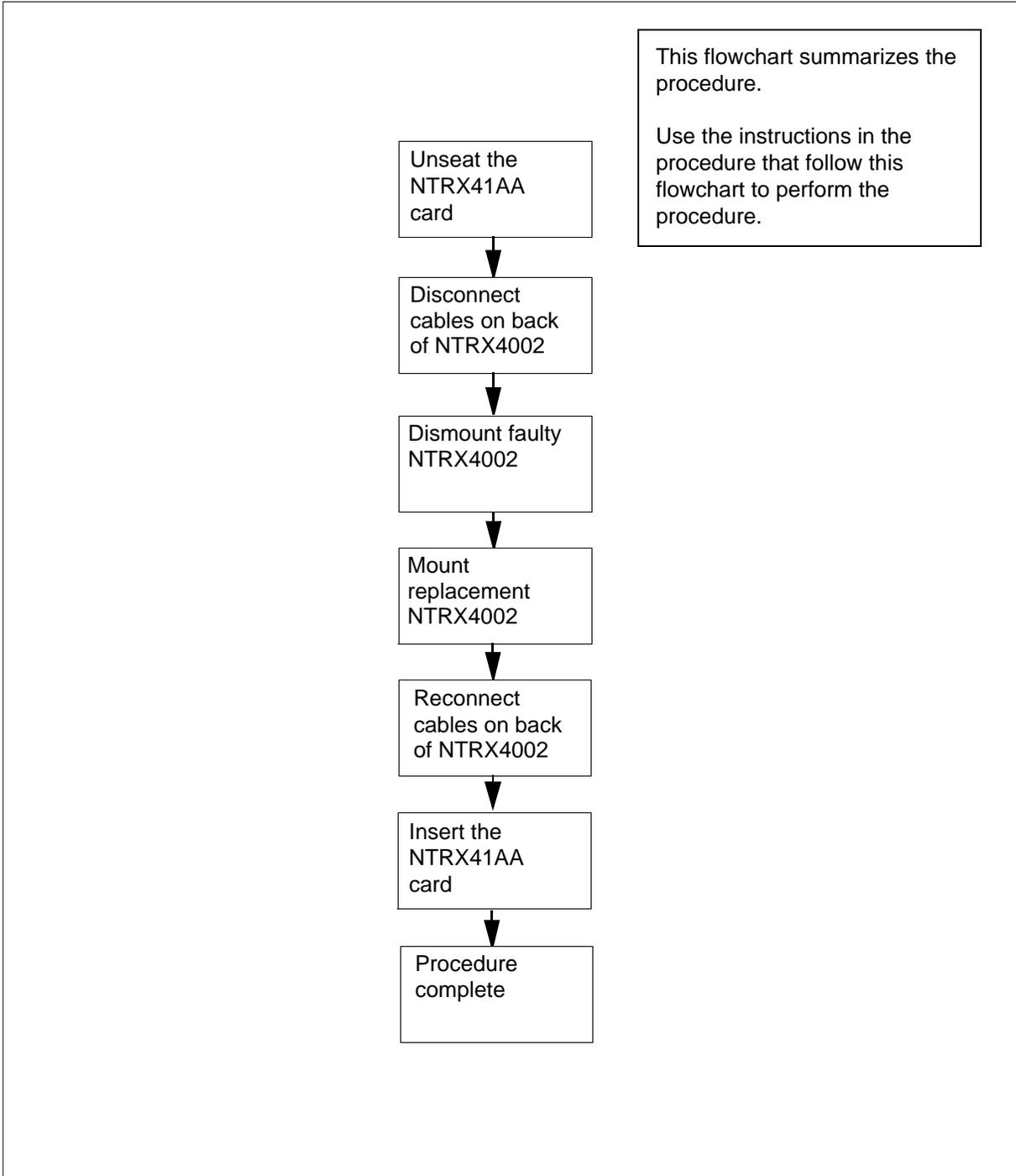
Not applicable

**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.

## NTRX4002 in an NTRX40AA (continued)

### Summary of Replacing an NTRX2002 in and NTRX40AA



---

## NTRX4002 in an NTRX40AA (continued)

---

### Replacing an NTRX4002 back plane in an NTRX40AA shelf

#### *At your current location*

- 1 Obtain a replacement back plane. Make sure that the replacement has the same PEC as the back plane that you remove.

#### *At the NTRX40AA shelf*

2



#### **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.

- 3 Unseat the NTRX41AA card.

**Note:** If necessary, refer to the procedures that describe replacement of NTRX41 cards.

- 4 Make a note of the position of the connectors, then disconnect the connectorized cables on the back of the NTRX4002 back plane.
- 5 Remove the screws that mount the NTRX4002 back plane to the NTRX40AA shelf, then remove the faulty NTRX4002.
- 6 Mount the new NTRX4002 back plane to the NTRX40AA shelf.
- 7 Reconnect the previously disconnected cables.
- 8 Insert the NTRX41AA card.
- 9 Procedure complete.

### Procedure history

#### **SN08 (DMS)**

Procedure added according to CR Q01166307.

1-4 Back plane replacement procedure

---

**NTRX4002**  
**in an NTRX40AA (end)**

---

## **NTRX41 in an IOPAC MSP**

---

### **Application**

Use this procedure to replace the following card in an IOPAC MSP.

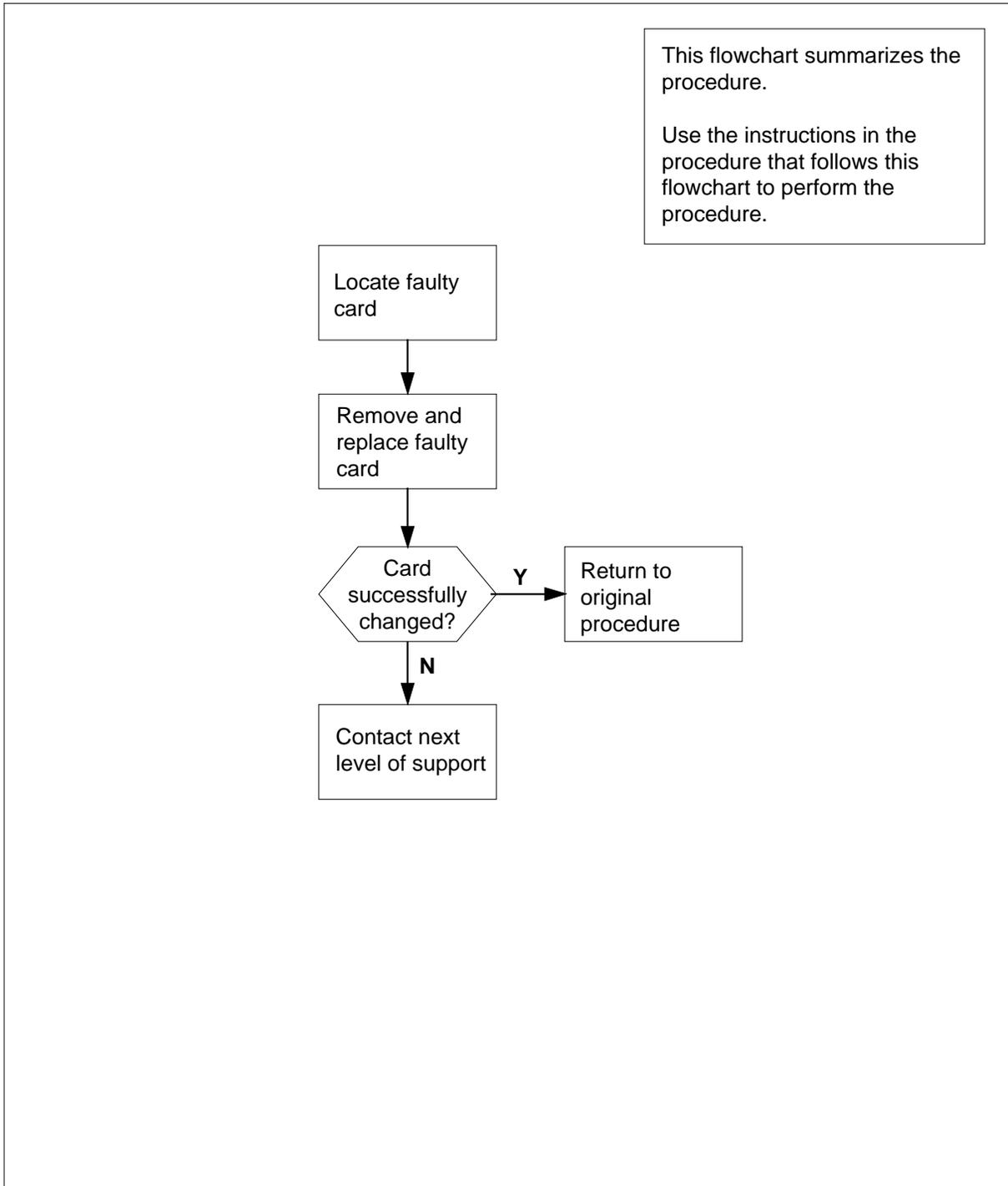
| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>  |
|------------|-----------------|--------------|
| NTRX41     | AA              | Alarm Module |

### **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.

**NTRX41**  
**in an IOPAC MSP** (continued)**Summary of card replacement procedure for an NTRX41 card in MSP**

## NTRX41 in an IOPAC MSP (continued)

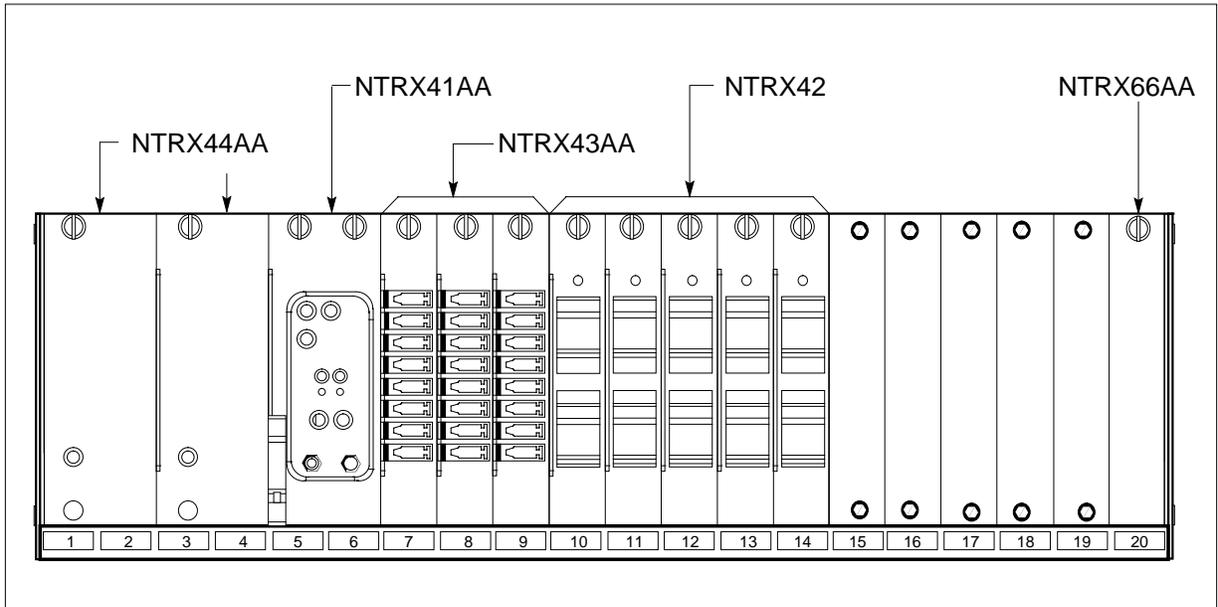
### Replacing an NTRX41 in MSP

#### *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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At Row A Bay 1 of the IOPAC:*

- 3 Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



4



#### **DANGER**

##### **Static electricity damage**

Wear a wrist strap connected to a wrist strap grounding point while handling circuit cards. This protects the cards against damage caused by static electricity.

## NTRX41 in an IOPAC MSP (continued)

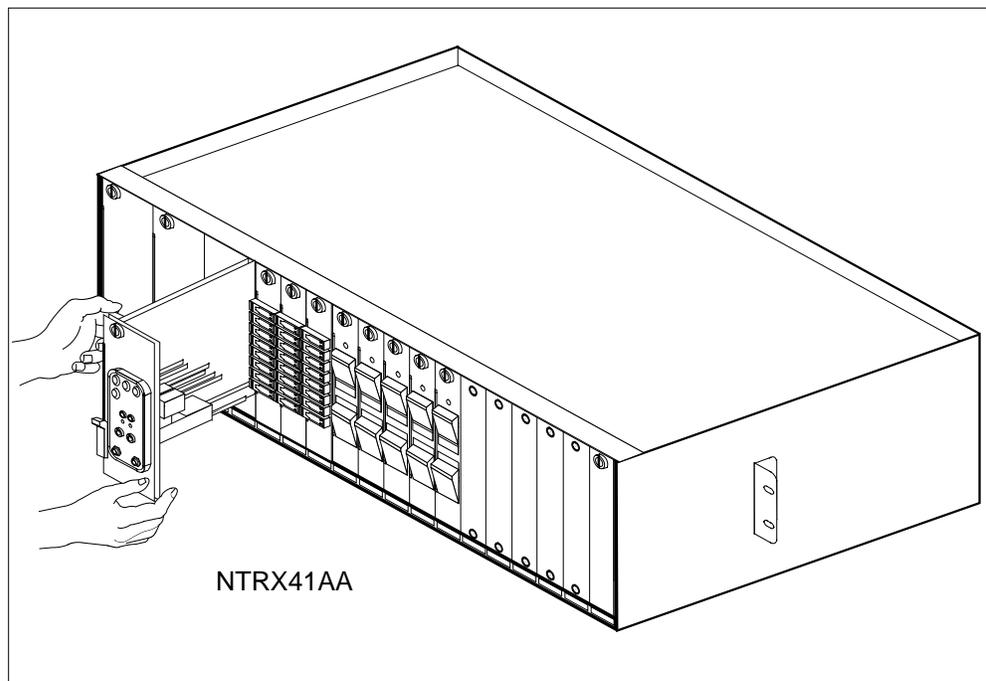


**DANGER**

Risk of injury from high energy levels, equipment damage  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

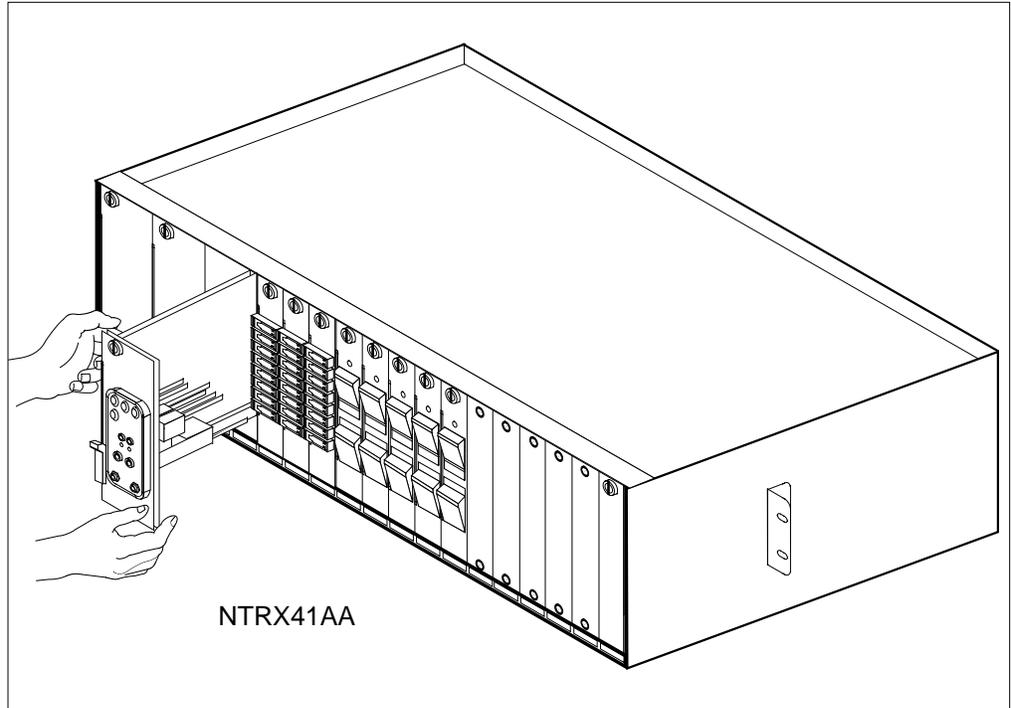
Put on a wrist strap.

- 5 Remove the NTRX41 circuit card as shown in the following figures.
  - a Locate the circuit card. It will be in slots 05 and 06.



- b At the front of the MSP, disengage the captive screw at the top of the circuit card.
    - c Pull out the lever on the lower left side of the alarm module.
    - d Gently pull the circuit card toward you until it clears the shelf.
- 6 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.

## NTRX41 in an IOPAC MSP (end)



- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
- b Gently but firmly seat the circuit card.
- c Push in lever on the lower left side of alarm module.
- d Tighten the captive screw at the top of the circuit card.

| If alarm lights | Do     |
|-----------------|--------|
| remain off      | step 7 |
| light up        | step 9 |

- 7 Send any faulty cards for repair according to local procedure.
- 8 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 10.
- 9 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 10 You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTRX41  
in an OPAC MSP**

---

**Application**

Use this procedure to replace an NTRX41 card in an MSP.

| PEC    | Suffixes | Name         |
|--------|----------|--------------|
| NTRX41 | AA       | Alarm Module |

**Common procedures**

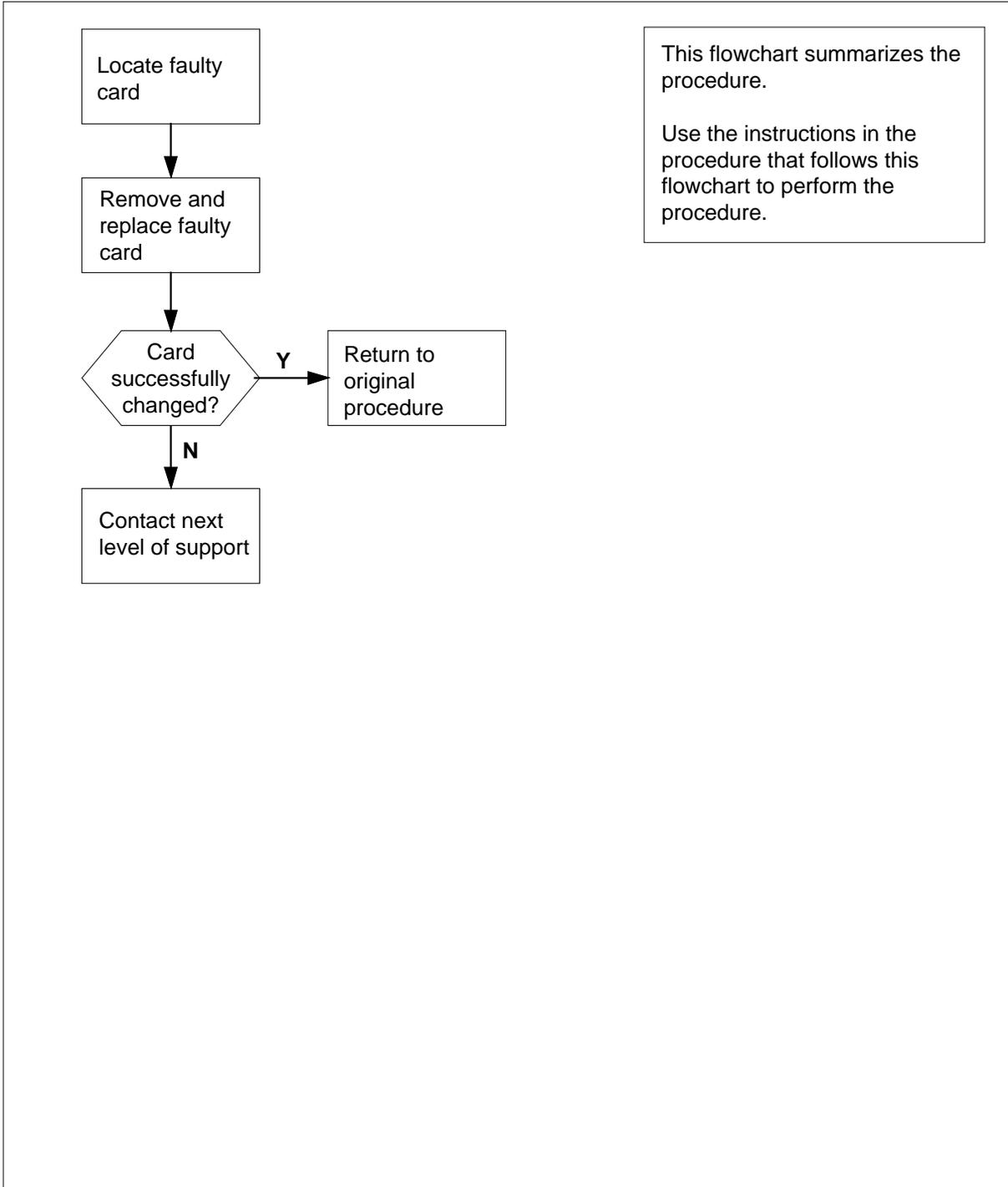
None

**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.

## NTRX41 in an OPAC MSP (continued)

### Summary of card replacement procedure for an NTRX41 card in an MSP



## NTRX41 in an OPAC MSP (continued)

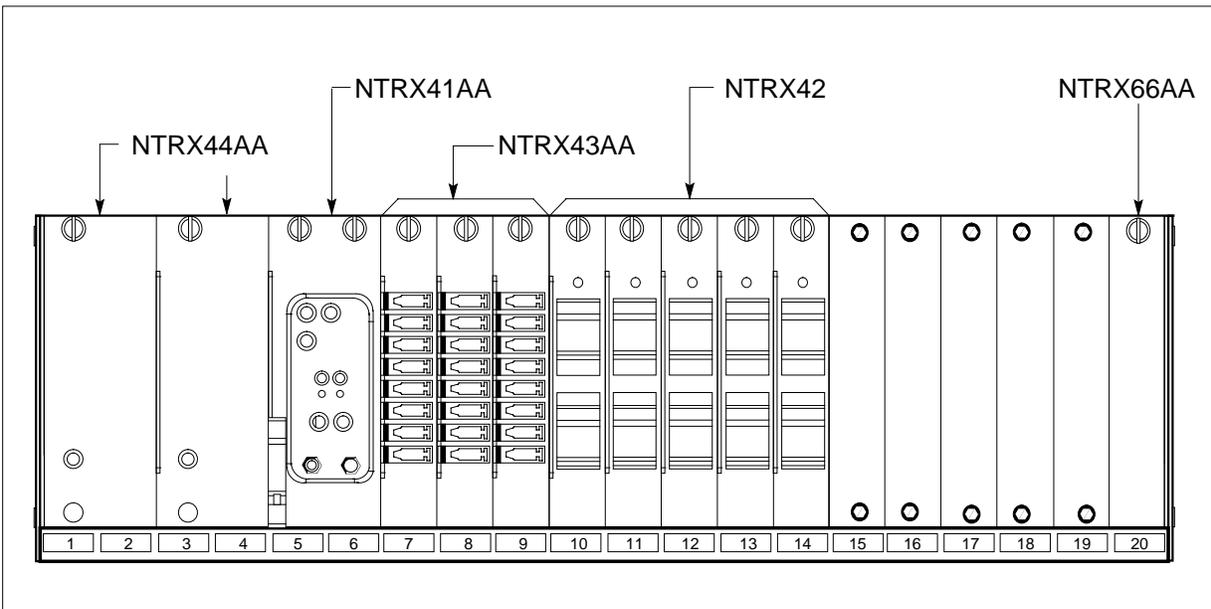
### Replacing an NTRX41 in an MSP

#### *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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At Bay 1 of the OPAC:*

- 3 Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



4



#### **DANGER**

##### **Static electricity damage**

Wear a wrist strap connected to a wrist strap grounding point while handling circuit cards. This protects the cards against damage caused by static electricity.

## NTRX41 in an OPAC MSP (continued)

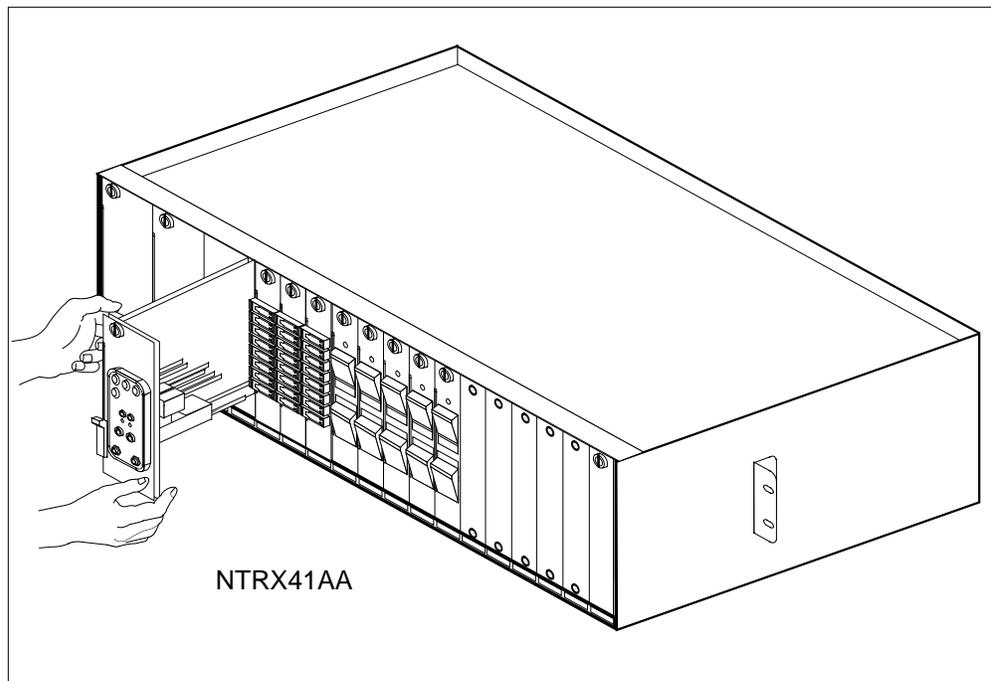


### DANGER

Risk of injury from high energy levels, equipment damage  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

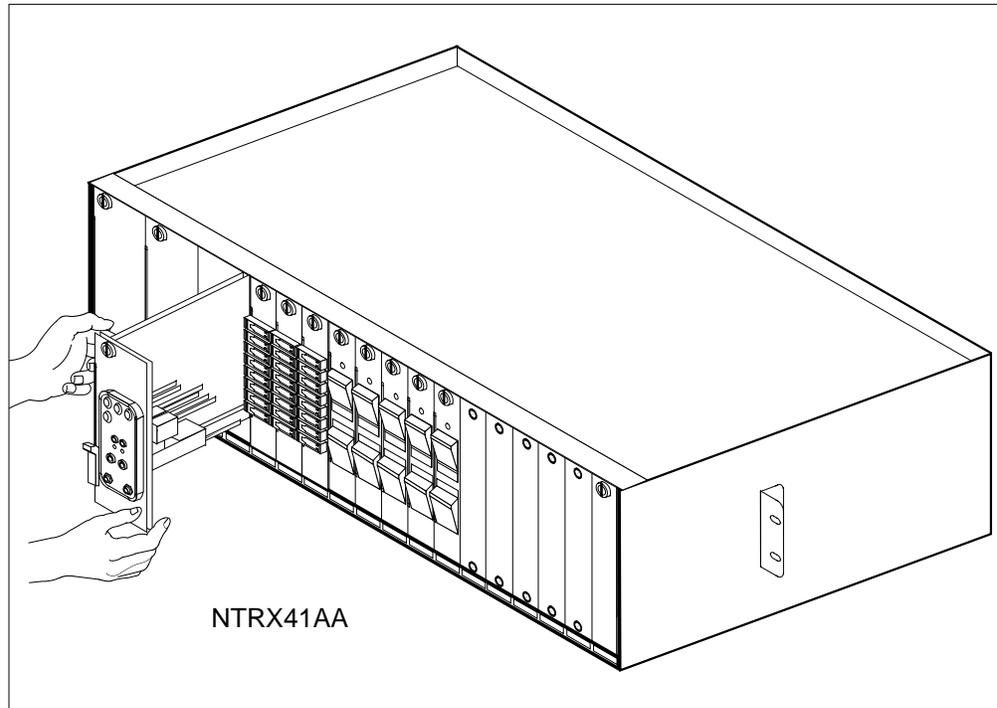
Put on a wrist strap.

- 5 Remove the NTRX41 circuit card as shown in the following figures.
  - a Locate the circuit card. It will be in slots 05 and 06.



- b At the front of the MSP, disengage the captive screw at the top of the circuit card.
    - c Pull out the lever on the lower left side of the alarm module.
    - d Gently pull the circuit card toward you until it clears the shelf.
- 6 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.

## NTRX41 in an OPAC MSP (end)



- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
- b Gently but firmly seat the circuit card.
- c Push in lever on the lower left side of alarm module.
- d Tighten the captive screw at the top of the circuit card.

| If alarm lights | Do     |
|-----------------|--------|
| remain off      | step 7 |
| light up        | step 9 |

- 7 Send any faulty cards for repair according to local procedure.
- 8 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 10.
- 9 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 10 You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX41 in an RSC-M/MSP**

---

### **Application**

Use this procedure to replace an NTRX41 card in a modular supervisory panel (MSP) that supports a Remote Switching Center Multi-Access (RSC-M) cabinet.

*Note:* In this section, examples refer to RSC-M as RCO2 . When software outputs messages to the MAP terminal, software does not differentiate between the two types of RCO2.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>  |
|------------|-----------------|--------------|
| NTRX41     | AA, BA,<br>CA   | Alarm module |

### **Common procedures**

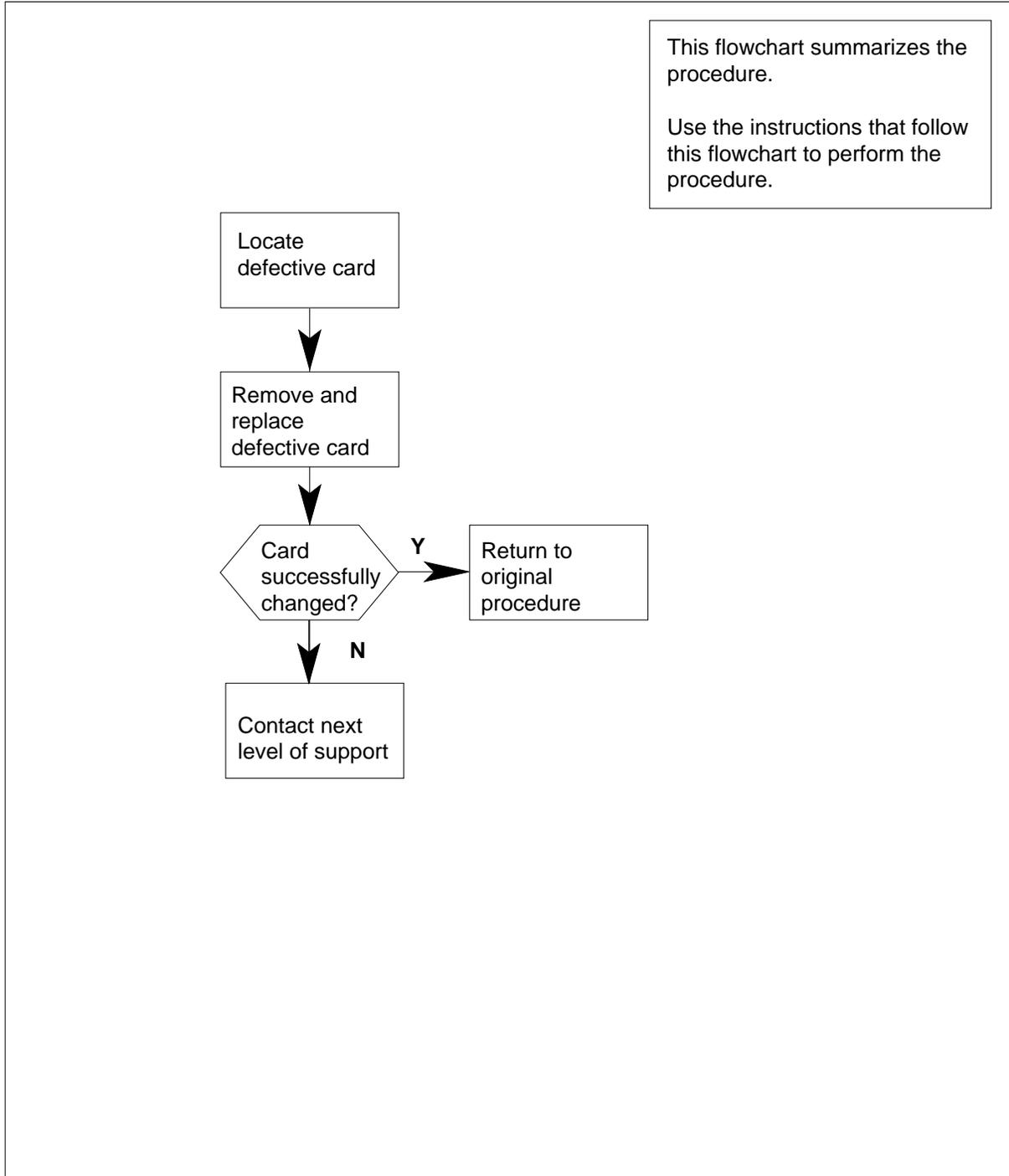
The common returning a card procedure is referenced in this procedure.

### **Action**

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

**NTRX41**  
**in an RSC-M/MSP** (continued)

**Summary of Replacing an NTRX41 in an RSC-M/MSP**



## NTRX41 in an RSC-M/MSP (continued)

### Replacing an NTRX41 in an RSC-M/MSP

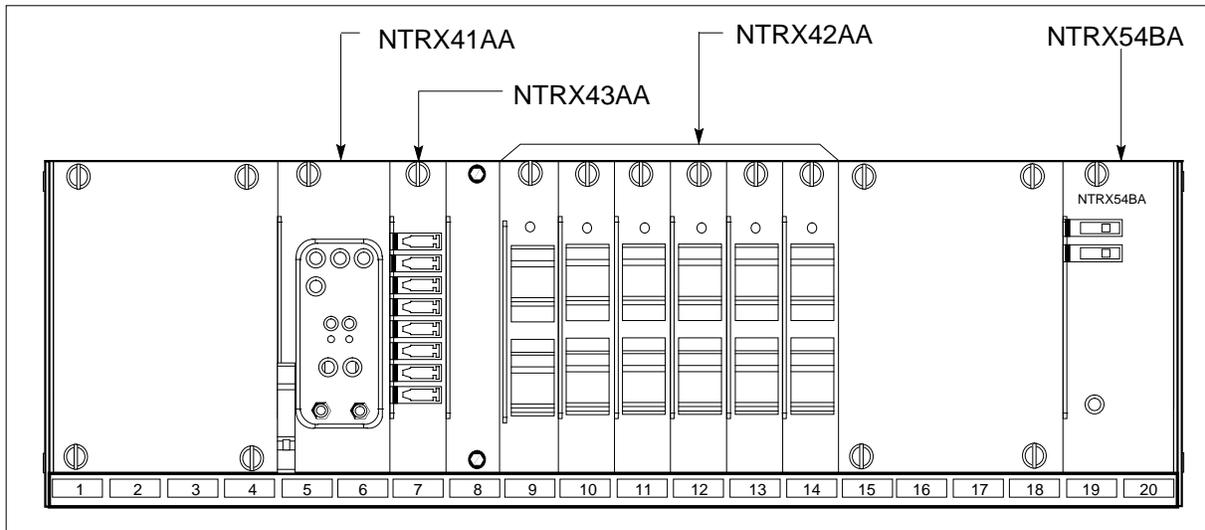
#### At the MAP display:

- 1 Proceed if the next level of support or a step in a maintenance procedure directed you to this card replacement procedure. Use this procedure to verify or accept cards.
- 2 Obtain an NTRX41 replacement circuit card. Make sure the replacement circuit card has the same PEC and suffix as the circuit card to remove.

#### At the front panel of the cabinet

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

### MSP



4



#### WARNING

**Risk of injury from high energy levels, static electricity damage**  
Wear a wrist strap that connects to the wrist-strap grounding point on the left side of the modular supervisory panel (MSP) to remove cards. The wrist strap protects the equipment against static electricity damage.

## NTRX41 in an RSC-M/MSP (continued)

**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when you remove or insert a card:

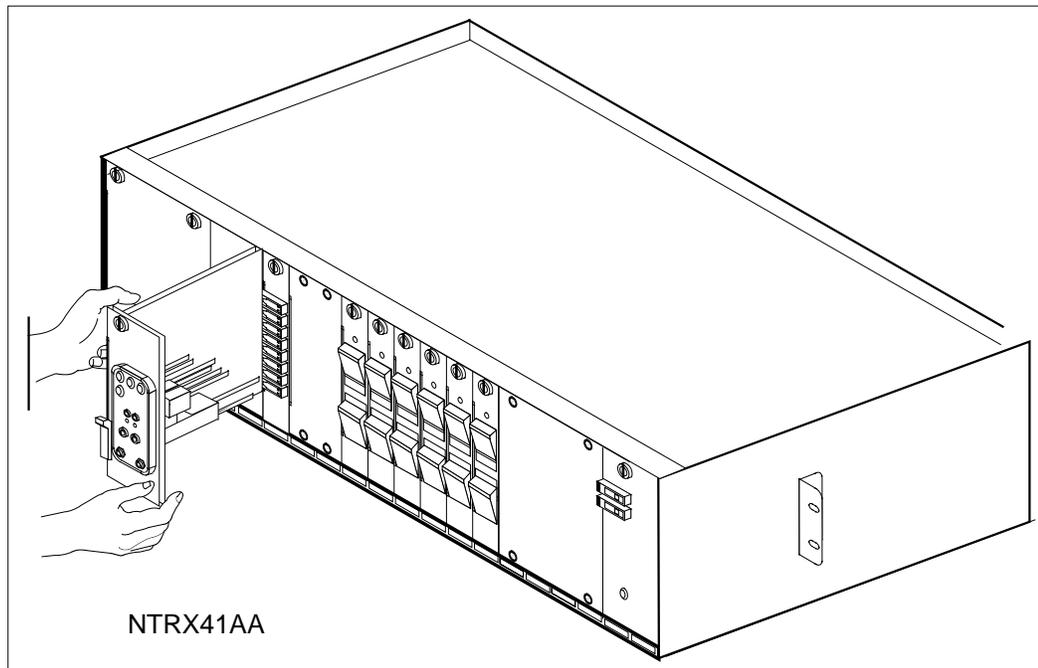
1. Do not apply direct pressure to the components.
2. Do not force the cards in the slots.

Wear a wrist strap.

- 5** Locate and remove the NTRX41 circuit card that appears in the following figure.

The circuit card is in slots 05 and 06.

- a** At the front of the MSP, disengage the knurled thumbscrew at the top of the circuit card.
  - b** Pull out the lever on the upper left side of the alarm module.
  - c** Carefully pull the circuit card toward you until the circuit card clears the shelf.
- 6** Make sure the replacement circuit card has the same PEC and suffix as the last circuit card removed.



- a** Align the circuit card with the slots in the shelf. Carefully slide the circuit card in the shelf.
- b** Seat the circuit card carefully and tight.

**NTRX41**  
**in an RSC-M/MSP (end)**

---

- c Push in lever on the upper left side of alarm module.
- d Tighten the knurled thumbscrew at the top of the circuit card.

---

**If the alarm light**

**Do**

---

remains off (or light for a short time)

step 7

turns on

step 9

- 
- 7 Go to the common returning a card procedure in this document.
  - 8 This procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.
  - 9 For additional help with this card replacement, contact the next level of support.

---

## NTRX41 in an RSC MSP

---

### Application

Use this procedure to replace an NTRX41 card in a modular supervisory panel (MSP) located in a:

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)
- cabinetized remote miscellaneous equipment (CRME)

| PEC    | Suffixes   | Name         |
|--------|------------|--------------|
| NTRX41 | AA, BA, CA | Alarm Module |

### Common procedures

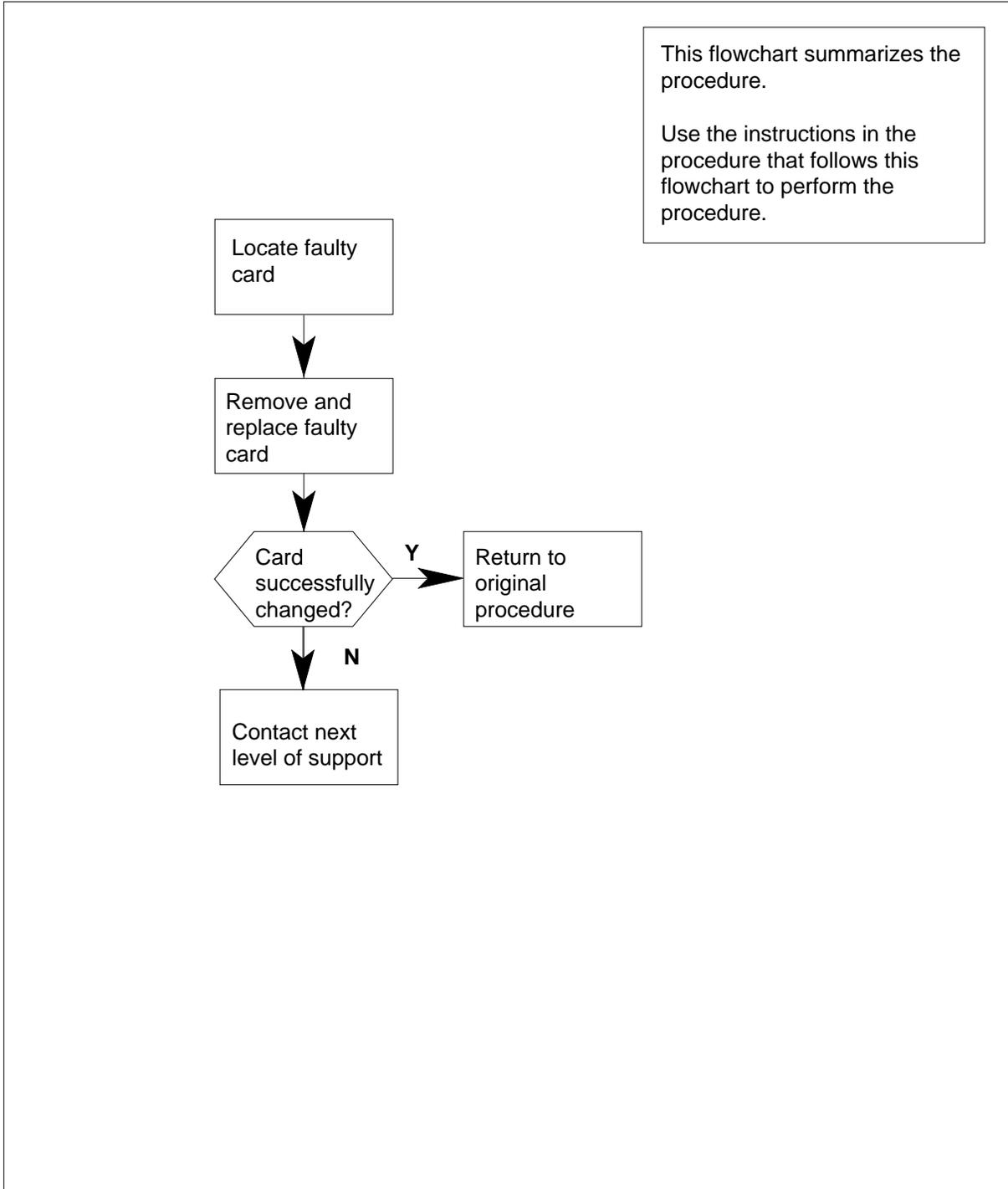
None

### 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.

## NTRX41 in an RSC MSP (continued)

### Summary of card replacement procedure for an NTRX41 card in RSC MSP



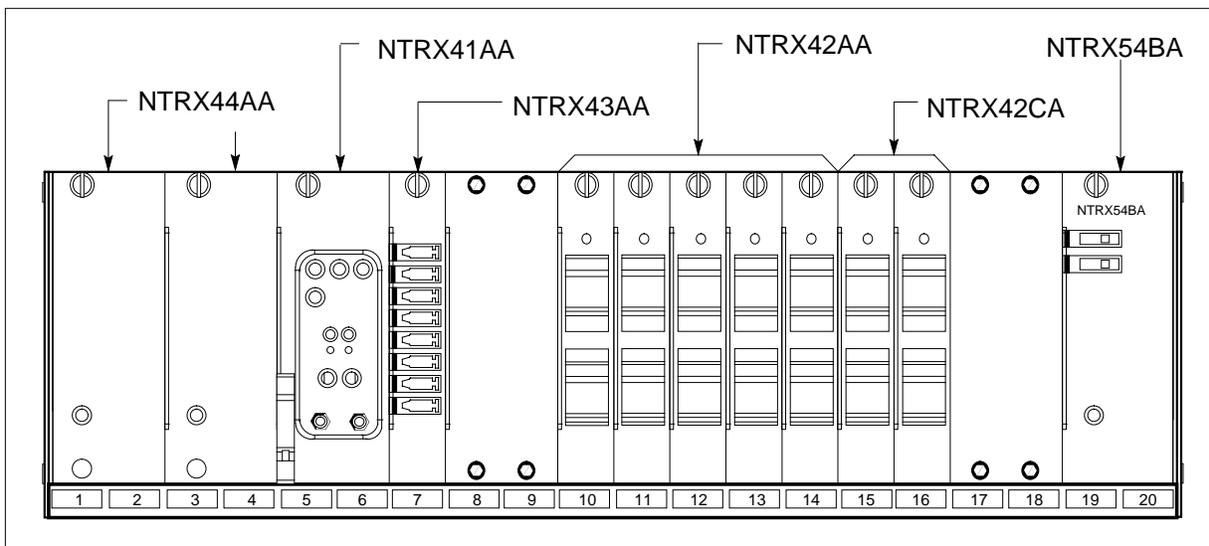
## NTRX41 in an RSC MSP (continued)

### Replacing an NTRX41 card in RSCE MSP

#### *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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.
- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an RSCE or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



4



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

## NTRX41 in an RSC MSP (continued)



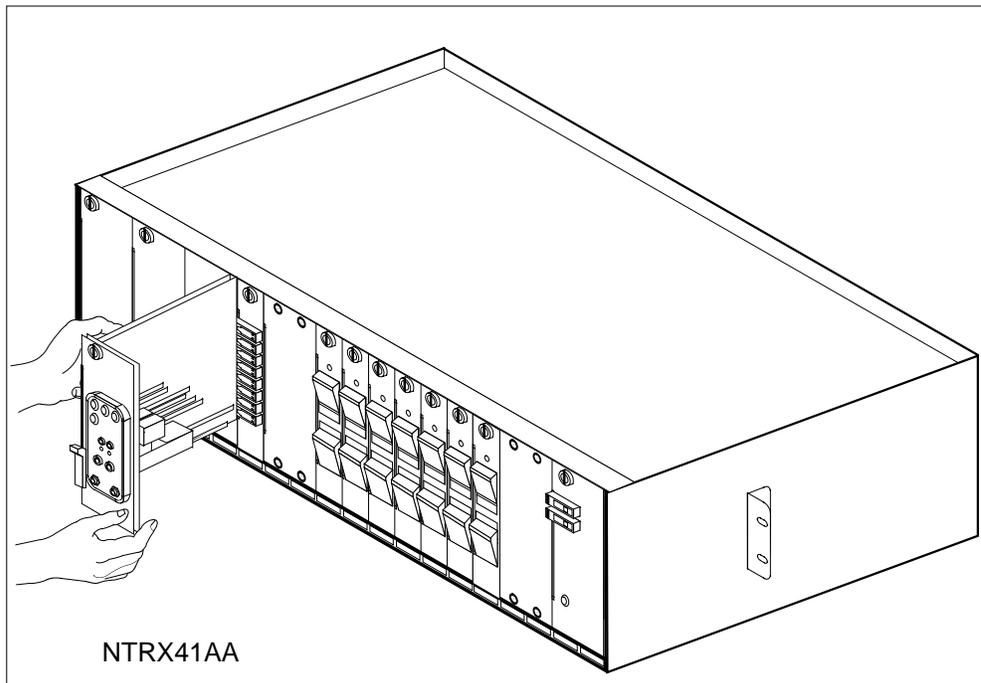
### DANGER

Risk of injury from high energy levels, equipment damage  
Take these precautions when removing or inserting a card:

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

Put on a wrist strap.

- 5 Remove the NTRX41 circuit card as shown in the following figure.
  - a Open the front doors of the cabinet and locate the circuit card, it will be in slots 05 and 06.
  - b At the front of the MSP, disengage the knurled thumbscrew at the top of the circuit card.
  - c Pull out the lever on the upper left side of the alarm module.
  - d Gently pull the circuit card toward you until it clears the shelf.
- 6 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.



- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
- b Gently but firmly seat the circuit card.
- c Push in lever on the upper left side of alarm module.

---

**NTRX41**  
**in an RSC MSP (end)**

---

**d** Tighten the knurled thumbscrew at the top of the circuit card.

---

| <b>If alarm lights</b> | <b>Do</b> |
|------------------------|-----------|
| remain off             | step 7    |
| light up               | step 9    |

---

- 7** Send any faulty cards for repair according to local procedure.
- 8** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 10.
- 9** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 10** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX41 in an RSC-S (DS-1) Model B MSP**

---

### **Application**

Use this procedure to replace an NTRX41 card in a modular supervisory panel (MSP) located in a

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)
- cabinetized remote miscellaneous equipment (CRME)

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>  |
|------------|-----------------|--------------|
| NTRX41     | AA, BA, CA      | Alarm Module |

### **Common procedures**

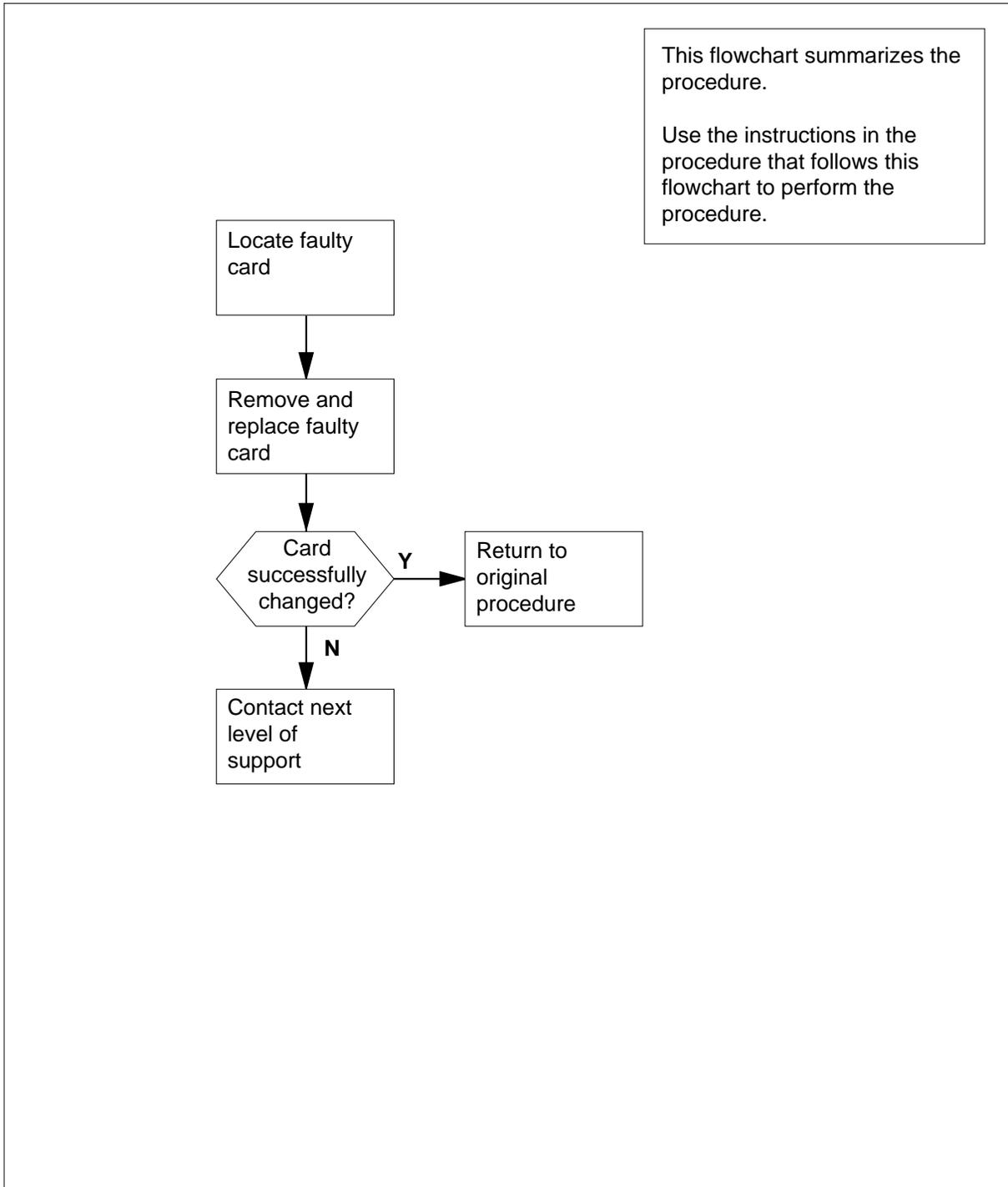
None

### **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.

**NTRX41**  
**in an RSC-S (DS-1) Model B MSP** (continued)

**Summary of card replacement procedure for an NTRX41 card in RSC-S MSP**



## NTRX41 in an RSC-S (DS-1) Model B MSP (continued)

### Replacing an NTRX41 card in RSC-S MSP

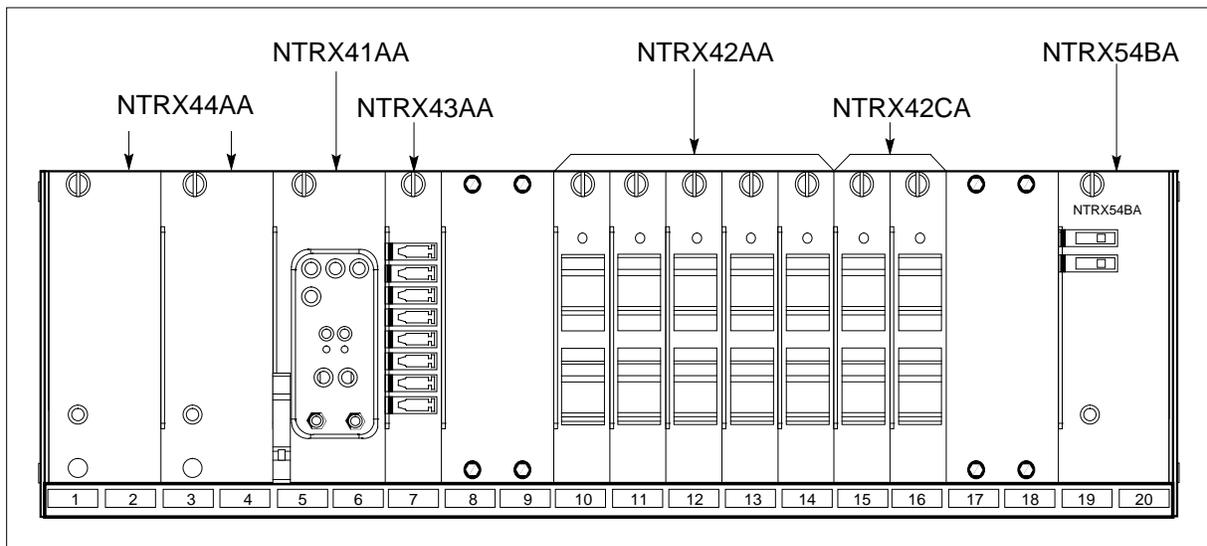
#### At your Current Location

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At the front panel of the cabinet

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



4



#### DANGER

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

## NTRX41 in an RSC-S (DS-1) Model B MSP (continued)



### DANGER

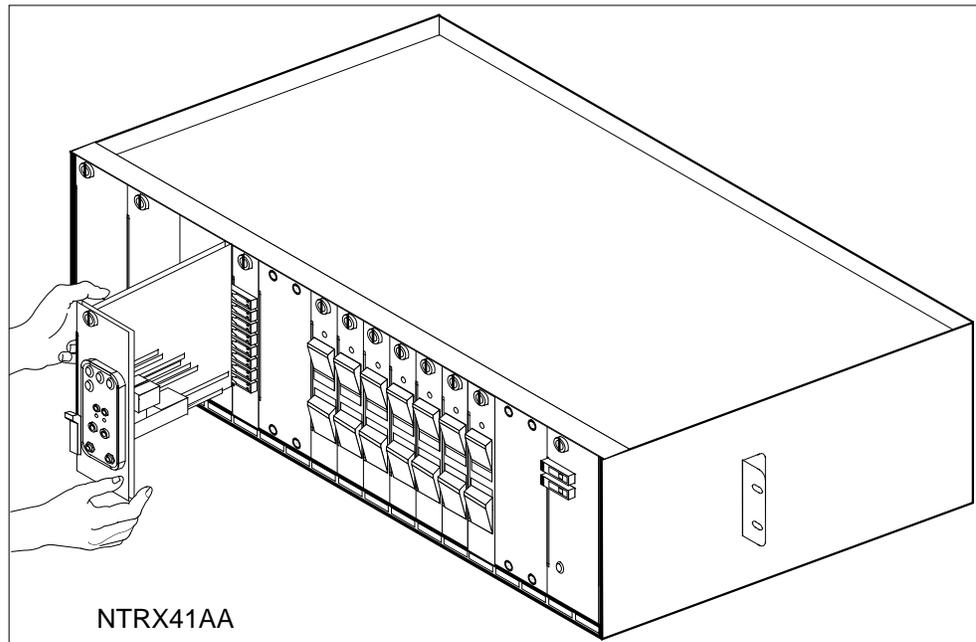
Risk of injury from high energy levels, equipment damage

Take these precautions when removing or inserting a card:

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

Put on a wrist strap.

- 5 Remove the NTRX41 circuit card as shown in the following figure.
  - a Open the front doors of the cabinet and locate the circuit card, it will be in slots 05 and 06.

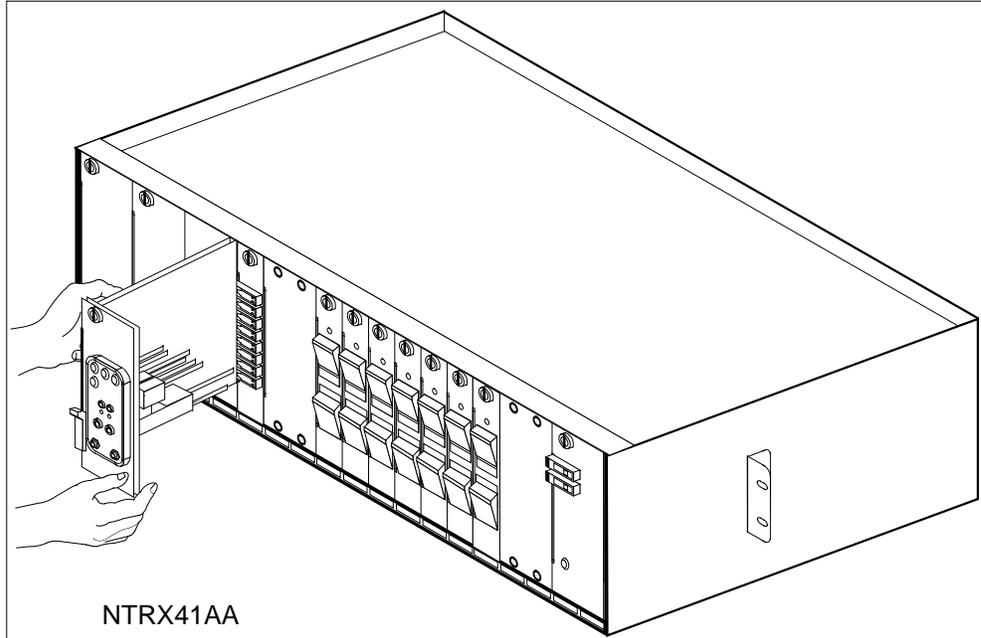


- b At the front of the MSP, disengage the knurled thumbscrew at the top of the circuit card.
  - c Pull out the lever on the upper left side of the alarm module.
  - d Gently pull the circuit card toward you until it clears the shelf.
- 6 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.

---

## NTRX41 in an RSC-S (DS-1) Model B MSP (end)

---



- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
- b Gently but firmly seat the circuit card.
- c Push in lever on the upper left side of alarm module.
- d Tighten the knurled thumbscrew at the top of the circuit card.

---

| If alarm lights | Do |
|-----------------|----|
|-----------------|----|

---

remain off

step 7

light up

step 9

- 
- 7 Send any faulty cards for repair according to local procedure.
  - 8 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 10.
  - 9 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
  - 10 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

---

**NTRX41  
in an SMA2 MSP**

---

**Application**

Use this procedure to replace an NTRX41 card in a modular supervisory panel (MSP) located in a:

- cabinetized multi-vendor interface (CMVI)
- multi-vendor interface equipment frame (MVIE)
- multi-vendor double density frame (MVDD)

| PEC    | Suffixes | Name         |
|--------|----------|--------------|
| NTRX41 | AA       | Alarm Module |

**Common procedures**

The common returning a card procedure is referenced in this procedure.

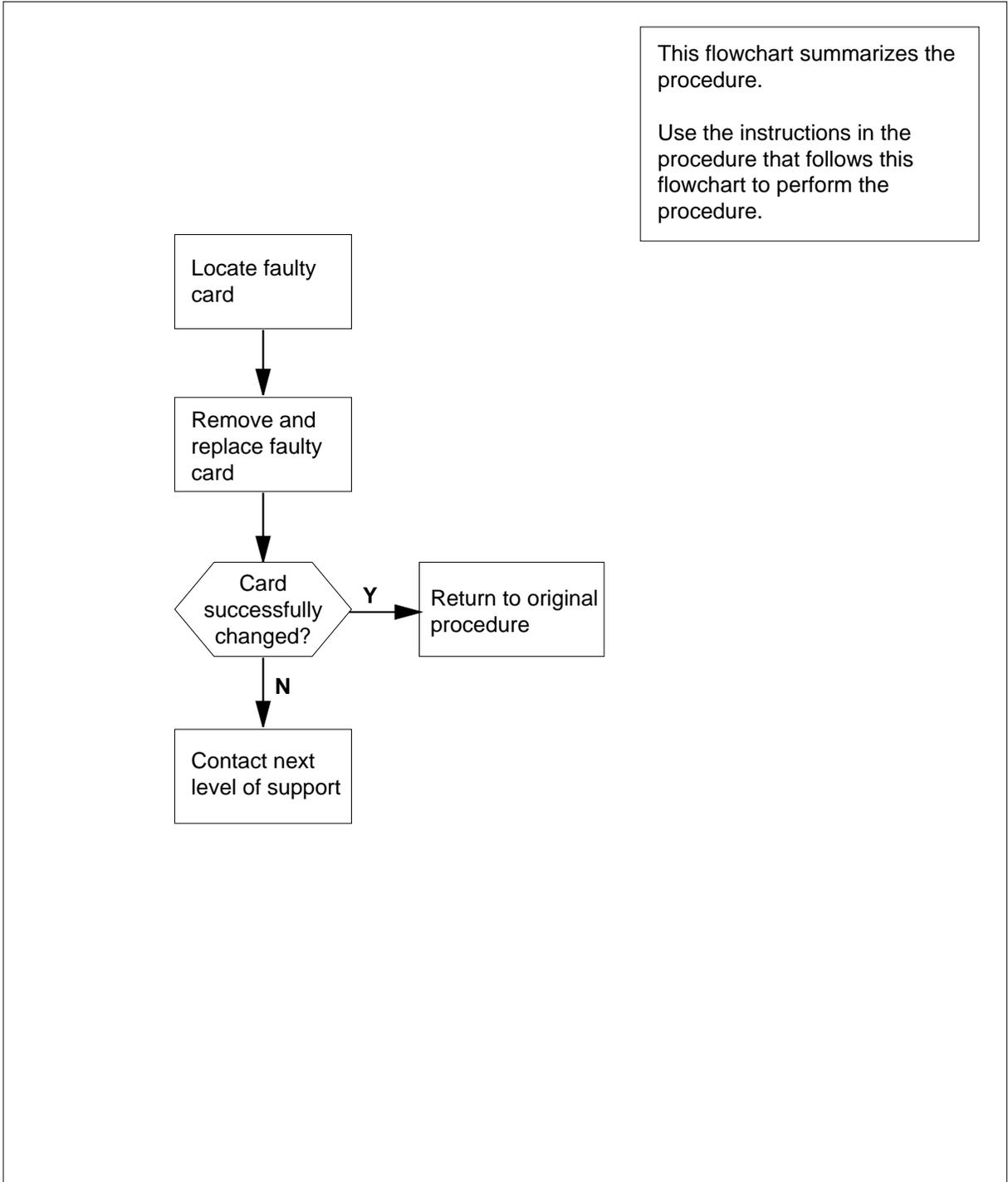
Do not go to a common procedure unless directed to do so in the step-action procedure.

**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.

## NTRX41 in an SMA2 MSP (continued)

### Summary of card replacement procedure for an NTRX41 card in an SMA2 MSP



## NTRX41 in an SMA2 MSP (continued)

### Replacing an NTRX41 card in an SMA2 MSP

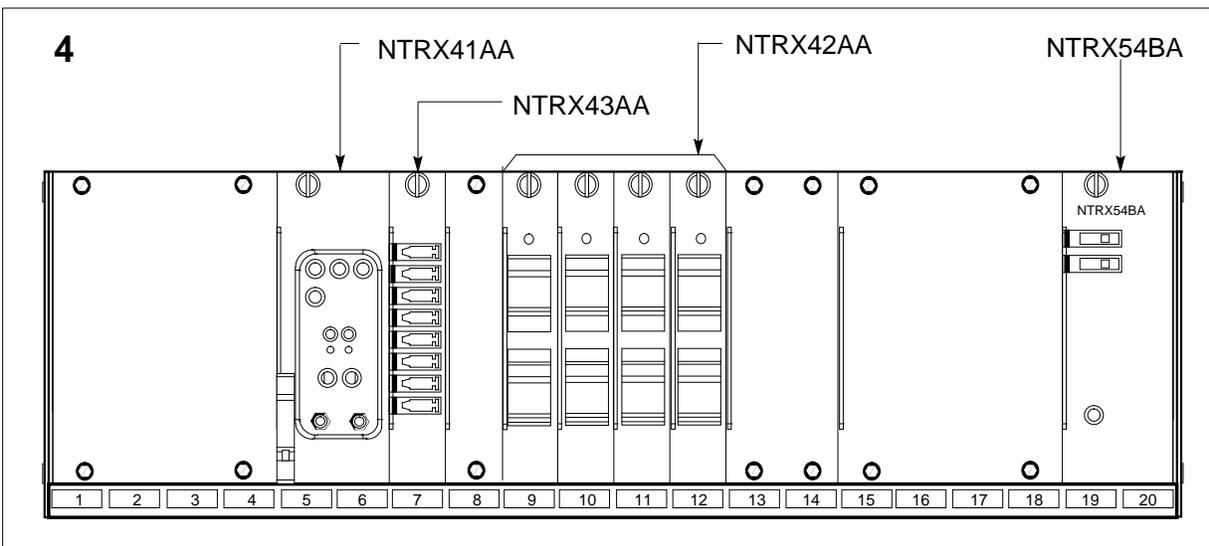
#### *At your current location*

- 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 Obtain a replacement card. Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### *At the front panel of the cabinet or frame*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

#### MSP



4



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

## NTRX41 in an SMA2 MSP (continued)



### DANGER

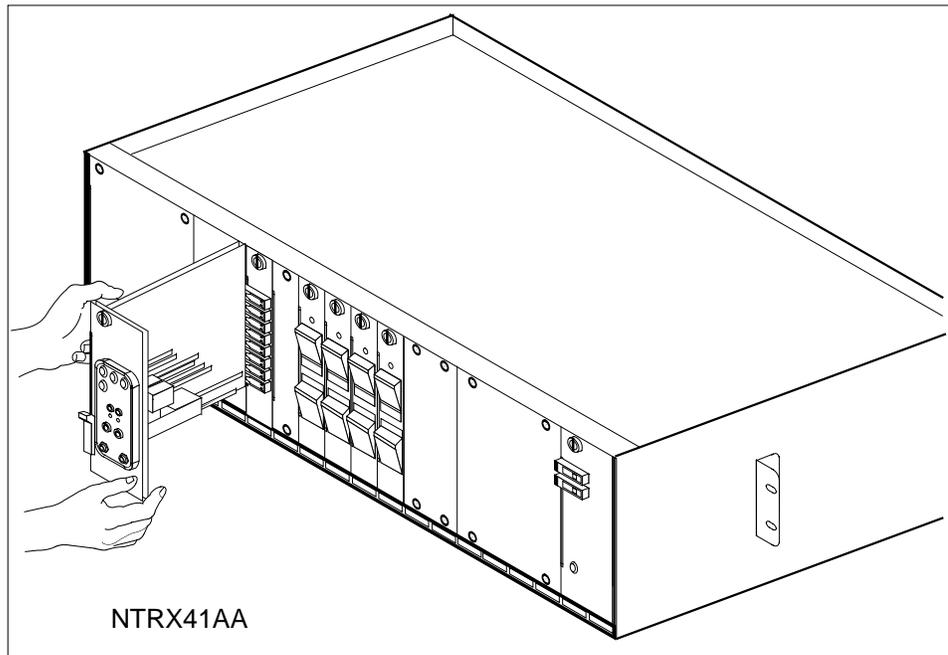
Risk of injury from high energy levels, equipment damage

Take these precautions when removing or inserting a card:

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

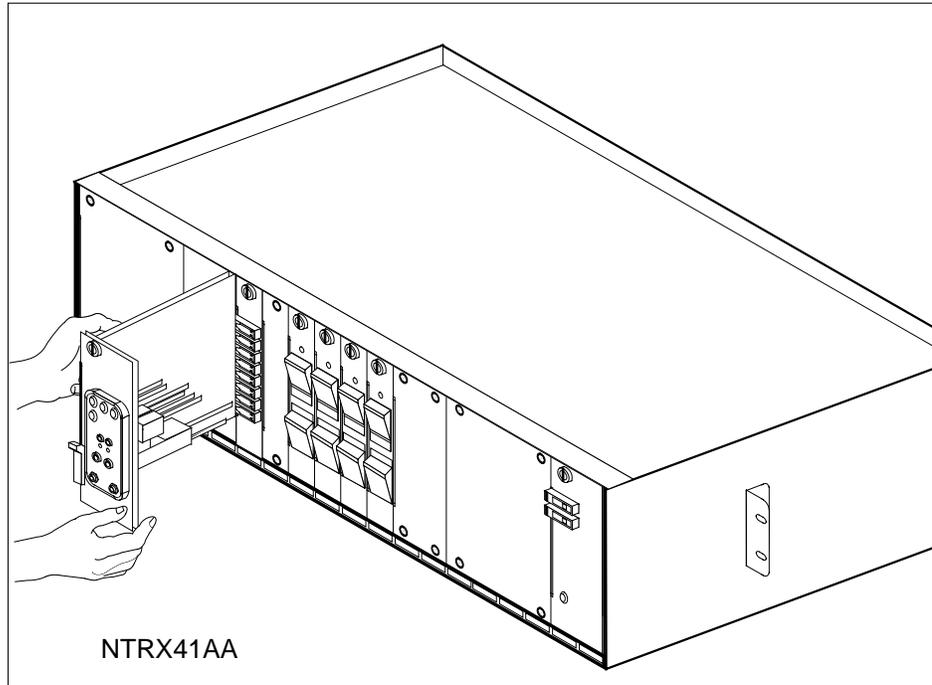
Put on a wrist strap.

- 5 Remove the NTRX41 circuit card as shown in the following figure.
  - a Open the front doors of the cabinet and locate the circuit card, it will be in slots 05 and 06.



- b At the front of the MSP, disengage the knurled thumbscrew at the top of the circuit card.
  - c Pull out the lever on the lower left side of the alarm module.
  - d Gently pull the circuit card toward you until it clears the shelf.
- 6 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.

**NTRX41**  
**in an SMA2 MSP (end)**



- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
- b Gently but firmly seat the circuit card.
- c Push in lever on the upper left side of alarm module.
- d Tighten the knurled thumbscrew at the top of the circuit card.

7 Proceed as shown in the following table.

| If alarm lights | Do     |
|-----------------|--------|
| remain off      | step 8 |
| light up        | step 9 |

- 8 Go to the common returning a card procedure in this document.  
Go to step 10.
- 9 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 10 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX42 in an IOPAC MSP**

---

### **Application**

Use this procedure to replace the following card in an IOPAC MSP.

| <b>PEC</b> | <b>Suffixes</b>    | <b>Name</b>    |
|------------|--------------------|----------------|
| NTRX42     | AA, BA, CA, DA, EA | Breaker Module |

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

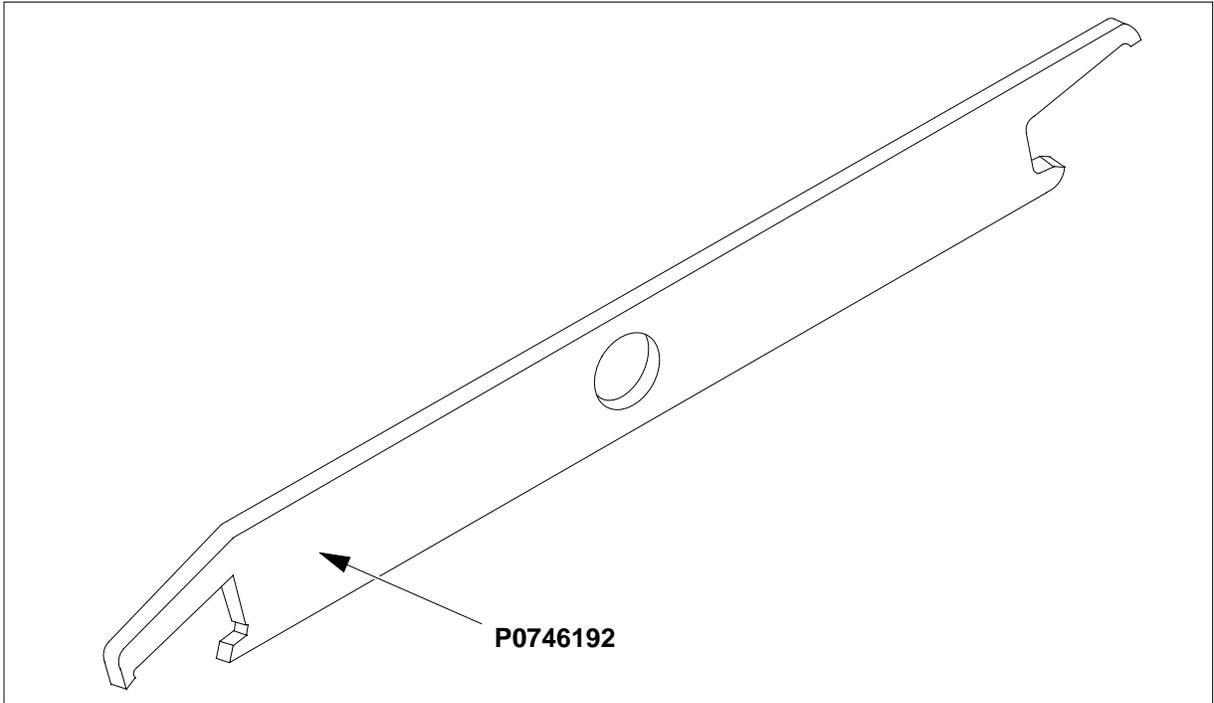
The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

The following is an illustration of the connector removal tool.

**NTRX42**  
**in an IOPAC MSP** (continued)

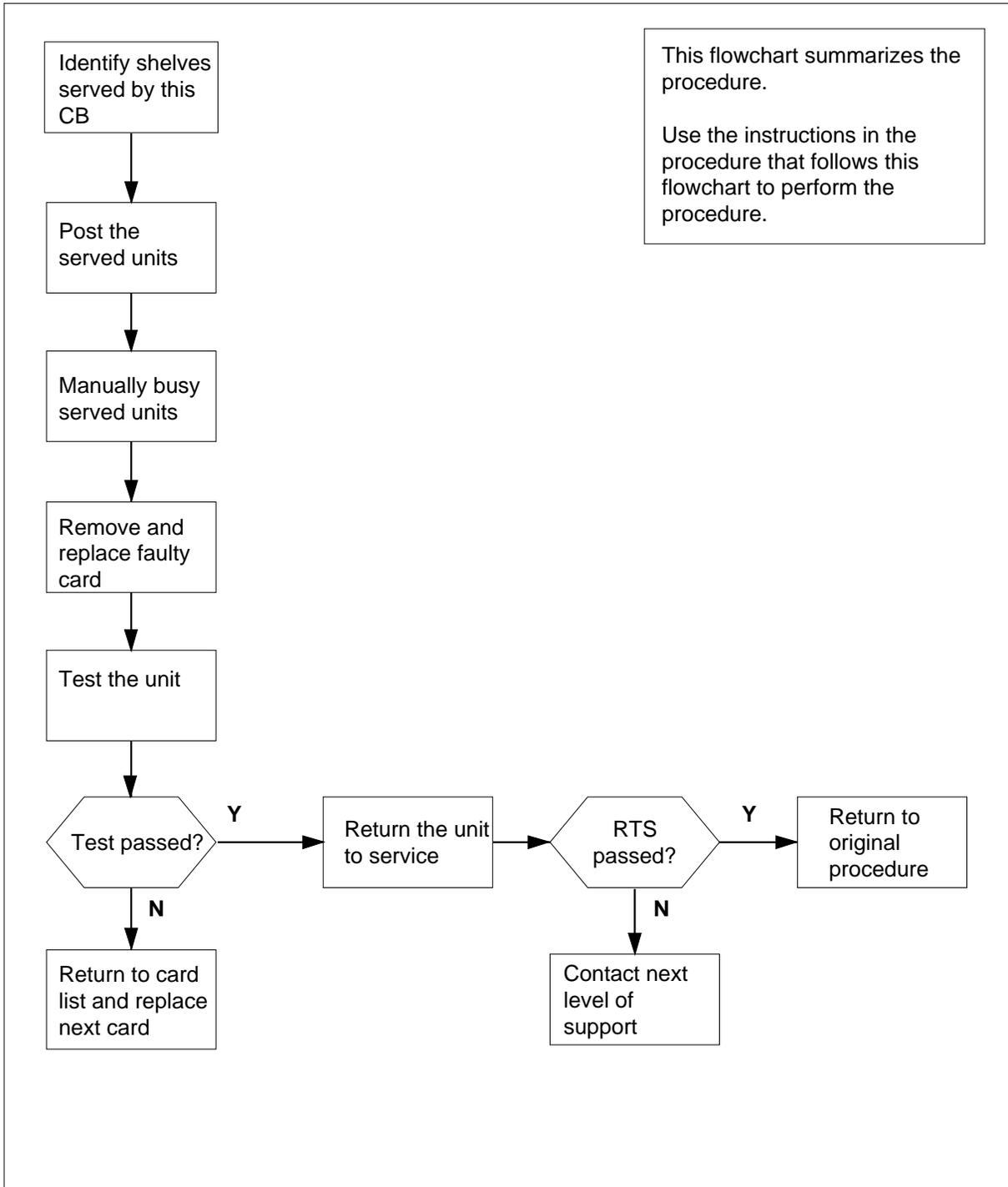
**Connector removal tool**



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. The detailed procedure depends on which circuit cards are served by the breaker module circuit card (NTRX42). You will be directed to the appropriate steps depending on your configuration.

## NTRX42 in an IOPAC MSP (continued)

### Summary of card replacement procedure for an NTRX42 card in MSP



## NTRX42 in an IOPAC MSP (continued)

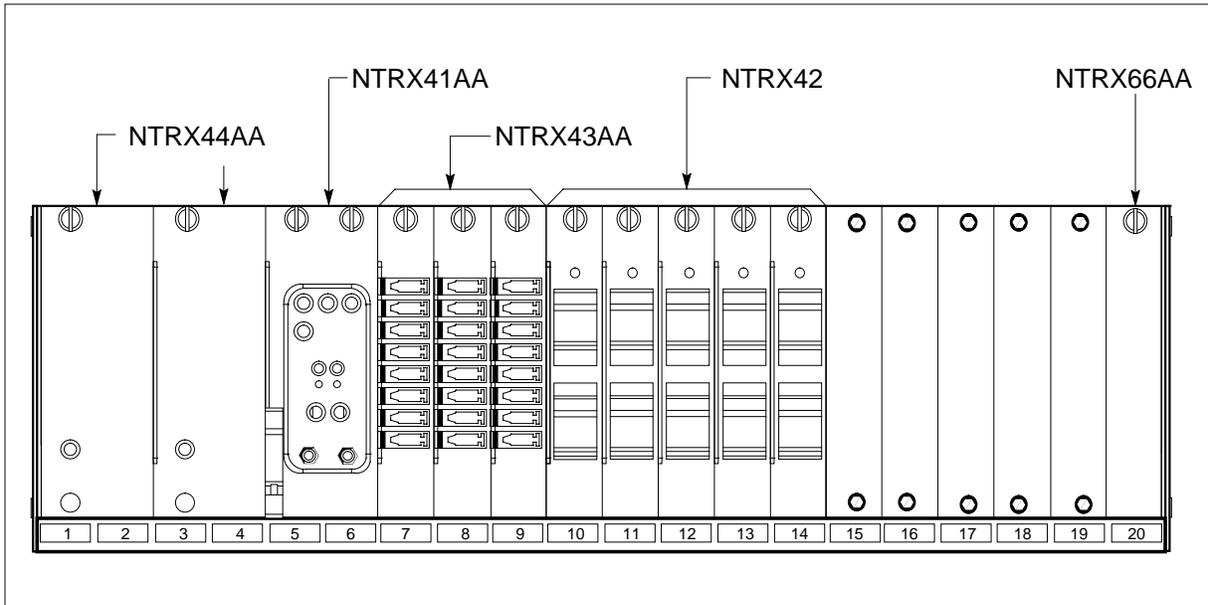
### Replacing an NTRX42 in MSP

#### *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 Obtain a replacement card. Verify that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At Row A Bay 1 of the IOPAC cabinet*

- 3 Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



- 4 Use the breaker designation label to identify which cards are serviced by each circuit breaker (CB). For example, the label CB01-0/18-01 identifies circuit breaker 01 as controlling circuit card position 01 on shelf location 18 in bay 0. Many RX42 modules service two separate devices or units; both units must be powered down prior to removal of the associated RX42 circuit card.

| If CB powers | DoGo to |
|--------------|---------|
| RMM shelf    | step 5  |
| ILCM         | step 9  |

## NTRX42 in an IOPAC MSP (continued)

### At the MAP display

- 5 Set the MAP display to the PM level and post the RMM by typing the following string:

```
>MAPCI;MTC;PM;POST RMM rmm_no
```

and pressing the Enter key.

where

**rmm\_no**

is the number of the RMM unit from which the card is to be removed

*Example of a MAP display:*

| CM         | MS      | IOD        | Net  | PM   | CCS  | LNS | Trks | Ext  | Appl |
|------------|---------|------------|------|------|------|-----|------|------|------|
| .          | .       | .          | .    | .    | .    | .   | .    | .    | .    |
| <b>RMM</b> |         |            | SysB | ManB | OffL |     | CBsy | ISTb | InSv |
| 0          | Quit    | PM         | 4    | 0    | 10   |     | 3    | 3    | 130  |
| 2          | Post_   | <b>RMM</b> | 0    | 1    | 1    |     | 0    | 0    | 2    |
| 3          |         |            |      |      |      |     |      |      |      |
| 4          |         | RMM        | 5    | INSV |      |     |      |      |      |
| 5          | Trnsl   |            |      |      |      |     |      |      |      |
| 6          | Tst     |            |      |      |      |     |      |      |      |
| 7          | Bsy     |            |      |      |      |     |      |      |      |
| 8          | RTS     |            |      |      |      |     |      |      |      |
| 9          | OffL    |            |      |      |      |     |      |      |      |
| 10         | LoadPM  |            |      |      |      |     |      |      |      |
| 11         | Disp_   |            |      |      |      |     |      |      |      |
| 12         | Next    |            |      |      |      |     |      |      |      |
| 13         |         |            |      |      |      |     |      |      |      |
| 14         | QueryPM |            |      |      |      |     |      |      |      |
| 15         |         |            |      |      |      |     |      |      |      |
| 16         |         |            |      |      |      |     |      |      |      |
| 17         |         |            |      |      |      |     |      |      |      |
| 18         |         |            |      |      |      |     |      |      |      |

- 6 Busy the RMM by typing the following string:

```
>BSY
```

and pressing the Enter key.

*Example of a MAP display:*

## NTRX42 in an IOPAC MSP (continued)

| CM         | MS      | IOD        | Net  | PM    | CCS  | LNS | Trks | Ext  | Appl |
|------------|---------|------------|------|-------|------|-----|------|------|------|
| .          | .       | .          | .    | lManB | .    | .   | .    | .    | .    |
| <b>RMM</b> |         |            | SysB | ManB  | OffL |     | CBsy | ISTb | InSv |
| 0          | Quit    | PM         | 4    | 0     | 10   |     | 0    | 0    | 130  |
| 2          | Post_   | <b>RMM</b> | 0    | 1     | 0    |     | 0    | 0    | 0    |
| 3          |         |            |      |       |      |     |      |      |      |
| 4          |         | RMM        | 5    | ManB  |      |     |      |      |      |
| 5          | Trnsl   |            |      |       |      |     |      |      |      |
| 6          | Tst     |            |      |       |      |     |      |      |      |
| 7          | Bsy     |            |      |       |      |     |      |      |      |
| 8          | RTS     |            |      |       |      |     |      |      |      |
| 9          | OffL    |            |      |       |      |     |      |      |      |
| 10         | LoadPM  |            |      |       |      |     |      |      |      |
| 11         | Disp_   |            |      |       |      |     |      |      |      |
| 12         | Next    |            |      |       |      |     |      |      |      |
| 13         |         |            |      |       |      |     |      |      |      |
| 14         | QueryPM |            |      |       |      |     |      |      |      |
| 15         |         |            |      |       |      |     |      |      |      |
| 16         |         |            |      |       |      |     |      |      |      |
| 17         |         |            |      |       |      |     |      |      |      |
| 18         |         |            |      |       |      |     |      |      |      |

### **At the RMM shelf**

- 7 Power down the unit by setting the ON/OFF switch on the power converter faceplate to the OFF position. Both the CONVERTER FAIL LED and FRAME FAIL LED on the MSP will be ON.
- 8 Go to step 11.

### **At the MAP terminal**

- 9 Set the MAP display to the PM level and post the ILCM powered by the circuit breaker by typing the following string:

```
>MAPCI;MTC;PM;POST ILCM site frame lcm
```

and pressing the Enter key.

where

**site**

is the name of the site at which the ILCM is located

**lframe**

is the number of the frame in which the ILCM is located

**lcm**

is the number of the ILCM the circuit breaker supplies power to

*Example of a MAP display:*

## NTRX42 in an IOPAC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      .      .      .      .      .      .
ILCM      SysB      ManB      OffL      CBSy      ISTb      InSv
0 Quit      PM      4      0      10      3      3      130
2 Post_     ILCM    1      0      5      0      1      9
3
4 Swrg_     ILCM      Rem1  00 0 ISTb  Links_OOS:  CSide 1
5 Trnsl_    Unit-0:  InSv      /RG:  0
6 Tst_     Unit-1:  InSv      /RG:  0
7 Bsy_     Drwr:    01 23 45 67 89 01 23 45 67 89      RG:Pref:0 InSv
8 RTS_     Stby:1  InSv
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18

```

**10** Busy the ILCM unit powered by the circuit breaker, by typing the following string:

```
>BSY UNIT lcm_unit_no
```

and pressing the Enter key.

where

**lcm\_unit\_no**

is the number of the ILCM unit with the circuit card powered from the circuit breaker

*Example of a MAP display:*

**NTRX42**  
**in an IOPAC MSP (continued)**

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      IILCM      .      .      .      .      .
IILCM.      SysB      ManB      OffL      CBSy      ISTb      InSv
0 Quit      PM      4      1      10      3      3      130
2 Post_     IILCM.      1      1      5      0      1      9
3
4 SwRg      IILCM      Rem1  OO O  ISTb      Links_OOS:  CSide 1
5 Trnsl      Unit-0:  InSv  Mtce  TakeOver  /RG: 0
6 Tst      Unit-1:  ManB  Mtce      /RG: 0
7 Bsy      Drwr: 01 23 45 67 89 01 23 45 67 89  RG:Pref:0 InSv
8 RTS      Stby:1 InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

**At the front of the MSP**

- 11 Locate the faulty circuit breaker card on the MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.

## NTRX42 in an IOPAC MSP (continued)

### *At the rear of the MSP*

12



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Wear a wrist strap connected to a wrist strap grounding point.  
This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.



**DANGER**

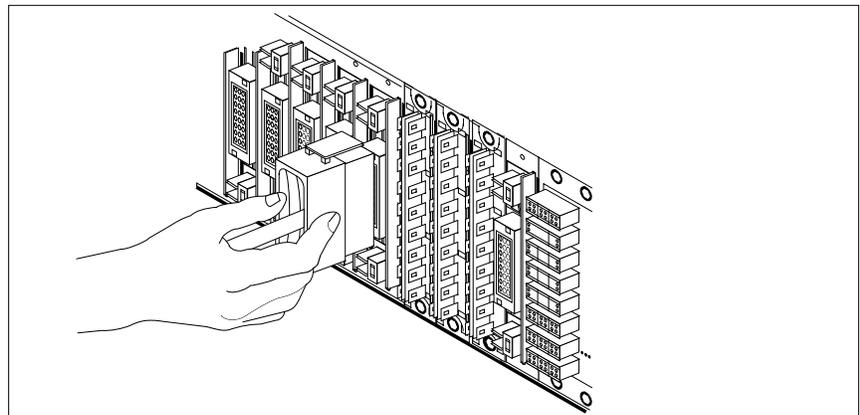
**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

Put on a wrist strap.

13

Swing the frame out and locate the NTRX42 circuit card. Ensure the card location by checking the slot number stamped into the chassis.

- a Note wire color and location to facilitate reconnection.

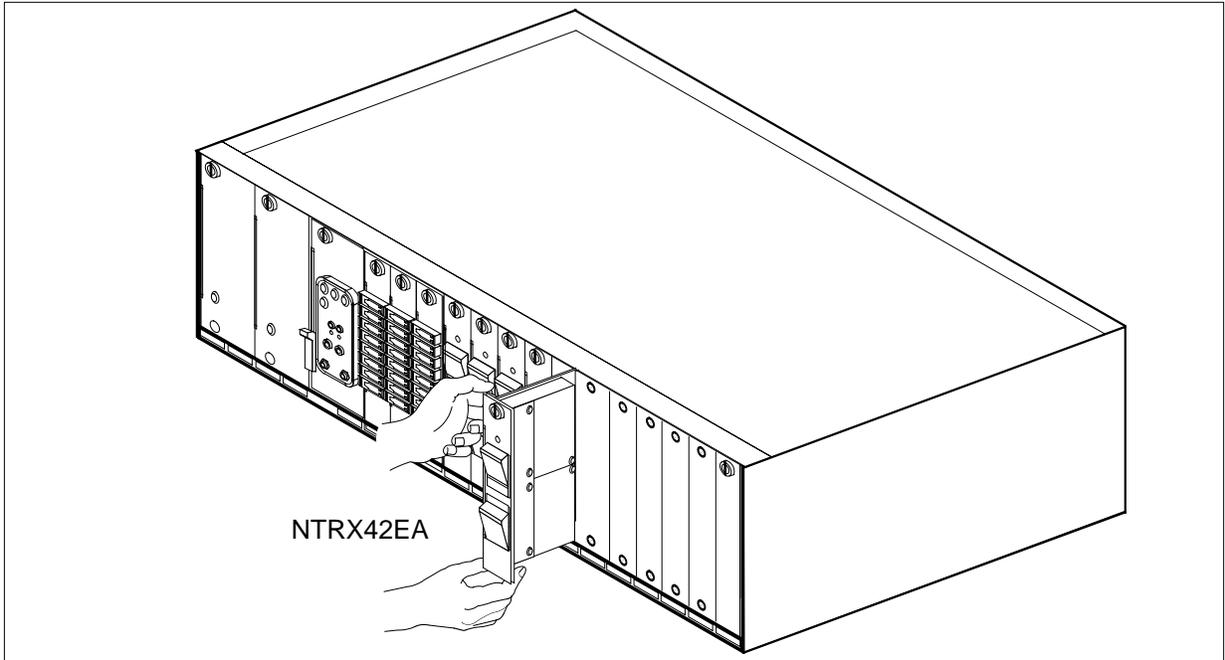


- b Safety tag the front of the circuit breaker to indicate maintenance activity.



## **NTRX42** **in an IOPAC MSP (continued)**

---

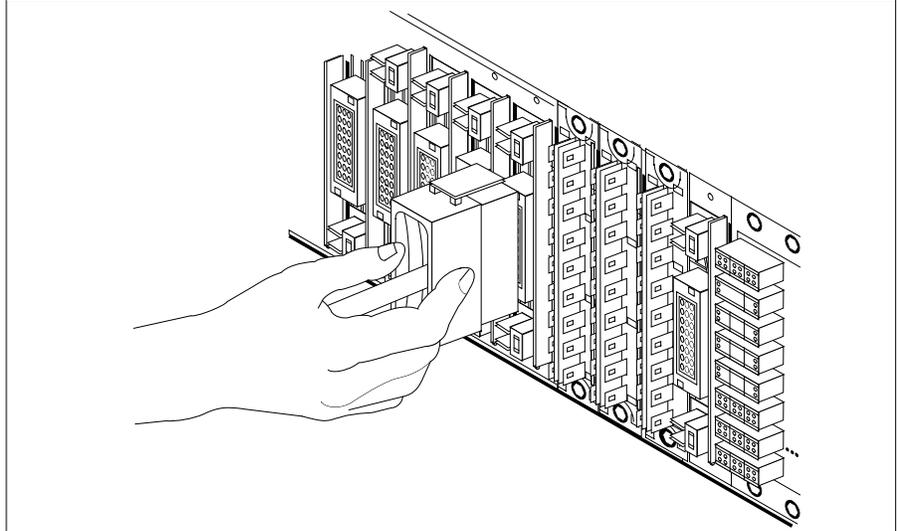


- 16** Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a** Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b** Gently but firmly seat the circuit card.
  - c** Tighten the captive screw at the top of the circuit card.

### ***At the rear of the MSP***

- 17** Locate the replaced circuit card and reattach the power connectors.
- 18** Replace any jumper connectors and cables removed in step 14. Reinsert the power connectors at the rear of the circuit card.

## NTRX42 in an IOPAC MSP (continued)



### ***At the front of the MSP***

- 19** Apply appropriate label from spare parts on replacement NTRX42 circuit card.
- 20** Switch on associated power converter.
- 21** Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 22** Remove safety tag from front of circuit breaker.
- 23** Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.

| If CB powers | DoGo to |
|--------------|---------|
| ILCM         | step 24 |
| RMM          | step 44 |

### ***At the MAP terminal***

- 24** Load the ILCM unit by typing  

```
>LOADPM UNIT lcm_unit_no CC
```

 and pressing the Enter key.  
*where*

**NTRX42**  
**in an IOPAC MSP** (continued)

---

**lcm\_unit\_no**  
 is the number of the ILCM unit to loaded (0 or 1)

|           | <b>If</b>                                                                                                                                                                                                                  | <b>Do</b> |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|           | message "loadfile not found in directory" is not received                                                                                                                                                                  | step 25   |
|           | load passed                                                                                                                                                                                                                | step 42   |
|           | load failed                                                                                                                                                                                                                | step 51   |
| <b>25</b> | Determine the type of device on which the PM load files are located.                                                                                                                                                       |           |
|           | <b>If load files are located on</b>                                                                                                                                                                                        | <b>Do</b> |
|           | tape                                                                                                                                                                                                                       | step 26   |
|           | IOC disk                                                                                                                                                                                                                   | step 32   |
|           | SLM disk                                                                                                                                                                                                                   | step 37   |
| <b>26</b> | Locate the tape that contains the PM load files.                                                                                                                                                                           |           |
| <b>27</b> | Mount the tape on a magnetic tape drive.                                                                                                                                                                                   |           |
|           | <b>At the MAP display</b>                                                                                                                                                                                                  |           |
| <b>28</b> | Download the tape by typing<br>>MOUNT <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files                                      |           |
| <b>29</b> | List the contents of the tape in your user directory by typing<br>>LIST T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files. |           |
| <b>30</b> | Demount the tape drive by typing<br>>DEMOUNT T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i>                                                                                                               |           |

---

**NTRX42**  
**in an IOPAC MSP (continued)**

---

**tape\_no**

is the number of the tape drive containing the PM load files

- 31** Go to step 41.
- 32** From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.
- 33** Access the disk utility level of the MAP by typing  
**>DSKUT**  
and pressing the Enter key.
- 34** List the IOC file names into your user directory by typing  
**>LISTVOL volume\_name ALL**  
and pressing the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 32.
- 35** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.
- 36** Go to step 41.
- 37** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 38** Access the disk utility level of the MAP by typing  
**>DISKUT**  
and pressing the Enter key.
- 39** List the SLM file names into your user directory by typing  
**>LV CM**  
and pressing the Enter key.  
**>LF load\_file\_name**  
and pressing the Enter key.  
*where*  
**load\_file\_name**  
is the name of the volume that contains the PM load files, obtained in step 37.
- 40** Leave the disk utility by typing  
**QUIT**  
and pressing the Enter key.

## NTRX42 in an IOPAC MSP (continued)

---

- 41 LOAD the PM by typing  
>LOADPM UNIT **unit\_no** CC  
and pressing the Enter key.
- | If LOADPM | Do      |
|-----------|---------|
| passed    | step 42 |
| failed    | step 51 |
- 42 Test the ILCM unit by typing  
>TST UNIT **lcm\_unit\_no**  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the ILCM unit busied.
- | If TST | Do      |
|--------|---------|
| passed | step 43 |
| failed | step 51 |
- 43 Return the ILCM unit to service by typing the following string:  
>RTS UNIT **lcm\_unit\_no**  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the ILCM unit tested in step 42
- | If RTS | Do      |
|--------|---------|
| passed | step 44 |
| failed | step 51 |
- 44 Access the PM level of the MAP display and post the RMM by typing  
>MAPCI;MTC;PM;POST RMM **rmm\_no**  
and pressing the Enter key.  
*where*  
**rmm\_no**  
is the number of the RMM unit from which the card is to be removed  
*Example of a MAP display:*

## NTRX42 in an IOPAC MSP (continued)

| CM         | MS      | IOD        | Net  | PM   | CCS | LNS  | Trks | Ext  | Appl |
|------------|---------|------------|------|------|-----|------|------|------|------|
| .          | .       | .          | .    | .    | .   | .    | .    | .    | .    |
| <b>RMM</b> |         |            | SysB | ManB |     | OffL | CBsy | ISTb | InSv |
| 0          | Quit    | PM         | 4    | 0    |     | 10   | 3    | 3    | 130  |
| 2          | Post_   | <b>RMM</b> | 0    | 1    |     | 1    | 0    | 0    | 2    |
| 3          |         |            |      |      |     |      |      |      |      |
| 4          |         | RMM        | 5    | ManB |     |      |      |      |      |
| 5          | Trnsl   |            |      |      |     |      |      |      |      |
| 6          | Tst     |            |      |      |     |      |      |      |      |
| 7          | Bsy     |            |      |      |     |      |      |      |      |
| 8          | RTS     |            |      |      |     |      |      |      |      |
| 9          | OffL    |            |      |      |     |      |      |      |      |
| 10         | LoadPM  |            |      |      |     |      |      |      |      |
| 11         | Disp_   |            |      |      |     |      |      |      |      |
| 12         | Next    |            |      |      |     |      |      |      |      |
| 13         |         |            |      |      |     |      |      |      |      |
| 14         | QueryPM |            |      |      |     |      |      |      |      |
| 15         |         |            |      |      |     |      |      |      |      |
| 16         |         |            |      |      |     |      |      |      |      |
| 17         |         |            |      |      |     |      |      |      |      |
| 18         |         |            |      |      |     |      |      |      |      |

- 45** Load the RMM by typing  
>**LOADPM**  
and pressing the Enter key.

| If          | Do      |
|-------------|---------|
| load passed | step 46 |
| load failed | step 51 |

- 46** Test the RMM by typing  
>**TST**  
and pressing the Enter key.

| If TST | Do      |
|--------|---------|
| passed | step 47 |
| failed | step 51 |

- 47** Return the RMM to service by typing  
>**RTS**

**NTRX42**  
**in an IOPAC MSP (end)**

---

and pressing the Enter key.

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 48   |
| failed        | step 51   |

---

- 48** Send any faulty cards for repair according to local procedure.
- 49** Record the following items in office records:
- a** date the card was replaced.
  - b** serial number of the card.
  - c** symptoms that prompted replacement of the card.
- 50** Go to step 52.
- 51** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 52** You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX42 in an OPAC MSP

### Application

Use this procedure to replace an NTRX42 card in an MSP.

| PEC    | Suffixes           | Name           |
|--------|--------------------|----------------|
| NTRX42 | AA, BA, CA, DA, EA | Breaker Module |

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

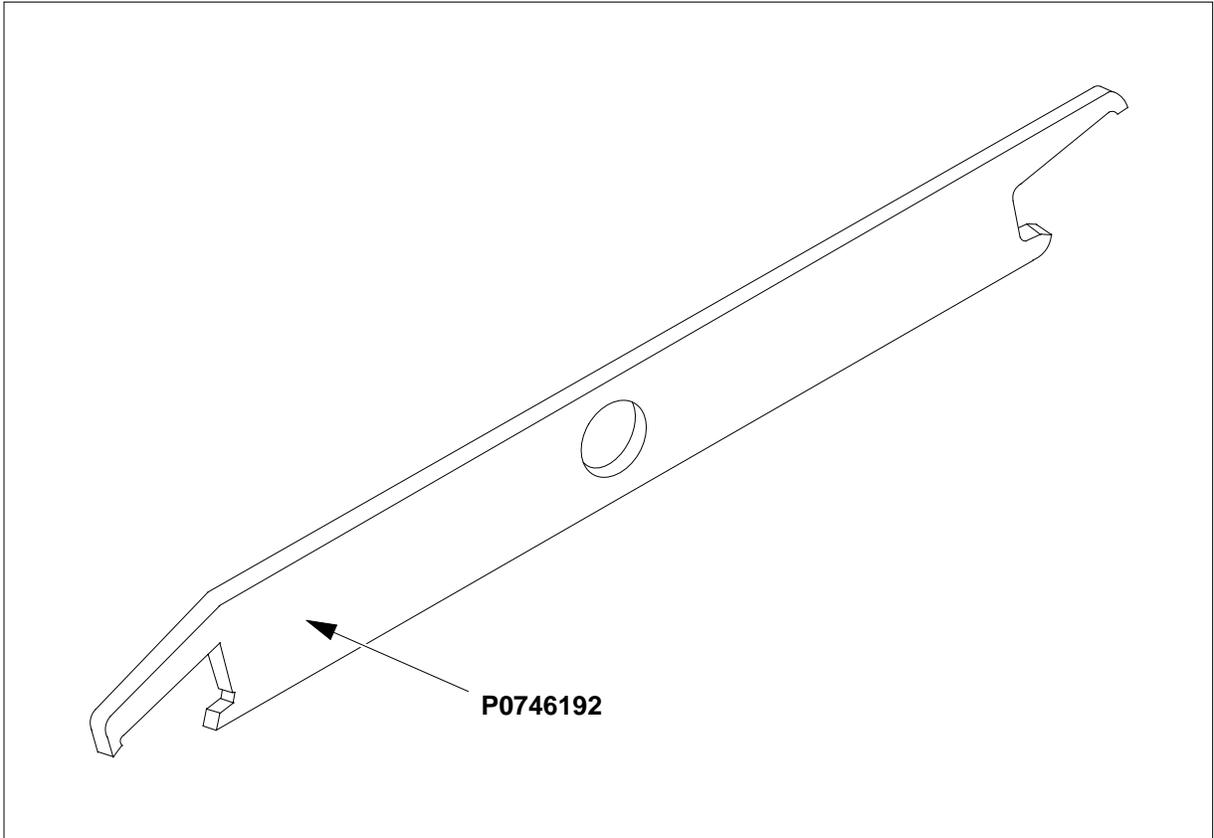
Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

The following is an illustration of the connector removal tool.

## **NTRX42** **in an OPAC MSP** (continued)

---

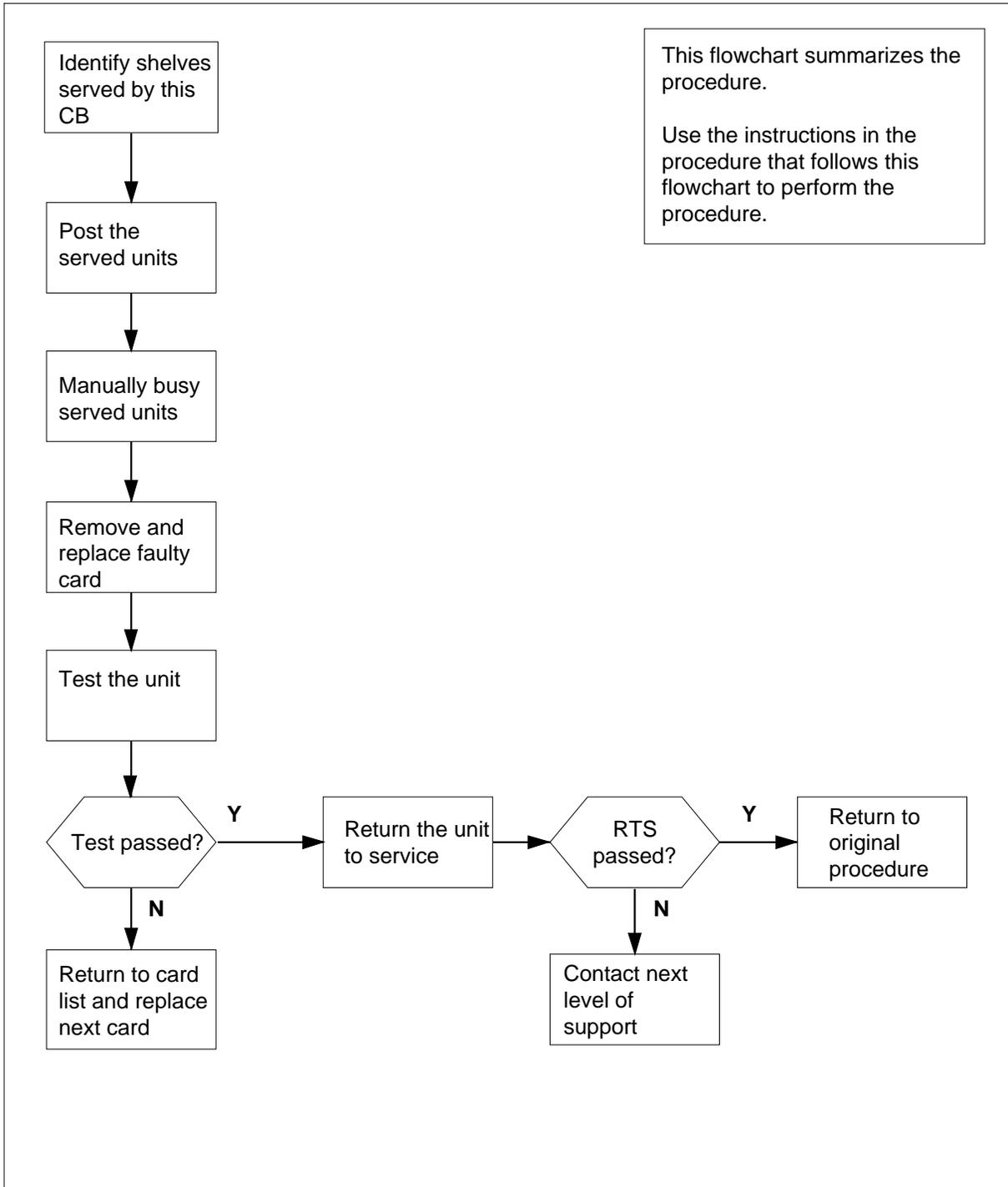
### **Connector removal tool**



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. The detailed procedure depends on which circuit cards are served by the breaker module circuit card (NTRX42). You will be directed to the appropriate steps depending on your configuration.

**NTRX42**  
**in an OPAC MSP** (continued)

**Summary of card replacement procedure for an NTRX42 card in an MSP**



## NTRX42 in an OPAC MSP (continued)

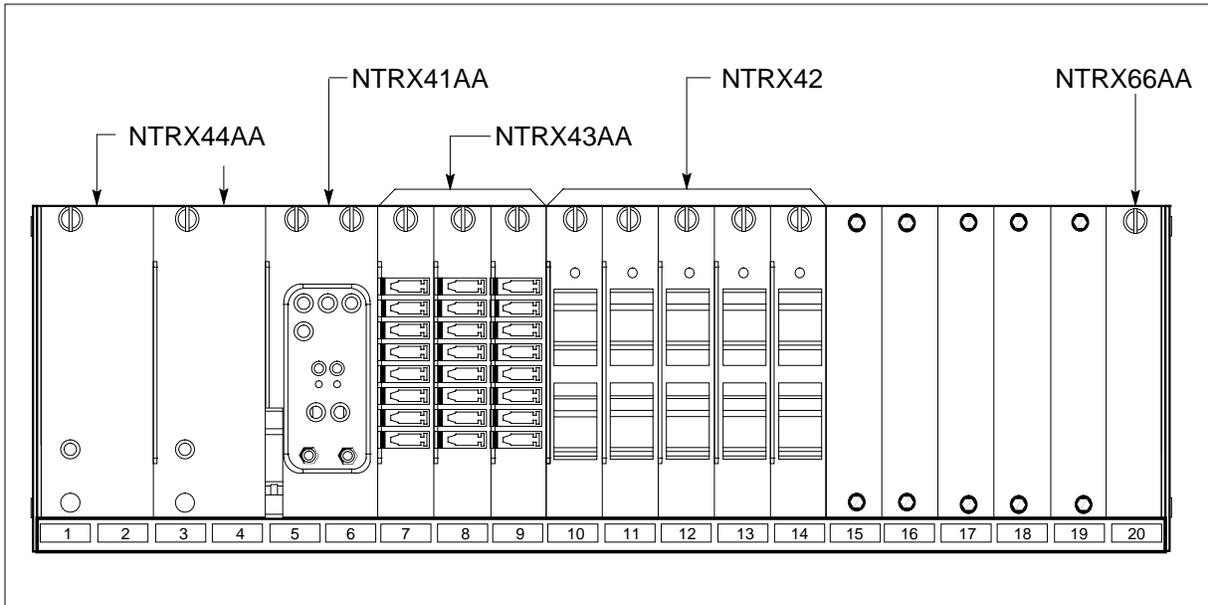
### Replacing an NTRX42 in an MSP

#### 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 Obtain a replacement card. Verify that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At Bay 1 of the OPAC

- 3 Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



- 4 Use the breaker designation label to identify which cards are serviced by each circuit breaker (CB). For example, the label CB01-0/18-01 identifies circuit breaker 01 as controlling circuit card position 01 on shelf location 18 in bay 0. Many RX42 modules service two separate devices or units; both units must be powered down prior to removal of the associated RX42 circuit card.

| If CB powers | DoGo to |
|--------------|---------|
| RMM shelf    | step 5  |
| LCM          | step 9  |

## NTRX42 in an OPAC MSP (continued)

### At the MAP display

- 5 Set the MAP display to the PM level and post the RMM by typing the following string:

```
>MAPCI;MTC;PM;POST RMM rmm_no
```

and pressing the Enter key.

where

**rmm\_no**

is the number of the RMM unit from which the card is to be removed

*Example of a MAP display:*

| CM         | MS      | IOD        | Net  | PM   | CCS  | LNS | Trks | Ext  | Appl |
|------------|---------|------------|------|------|------|-----|------|------|------|
| .          | .       | .          | .    | .    | .    | .   | .    | .    | .    |
| <b>RMM</b> |         |            | SysB | ManB | OffL |     | CBsy | ISTb | InSv |
| 0          | Quit    | PM         | 0    | 0    | 10   |     | 0    | 3    | 130  |
| 2          | Post_   | <b>RMM</b> | 0    | 0    | 1    |     | 0    | 0    | 2    |
| 3          |         |            |      |      |      |     |      |      |      |
| 4          |         | RMM        | 5    | INSV |      |     |      |      |      |
| 5          | Trnsl   |            |      |      |      |     |      |      |      |
| 6          | Tst     |            |      |      |      |     |      |      |      |
| 7          | Bsy     |            |      |      |      |     |      |      |      |
| 8          | RTS     |            |      |      |      |     |      |      |      |
| 9          | OffL    |            |      |      |      |     |      |      |      |
| 10         | LoadPM  |            |      |      |      |     |      |      |      |
| 11         | Disp_   |            |      |      |      |     |      |      |      |
| 12         | Next    |            |      |      |      |     |      |      |      |
| 13         |         |            |      |      |      |     |      |      |      |
| 14         | QueryPM |            |      |      |      |     |      |      |      |
| 15         |         |            |      |      |      |     |      |      |      |
| 16         |         |            |      |      |      |     |      |      |      |
| 17         |         |            |      |      |      |     |      |      |      |
| 18         |         |            |      |      |      |     |      |      |      |

- 6 Busy the RMM by typing the following string:

```
>BSY
```

and pressing the Enter key.

*Example of a MAP display:*

## NTRX42 in an OPAC MSP (continued)

| CM         | MS      | IOD        | Net  | PM   | CCS  | LNS  | Trks | Ext  | Appl |
|------------|---------|------------|------|------|------|------|------|------|------|
| .          | .       | .          | .    | .    | .    | .    | .    | .    | .    |
| <b>RMM</b> |         |            | SysB | ManB | OffL | CBsy | ISTb | InSv |      |
| 0          | Quit    | PM         | 0    | 0    | 10   | 0    | 3    | 130  |      |
| 2          | Post_   | <b>RMM</b> | 0    | 1    | 1    | 0    | 0    | 1    |      |
| 3          |         |            |      |      |      |      |      |      |      |
| 4          |         | RMM        | 5    | ManB |      |      |      |      |      |
| 5          | Trnsl   |            |      |      |      |      |      |      |      |
| 6          | Tst     |            |      |      |      |      |      |      |      |
| 7          | Bsy     |            |      |      |      |      |      |      |      |
| 8          | RTS     |            |      |      |      |      |      |      |      |
| 9          | OffL    |            |      |      |      |      |      |      |      |
| 10         | LoadPM  |            |      |      |      |      |      |      |      |
| 11         | Disp_   |            |      |      |      |      |      |      |      |
| 12         | Next    |            |      |      |      |      |      |      |      |
| 13         |         |            |      |      |      |      |      |      |      |
| 14         | QueryPM |            |      |      |      |      |      |      |      |
| 15         |         |            |      |      |      |      |      |      |      |
| 16         |         |            |      |      |      |      |      |      |      |
| 17         |         |            |      |      |      |      |      |      |      |
| 18         |         |            |      |      |      |      |      |      |      |

### At the RMM shelf

- 7 Power down the unit by setting the ON/OFF switch on the power converter faceplate to the OFF position. Both the CONVERTER FAIL LED and FRAME FAIL LED on the MSP will be ON.
- 8 Go to step 11.

### At the MAP terminal

- 9 Set the MAP display to the PM level and post the LCM powered by the circuit breaker by typing the following string:

```
>MAPCI;MTC;PM;POST LCM lcm_site_name lcm_frame_no lcm_no
```

and pressing the Enter key.

where

**lcm\_site\_name**

is the name of the site at which the LCM is located

**lcm\_frame\_no**

is the number of the frame in which the LCM is located

**lcm\_no**

is the number of the LCM the circuit breaker supplies power to

*Example of a MAP display:*

## NTRX42 in an OPAC MSP (continued)

| CM         | MS      | IOD        | Net     | PM   | CCS  | LNS  | Trks       | Ext   | Appl |
|------------|---------|------------|---------|------|------|------|------------|-------|------|
| .          | .       | .          | .       | .    | .    | .    | .          | .     | .    |
| <b>LCM</b> |         |            | SysB    | ManB | OffL | CBsy | ISTb       |       | InSv |
| 0          | Quit    | PM         | 0       | 0    | 10   | 0    | 3          |       | 130  |
| 2          | Post_   | <b>LCM</b> | 0       | 0    | 0    | 0    | 1          |       | 9    |
| 3          |         |            |         |      |      |      |            |       |      |
| 4          | Swrg_   | LCM        | REm1    | 14   | 0    | ISTb | Links_OOS: | CSide | 1    |
| 5          | Trnsl_  |            | Unit-0: | InSv |      |      | /RG:       | 0     |      |
| 6          | Tst_    |            | Unit-1: | InSv |      |      | /RG:       | 0     |      |
| 7          | Bsy_    |            |         |      | 11   | 11   | 11         | 11    | 11   |
| 8          | RTS_    | Drwr:      | 01      | 23   | 45   | 67   | 89         | 01    | 23   |
| 9          | OffL_   |            | ..      | ..   | ..   | ..   | ..         | ..    | ..   |
| 10         | LoadPM_ |            |         |      |      |      |            |       |      |
| 11         | Disp_   |            |         |      |      |      |            |       |      |
| 12         | Next_   |            |         |      |      |      |            |       |      |
| 13         |         |            |         |      |      |      |            |       |      |
| 14         | QueryPM |            |         |      |      |      |            |       |      |
| 15         |         |            |         |      |      |      |            |       |      |
| 16         |         |            |         |      |      |      |            |       |      |
| 17         |         |            |         |      |      |      |            |       |      |
| 18         |         |            |         |      |      |      |            |       |      |

- 10** Busy the LCM unit powered by the circuit breaker, by typing the following string:

```
>BSY UNIT lcm_unit_no
```

and pressing the Enter key.

*where*

**lcm\_unit\_no**

is the number of the LCM unit with the circuit card powered from the circuit breaker

*Example of a MAP display:*

**NTRX42**  
**in an OPAC MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      1LCM      .      .      .      .      .
LCM.
0 Quit      PM      SysB      ManB      OffL      CBSy      ISTb      InSv
2 Post_     LCM.      1      1      5      0      1      130
3
4 SwRg      LCM      REM1 14 0 ISTb  Links_OOS: CSide 1
5 Trnsl      Unit-0: InSv Mtce TakeOver /RG: 0
6 Tst      Unit-1: ManB Mtce /RG: 0
7 Bsy      Drwr: 01 23 45 67 89 01 23 45 67 89  RG:Pref:0 InSv
8 RTS      Stby:1 InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

**At the front of the MSP**

- 11 Locate the faulty circuit breaker card on the MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.

**NTRX42**  
**in an OPAC MSP (continued)****At the rear of the MSP**

12

**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Wear a wrist strap connected to a wrist strap grounding point.  
This protects the equipment against damage caused by static electricity.

**DANGER**

**Risk of injury from high energy levels, equipment damage**  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

**DANGER**

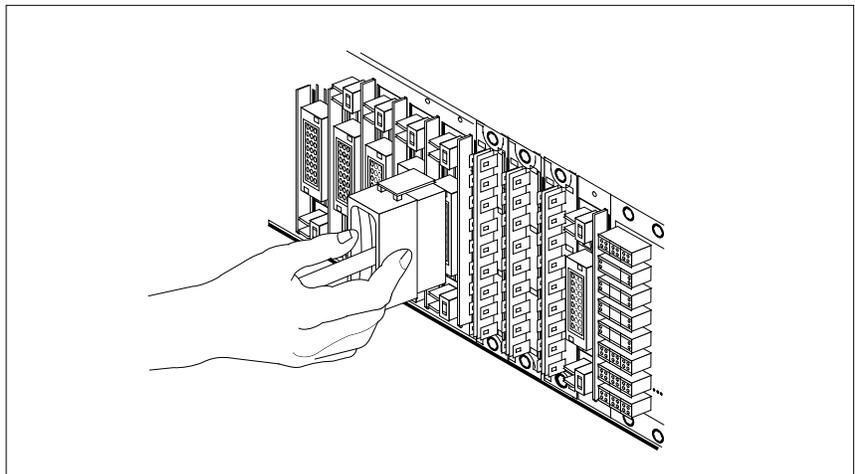
**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

Put on a wrist strap.

13

Swing the frame out and locate the NTRX42 circuit card. Ensure the card location by checking the slot number stamped into the chassis.

- a Note wire color and location to facilitate reconnection.

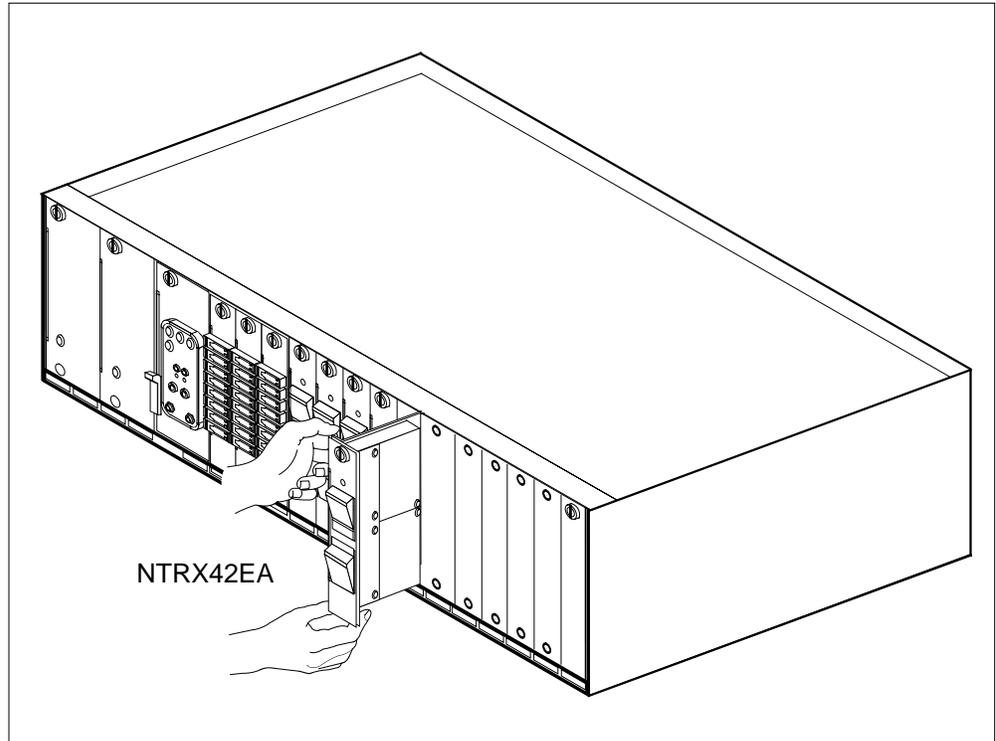




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## NTRX42 in an OPAC MSP (continued)

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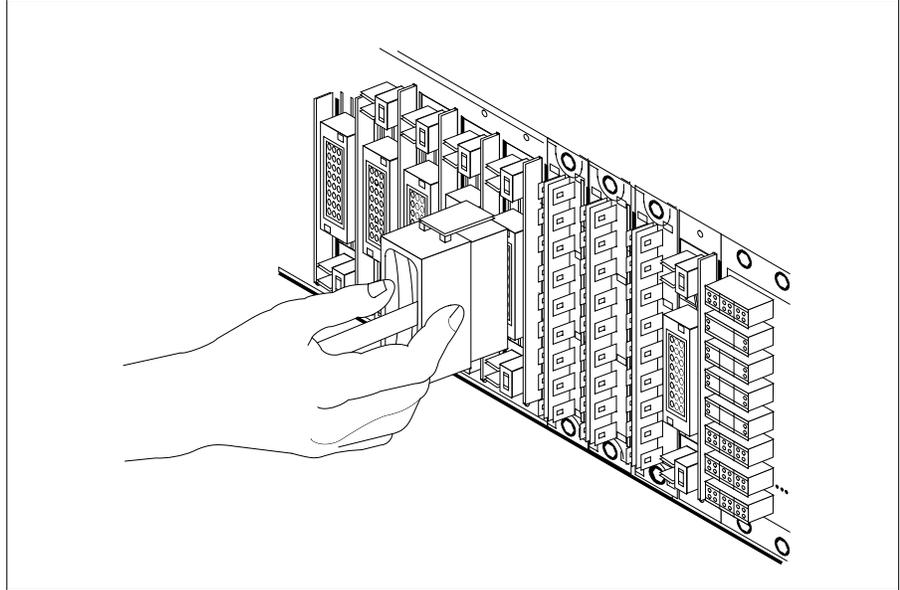
- 16** Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- a** Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b** Gently but firmly seat the circuit card.
  - c** Tighten the captive screw at the top of the circuit card.

***At the rear of the MSP***

- 17** Locate the replaced circuit card and reattach the power connectors.
- 18** Replace any jumper connectors and cables removed in step 14. Reinsert the power connectors at the rear of the circuit card.

## NTRX42 in an OPAC MSP (continued)

---



### ***At the front of the MSP***

- 19 Apply appropriate label from spare parts on replacement NTRX42 circuit card.
- 20 Switch on associated power converter.
- 21 Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 22 Remove safety tag from front of circuit breaker.
- 23 Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.

---

| <b>If CB powers</b> | <b>DoGo to</b> |
|---------------------|----------------|
| LCM                 | step 24        |
| RMM                 | step 47        |

---

### ***At the MAP terminal***

- 24 Load the LCM unit by typing  
`>LOADPM UNIT lcm_unit_no CC`  
and pressing the Enter key.  
*where*

## NTRX42 in an OPAC MSP (continued)

**lcm\_unit\_no**

is the number of the LCM unit to loaded (0 or 1)

| If                                                        | Do                                                                                                                                                                                                                         |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| message "loadfile not found in directory" is not received | step 25                                                                                                                                                                                                                    |
| load passes                                               | step 42                                                                                                                                                                                                                    |
| load fails                                                | step 70                                                                                                                                                                                                                    |
| <b>25</b>                                                 | Determine the type of device on which the PM load files are located.                                                                                                                                                       |
| If load files are located on                              | Do                                                                                                                                                                                                                         |
| tape                                                      | step 49                                                                                                                                                                                                                    |
| IOC disk                                                  | step 55                                                                                                                                                                                                                    |
| SLM disk                                                  | step 60                                                                                                                                                                                                                    |
| <b>26</b>                                                 | Locate the tape that contains the PM load files.                                                                                                                                                                           |
| <b>27</b>                                                 | Mount the tape on a magnetic tape drive.                                                                                                                                                                                   |
| <b>At the MAP display</b>                                 |                                                                                                                                                                                                                            |
| <b>28</b>                                                 | Download the tape by typing<br>>MOUNT <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files                                      |
| <b>29</b>                                                 | List the contents of the tape in your user directory by typing<br>>LIST T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i><br><b>tape_no</b><br>is the number of the tape drive containing the PM load files. |
| <b>30</b>                                                 | Demount the tape drive by typing<br>>DEMOUNT T <b>tape_no</b><br>and pressing the Enter key.<br><i>where</i>                                                                                                               |

## NTRX42 in an OPAC MSP (continued)

---

- tape\_no**  
is the number of the tape drive containing the PM load files
- 31** Go to step 64.
- 32** From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.
- 33** Access the disk utility level of the MAP by typing  
**>DSKUT**  
and pressing the Enter key.
- 34** List the IOC file names into your user directory by typing  
**>LISTVOL volume\_name ALL**  
and pressing the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 32.
- 35** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.
- 36** Go to step 64.
- 37** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 38** Access the disk utility level of the MAP by typing  
**>DISKUT**  
and pressing the Enter key.
- 39** List the SLM file names into your user directory by typing  
**>LV CM**  
and pressing the Enter key.  
**>LF load\_file\_name**  
and pressing the Enter key.  
*where*  
**load\_file\_name**  
is the name of the volume that contains the PM load files, obtained in step 37.
- 40** Leave the disk utility by typing  
**QUIT**  
and pressing the Enter key.

## NTRX42 in an OPAC MSP (continued)

- 
- 41** LOAD the PM by typing  
>LOADPM UNIT *unit\_no* CC  
and pressing the Enter key.
- | If LOADPM | Do      |
|-----------|---------|
| passed    | step 42 |
| failed    | step 70 |
- 
- 42** Test the LCM unit by typing  
>TST UNIT *lcm\_unit\_no*  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the LCM unit busied.
- | If TST | Do      |
|--------|---------|
| passed | step 43 |
| failed | step 70 |
- 
- 43** Return the LCM unit to service by typing the following string:  
>RTS UNIT *lcm\_unit\_no*  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the LCM unit tested in step 42
- | If RTS | Do      |
|--------|---------|
| passed | step 44 |
| failed | step 70 |
- 
- 44** Send any faulty cards for repair according to local procedure.
- 45** Record the following items in office records:
- a** date the card was replaced.
  - b** serial number of the card.
  - c** symptoms that prompted replacement of the card.
- 46** Go to step 71.
- 47** Load the RMM by typing  
>LOADPM
-

**NTRX42**  
**in an OPAC MSP** (continued)

---

and pressing the Enter key.

| <b>If</b>                                                 | <b>Do</b> |
|-----------------------------------------------------------|-----------|
| message "loadfile not found in directory" is not received | step 48   |
| load passes                                               | step 65   |
| load fails                                                | step 70   |

**48** Determine the type of device on which the PM load files are located.

| <b>If load files are located on</b> | <b>Do</b> |
|-------------------------------------|-----------|
| tape                                | step 49   |
| IOC disk                            | step 55   |
| SLM disk                            | step 60   |

**49** Locate the tape that contains the PM load files.

**50** Mount the tape on a magnetic tape drive.

***At the MAP display***

**51** Download the tape by typing

**>MOUNT tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

**52** List the contents of the tape in your user directory by typing

**>LIST T tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files.

**53** Demount the tape drive by typing

**>DEMOUNT T tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

**54** Go to step 64.

---

**NTRX42**  
**in an OPAC MSP (continued)**

---

- 55** From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.
- 56** Access the disk utility level of the MAP by typing  
>**DSKUT**  
and pressing the Enter key.
- 57** List the IOC file names into your user directory by typing  
>**LISTVOL volume\_name ALL**  
and pressing the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 55.
- 58** Leave the disk utility by typing  
>**QUIT**  
and pressing the Enter key.
- 59** Go to step 64.
- 60** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 61** Access the disk utility level of the MAP by typing  
>**DISKUT**  
and pressing the Enter key.
- 62** List the SLM file names into your user directory by typing  
>**LV CM**  
and pressing the Enter key.  
>**LF S00Dload\_file\_name**  
and pressing the Enter key.  
*where*  
**load\_file\_name**  
is the name of the volume that contains the PM load files, obtained in step 60.
- 63** Leave the disk utility by typing  
**QUIT**  
and pressing the Enter key.
- 64** Load the RMM by typing  
>**LOADPM**

**NTRX42**  
**in an OPAC MSP (end)**

---

and pressing the Enter key.

---

| <b>If load</b> | <b>Do</b> |
|----------------|-----------|
| passed         | step 65   |
| failed         | step 70   |

---

- 65** Test the RMM by typing  
>**TST**  
and pressing the Enter key.

---

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 66   |
| failed        | step 70   |

---

- 66** Return the RMM to service by typing  
>**RTS**  
and pressing the Enter key.

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 67   |
| failed        | step 70   |

---

- 67** Send any faulty cards for repair according to local procedure.
- 68** Record the date card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 69** Go to step 71.
- 70** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 71** You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX42 in an RSC-M/MSP

### Application

Use this procedure to replace an NTRX42 card in a modular supervisory panel (MSP) that supports a Remote Switching Center Multi-access (RSC-M) cabinet.

**Note:** In this section, RCO2 in the examples refers to RSC-M. When software outputs messages to the MAP terminal, software does not differentiate between the two types of RCO2.

| PEC    | Suffixes | Name                   |
|--------|----------|------------------------|
| NTRX42 | AA       | Circuit breaker module |

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles. This tool facilitates removal of these receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in) and P0747552 254 mm (10 in). You can use the shorter tool when access to the rear of the MSP is limited. For example, limited access can be MSP modules located behind the cabinet bulkhead.

This tool is approximately 2 mm (0.090 in) thick and 17 mm (0.65 in) wide, with a jaw-like cutout at each end. The cutout profile conforms to the shape of the Faston receptacle. You can use the shorter tip of each profile to position the receptacle in the tool.

The first connection point of the tool serves as the pivot point. To engage the longer profile tip with the action-arm of the power connector, rotate the tool around the pivot point. The longer tip of the profile is the tip that has a hook on the end. As the tool presses the action-arm of the connector, the receptacle disengages from the connector tab. To remove the receptacle, pull the tool away from the connector with the receptacle trapped in the jaw of the tool. To disengage the tool from the receptacle, rotate the hook of the tool off the action-arm of the receptacle.

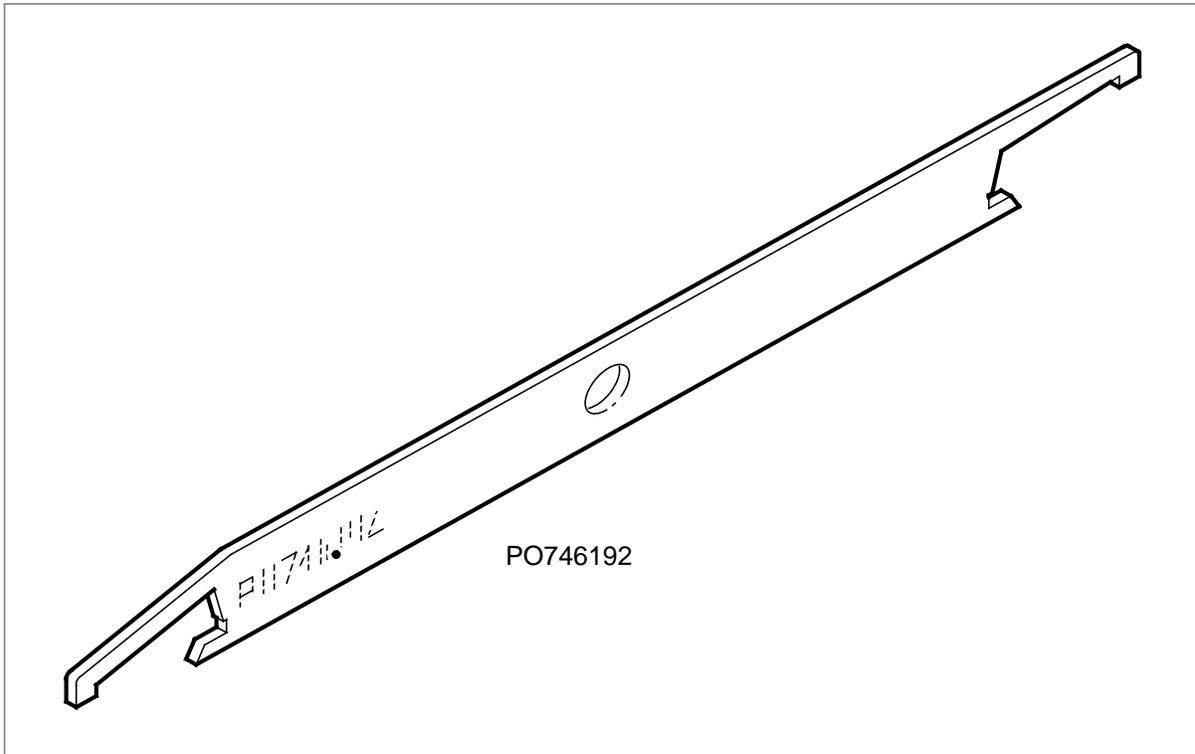
The cutout shape is the same on each tool end, but the orientation of the profile is off by 15 degrees. This difference enables the use of the tool at different

## **NTRX42** **in an RSC-M/MSP** (continued)

---

angles. You can require the use of these angles because of limited access to the connectors.

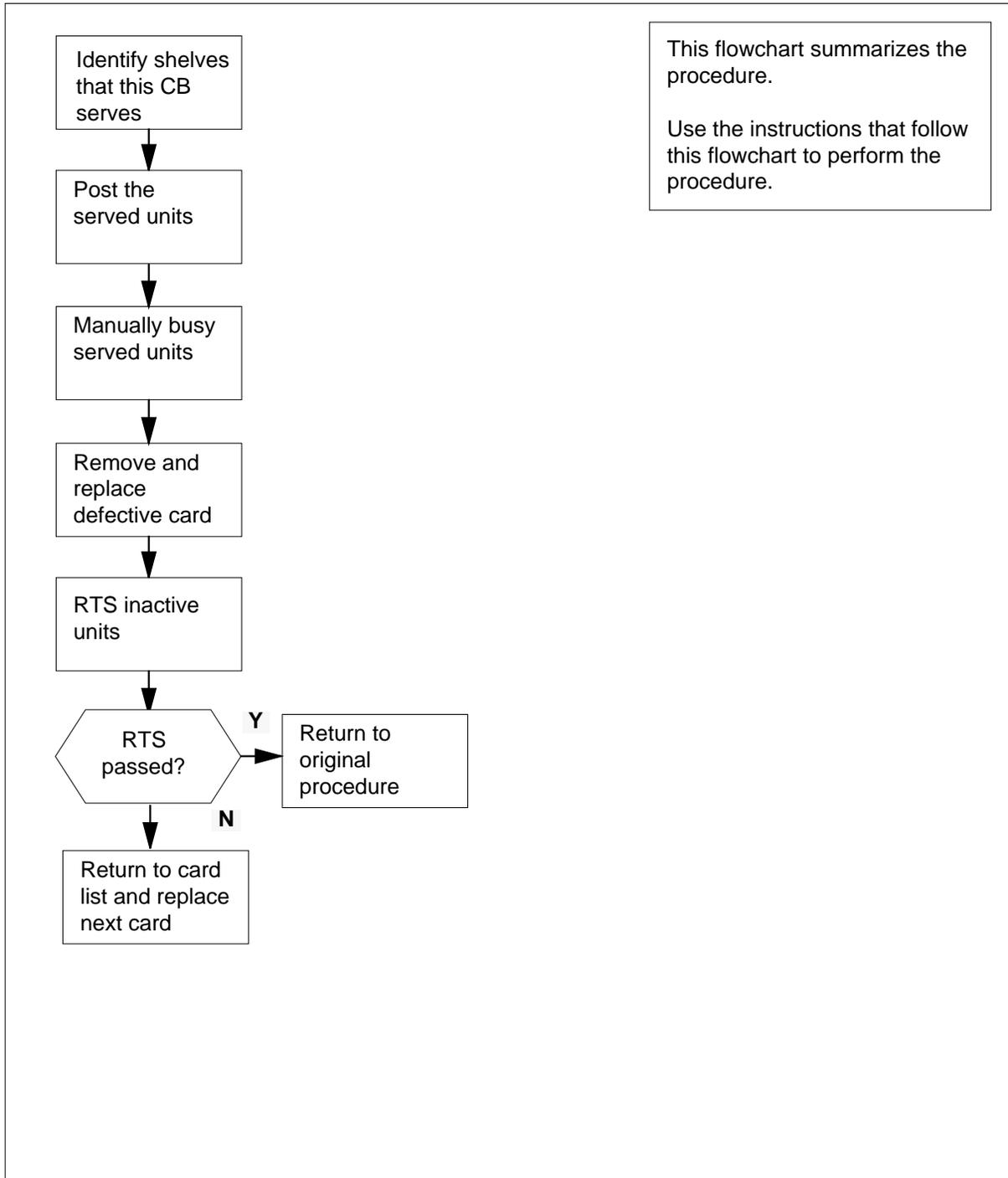
### **Connector removal tool**



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. The detailed procedure depends on which circuit cards the breaker module circuit card (NTRX42) serves. Instructions will direct you to the correct steps that depend on your configuration.

## NTRX42 in an RSC-M/MSP (continued)

### Summary of replacing an NTRX42 in an RSC-M/MSP



## NTRX42 in an RSC-M/MSP (continued)

### Replacing an NTRX42 in an RSC-M/MSP

#### At the MAP terminal

- 1 Proceed only if one of the following conditions applies. Your maintenance support group or a step in a maintenance procedure directed you to this card replacement procedure. You use the procedure to verify or accept cards.
- 2



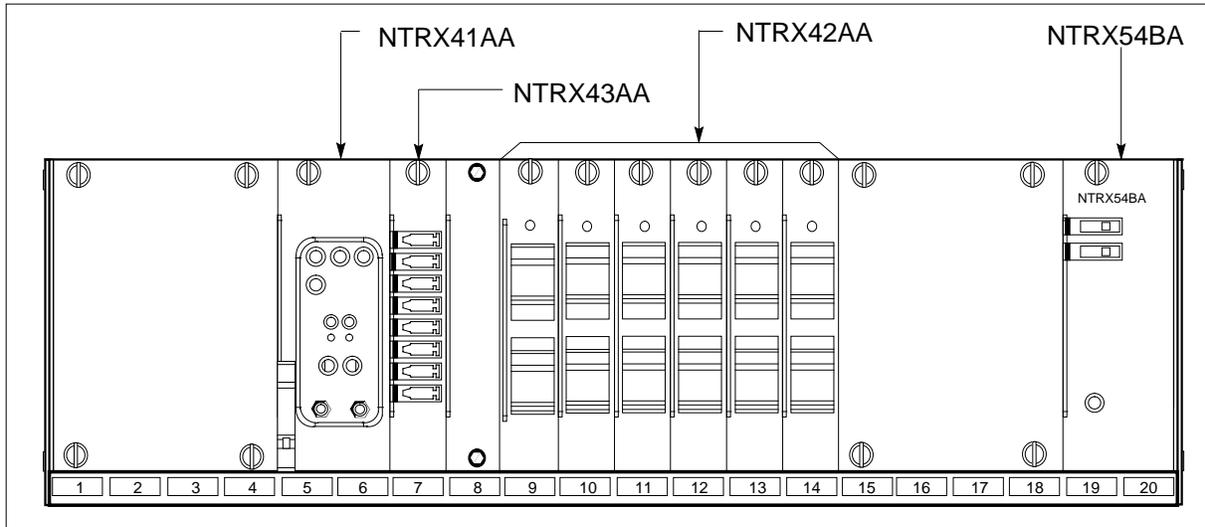
**WARNING**  
**Loss of service**  
When you replace an NTRX42 card in the RSC-M, make sure the units associated with the NTRX42 card are *inactive*. Make sure the mate units are *active*.

Obtain an NTRX42 replacement circuit card. Make sure the replacement circuit card has the same product equipment code (PEC) and PEC suffix as the circuit card to remove.

#### At the front panel of the cabinet

- 3 Open the front cover of the MSP. Release the two cover latches. Swing the cover down to the open position.

### MSP



- 4 Use the breaker designation label to identify the circuit cards each circuit breaker (CB) services. Many modules of NTRX42 service two separate

## NTRX42 in an RSC-M/MSP (continued)

devices (or units). You must power down both units before removal of the associated NTRX42 circuit card.

### At the MAP terminal

- 5 Set the MAP display to the peripheral module (PM) level. To post the RSC-M/RCO2 that the NTRX42 circuit breaker card powers, type

```
>MAPCI;MTC;PM;POST RCO2 rco2_no
```

and press the Enter key.

where

**rco2\_no**

is the number of the RCO2 that the NTRX42 card powers

Example of a MAP response:

```
RCO2          SysB      ManB      OffL      Cbsy      ISTb      InSv
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCO2          0          0          0          0          1          1
3 ListSet
4           RCO2      0 ISTb Links_OOS: CSide 1, PSide 1
5 TRNSL     Unit0:      Inact ISTb
6 TST       Unit1:      Act InSv
7 BSY
8 RTS
9 OffL
10 LoadPM_
11 Disp_
12 Next_
```

- 6 To determine the location of the RSC-M units or extension (EXT) half shelves that the circuit card you replace powers, type

```
>QUERYPM
```

and press the Enter key.

Example of a MAP response:

```
PM Type: RCO2 PM No.: 0 PM Int. No.: 9 Node_No: 24
PMs Equipped: 53 Loadname:KRI07BI1 EEPROM Load:MX77NG03
WARM SWACT is supported and available
RCO2 0 is included in the REX schedule.
REX on RCO2 0 has not been performed.
Node Status: {OK, FALSE}
Unit 0 Act, Status: {OK, FALSE}
Unit 1 Inact, Status: {OK, FALSE}
Site Flr RPos Bay_id Shf Description Slot EqPEC
HOST 00 C02 LTEI 00 05 RCO2 000 MX85AA
HOST 00 C02 CEXT 00 47 EXT:LEFT 01:13 MX86AA
```

## NTRX42 in an RSC-M/MSP (continued)

- 7 Use the following table to determine the RSCM PM units or EXT half shelves associated with the NTRX42 card that you replace.

**Note:** You must busy all RCO2 units or EXT half shelves associated with the circuit breakers on the defective NTRX42 card before replacement. For example, replacement of the NTRX42 card with CB3 and CB4 affects unit 1 of the RSCM located in shelf 5. This replacement also affects unit 1 of the RSCM located in shelf 19.

### RSC-M shelves powered by NTRX42 circuit breakers

| CB1 and CB2            | CB3 and CB4            | CB5 and CB6            | CB7 and CB8            | CB9 and CB10                                                      | CB11 and CB12                                                     |
|------------------------|------------------------|------------------------|------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| CB1 shelf 5<br>unit 0  | CB3 shelf 5<br>unit 1  | CB5 shelf 33<br>unit 0 | CB7 shelf 33<br>unit 1 | CB9 shelf 47<br>EXT left to unit<br>0 of RSCM in<br>shelf 5       | CB11 shelf 47<br>EXT left to unit<br>1 of RSCM in<br>shelf 5      |
| CB2 shelf 19<br>unit 0 | CB4 shelf 19<br>unit 1 | Reserved               | Reserved               | CB10 shelf 47<br>EXT right to<br>unit 1 of<br>RSCM in shelf<br>19 | CB12 shelf 47<br>EXT right to<br>unit 0 of<br>RSCM in shelf<br>19 |

**Note 1:** Before you remove the NTRX42 card with CB9 and CB10, you must busy specified units. BSY unit 0 of the RSCM in shelf 5 and BSY unit 1 of the RSCM in shelf 19.

**Note 2:** Before you remove the NTRX42 card with CB11 and CB12, you must busy specified units. BSY unit 1 of the RSCM in shelf 5 and BSY unit 0 of the RSCM located in shelf 19.

- 8 Repeat steps 5 and 7 to determine the RSC-M unit(s) that will associate.
- 9 Determine the state of the RSC-M unit(s) associated with the NTRX42 card you want to replace.

| If the state of the RCO2 unit | Do      |
|-------------------------------|---------|
| is active                     | step 10 |
| is inactive                   | step 13 |

- 10 To switch activity of the units, type

>SWACT

and press the Enter key.

*Example of a MAP response:*

---

## NTRX42 in an RSC-M/MSP (continued)

---

RCO2 0      A Warm SwAct will be performed after  
                 data sync of active terminals.  
Please confirm ("YES", "Y", "NO", or "N"):

| If the system                       | Do      |
|-------------------------------------|---------|
| prompts you to confirm a warm SWACT | step 11 |
| rejects the SWACT                   | step 32 |

**11** To confirm the command, type

>YES

and press the Enter key.

*Example of a MAP response:*

```
Unit0:  Inact SysB Mtce
Unit1:  Act   ISTb
```

```
RCO2 0      SwAct Passed
```

| If the MAP response       | Do      |
|---------------------------|---------|
| is SWACT passed           | step 12 |
| is other than listed here | step 31 |

### ***At the MAP terminal***

**12** To manually busy (ManB) the inactive unit, type

>BSY UNIT INACTIVE

and press the Enter key.

*Example of a MAP response:*

```
RCO2      0 ISTb Links_OOS: CSide 0 , PSide 1
Unit0:    Inact ManB
Unit1:    Act   ISTb
Bsy INACTIVE
RCO2 0 Unit 0      Bsy Passed
```

| If the BSY command | Do      |
|--------------------|---------|
| passed             | step 13 |
| failed             | step 31 |

---

## NTRX42 in an RSC-M/MSP (continued)

---

- 13 Repeat steps 9 to 12 until all units powered by the NTRX42 card are in the inactive state. Place a sign on the active units that bears the words *Active unit-Do not touch*. Do not attach this sign with magnets or tape.

### **At the RCO2 shelf**

- 14 Power down the unit(s) and EXT shelves associated with the NTRX42 cards. To power down these units and shelves, set the ON/OFF switch on the power converter faceplate to the OFF position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON. An audible alarm can sound. To silence an alarm, type

>*SIL*

and press the Enter key.

### **At the front panel of the cabinet**

- 15 Determine the defective circuit breaker on the MSP. Switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.

- 16 An alarm can sound. To silence the alarm, type

>*SIL*

and press the Enter key.

### **At the rear panel of the cabinet**

17



#### **WARNING**

##### **Risk of injury from high energy levels, static electricity damage**

Wear a wrist strap that connects to the wrist-strap grounding point on the left side of the modular supervisory panel (MSP) to remove cards. The wrist strap protects the equipment from static electricity damage.



#### **DANGER**

##### **Risk of physical damage to cards**

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.
3. Do not insert metallic objects into the black connectors. Voltage is present and equipment damage can result.

Wear a wrist strap.

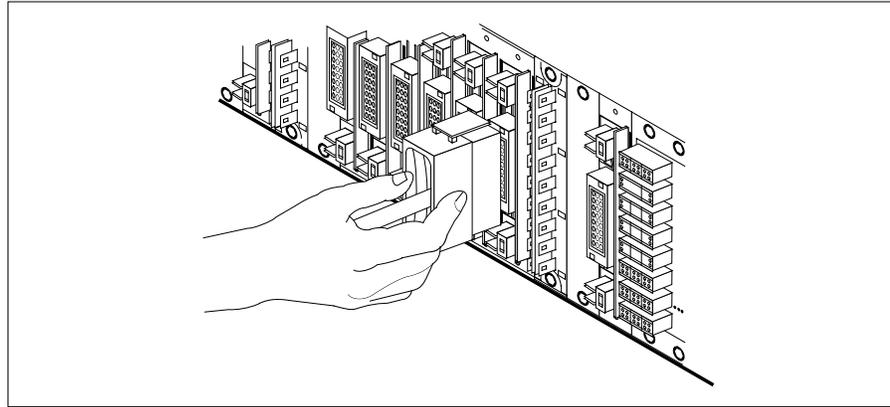
- 18 Open the rear door and locate the NTRX42 circuit card. To verify the card location, check the slot number stamped in the chassis.

---

## NTRX42 in an RSC-M/MSP (continued)

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- a Note the wire color and the location to facilitate connection again.



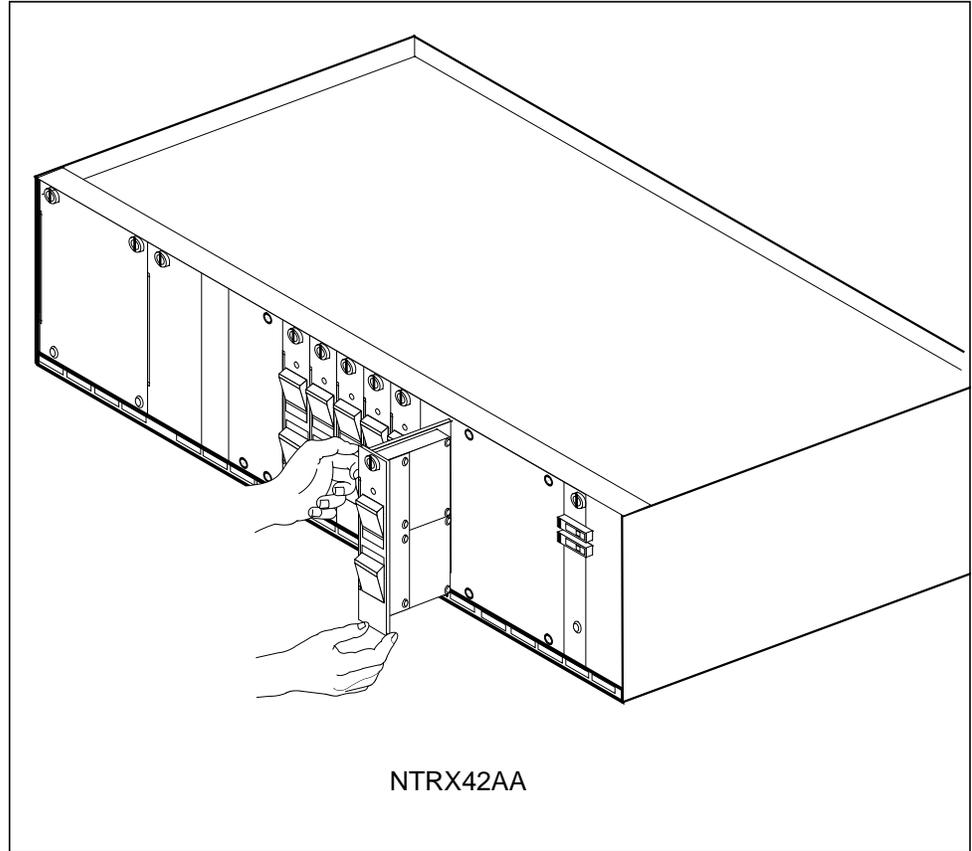
- b Safety tag the front of the circuit breaker to indicate maintenance activity.
- c Use the connector removal tool to disconnect the power connectors to the circuit card manually. Work from the bottom of the MSP shelf to the top of the MSP shelf. Manually disconnect and tag the smaller black power connectors located below the larger blue power connector. Manually disconnect and tag the large blue power connector. Disconnect and tag the smaller black power connectors located above the large blue power connector. Make sure you disconnect the black connectors *before* you remove the circuit card.
- d The connectors have voltage present, but the connectors are insulated. Secure the connectors to the power-connector bundle with a line-tie until you connect the connectors again.
- 19 Jumper connectors and cables can be present. Disconnect and tag these jumper connectors and cables. Separate the jumper connectors and cables for use on the replacement unit.

***At the front panel of the cabinet***

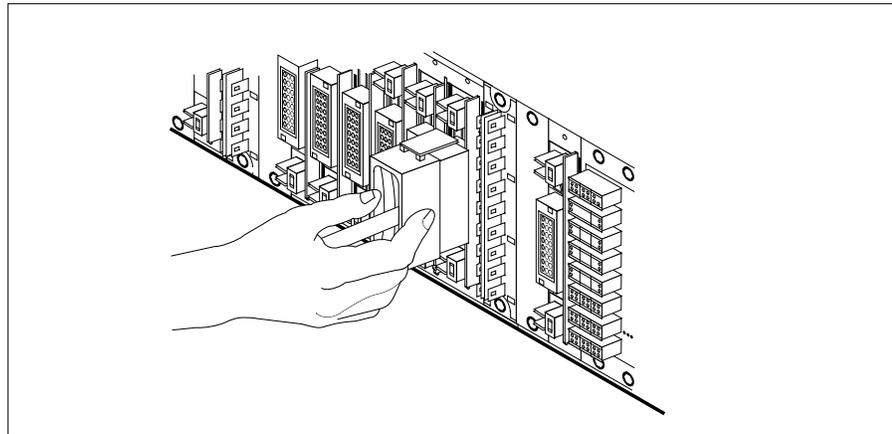
- 20 Remove the NTRX42 circuit card.
- a Disengage the captive screw that has a spring and is at the top of the circuit card.
- b Grasp the top and bottom of unit. Carefully pull the circuit card toward you until the circuit card clears the shelf.
- c Replace the circuit card. Make sure the replacement circuit card has the same PEC and PEC suffix as the circuit card that you replace.
- d Tighten the spring-loaded captive screw at the top of the circuit card.

## NTRX42 in an RSC-M/MSP (continued)

---



- 21** Replace any jumper connectors and cables removed in step 19. Insert the power connectors again at the rear of the circuit card.



- 22** Apply the correct label from the spare parts on the replacement NTRX42 circuit breaker card.

## NTRX42 in an RSC-M/MSP (continued)

- 23** Switch on the associated power converter(s).
- 24** Reset the circuit breakers to ON (up). Cards that this breaker controls can include a reset switch. If this condition applies, hold the RESET button up while you set the circuit breaker to the ON position.
- 25** Observe the circuit breakers on the NTRX42 card.
- | If the circuit breaker(s)                                          | Do      |
|--------------------------------------------------------------------|---------|
| does not trip and power returns to the associated power converters | step 26 |
| trips or power does not return to the associated power converters  | step 31 |
- 26** To load the inactive units, type  
**>LOADPM UNIT INACTIVE**  
 and press the Enter key.  
**Note:** Repeat this step for each unit that you busied in step 12.
- | If the LOADPM command | Do      |
|-----------------------|---------|
| passed                | step 27 |
| failed                | step 31 |
- 27** To return the inactive unit(s) to service, type  
**>RTS INACTIVE**  
 and press the Enter key.
- | If the RTS command | Do      |
|--------------------|---------|
| passed             | step 28 |
| failed             | step 31 |
- 28** Remove the safety tag from the front of the circuit breaker and the signs from the active units.
- 29** Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.
- 30** This procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure. Continue as directed.
- 31** For additional help with this card replacement, contact the next level of support.

**NTRX42**  
**in an RSC-M/MSP** (end)

---

- 32** 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, consult office personnel. Office personnel can advise you to not use the FORCE option.

## NTRX42 in an RSC MSP

### Application

Use this procedure to replace an NTRX42 card in a modular supervisory panel (MSP) in the following cabinets.

- Cabinetized Extension Module (CEXT)
- Cabinetized Line Concentrating Equipment (CLCE)
- Cabinetized Power Distribution Center (CPDC)
- Cabinetized Remote Switching Center (CRSC)
- Cabinetized Miscellaneous Equipment (CMIS)
- Cabinetized Remote Miscellaneous Equipment (CRME)

| PEC    | Suffixes | Name                   |
|--------|----------|------------------------|
| NTRX42 | AA, CA   | Circuit Breaker Module |

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (0.090 in.) thick and 17 mm (0.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw away from the connector. The tool is disengaged

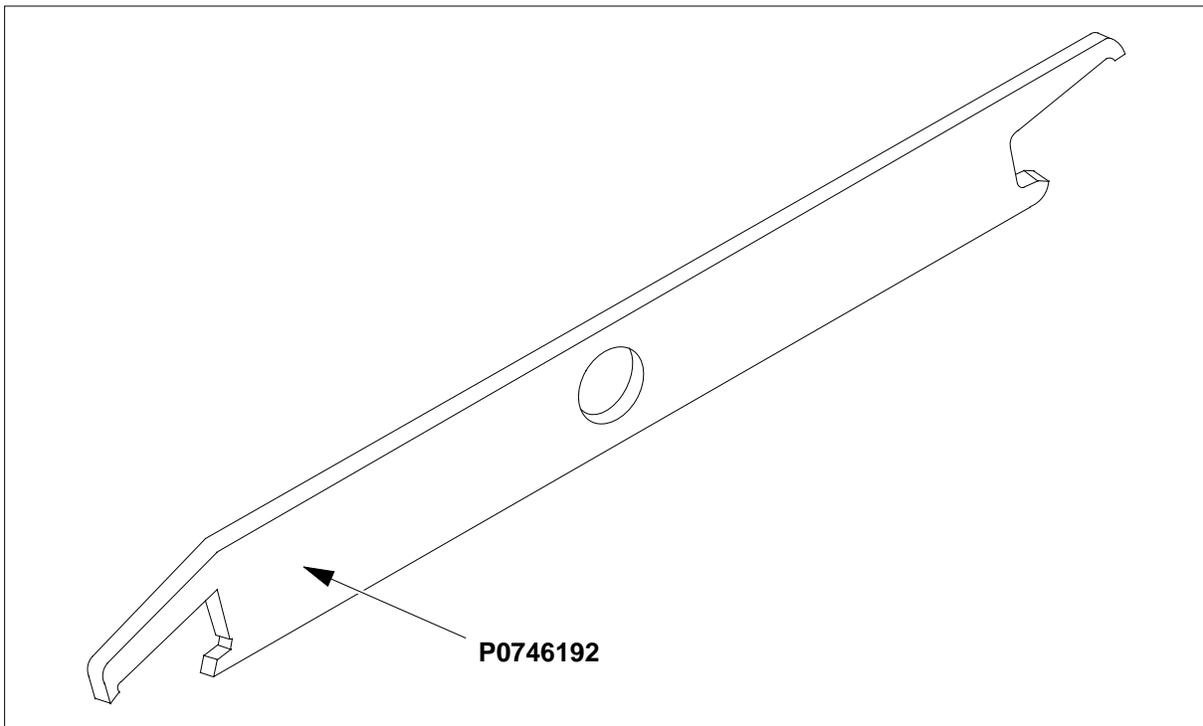
## **NTRX42** **in an RSC MSP** (continued)

---

from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

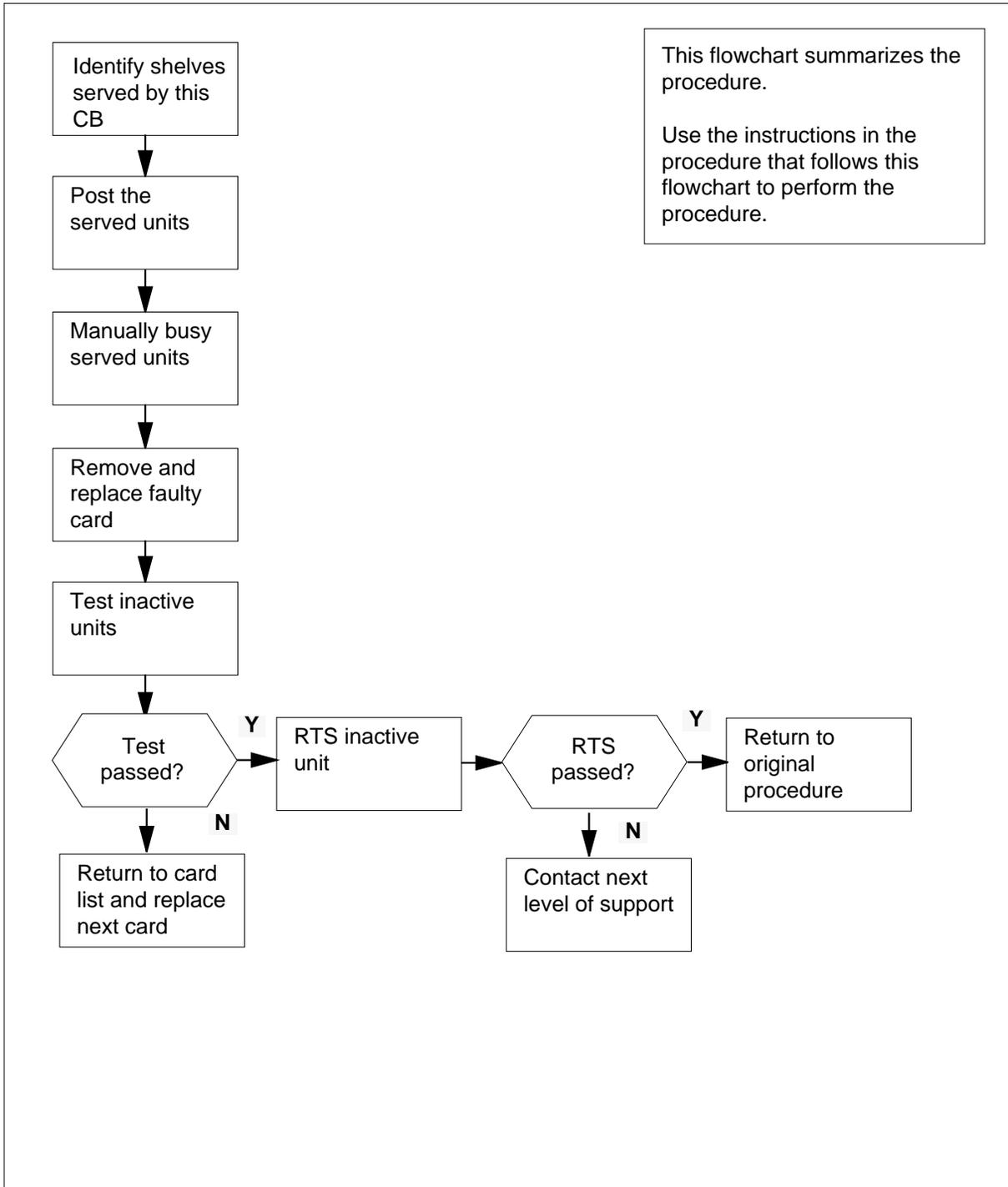
### **Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the procedure that follows the flowchart to perform the procedure. The detailed procedure depends on which circuit cards are served by the breaker module circuit card (NTRX42). You will be directed to the appropriate steps depending on your configuration.

**NTRX42**  
**in an RSC MSP** (continued)

**Summary of card replacement procedure for an NTRX42 card in an RSC-S MSP**



## NTRX42 in an RSC MSP (continued)

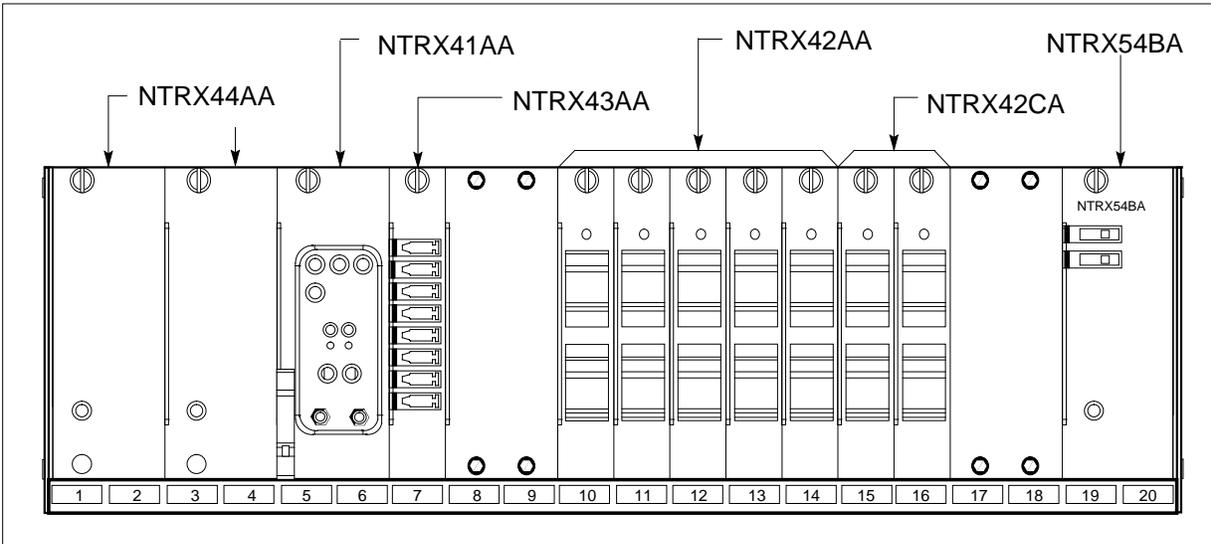
### Replacing an NTRX42 card in RSCE MSP

#### 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.
- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.

#### MSP



- 4 Use the breaker designation label to identify which cards are serviced by each circuit breaker (CB). For example, the label CB01-47-01 identifies circuit breaker 01 as controlling circuit card position 01 on shelf 47. Many RX42 modules service two separate devices (or units); both units must be powered down prior to removal of the associated RX42 circuit card.
- 5 Use the following table to determine which step to do next.

| If the CB powers the                    | Do     |
|-----------------------------------------|--------|
| RMM shelf containing 2X09 or 2X06 cards | step 6 |

## NTRX42 in an RSC MSP (continued)

| If the CB powers the                            | Do      |
|-------------------------------------------------|---------|
| RCC2 shelf containing MX72 card                 | step 9  |
| LCME shelf containing 6X30, 6X53, or BX72 cards | step 15 |

- 6 Set the MAP display to the PM level and post the RMM by typing

```
>MAPCI;MTC;PM;POST RMM rmm_no
```

and pressing the Enter key.

where

**rmm\_no**

is the number of the RMM unit from which the card is to be removed

*Example of a MAP display:*

| CM  | MS      | IOD | Net  | PM   | CCS  | LNS | Trks | Ext  | Appl |
|-----|---------|-----|------|------|------|-----|------|------|------|
| RMM | .       | .   | SysB | ManB | OffL | .   | CBsy | ISTb | InSv |
| 0   | Quit    | PM  | 4    | 0    | 10   |     | 3    | 3    | 130  |
| 2   | Post_   | RMM | 0    | 1    | 1    |     | 0    | 0    | 2    |
| 3   |         |     |      |      |      |     |      |      |      |
| 4   |         | RMM | 5    | INSV |      |     |      |      |      |
| 5   | Trnsl   |     |      |      |      |     |      |      |      |
| 6   | Tst     |     |      |      |      |     |      |      |      |
| 7   | Bsy     |     |      |      |      |     |      |      |      |
| 8   | RTS     |     |      |      |      |     |      |      |      |
| 9   | OffL    |     |      |      |      |     |      |      |      |
| 10  | LoadPM  |     |      |      |      |     |      |      |      |
| 11  | Disp_   |     |      |      |      |     |      |      |      |
| 12  | Next    |     |      |      |      |     |      |      |      |
| 13  |         |     |      |      |      |     |      |      |      |
| 14  | QueryPM |     |      |      |      |     |      |      |      |
| 15  |         |     |      |      |      |     |      |      |      |
| 16  |         |     |      |      |      |     |      |      |      |
| 17  |         |     |      |      |      |     |      |      |      |
| 18  |         |     |      |      |      |     |      |      |      |

- 7 Busy the RMM by typing

```
>BSY
```

and pressing the Enter key.

*Example of a MAP display:*

## NTRX42 in an RSC MSP (continued)

| CM  | MS      | IOD | Net  | PM    | CCS  | LNS | Trks | Ext  | Appl |
|-----|---------|-----|------|-------|------|-----|------|------|------|
| .   | .       | .   | .    | lManB | .    | .   | .    | .    | .    |
| RMM |         |     | SysB | ManB  | OffL |     | CBsy | ISTb | InSv |
| 0   | Quit    | PM  | 4    | 0     | 10   |     | 0    | 0    | 130  |
| 2   | Post_   | RMM | 0    | 1     | 0    |     | 0    | 0    | 0    |
| 3   |         |     |      |       |      |     |      |      |      |
| 4   |         | RMM | 5    | ManB  |      |     |      |      |      |
| 5   | Trnsl   |     |      |       |      |     |      |      |      |
| 6   | Tst     |     |      |       |      |     |      |      |      |
| 7   | Bsy     |     |      |       |      |     |      |      |      |
| 8   | RTS     |     |      |       |      |     |      |      |      |
| 9   | OffL    |     |      |       |      |     |      |      |      |
| 10  | LoadPM  |     |      |       |      |     |      |      |      |
| 11  | Disp_   |     |      |       |      |     |      |      |      |
| 12  | Next    |     |      |       |      |     |      |      |      |
| 13  |         |     |      |       |      |     |      |      |      |
| 14  | QueryPM |     |      |       |      |     |      |      |      |
| 15  |         |     |      |       |      |     |      |      |      |
| 16  |         |     |      |       |      |     |      |      |      |
| 17  |         |     |      |       |      |     |      |      |      |
| 18  |         |     |      |       |      |     |      |      |      |

### At the RMM shelf

- 8 Power down the unit by setting the ON/OFF switch on the power converter faceplate to the OFF position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON. An audible alarm may sound. If an alarm does sound, silence it by typing

>**SIL**

and pressing the Enter key.

Go to step 28.

- 9 Access the PM level and post the RCC2 by typing

>**MAPCI;MTC;PM;POST rcc2\_no**

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 unit that will be busied

Example of a MAP display:

**NTRX42**  
**in an RSC MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      1RCC2      .      .      .      .      .

RCC2
0 Quit      PM      0      0      OffL      Cbsy      ISTb      InSv
2 Post_     RCC2      0      0      0      0      1      1
3 ListSet
4           RCC2      0 ISTb Links_OOS: CSide 1, 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
18
    
```

- 10** The NTRX42 you are replacing should be controlling the inactive side of the RCC2.

| If NTRX42 card is on the | Do      |
|--------------------------|---------|
| active unit              | step 11 |
| inactive unit            | step 13 |

- 11**



**CAUTION**  
**Loss of service**  
All calls being handled by this PM could be lost, including data calls. Perform the next step during a period of low traffic only.

Switch the processing activity (SWACT) to the inactive unit by typing

**>SWACT**

and pressing the Enter key.

- 12** Confirm the system prompt by typing

**>YES**

and pressing the Enter key.

## NTRX42 in an RSC MSP (continued)

---

After both units are in-service, proceed to the next step.

### **At the RCSE frame**

- 13 Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

### **At the MAP terminal**

- 14 Busy the inactive PM unit by typing

```
> bsy unit unit_no
```

where

**unit\_no**

is the number of the inactive RCC2 unit that will be busied

Go to step 28.

- 15 Use the following information to determine where to proceed.

---

| <b>If top circuit breaker of NTRX42 powers</b> | <b>Do</b> |
|------------------------------------------------|-----------|
|------------------------------------------------|-----------|

---

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

---

- 16 Use the following information to determine where to proceed.

---

| <b>If bottom circuit breaker of NTX42 powers</b> | <b>Do</b> |
|--------------------------------------------------|-----------|
|--------------------------------------------------|-----------|

---

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

---

- 17 Set the MAP display to the PM level and post the LCME powered by the circuit breaker by typing

```
>MAPCI;MTC;PM;POST LCME site lcme_frame_no lcme_no
```

and pressing the Enter key.

where

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of LCME the circuit breaker supplies power to

*Example of a MAP display:*

## NTRX42 in an RSC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.
lcme
0 Quit      PM          4          0          10         3          3          130
2 Post_    LCME         1          0          5          0          1          9
3
4 Swrg_    LCME      RemL  00 0  ISTb  Links_OOS:  CSide 1
5 Trnsl_   Unit-0:  InSv
6 Tst_    Unit-1:  InSv
7 Bsy_
8 RTS_    Drwr:  01 23 45 67 89 01 23 45
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18

```

- 18** Busy the LCME unit powered by the circuit breaker by typing

```
>BSY UNIT lcme_unit_no
```

and pressing the Enter key.

where

**lcme\_unit\_no**

is the unit number of the LCME to which the circuit breaker supplies power

*Example of a MAP display:*

**NTRX42**  
**in an RSC MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME   .       .       .       .       .
LCME
0 Quit      PM       4       1       10      3       3       130
2 Post_     LCME     1       1       5       0       1
3
4 SwRg      LCME     RemL   OO O ISTb  Links_OOS: CSide 1
5 Trns1     Unit-0:  InSv  Mtce TakeOver /RG: 0
6 Tst       Unit-1:  ManB Mtce      /RG: 0
7 Bsy                               11 11 11      RG:Pref:0 InSv
8 RTS       Drwr:   01 23 45 67 89 01 23 45      Stby:1 InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 19 An alarm may sound. If this occurs, silence the alarm by typing  
**>SIL**  
and pressing the Enter key.

- 20 Use the following information to determine where to proceed.

| If                                                                                                    | Do      |
|-------------------------------------------------------------------------------------------------------|---------|
| circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16 |
| circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28 |

- 21 Set the MAP display to the PM level and post the LCME in the same frame as the circuit breaker by typing  
**>MAPCI;MTC;PM;POST lcme site lcme\_frame\_no lcme\_no**  
and pressing the Enter key.  
*where*

## NTRX42 in an RSC MSP (continued)

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of the LCME in the same frame as the circuit breaker

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .
LCME    .       .       SysB    ManB    OffL    CBSy    ISTb    InSv
0 Quit  PM       4       0       10      3       3       130
2 Post_ LCME     1       0       5       0       1       9
3
4 Swrg_          LCME    RemL  00 0  ISTb  Links_OOS:  CSide 1
5 Trnsl_        Unit-0:  InSv                      /RG:  0
6 Tst_         Unit-1:  InSv                      /RG:  0
7 Bsy_                               11 11 11          RG:Pref:0  InSv
8 RTS_         Drwr:  01 23 45 67 89 01 23 45          Stby:1  InSv
9 OffL_        . . . . .
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18

```

- 22** Busy the LCME unit associated with the ringing generator by typing

**>BSY UNIT lcme\_unit\_no**

and pressing the Enter key.

*where*

**lcme\_unit\_no**

is zero when the circuit breaker powers ringing generator zero, and is one when the circuit breaker powers ringing generator one

*Example of a MAP display:*

## NTRX42 in an RSC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME   .       .       .       .       .
LCME
0 Quit      PM          4         1         10        3         3         130
2 Post_     LCME         1         1         5         0         1         9
3
4 SwRg      LCME      RemL  OO O  ISTb  Links_OOS:  CSide 1
5 Trns1     Unit-0:  InSv  Mtce  TakeOver  /RG:  0
6 Tst       Unit-1:  ManB  Mtce           /RG:  0
7 Bsy                               11 11 11      RG:Pref:0  InSv
8 RTS       Drwr:  01 23 45 67 89 01 23 45      Stby:1  InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 23** An alarm may sound. If this occurs, silence the alarm by typing  
**>SIL**  
and pressing the Enter key.
- 24** If there is a second LCME in the same frame as the circuit breaker, post the other LCME by typing  
**>MAPCI;MTC;PM;POST lcme site lcme\_frame\_no lcme\_unit\_no**  
and pressing the Enter key.  
*where*  
**site**  
is the name of the site at which the LCME is located  
**lcme\_frame\_no**  
is the number of the frame in which the LCME is located  
**lcme\_unit\_no**  
is the number of the LCME in the same frame as the circuit breaker
- 25** Busy the LCME unit associated with the ringing generator by typing  
**>BSY UNIT lcme\_unit\_no**  
and pressing the Enter key.  
*where*  
**lcme\_unit\_no**  
is zero when the circuit breaker powers ringing generator zero, and is one when the circuit breaker powers ringing generator one

---

## NTRX42 in an RSC MSP (continued)

---

- 26** An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 27** Use the following information to determine where to proceed.

| If                                                                                                    | Do      |
|-------------------------------------------------------------------------------------------------------|---------|
| circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16 |
| circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28 |

***At the front panel of the cabinet***

- 28** Verify and switch off the associated power converter.  
**Note:** This step does not apply to the CPDC and CRME.
- 29** Determine the faulty circuit breaker on the MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.
- 30** An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 31** Power down and safety tag the ABS fuse in the power room.
- 32** Pull out the corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP.  
**Note:** This step does not apply to the CMIS, CPDC, and CRME.

## NTRX42 in an RSC MSP (continued)

### *At the rear panel of the cabinet*

33



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



#### **DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:

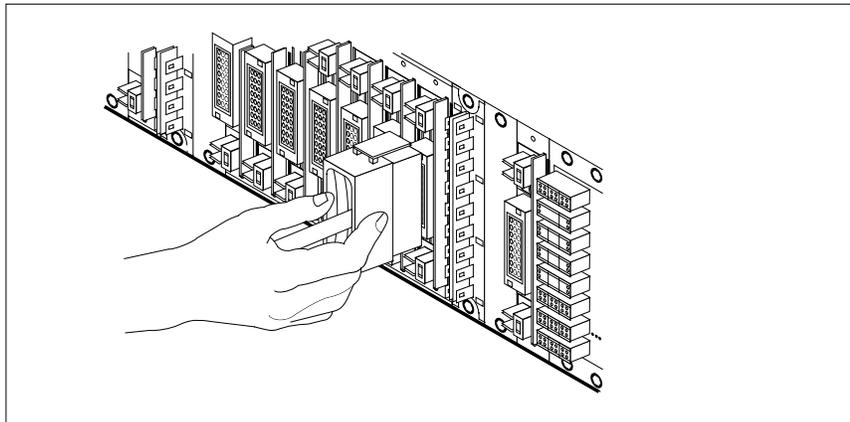
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.
3. Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

Put on a wrist strap.

34

Open the rear door and locate the NTRX42 circuit card. Verify the card location by checking the slot number stamped into the chassis.

- a Note the wire color and the location to facilitate re-connection.



- b Safety tag the front of the circuit breaker to indicate maintenance activity.
- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect and tag the smaller black power connectors located below the larger blue power connector.

---

**NTRX42**  
**in an RSC MSP** (continued)

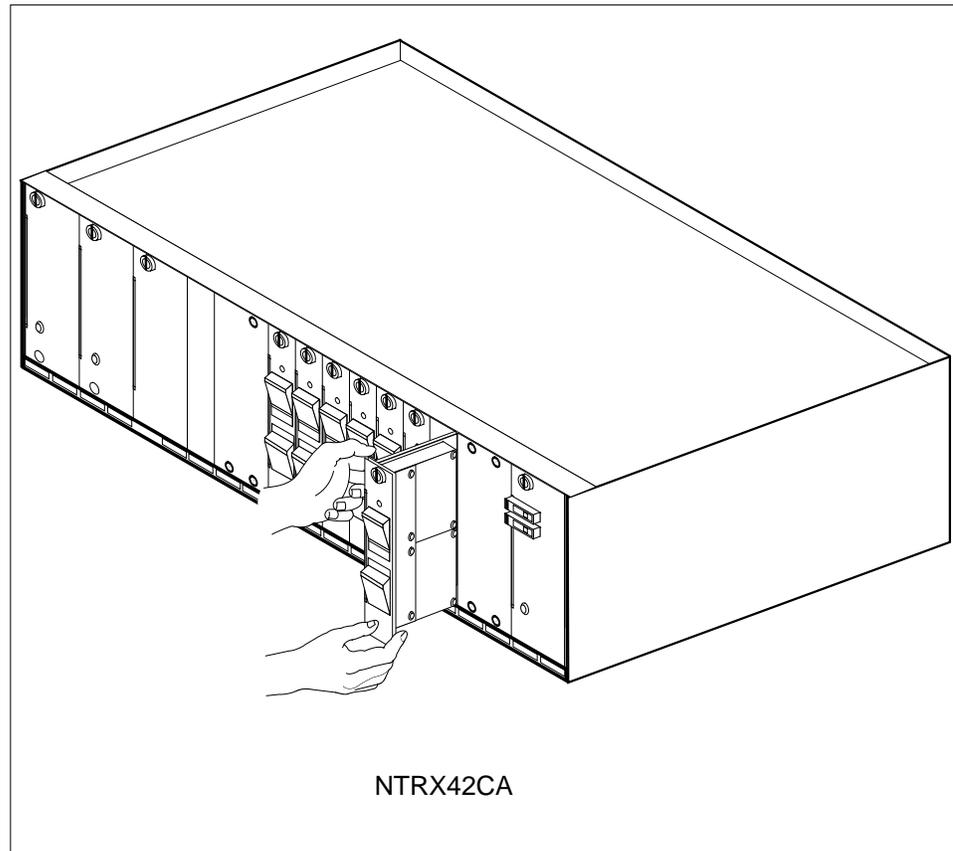
---

Manually disconnect and tag the large blue power connector. Disconnect and tag the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- 35** Disconnect and tag any jumper connectors and cables that may be present and set them aside for use on the replacement unit.

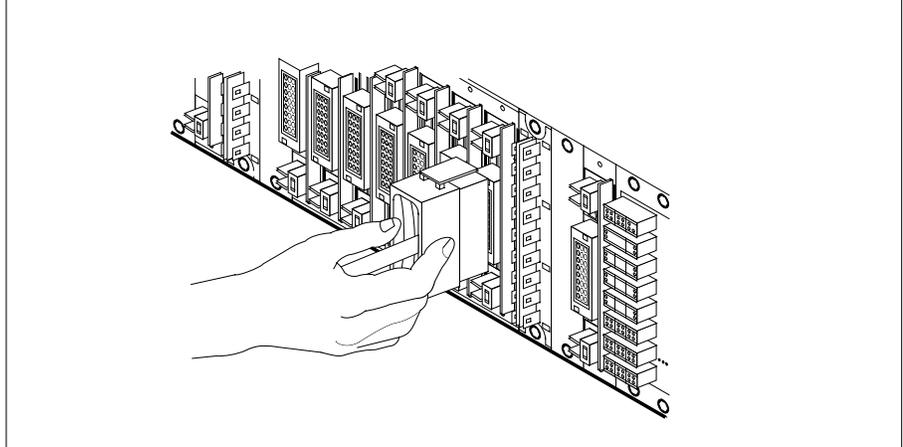
***At the front panel of the cabinet***

- 36** Remove the NTRX42 card.
- a Disengage the spring-loaded captive screw at the top of the circuit card.
  - b Grasping the top and bottom of unit, gently pull the circuit card toward you until it clears the shelf.
  - c Replace the circuit card. Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card being replaced.
  - d Tighten the spring-loaded captive screw at the top of the circuit card.

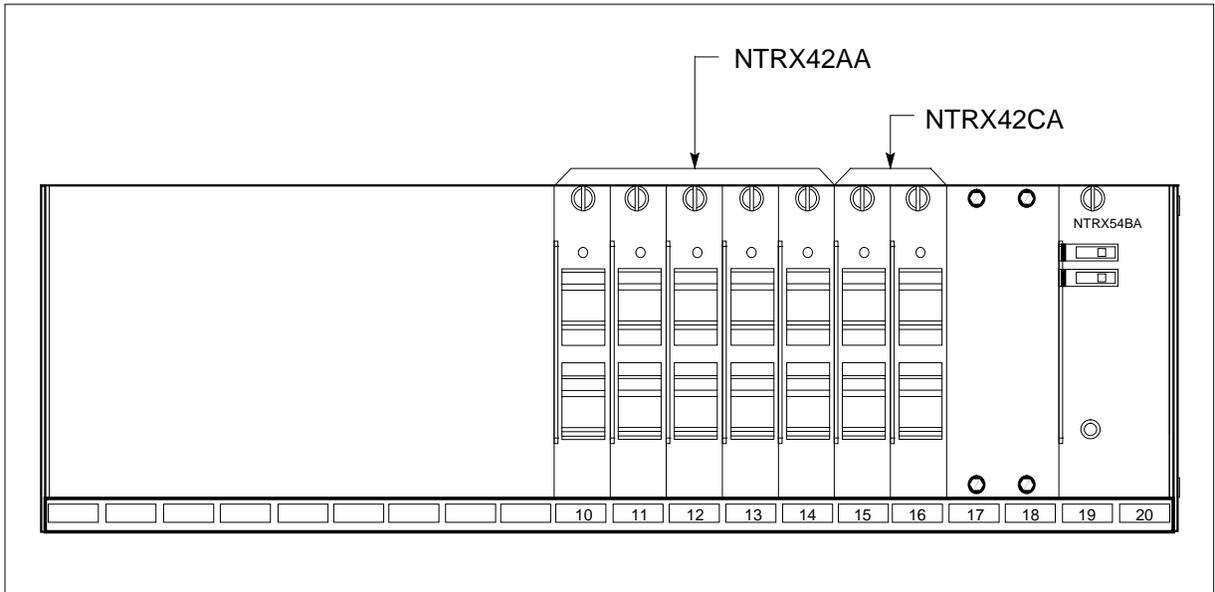


## NTRX42 in an RSC MSP (continued)

- 37 Replace any jumper connectors and cables removed in step 35. Reinsert the power connectors at the rear of the circuit card.



- 38 Push in the corresponding line shelf. This step does *not* apply to the CMIS, CPDC, and CRME.



- 39 Apply the appropriate label from the spare parts on the replacement NTRX42 circuit card.
- 40 Power up the ABS fuse in the power room, and remove the safety tag from the ABS fuse.
- Note:** This step applies to the CPDC and CRME.
- 41 Switch on the associated power converter.
- Note:** This step does not apply to the CPDC and CRME.

## NTRX42 in an RSC MSP (continued)

- 42** Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 43** Remove the safety tag from the front of the circuit breaker.
- 44** Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.
- 45** Read the following table to determine where to proceed.

| If circuit breakers power the                   | Do      |
|-------------------------------------------------|---------|
| LCME shelf containing 6X30, 6X53, or BX72 cards | step 46 |
| RCC2 shelf containing MX72 card                 | step 50 |
| RMM shelf containing 2X09 or 2X06 cards         | step 54 |

- 46** Return the LCME unit to service by typing  
`>RTS UNIT lcme_unit_no`  
 and pressing the Enter key.  
*where*

**lcme\_unit\_no**  
is the number of the inactive unit

| If RTS | Do      |
|--------|---------|
| passed | step 47 |
| failed | step 59 |

- 47** Send any faulty cards for repair according to local procedure.
- 48** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 49** Go to step 60.
- 50** Return the RCC2 unit to service by typing  
`>RTS UNIT rcc2_unit_no`  
 and pressing the Enter key.  
*where*

## NTRX42 in an RSC MSP (continued)

---

**rcc2\_unit\_no**  
is the number of the inactive RCC2 unit

---

| If RTS | Do      |
|--------|---------|
| passed | step 51 |
| failed | step 59 |

---

- 51 Send any faulty cards for repair according to local procedure.
- 52 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.
- 53 Go to step 60.

**At the MAP terminal**

- 54 Reload the RMM by entering  
>LOADPM  
and pressing the Enter key.

---

| If LOAD | Do      |
|---------|---------|
| passed  | step 55 |
| failed  | step 59 |

---

- 55 Test the RMM unit by typing  
>TST UNIT rmm\_unit\_no  
and pressing the Enter key.  
*where*

**rmm\_unit\_no**  
is the number of the RCC2 unit

---

| If RTS | Do      |
|--------|---------|
| passed | step 56 |
| failed | step 59 |

---

- 56 Return the RMM shelf to service by typing  
>RTS UNIT rmm\_unit\_no  
and pressing the Enter key.  
*where*

---

**NTRX42**  
**in an RSC MSP (end)**

---

**rmm\_unit\_no**

is the number of the RCC2 unit tested in step 55

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 57   |
| failed        | step 59   |

---

- 57** Send any faulty cards for repair according to local procedure.
- 58** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 60.
- 59** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 60** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX42 in an RSC-S (DS-1) Model B MSP**

---

### **Application**

Use this procedure to replace an NTRX42 card in a modular supervisory panel (MSP) located in a

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)
- cabinetized remote miscellaneous equipment (CRME)

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>            |
|------------|-----------------|------------------------|
| NTRX42     | AA, CA          | Circuit Breaker Module |

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

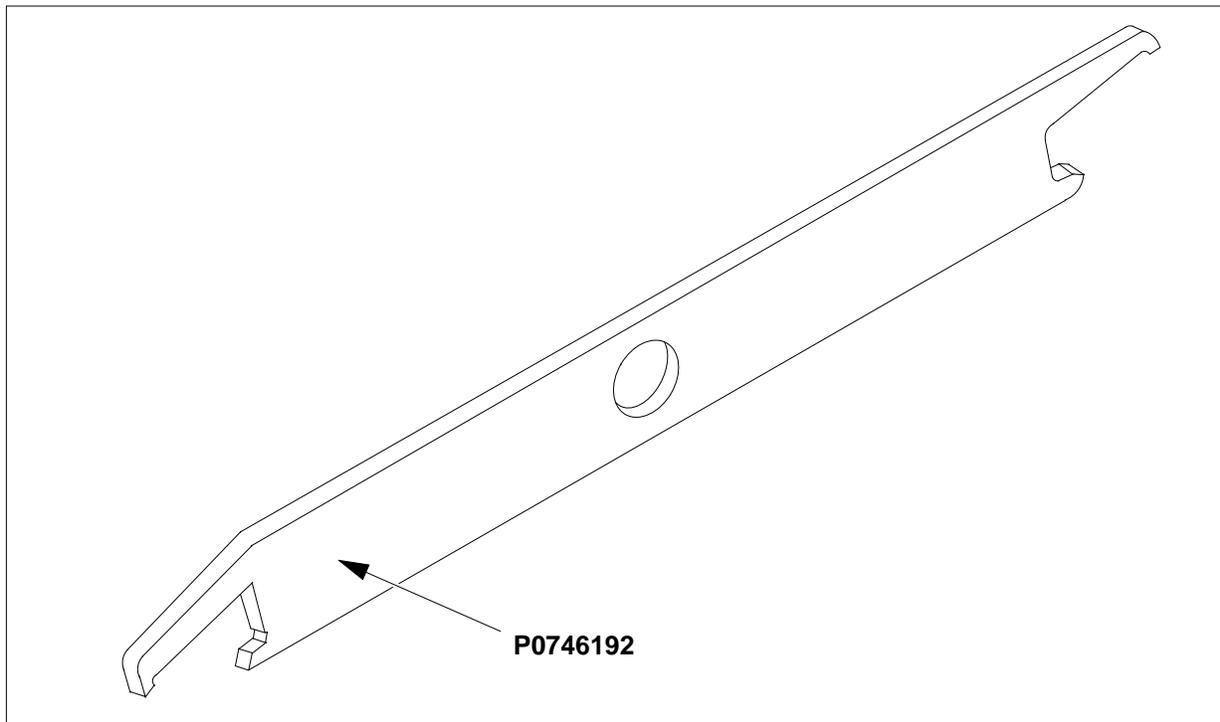
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**NTRX42**  
**in an RSC-S (DS-1) Model B MSP** (continued)

---

from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

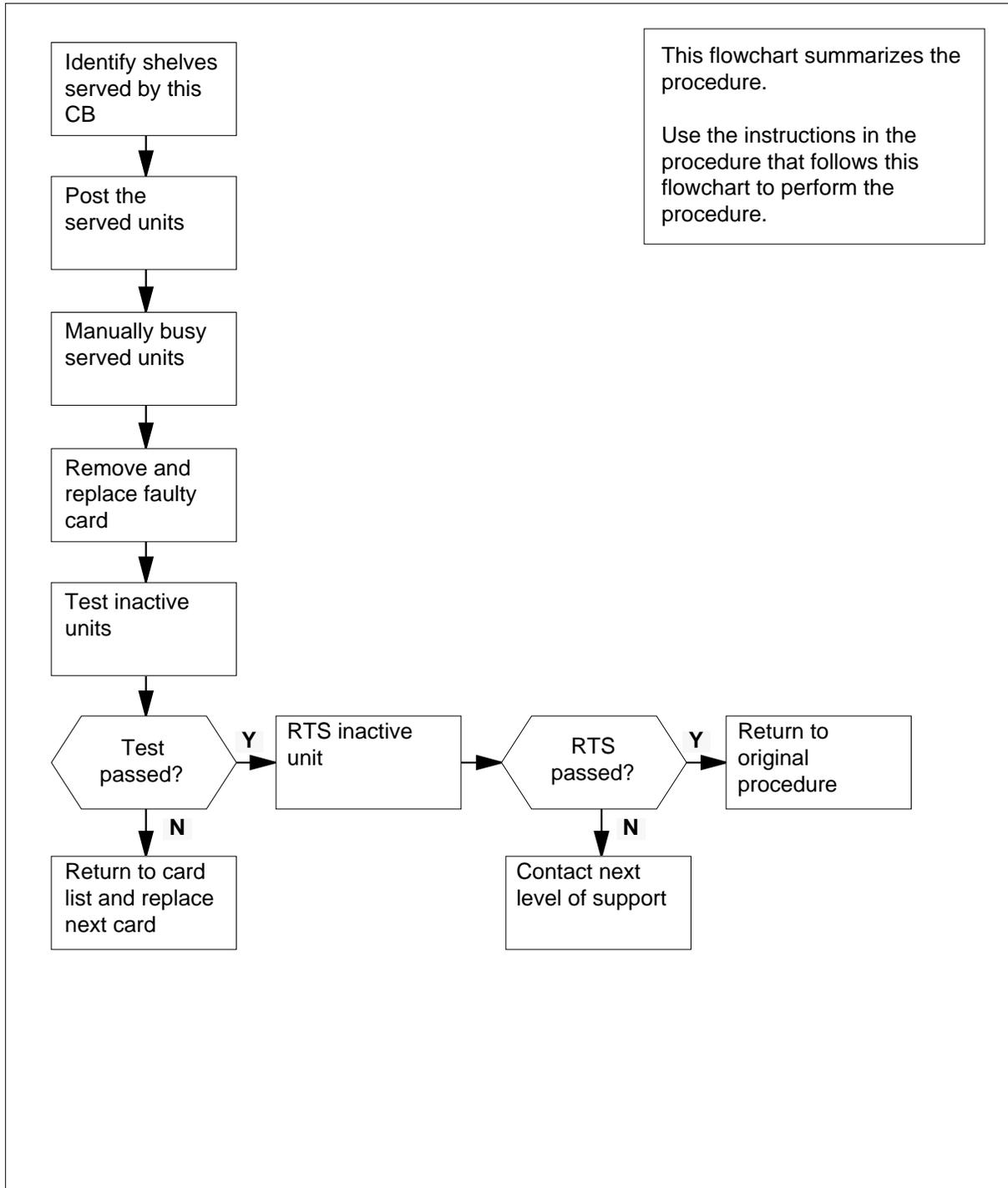
Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

**Connector removal tool**

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure. The detailed procedure depends on which circuit cards are served by the breaker module circuit card (NTRX42). You will be directed to the appropriate steps depending on your configuration.

## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

### Summary of replacing an NTRX42 card in an RSC-S MSP



## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

### Replacing an NTRX42 card in RSC-S MSP

#### *At your Current Location*

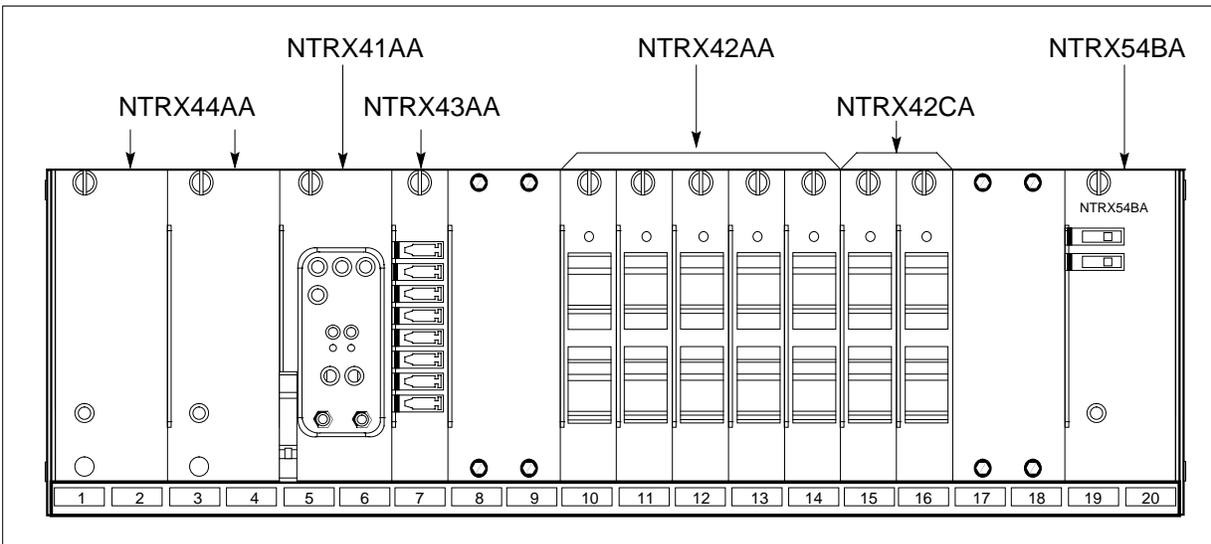
- 1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.

#### Modular supervisory panel



- 4 Use the breaker designation label to identify which cards are serviced by each circuit breaker (CB). For example, the label CB01-47-01 identifies circuit breaker 01 as controlling circuit card position 01 on shelf 47. Many RX42 modules service two separate devices (or units); both units must be powered down prior to removal of the associated RX42 circuit card.
- 5 Use the following table to determine which step to do next.

| If the CB powers the                    | Do     |
|-----------------------------------------|--------|
| RMM shelf containing 2X09 or 2X06 cards | step 6 |

## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

| If the CB powers the                           | Do      |
|------------------------------------------------|---------|
| RCC2 shelf containing MX72 card                | step 9  |
| LCME shelf containing 6X30, 6X53 or BX72 cards | step 15 |

### At the MAP terminal

- 6 Set the MAP display to the PM level and post the RMM by typing

```
>MAPCI;MTC;PM;POST RMM rmm_no
```

and pressing the Enter key.

where

**rmm\_no**

is the number of the RMM unit from which the card is to be removed

*Example of a MAP display*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

RMM
0 Quit      PM      4      0      10      3      3      130
2 Post_     RMM      0      1      1      0      0      2
3
4          RMM  5  INSV
5 Trnsl
6 Tst
7 Bsy
8 RTS
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18
    
```

- 7 Busy the RMM by typing

```
>BSY
```

and pressing the Enter key.

*Example of a MAP display*

## NTRX42

### in an RSC-S (DS-1) Model B MSP (continued)

| CM  | MS      | IOD | Net  | PM    | CCS  | LNS  | Trks | Ext  | Appl |
|-----|---------|-----|------|-------|------|------|------|------|------|
| .   | .       | .   | .    | lManB | .    | .    | .    | .    | .    |
| RMM |         |     | SysB | ManB  | OffL | CBsy | ISTb | InSv |      |
| 0   | Quit    | PM  | 4    | 0     | 10   | 0    | 0    | 130  |      |
| 2   | Post_   | RMM | 0    | 1     | 0    | 0    | 0    | 0    |      |
| 3   |         |     |      |       |      |      |      |      |      |
| 4   |         | RMM | 5    | ManB  |      |      |      |      |      |
| 5   | Trnsl   |     |      |       |      |      |      |      |      |
| 6   | Tst     |     |      |       |      |      |      |      |      |
| 7   | Bsy     |     |      |       |      |      |      |      |      |
| 8   | RTS     |     |      |       |      |      |      |      |      |
| 9   | OffL    |     |      |       |      |      |      |      |      |
| 10  | LoadPM  |     |      |       |      |      |      |      |      |
| 11  | Disp_   |     |      |       |      |      |      |      |      |
| 12  | Next    |     |      |       |      |      |      |      |      |
| 13  |         |     |      |       |      |      |      |      |      |
| 14  | QueryPM |     |      |       |      |      |      |      |      |
| 15  |         |     |      |       |      |      |      |      |      |
| 16  |         |     |      |       |      |      |      |      |      |
| 17  |         |     |      |       |      |      |      |      |      |
| 18  |         |     |      |       |      |      |      |      |      |

#### **At the RMM shelf**

- 8** Power down the unit by setting the ON/OFF switch on the power converter faceplate to the OFF position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON. An audible alarm may sound. If an alarm does sound, silence it by typing

**SIL**

and pressing the Enter key.

Go to step 28.

- 9** Access the PM level and post the RCC2 by typing

**>MAPCI;MTC;PM;POST rcc2\_no**

and pressing the Enter key.

where

**rcc2\_no**

is the number of the RCC2 unit that will be busied.

*Example of a MAP display*

**NTRX42**  
**in an RSC-S (DS-1) Model B MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1RCC2   .       .       .       .       .

RCC2
0 Quit      PM          0          0          2          0          2          25
2 Post_     RCC2         0          0          0          0          1          1
3 ListSet
4           RCC2      0 ISTb  Links_OOS: CSide 1, 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
18

```

- 10** The NTRX42 you are replacing should be controlling the INACTIVE side of the RCC2.

| If NTRX42 card is on the | Do      |
|--------------------------|---------|
| active unit              | step 11 |
| inactive unit            | step 13 |

- 11** Switch the processing activity (SWACT) to the INACTIVE unit by typing **>SWACT** and pressing the Enter key.

- 12** Confirm the system prompt by typing **>YES** and pressing the Enter key.  
 After both units are in-service proceed to the next step.

**At the RCE frame**

- 13** Place a sign on the active unit bearing the words: *Active unit. Do not touch.* This sign should not be attached by magnets or tape.

---

## NTRX42

### in an RSC-S (DS-1) Model B MSP (continued)

---

**At the MAP terminal**

- 14** Busy the inactive PM unit by typing

```
> bsy unit unit_no
```

where

**unit\_no**

is the number of the INACTIVE RCC2 unit that will be busied.

Go to step 28.

- 15** Use the following information to determine where to proceed.

---

| <b>If top circuit breaker of NTRX42 powers</b> | <b>Do</b> |
|------------------------------------------------|-----------|
|------------------------------------------------|-----------|

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

- 16** Use the following information to determine where to proceed.

---

| <b>If bottom circuit breaker of NTRX42 powers</b> | <b>Do</b> |
|---------------------------------------------------|-----------|
|---------------------------------------------------|-----------|

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

- 17** Set the MAP display to the PM level and post the LCME powered by the circuit breaker by typing

```
>MAPCI;MTC;PM;POST LCME site lcme_frame_no lcme_no
```

and pressing the Enter key.

where

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of LCME the circuit breaker supplies power to

*Example of a MAP display*

**NTRX42**  
**in an RSC-S (DS-1) Model B MSP (continued)**

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .

LCME
0 Quit      PM          4          0          10         3          3          130
2 Post_    LCME          1          0          5          0          1          9
3
4 Swrg_    LCME  RemL  00 0 ISTb  Links_OOS:  CSide 1
5 Trnsl_   Unit-0:  InSv                               /RG:  0
6 Tst_     Unit-1:  InSv                               /RG:  0
7 Bsy_                                11 11 11                               RG:Pref:0 InSv
8 RTS_     Drwr:  01 23 45 67 89 01 23 45                               Stby:1 InSv
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18

```

- 18** Busy the LCME unit powered by the circuit breaker by typing  
**>BSY UNIT lcme\_unit\_no**  
and pressing the Enter key.  
*where*  
**lcme\_unit\_no**  
is the unit number of LCME to which the circuit breaker supplies power.  
*Example of a MAP display*

**NTRX42**

**in an RSC-S (DS-1) Model B MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME   .       .       .       .       .

LCME
0 Quit      PM          4          1          10         3          3          130
2 Post_     LCME         1          1          5          0          1          9
3
4 SwRg      LCME      RemL  OO O  ISTb  Links_OOS:  CSide 1
5 TrnsL     Unit-0:  InSv  Mtce  TakeOver  /RG:  0
6 Tst       Unit-1:  ManB  Mtce  /RG:  0
7 Bsy                               11 11 11      RG:Pref:0  InSv
8 RTS       Drwr:  01 23 45 67 89 01 23 45      Stby:1  InSv
9 OffL      . . . . .
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18
    
```

- 19** An alarm may sound. If this occurs, silence the alarm by typing **>SIL** and pressing the Enter key.

- 20** Use the following information to determine where to proceed.

| If                                                                                                    | Do      |
|-------------------------------------------------------------------------------------------------------|---------|
| Circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16 |
| Circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28 |

- 21** Set the MAP display to the PM level and post the LCME in the same frame as the circuit breaker by typing **>MAPCI;MTC;PM;POST LCME site lcme\_frame\_no lcme\_no** and pressing the Enter key.  
*where*

## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of the LCME in the same frame as the circuit breaker

*Example of a MAP display*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      .      .      .      .      .      .

LCME
0 Quit      PM      4      0      10      3      3      130
2 Post_     LCME     1      0      5      0      1      9
3
4 Swrg_     LCME     RemL  00 0 ISTb  Links_OOS:  CSide 1
5 Trnsl_    Unit-0:  InSv                                /RG:  0
6 Tst_     Unit-1:  InSv                                /RG:  0
7 Bsy_   11 11 11      RG:Pref:0 InSv
8 RTS_     Drwr: 01 23 45 67 89 01 23 45      Stby:1 InSv
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18
    
```

**22** Busy the LCME unit associated with the ring generator by typing

**>BSY UNIT lcme\_unit\_no**

and pressing the Enter key.

where

**lcme\_unit\_no**

is zero when the circuit breaker powers ring generator zero

is one when the circuit breaker powers ring generator one

*Example of a MAP display*

## NTRX42

### in an RSC-S (DS-1) Model B MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME   .       .       .       .       .

LCME
0 Quit      PM          4          1          10         3          3          130
2 Post_     LCME        1          1          5          0          1          9
3
4 SwRg      LCME      RemL  OO O ISTb  Links_OOS: CSide 1
5 Trnsl     Unit-0:  InSv  Mtce  TakeOver /RG: 0
6 Tst       Unit-1:  ManB  Mtce  /RG: 0
7 Bsy                               11 11 11      RG:Pref:0 InSv
8 RTS       Drwr: 01 23 45 67 89 01 23 45      Stby:1 InSv
9 OffL      . . . . .
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 23 An alarm may sound. If this occurs, silence the alarm by typing  
**>SIL**  
 and pressing the Enter key.
- 24 If there is a second LCME in the same frame as the circuit breaker, post the  
 other LCME by typing  
**>MAPCI;MTC;PM;POST LCME site lcme\_frame\_no lcme\_unit\_no**  
 and pressing the Enter key.  
*where*  
**site**  
 is the name of the site at which the LCME is located  
**lcme\_frame\_no**  
 is the number of the frame in which the LCME is located  
**lcme\_unit\_no**  
 is the number of the LCME in the same frame as the circuit breaker
- 25 Busy the LCME unit associated with the ring generator by typing  
**>BSY UNIT lcme\_unit\_no**  
 and pressing the Enter key.  
*where*  
**lcme\_unit\_no**  
 is zero when the circuit breaker powers ring generator zero.  
 is one when the circuit breaker powers ring generator one

## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

---

- 26 An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 27 Use the following information to determine where to proceed.

---

| <b>If</b>                                                                                             | <b>Do</b> |
|-------------------------------------------------------------------------------------------------------|-----------|
| Circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16   |
| Circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28   |

---

### ***At the front panel of the cabinet***

- 28 Verify and switch off associated power converter.  
**Note:** Not applicable to the CPDC and CRME.
- 29 Determine faulty circuit breaker on MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.
- 30 An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 31 Power down and safety tag the ABS fuse in the power room.  
**Note:** This step applies to the CPDC and CRME.
- 32 Pull out corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP.  
**Note:** This step does not apply to the CMIS, CPDC, and CRME.

## NTRX42

### in an RSC-S (DS-1) Model B MSP (continued)

*At the rear panel of the cabinet*

33



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



#### **DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:

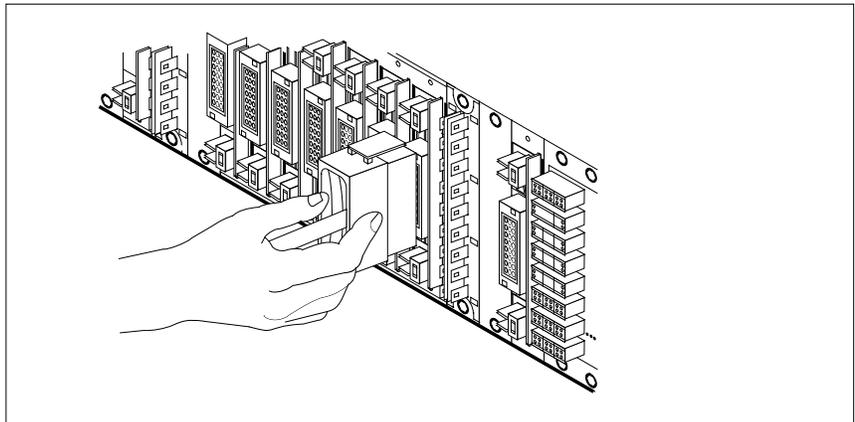
- 1 Do not apply direct pressure to the components.
2. Do not force the cards into the slots.
3. Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

Put on a wrist strap.

34

Open the rear door and locate the NTRX42 circuit card. Verify the card location by checking the slot number stamped into the chassis.

- a Note wire color and location to facilitate re-connection.



- b Safety tag the front of the circuit breaker to indicate maintenance activity.
- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect and tag the smaller black power connectors located below the larger blue power connector.

## **NTRX42** **in an RSC-S (DS-1) Model B MSP (continued)**

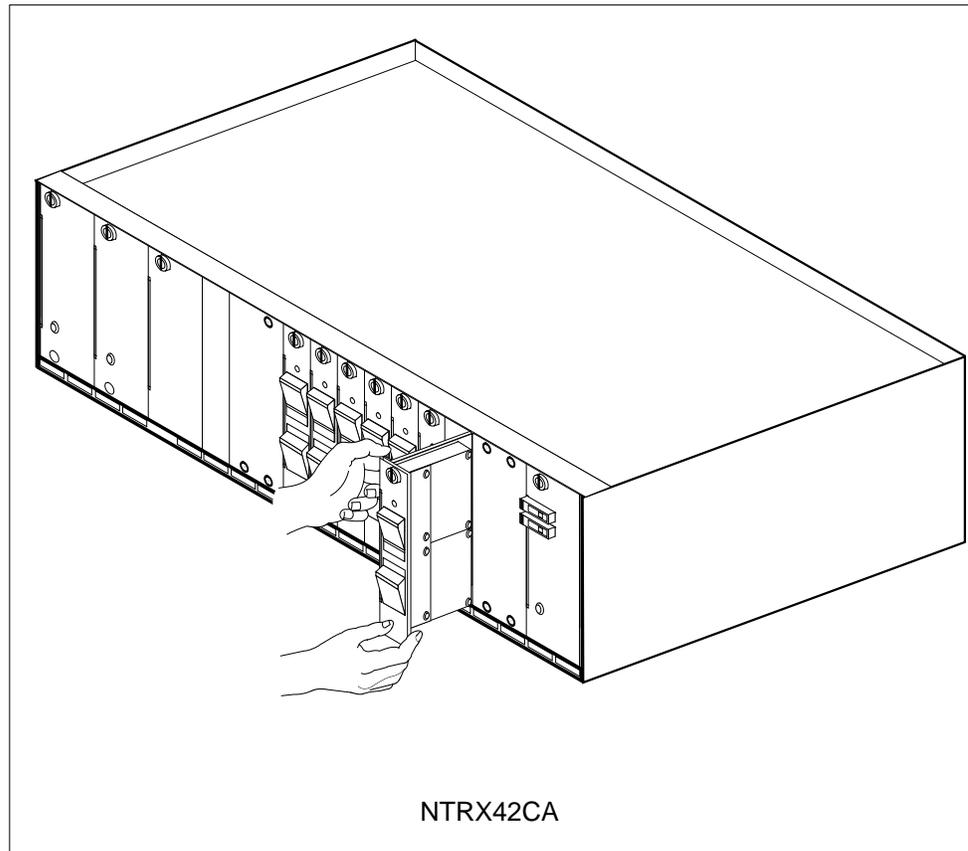
---

Manually disconnect and tag the large blue power connector. Disconnect and tag the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- 35** Disconnect and tag any jumper connectors and cables which may be present and set them aside for use on the replacement unit.

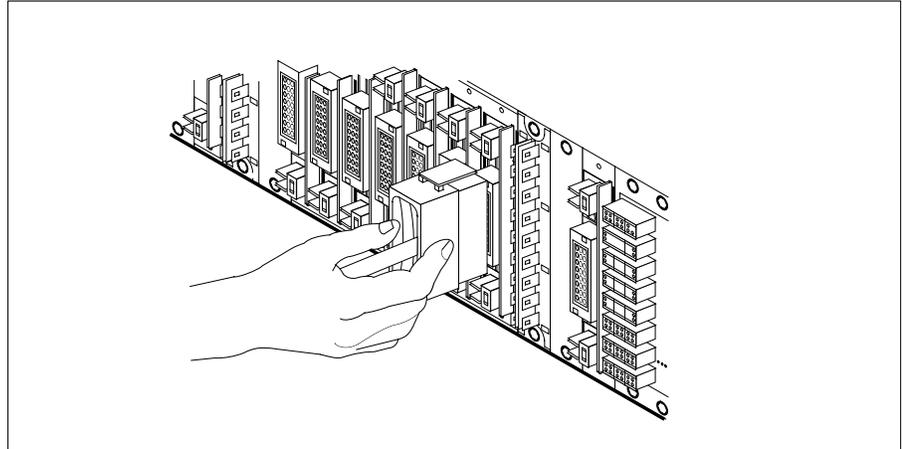
### ***At the front panel of the cabinet***

- 36** Remove the NTRX42 card.
- a Disengage the spring-loaded captive screw at the top of the circuit card.
  - b Grasping the top and bottom of unit, gently pull the circuit card towards you until it clears the shelf.
  - c Replace the circuit card. Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card being replaced.
  - d Tighten the spring-loaded captive screw at the top of the circuit card.

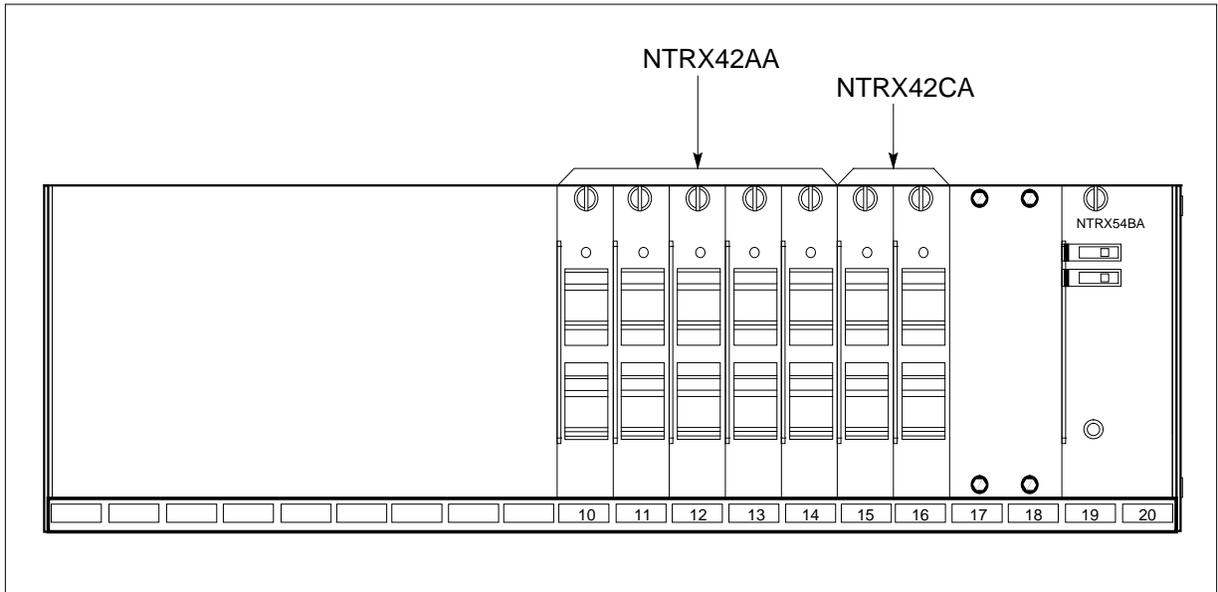


## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

- 37** Replace any jumper connectors and cables removed in step 35. Reinsert the power connectors at the rear of the circuit card.



- 38** Push in corresponding line shelf. This step does *not* apply to the CMIS, CPDC, and CRME.



- 39** Apply appropriate label from spare parts on replacement NTRX42 circuit card.
- 40** Power up the ABS fuse in the power room, remove safety tag from ABS fuse.  
**Note:** This step applies to the CPDC and CRME.
- 41** Switch on associated power converter.  
**Note:** This step does not apply to the CPDC and CRME.

**NTRX42**  
**in an RSC-S (DS-1) Model B MSP** (continued)

- 42 Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 43 Remove safety tag from front of circuit breaker.
- 44 Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.
- 45 Proceed according to the following table.

| If circuit breakers power the                  | Do      |
|------------------------------------------------|---------|
| LCME shelf containing 6X30, 6X53 or BX72 cards | step 46 |
| RCC2 shelf containing MX72 card                | step 51 |
| RMM shelf containing 2X09 or 2X06 cards        | step 56 |

- 46 Test the LCME unit by typing  
*TST UNIT lcme\_unit\_no*  
 and pressing the Enter key.  
*where*

**lcme\_unit\_no**  
 is the number of the LCME unit busied.

| If test | Do      |
|---------|---------|
| passed  | step 47 |
| failed  | step 65 |

- 47 Return the LCME unit to service by typing  
*RTS UNIT lcme\_unit\_no*  
 and pressing the Enter key.  
*where*

**lcme\_unit\_no**  
 is the number of the LCME unit tested in step 46

| If RTS | Do      |
|--------|---------|
| passed | step 48 |
| failed | step 65 |

- 48 Send any faulty cards for repair according to local procedure.

---

**NTRX42**

**in an RSC-S (DS-1) Model B MSP** (continued)

---

**49** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.

**50** Go to step 66.

**51** Test the RCC2 unit by typing  
`>TST UNIT rcc2_unit_no`  
 and pressing the Enter key.

*where*

**rcc2\_unit\_no**

is the number of the RCC2 unit

| <b>If test</b> | <b>Do</b> |
|----------------|-----------|
| passed         | step 52   |
| failed         | step 65   |

**52** Return the RCC2 unit to service by typing  
`>RTS UNIT RCC2_unit_no`  
 and pressing the Enter key.

*where*

**rcc2\_unit\_no**

is the number of the RCC2 unit tested in step 51

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 53   |
| failed        | step 65   |

**53** Send any faulty cards for repair according to local procedure.

**54** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.

**55** Go to step 66.

**At the MAP terminal**

**56** Determine the system load version.

| <b>If</b>                          | <b>Do</b> |
|------------------------------------|-----------|
| System Load Module is<br>Version 1 | step 57   |
| System Load Module is<br>Version 2 | step 58   |

---

## NTRX42 in an RSC-S (DS-1) Model B MSP (continued)

---

- 57 List the loadfile in the directory by typing  
> *DSKUT;listvol d000 all*  
or  
> *diskut;listvol d010 all*  
and pressing the Enter key.  
Local operating company policy determines which disk, D000 or D010, the loadfile will be on.  
Proceed to step 59.

- 58 List the loadfile in the directory by typing  
>*DISKUT;LV s00d*  
>*LF*  
or  
> *diskut;LV s01d*  
>*LF*  
and pressing the Enter key.

- 59 Leave the disk utility by typing  
>*QUIT*  
and pressing the Enter key.

- 60 Reload the RMM by typing  
>*LOADPM*  
and pressing the Enter key.

---

| <b>If</b>   | <b>Do</b> |
|-------------|-----------|
| load passes | step 61   |
| load fails  | step 65   |

---

- 61 Test the RMM unit by typing  
>*TST UNIT rmm\_unit\_no*  
and pressing the Enter key.  
*where*  
**rmm\_unit\_no**  
is the number of the RCC2 unit

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 62   |
| failed        | step 65   |

---

---

**NTRX42**

**in an RSC-S (DS-1) Model B MSP (end)**

---

- 62** Return the RMM shelf to service by typing

```
>RTS UNIT rmm_unit_no
```

and pressing the Enter key.

where

**rmm\_unit\_no**

is the number of the RCC2 unit tested in step 61

---

**If RTS**

**Do**

passes

step 63

fails

step 65

---

- 63** Send any faulty cards for repair according to local procedure.
- 64** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 66.
- 65** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 66** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX42 in an RSC-S (PCM-30) Model B MSP**

---

### **Application**

Use this procedure to replace an NTRX42 card in a modular supervisory panel (MSP) located in the following cabinets:

- Cabinetized Extension Module (CEXT)
- Cabinetized Line Concentrating Equipment (CLCE)
- Cabinetized Line Module ISDN (CLMI)
- Cabinetized Power Distribution Center (CPDC)
- Cabinetized Remote Switching Center (CRSC)
- Cabinetized Miscellaneous Equipment (CMIS)
- Cabinetized Remote Miscellaneous Equipment (CRME)

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>            |
|------------|-----------------|------------------------|
| NTRX42     | AA, CA          | Circuit Breaker Module |

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (0.090 in.) thick and 17 mm (0.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw away from the connector. The tool is disengaged

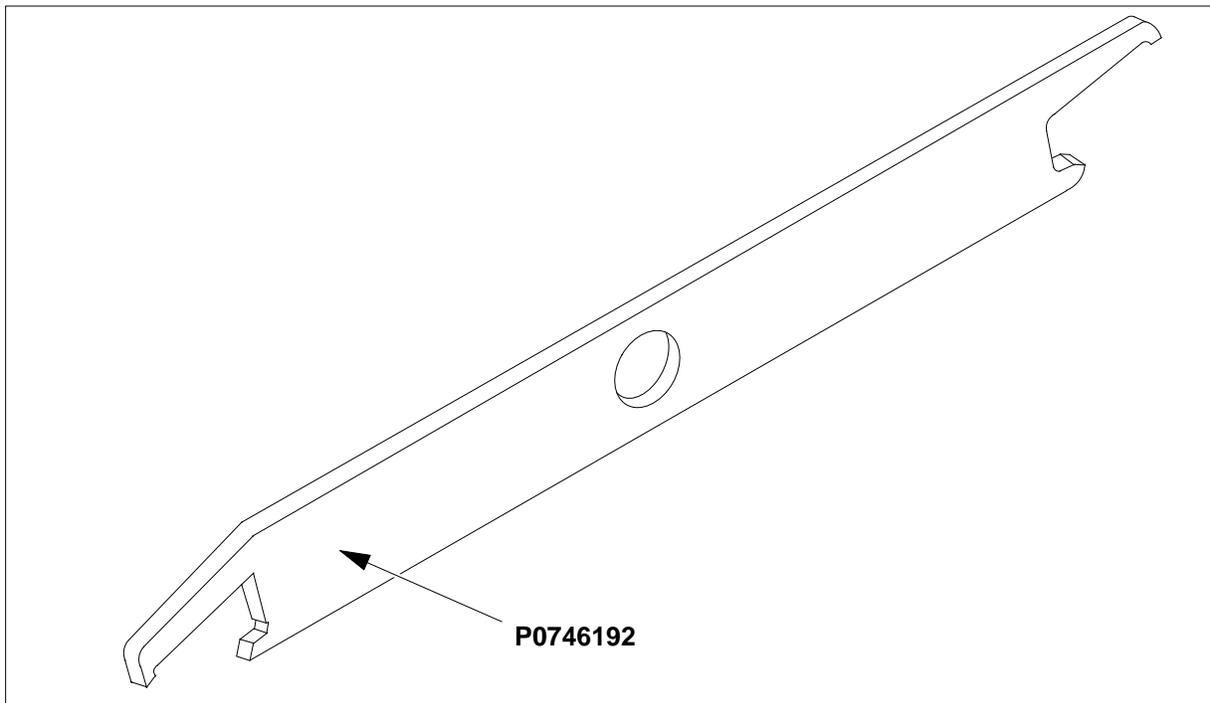
---

**NTRX42**  
**in an RSC-S (PCM-30) Model B MSP** (continued)

---

from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

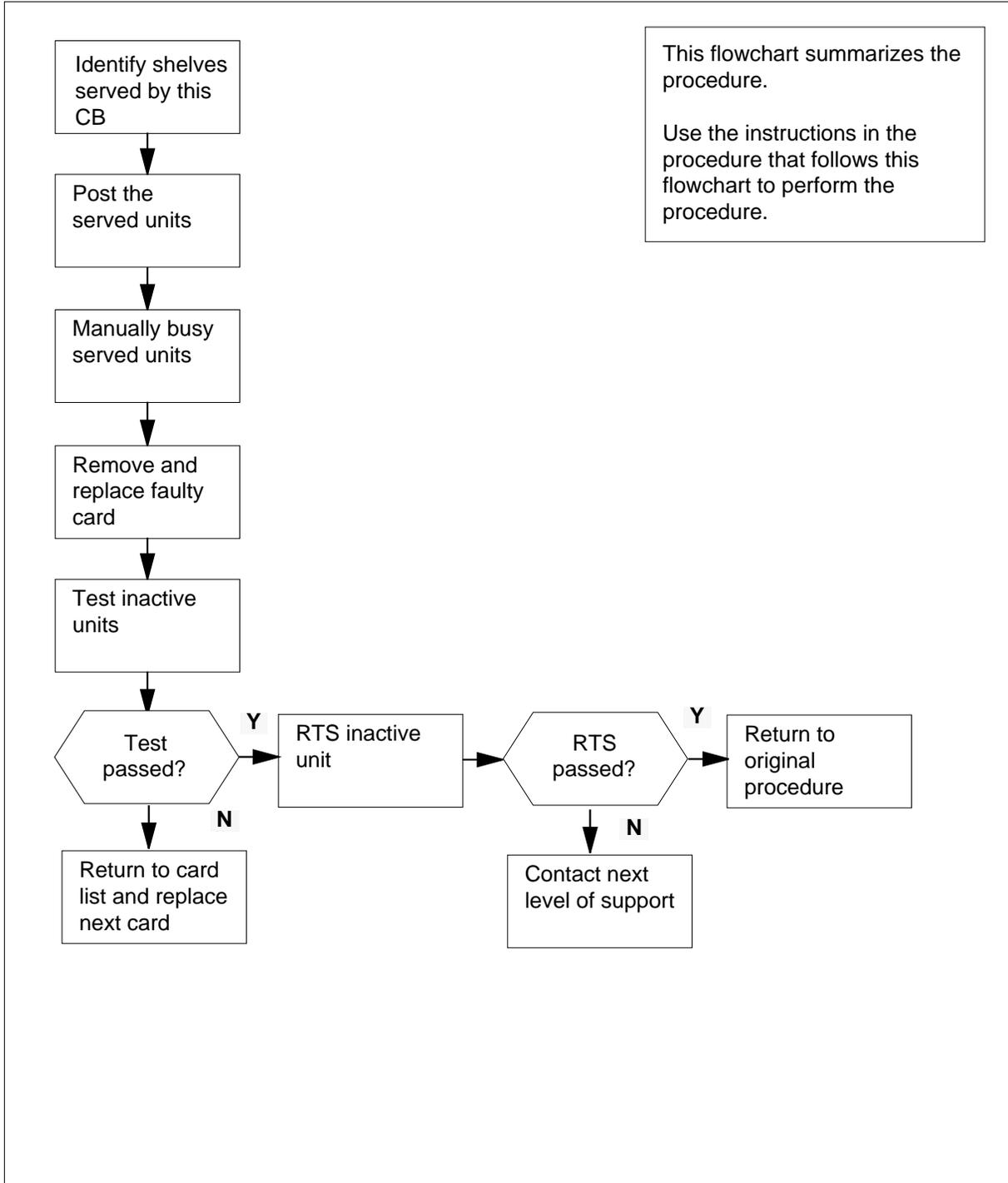
Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

**Connector removal tool**

The following flowchart is a summary of this procedure. Use the instructions in the procedure that follows the flowchart to perform the procedure. The detailed procedure depends on which circuit cards are served by the breaker module circuit card (NTRX42). You will be directed to the appropriate steps depending on your configuration.

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

### Summary of card replacement procedure for an NTRX42 card in an RSC-S MSP



## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

### Replacing an NTRX42 card in RSC-S MSP

#### *At your Current Location*

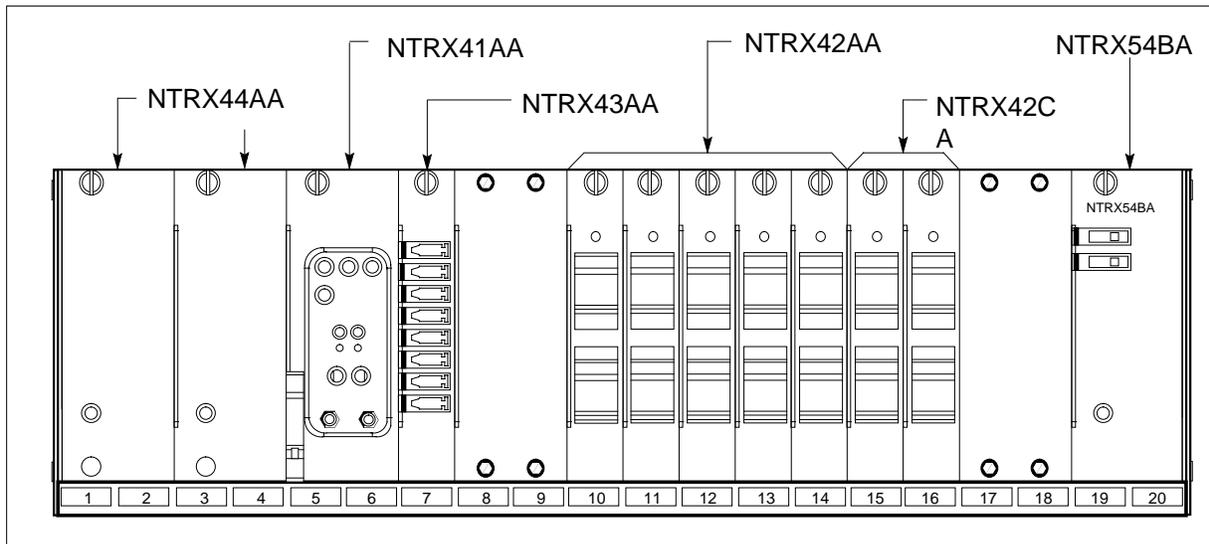
- 1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.

#### MSP



- 4 Use the breaker designation label to identify which cards are serviced by each circuit breaker (CB). For example, the label CB01-47-01 identifies circuit breaker 01 as controlling circuit card position 01 on shelf 47. Many RX42 modules service two separate devices (or units); both units must be powered down prior to removal of the associated RX42 circuit card.
- 5 Use the following table to determine which step to do next.

| If the CB powers the                    | Do     |
|-----------------------------------------|--------|
| RMM shelf containing 2X09 or 2X06 cards | step 6 |

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

| If the CB powers the                            | Do      |
|-------------------------------------------------|---------|
| RCO2 shelf containing MX72 card                 | step 9  |
| LCME shelf containing 6X30, 6X53, or BX72 cards | step 15 |

### At the MAP terminal

- 6 Set the MAP display to the PM level and post the RMM by typing

```
>MAPCI;MTC;PM;POST RMM rmm_no
```

and pressing the Enter key.

where

**rmm\_no**

is the number of the RMM unit from which the card is to be removed

Example of a MAP display:

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .
RMM
0 Quit      PM      4      0      10      3      3      130
2 Post_     RMM      0      1      1      0      0      2
3
4          RMM  5  INSV
5 Trnsl
6 Tst
7 Bsy
8 RTS
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 7 Busy the RMM by typing

```
>BSY
```

and pressing the Enter key.

Example of a MAP display:

## NTRX42

### in an RSC-S (PCM-30) Model B MSP (continued)

| CM  | MS      | IOD | Net  | PM    | CCS  | LNS  | Trks | Ext  | Appl |
|-----|---------|-----|------|-------|------|------|------|------|------|
| .   | .       | .   | .    | lManB | .    | .    | .    | .    | .    |
| RMM |         |     | SysB | ManB  | OffL | CBsy | ISTb | InSv |      |
| 0   | Quit    | PM  | 4    | 0     | 10   | 0    | 0    | 130  |      |
| 2   | Post_   | RMM | 0    | 1     | 0    | 0    | 0    | 0    |      |
| 3   |         |     |      |       |      |      |      |      |      |
| 4   |         | RMM | 5    | ManB  |      |      |      |      |      |
| 5   | Trnsl   |     |      |       |      |      |      |      |      |
| 6   | Tst     |     |      |       |      |      |      |      |      |
| 7   | Bsy     |     |      |       |      |      |      |      |      |
| 8   | RTS     |     |      |       |      |      |      |      |      |
| 9   | OffL    |     |      |       |      |      |      |      |      |
| 10  | LoadPM  |     |      |       |      |      |      |      |      |
| 11  | Disp_   |     |      |       |      |      |      |      |      |
| 12  | Next    |     |      |       |      |      |      |      |      |
| 13  |         |     |      |       |      |      |      |      |      |
| 14  | QueryPM |     |      |       |      |      |      |      |      |
| 15  |         |     |      |       |      |      |      |      |      |
| 16  |         |     |      |       |      |      |      |      |      |
| 17  |         |     |      |       |      |      |      |      |      |
| 18  |         |     |      |       |      |      |      |      |      |

#### **At the RMM shelf**

- 8** Power down the unit by setting the ON/OFF switch on the power converter faceplate to the OFF position. Both the converter FAIL LED and FRAME FAIL lamp on the MSP will be ON. An audible alarm may sound. If an alarm does sound, silence it by typing

**>SIL**

and pressing the Enter key.

Go to step 28.

- 9** Access the PM level and post the RCO2 by typing

**>MAPCI;MTC;PM;POST rco2\_no**

and pressing the Enter key.

where

**rco2\_no**

is the number of the RCO2 unit that will be busied

*Example of a MAP display:*

**NTRX42**  
**in an RSC-S (PCM-30) Model B MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.      .      .      .      1RCO2      .      .      .      .      .

RCO2
0 Quit      PM      0      0      OffL      CBsy      ISTb      InSv
2 Post_     RCO2      0      0      2      0      1      25
3 ListSet
4           RCO2      0 ISTb Links_OOS: CSide 1, 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
18
    
```

- 10** The NTRX42 you are replacing should be controlling the inactive side of the RCO2.

| If NTRX42 card is on the | Do      |
|--------------------------|---------|
| active unit              | step 11 |
| inactive unit            | step 13 |

- 11** Switch the processing activity (SWACT) to the inactive unit by typing  
**>SWACT**  
 and pressing the Enter key.

**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.

- 12** Confirm the system prompt by typing  
**>YES**  
 and pressing the Enter key.  
 After both units are in-service, proceed to the next step.

**At the RCE frame**

- 13** Place a sign on the active unit bearing the words *Active unit—Do not touch*. This sign should not be attached by magnets or tape.

---

## NTRX42

### in an RSC-S (PCM-30) Model B MSP (continued)

---

**At the MAP terminal**

- 14** Busy the inactive PM unit by typing

```
> bsy unit unit_no
```

where

**unit\_no**

is the number of the inactive RCO2 unit that will be busied

Go to step 28.

- 15** Use the following information to determine where to proceed.

---

| <b>If top circuit breaker of NTRX42 powers</b> | <b>Do</b> |
|------------------------------------------------|-----------|
|------------------------------------------------|-----------|

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

- 16** Use the following information to determine where to proceed.

---

| <b>If bottom circuit breaker of NTRX42 powers</b> | <b>Do</b> |
|---------------------------------------------------|-----------|
|---------------------------------------------------|-----------|

|                 |         |
|-----------------|---------|
| NT6X53 or NTB72 | step 17 |
|-----------------|---------|

|        |         |
|--------|---------|
| NT6X30 | step 21 |
|--------|---------|

- 17** Set the MAP display to the PM level and post the LCME powered by the circuit breaker by typing

```
>MAPCI;MTC;PM;POST LCME site lcme_frame_no lcme_no
```

and pressing the Enter key.

where

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of LCME the circuit breaker supplies power to

*Example of a MAP display:*

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

```
CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
LCME
0 Quit      PM      4      0      10      3      3      130
2 Post_    LCME      1      0      5      0      1      9
3
4 Swrg_    LCME      RemL  00 0  ISTb  Links_OOS:  CSide 1
5 Trnsl_   Unit-0:  InSv      /RG:  0
6 Tst_     Unit-1:  InSv      /RG:  0
7 Bsy_     11 11 11      RG:Pref:0  InSv
8 RTS_     Drwr:  01 23 45 67 89 01 23 45      Stby:1  InSv
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18
```

- 18** Busy the LCME unit powered by the circuit breaker by typing  
`>BSY UNIT lcme_unit_no`  
and pressing the Enter key.  
*where*  
**lcme\_unit\_no**  
is the unit number of the LCME to which the circuit breaker supplies power  
*Example of a MAP display:*

**NTRX42**

**in an RSC-S (PCM-30) Model B MSP** (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME   .       .       .       .       .
LCME
0 Quit      PM       4       1       10      3       3       130
2 Post_     LCME     1       1       5       0       1       9
3
4 SwRg      LCME     RemL   OO O ISTb  Links_OOS: CSide 1
5 Trns1     Unit-0:  InSv  Mtce TakeOver /RG: 0
6 Tst       Unit-1:  ManB Mtce           /RG: 0
7 Bsy                               11 11 11      RG:Pref:0 InSv
8 RTS       Drwr:   01 23 45 67 89 01 23 45      Stby:1 InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18
    
```

- 19** An alarm may sound. If this occurs, silence the alarm by typing **>SIL** and pressing the Enter key.

- 20** Use the following information to determine where to proceed.

| If                                                                                                    | Do      |
|-------------------------------------------------------------------------------------------------------|---------|
| circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16 |
| circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28 |

- 21** Set the MAP display to the PM level and post the LCME in the same frame as the circuit breaker by typing **>MAPCI;MTC;PM;POST LCME site lcme\_frame\_no lcme\_no** and pressing the Enter key.  
*where*

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

**site**

is the name of the site at which the LCME is located

**lcme\_frame\_no**

is the number of the frame in which the LCME is located

**lcme\_no**

is the number of the LCME in the same frame as the circuit breaker

*Example of a MAP display:*

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       .       .       .       .       .       .
LCME
0 Quit  PM      SysB      4       0       OffL      CBsy      ISTb      InSv
2 Post_ LCME      1       0       5       0       1       9
3
4 Swrg_          LCME  RemL  00 0  ISTb  Links_OOS:  CSide 1
5 Trnsl_        Unit-0: InSv
6 Tst_          Unit-1: InSv
7 Bsy_                                11 11 11
8 RTS_          Drwr: 01 23 45 67 89 01 23 45
9 OffL_
10 LoadPM_
11 Disp_
12 Next_
13
14 QueryPM
15
16
17
18
    
```

- 22** Busy the LCME unit associated with the ringing generator by typing  
**>BSY UNIT lcme\_unit\_no**  
 and pressing the Enter key.

*where*

**lcme\_unit\_no**

is zero when the circuit breaker powers ringing generator zero, and is one when the circuit breaker powers ringing generator one

*Example of a MAP display:*

## NTRX42

### in an RSC-S (PCM-30) Model B MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      LNS      Trks      Ext      Appl
.       .       .       .       1LCME  .       .       .       .       .
LCME
0 Quit      PM         4         1         10        3         3         130
2 Post_     LCME        1         1         5         0         1         9
3
4 SwRg      LCME      RemL  OO O  ISTb  Links_OOS:  CSide 1
5 Trnsl     Unit-0:  InSv  Mtce  TakeOver  /RG:  0
6 Tst       Unit-1:  ManB  Mtce                /RG:  0
7 Bsy                               11 11 11          RG:Pref:0  InSv
8 RTS       Drwr:  01 23 45 67 89 01 23 45          Stby:1  InSv
9 OffL
10 LoadPM
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 23** An alarm may sound. If this occurs, silence the alarm by typing  
**>SIL**  
 and pressing the Enter key.
- 24** If there is a second LCME in the same frame as the circuit breaker, post the other LCME by typing  
**>MAPCI;MTC;PM;POST LCME site lcme\_frame\_no lcme\_unit\_no**  
 and pressing the Enter key.  
*where*  
**site**  
 is the name of the site at which the LCME is located  
**lcme\_frame\_no**  
 is the number of the frame in which the LCME is located  
**lcme\_unit\_no**  
 is the number of the LCME in the same frame as the circuit breaker
- 25** Busy the LCME unit associated with the ringing generator by typing  
**>BSY UNIT lcme\_unit\_no**  
 and pressing the Enter key.  
*where*  
**lcme\_unit\_no**  
 is zero when the circuit breaker powers ringing generator zero, and is one when the circuit breaker powers ringing generator one

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

---

- 26 An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 27 Use the following information to determine where to proceed.

---

| If                                                                                                    | Do      |
|-------------------------------------------------------------------------------------------------------|---------|
| circuits associated with bottom circuit breaker of NTRX42 have not been busied or otherwise addressed | step 16 |
| circuits associated with both circuit breakers of NTRX42 have been busied or otherwise addressed      | step 28 |

---

### ***At the front panel of the cabinet***

- 28 Verify and switch off the associated power converter.  
**Note:** This step does not apply to the CPDC and CRME.
- 29 Determine the faulty circuit breaker on the MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.
- 30 An alarm may sound. If this occurs, silence the alarm by typing  
>*SIL*  
and pressing the Enter key.
- 31 Power down and safety tag the ABS fuse in the power room.  
**Note:** This step applies to the CPDC and CRME.
- 32 Pull out the corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP.  
**Note:** This step does not apply to the CMIS, CPDC, and CRME.

## NTRX42

### in an RSC-S (PCM-30) Model B MSP (continued)

*At the rear panel of the cabinet*

33



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
 Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
 Take these precautions when removing or inserting a card:

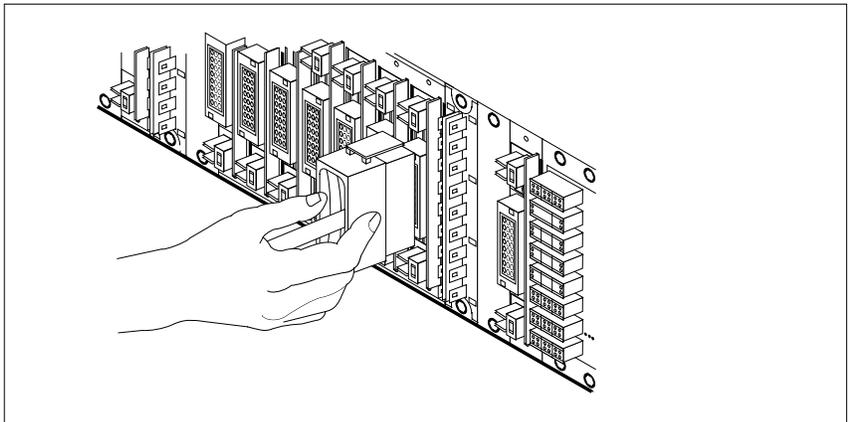
- 1 Do not apply direct pressure to the components.
2. Do not force the cards into the slots.
3. Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

Put on a wrist strap.

34

Open the rear door and locate the NTRX42 circuit card. Verify the card location by checking the slot number stamped into the chassis.

- a** Note the wire color and the location to facilitate re-connection.



- b** Safety tag the front of the circuit breaker to indicate maintenance activity.
- c** Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect and tag the smaller black power connectors located below the larger blue power connector.

## **NTRX42** **in an RSC-S (PCM-30) Model B MSP** (continued)

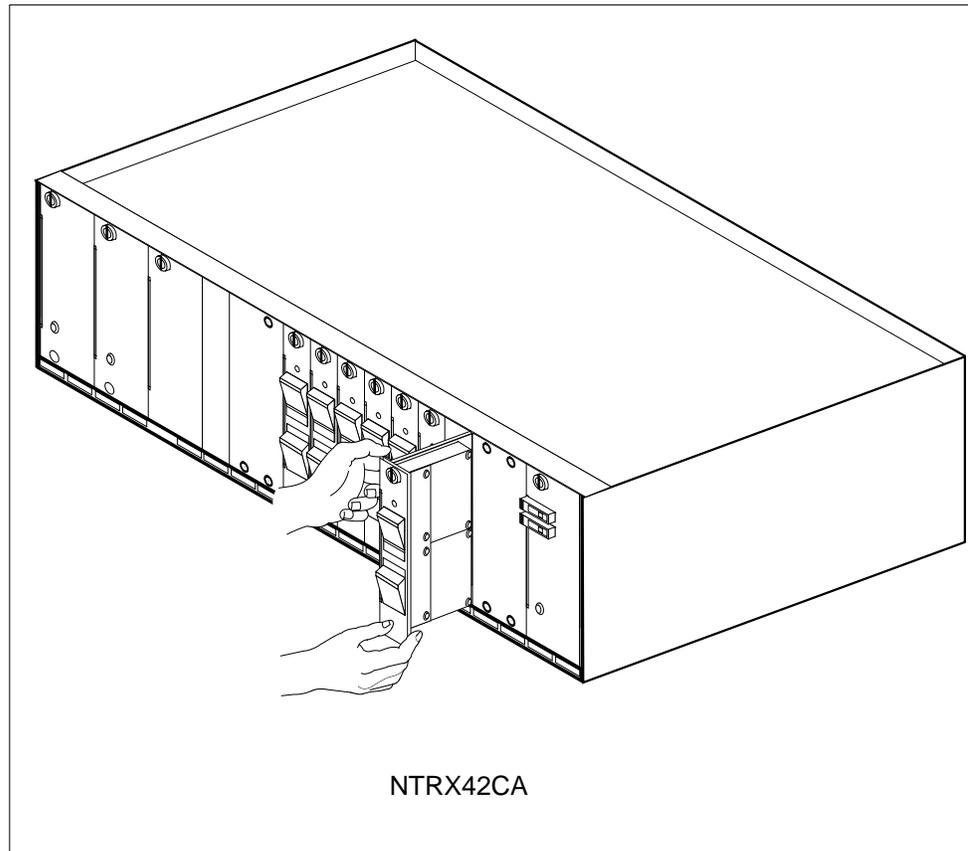
---

Manually disconnect and tag the large blue power connector. Disconnect and tag the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- 35** Disconnect and tag any jumper connectors and cables that may be present and set them aside for use on the replacement unit.

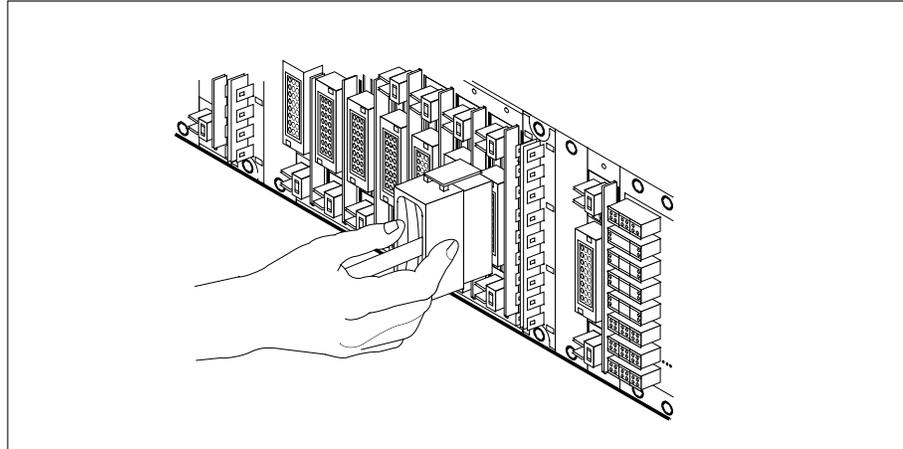
### ***At the front panel of the cabinet***

- 36** Remove the NTRX42 card.
- a Disengage the spring-loaded captive screw at the top of the circuit card.
  - b Grasping the top and bottom of unit, gently pull the circuit card toward you until it clears the shelf.
  - c Replace the circuit card. Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card being replaced.
  - d Tighten the spring-loaded captive screw at the top of the circuit card.

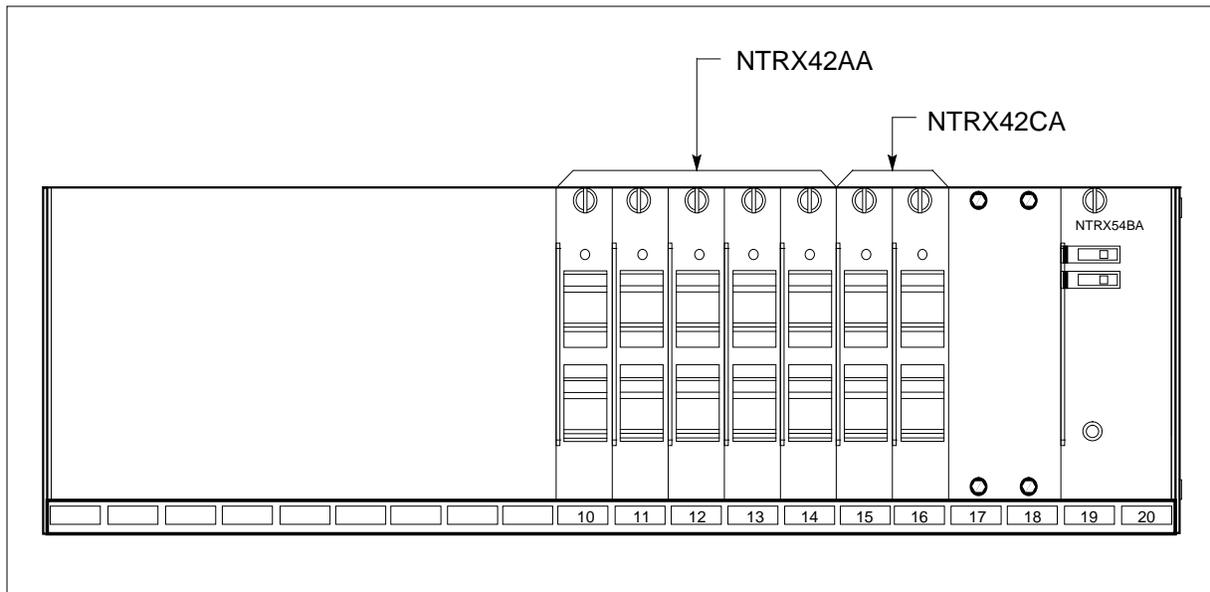


## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

- 37** Replace any jumper connectors and cables removed in step 35. Reinsert the power connectors at the rear of the circuit card.



- 38** Push in the corresponding line shelf. This step does *not* apply to the CMIS, CPDC, and CRME.



- 39** Apply the appropriate label from the spare parts on the replacement NTRX42 circuit card.
- 40** Power up the ABS fuse in the power room, and remove the safety tag from the ABS fuse.  
**Note:** This step applies to the CPDC and CRME.
- 41** Switch on the associated power converter.  
**Note:** This step does not apply to the CPDC and CRME.

**NTRX42**  
**in an RSC-S (PCM-30) Model B MSP** (continued)

- 42 Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 43 Remove the safety tag from the front of the circuit breaker.
- 44 Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.
- 45 Read the following table to determine where to proceed.

| If circuit breakers power the                   | Do      |
|-------------------------------------------------|---------|
| LCME shelf containing 6X30, 6X53, or BX72 cards | step 46 |
| RCO2 shelf containing MX72 card                 | step 51 |
| RMM shelf containing 2X09 or 2X06 cards         | step 56 |

- 46 Test the LCME unit by typing  
`>TST UNIT lcme_unit_no`  
 and pressing the Enter key.  
*where*

**lcme\_unit\_no**  
 is the number of the LCME unit busied

| If TST | Do      |
|--------|---------|
| passed | step 47 |
| failed | step 65 |

- 47 Return the LCME unit to service by typing  
`>RTS UNIT lcme_unit_no`  
 and pressing the Enter key.  
*where*

**lcme\_unit\_no**  
 is the number of the LCME unit tested in step 46

| If RTS | Do      |
|--------|---------|
| passed | step 48 |
| failed | step 65 |

- 48 Send any faulty cards for repair according to local procedure.

---

**NTRX42**

**in an RSC-S (PCM-30) Model B MSP** (continued)

---

**49** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.

**50** Go to step 66.

**51** Test the RCO2 unit by typing  
`>TST UNIT rco2_unit_no`  
 and pressing the Enter key.

*where*

**rco2\_unit\_no**  
 is the number of the RCO2 unit

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 52   |
| failed        | step 65   |

**52** Return the RCO2 unit to service by typing  
`>RTS UNIT rco2_unit_no`  
 and pressing the Enter key.

*where*

**rco2\_unit\_no**  
 is the number of the RCO2 unit tested in step 51

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passed        | step 53   |
| failed        | step 65   |

**53** Send any faulty cards for repair according to local procedure.

**54** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card.

**55** Go to step 66.

**At the MAP terminal**

**56** Determine the system load version.

| <b>If system load module is</b> | <b>Do</b> |
|---------------------------------|-----------|
| version 1                       | step 57   |
| version 2                       | step 58   |

**57** List the loadfile in the directory by typing  
`> DSKUT;listvol d000 all`

## NTRX42 in an RSC-S (PCM-30) Model B MSP (continued)

---

and pressing the Enter key.

or

```
> dskut;listvol d010 all
```

and pressing the Enter key.

Local operating company policy determines which disk, D000 or D010, the loadfile will be on.

Proceed to step 59.

**58** List the loadfile in the directory by typing

```
>DISKUT;LV s00d
```

```
>LF
```

and pressing the Enter key.

or

```
> diskut;LV s01d
```

```
>LF
```

and pressing the Enter key.

**59** Leave the disk utility by entering

```
>QUIT
```

and pressing the Enter key.

**60** Reload the RMM by entering

```
>LOADPM
```

and pressing the Enter key.

---

| If LOAD | Do      |
|---------|---------|
| passed  | step 61 |
| failed  | step 65 |

---

**61** Test the RMM unit by typing

```
>TST UNIT rmm_unit_no
```

and pressing the Enter key.

where

**rmm\_unit\_no**  
is the number of the RCO2 unit

---

| If RTS | Do      |
|--------|---------|
| passed | step 62 |
| failed | step 65 |

---

---

**NTRX42**

**in an RSC-S (PCM-30) Model B MSP (end)**

---

- 62** Return the RMM shelf to service by typing

```
>RTS UNIT rmm_unit_no
```

and pressing the Enter key.

where

**rmm\_unit\_no**

is the number of the RCO2 unit tested in step 61

---

| If RTS | Do      |
|--------|---------|
| passed | step 63 |
| failed | step 65 |

---

- 63** Send any faulty cards for repair according to local procedure.
- 64** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 66.
- 65** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 66** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX42 in an SMA2 MSP

---

### Application

Use this procedure to replace an NTRX42 card in a modular supervisory panel (MSP) located in a:

- cabinetized multi-vendor interface (CMVI)
- multi-vendor interface equipment frame (MVIE)
- multi-vendor double density frame (MVDD)

| PEC    | Suffixes | Name                   |
|--------|----------|------------------------|
| NTRX42 | AA       | Circuit Breaker Module |

### Common procedures

The common returning a card procedure is referenced in this procedure.

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

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

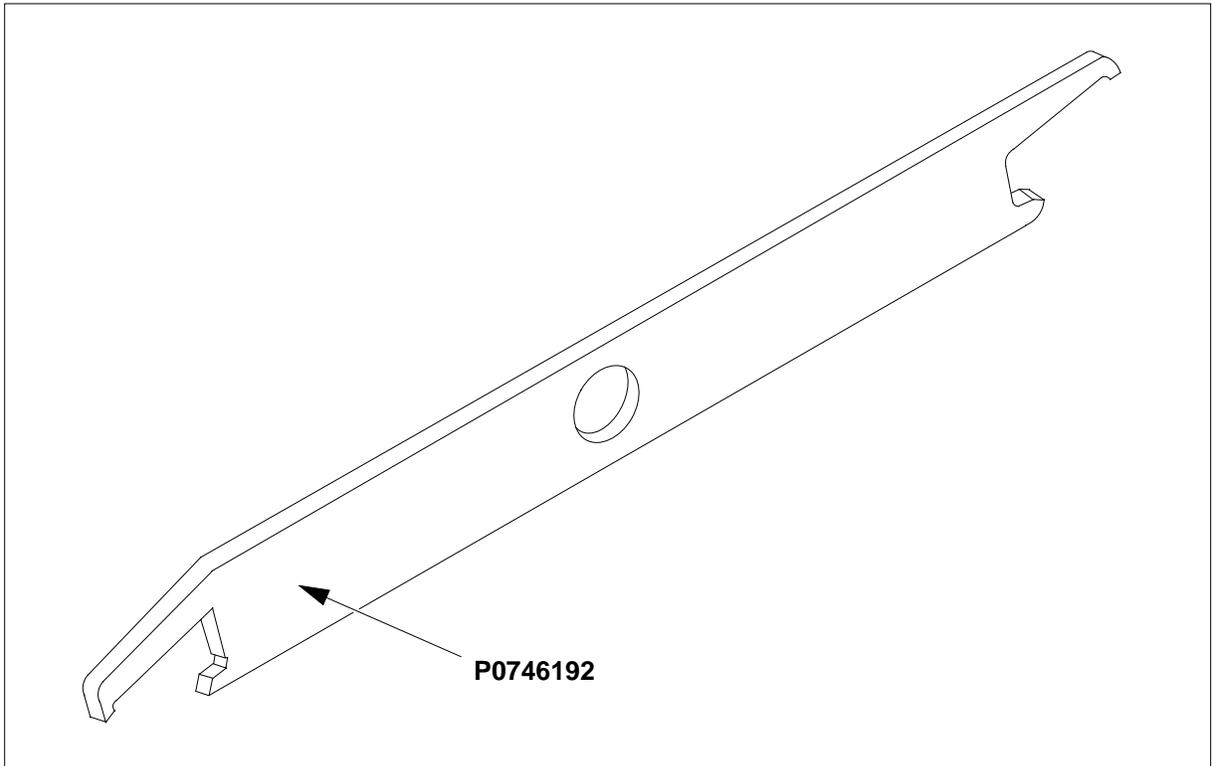
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**NTRX42**  
**in an SMA2 MSP** (continued)

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Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

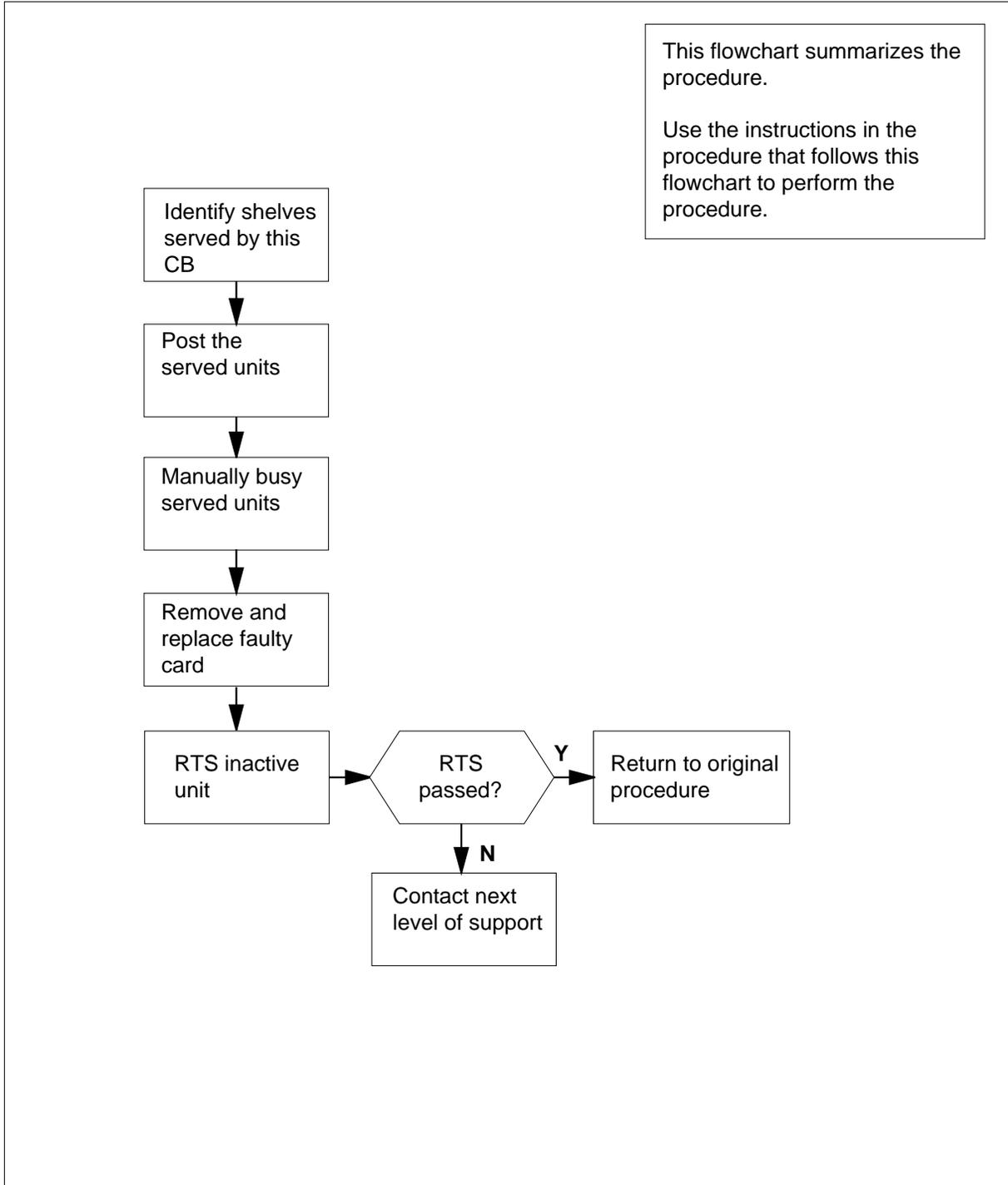
**Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

## NTRX42 in an SMA2 MSP (continued)

### Summary of replacing an NTRX42 card in an SMA2 MSP



**NTRX42**  
**in an SMA2 MSP** (continued)

---

**Replacing an NTRX42 card in an SMA2 MSP**

***At your current location***

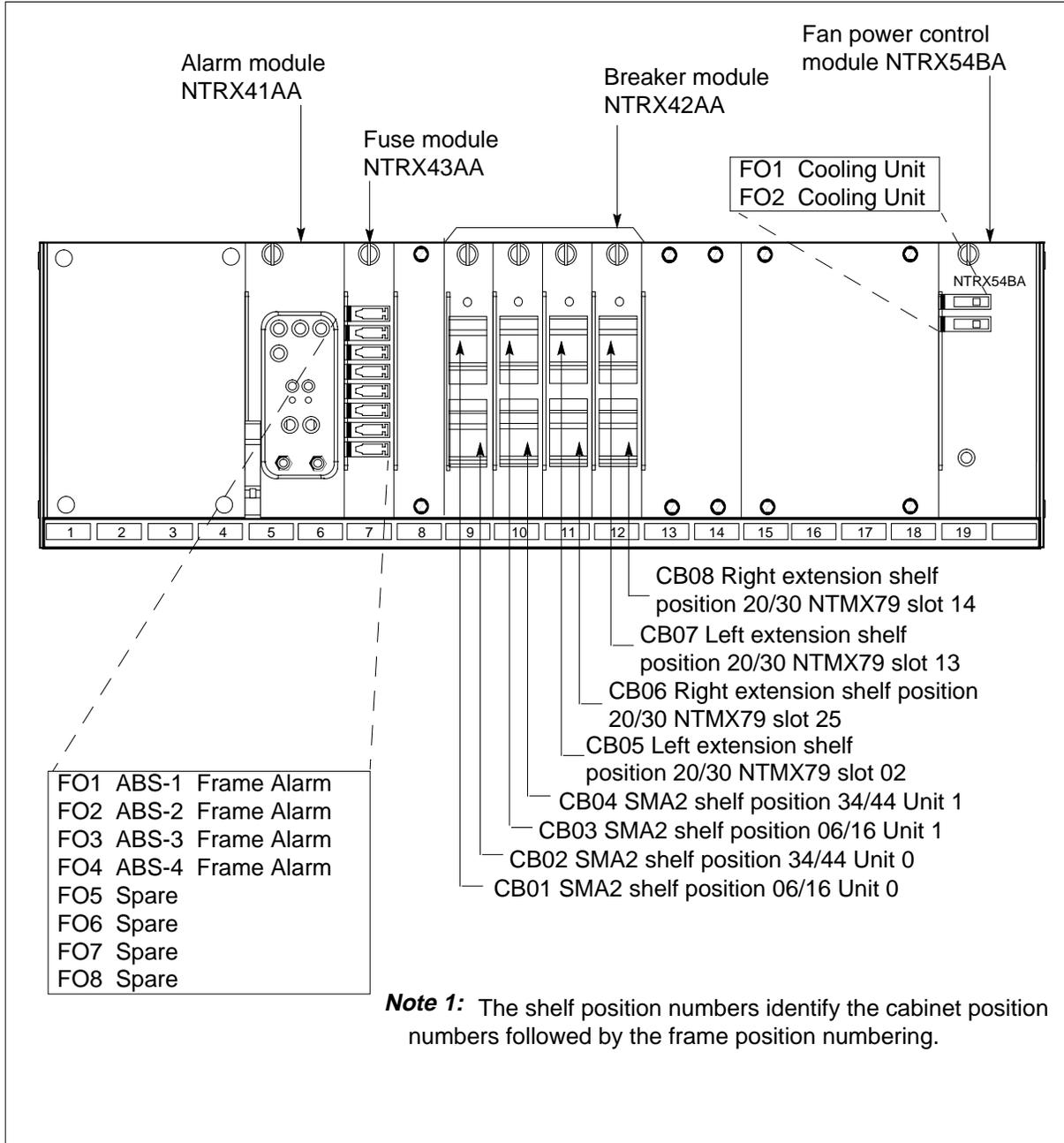
- 1** Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2** Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

***At the front panel of the frame or cabinet***

- 3** Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

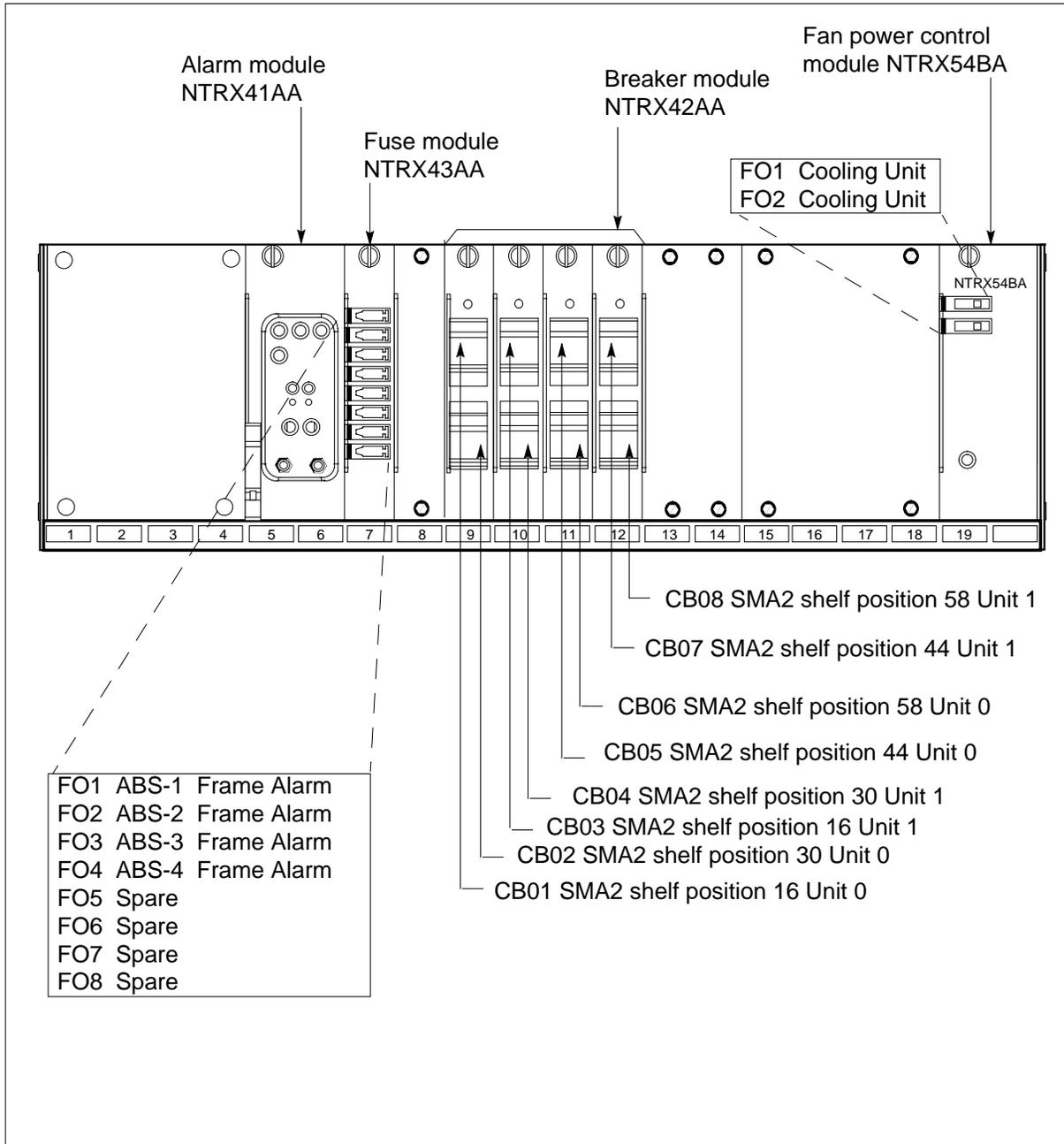
## NTRX42 in an SMA2 MSP (continued)

### MSP in a CMVI cabinet or MVIE frame with an exrention shelf



## NTRX42 in an SMA2 MSP (continued)

### MSP shelf for MVDD frame (without extension shelf)



- 4 Use the previous MSP figures and the breaker designation label to identify which cards are serviced by each circuit breaker (CB). Many RX42 modules service two separate devices (or units); both units must be powered down prior to removal of the associated RX42 circuit card.

## NTRX42 in an SMA2 MSP (continued)

---

**At the MAP terminal**

- 5 Access the PM level and post the SMA2 by typing

```
>MAPCI ;MTC ;PM ;POST sma2_no
```

and pressing the Enter key.

where

**sma2\_no**

is the number of the SMA2 unit that will be busied.

Example of a MAP display

|        |       |      |            |       |          |      |
|--------|-------|------|------------|-------|----------|------|
| SMA2   | SysB  | ManB | OffL       | CBsy  | ISTb     | InSv |
| PM     | 3     | 0    | 1          | 0     | 2        | 13   |
| SMA2   | 0     | 0    | 0          | 0     | 1        | 7    |
| SMA2   | 0     | ISTb | Links_OOS: | CSide | 0, PSide | 0    |
| Unit0: | Act   | InSv |            |       |          |      |
| Unit1: | InAct | IsTb |            |       |          |      |

- 6 The NTRX42 you are replacing should be controlling the INACTIVE side of the SMA2.

---

| If NTRX42 card is on the | Do      |
|--------------------------|---------|
| active unit              | step 7  |
| inactive unit            | step 11 |

---

- 7 Switch the processing activity (SWACT) to the INACTIVE unit by typing

```
>SWACT
```

and pressing the Enter key.

A confirmation prompt for the SWACT command is displayed at the MAP terminal

---

| If prompt indicates          | Do     |
|------------------------------|--------|
| cannot continue at this time | step 8 |
| can continue at this time    | step 9 |

---

- 8 Reject the prompt to SWACT of the units by typing

```
>NO
```

and pressing the Enter key.

The system discontinues the SWACT.

- 9 Confirm the system prompt by typing

```
>YES
```

and pressing the Enter key.

## NTRX42 in an SMA2 MSP (continued)

The system runs a pre-SWACT audit to determine the ability of the inactive unit to accept activity reliably.

**Note:** A maintenance flag appears when maintenance tasks are in progress. Wait until the flag disappears before proceeding with the next maintenance action.

| If the message is                     | Do      |
|---------------------------------------|---------|
| SWACT passed                          | step 11 |
| SWACT failed<br>Reason: XPM SWACTback | step 10 |
| SWACT refused by<br>SWACT Controller  | step 10 |

- 10** The inactive unit could not establish two-way communication with CC and has switched activity back to the originally active unit. You must clear all faults on the inactive unit before attempting to clear the alarm condition on the active unit.

Go to step 30.

After both units are in-service proceed to the next step.

### **At the frame or cabinet**

- 11** Place a sign on the active unit bearing the words: *Active unit-Do not touch*. This sign should not be attached by magnets or tape.

### **At the MAP terminal**

- 12** Busy the inactive PM unit by typing

```
> bsy unit unit_no
```

where

**unit\_no**

is the number of the INACTIVE SMA2 unit to be busied.

Go to step 13.

### **At the front panel of the frame or cabinet**

- 13** Verify and switch off associated power converter.
- 14** Determine faulty circuit breaker on MSP and switch both breakers on that circuit card to the OFF position. Safety tag the front of the circuit breaker.
- 15** An alarm may sound. If this occurs, silence the alarm by typing
- ```
>SIL
```
- and pressing the Enter key.
- 16** Power down and safety tag the ABS fuse in the power room.

## NTRX42 in an SMA2 MSP (continued)

### *At the rear panel of the frame or cabinet*

17



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



#### **DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:

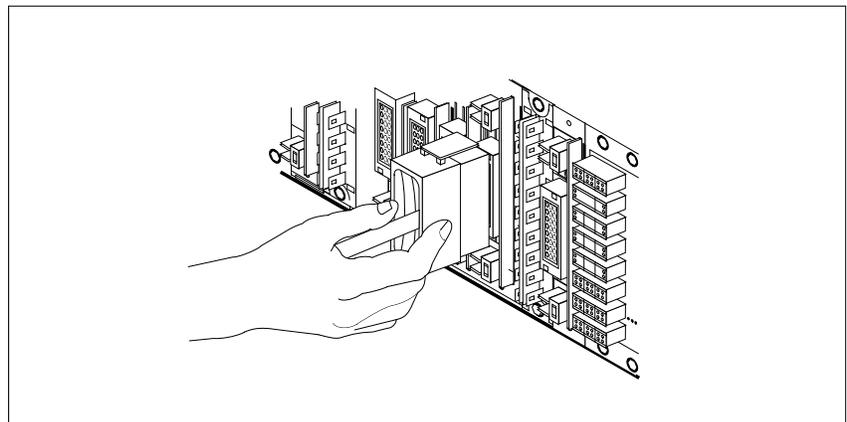
- 1 Do not apply direct pressure to the components.
2. Do not force the cards into the slots.
3. Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

Put on a wrist strap.

18

Open the rear door and locate the NTRX42 circuit card. Verify the card location by checking the slot number stamped into the chassis.

- a** Note wire color and location to facilitate re-connection.



- b** Safety tag the front of the circuit breaker to indicate maintenance activity.
- c** Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect and tag the smaller black power connectors located below the larger blue power connector.

---

## NTRX42 in an SMA2 MSP (continued)

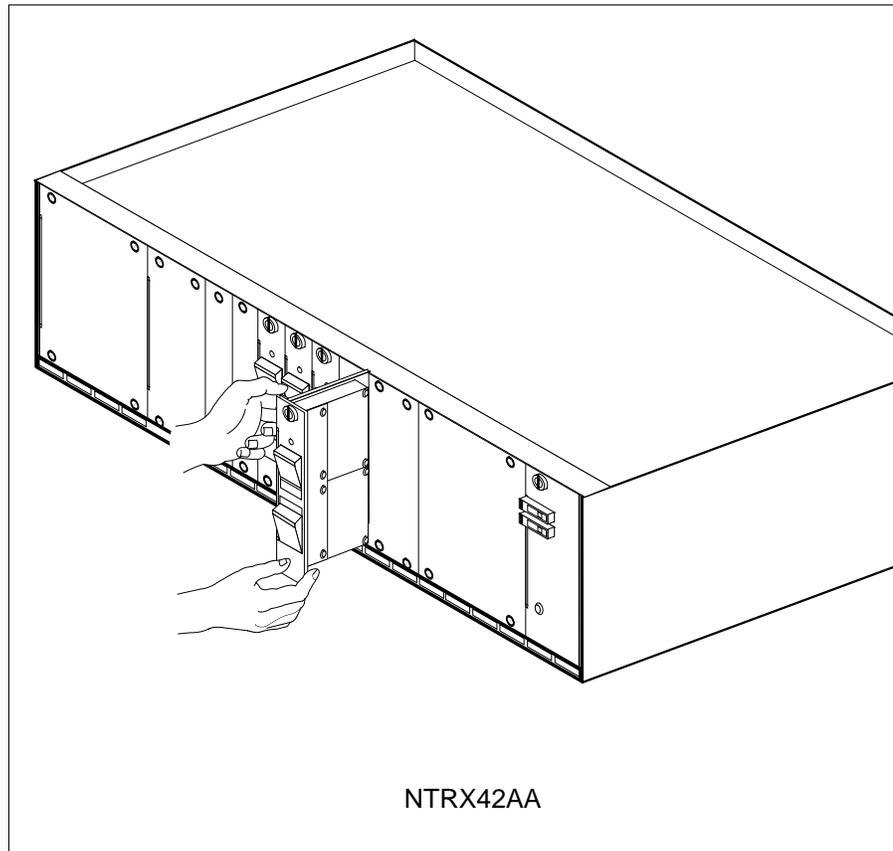
---

Manually disconnect and tag the large blue power connector. Disconnect and tag the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- 19 Disconnect and tag any jumper connectors and cables which may be present and set them aside for use on the replacement unit.

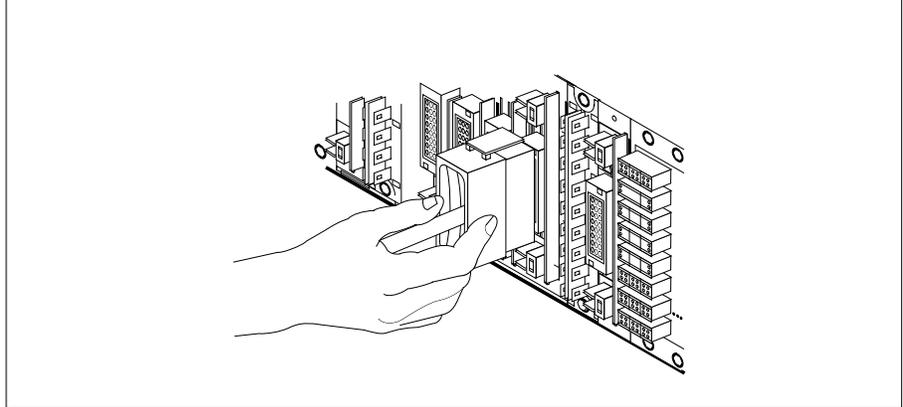
### *At the front panel of the frame or cabinet*

- 20 Remove the NTRX42 card.
- a Disengage the spring-loaded captive screw at the top of the circuit card.
  - b Grasping the top and bottom of unit, gently pull the circuit card towards you until it clears the shelf.
  - c Replace the circuit card. Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card being replaced.
  - d Tighten the spring-loaded captive screw at the top of the circuit card.

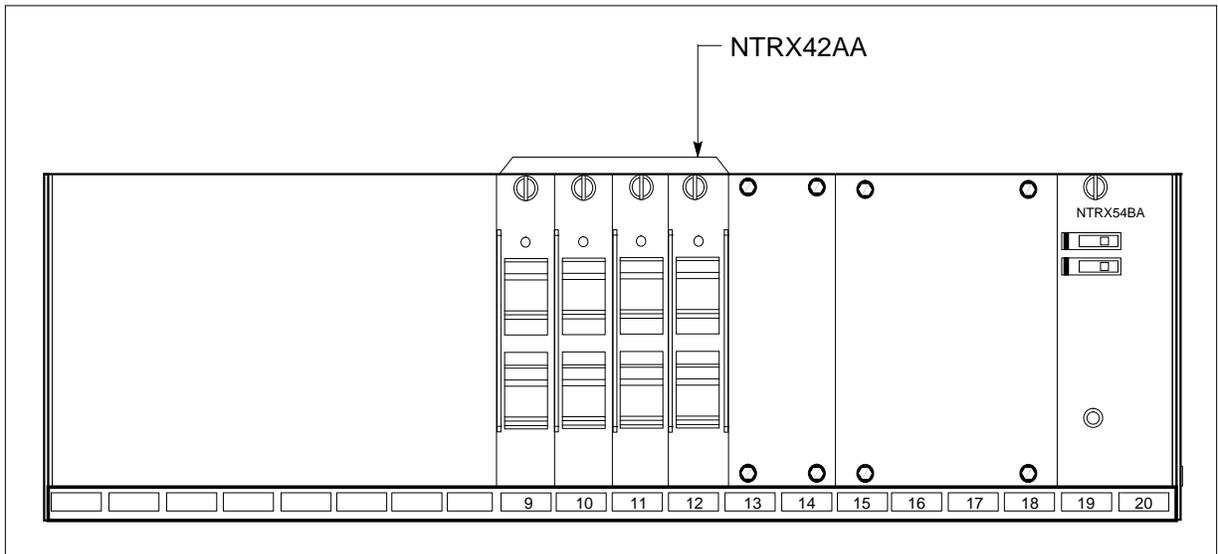


## NTRX42 in an SMA2 MSP (continued)

- 21 Replace any jumper connectors and cables removed in step 19. Reinsert the power connectors at the rear of the circuit card.



- 22 Apply appropriate label from spare parts on replacement NTRX42 circuit card.



- 23 Power up the ABS fuse in the power room, remove safety tag from ABS fuse.
- 24 Switch on associated power converter.
- 25 Reset the circuit breakers to ON (upward). If any card controlled by this breaker includes a reset switch, hold the RESET button downward while setting the circuit breaker to the ON position.
- 26 Remove safety tag from front of circuit breaker.
- 27 Close the front cover of the MSP. Swing the cover up to the closed position and lock the two cover latches.

---

**NTRX42**  
**in an SMA2 MSP (end)**

---

- 28** Return the SMA2 unit to service by typing

`>RTS UNIT sma2_unit_no`

and pressing the Enter key.

where

**sma2\_unit\_no**

is the number of the SMA2 unit busied in step 12

---

<b>If RTS</b>	<b>Do</b>
---------------	-----------

passed	step 29
--------	---------

failed	step 30
--------	---------

- 
- 29** Go to the common returning a card procedure in this document.  
Go to step 31.
- 30** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 31** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX43 in an IOPAC MSP**

---

### **Application**

Use this procedure to replace the following card in an IOPAC MSP.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX43	AA	Fuse Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules.

This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector.

As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

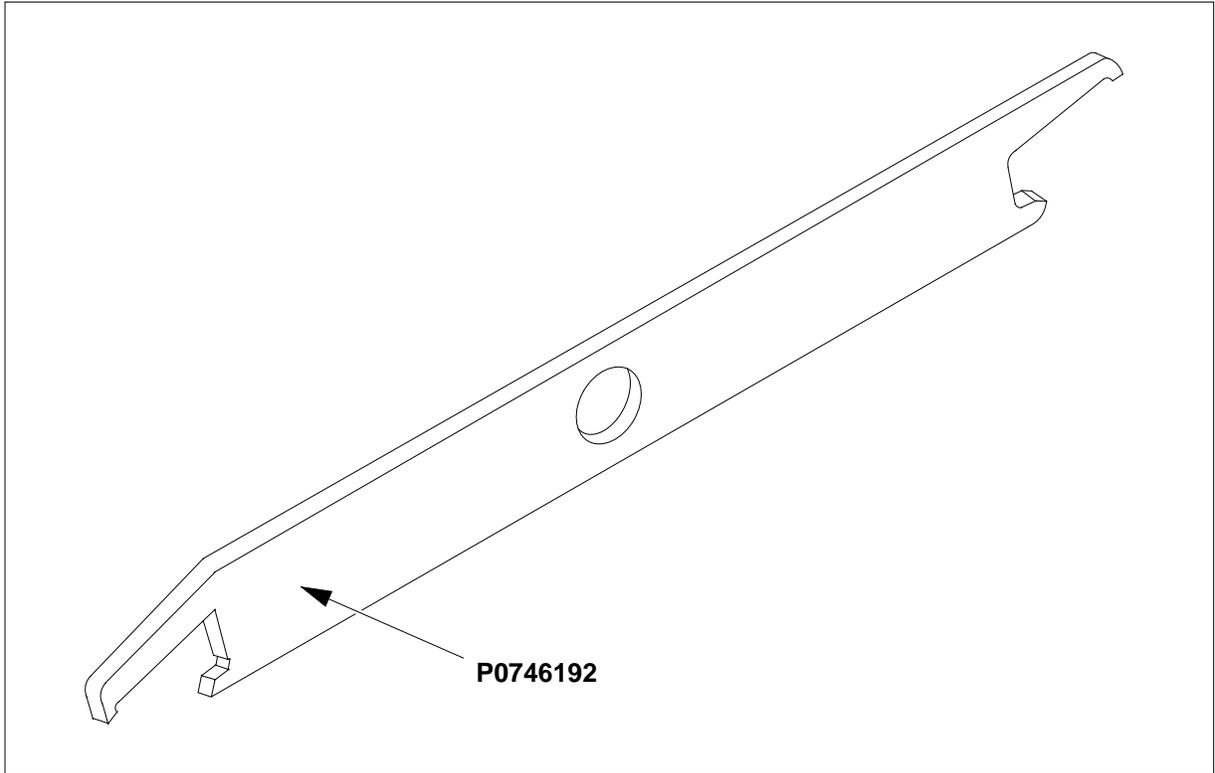
The following is an illustration of the connector removal tool.

---

**NTRX43**  
**in an IOPAC MSP** (continued)

---

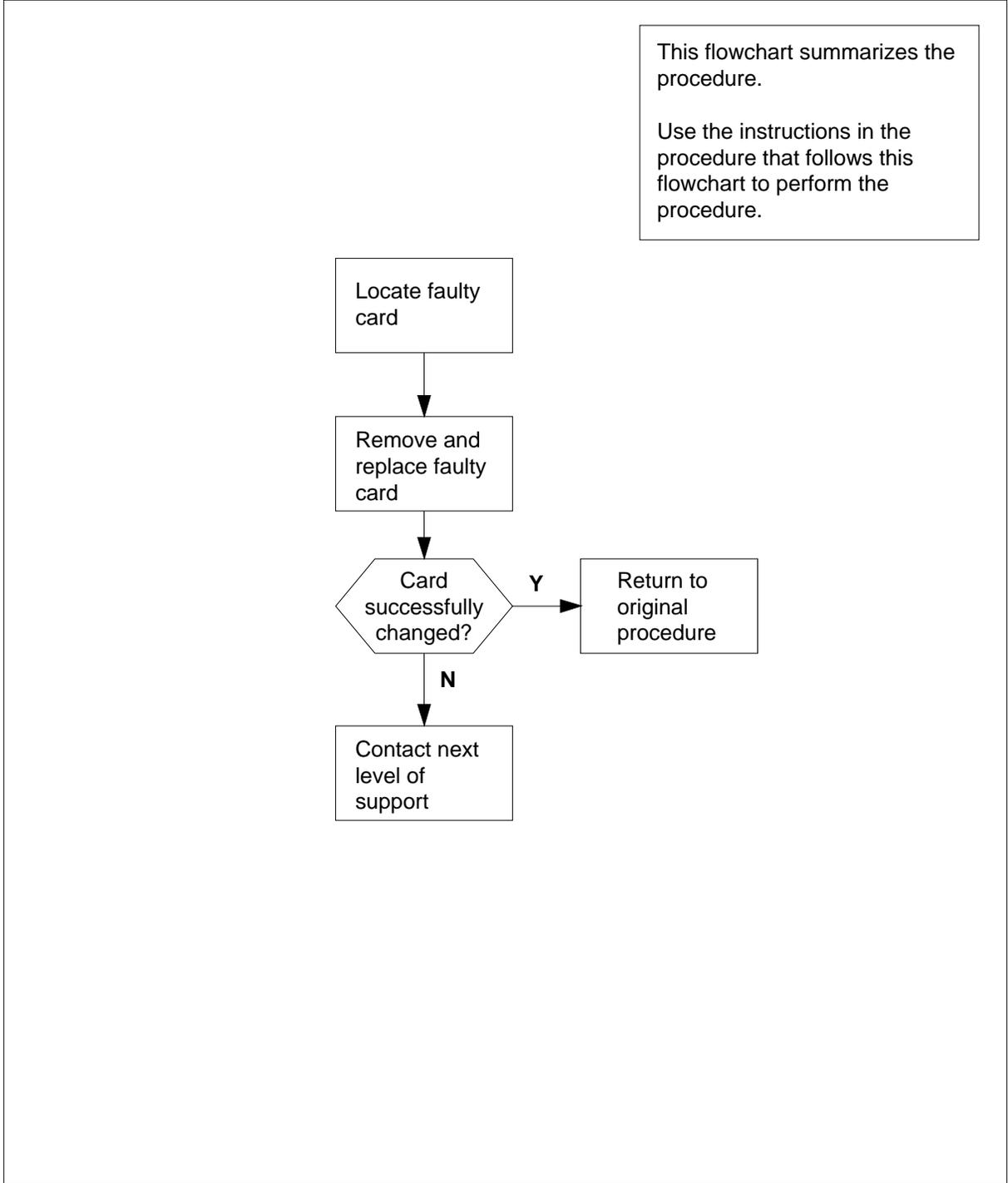
**Connector removal tool**



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.

## NTRX43 in an IOPAC MSP (continued)

### Summary of card replacement procedure for an NTRX43 card in MSP



## NTRX43 in an IOPAC MSP (continued)

### Replacing an NTRX43 in an MSP

#### *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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front of the MSP*

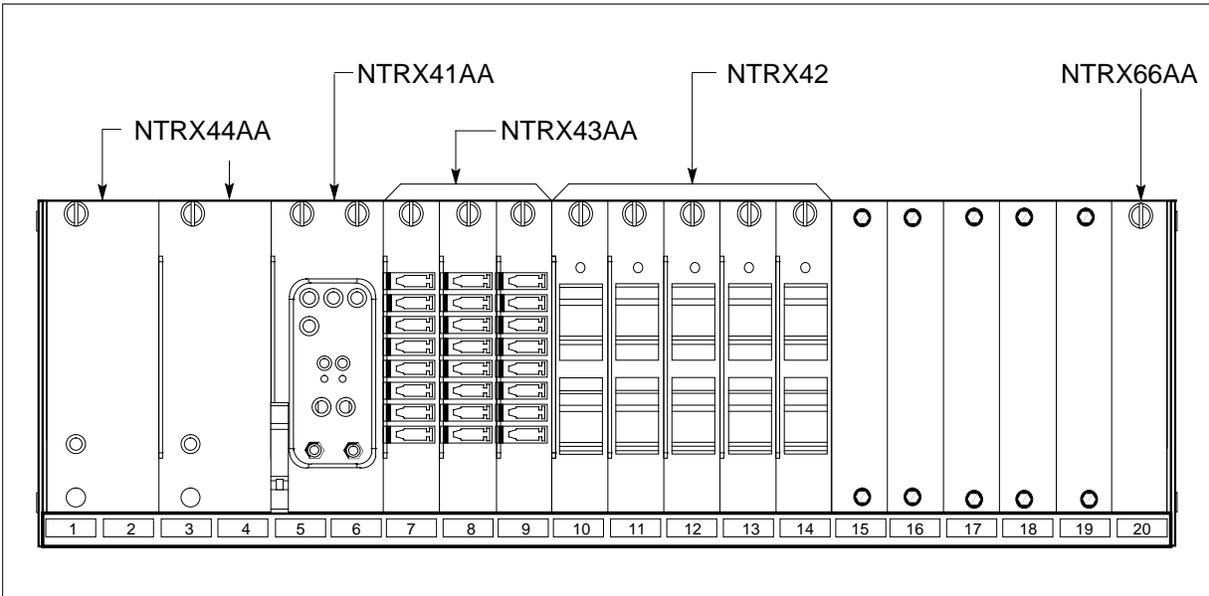
3



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Wear a wrist strap connected to a wrist strap grounding point to protect equipment against damage caused by static electricity.

Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.



## NTRX43 in an IOPAC MSP (continued)

---

### *At the rear of the MSP*

4



#### **DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

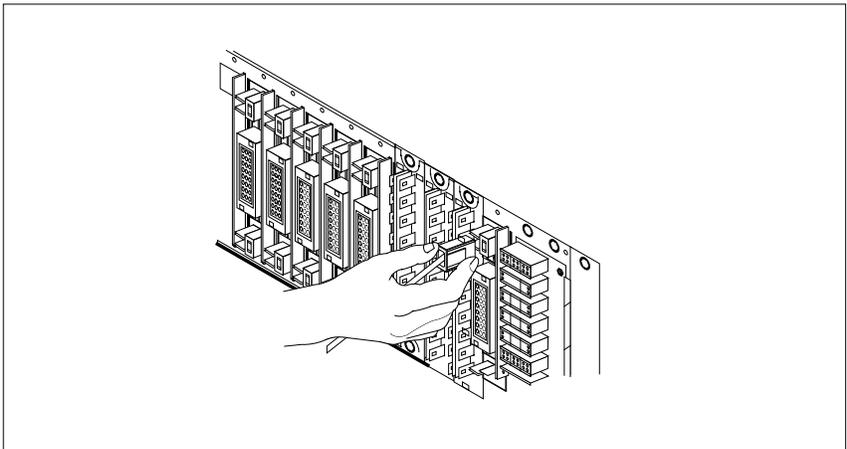
Put on a wrist strap.

Before removing fuses from fuse module, observe fuse colors, values, and positions. Remove fuses from fuse module. When servicing the fuse module, fans may shut down, alarms may be activated, and there may be a loss of alarms.

5

Disconnect the NTRX43 circuit card as shown in the following figure.

- a Swing the frame out and locate the back of the card to be replaced.
- b Note wire color and location to facilitate reconnection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- e Remove and tag jumper connectors and cables, which may be present on the back of the circuit card and save for use on the replacement circuit card.

## NTRX43 in an IOPAC MSP (continued)

*At the front of the MSP*

6

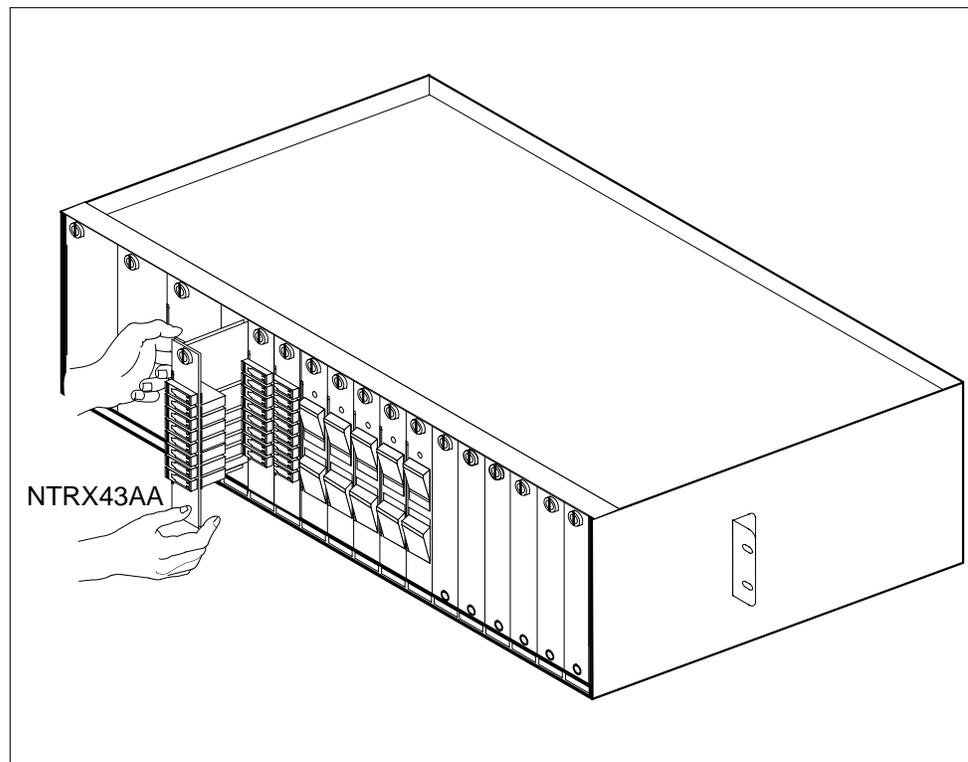


### DANGER

Risk of injury from high energy levels, equipment damage  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

Remove the NTRX43 circuit card as shown in the following figure.

- a Disengage the captive screw at the top of the circuit card.
- b Gently pull the circuit card towards you until it clears the shelf.



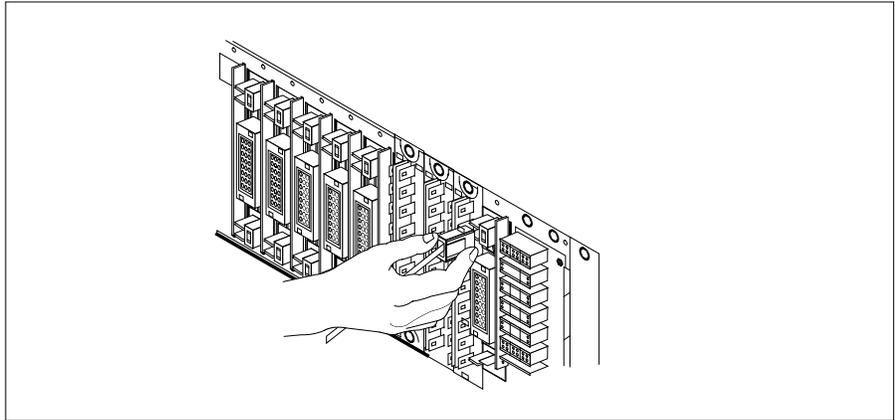
- 7 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the captive screw at the top of the circuit card.

## NTRX43 in an IOPAC MSP (end)

---

### *At the rear of the MSP*

- 8 Locate the replaced circuit card and reattach the power connectors. Install the jumper connectors and cables removed in step 5 e.e onto the replacement circuit card.



### *At the front of the MSP:*

- 9 Replace fuses removed in step 4.

---

<b>If Fuses</b>	<b>Do</b>
do not blow	step 10
blow (protrude)	step 12

---

- 10 Send any faulty cards for repair according to local procedure.
- 11 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 13.
- 12 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 13 You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure, and continue as directed.

## NTRX43 in an OPAC MSP

### Application

Use this procedure to replace NTRX43 card in an MSP.

PEC	Suffixes	Name
NTRX43	AA	Fuse Module

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules.

This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector.

As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

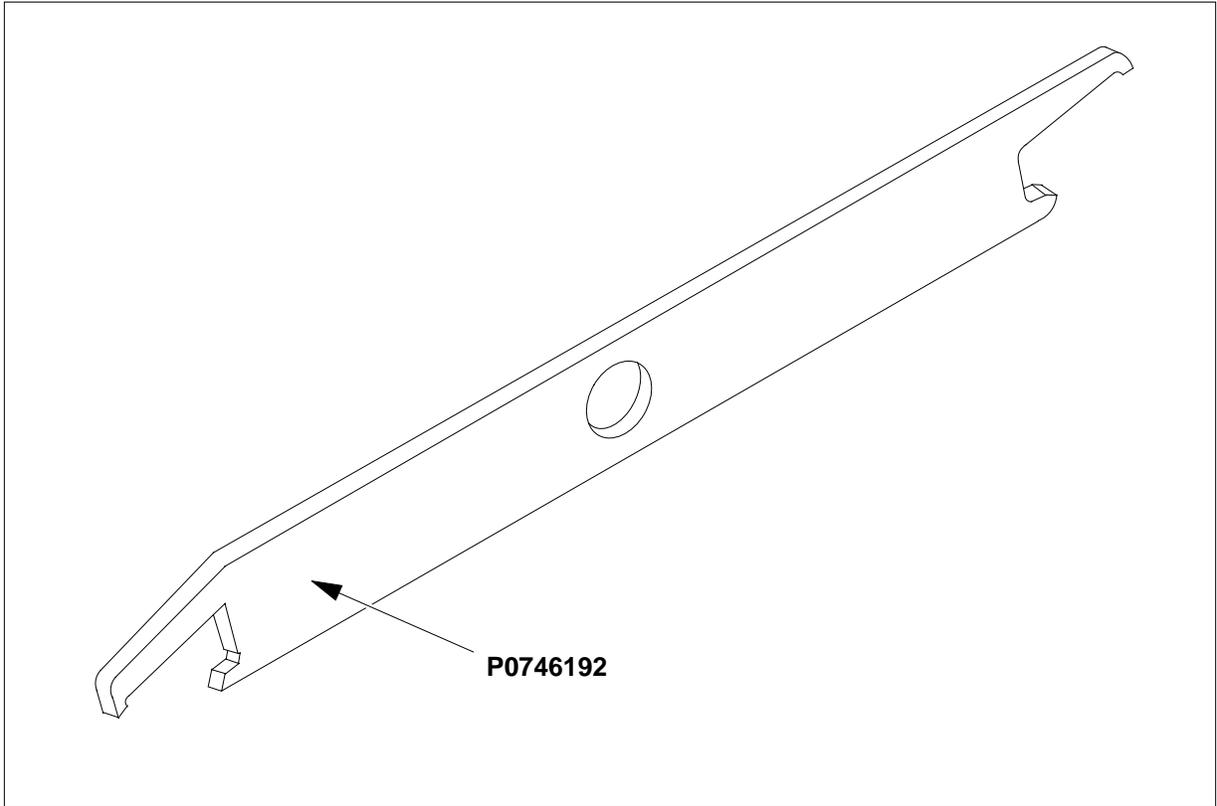
Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

The following is an illustration of the connector removal tool.

**NTRX43**  
**in an OPAC MSP** (continued)

---

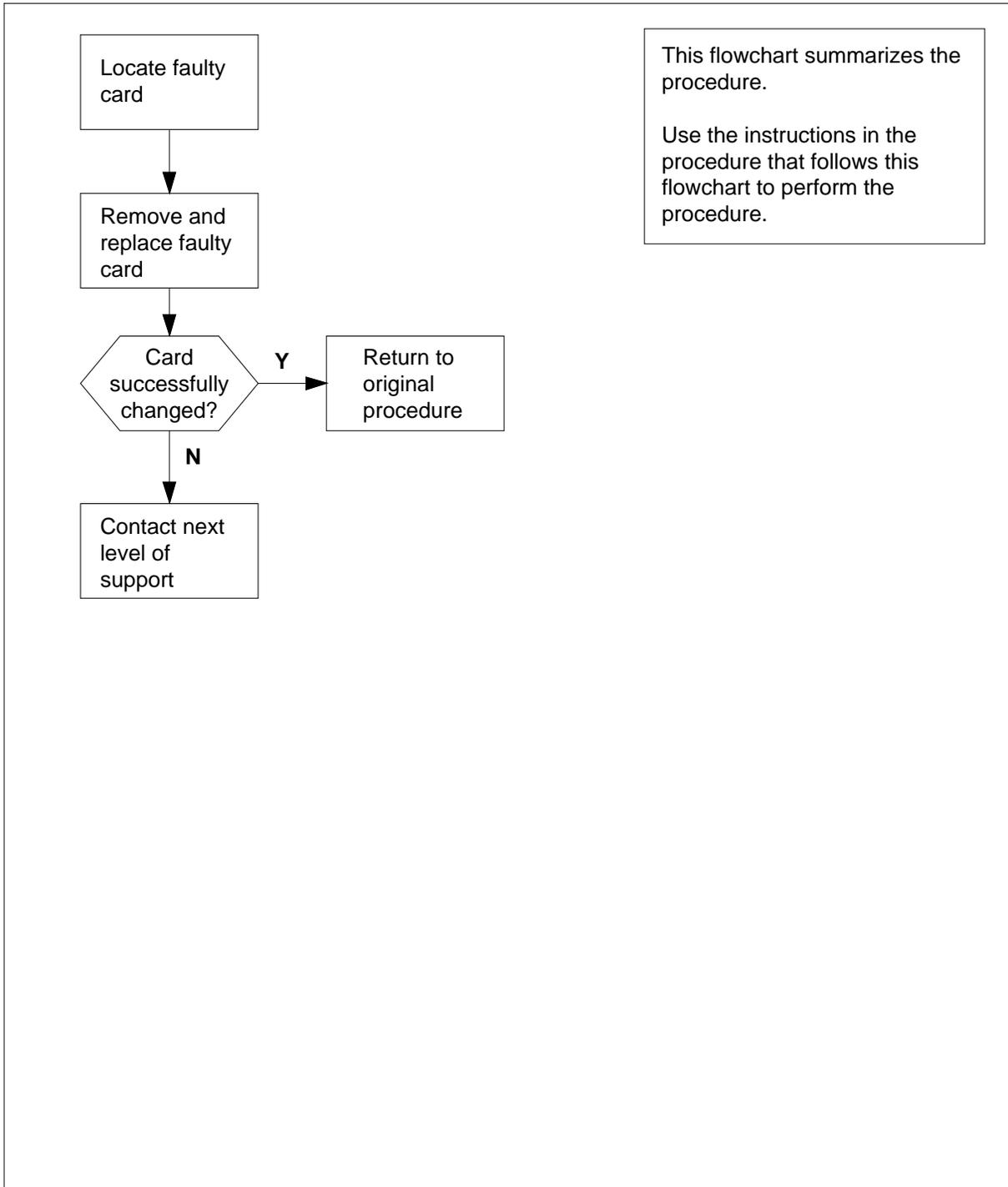
**Connector removal tool**



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.

**NTRX43**  
**in an OPAC MSP** (continued)

**Summary of card replacement procedure for an NTRX43 card in an MSP**



## NTRX43 in an OPAC MSP (continued)

### Replacing an NTRX43 in an MSP

#### 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At the front of the MSP

3

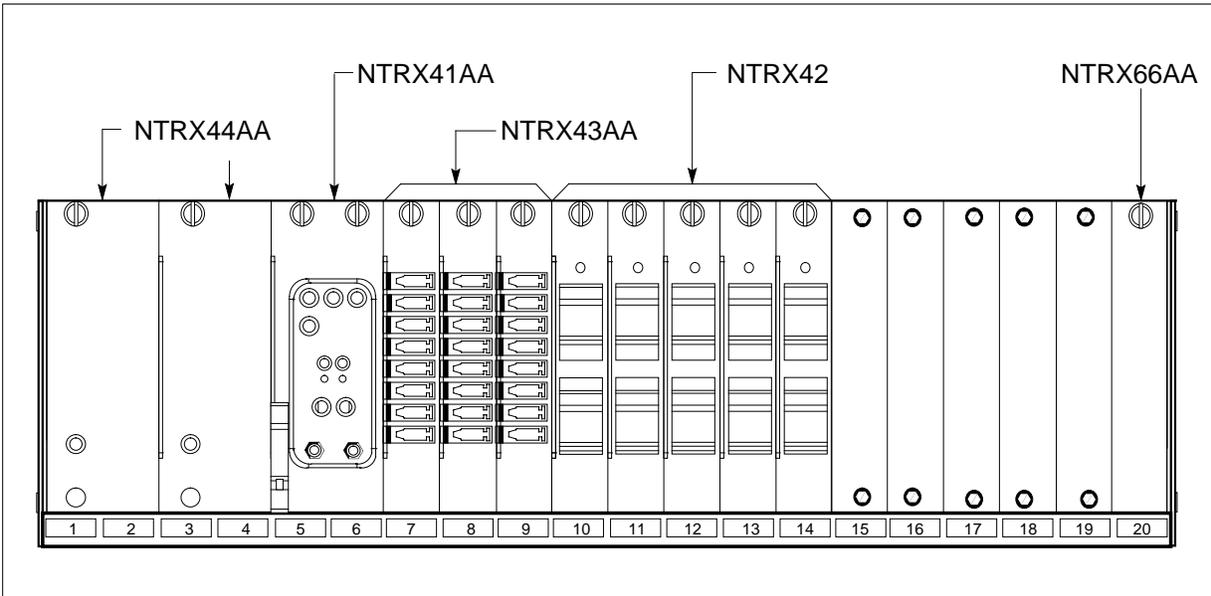


#### DANGER

Risk of injury from high energy levels, static electricity damage

Wear a wrist strap connected to a wrist strap grounding point to protect equipment against damage caused by static electricity.

Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.



---

**NTRX43**  
**in an OPAC MSP** (continued)

---

**At the rear of the MSP**

4

**DANGER**

Risk of injury from high energy levels, voltage present  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

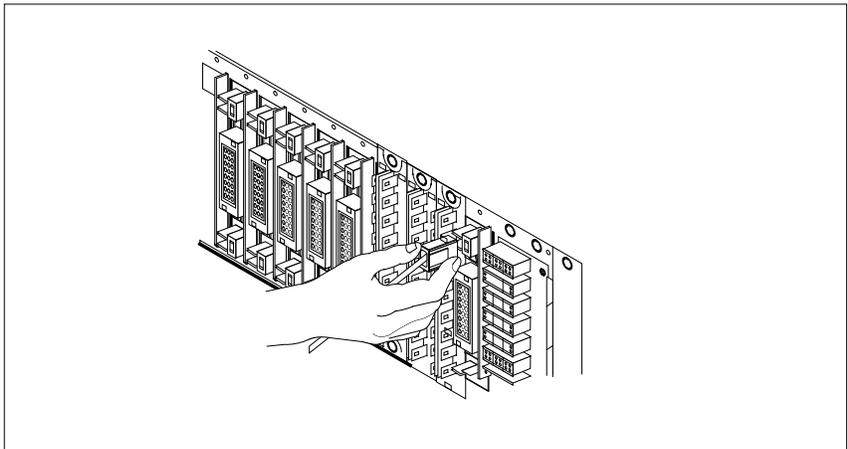
Put on a wrist strap.

Before removing fuses from fuse module, observe fuse colors, values, and positions. Remove fuses from fuse module. When servicing the fuse module, fans may shut down, alarms may be activated, and there may be a loss of alarms.

5

Disconnect the NTRX43 circuit card as shown in the following figure.

- a Swing the frame out and locate the back of the card to be replaced.
- b Note wire color and location to facilitate reconnection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- e Remove and tag jumper connectors and cables, which may be present on the back of the circuit card and save for use on the replacement circuit card.

## NTRX43 in an OPAC MSP (continued)

---

*At the front of the MSP*

6

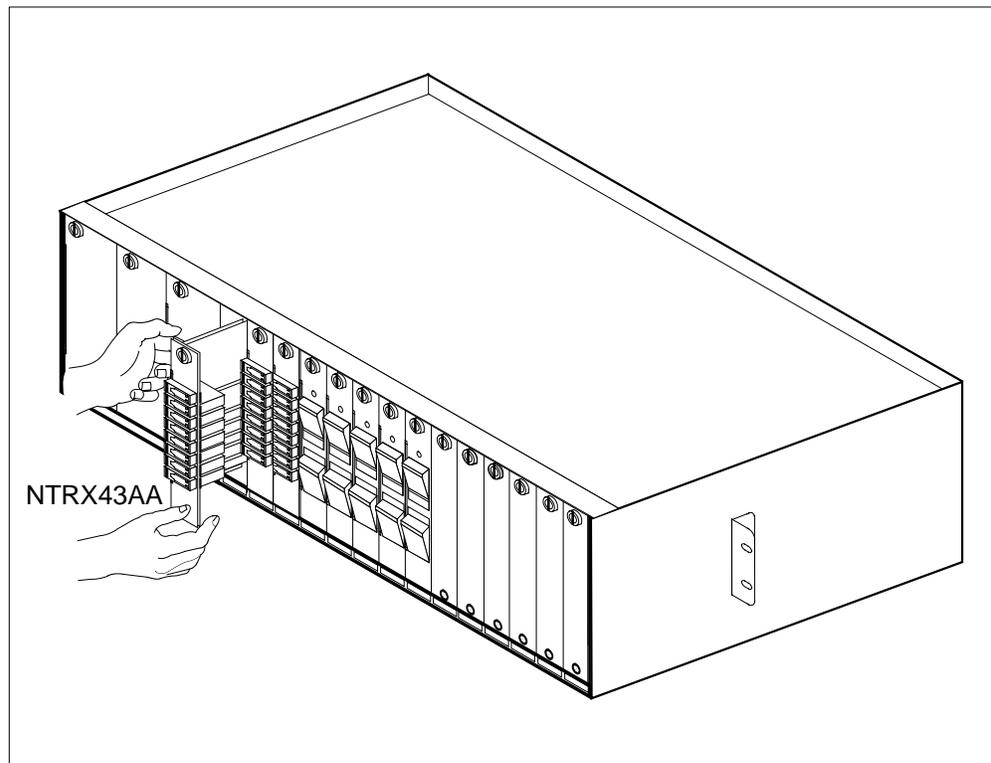


**DANGER**

**Risk of injury from high energy levels, equipment damage**  
When removing or inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

Remove the NTRX43 circuit card as shown in the following figure.

- a Disengage the captive screw at the top of the circuit card.
- b Gently pull the circuit card towards you until it clears the shelf.

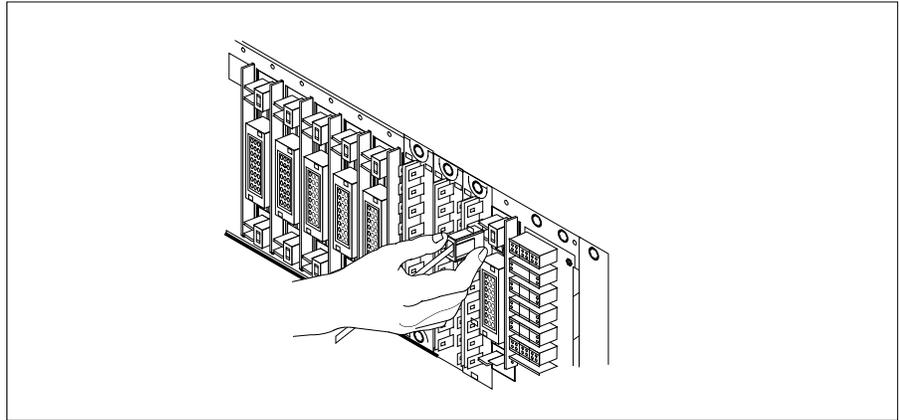


- 7
- Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the captive screw at the top of the circuit card.

## NTRX43 in an OPAC MSP (end)

### *At the rear of the MSP*

- 8** Locate the replaced circuit card and reattach the power connectors. Install the jumper connectors and cables removed in step 5 onto the replacement circuit card.



### *At the front of the MSP:*

- 9** Replace fuses removed in step 4.

If Fuses	Do
do not blow	step 10
blow (protrude)	step 12

- 10** Send any faulty cards for repair according to local procedure.
- 11** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 13.
- 12** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 13** You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure, and continue as directed.

## **NTRX43 in an RSC-M/MSP**

---

### **Application**

Use this procedure to replace an NTRX43 card in a modular supervisory panel (MSP) that supports a Remote Switching Center Multi-access (RSC-M) cabinet.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX43	AA	Fuse module

### **Common procedures**

The common returning a card procedure is referenced in this procedure.

### **Action**

A connector removal tool is available to allow removal of the AMP Faston receptacles. This tool allows removal of these receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). Use the shorter tool when conditions cause limited access to the rear of the MSP. Limited access can occur when MSP modules are behind the cabinet bulkhead.

This tool is approximately 2 mm (0.090 in.) thick and 17 mm (0.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. Use the shorter tip of each profile to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. When you rotate the tool around this pivot point, you engage one tip with the action-arm of the power connector. This tip is the longer tip of the profile that has a hook on the end of the tip. As you press the action-arm of the connector, you disengage the receptacle from the connector tab. To remove the receptacle, pull the tool with the receptacle trapped in the jaw of the tool away from the connector. To disengage the tool from the receptacle, rotate the hook of the tool off the action-arm of the receptacle.

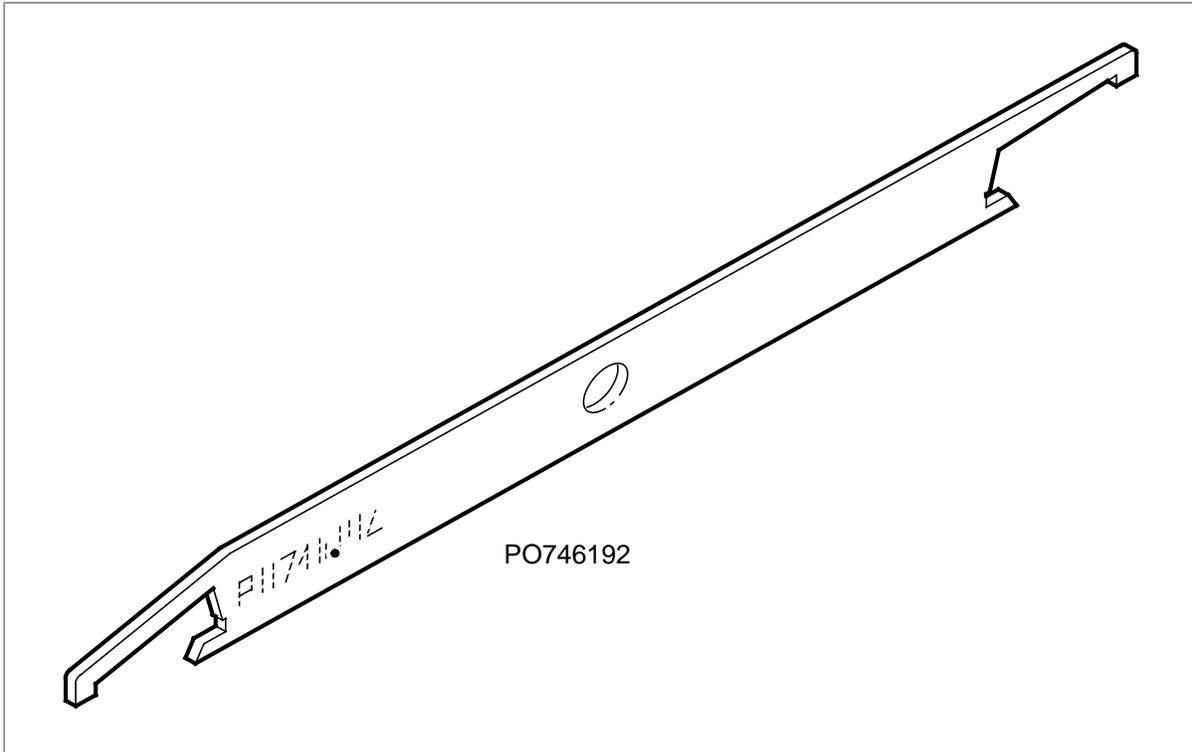
The shape of the cut-out is the same on each end of the tool. The position of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles. You can require the use of the tool at different angles because of limited access to the connectors.

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**NTRX43**  
**in an RSC-M/MSP** (continued)

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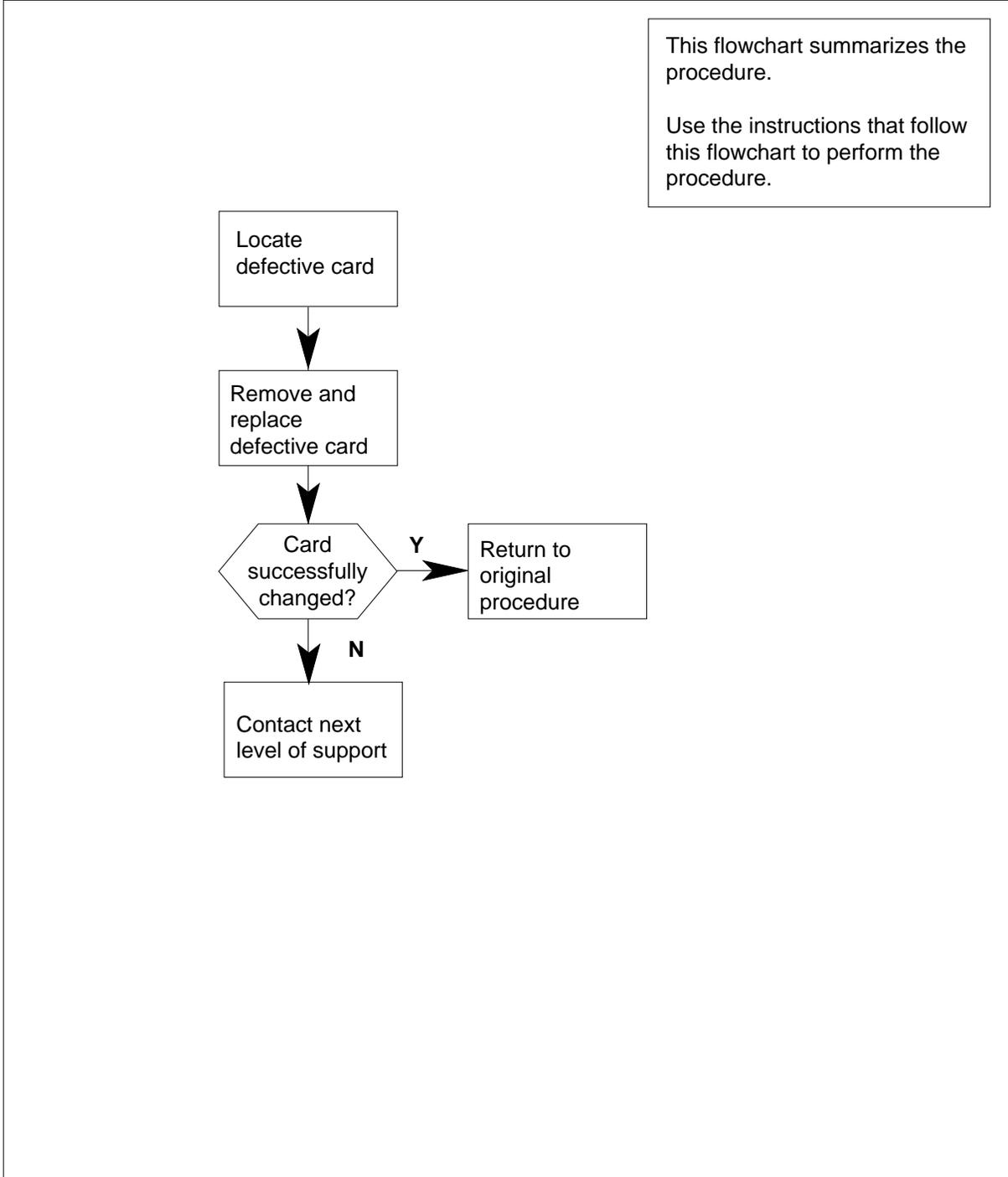
**Connector removal tool**



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

**NTRX43**  
**in an RSC-M/MSP** (continued)

**Summary of Replacing an NTRX43 in an RSC-M/MSP**



## NTRX43 in an RSC-M/MSP (continued)

### Replacing an NTRX43 in an RSC-M/MSP

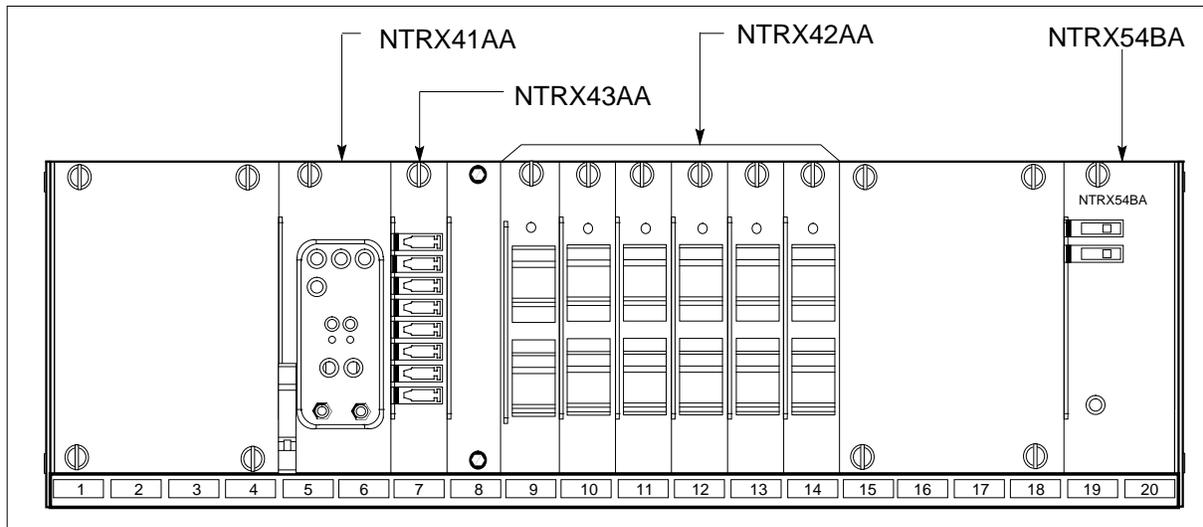
#### *At the MAP terminal*

- 1 Proceed if the maintenance support group or a step in a maintenance procedure directed you to this card replacement procedure. Use this procedure to verify or accept cards.
- 2 Obtain a replacement circuit card. Make sure the replacement circuit card has the same product equipment code (PEC) and suffix as the circuit card you want to remove.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches. Swing the cover down to the open position.

#### MSP



- 4 Power down the circuit breaker that supplies the fuse module. Safety tag the front of the circuit breaker. When you service the fuse module, fans can shut down, alarms can sound or a loss of alarms can occur.

## NTRX43 in an RSC-M/MSP (continued)

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5



### WARNING

**Risk of injury from high energy levels, static electricity damage**

Wear a wrist strap connected to the wrist-strap grounding point on the left side of the modular supervisory panel (MSP) to remove cards. The wrist strap protects the equipment static electricity damage.



### DANGER

**Risk of injury from high energy levels, 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 in the slots.

Wear a wrist strap.

6

Remove the fuses from the fuse module.

**Note:** Observe fuse colors, values and positions before you remove fuses from the fuse module. At the front panel of the cabinet

Open the front cover of the MSP. Release the two cover latches. Swing the cover down to the open position.

MSP

Power down the circuit breaker that supplies the fuse module. Safety tag the front of the circuit breaker. When you service the fuse module, fans can shut down, alarms can sound or a loss of alarms can occur.

Wear a wrist strap.

Remove the fuses from the fuse module.

Observe fuse colors, values and positions before you remove fuses from the fuse module.

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**NTRX43**  
**in an RSC-M/MSP (continued)**

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**At the rear panel of the cabinet**

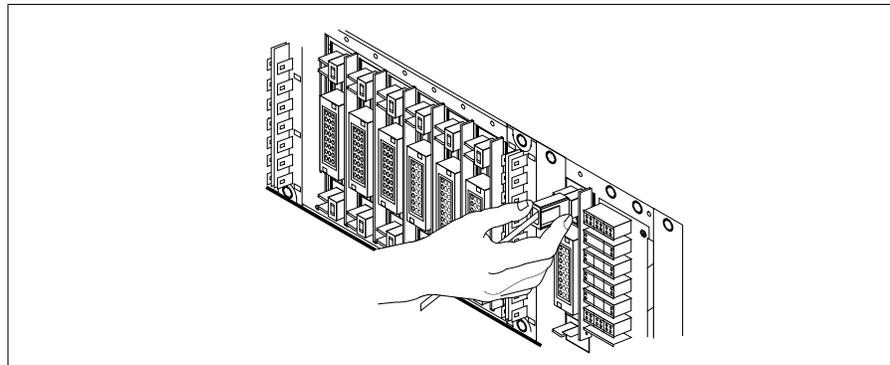
7

**DANGER**

Risk of injury from high energy levels, voltage present  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage can result.

Remove the NTRX43 circuit card as appears in the following figures.

- a Open the rear doors of the cabinet. Locate the back of the card to replace.
- b Note the wire color and the location to facilitate connection.



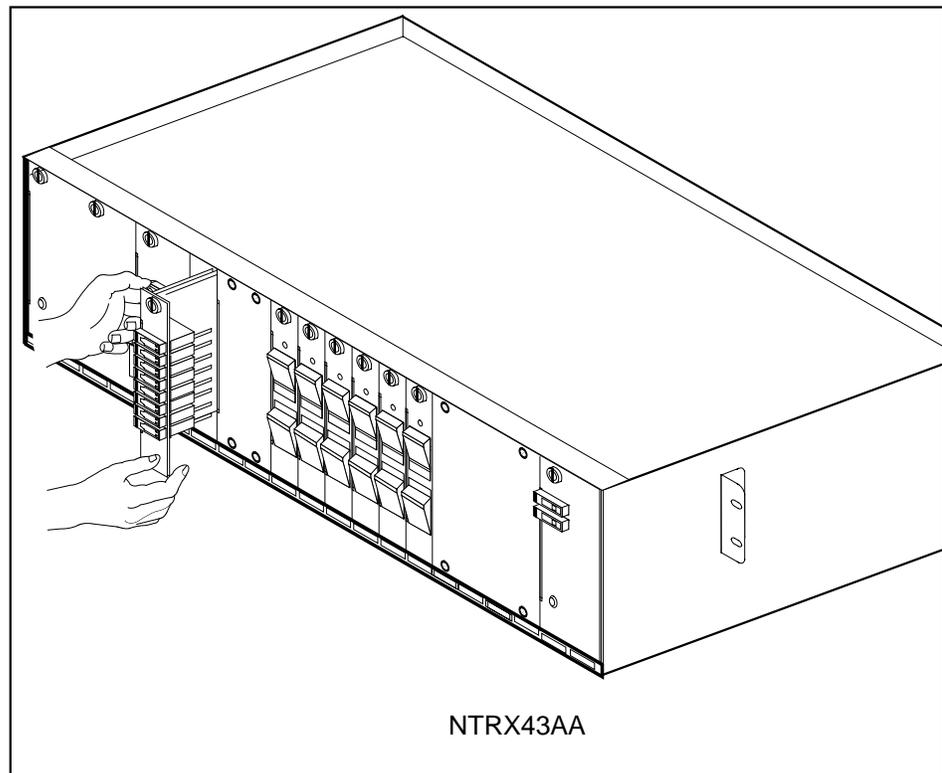
- c Use the connector removal tool to disconnect the power connectors to the circuit card manually. Work from the bottom of the MSP shelf to the top of the MSP shelf. Manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Make sure that you disconnect the black connectors *before* you remove the circuit card.
- d The connectors have voltage present. The connectors are insulated. Secure the connectors to the power-connector bundle with a line-tie until the time comes to connect the connectors again.
- e Jumper connectors and cables can be present. Remove and tag these jumper connectors and cables on the back of the circuit card. Save the jumper connectors and cables for use on the replacement circuit card.

## **NTRX43** **in an RSC-M/MSP** (continued)

---

### ***At the front panel of the cabinet***

- 8** Remove the NTRX43 circuit card.
  - a** Disengage the knurled thumbscrew at the top of the circuit card.
  - b** Carefully pull the circuit card toward you until the circuit card clears the shelf.

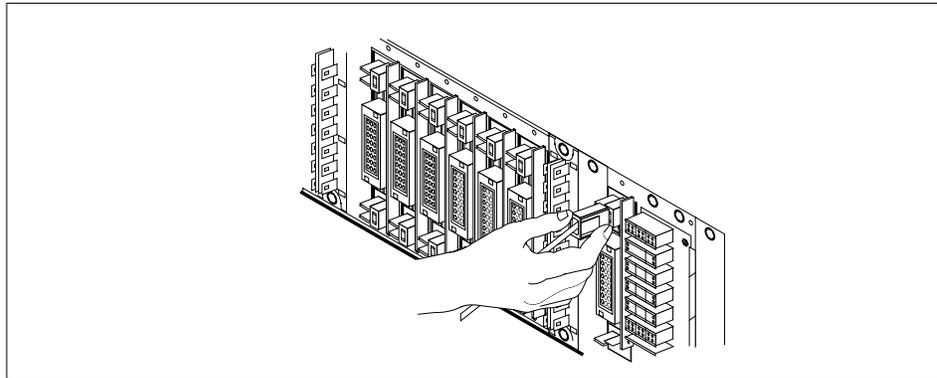


- 9** Make sure the replacement circuit card has the same PEC and suffix as the circuit card you removed.
  - a** Align the circuit card with the slots in the shelf. Carefully slide the circuit card in the shelf.
  - b** Carefully seat the circuit card tight.
  - c** Tighten the knurled thumbscrew at the top of the circuit card.

### ***At the rear panel of the cabinet***

- 10** Locate the replaced circuit card. Attach the power connectors again.

**NTRX43**  
**in an RSC-M/MSP (end)**



- 11** Install the jumper connectors and cables removed in step 7 on the replacement circuit card.

***At the front of the cabinet***

- 12** Replace the fuses removed in step 6.
- 13** Power up the circuit breaker that supplies the fuse module. Remove the safety tag.

<b>If fuses</b>	<b>Do</b>
do not blow	step 14
blow (protrude)	step 16

- 14** Go to the common returning a card procedure in this document.
- 15** This procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure.
- 16** For additional help with this card replacement, contact the next level of support.

## **NTRX43 in an RSC MSP**

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### **Application**

Use this procedure to replace an NTRX43 card in a modular supervisory panel (MSP) in the following cabinets.

- Cabinetized Extension Module (CEXT)
- Cabinetized Line Concentrating Equipment (CLCE)
- Cabinetized Power Distribution Center (CPDC)
- Cabinetized Remote Switching Center (CRSC)
- Cabinetized Miscellaneous Equipment (CMIS)
- Cabinetized Remote Miscellaneous Equipment (CRME)

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX43	AA	Fuse Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

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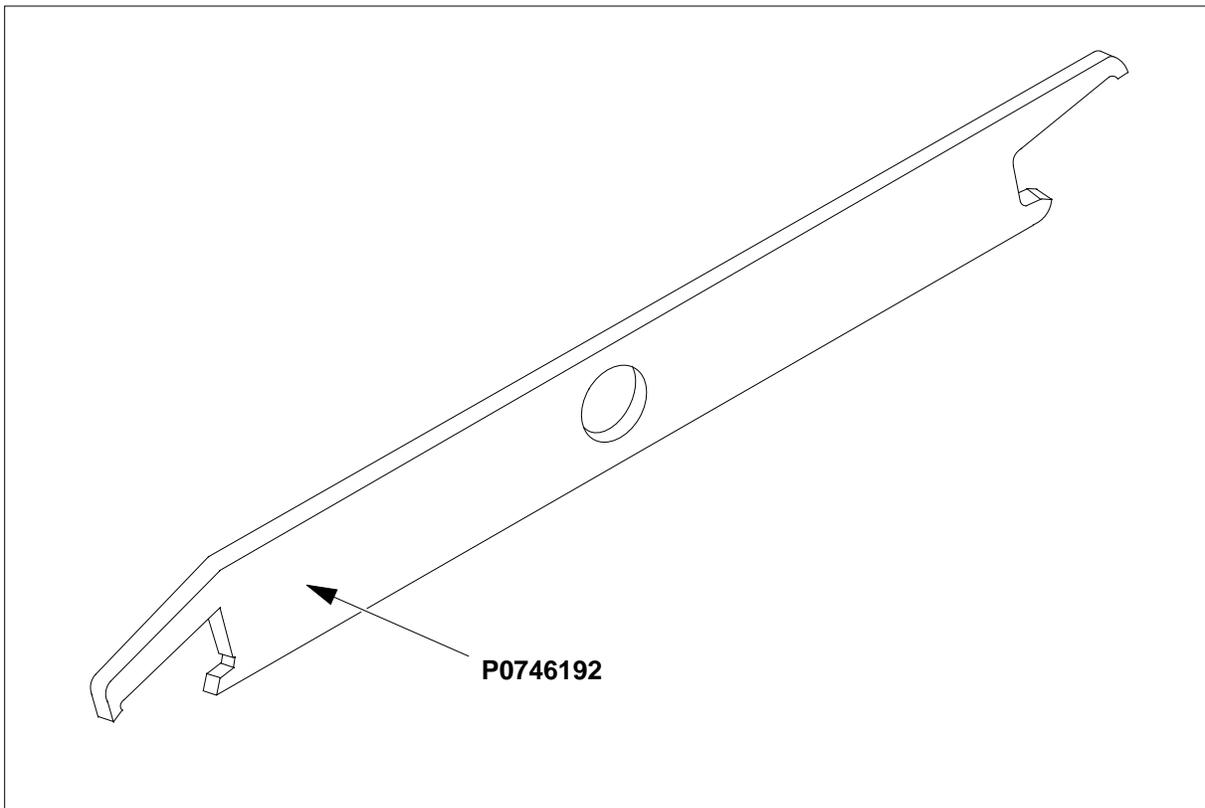
**NTRX43**  
**in an RSC MSP** (continued)

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from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

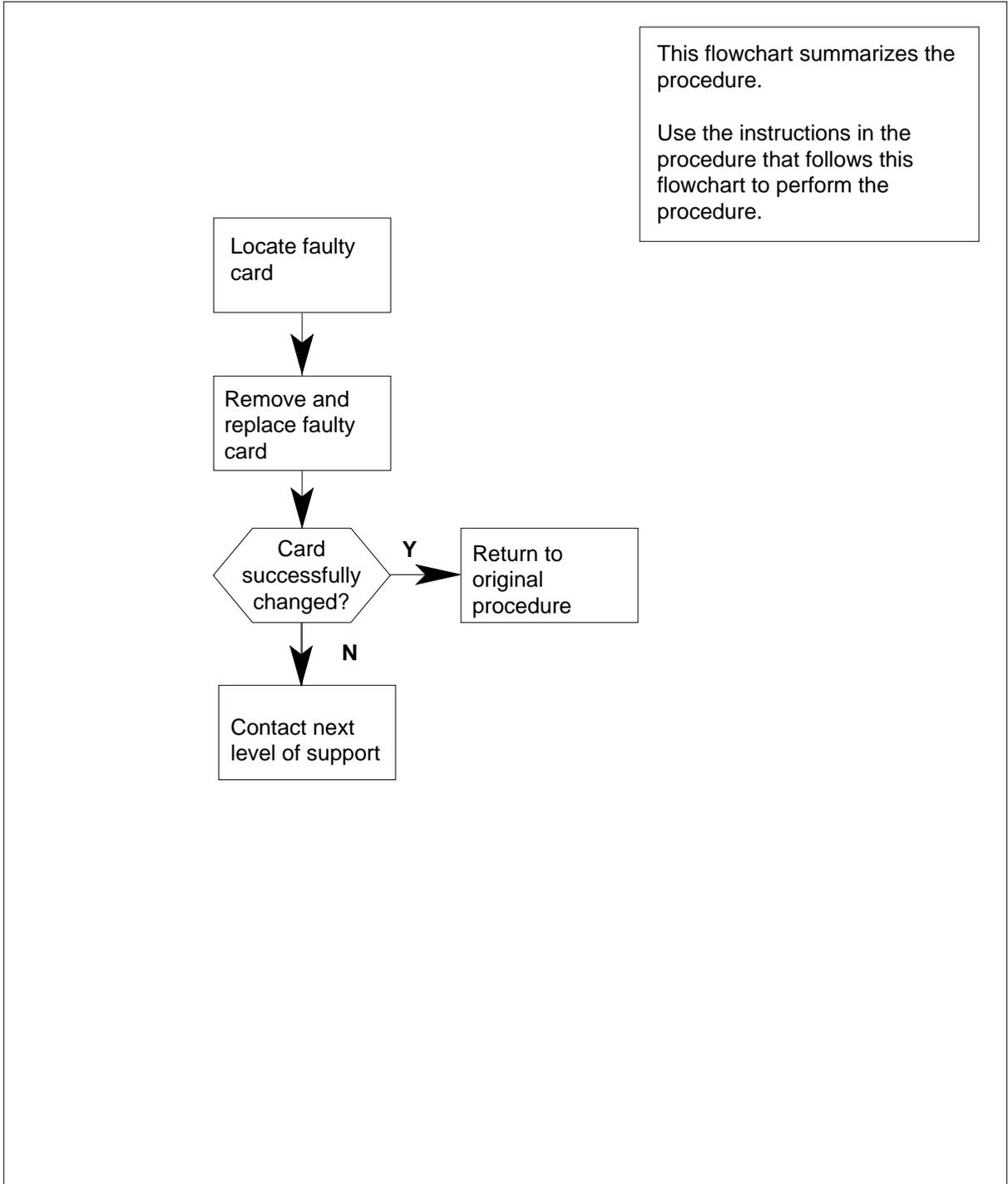
**Connector removal tool**



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.

## NTRX43 in an RSC MSP (continued)

### Summary of card replacement procedure for an NTRX43 card in RSC MSP



## NTRX43 in an RSC MSP (continued)

### Replacing an NTRX43 card in RSC MSP

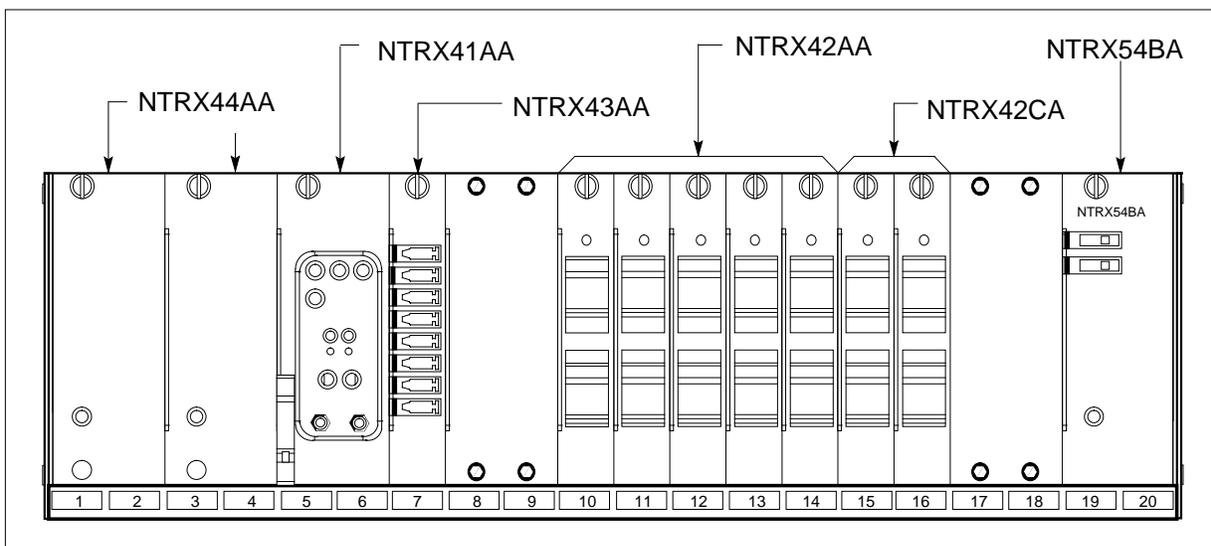
#### *At your Current Location*

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



- 4 Power down circuit breaker supplying fuse module. Safety tag the front of the circuit breaker. When servicing the fuse module, fans may shut down, alarms may sound, or there may be a loss of alarms.

## NTRX43 in an RSC MSP (continued)

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5



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:  
1. Do not apply direct pressure to the components.  
2. Do not force the cards into the slots.

Put on a wrist strap.

6

Remove fuses from fuse module.

**Note:** Observe fuse colors, values, and positions before removing fuses from fuse module.

7

Pull out corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP. This step does *not* apply to the CMIS, CPDC, and CRME.

8



**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

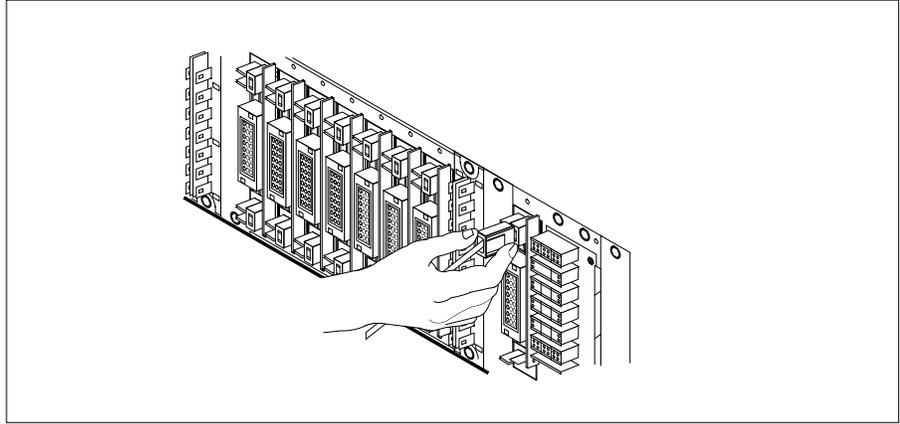
Remove the NTRX43 circuit card as shown in the following figures.

- a Open the rear doors of the cabinet and locate the back of the card to be replaced.
- b Note wire color and location to facilitate re-connection.

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**NTRX43**  
**in an RSC MSP** (continued)

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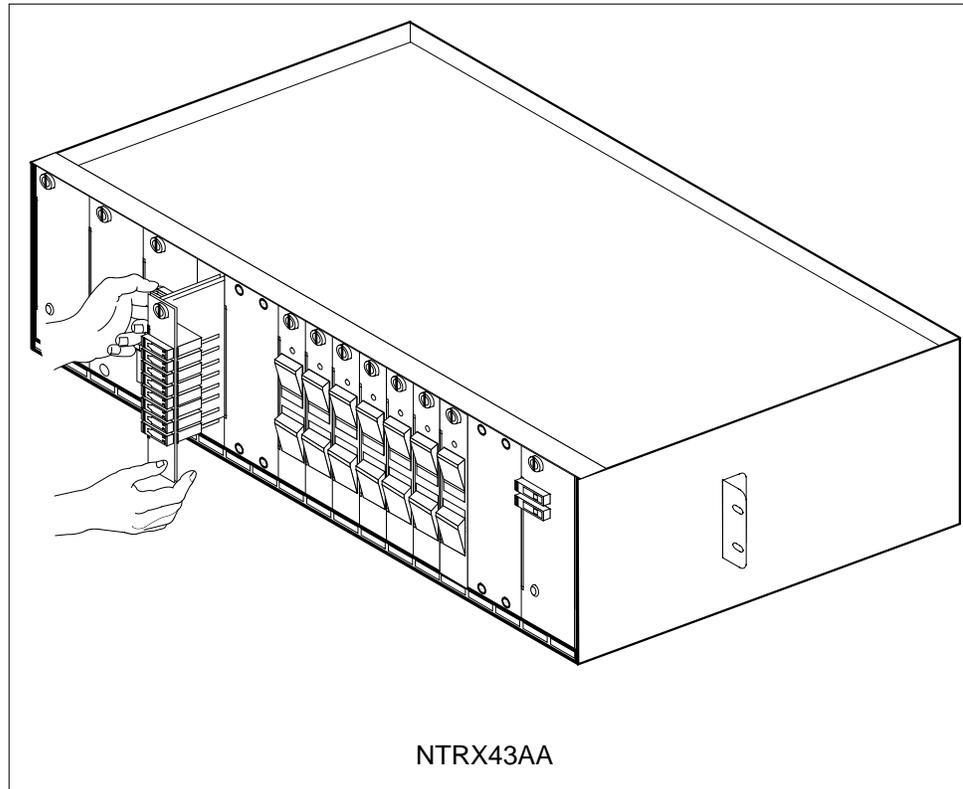
- 9 Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.
- 10 Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- 11 Remove and tag jumper connectors and cables, which may be present on the back of the circuit card and save for use on the replacement circuit card.

***At the front panel of the cabinet***

- 12 Remove the NTRX43 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.

## NTRX43 in an RSC MSP (continued)

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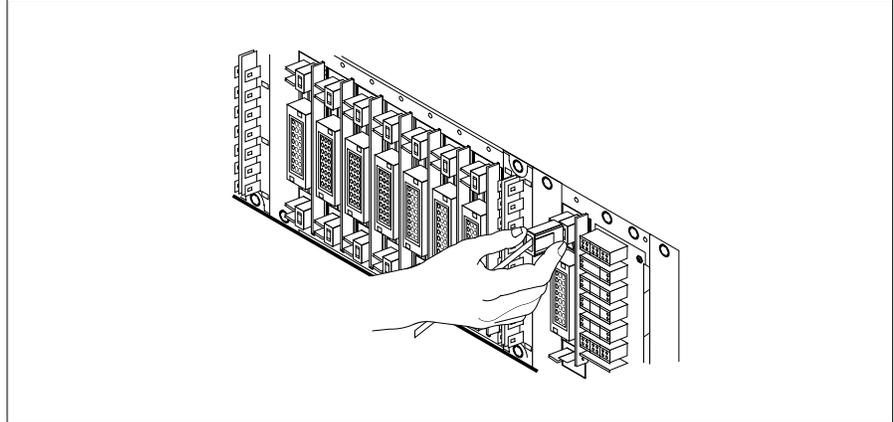


- 13** Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- a** Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b** Gently but firmly seat the circuit card.
  - c** Tighten the knurled thumbscrew at the top of the circuit card.

***At the rear panel of the cabinet***

- 14** Locate the replaced circuit card and re-attach the power connectors.

## NTRX43 in an RSC MSP (end)



- 15** Install the jumper connectors and cables removed in step 8 onto the replacement circuit card.

***At the front of the cabinet***

- 16** Push in corresponding line shelf. Please note this step does *not* apply to the CMIS, CPDC, and CRME.
- 17** Replace fuses removed in step 6.
- 18** Power up circuit breaker supplying fuse module and remove safety tag.

If fuses	Do
do not blow	step 19
blow (protrude)	step 21

- 19** Send any faulty cards for repair according to local procedure.
- 20** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 22.
- 21** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 22** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX43 in an RSC-S (DS-1) Model B MSP**

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### **Application**

Use this procedure to replace an NTRX43 card in a modular supervisory panel (MSP) located in a

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)
- cabinetized remote miscellaneous equipment (CRME)

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX43	AA	Fuse Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

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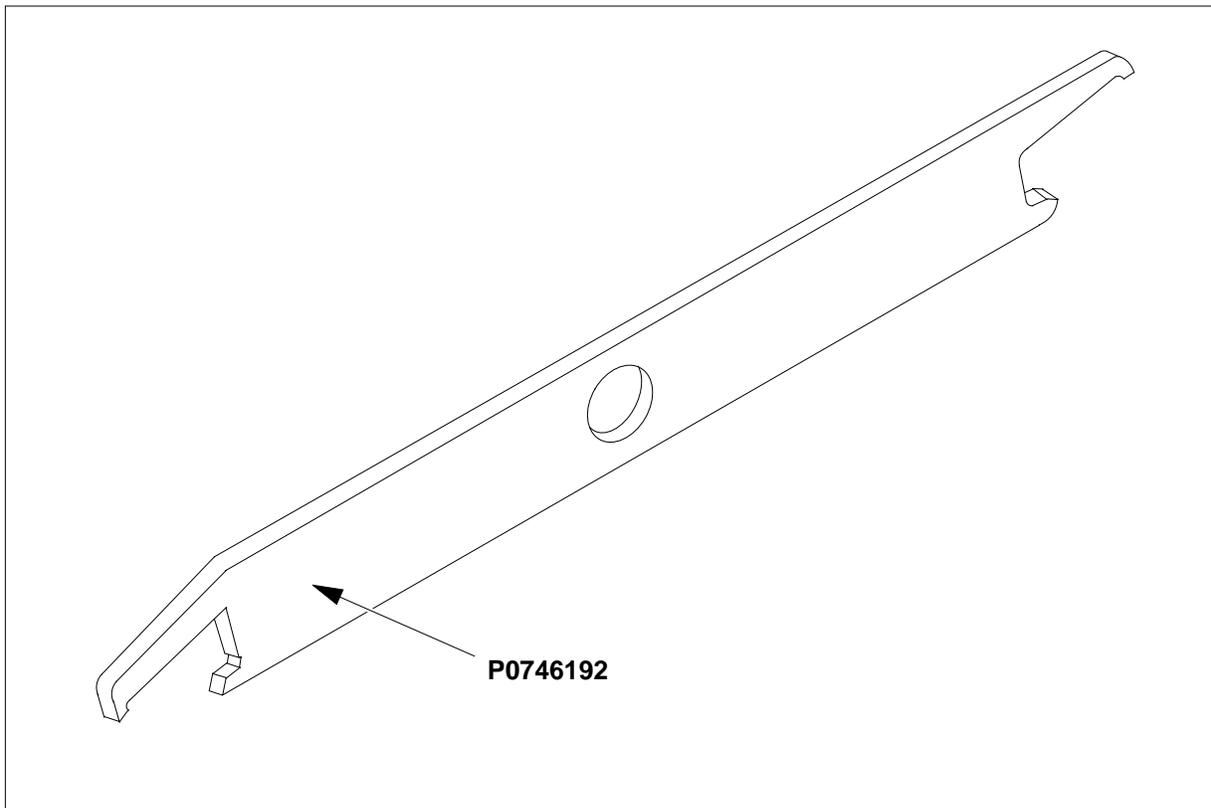
**NTRX43**  
**in an RSC-S (DS-1) Model B MSP** (continued)

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from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

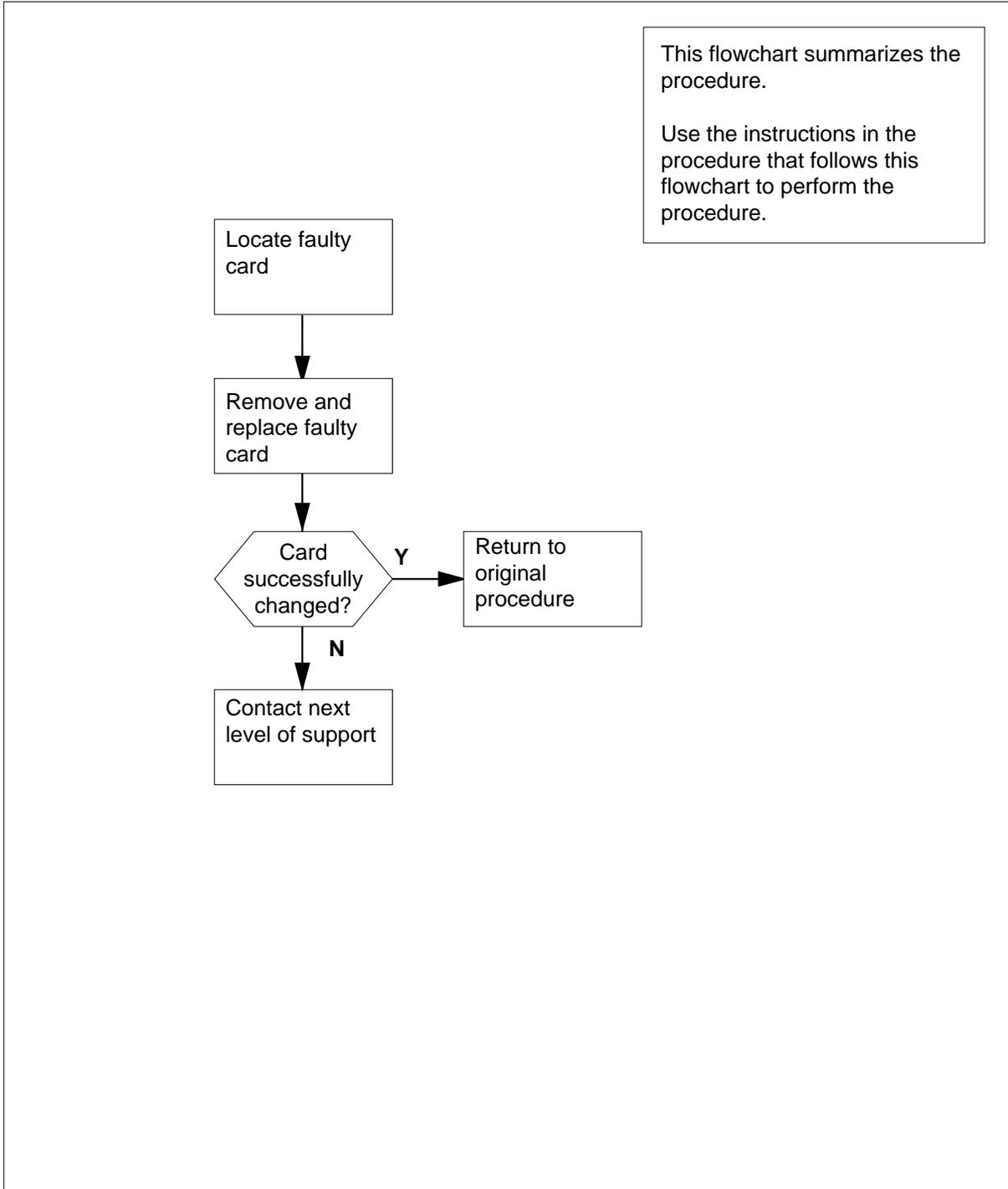
**Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

## NTRX43 in an RSC-S (DS-1) Model B MSP (continued)

### Summary of card replacement procedure for an NTRX43 card in RSC-S MSP



## NTRX43

### in an RSC-S (DS-1) Model B MSP (continued)

#### Replacing an NTRX43 card in RSC-S MSP

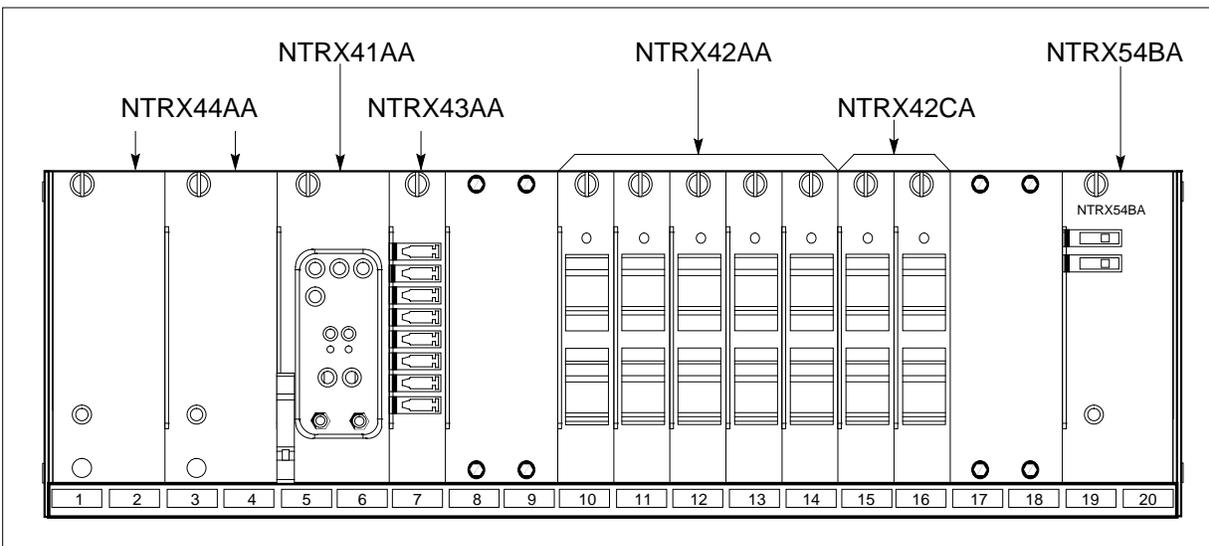
##### *At your Current Location*

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

##### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



- 4 Power down circuit breaker supplying fuse module. Safety tag the front of the circuit breaker. When servicing the fuse module, fans may shut down, alarms may sound, or there may be a loss of alarms.

## NTRX43 in an RSC-S (DS-1) Model B MSP (continued)

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5



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:  
1. Do not apply direct pressure to the components.  
2. Do not force the cards into the slots.

Put on a wrist strap.

6 Remove fuses from fuse module.

**Note:** Observe fuse colors, values, and positions before removing fuses from fuse module.

7 Pull out corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP. This step does *not* apply to the CMIS, CPDC, and CRME.

**At the rear panel of the cabinet**

8



**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

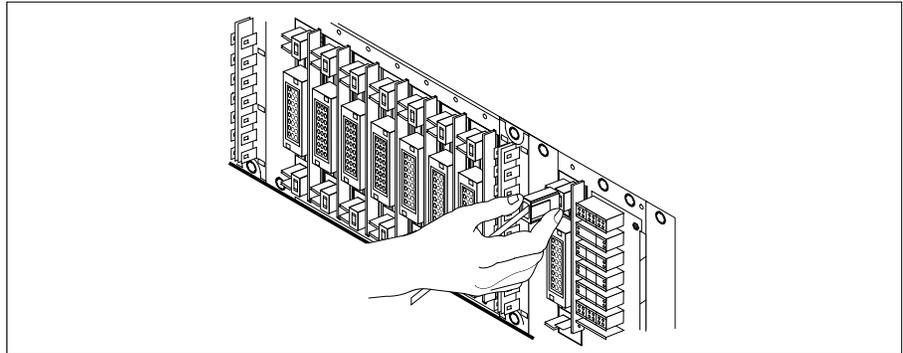
Remove the NTRX43 circuit card as shown in the following figures.

- a Open the rear doors of the cabinet and locate the back of the card to be replaced.
- b Note wire color and location to facilitate re-connection.

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**NTRX43**  
**in an RSC-S (DS-1) Model B MSP** (continued)

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- c** Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.
- d** Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- e** Remove and tag jumper connectors and cables, which may be present on the back of the circuit card and save for use on the replacement circuit card.

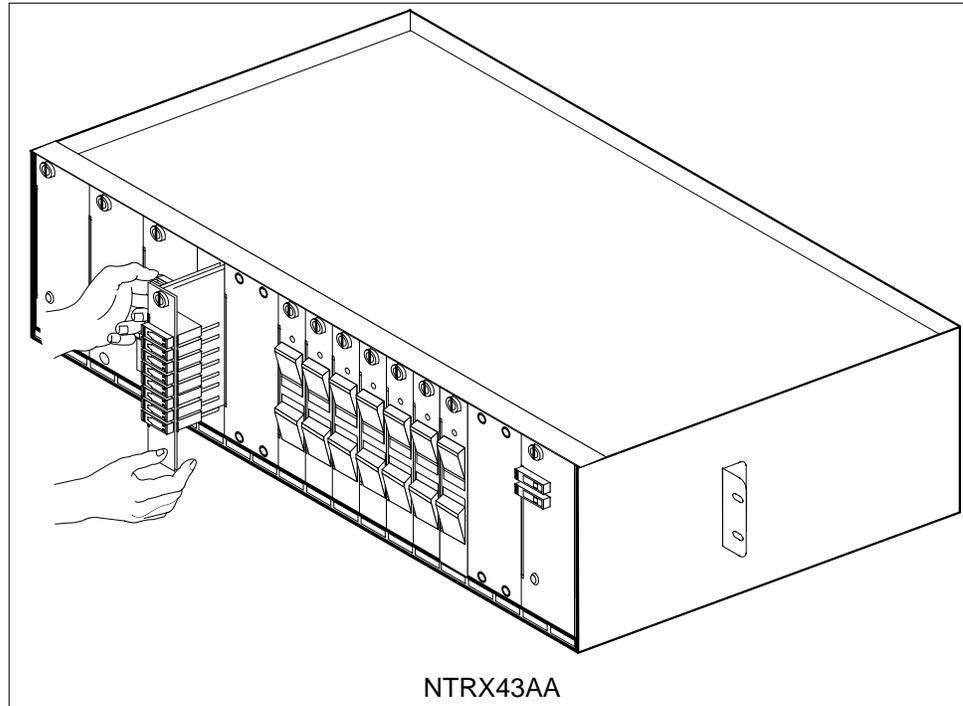
***At the front panel of the cabinet***

- 9** Remove the NTRX43 card.
  - a** Disengage the knurled thumbscrew at the top of the card.
  - b** Gently pull the card towards you until it clears the shelf.

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**NTRX43**  
**in an RSC-S (DS-1) Model B MSP (continued)**

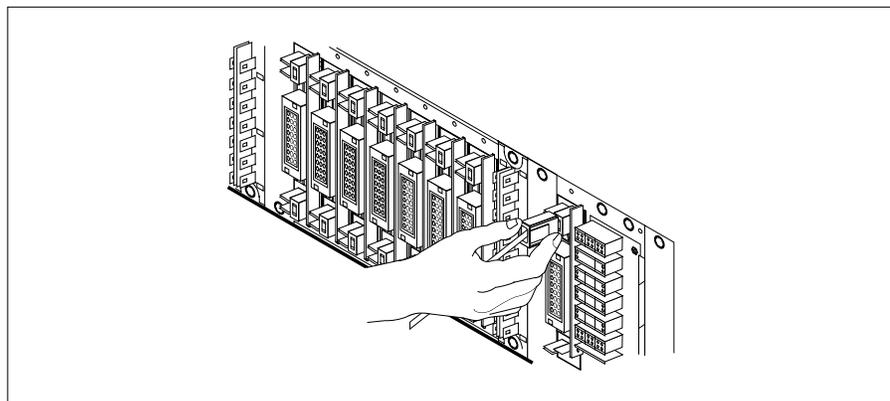
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- 10 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

***At the rear panel of the cabinet***

- 11 Locate the replaced circuit card and re-attach the power connectors.



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**NTRX43**  
**in an RSC-S (DS-1) Model B MSP (end)**

---

- 12** Install the jumper connectors and cables removed in step 8 onto the replacement circuit card.

***At the front of the cabinet***

- 13** Push in corresponding line shelf. Please note this step does *not* apply to the CMIS, CPDC, and CRME.
- 14** Replace fuses removed in step 6.
- 15** Power up circuit breaker supplying fusEve module and remove safety tag.

<b>If fuses</b>	<b>Do</b>
do not blow	step 16
blow (protrude)	step 18

- 16** Send any faulty cards for repair according to local procedure.
- 17** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 19.
- 18** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 19** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX43 in an SMA2 MSP

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### Application

Use this procedure to replace a NTRX43 card in a modular supervisory panel (MSP) located in a:

- cabinetized multi-vendor interface (CMVI)
- multi-vendor interface equipment frame (MVIE)
- multi-vendor double density frame (MVDD)

PEC	Suffixes	Name
NTRX43	AA	Fuse Module

### Common procedures

The common returning a card procedure is referenced in this procedure.

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

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is pressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

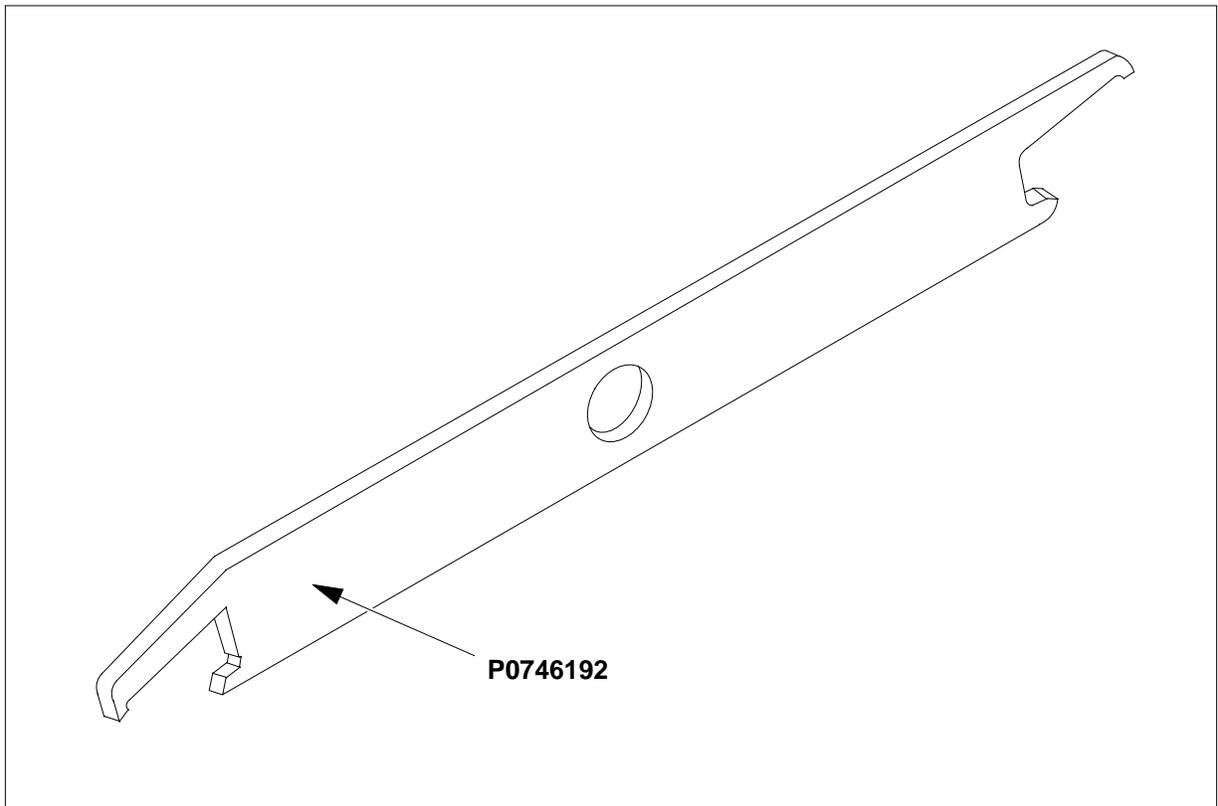
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**NTRX43**  
**in an SMA2 MSP** (continued)

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Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required because of limited access to the connectors.

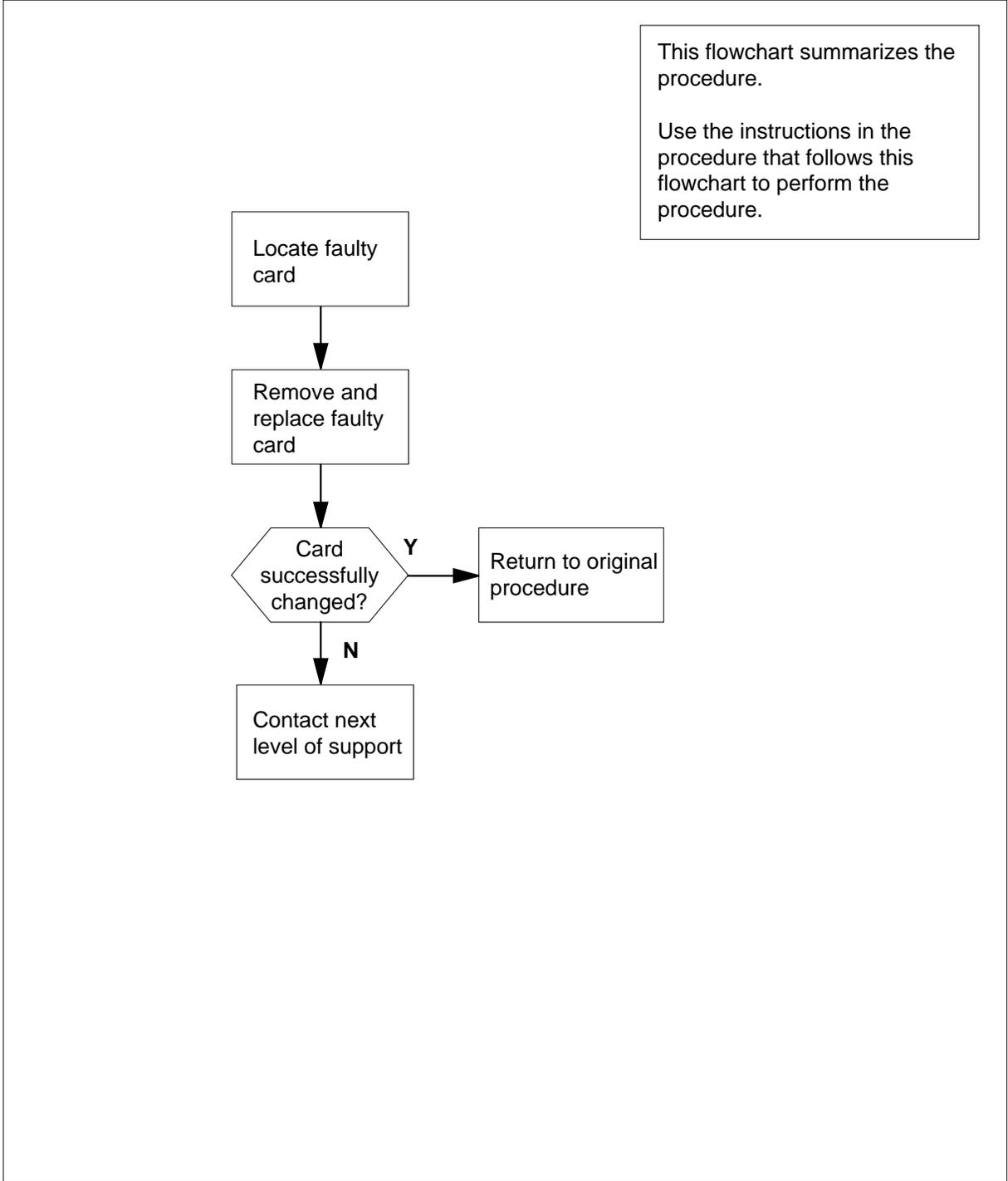
**Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

## NTRX43 in an SMA2 MSP (continued)

### Summary of card replacement procedure for an NTRX43 card in an SMA2 MSP



## NTRX43 in an SMA2 MSP (continued)

### Replacing an NTRX43 card in an SMA2 MSP

#### *At your current location*

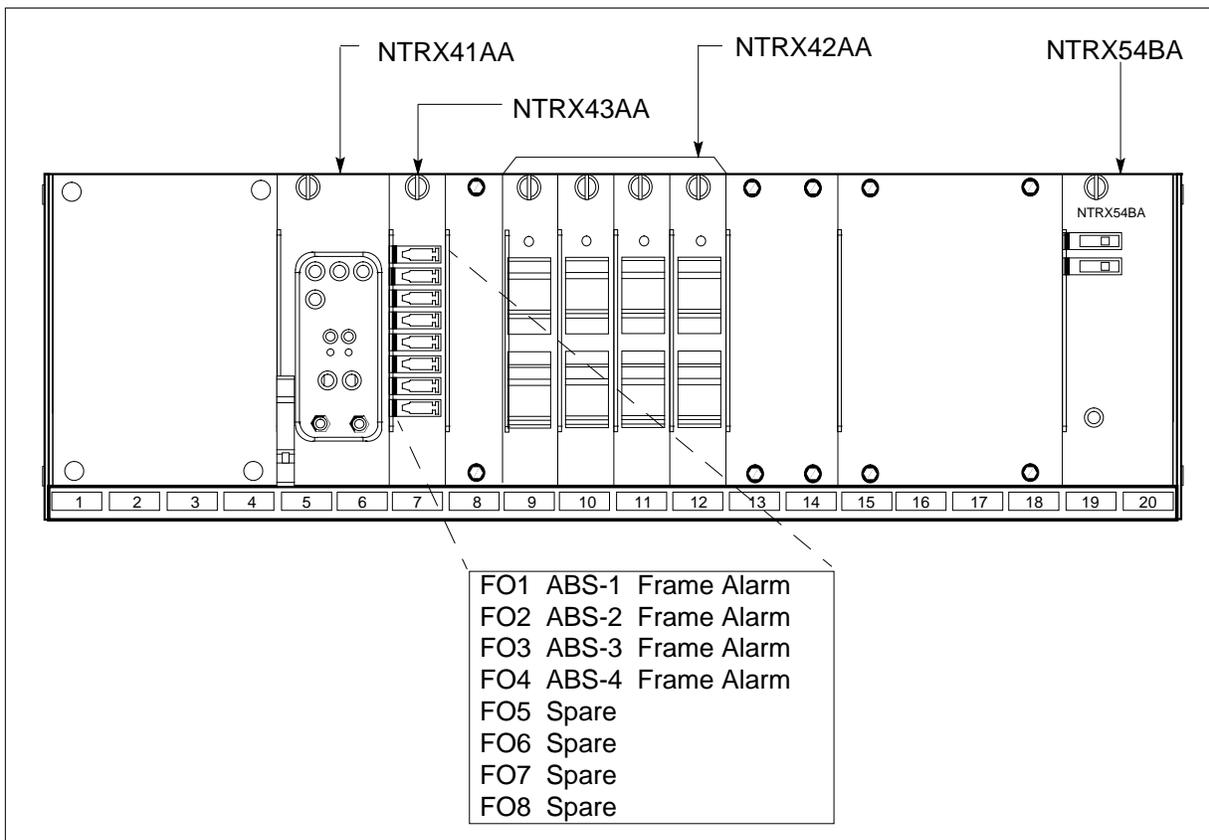
- 1 Proceed only if you have been directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the frame or cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** When servicing the fuse module, fans may shut down, alarms may sound, or there may be a loss of alarms. Use the following figure to identify fuse assignment.

#### MSP



## NTRX43 in an SMA2 MSP (continued)

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4



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:  
1. Do not apply direct pressure to the components.  
2. Do not force the cards into the slots.

Put on a wrist strap.

5

Remove fuses from fuse module.

**Note:** Observe fuse colors, values, and positions before removing fuses from fuse module.

***At the rear panel of the frame or cabinet***

6



**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors. Voltage is present and equipment damage could result.

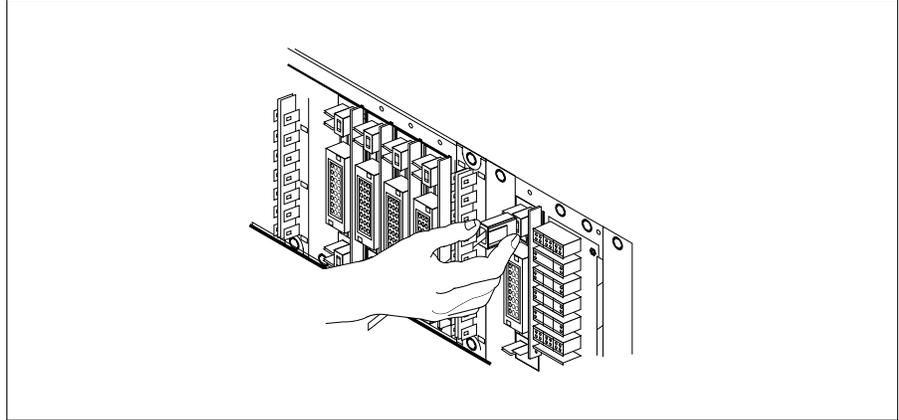
Remove the NTRX43 circuit card as shown in the following figures.

- a Open the rear doors of the cabinet and locate the back of the card to be replaced.
- b Note wire color and location to facilitate re-connection.

---

**NTRX43**  
**in an SMA2 MSP** (continued)

---



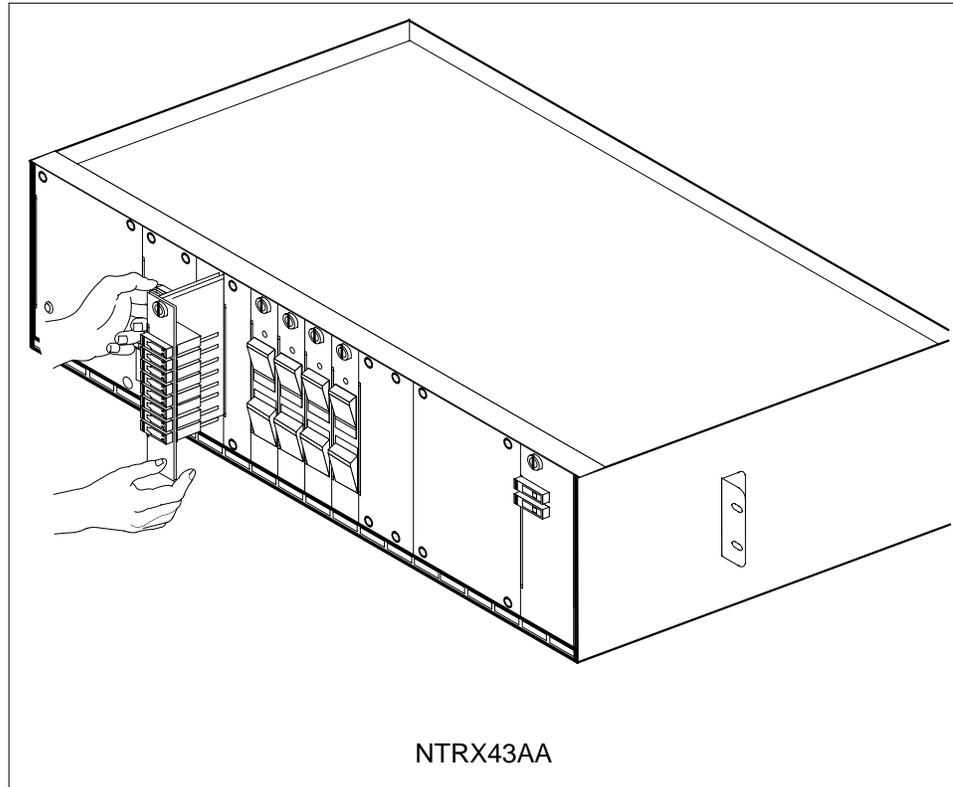
- c Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.
- d Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.
- e Remove and tag jumper connectors and cables, which may be present on the back of the circuit card and save for use on the replacement circuit card.

***At the front panel of the frame or cabinet***

- 7 Remove the NTRX43 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.

**NTRX43**  
**in an SMA2 MSP (continued)**

---

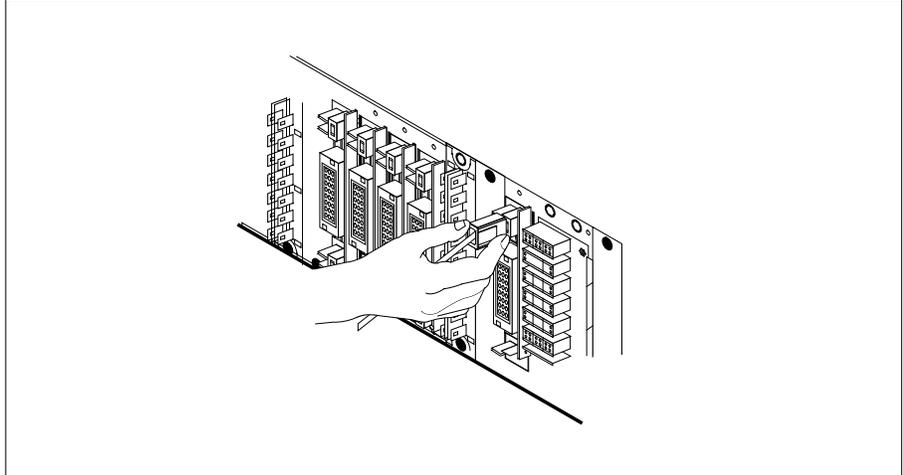


- 8 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

***At the rear panel of the frame or cabinet***

- 9 Locate the replaced circuit card and re-attach the power connectors.

## NTRX43 in an SMA2 MSP (end)



- 10** Install the jumper connectors and cables removed in step 6 onto the replacement circuit card.

***At the front panel of the frame or cabinet***

- 11** Replace fuses removed in step 5.  
**12** Power up circuit breaker supplying fuse module and remove safety tag.

If fuses	Do
do not blow	step 13
blow (protrude)	step 14

- 13** Go to the common returning a card procedure in this document.  
Go to step 15.
- 14** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 15** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX44 in an IOPAC MSP**

---

### **Application**

Use this procedure to replace the following card in an IOPAC MSP.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX44	AA	Talk Battery Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules.

This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

An example of limited access is MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector.

As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

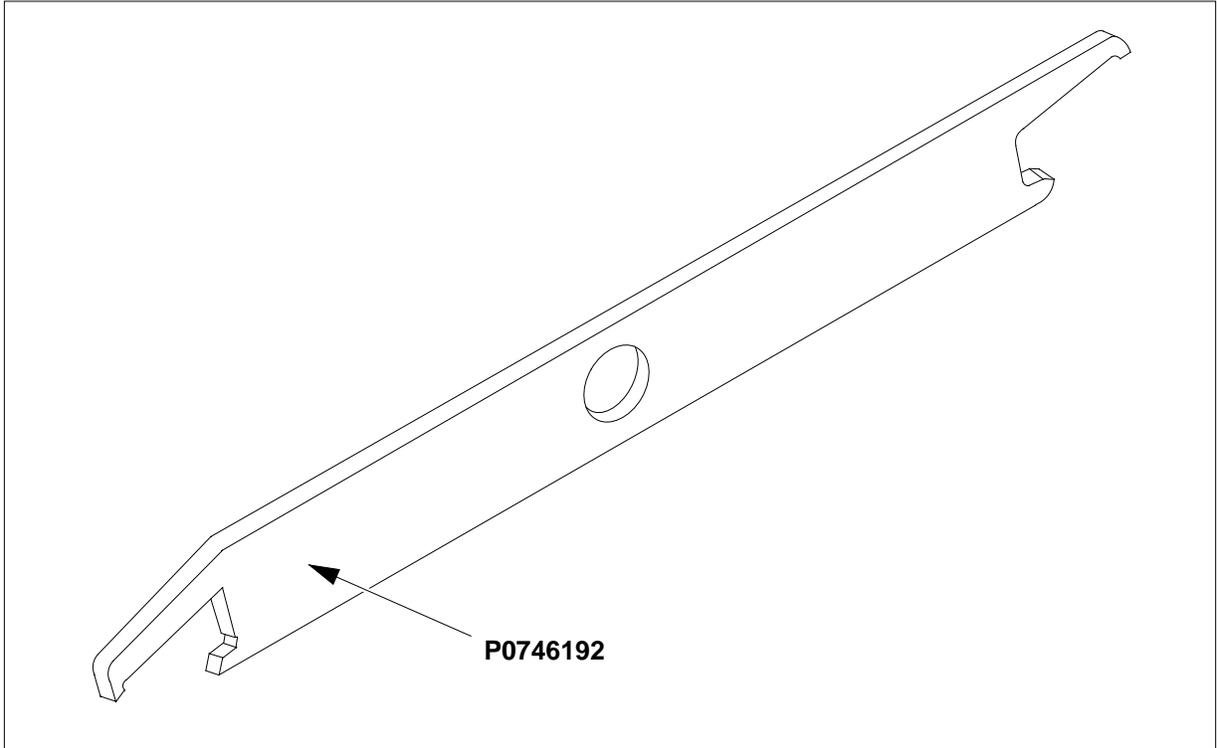
---

**NTRX44**  
**in an IOPAC MSP** (continued)

---

The following is an illustration of the connector removal tool.

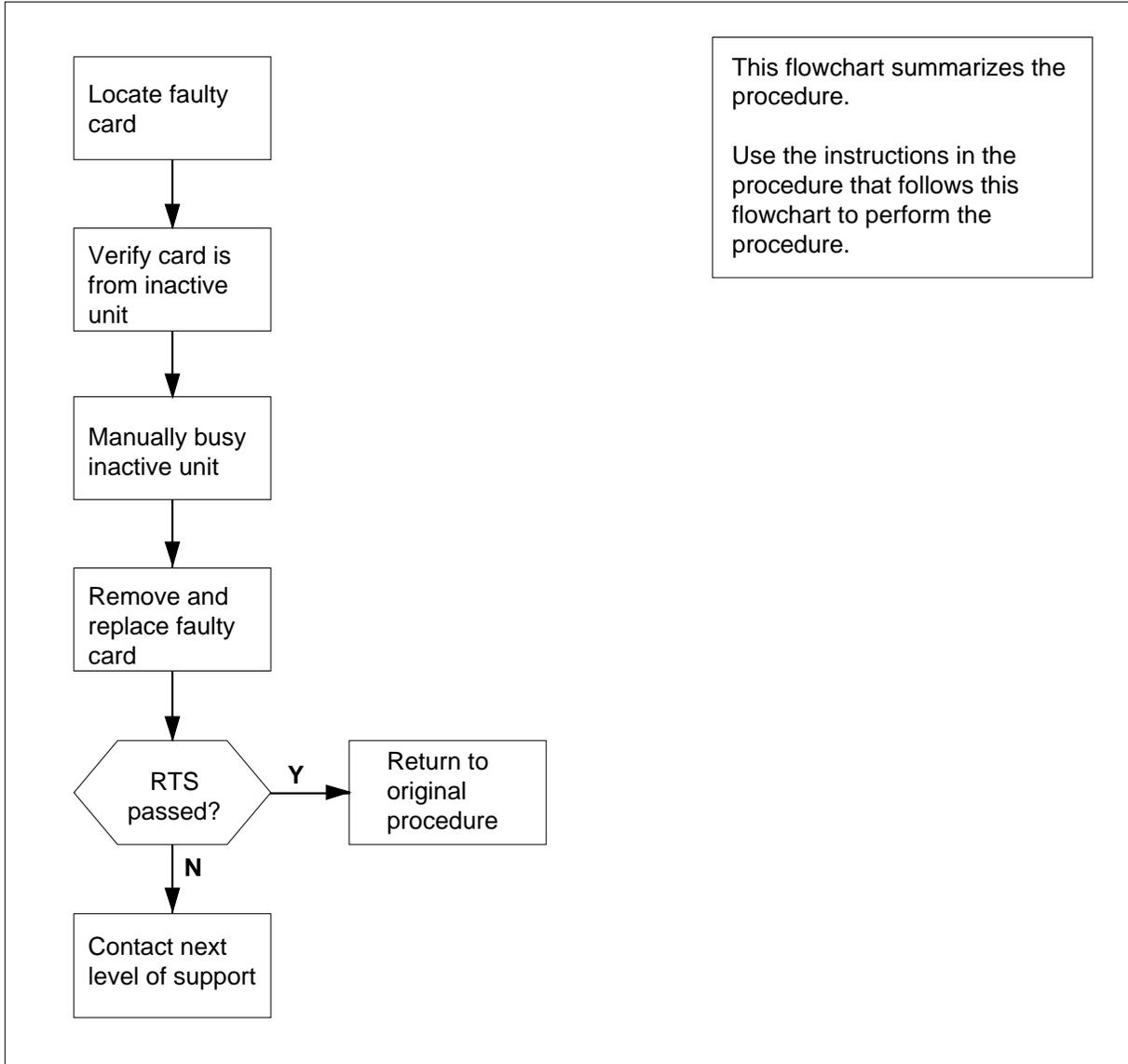
**Connector removal tool**



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.

## NTRX44 in an IOPAC MSP (continued)

### Summary of card replacement procedure for an NTRX44 card in MSP



---

## NTRX44 in an IOPAC MSP (continued)

---

### Replacing an NTRX44 in MSP

#### *At your current location:*

1



#### **DANGER**

##### **Loss of service**

A loss of service *will* occur when this procedure is used as an acceptance procedure or when talk battery is already available on the affected ILCM unit. Bussing the LCM unit is a precaution only and does not transfer talk battery to the other ILCM unit. Talk battery is *not redundant*, and therefore a loss of service occurs on the affected ILCM unit. Perform this procedure only during periods of low traffic.

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 Obtain a replacement card. Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal:*

- 3 Access the PM level and post the ILCM by typing:

```
>MAPCI;MTC;PM;POST ILCM site frame lcm
```

and pressing the Enter key.

*where*

**site**

is the name of the site at which the LCM is located

**frame**

is the number of the frame in which the LCM is located

**lcm**

is the number of the ILCM unit with the faulty card

*Example of a MAP display:*

## NTRX44 in an IOPAC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      APPL
.       .       .       .       1ILCM   .       .       .       .       .

ILCM.
0 Quit      PM       1       0       0       0       0       0       126
2 Post_    ILCM.   0       0       0       0       0       1       9
3 ListSet
4 SwRG     ILCM.   REM1    14 1  ISTb  Links_OOS:  CSide 0  PSide 0
5 Trnsl_   Unit0:  InSv                    /RG: 1
6 Tst_     Unit1:  InSv                    /RG: 1
7 Bsy_
8 RTS_     Drwr:  01  23  45  67  89  01  23  45  67  89  RG:Pref 1  ISTB
9 OffL
10 LoadPM_
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

**At the MAP terminal:**

- 4** Busy the affected in-service LCM unit by typing

```
>bsy unit lcm_unit_no
```

and pressing the Enter key.

where

**lcm\_unit\_no**

is the number of the affected LCM unit (0 or 1)

**Note:** The Talk Battery Modules are provisioned by slot positions.

For example:

- Talk battery module in slots 1 and 2 controls unit 0
- Talk battery module in slots 3 and 4 controls unit 1

## NTRX44 in an IOPAC MSP (continued)

At Row A Bay 1 of the IOPAC cabinet

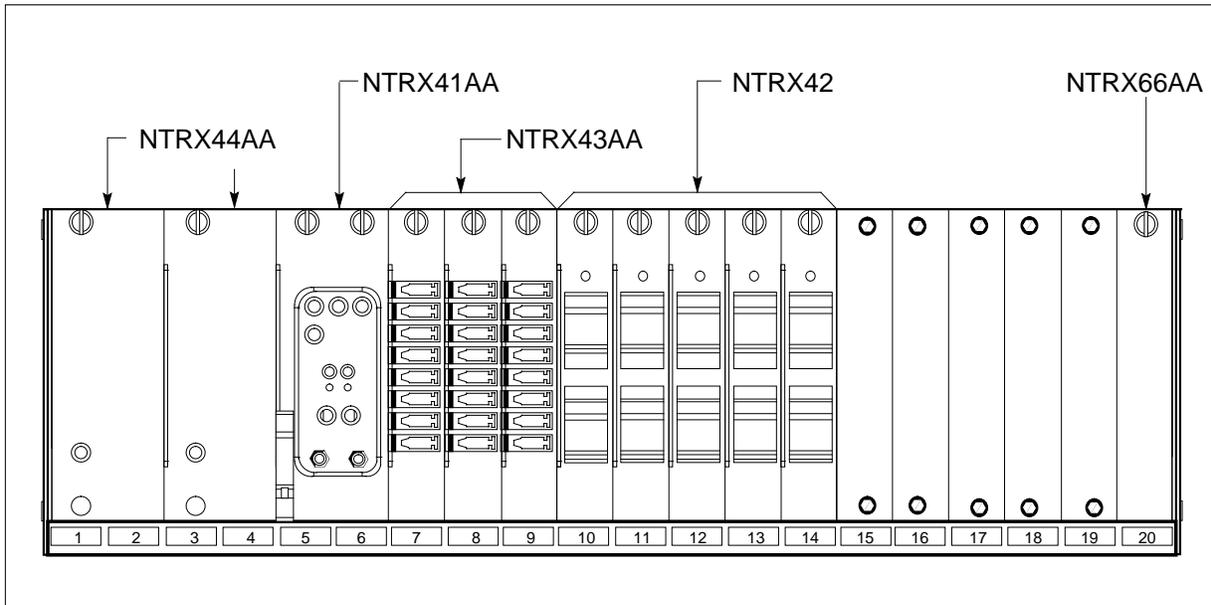
5



### DANGER

Risk of injury from high energy levels, static electricity damage  
Wear a wrist strap and connect it to a wrist strap grounding point. This protects the equipment from damage caused by static electricity. A wrist strap grounding point is located at the top of each frame near the hinge.

Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



- 6 The circuit breaker designation may vary. Verify the circuit breaker designation, front and rear of MSP, before replacing the talk battery module.
- 7 Turn OFF the associated circuit breaker in slot 10 (circuit breaker 02) if replacing the talk battery module in slots 1 and 2. Turn OFF the associated circuit breaker at slot 11 (circuit breaker 04) if replacing the talk battery module in slots 3 and 4.

## NTRX44 in an IOPAC MSP (continued)

---

### *At the rear of the MSP*

8

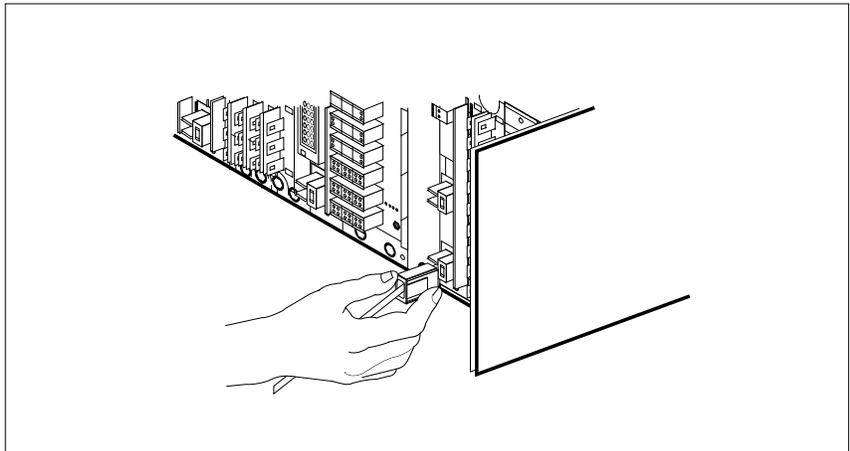


#### **DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

Disconnect the NTRX44 card as shown in the following figure.

- a Swing the frame out and locate the back of the card to be replaced. The card is located in slots 1 and 2 for talk battery "A" or in slots 3 and 4 for talk battery "B".
- b Note wire color and location to facilitate reconnection.

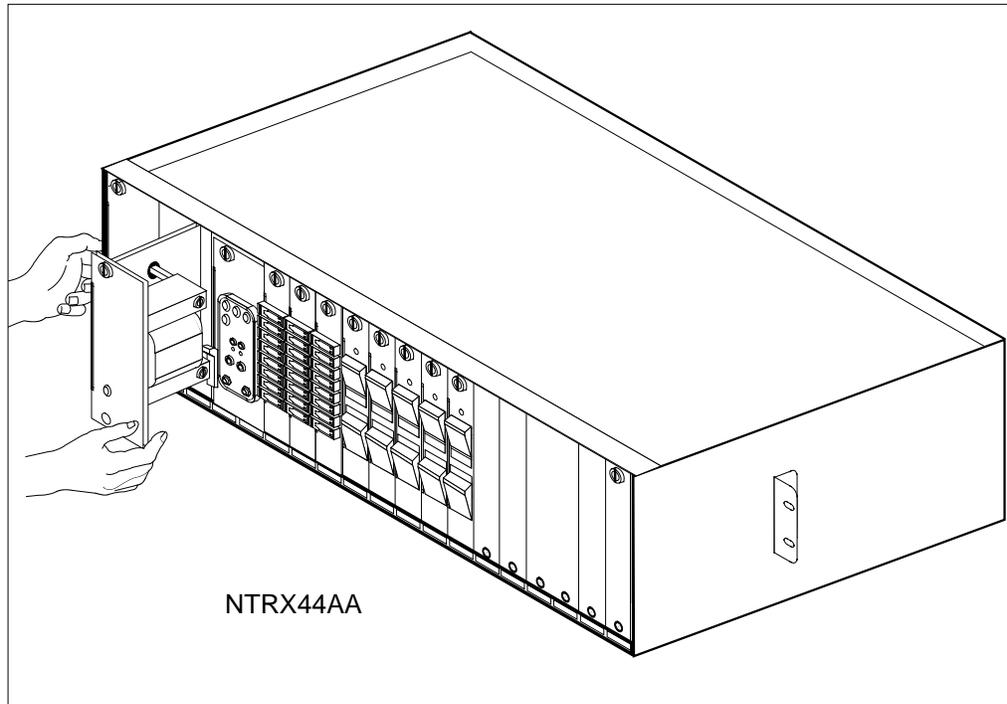


- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors before removing the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

### *At the front of the MSP*

- 9 Remove the NTRX44 card as shown in the following figure.

## NTRX44 in an IOPAC MSP (continued)



- a Disengage the captive screw at the top of the card.
- b Gently pull the card toward you until it clears the shelf.

10



### **DANGER**

**Risk of injury from high energy levels, equipment damage**  
When inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

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

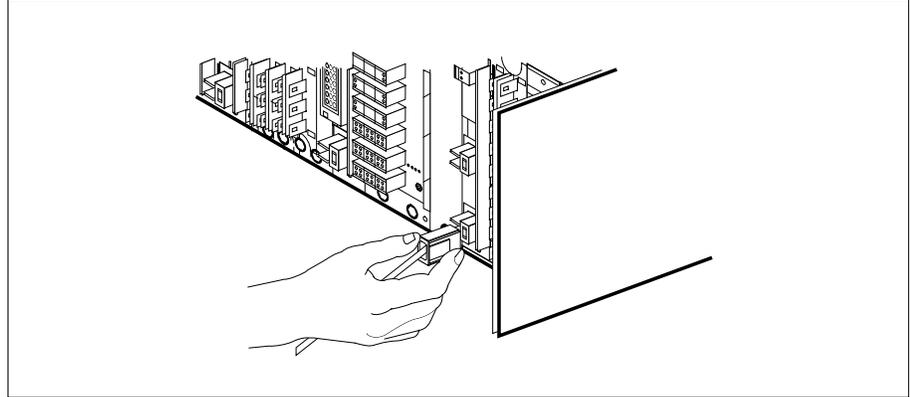
- a Align the card with the slots in the shelf and gently slide the card into the shelf.
- b Gently but firmly seat the card.
- c Tighten the captive screw at the top of the card.

### ***At the rear of the MSP***

- 11 Locate the replaced card and reattach the power connectors, as noted in step 8.

## NTRX44 in an IOPAC MSP (continued)

---



### **At the front of the MSP**

- 12** If talk battery A, in slots 1 and 2, was replaced, turn on the circuit breaker at slot 10 (circuit breaker 02). If talk battery B, in slots 3 and 4, was replaced, turn on the circuit breaker at slot 11 (circuit breaker 04).

### **At the MAP terminal**

- 13** Load the PM by typing  
`>LOADPM UNIT lcm_unit_no CC`  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the ILCM unit to be loaded  
and pressing the Enter key.

---

<b>If</b>	<b>Do</b>
message "loadfile not found in directory" is not received	step 14
load passed	step 31
load failed	step 34

---

**14** Determine the type of device on which the PM load files are located.

<b>If load files are located on</b>	<b>Do</b>
tape	step 15
IOC disk	step 21
SLM disk	step 26

---

---

**NTRX44**  
**in an IOPAC MSP (continued)**

---

15 Locate the tape that contains the PM load files.

16 Mount the tape on a magnetic tape drive.

**At the MAP display**

17 Download the tape by typing

>MOUNT **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

18 List the contents of the tape in your user directory by typing

>TLIST T **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files.

19 Demount the tape drive by typing

>DEMOUNT T **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

20 Go to step 30.

21 From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.

22 Access the disk utility level of the MAP by typing

>DSKUT

and pressing the Enter key.

23 List the IOC file names into your user directory by typing

>LISTVOL **volume\_name** ALL

and pressing the Enter key.

*where*

**volume\_name**

is the name of the volume that contains the PM load files, obtained in step 21.

24 Leave the disk utility by typing

>QUIT

and pressing the Enter key.

## NTRX44 in an IOPAC MSP (continued)

---

- 25** Go to step 30.
- 26** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 27** Access the disk utility level of the MAP by typing  
**>DISKUT**  
and pressing the Enter key.
- 28** List the SLM file names into your user directory by typing  
**>LV CM**  
and pressing the Enter key.  
**>LF load\_file\_name**  
and pressing the Enter key.  
*where*  
**load\_file\_name**  
is the name of the volume that contains the PM load files, obtained in step 26.
- 29** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.
- 30** Load the ILCM unit by typing  
**>LOADPMT UNIT lcm\_unit\_no CC**  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the ILCM unit to be loaded  
and pressing the Enter key.
- | <b>If</b>   | <b>Do</b> |
|-------------|-----------|
| load passed | step 31   |
| load failed | step 34   |
- 31** Return the busied ILCM unit to service by typing the following string:  
**>RTS UNIT lcm\_unit\_no**  
and pressing the Enter key.  
*where*

---

**NTRX44**  
**in an IOPAC MSP (end)**

---

**lcm\_unit\_no**

is the number of the ILCM unit to be returned to service

---

<b>If RTS</b>	<b>Do</b>
passed	step 32
failed	step 34

---

- 32** Send any faulty cards for repair according to local procedure.
- 33** Record the date card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 35.
- 34** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 35** You have completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX44 in an OPAC MSP**

---

### **Application**

Use this procedure to replace the following card in an MSP.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX44	AA	Talk Battery Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules.

This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited.

An example of limited access is MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end is engaged with the action-arm of the power connector.

As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

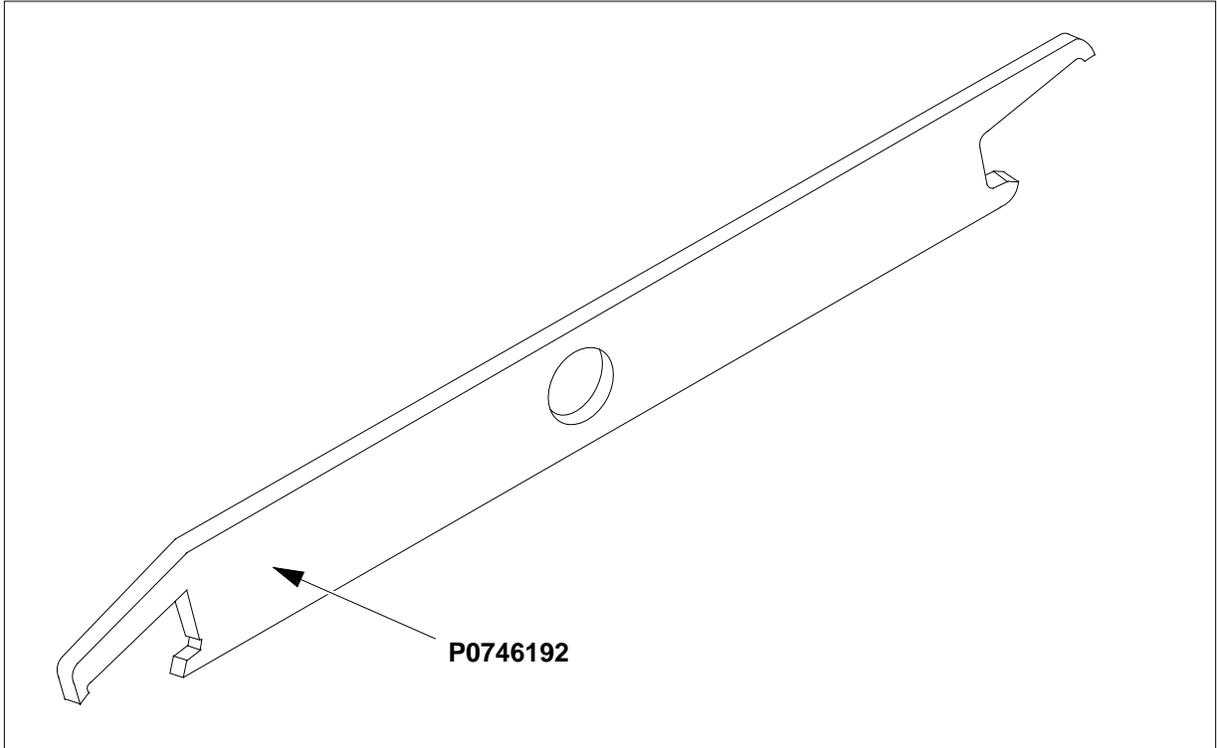
---

**NTRX44**  
**in an OPAC MSP** (continued)

---

The following is an illustration of the connector removal tool.

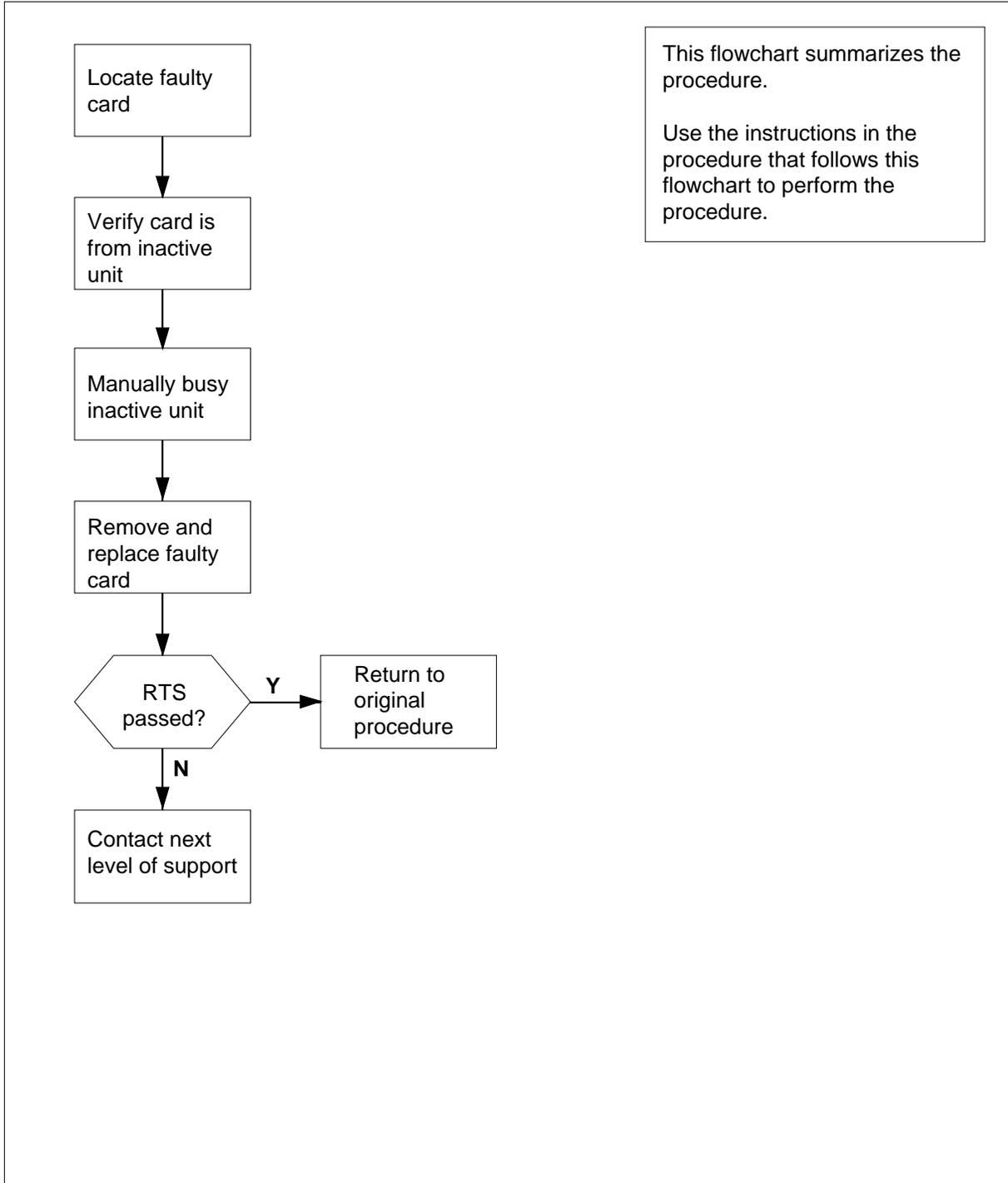
**Connector removal tool**



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.

## NTRX44 in an OPAC MSP (continued)

### Summary of card replacement procedure for an NTRX44 card in an MSP



---

**NTRX44**  
**in an OPAC MSP** (continued)

---

**Replacing an NTRX44 in an MSP****At your current location:****1****CAUTION****Loss of service**

A loss of service *will* occur when this procedure is used as an acceptance procedure or when talk battery is already available on the affected LCM unit. Busing the LCM unit is a precaution only and does not transfer talk battery to the other LCM unit. Talk battery is *not redundant*, and therefore a loss of service occurs on the affected LCM unit. Perform this procedure only during periods of low traffic.

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** Obtain a replacement card. Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

**At the MAP terminal:**

- 3** Access the PM level and post the LCM by typing:

```
>MAPCI;MTC;PM;POST LCM site frame lcm
```

and pressing the Enter key.

where

**site**

is the site name (alphanumeric) of the OPAC

**frame**

is the frame number (0-511) of the OPAC

**lcm**

is the number (0 to 1) of the LCM

*Example of a MAP display:*

## NTRX44 in an OPAC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      APPL
.       .       .       .       1LCM    .       .       .       .       .

LCM.
0 Quit      PM      1       0       0       0       0       0       126
2 Post_     LCM.   0       0       0       0       0       1       9
3 ListSet
4 SwRG      LCM.   REM1    14 1  ISTb  Links_OOS: CSide 0 PSide 0
5 Trnsl_    Unit0:  InSv          /RG: 1
6 Tst_      Unit1:  InSv          /RG: 1
7 Bsy_
8 RTS_      Drwr:  01  23  45  67  89  01  23  45  67  89  Stby 0 InSv
9 OffL
10 LoadPM_
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 4 Busy the affected in-service LCM unit by typing

```
>bsy unit lcm_unit_no
```

and pressing the Enter key.

where

**lcm\_unit\_no**

is the number of the INACTIVE LCM unit (0 or 1)

**Note:** The Talk Battery Module in slots 1 and 2 controls unit number 0; the Module in slots 3 and 4 controls unit number 1.

**At Bay 1 of the OPAC:**

- 5



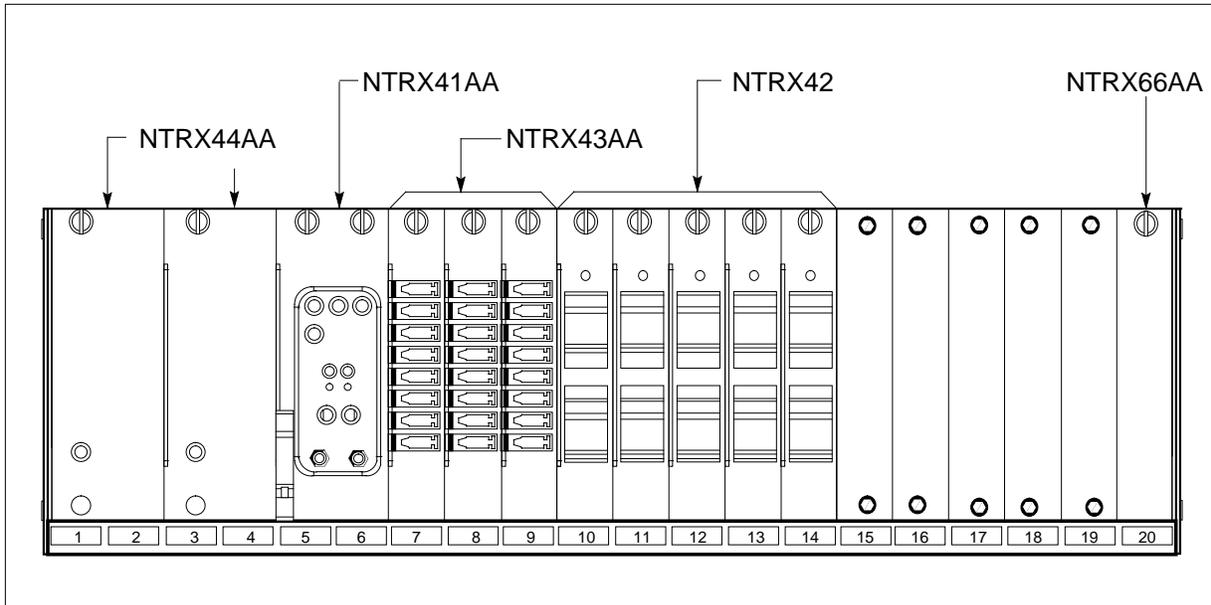
### DANGER

**Risk of injury from high energy levels, static electricity damage**

Wear a wrist strap and connect it to a wrist strap grounding point. This protects the equipment from damage caused by static electricity. A wrist strap grounding point is located at the top of each frame near the hinge.

Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.

## NTRX44 in an OPAC MSP (continued)



- 6 The circuit breaker designation may vary. Verify the circuit breaker designation, front and rear of MSP, before replacing the talk battery module.
- 7 Turn OFF the associated circuit breaker in slot 10 (circuit breaker 02) if replacing the talk battery module in slots 1 and 2. Turn OFF the associated circuit breaker at slot 11 (circuit breaker 04) if replacing the talk battery module in slots 3 and 4.

### ***At the rear of the MSP***

8



#### **DANGER**

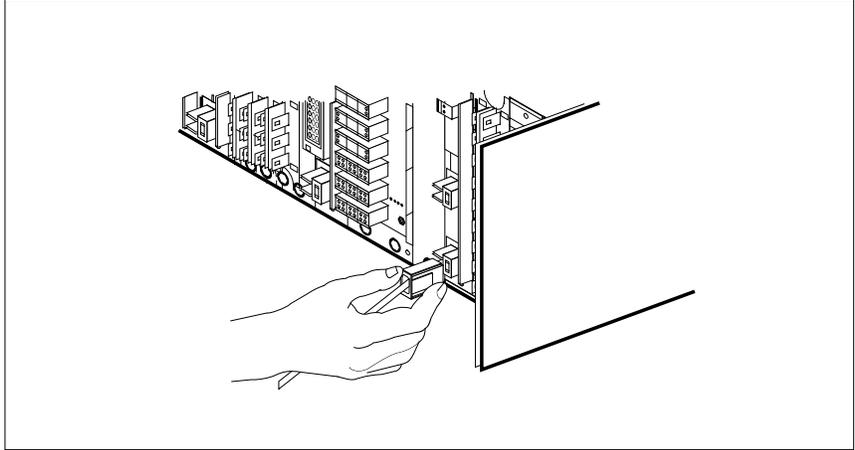
Risk of injury from high energy levels, voltage present  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

Disconnect the NTRX44 card as shown in the following figure.

- a Swing the frame out and locate the back of the card to be replaced. The card is located in slots 1 and 2 for talk battery "A" or in slots 3 and 4 for talk battery "B".
- b Note wire color and location to facilitate reconnection.

## **NTRX44** **in an OPAC MSP (continued)**

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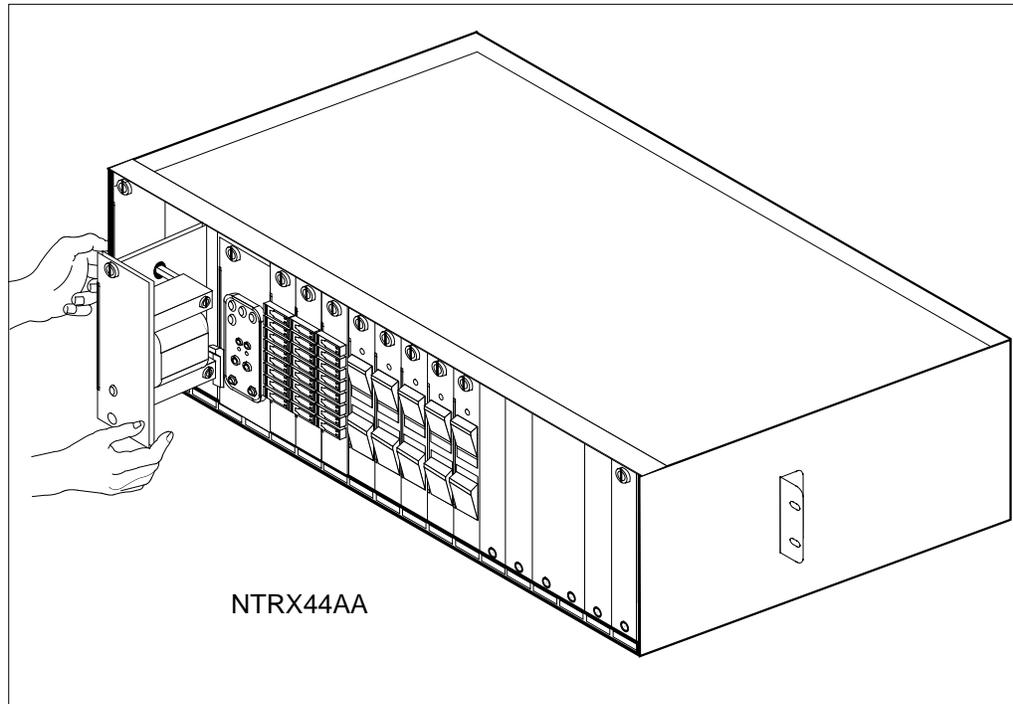


- c** Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors before removing the circuit card.
- d** Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

### ***At the front of the MSP***

- 9** Remove the NTRX44 card as shown in the following figure.

**NTRX44**  
**in an OPAC MSP (continued)**



- a Disengage the captive screw at the top of the card.
- b Gently pull the card toward you until it clears the shelf.

10



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
 When inserting a card, do not apply direct pressure to the components and do not force the cards into the slots.

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

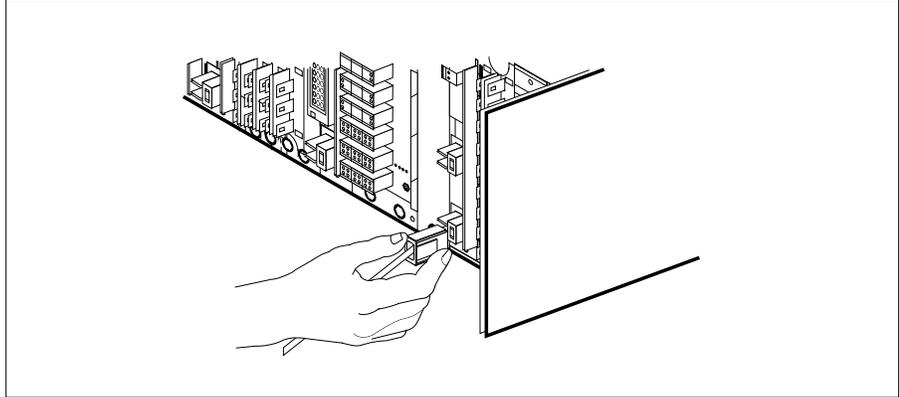
- a Align the card with the slots in the shelf and gently slide the card into the shelf.
- b Gently but firmly seat the card.
- c Tighten the captive screw at the top of the card.

***At the rear of the MSP***

- 11 Locate the replaced card and reattach the power connectors, as noted in step 8.

## NTRX44 in an OPAC MSP (continued)

---



### **At the front of the MSP**

- 12** If talk battery A, in slots 1 and 2, was replaced, turn on the circuit breaker at slot 10 (circuit breaker 02). If talk battery B, in slots 3 and 4, was replaced, turn on the circuit breaker at slot 11 (circuit breaker 04).

### **At the MAP terminal**

- 13** Load the PM by typing  
>LOADPM UNIT *lcm\_unit\_no* CC  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the LCM unit to be loaded  
and pressing the Enter key.

---

<b>If</b>	<b>Do</b>
message "loadfile not found in directory" is not received	step 14
load passed	step 31
load failed	step 34

---

**14** Determine the type of device on which the PM load files are located.

<b>If load files are located on</b>	<b>Do</b>
tape	step 15
IOC disk	step 21
SLM disk	step 26

---

---

**NTRX44**  
**in an OPAC MSP** (continued)

---

15 Locate the tape that contains the PM load files.

16 Mount the tape on a magnetic tape drive.

**At the MAP display**

17 Download the tape by typing

>MOUNT **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

18 List the contents of the tape in your user directory by typing

>TLIST T **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files.

19 Demount the tape drive by typing

>DEMOUNT T **tape\_no**

and pressing the Enter key.

*where*

**tape\_no**

is the number of the tape drive containing the PM load files

20 Go to step 30.

21 From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.

22 Access the disk utility level of the MAP by typing

>DSKUT

and pressing the Enter key.

23 List the IOC file names into your user directory by typing

>LISTVOL **volume\_name** ALL

and pressing the Enter key.

*where*

**volume\_name**

is the name of the volume that contains the PM load files, obtained in step 21.

24 Leave the disk utility by typing

>QUIT

and pressing the Enter key.

## NTRX44 in an OPAC MSP (continued)

---

- 25** Go to step 30.
- 26** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 27** Access the disk utility level of the MAP by typing  
**>DISKUT**  
and pressing the Enter key.
- 28** List the SLM file names into your user directory by typing  
**>LV CM**  
and pressing the Enter key.  
**>LF load\_file\_name**  
and pressing the Enter key.  
*where*  
**load\_file\_name**  
is the name of the volume that contains the PM load files, obtained in step 26.
- 29** Leave the disk utility by typing  
**>QUIT**  
and pressing the Enter key.
- 30** Load the LCM unit by typing  
**>LOADPMT UNIT lcm\_unit\_no CC**  
and pressing the Enter key.  
*where*  
**lcm\_unit\_no**  
is the number of the LCM unit to be loaded  
and pressing the Enter key.
- 
- | <b>If</b>   | <b>Do</b> |
|-------------|-----------|
| load passed | step 31   |
| load failed | step 34   |
- 
- 31** Return the busied LCM unit to service by typing the following string:  
**>RTS UNIT lcm\_unit\_no**  
and pressing the Enter key.  
*where*

---

**NTRX44**  
**in an OPAC MSP (end)**

---

**lcm\_unit\_no**

is the number of the LCM unit to be returned to service

---

<b>If RTS</b>	<b>Do</b>
passed	step 32
failed	step 34

---

- 32** Send any faulty cards for repair according to local procedure.
- 33** Record the date card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 35.
- 34** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 35** You have completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX44 in an RSC MSP

---

### Application

Use this procedure to replace an NTRX44 card in a modular supervisory panel (MSP) in the following cabinets.

- Cabinetized Extension Module (CEXT)
- Cabinetized Line Concentrating Equipment (CLCE)
- Cabinetized Power Distribution Center (CPDC)
- Cabinetized Remote Switching Center (CRSC)
- Cabinetized Miscellaneous Equipment (CMIS)
- Cabinetized Remote Miscellaneous Equipment (CRME)

PEC	Suffixes	Name
NTRX44	AA	Talk Battery Module

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

---

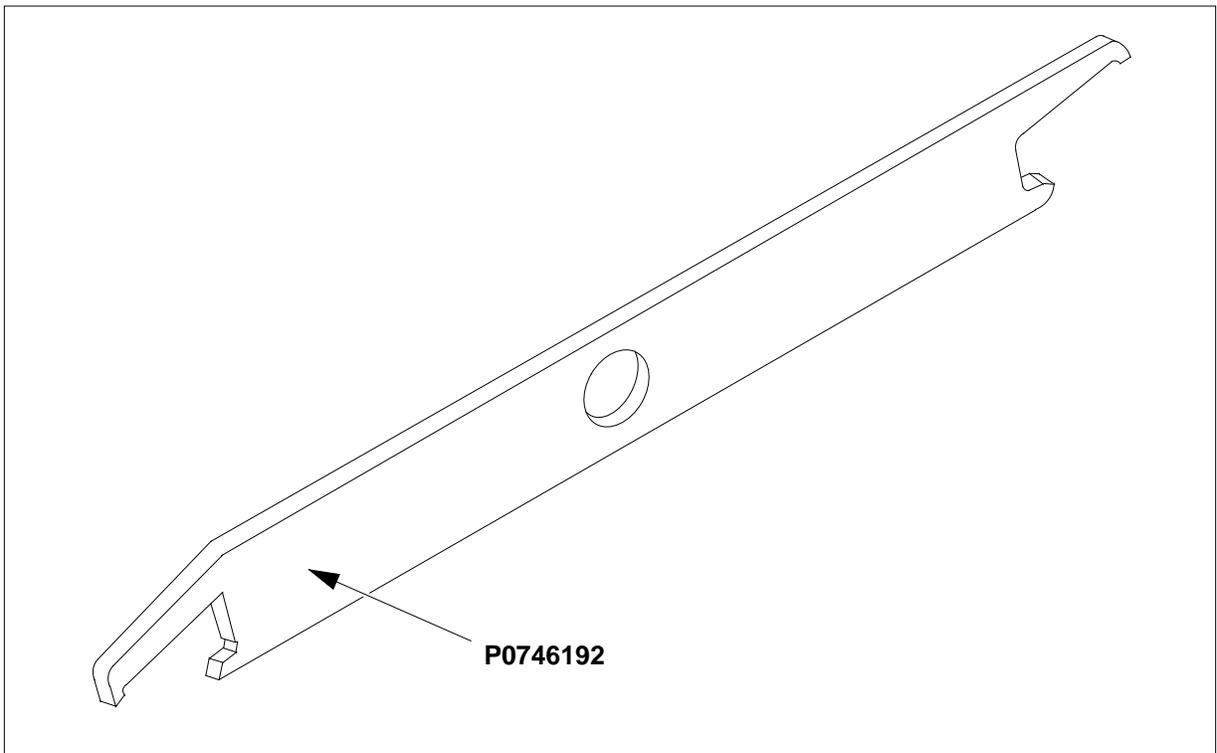
**NTRX44**  
**in an RSC MSP** (continued)

---

from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

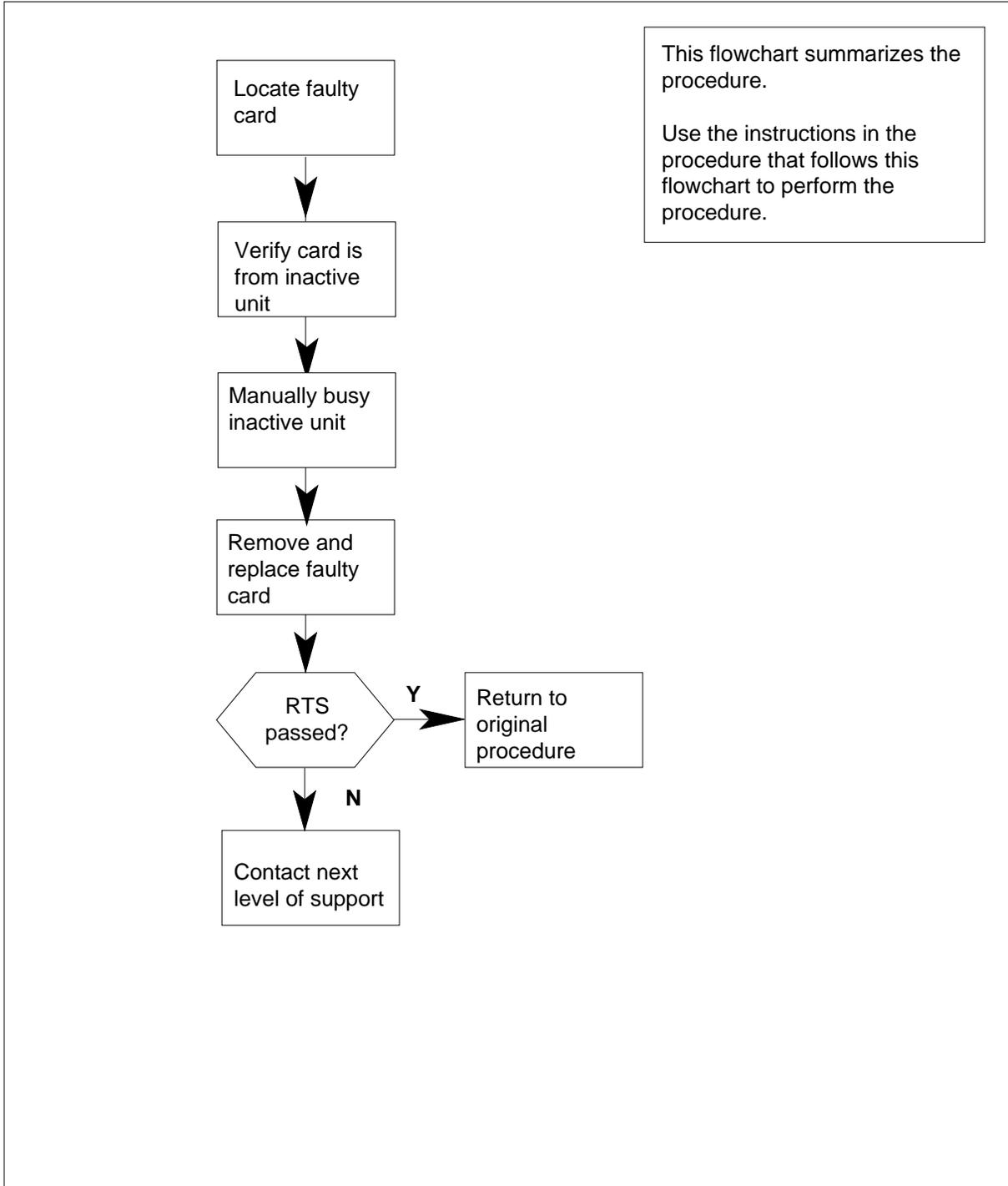
**Connector removal tool**



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.

## NTRX44 in an RSC MSP (continued)

### Summary of card replacement procedure for an NTRX44 card in RSC MSP



## NTRX44 in an RSC MSP (continued)

### Replacing an NTRX44RX44 card in RSCE MSP

#### *At your current location*

1



#### **CAUTION**

##### **Loss of service**

A loss of service *will* occur when this procedure is used as an acceptance procedure or when talk battery is already available on the affected LCM unit. Busing the LCM unit is a precaution only and does not transfer talk battery to the other LCM unit. Talk battery is *not redundant*, and therefore a loss of service occurs on the affected LCM unit. Perform this procedure only during periods of low traffic.

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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the LCME powered by the talk battery module by typing

```
>MAPCI;MTC;PM;POST LCME site lcme_frame_no lcme_no
```

and pressing the Enter key.

where

##### **site**

is the name of the site at which the LCME is located

##### **lcme\_frame\_no**

is the number of the frame in which the LCME is located

##### **lcme\_no**

is the number of the LCME powered by the talk battery module

*Example of a MAP display*

## NTRX44 in an RSC MSP (continued)

```

CM      MS      IOD      Net      PM      CCS      Lns      Trks      Ext      APPL
.       .       .       .       1LCME   .       .       .       .       .

LCME
0 Quit      PM          1          0          2          0          2          12
2 Post_     LCME        0          0          2          0          2          9
3 ListSet
4 SwRG      LCME        RSC-S 14 1 ISTb Links_OOS: CSide 0 PSide 0
5 Trnsl_    Unit0:      InSv      /RG: 1
6 Tst_      Unit1:      InSv      /RG: 1
7 Bsy_
8 RTS_      Drwr: 01 23 45 67 89 01 23 4          RG:Pref 1 ISTB
9 OffL
10 LoadPM_
11 Disp_
12 Next
13
14 QueryPM
15
16
17
18

```

- 4 Busy the affected in-service PM unit by typing

>BSY UNIT lcme\_unit\_no

and pressing the Enter key.

where

**lcme\_unit\_no**

is the number of the LCME unit.

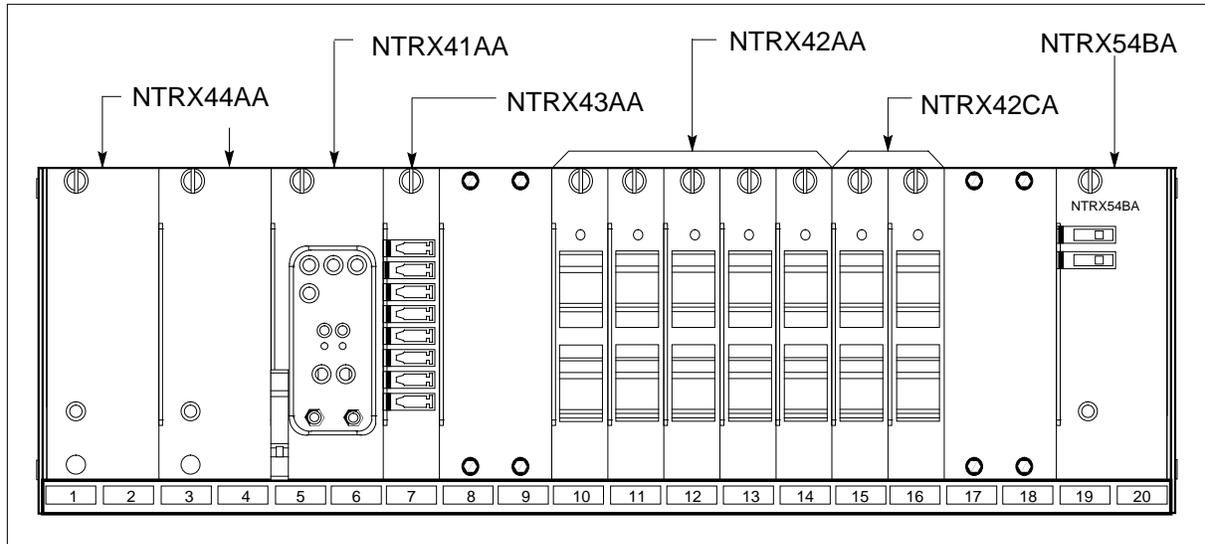
**Note:** The talk battery module in slots 1 and 2 controls unit number 0; the module in slots 3 and 4 controls unit number 1.

**At the front panel of the cabinet**

- 5 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module.

## NTRX44 in an RSC MSP (continued)



6



**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:

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

Put on a wrist strap.

7

Turn off the circuit breaker at slot 15 (circuit breaker 12) if replacing the talk battery module in slots 1 and 2. Turn off the circuit breaker at slot 16 (circuit breaker 14) if replacing the talk battery module in slots 3 and 4. These circuit breaker locations correspond to the CRSC and CEXT modules.

**Note:** The circuit breaker designation may vary depending on the type of cabinet where you are replacing the talk battery module. Verify the circuit breaker designation at shelf position 61 before replacing the talk battery.

## NTRX44 in an RSC MSP (continued)

---

- 8 Pull out corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the connectors on the rear of the MSP. This step does not apply to the CMIS, CPDC, and CRME.

***At the rear panel of the cabinet***

9

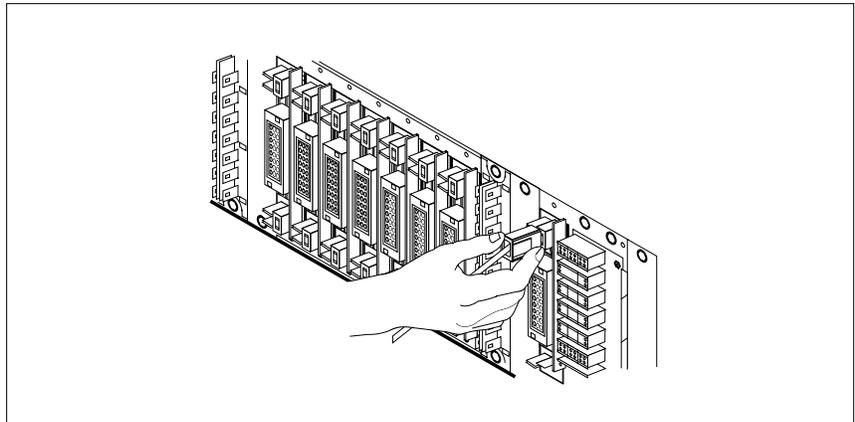


**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage can result.

Remove the NTRX44 circuit card as shown in the following figures.

- a Open the rear doors of the cabinet and locate the back of the circuit card to be replaced. The circuit card is located in slots 1 and 2 for talk battery "A" or in slots 3 and 4 for talk battery "B".
- b Note wire color and location to facilitate re-connection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors before removing the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

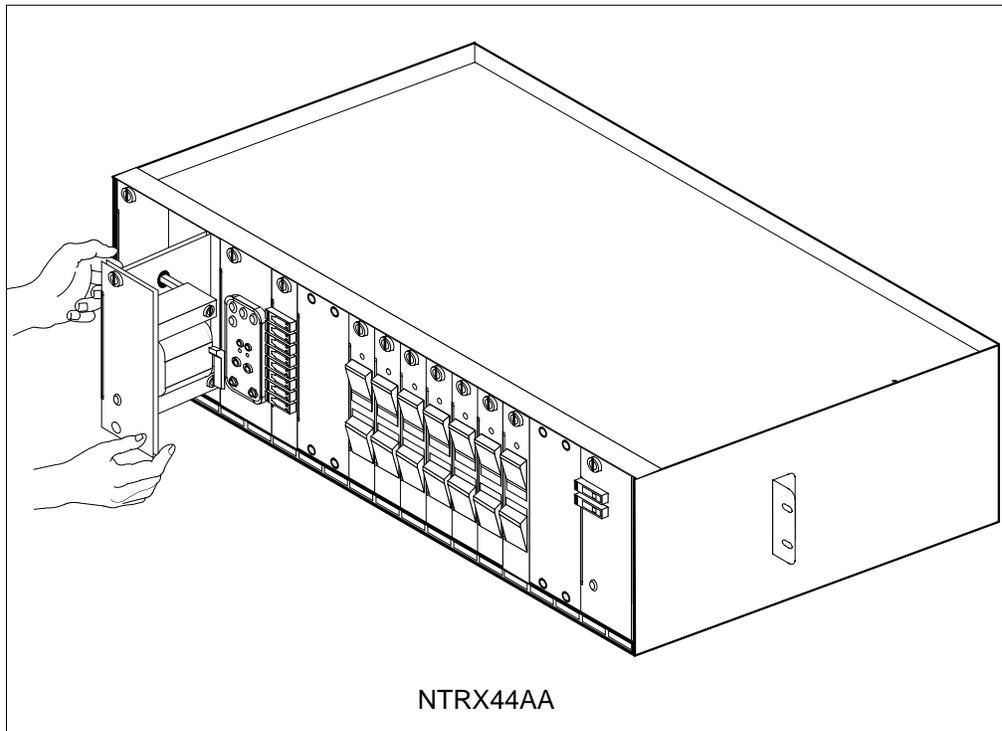
---

**NTRX44**  
**in an RSC MSP** (continued)

---

***At the front panel of the cabinet***

- 10** Remove the NTRX44 card.
- a** Disengage the knurled thumbscrew at the top of the card.
  - b** Gently pull the card towards you until it clears the shelf.



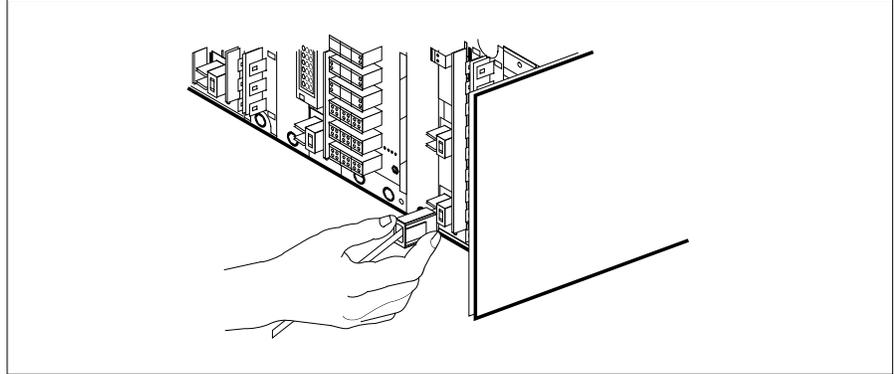
- 11** Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- a** Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b** Gently but firmly seat the circuit card.
  - c** Tighten the knurled thumbscrew at the top of the circuit card.

***At the rear panel of the cabinet***

- 12** Locate the replaced circuit card and re-attach the power connectors.

## NTRX44 in an RSC MSP (continued)

---



- 13 Install the jumper connectors and cables removed in step 9 onto the replacement circuit card.

### **At the front of the cabinet**

- 14 If talk battery A, in slots 1 and 2, was replaced, turn on the circuit breaker at slot 15 (circuit breaker 12). If Talk Battery B, in slots 3 and 4, was replaced, turn on the circuit breaker at slot 16 (circuit breaker 14).

**Note:** The circuit breaker designation may vary depending on the type of cabinet where you are replacing the talk battery module. Verify the circuit breaker designation at shelf position 61 before replacing the talk battery.

- 15 Push in corresponding line shelf. Note that this step does *not* apply to the CMIS, CPDC, and CRME.

### **At the MAP terminal**

- 16 Return the LCME to service by typing

```
>RTS UNIT lcme_unit_no
```

and pressing the Enter key.

where

**lcme\_unit\_no**

is the number of the LCME unit.

---

If RTS	Do
--------	----

passed	step 17
--------	---------

did not pass	step 19
--------------	---------

- 
- 17 Send any faulty cards for repair according to local procedure.
- 18 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 20.
- 19 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.

**NTRX44**  
**in an RSC MSP (end)**

---

- 20** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX44 in an RSC-S (DS-1) Model B MSP**

---

### **Application**

Use this procedure to replace an NTRX44 card in a modular supervisory panel (MSP) located in a

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX44	AA	Talk Battery Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

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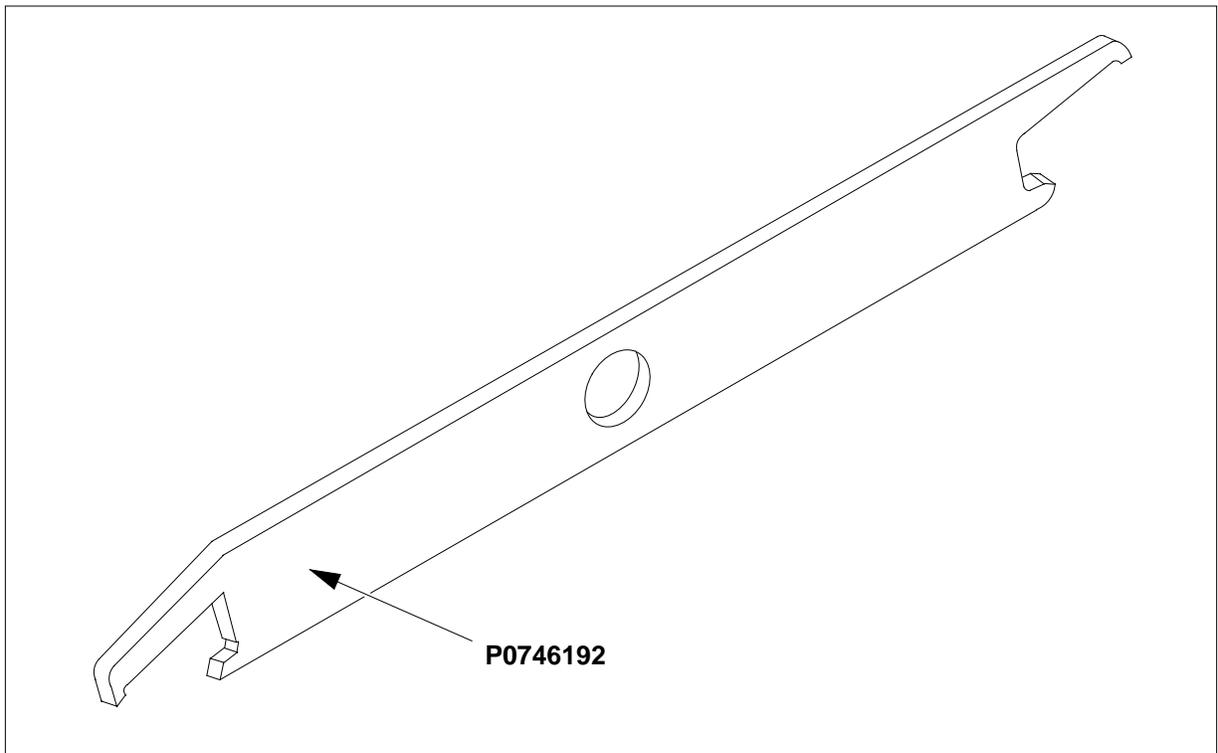
**NTRX44**  
**in an RSC-S (DS-1) Model B MSP** (continued)

---

from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

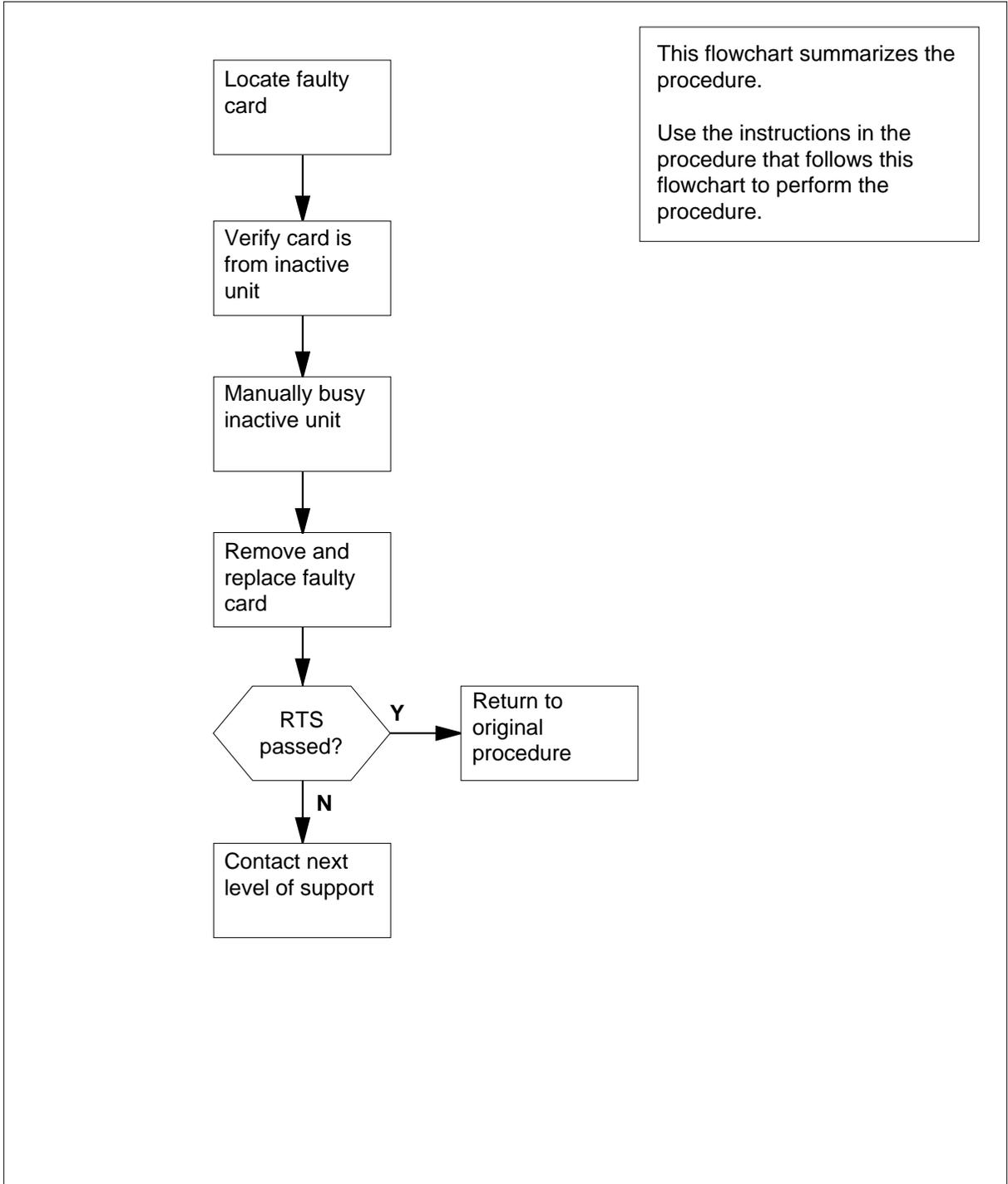
**Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

## NTRX44 in an RSC-S (DS-1) Model B MSP (continued)

### Summary of card replacement procedure in an NTRX44 card in RSC-S MSP



## NTRX44

### in an RSC-S (DS-1) Model B MSP (continued)

#### Replacing an NTRX44 card in RSC-S MSP

##### *At your Current Location*

1



#### **CAUTION**

##### **Loss of service**

A loss of service *will* occur when this procedure is used as an acceptance procedure or when talk battery is already available on the affected LCM unit. Busing the LCM unit is a precaution only and does not transfer talk battery to the other LCM unit. Talk battery is *not redundant*, and therefore a loss of service occurs on the affected LCM unit. Perform this procedure only during periods of low traffic.

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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

##### *At the MAP terminal*

- 3 Set the MAP display to the PM level and post the LCME powered by the talk battery module by typing

```
>MAPCI;MTC;PM;POST LCME site lcme_frame_no lcme_no
```

and pressing the Enter key.

*where*

##### **site**

is the name of the site at which the LCME is located

##### **lcme\_frame\_no**

is the number of the frame in which the LCME is located

##### **lcme\_no**

is the number of the LCME powered by the talk battery module

*Example of a MAP display*

## NTRX44 in an RSC-S (DS-1) Model B MSP (continued)

CM	MS	IOD	Net	PM	CCS	Lns	Trks	Ext	APPL
.	.	.	.	1LCME	.	.	.	.	.
LCME			SysB	ManB	OffL	CBsy	ISTb	InSv	
0	Quit	PM	1	0	2	0	2	12	
2	Post_	LCME	0	0	2	0	2	9	
3	ListSet								
4	SwRG	LCME	RSC-S	14 1	ISTb	Links_OOS:	CSide	0	PSide 0
5	Trnsl_	Unit0:	InSv			/RG: 1			
6	Tst_	Unit1:	InSv			/RG: 1			
7	Bsy_					11 11 11		RG:Pref 1	ISTB
8	RTS_	Drwr:	01 23	45 67	89	01 23 4		Stby 0	InSv
9	OffL		.. ..	.. ..	.. ..	.. ..			
10	LoadPM_								
11	Disp_								
12	Next								
13									
14	QueryPM								
15									
16									
17									
18									

- 4 Busy the affected in-service PM unit by typing

```
>BSY UNIT lcme_unit_no
```

and pressing the Enter key.

where

**lcme\_unit\_no**

is the number of the LCME unit.

**Note:** The talk battery module in slots 1 and 2 controls unit number 0; the module in slots 3 and 4 controls unit number 1.

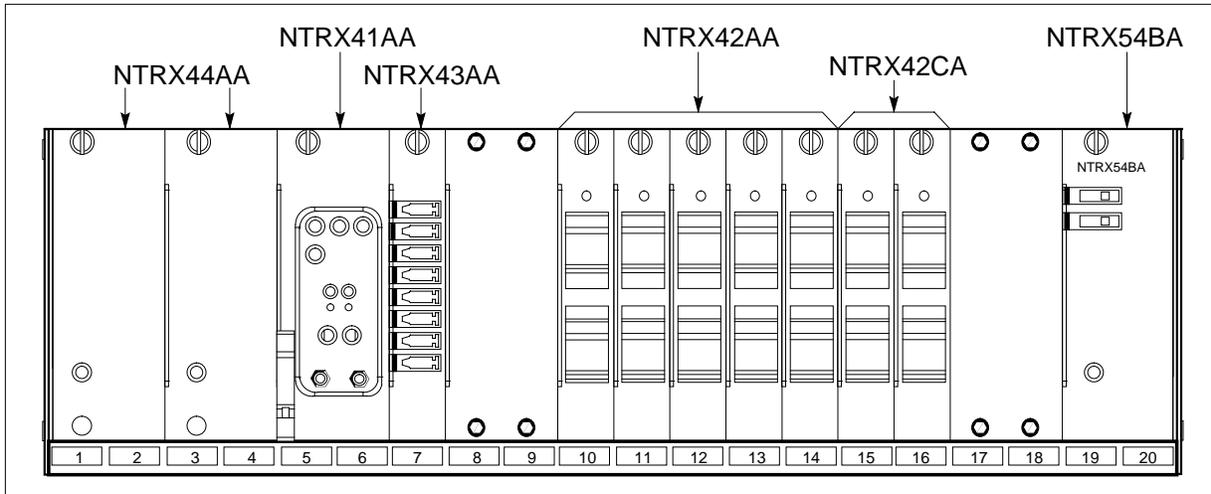
**At the front panel of the cabinet**

- 5 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module.

## NTRX44

### in an RSC-S (DS-1) Model B MSP (continued)



6

**DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card:

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

Put on a wrist strap.

- 7** Turn off the circuit breaker at slot 15 (circuit breaker 12) if replacing the talk battery module in slots 1 and 2. Turn off the circuit breaker at slot 16 (circuit breaker 14) if replacing the talk battery module in slots 3 and 4. These circuit breaker locations correspond to the CRSC and CEXT modules.

**Note:** The circuit breaker designation may vary depending on the type of cabinet where you are replacing the talk battery module. Verify the circuit breaker designation at shelf position 61 before replacing the talk battery.

- 8** Pull out corresponding line shelf approximately 152 mm (6 in.). The line shelf is located below the MSP. This approach permits easier hand access to the

## NTRX44 in an RSC-S (DS-1) Model B MSP (continued)

---

connectors on the rear of the MSP. This step does not apply to the CMIS, CPDC, and CRME.

*At the rear panel of the cabinet*

9

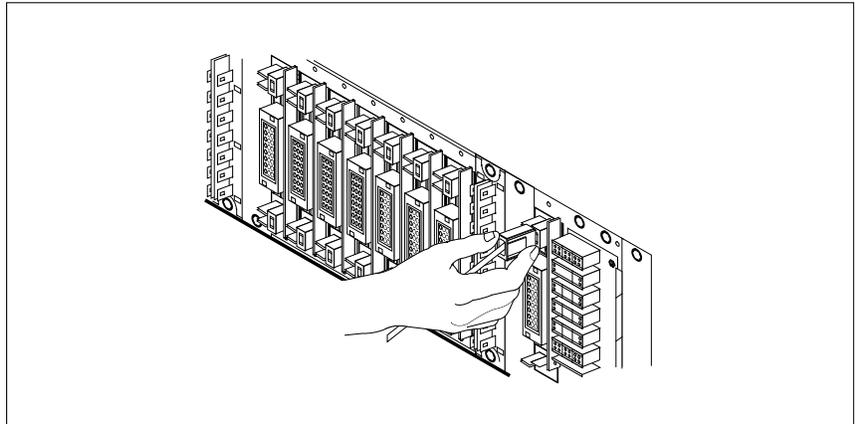


**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage can result.

Remove the NTRX44 circuit card as shown in the following figures.

- a Open the rear doors of the cabinet and locate the back of the circuit card to be replaced. The circuit card is located in slots 1 and 2 for talk battery "A" or in slots 3 and 4 for talk battery "B".
- b Note wire color and location to facilitate re-connection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black power connectors located above the large blue power connector. Ensure you disconnect the black connectors before removing the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

---

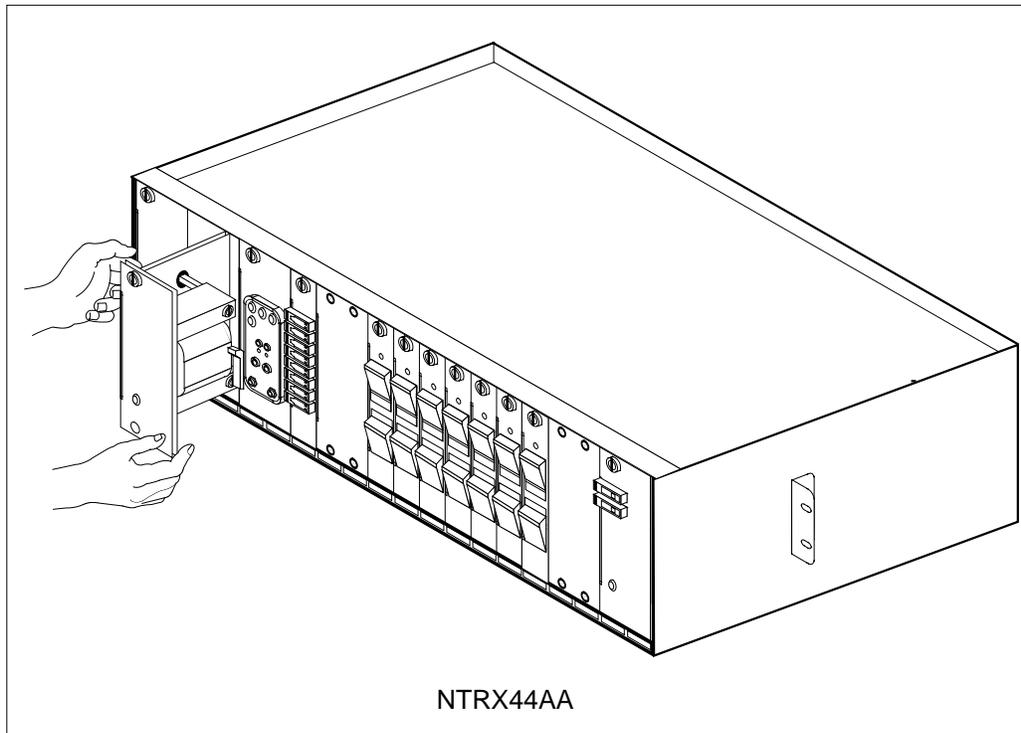
## NTRX44

### in an RSC-S (DS-1) Model B MSP (continued)

---

***At the front panel of the cabinet***

- 10 Remove the NTRX44 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.



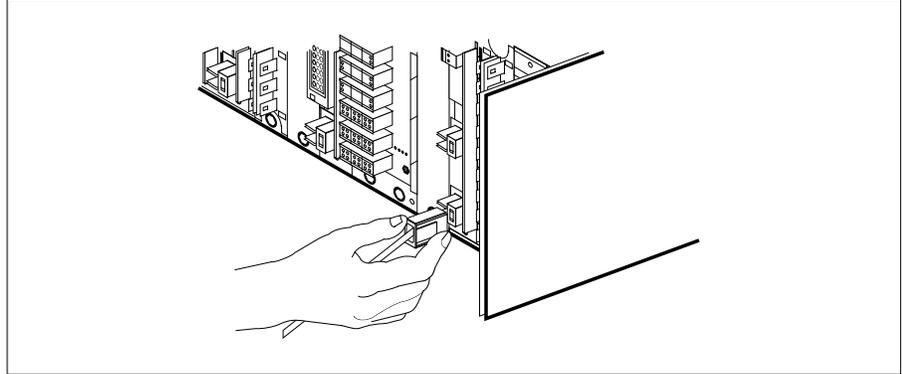
- 11 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

***At the rear panel of the cabinet***

- 12 Locate the replaced circuit card and re-attach the power connectors.

## NTRX44 in an RSC-S (DS-1) Model B MSP (continued)

---



- 13 Install the jumper connectors and cables removed in step 9 9 onto the replacement circuit card.

### **At the front of the cabinet**

- 14 If talk battery A, in slots 1 and 2, was replaced, turn on the circuit breaker at slot 15 (circuit breaker 12). If Talk Battery B, in slots 3 and 4, was replaced, turn on the circuit breaker at slot 16 (circuit breaker 14).

**Note:** The circuit breaker designation may vary depending on the type of cabinet where you are replacing the talk battery module. Verify the circuit breaker designation at shelf position 61 before replacing the talk battery.

- 15 Push in corresponding line shelf. Note that this step does *not* apply to the CMIS, CPDC, and CRME.

### **At the MAP terminal**

- 16 Return the LCME to service by typing

```
>RTS UNIT lcme_unit_no
```

and pressing the Enter key.

where

**lcme\_unit\_no**

is the number of the LCME unit.

---

If RTS	Do
--------	----

passed	step 17
--------	---------

did not pass	step 19
--------------	---------

- 
- 17 Send any faulty cards for repair according to local procedure.
- 18 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 20.
- 19 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.

**NTRX44**  
**in an RSC-S (DS-1) Model B MSP (end)**

---

- 20** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX54 in an RSC-M/MSP**

---

### **Application**

Use this procedure to replace an NTRX54 card in a modular supervisory panel (MSP) that supports the RCO2 shelf in the Remote Switching Center Multi-access (RSC-M) cabinet.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX54	BA	Fan power control module

### **Common procedures**

The common returning a card procedure is referenced in this procedure.

### **Action**

A connector removal tool is available to allow removal of the AMP Faston receptacles. This tool allows removal of these receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.) and P0747552 254 mm (10 in.). You can use the shorter tool when conditions cause limited access to the rear of the MSP. An example of limited access is MSP modules located behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile positions the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. When you rotate the tool around this pivot point, you engage a profile tip with the action-arm of the power connector. This profile tip is the longer tip of the profile that has a hook on the end of the tip. As you press the action-arm of the connector, you disengage the receptacle from the connector tab. To remove the receptacle, pull the tool with the receptacle trapped in the jaw of the tool away from the connector. To disengage the tool from the receptacle, rotate the hook of the tool off the action-arm of the receptacle.

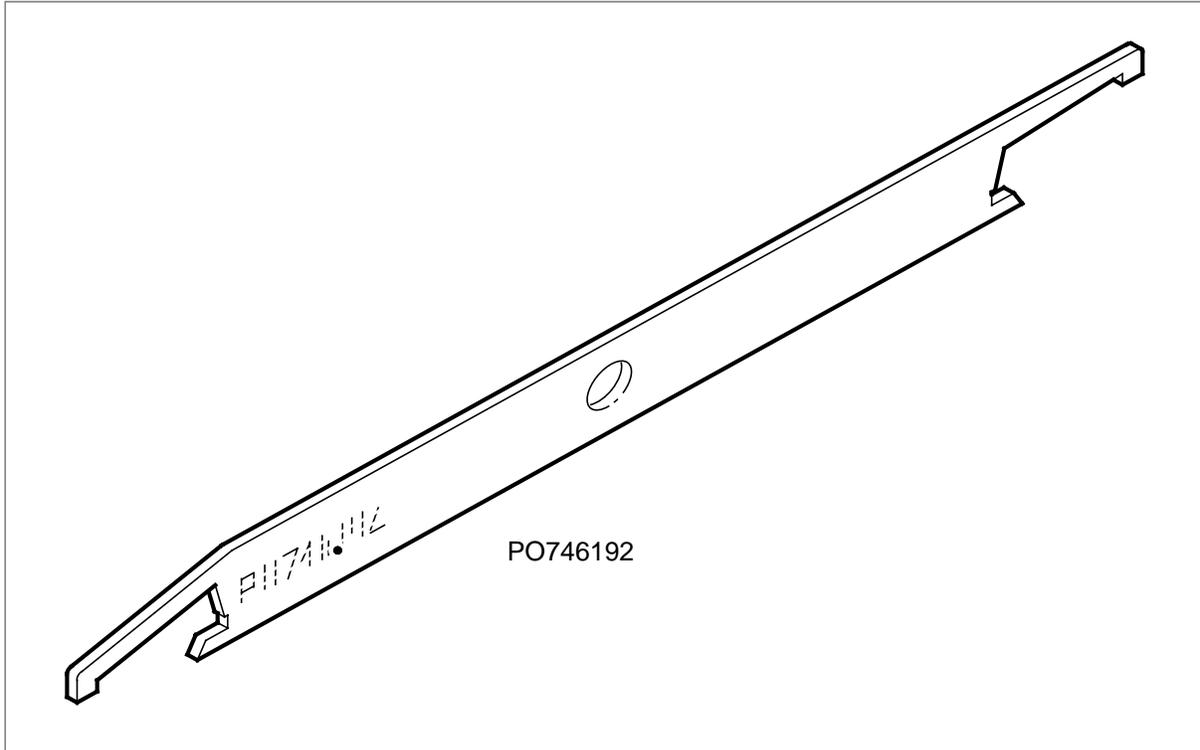
The shape of the cut-out is the same on each end of the tool. The position of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles. You can require the use of the tool at different angles because of limited access to the connectors.

---

**NTRX54**  
**in an RSC-M/MSP** (continued)

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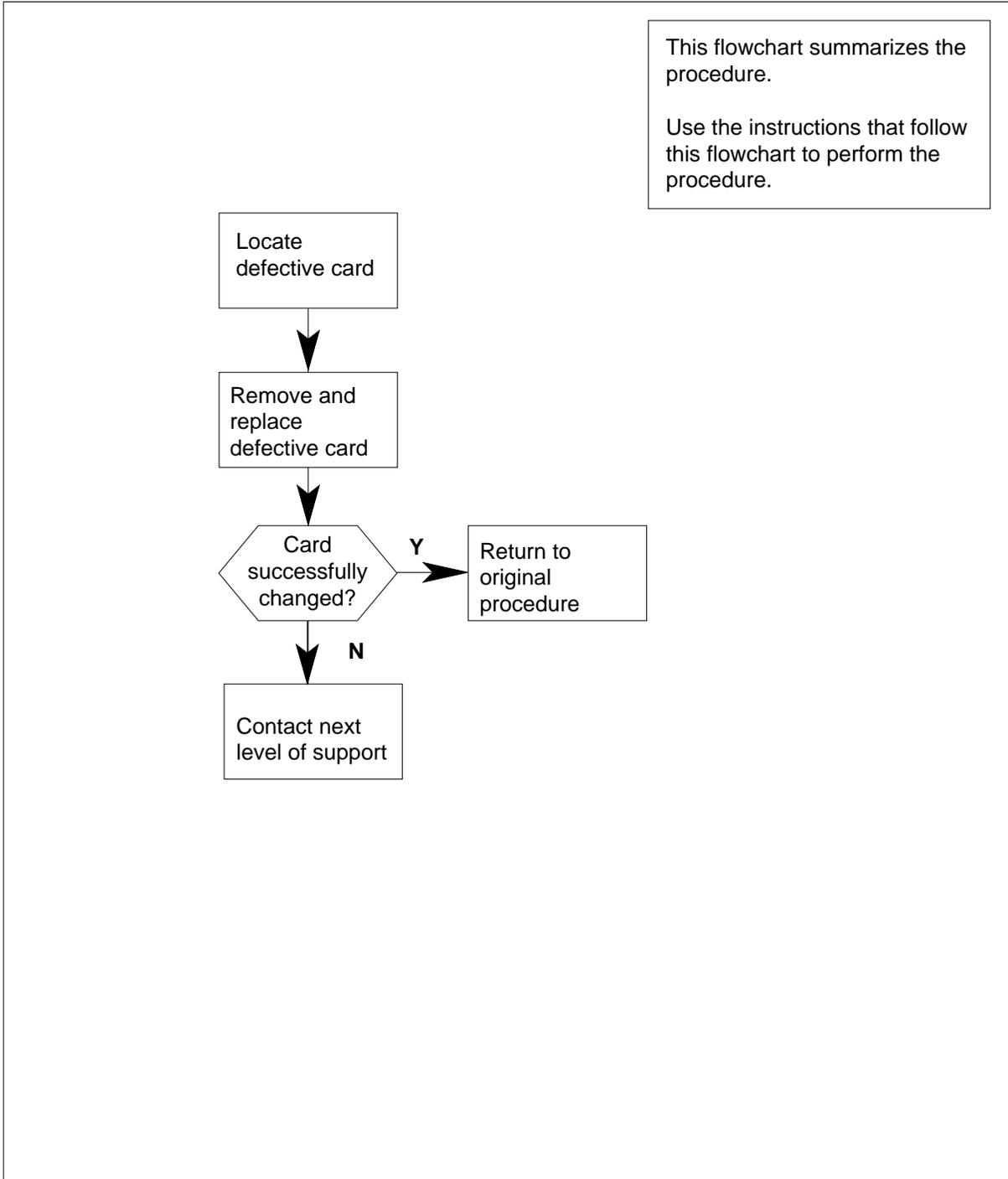
**Connector removal tool**



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

## NTRX54 in an RSC-M/MSP (continued)

### Summary of Replacing an NTRX54 in an RSC-M/MSP



## NTRX54 in an RSC-M/MSP (continued)

### Replacing a/an NTRX54 card in an RSC-M/MSP

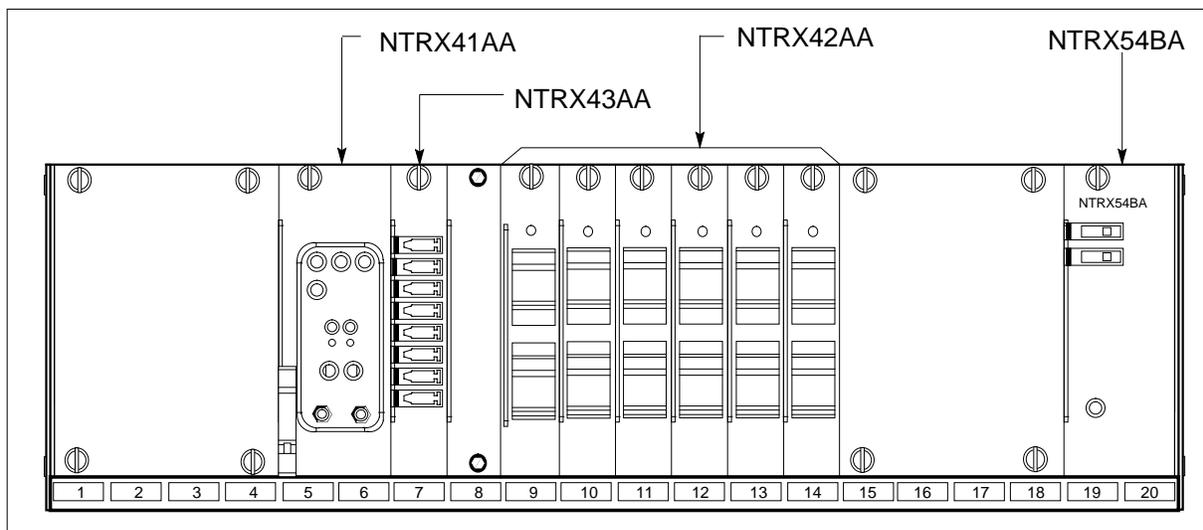
#### *At the MAP terminal*

- 1 Proceed if your maintenance support group or a step in a maintenance procedure directed you to this card replacement procedure. Use the procedure to verify or accept cards.
- 2 Obtain a replacement circuit card. Make sure the replacement circuit card has the same product equipment code (PEC) and suffix as the circuit card you want to remove.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches. Swing the cover down to the open position.

#### MSP



4



#### **WARNING**

**Risk of injury from high energy levels, static electricity damage**  
Wear a wrist strap that connects to the wrist-strap grounding point on the left side of the modular supervisory panel (MSP) to remove cards. The wrist strap protects the equipment against static electricity damage.

## NTRX54 in an RSC-M/MSP (continued)



### DANGER

**Risk of injury from high energy levels, 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 in the slots.



### DANGER

#### Heat damage

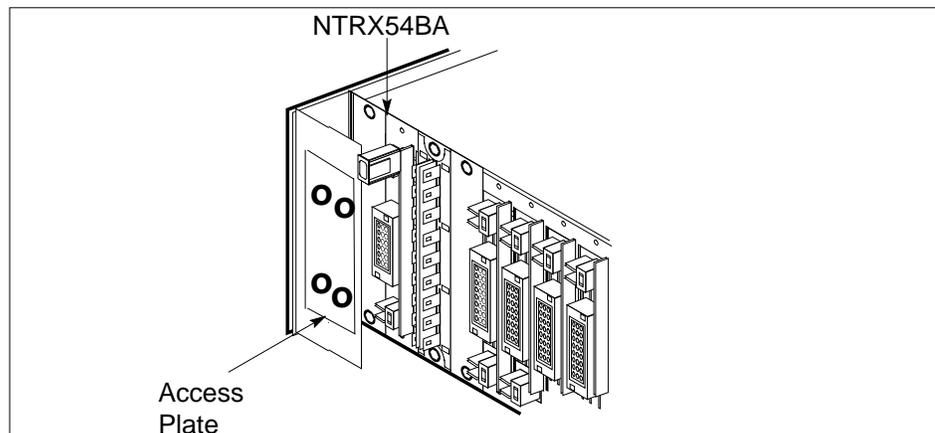
Do not leave this card out of service for more than 30 min. A large amount of damage the whole cabinet can occur if cooling does not occur for more than 30 min.

Put on a wrist strap.

- 5 Remove the two fuses in the fan power control module.

#### ***At the rear panel of the cabinet***

- 6 Remove the NTRX54 circuit card as shown in the following figures.
  - a Open the rear doors of the cabinet. Locate the circuit card. The circuit card is in slots 19 and 20.
  - b Loosen the four screws. Slide the access plate sideways to remove the access plate.



- 7 Note the wire color and location of the connector cables to facilitate connection.
- 8 Use the connector removal tool to disconnect the power connectors to the circuit card manually. Work from the bottom of the MSP shelf to the top of the MSP shelf. Manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue

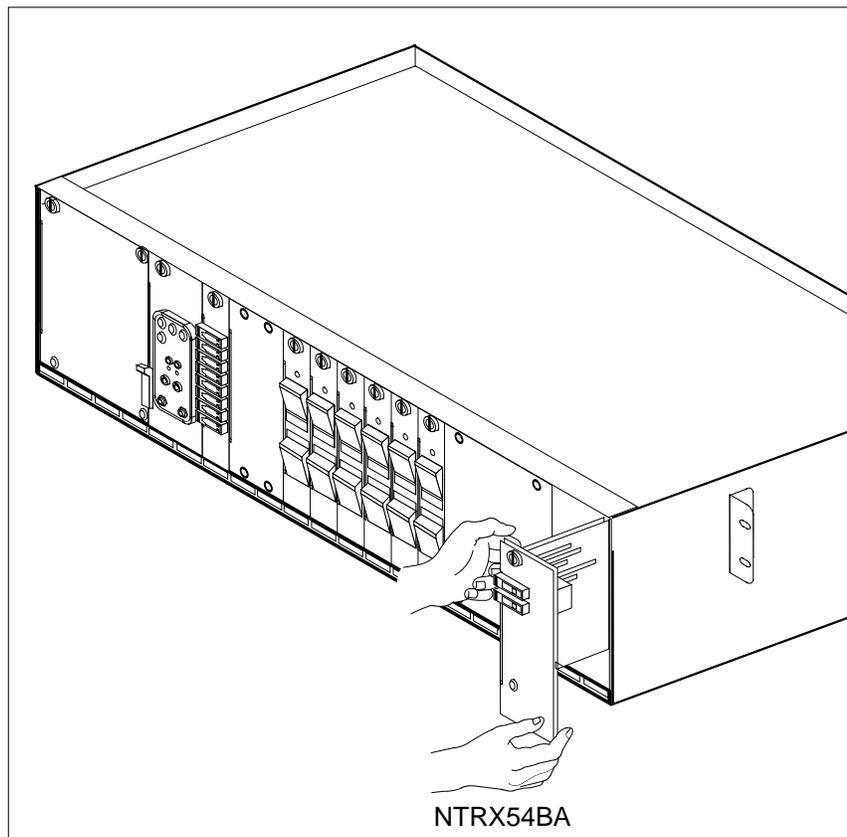
## NTRX54 in an RSC-M/MSP (continued)

power connector. Disconnect the smaller black power connectors located above the large blue power connector. Make sure you disconnect the black connectors before you remove the circuit card.

- 9 The connectors have voltage present. The connectors are insulated. Secure the connectors to the power-connector bundle with a line-tie until the time arrives to connect the connectors again.

### *At the front panel of the cabinet*

- 10 Remove the NTRX54 circuit card.
  - a Disengage the knurled thumbscrew at the top of the circuit card.
  - b Carefully pull the circuit card toward you until the circuit card clears the shelf.



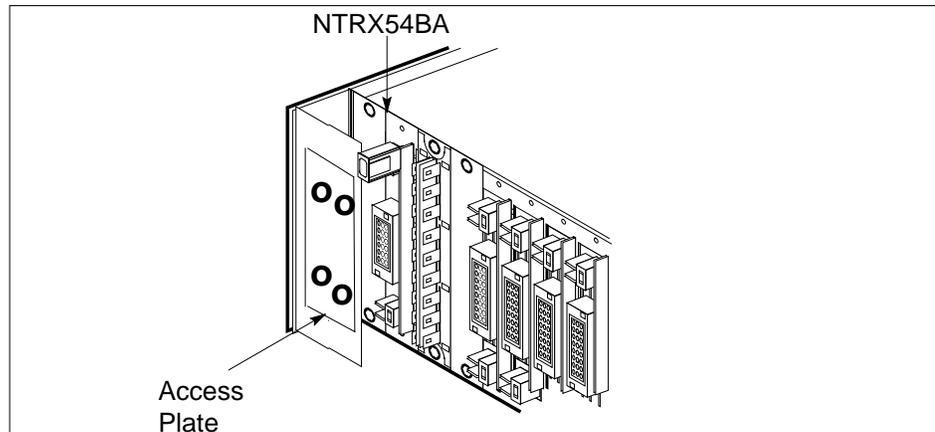
- 11 Make sure the replacement circuit card has the same PEC and suffix as the circuit card you removed.
  - a Align the circuit card with the slots in the shelf. Carefully slide the circuit card in the shelf.
  - b Carefully seat the circuit card tight.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

## NTRX54 in an RSC-M/MSP (end)

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### *At the rear panel of the cabinet*

- 12 Locate the replaced circuit card. Attach the power connectors. Step 6 describes how to attach the power connectors.



- 13 Replace the two fuses removed in step 5.  
14 Send defective cards for repair according to local procedure.

---

<b>If fuses</b>	<b>Do</b>
do not blow	step 15
blow (protrude)	step 16

---

- 15 Go to the common returning a card procedure in this document.  
Go to step 17.  
16 For additional help with this card replacement, contact the next level of support.  
17 This procedure is complete. Return to the maintenance procedure that directed you to this card replacement procedure.

## NTRX54 in an RSC MSP

### Application

Use this procedure to replace an NTRX54 card in a modular supervisory panel (MSP) in the following cabinets.

- Cabinetized Extension Module (CEXT)
- Cabinetized Line Concentrating Equipment (CLCE)
- Cabinetized Power Distribution Center (CPDC)
- Cabinetized Remote Switching Center (CRSC)
- Cabinetized Miscellaneous Equipment (CMIS)
- Cabinetized Remote Miscellaneous Equipment (CRME)

PEC	Suffixes	Name
NTRX54	BA	Fan Power Control Module

### Common procedures

None

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

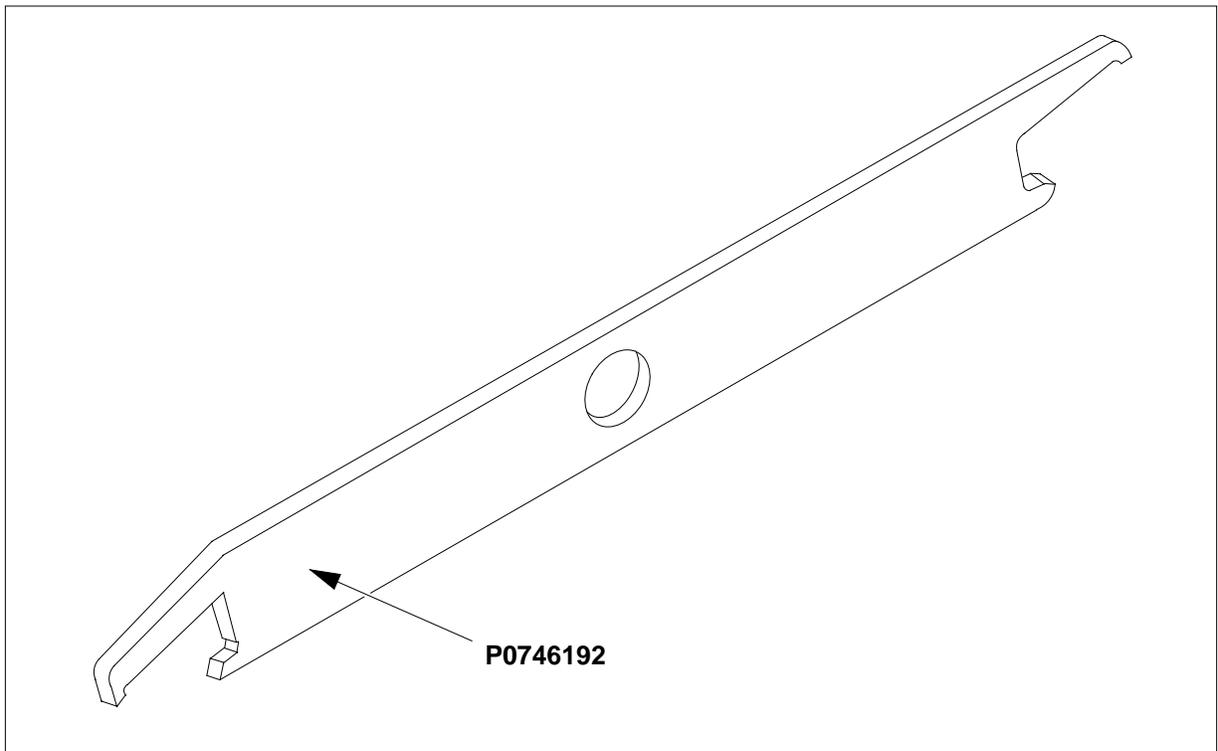
## **NTRX54** **in an RSC MSP** (continued)

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from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

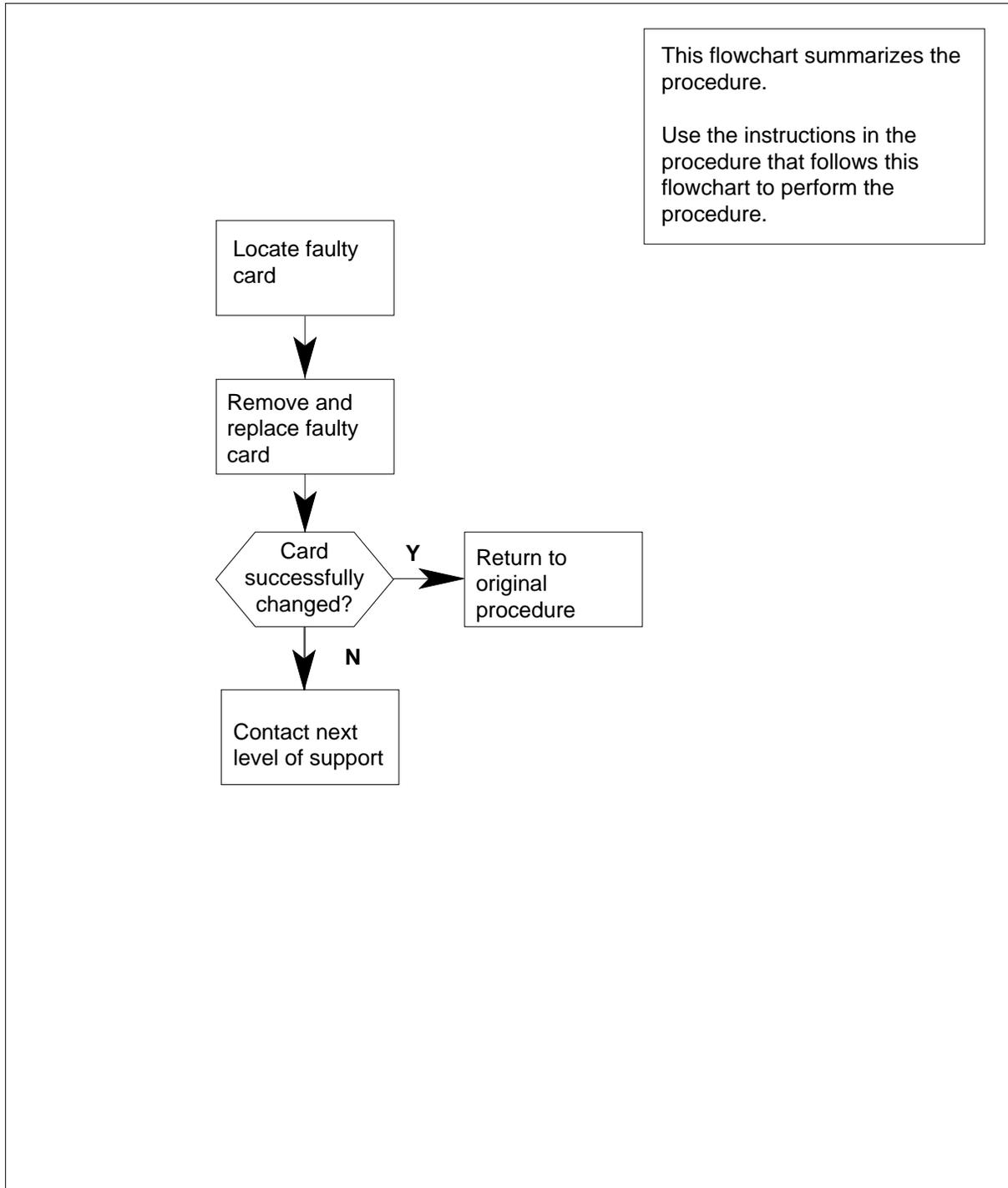
### **Connector removal tool**



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.

**NTRX54**  
**in an RSC MSP** (continued)

**Summary of card replacement procedure for an NTRX54 card in RSC MSP**



## NTRX54 in an RSC MSP (continued)

### Replacing an NTRX54 card in RSCE MSP

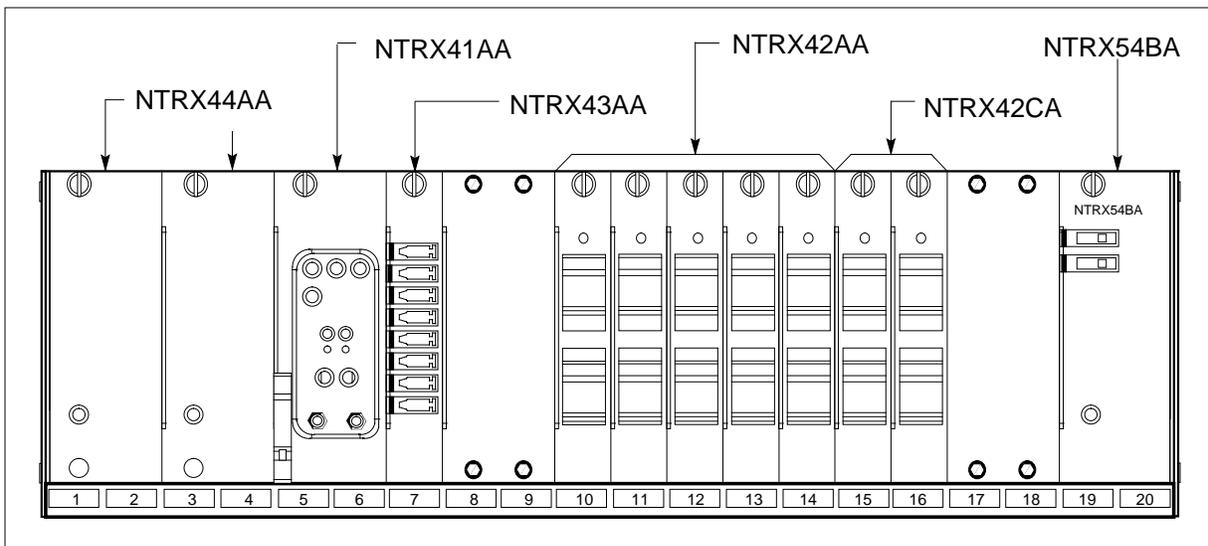
#### At your current location

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At the front panel of the cabinet

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



4



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

**NTRX54**  
**in an RSC MSP** (continued)**DANGER****Risk of injury from high energy levels, equipment damage**

Take these precautions when removing or inserting a card:

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

**DANGER****Heat damage**

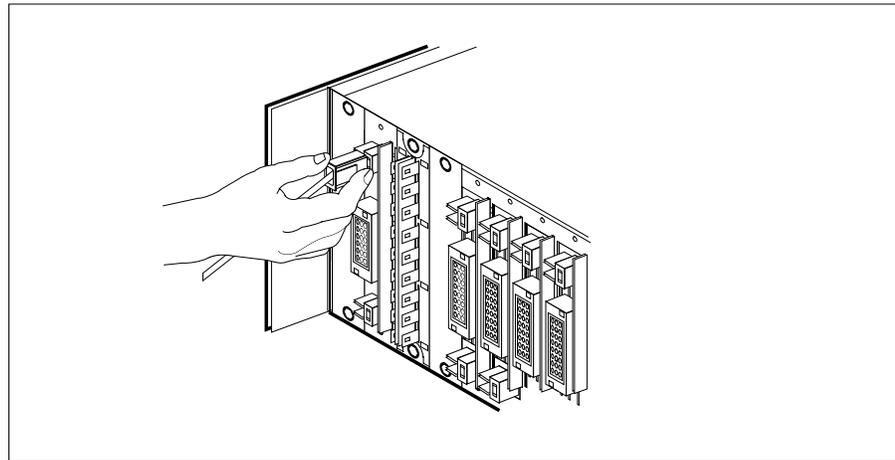
Avoid leaving this card out of service for more than 30 minutes. Extensive damage to the entire cabinet may occur if cooling is lost for more than 30 minutes.

Put on a wrist strap.

- 5 Remove the two fuses in the fan power control module.

**At the rear panel of the cabinet**

- 6 Remove the NTRX54 circuit card as shown in the following figures.
  - a Open the rear doors of the cabinet and locate the circuit card, it will be in slots 19 and 20.
  - b Note the wire color and location to facilitate re-connection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black

## NTRX54 in an RSC MSP (continued)

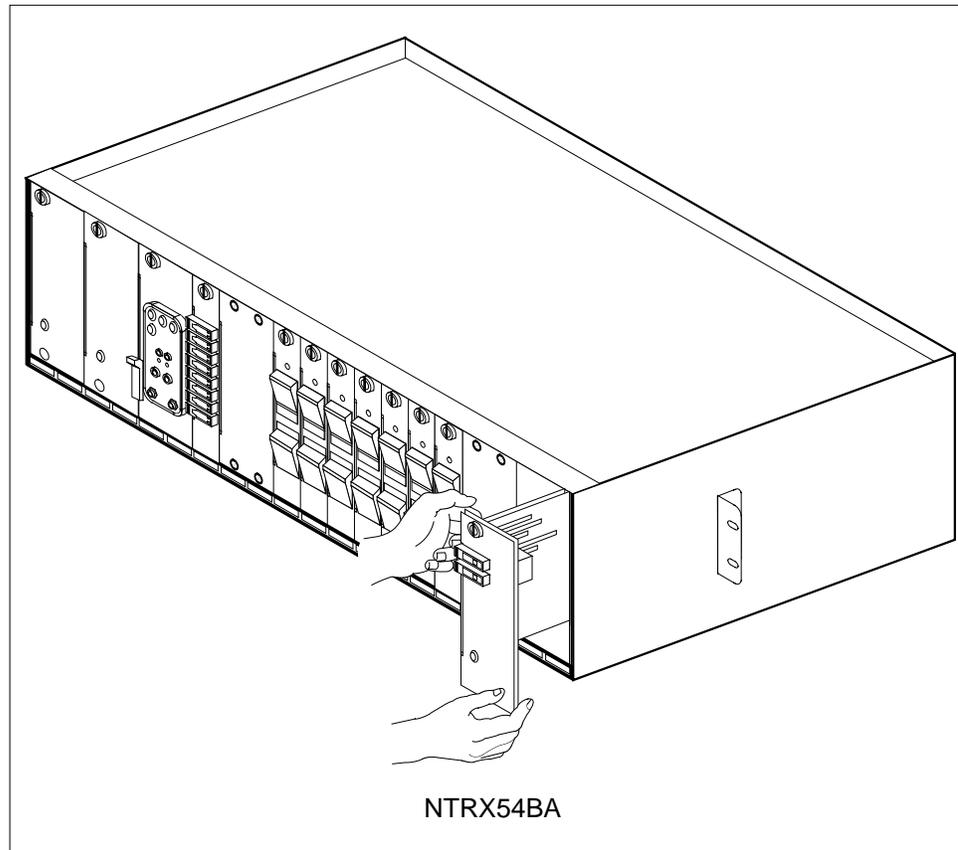
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power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

### ***At the front panel of the cabinet***

- 7 Remove the NTRX54 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.

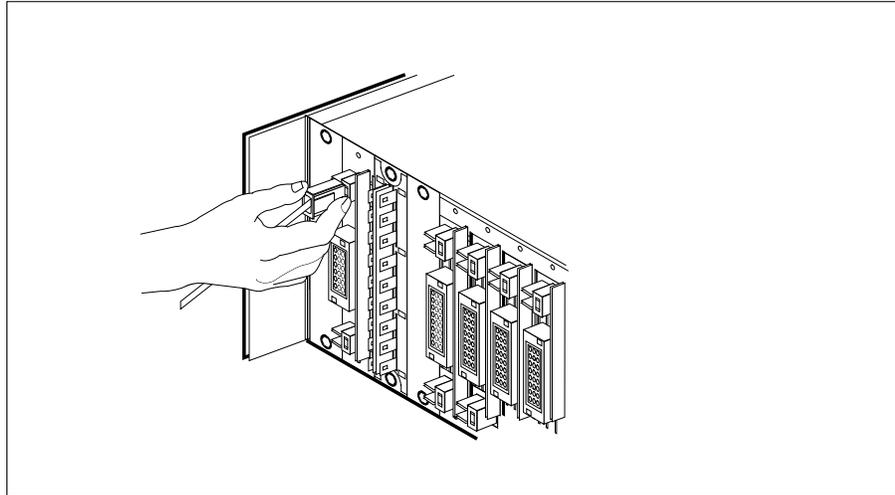


- 8 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

## NTRX54 in an RSC MSP (end)

### *At the rear panel of the cabinet*

- 9 Locate the replaced circuit card and re-attach the power connectors, as noted in step 6.



- 10 Replace the two fuses removed in step 5.

If fuses	Do
do not blow	step 11
blow (protrude)	step 13

- 11 Send any faulty cards for repair according to local procedure.
- 12 Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 14.
- 13 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 14 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTRX54 in an RSC-S (DS-1) Model B MSP**

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### **Application**

Use this procedure to replace an NTRX54 card in a modular supervisorb(MSP) located in a

- cabinetized extension module (CEXT)
- cabinetized line concentrating equipment (CLCE)
- cabinetized line module ISDN (CLMI)
- cabinetized power distribution center (CPDC)
- cabinetized remote switching center (CRSC)
- cabinetized miscellaneous equipment (CMIS)

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTRX54	BA	Fan Power Control Module

### **Common procedures**

None

### **Action**

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged

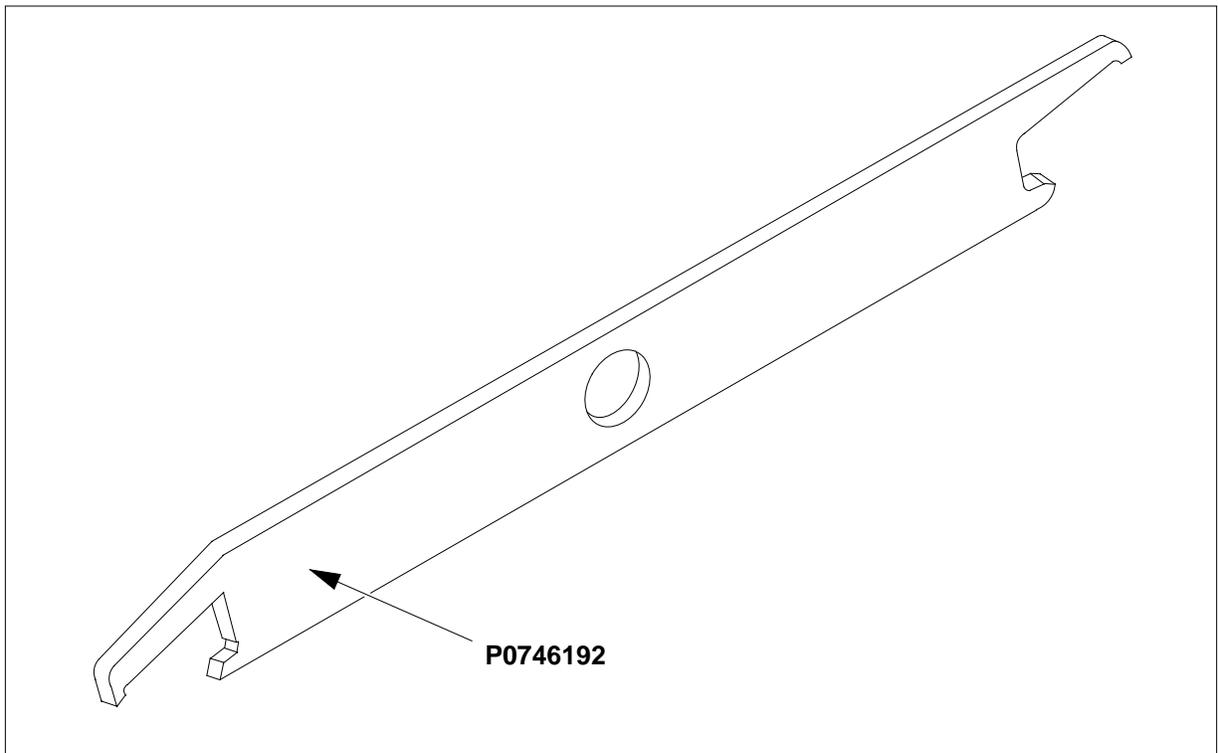
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**NTRX54**  
**in an RSC-S (DS-1) Model B MSP** (continued)

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from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

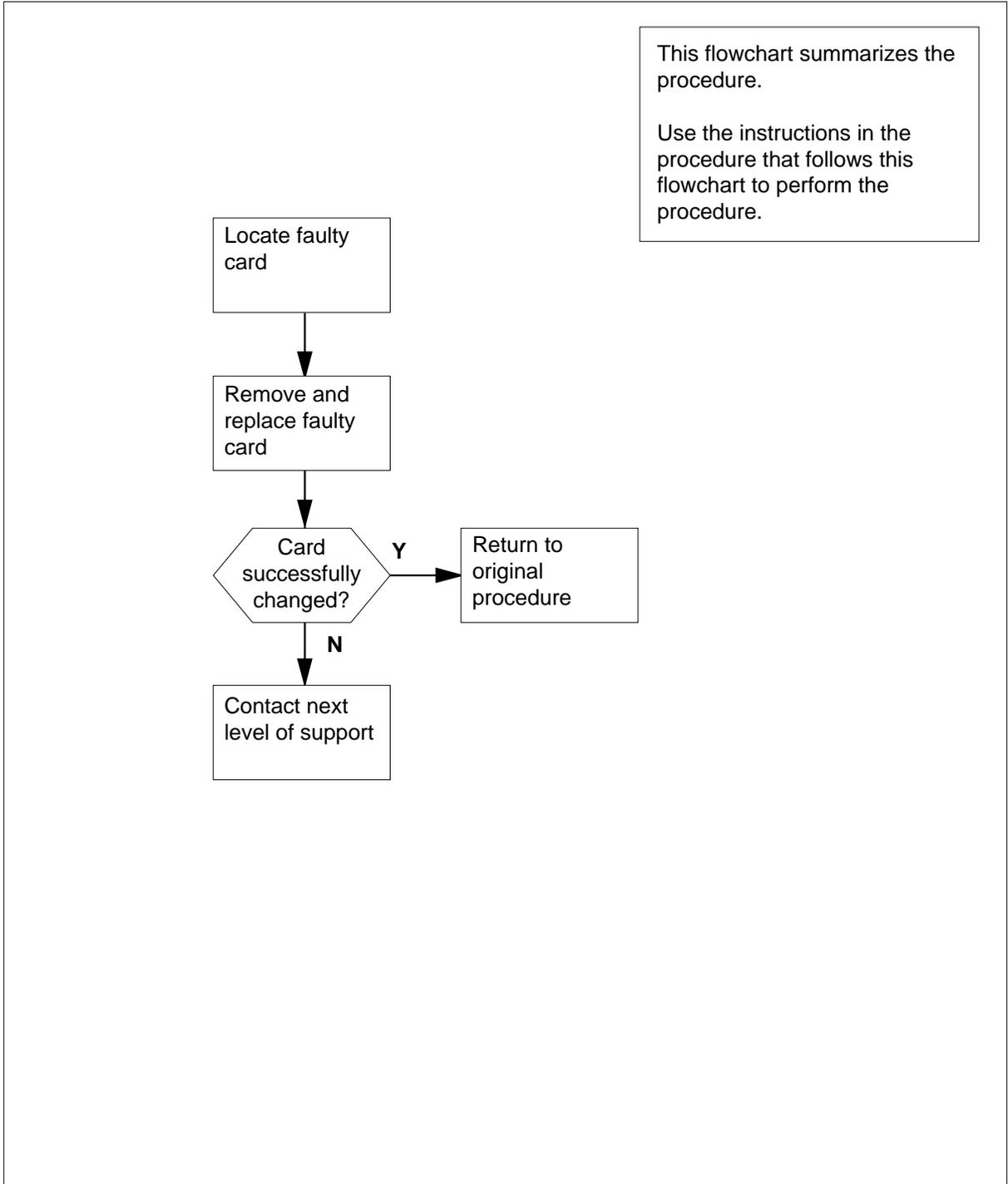
Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required due to limited access to the connectors.

**Connector removal tool**

The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

## NTRX54 in an RSC-S (DS-1) Model B MSP (continued)

### Summary of card replacement procedure for an NTRX54 card in RSC-S MSP



## NTRX54 in an RSC-S (DS-1) Model B MSP (continued)

### Replacing an NTRX54 card in RSC-S MSP

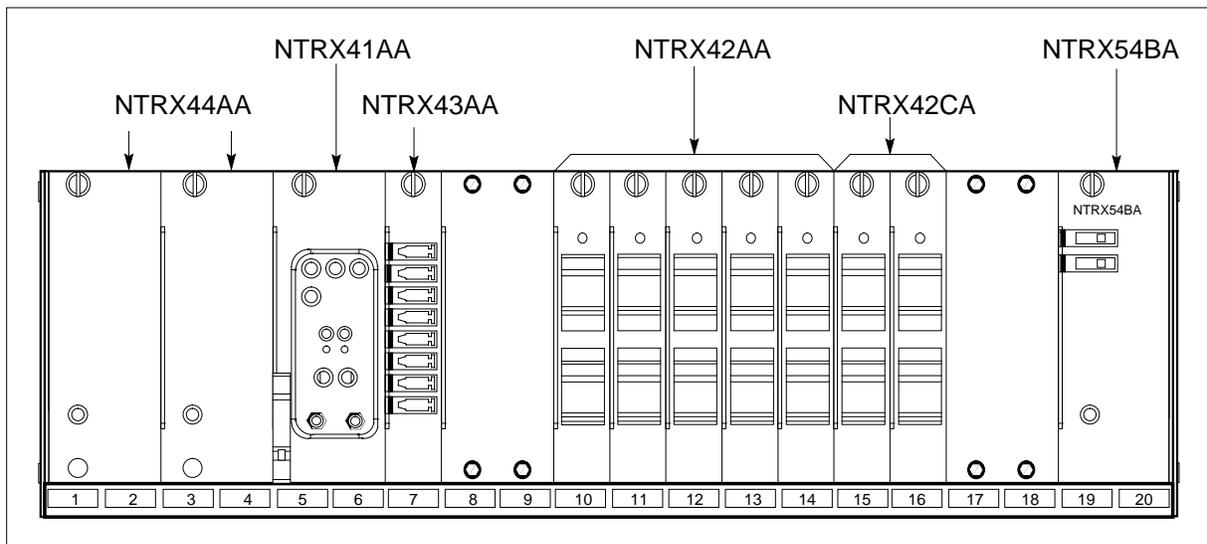
#### *At your Current Location*

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

**Note:** The illustrations in this card replacement procedure are for the MSP shelf in an CRSC or CEXT module. The circuit breaker designation may vary depending on the type of cabinet you are working in.



4



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

## NTRX54 in an RSC-S (DS-1) Model B MSP (continued)



### DANGER

**Risk of injury from high energy levels, equipment damage**

Take these precautions when removing or inserting a card:

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



### DANGER

**Heat damage**

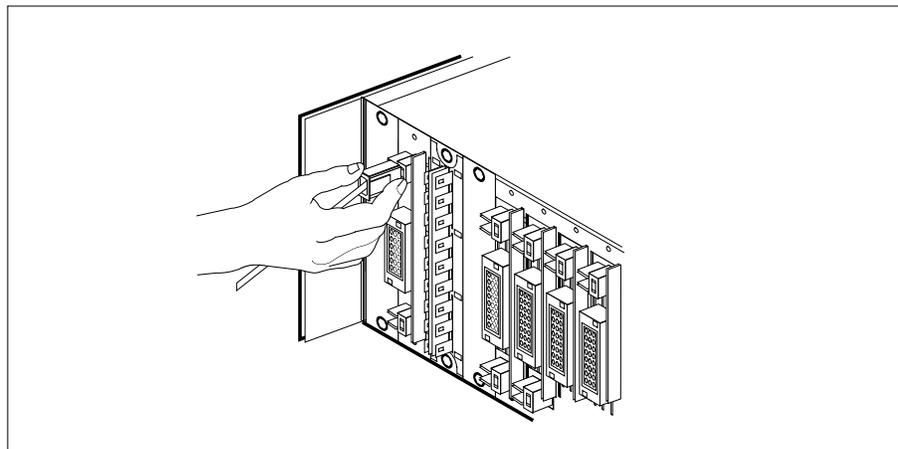
Avoid leaving this card out of service for more than 30 minutes. Extensive damage to the entire cabinet may occur if cooling is lost for more than 30 minutes.

Put on a wrist strap.

- 5 Remove the two fuses in the fan power control module.

### ***At the rear panel of the cabinet***

- 6 Remove the NTRX54 circuit card as shown in the following figures.
  - a Open the rear doors of the cabinet and locate the circuit card, it will be in slots 19 and 20.
  - b Note the wire color and location to facilitate re-connection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black

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## NTRX54

### in an RSC-S (DS-1) Model B MSP (continued)

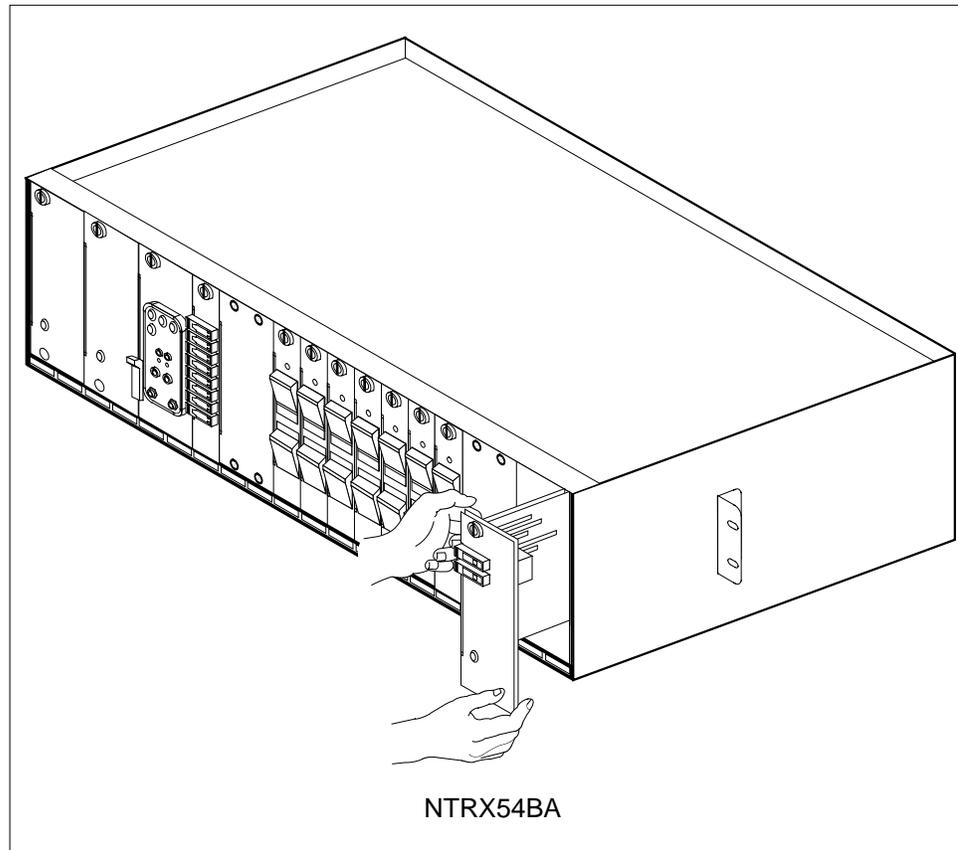
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power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

#### ***At the front panel of the cabinet***

- 7 Remove the NTRX54 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.



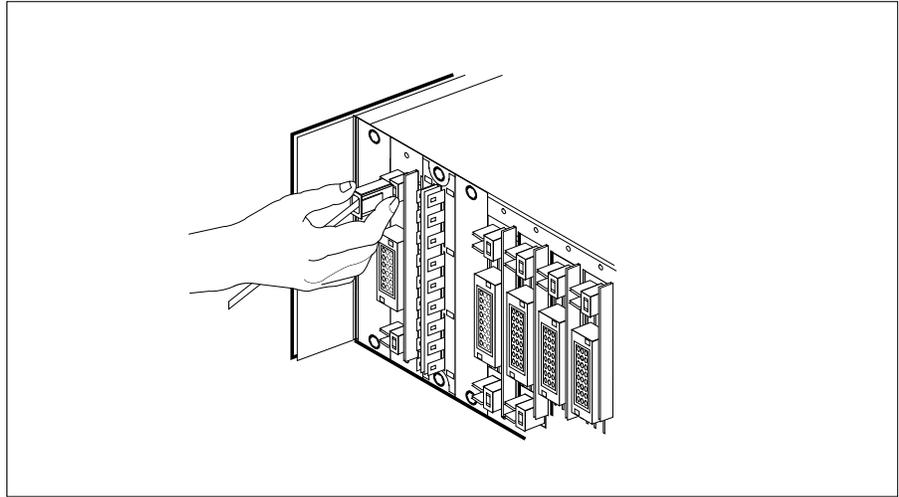
- 8 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

## **NTRX54** **in an RSC-S (DS-1) Model B MSP (end)**

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***At the rear panel of the cabinet***

- 9** Locate the replaced circuit card and re-attach the power connectors, as noted in step 6.



- 10** Replace the two fuses removed in step 5.

---

<b>If fuses</b>	<b>Do</b>
do not blow	step 11
blow (protrude)	step 13

---

- 11** Send any faulty cards for repair according to local procedure.
- 12** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 14.
- 13** Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 14** You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## NTRX54 in an SMA2 MSP

### Application

Use this procedure to replace a NTRX54 card in a modular supervisory panel (MSP) located in a:

- cabinetized multi-vendor interface (CMVI)
- multi-vendor interface equipment frame (MVIE)
- multi-vendor double density frame (MVDD)

PEC	Suffixes	Name
NTRX54	BA	Fan Power Control Module

### Common procedures

The common returning a card procedure is referenced in this procedure.

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

### Action

A connector removal tool is available to facilitate removal of the AMP Faston receptacles from the power input and output connectors of the MSP modules. This tool comes in two lengths: P0746192 152 mm (6 in.), and P0747552 254 mm (10 in.). The shorter tool is used when access to the rear of the MSP is very limited. An example of limited access is, MSP modules located directly behind the cabinet bulkhead.

This tool is approximately 2 mm (.090 in.) thick and 17 mm (.65 in.) wide, with a jaw-like cut-out at each end. The cut-out profile conforms to the shape of the Faston receptacle. The shorter tip of each profile is used to position the receptacle in the tool.

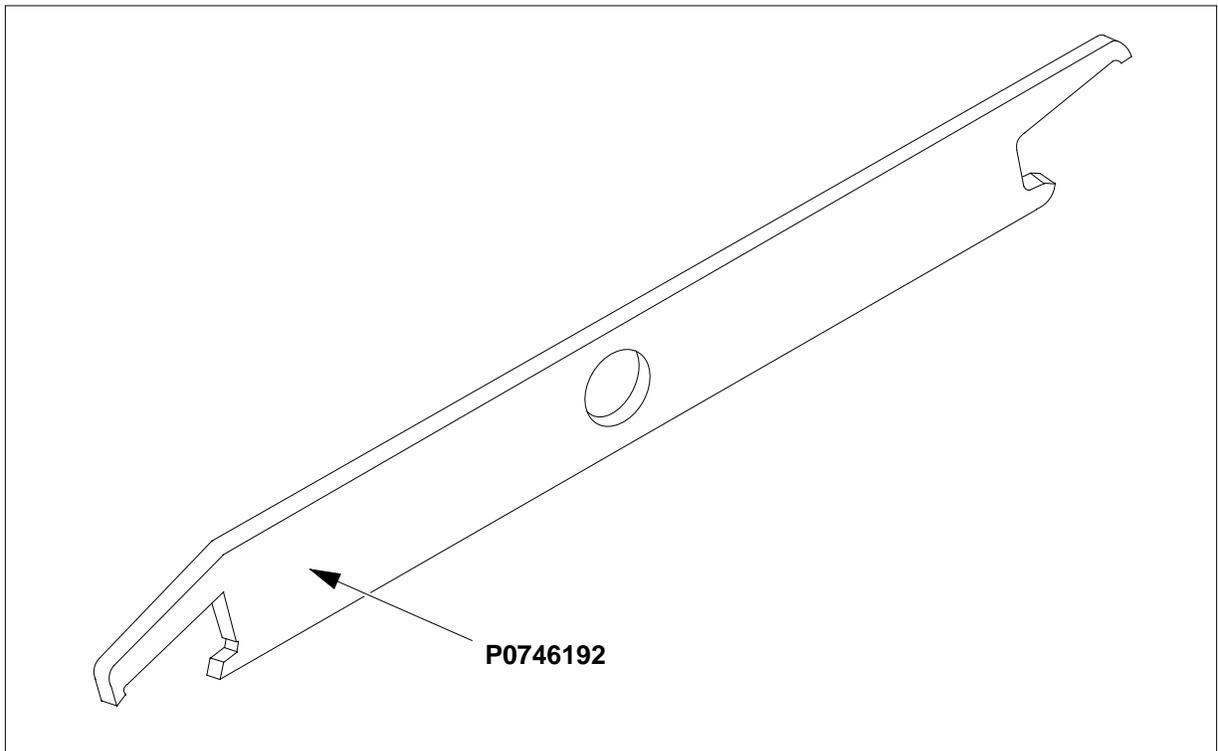
The first meeting point of the tool serves as the pivot point. By rotating the tool around this pivot point, the longer tip of the profile which has a hook on its end, is engaged with the action-arm of the power connector. As the action-arm of the connector is depressed, the receptacle is disengaged from the connector tab. The receptacle is removed by pulling the tool with the receptacle trapped in its jaw, away from the connector. The tool is disengaged from the receptacle by rotating the tool's hook off the action-arm of the receptacle.

## **NTRX54** **in an SMA2 MSP (continued)**

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Although the shape of the cut-out is the same on each end of the tool, the orientation of the profile is off by 15 degrees. This difference allows for the use of the tool at different angles, which may be required because of limited access to the connectors.

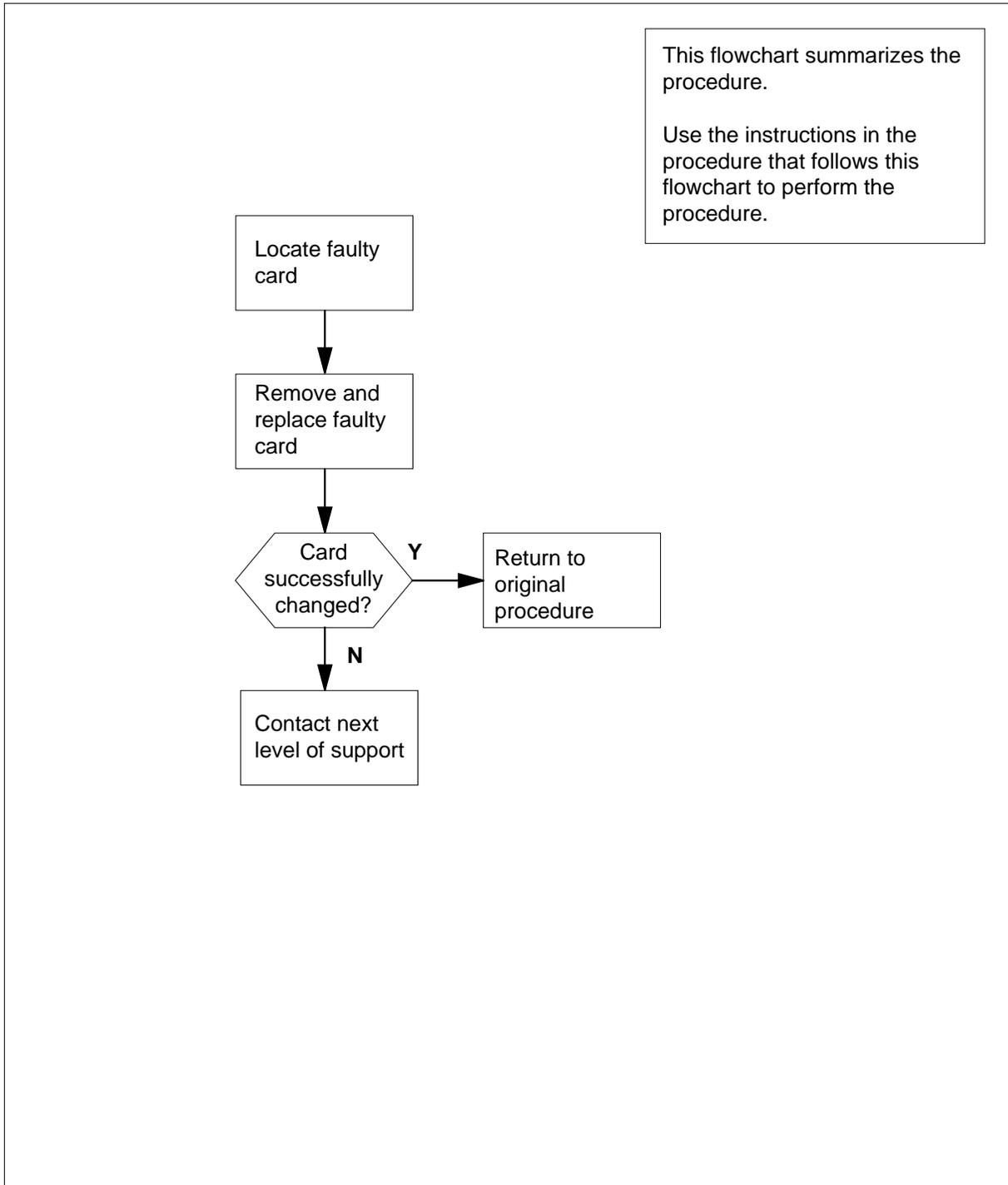
### **Connector removal tool**



The following flowchart is a summary of this procedure. Use the instructions in the step-action table that follows the flowchart to perform the procedure.

**NTRX54**  
**in an SMA2 MSP** (continued)

**Summary of card replacement procedure for an NTRX54 card in an SMA2 MSP**



## NTRX54 in an SMA2 MSP (continued)

### Replacing an NTRX54 card in an SMA2 MSP

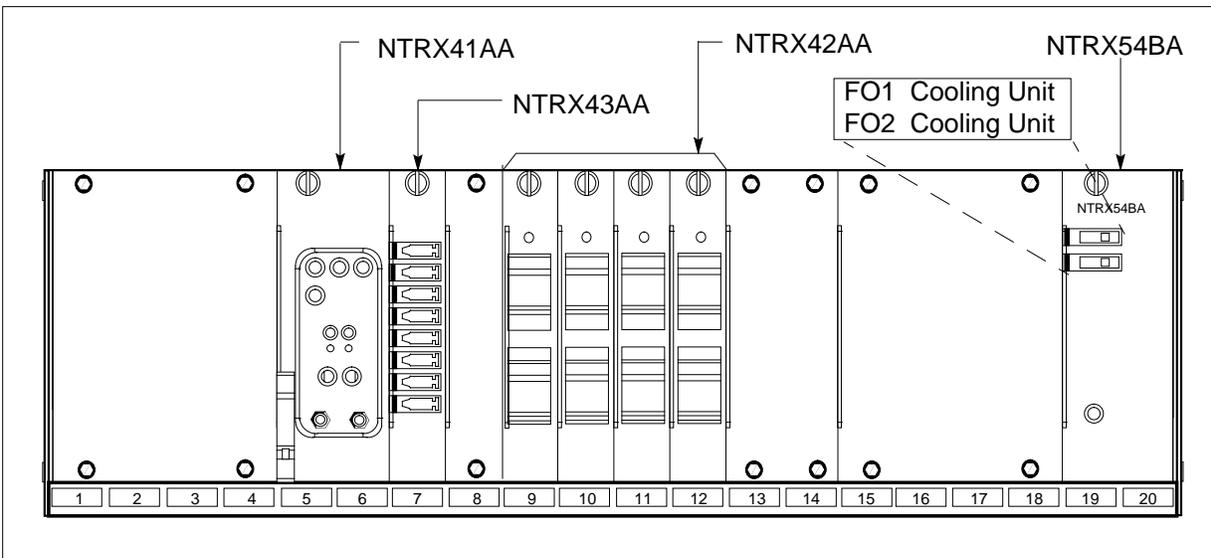
#### *At your current location*

- 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 Obtain a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the front panel of the frame or cabinet*

- 3 Open the front cover of the MSP. Release the two cover latches and swing the cover down to the open position.

#### MSP



4



#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**  
Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the modular supervisory panel (MSP). This protects the equipment against damage caused by static electricity.

## NTRX54 in an SMA2 MSP (continued)



### DANGER

**Risk of injury from high energy levels, equipment damage**

Take these precautions when removing or inserting a card:

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



### WARNING

**Heat damage**

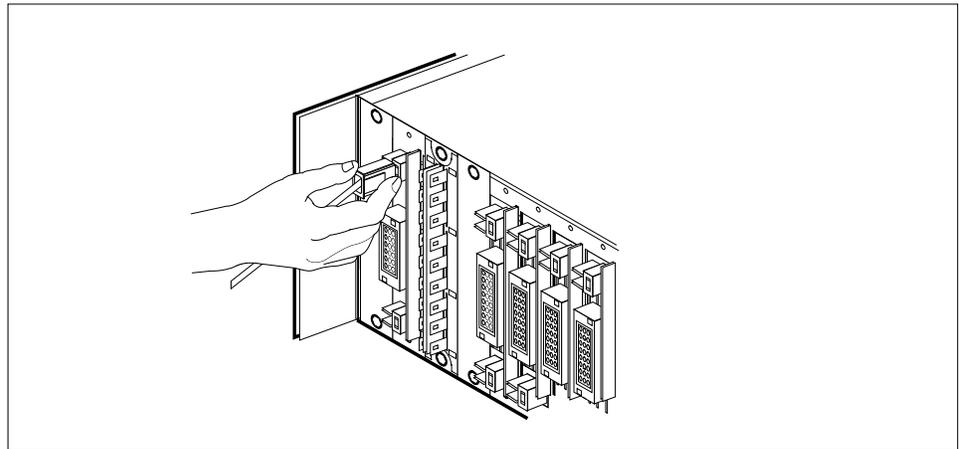
Avoid leaving this card out of service for more than 30 minutes. Extensive damage to the entire cabinet may occur if cooling is lost for more than 30 minutes.

Put on a wrist strap.

- 5 Remove the two fuses in the fan power control module.

### ***At the rear panel of the frame or cabinet***

- 6 Remove the NTRX54 circuit card as shown in the following figures.
  - a Open the rear doors of the cabinet and locate the circuit card, it will be in slots 19 and 20.
  - b Note the wire color and location to facilitate re-connection.



- c Using the connector removal tool, manually disconnect the power connectors to the circuit card. Working from the bottom of the MSP shelf to the top of the MSP shelf, manually disconnect the smaller black power connectors located below the larger blue power connector. Manually disconnect the large blue power connector. Disconnect the smaller black

## NTRX54 in an SMA2 MSP (continued)

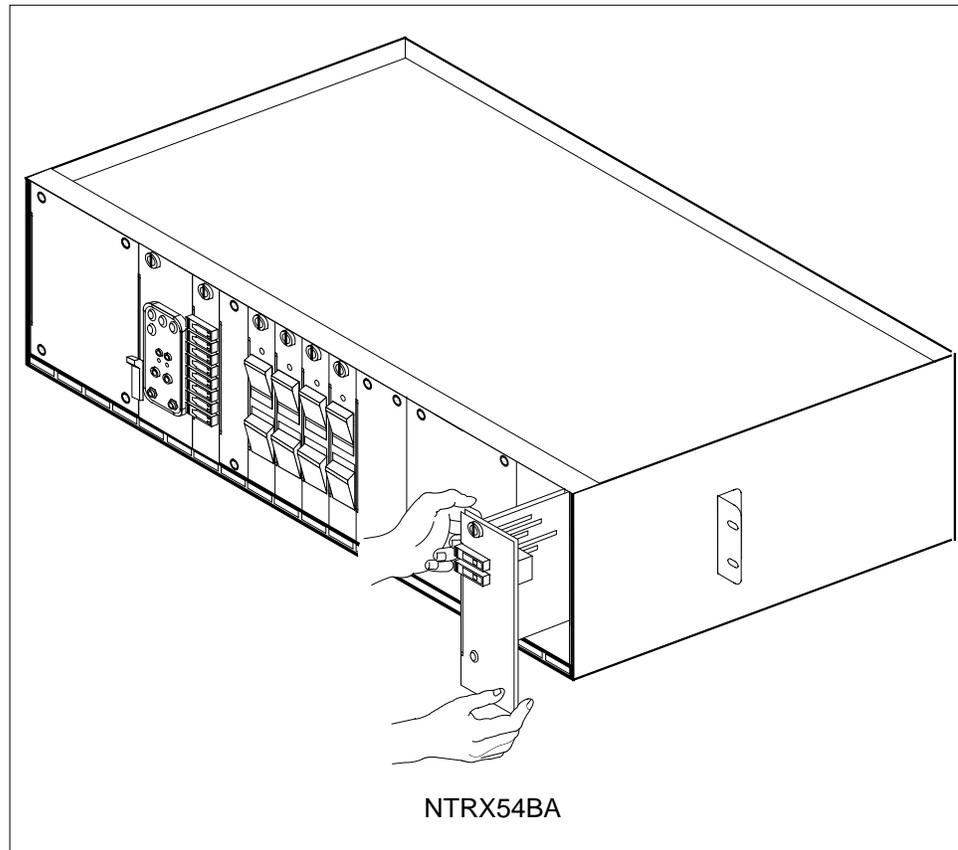
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power connectors located above the large blue power connector. Ensure you disconnect the black connectors *before* removing the circuit card.

- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

### ***At the front panel of the frame or cabinet***

- 7 Remove the NTRX54 card.
  - a Disengage the knurled thumbscrew at the top of the card.
  - b Gently pull the card towards you until it clears the shelf.

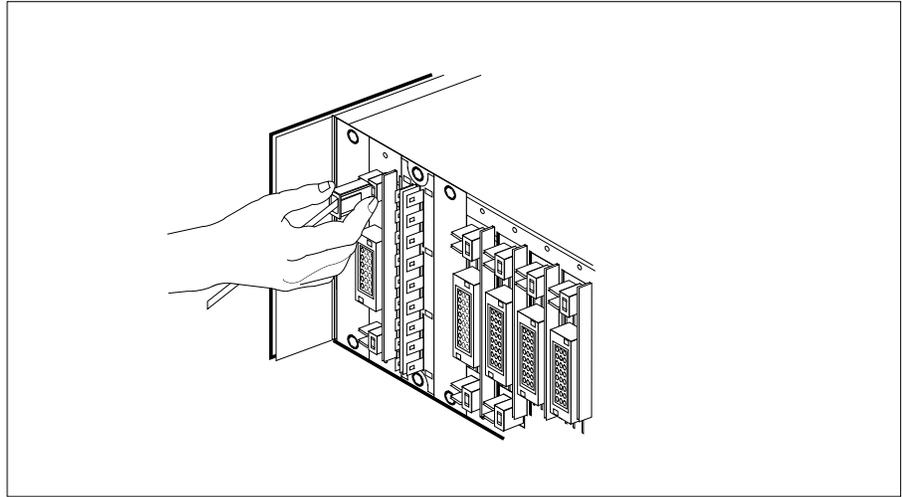


- 8 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
  - a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the knurled thumbscrew at the top of the circuit card.

## NTRX54 in an SMA2 MSP (end)

### *At the rear panel of the frame or cabinet*

- 9 Locate the replaced circuit card and re-attach the power connectors, as noted in step 6.



- 10 Replace the two fuses removed in step 5.

If fuses	Do
do not blow	step 11
blow (protrude)	step 12

- 11 Go to the common returning a card procedure in this document.  
Go to step 13.
- 12 Obtain further assistance in replacing this card by contacting the personnel responsible for the next higher level of support.
- 13 You have successfully completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTRX66**  
**MSP**

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**Application**

Use this procedure to replace NTRX66 card in an MSP.

PEC	Suffix	Name
NTRX66	AA	Fan Alarm Module

**Common procedures**

None

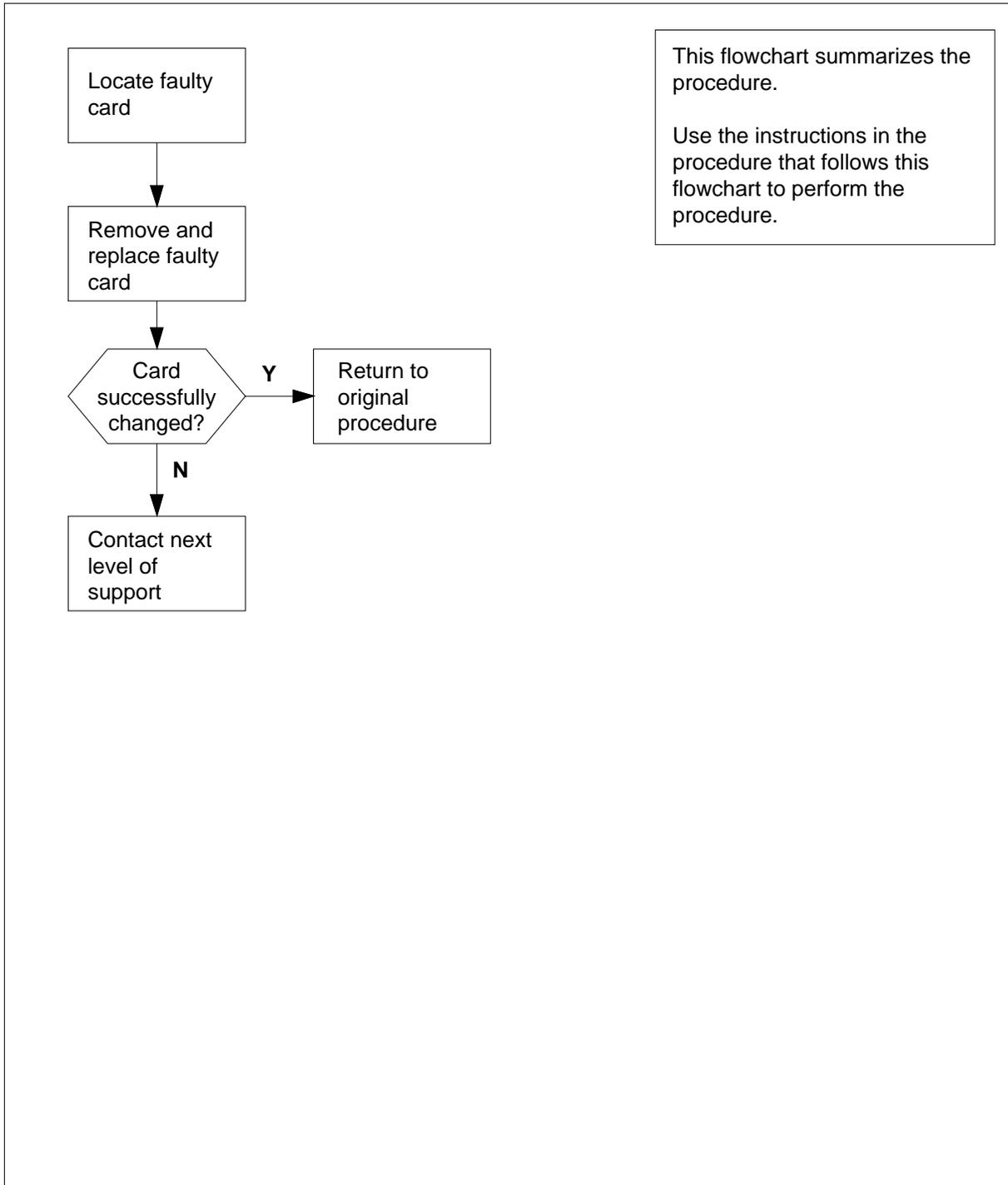
**Action**

None

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

**NTRX66**  
**MSP** (continued)

**Summary of card replacement procedure for an NTRX66 card in an MSP**



## NTRX66

### MSP (continued)

#### Replacing an NTRX66 in an MSP

##### *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 Get a replacement card. Ensure that the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

##### *At the front of the MSP*

3



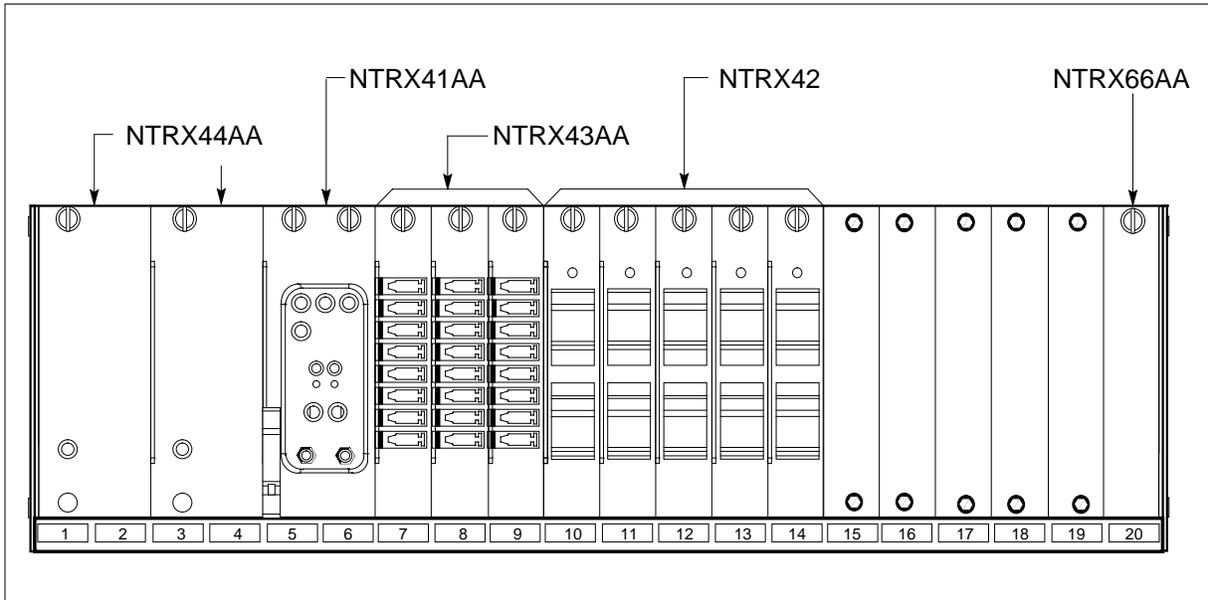
#### **DANGER**

**Risk of injury from high energy levels, static electricity damage**

Wear a wrist strap connected to a wrist strap grounding point.

This protects the equipment against damage caused by static electricity.

Open the front cover of the MSP by pulling outward firmly at the finger holes provided and swing the cover down to the open position.



**NTRX66**  
**MSP** (continued)

4



**DANGER**

**Risk of injury from high energy levels, equipment damage**  
Take these precautions when removing or inserting a card.  
Do not apply direct pressure to the components and do not force the cards into the slots.

Put on a wrist strap.

*At the rear of the MSP*

5

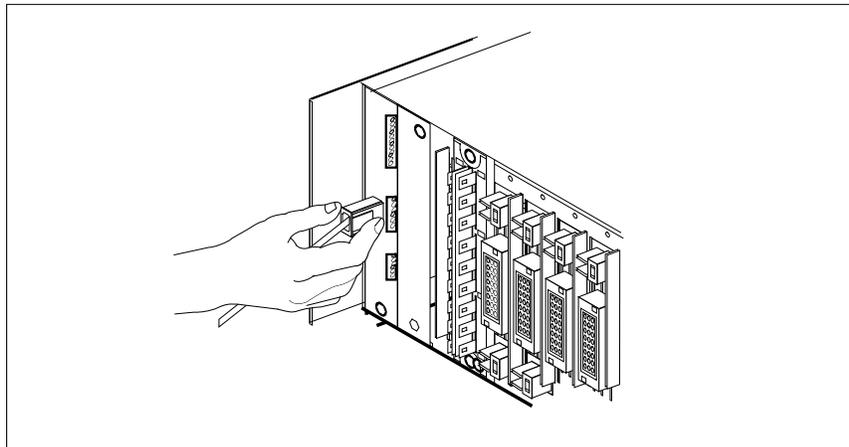


**DANGER**

**Risk of injury from high energy levels, voltage present**  
Do not insert metallic objects into the black connectors.  
Voltage is present and equipment damage could result.

Disconnect the NTRX66 circuit card as shown in the following figure.

- a Swing the frame out and locate the back of the circuit card to be replaced. The circuit card is in slot 20.
- b Note the wire color and location to facilitate reconnection.



- c Manually disconnect all connectors from the circuit card.
- d Although the connectors have voltage present on them, they are insulated. Secure the connectors to the power-connector bundle with a line-tie until it is time to reconnect them.

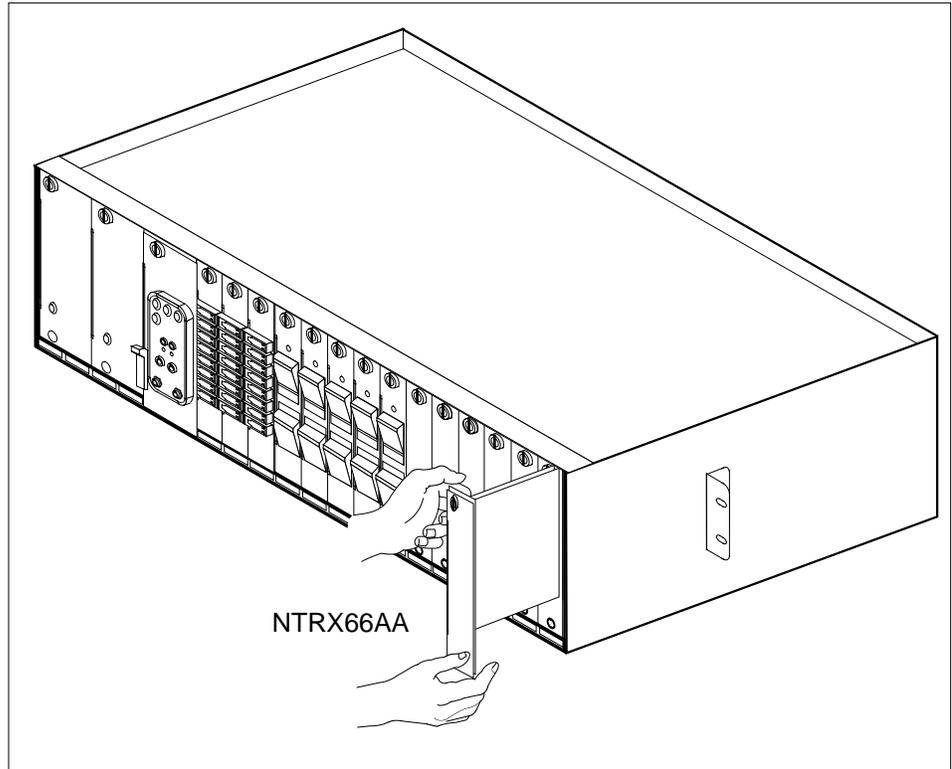
## **NTRX66**

### **MSP (continued)**

---

#### ***At the front of the MSP***

- 6 Remove the NTRX66 as shown in the following figure.



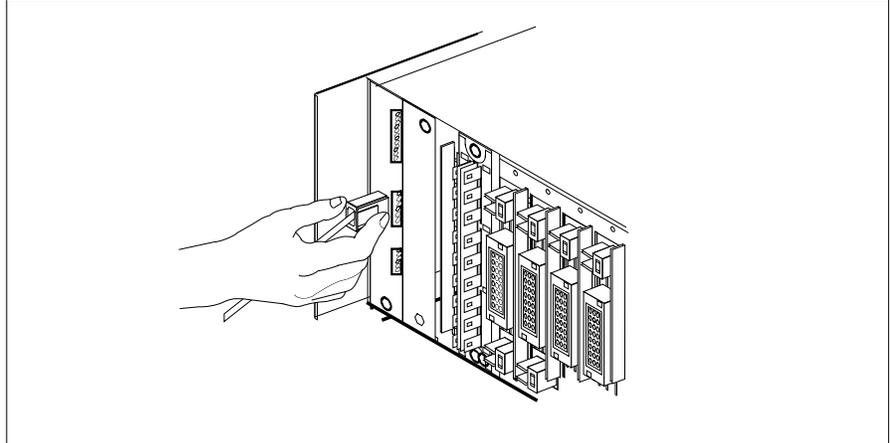
- a Disengage the captive screw at the top of the circuit card.
  - b Gently pull the circuit card towards you until it clears the shelf.
- 7 Ensure the replacement circuit card has the same PEC, including suffix, as the circuit card just removed.
- a Align the circuit card with the slots in the shelf and gently slide the circuit card into the shelf.
  - b Gently but firmly seat the circuit card.
  - c Tighten the captive screw at the top of the circuit card.

#### ***At the rear of the MSP***

- 8 Locate the replaced circuit card and reattach the connectors, as noted in step 5.

**NTRX66**  
**MSP (end)**

---



- 9** Send any faulty cards for repair according to local procedure.
- 10** Record the date the card was replaced, the serial number of the card, and the symptoms that prompted replacement of the card. Go to step 11.
- 11** You have completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTTR46 in an RLD**

---

### **Application**

Use this procedure to replace an NTTR46 in a Star Remote Module Equipment (SRME) cabinet or Star Remote Module Outside (SRMO) cabinet as identified in the following table.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTTR46	AA	ac to dc rectifier

### **Common procedures**

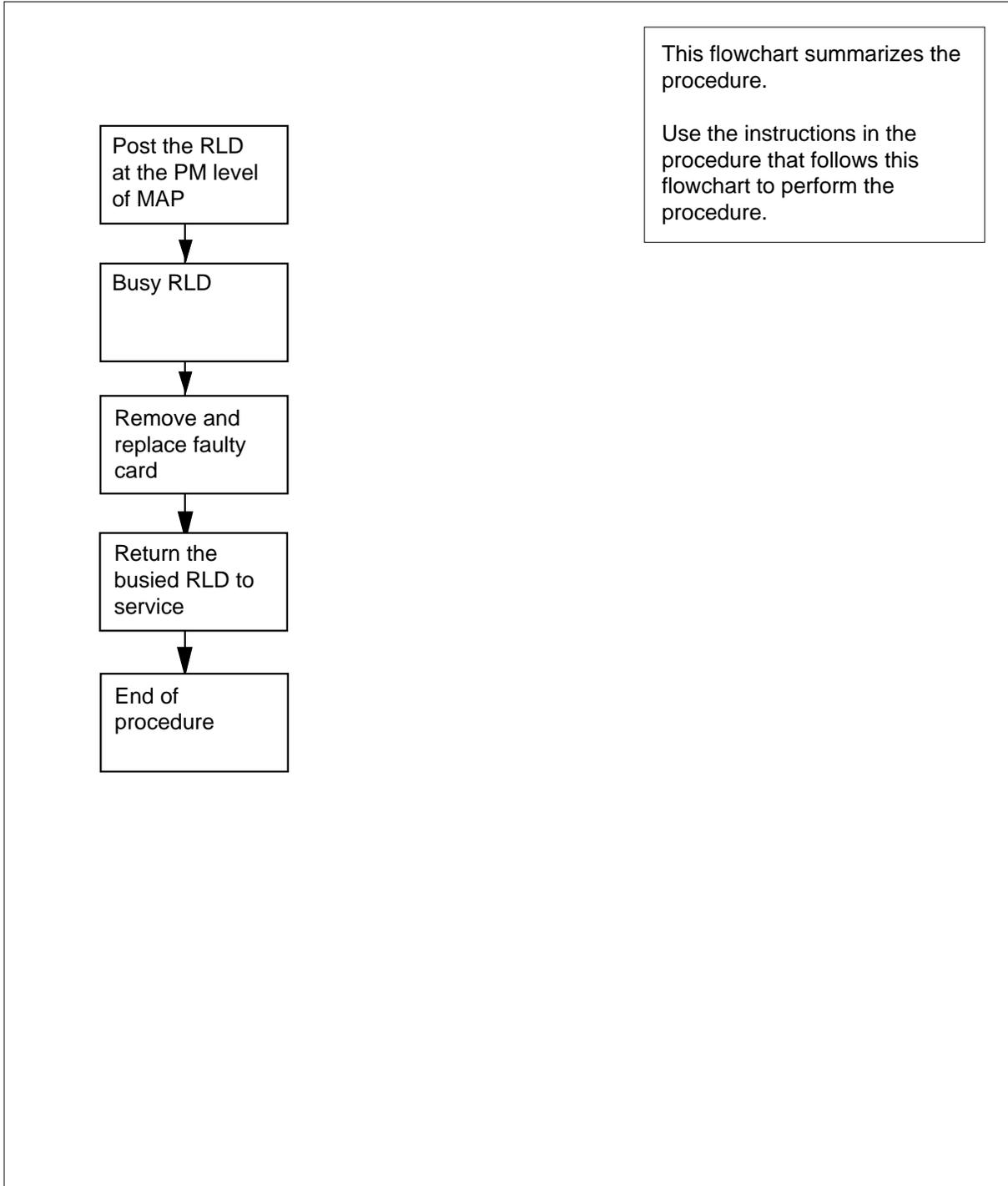
No common procedures are referenced in this procedure.

### **Action**

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

**NTTR46**  
**in an RLD (continued)**

**Summary of replacing an NTTR46 in an RLD**



## NTTR46 in an RLD (continued)

---

### Replacing an NTTR46 in an RLD

#### *At your current location:*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 To post the Star Hub the RLD is connected to, type  
**>MAPCI;MTC;PM;POST STAR site frame unit**  
and press the Enter key.

*where*

**site**  
is the name of the STAR site

**frame**  
is the frame number of the STAR (0 to 511)

**unit**  
is 0 for the STAR

*Example of a MAP display:*

```
          SysB      ManB      OffL      CBsy      ISTb      InSv
          PM        0        0        0        0        1        130
          STAR      0        0        0        0        1        10
STAR  Reml  OO O ISTb  Links_OOS: CSide 0 PSide 0
Unit 0: InSv Mtce TakeOver /RG: 0
Unit 1: SysB Mtce /RG: 0
DRwr:
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 Stby 1 InSv
. . . . .
```

- 4 To post the RLD, type  
**>RLD;POST rld\_no**  
and press the Enter key.

*where*

**rld\_no**  
is the RLD number to be posted

*Example of a MAP display:*

**NTTR46**  
**in an RLD (continued)**

```

                SysB      ManB      OffL      Cbsy      ISTb      InSv
          PM        4        0        10        3        3        3
          STAR      0        0        0        0        1        1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb                      /RG: 0
Unit 1:  ManB                      /RG: 0
Drwr:    11 11 11 11 11 22 22 22 22 22 33 33 33  RG
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -- -o ss -- -- -- -- -- -- -- --
REM9 RLD DRWR 8 SYSB                      LogDrwr: 16 17
BANK_0: Active                      Links_OOS: 2
BANK_1: Stby                          RLD BDch: -
    
```

- 5 To busy the posted RLD, type  
**>BSY DRWR**  
 and press the Enter key.

*Example of a MAP display:*

```

Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
    
```

- 6 To respond affirmatively to the confirmation request, type  
**>Y**  
 and press the Enter key.

**At the SRME or SRMO site**

- 7 The type of enclosure for the Star Module determines your next action.  
**Note:** Because the rectifier has failed, the RLD is on battery power. The batteries support subscribers for up to 8 hours, depending on traffic.

If the RLD is in an	Do
SRME (inside) cabinet	step 8
SRMO (outdoors) cabinet	step 10

- 8 Use a flat blade screwdriver and turn the three 1/4-turn fastening screws at the bottom of the cover. Hold the cover by the left and right sides, lift up, and pull the cover towards you. Set the cover against a vertical surface with the inside facing out. This makes the equipment location diagram visible.

## NTTR46 in an RLD (continued)

---

9



### **DANGER**

#### **Static electricity damage**

Before removing the rectifier, put on a wrist strap and connect it to the wrist strap grounding point in the top right corner of the TSS. This protects the equipment against damage caused by static electricity.

The rectifier is in the lower right corner of the telephony subsystem (TSS). Perform the following steps to remove and replace the rectifier:

- a To remove power from the rectifier, disconnect the gray power cord. Disconnect the dc output connector.
- b Use a Phillips screwdriver to remove the five screws that hold the rectifier in its holding bracket.
- c Remove the rectifier.
- d Install a replacement rectifier with one of the same PEC and suffix.
- e Use a Phillips screwdriver to install and tighten the screws to the rectifier holding bracket.
- f Connect the dc output connector that was disconnected in step a.a
- g To supply power to the rectifier, connect the ac supply cable that was disconnected in step a.a
- h Go to step 13.

10 Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm. Use a flat blade screwdriver to unscrew the two large knurled screws at the left side of the inside TSS cover.

11



### **DANGER**

#### **Static electricity damage**

Before removing the rectifier, put on a wrist strap and connect it to the wrist strap grounding point in the top left corner of the TSS. This protects the equipment against damage caused by static electricity.

The rectifier is at the bottom center of the telephony subsystem (TSS) cover. Perform the following steps to remove and replace the rectifier.

- a Remove power from the rectifier by setting the Rectifier breaker on the ac panel to the OFF position. Disconnect the rectifier output connector. Disconnect the power cord from the rectifier. Use a 7mm nutdriver to loosen the nut that secures the ground strap. Remove the ground strap.
- b Open the TSS cover.

---

## NTTR46 in an RLD (end)

---

- c Use a Phillips screwdriver to loosen and remove the three screws that hold the rectifier to the TSS cover.
  - d Remove the rectifier.
  - e Install a replacement rectifier with one of the same PEC and suffix.
  - f Use a Phillips screwdriver to tighten the three screws that hold the rectifier to the TSS cover.
  - g Close the TSS cover.
  - h Install the ground strap and nut. Tighten the nut with a 7mm nutdriver. Connect the rectifier output connector and the power cord that were disconnected in step a.a
  - i Supply power to the rectifier by setting the Rectifier breaker on the ac panel to the ON position.
- 12 Open the TSS cover.
- 13 Note the condition of the indicator lights on the faceplate of the NTTR70AA Star Module control (SMC) card. Check that the Critical alarm light emitting diode (LED) is no longer lit. Also make sure the green LED on the rectifier is lit.
- 14 Close the TSS cover. Close and lock the SRMO front door.

### ***At the MAP terminal***

- 15 To return the RLD to service, type  
**>RTS DRWR**  
 and press the Enter key.

---

If the RTS	Do
passes	step 16
fails	step 18

- 16 Send any cards with faults for repair according to local procedure.
- 17 Record the following items in office records:
- date the card was replaced
  - serial number of the card
  - problems that prompted replacement of the card
- Go to step 19.
- 18 Get additional support for replacing this card by calling operating company personnel responsible for a higher level of support.
- 19 You have correctly completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTTR47 in an RLD**

---

### **Application**

Use this procedure to replace an NTTR47 in a remote line drawer (RLD) in Star Remote Module Outside (SRMO) as identified in the following table.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTTR47	AA	ac panel

### **Common procedures**

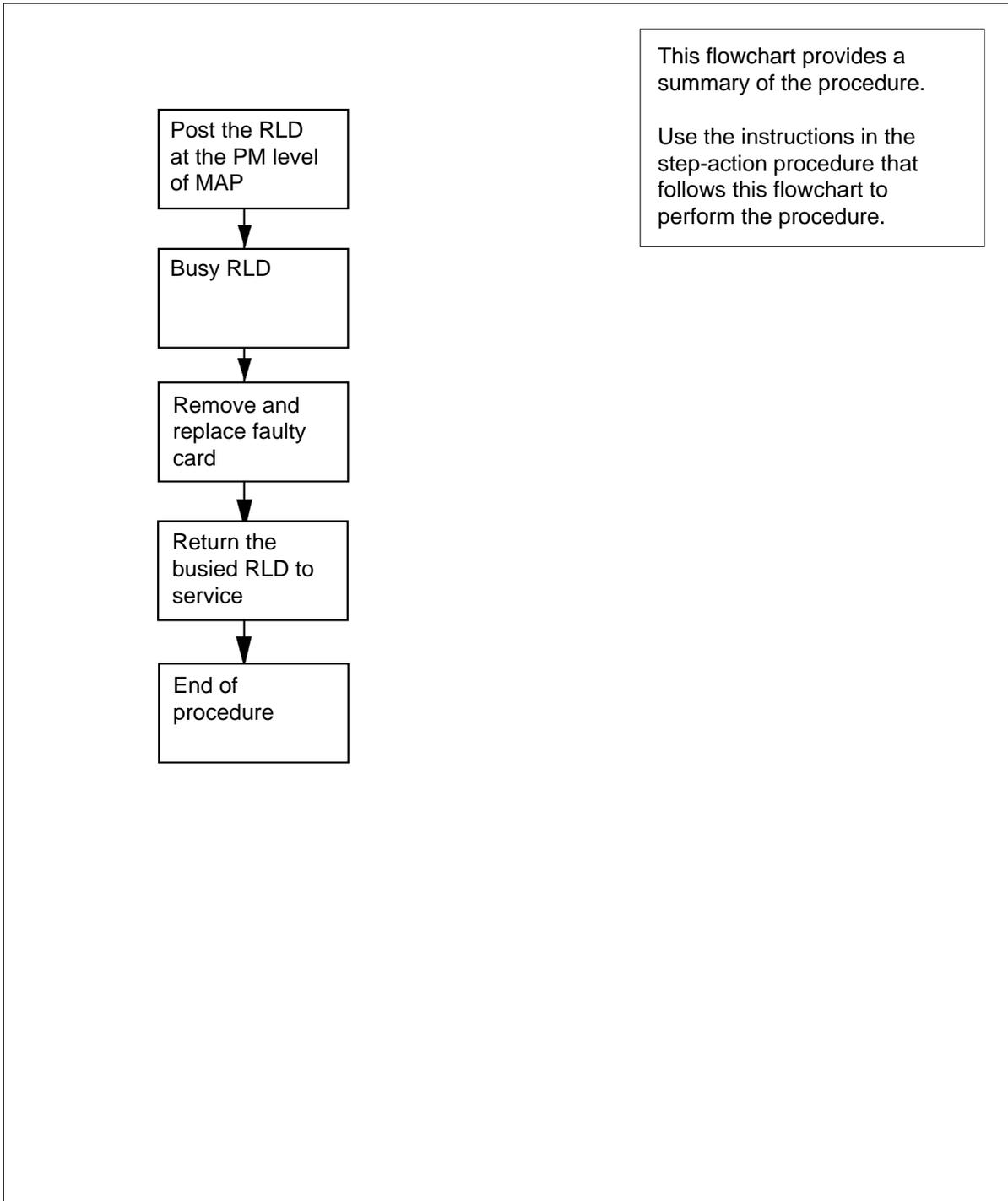
This procedure does not refer to any common procedures.

### **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.

**NTTR47**  
**in an RLD (continued)**

**Summary of replacing an NTTR47 in an RLD**



## NTTR47 in an RLD (continued)

---

### Replacing an NTTR47 in an RLD

#### At the current location

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### At the MAP display

- 3 To post the Star Hub the RLD is connected to, type  
**>MAPCI;MTC;PM;POST STAR site frame unit**  
and press the Enter key.

where

**site**

is the name of the STAR site

**frame**

is the frame number of the STAR (0 to 511)

**unit**

is 0 for the STAR

Example of a MAP display:

```
          SysB      ManB      OffL      CBsy      ISTb      InSv
          PM        0        0        0        0        1        130
          STAR      0        0        0        0        1        10
STAR      Reml  OO O  ISTb  Links_OOS: CSide 0 PSide 0
Unit 0:  InSv  Mtce  TakeOver  /RG: 0
Unit 1:  SysB  Mtce  /RG: 0
DRwr:    11 11 11 11 11 11 22 22 22 22 22 33 33 33  RG:
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Pref 0 InSv
.. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. Stby 1 InSv
```

- 4 To post the RLD, type  
**>RLD;POST rld\_no**  
and press the Enter key.

where

**rld\_no**

is the RLD number to be posted

Example of a MAP display:

**NTTR47**  
**in an RLD (continued)**

```

                SysB      ManB      OffL      Cbsy      ISTb      InSv
                PM        4          0          10         3          3
                STAR      0          0          0          0          1          1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb                      /RG: 0
Unit 1:  ManB                      /RG: 0          RG
Drwr:    11 11 11 11 11 22 22 22 22 22 33 33 33  Pref
0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby
1 InSv
MM .M -- -- -- -- -- -o ss -- -- -- -- -- -- -- -- -- --

REM9 RLD DRWR 8 SYSB          LogDrwr: 16 17
BANK_0: Active          Links_OOS: 2
BANK_1: Stby          RLD BDch: -
    
```

**5** To busy the posted RLD, type

**>BSY DRWR**

and press the Enter key.

*Example of a MAP display:*

```

Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
    
```

**6** To respond affirmatively to the confirmation request, type

**>Y**

and press the Enter key.

**At the SRMO site**

**7**



**WARNING**

**Static electricity damage**

Before removing the ac panel, put on a wrist strap and connect it to the wrist strap grounding point on the TSS. This protects the equipment against damage caused by static electricity.

## NTTR47 in an RLD (continued)

---

8



**DANGER**

**Risk of electrocution**

To eliminate the risk of electrical shock, remove external ac power to the SRMO cabinet before accessing the ac panel.

- Set the circuit breaker that supplies external ac power to the SRMO cabinet to the OFF position.
- 9 Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm by pulling the interlock switch out.
  - 10 Set the main and rectifier circuit breakers on the ac panel to the OFF position.
  - 11 Use a flat blade screwdriver to loosen the screw to open the ac panel. Swing the ac panel cover out and lift up to release the cover from the mounting bracket. Put the cover on the SRMO cabinet floor.
  - 12 Disconnect the main ac input load (L) wire that connects to CB1, the 16 A main circuit breaker. Loosen the locking screw at the bottom of the circuit breaker to release the wire.
  - 13 Disconnect the ac neutral cable from J3-1 (TB1) on the ac panel.
  - 14 Use a 7 mm nutdriver to loosen the ground wire nut. Remove the green and yellow ground wire from the ac panel (not the ac panel cover).
  - 15 Disconnect the ac panel output connectors J1 and J2.
  - 16 Use a 10 mm nutdriver to loosen the nut that secures the ac panel to the back wall of the SRMO cabinet. Remove the nut. Lift up on the ac panel to remove it from the mounting bracket.
  - 17 Install the replacement ac panel on the ac panel mounting bracket.
  - 18 Install the 10 mm nut that was removed in step 16. Use a 10 mm nutdriver to tighten the nut and secure the ac panel to the rear wall of the SRMO cabinet. Make sure the flat washer and lock washer are behind the nut and not behind the ac panel.
  - 19 Connect the ac panel output connectors J1 and J2.
  - 20 Install the ground wire. Use a 7 mm nutdriver to tighten the nut that secures the green and yellow ground wire to the ac panel.
  - 21 Connect the ac neutral cable to J3-1 (TB1) on the ac panel.
  - 22 Connect the main ac input load (L) wire to CB1, the 16 A main circuit breaker. Tighten the locking screw at the bottom of the circuit breaker to secure the wire.
  - 23 Install the ac panel cover. Use a flat blade screwdriver to tighten the screw to secure the ac panel.
  - 24 Close the circuit breaker that supplies external ac power to the SRMO cabinet.

---

## NTTR47 in an RLD (end)

---

- 25** Set the main and rectifier circuit breakers on the ac panel to the ON position.
- 26** Make sure the green power light emitting diode (LED) on the ac panel is lit.
- 27** Open the TSS front panel. Note the condition of the indicator lights on the faceplate of the NTTR70AA/AB Star Module control (SMC) card. Check that the Critical alarm LED is no longer lit.

---

If alarm LEDs on the SMC card are	Do
lit	step 32
not lit	step 28

- 28** Close the TSS front cover.

**At the MAP terminal**

- 29** To return the posted RLD to service, type  
>RTS DRWR  
and press the Enter key.

---

If RTS	Do
fails	step 32
passes	step 30

- 30** Send any faulty cards for repair according to local procedure.
- 31** Record the following items in office records:
- date the card was replaced
  - serial number of the card
  - problems that prompted replacement of the card
- Go to step 33.
- 32** Get additional support in replacing this card by contacting operating company personnel responsible for a higher level of support.
- 33** You have correctly completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTTR60 in a STAR**

---

### **Application**

Use this procedure to replace the following card in STAR.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTTR60	AA, BA	Ring Generator

### **Common procedures**

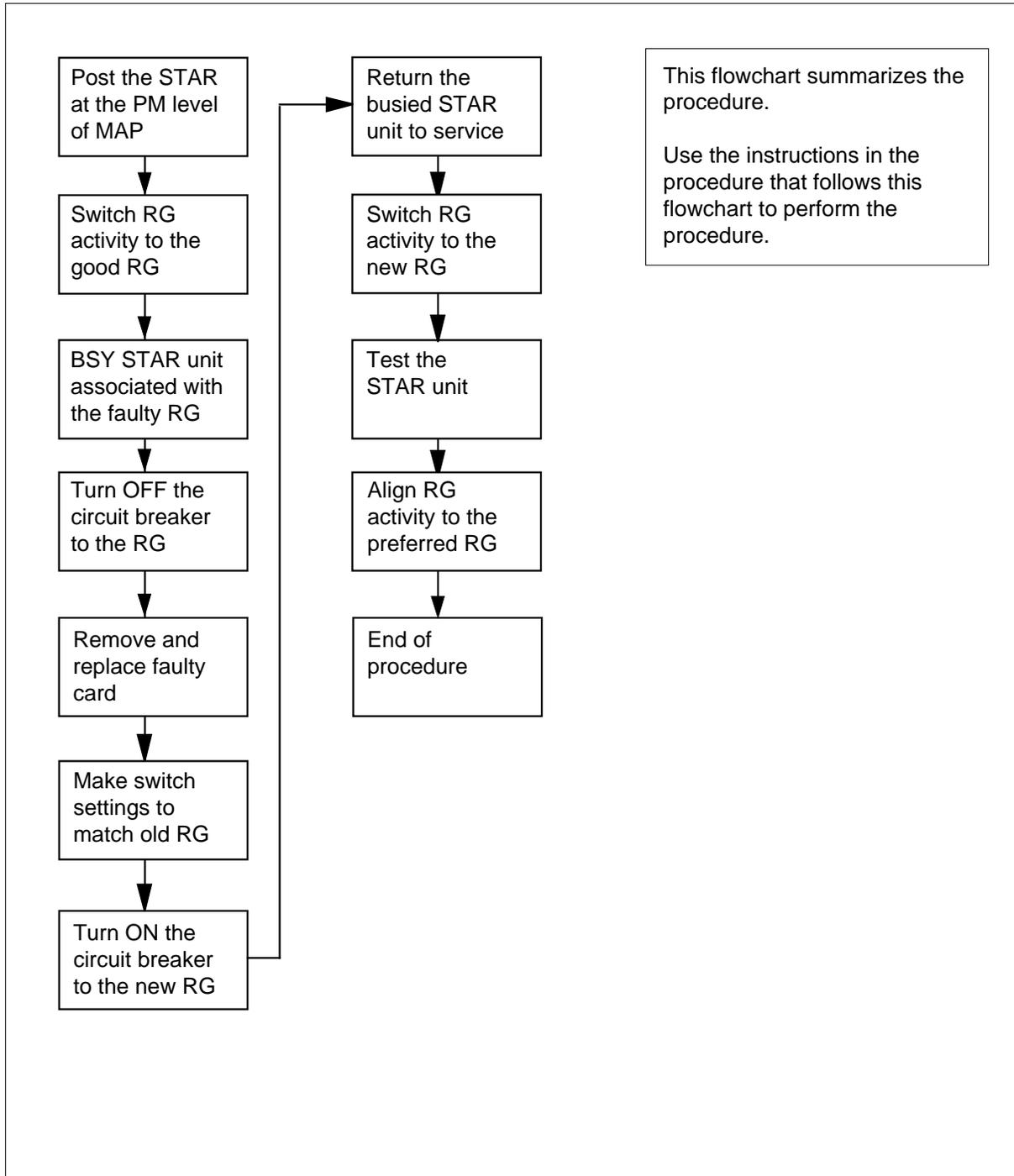
None

### **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.

**NTTR60**  
in a **STAR** (continued)

**Summary of card replacement procedure for an NTTR60 card in a STAR**



## NTTR60 in a STAR (continued)

---

### Replacing an NTTR60 card in a STAR

#### *At your current location*

1



#### **CAUTION**

##### **Loss of service**

This procedure includes directions to manually busy one or more peripheral module (PM) units. Since manually busying a PM unit can cause service degradation, perform this procedure only if necessary to restore out-of-service components. Otherwise, carry out this procedure during periods of low traffic.

Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure for verifying or accepting cards, or were directed to this procedure by your maintenance support group.

- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.
- 3 If you were directed to this procedure from an alarm clearing procedure in this manual, go to step 9. Otherwise, continue with step 4.

#### *At the MAP terminal*

- 4 To post the STAR containing the card to be replaced, type

```
>MAPCI;MTC;PM;POST STAR site frame unit
```

and press the Enter key.

*where*

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the faulty card (0 to 511)

**unit**

is 0 for the STAR

*Example of a MAP response:*

**NTTR60**  
**in a STAR (continued)**

```

          SysB      ManB      OffL      CBSy      ISTb      InSv
    PM          0          0          2          0          1          12
    STAR        0          0          2          0          1          9

STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb          /RG: 0
Unit 1:  ManB          /RG: 0
Drwr:    11 11 11 11 11 22 22 22 22 22 33 33 33 Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 Stby 1 InSv
. . . . .
    
```

- 5 Determine the unit associated with the NTTR60 card to be replaced by using the following table.

If STAR unit	Do RG card
0	0 in slot 1
1	1 in slot 22

- 6 Check the state of the STAR units.

If the STAR units are	Do
OFFL or SysB	step 8
One unit is InSv or ISTb the other unit is ISTB or SysB	step 7

- 7 To switch ringing generator activity to the good NTTR60 card, type  
>SWRG UNIT unit\_no  
and press the Enter key.

where

**unit\_no**  
is the STAR unit (0 or 1) aligned to the faulty RG

**Note:** If necessary, repeat this step until both units of the STAR are on the good RG.

If the SWRG command	Do
passes	step 8
fails	step 21

- 8 To busy the STAR unit associated with the faulty RG, type  
>BSY UNIT unit\_no  
and press the Enter key.

## NTTR60 in a STAR (continued)

---

where

**unit\_no**  
is the STAR unit (0 or 1) as seen in step 5

### At the FSP

- 9 Turn OFF the circuit breaker for the ringing generator to be replaced by using the information in the following table.

IfCircuit breaker label	DoRinging generator
Ring 0	0 in slot 1
Ring 1	1 in slot 22

10



#### WARNING

##### Static electricity damage

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the STAR. This protects the equipment against damage caused by static electricity.



#### WARNING

##### Equipment damage

Take these precautions when removing or inserting a card.1. Do not apply direct pressure to the components.2. Do not force the cards into the slots.

Put on a wrist strap.

### At the STAR

- 11 Remove the NTTR60 card as follows:
- Locate the card to be removed on the appropriate shelf.
  - Open the locking levers on the card to be replaced and gently pull the card towards you until it clears the shelf.
  - Place the card you have removed in an electrostatic discharge (ESD) protective container.
  - Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card you just removed.
- 12 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.
- 13 Seat and lock the card.

---

## NTTR60 in a STAR (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.

**At the FSP**

- 14 Turn ON the circuit breaker turned OFF in step 9.
- 15 Remove the wrist strap.
- 16 If you were directed to this procedure from an alarm clearing procedure in this manual, return now to the alarm clearing procedure that directed you here. Otherwise, continue with step 17.

**At the MAP terminal**

- 17 To return the STAR unit to service, type

```
>RTS UNIT unit_no
```

and press the Enter key.

where

**unit\_no**

is the number of the STAR unit (0 or 1) busied in step 8

If RTS	Do
passes	step 18
fails	step 21

- 18 To switch ringing generator activity to the new NTTR60 card, type

```
>SWRG UNIT unit_no
```

and press the Enter key.

where

**star\_unit**

is the STAR unit (0 or 1) where the RG was replaced

If the SWRG command	Do
passes	step 19
fails	step 21

- 19 Send any faulty cards for repair according to local procedure.

- 20 Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Go to step 22.

**NTTR60**  
**in a STAR** (end)

---

- 21 Get additional help replacing this card by contacting personnel responsible for a higher level of support.
- 22 You have correctly completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

**NTTR66  
in an RLD**

---

**Application**

Use this procedure to replace an NTTR66 in a remote line drawer (RLD) in a Star Remote Module Equipment (SRME) wall mount or Star Remote Module Outside (SRMO) cabinet as identified in the following table.

PEC	Suffixes	Name
NTTR66	AA	Electromagnetic interference (EMI) filter pack

**Common procedures**

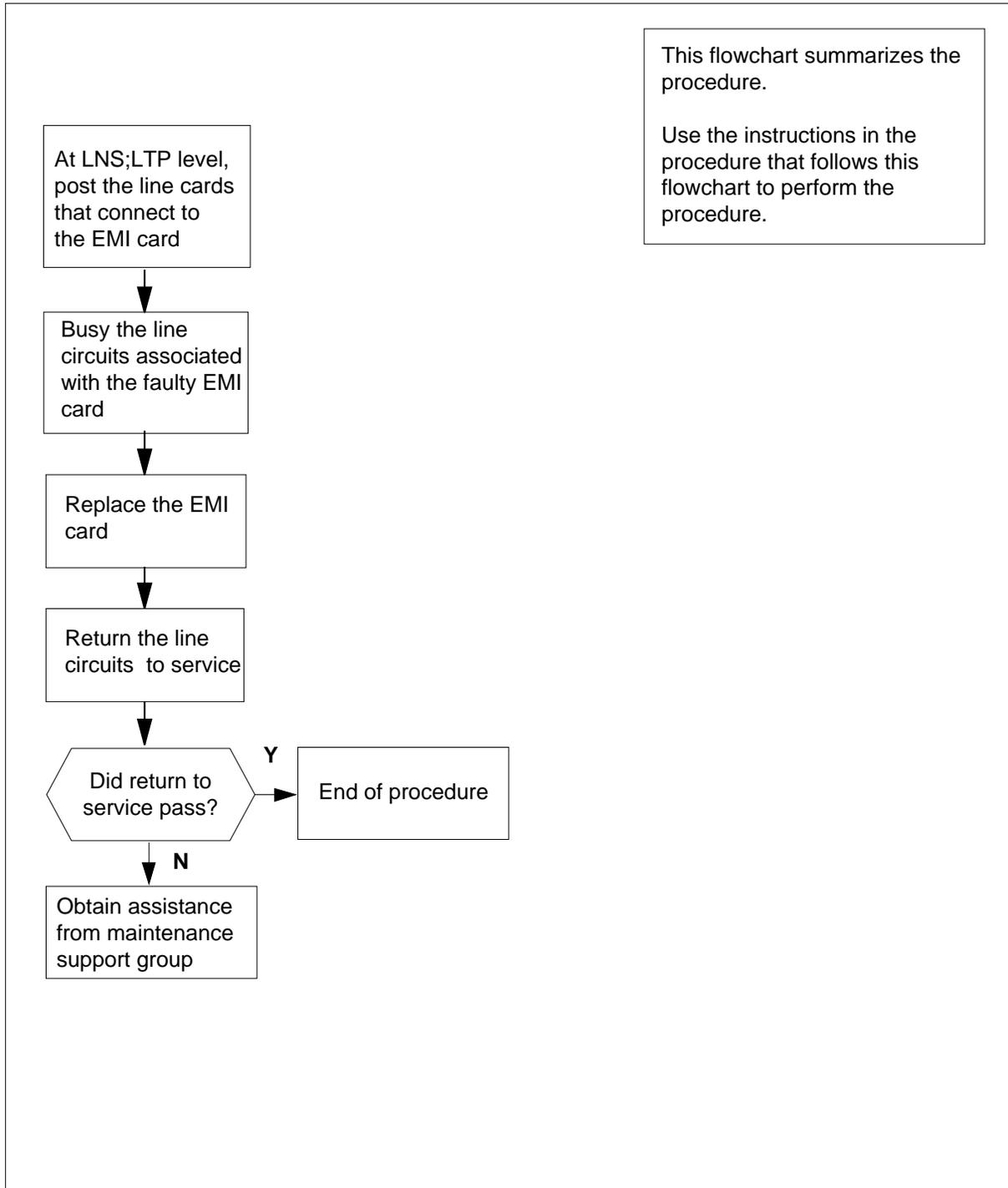
No common procedures are referenced in this procedure.

**Action**

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

## NTTR66 in an RLD (continued)

### Summary of replacing an NTTR66 in an RLD



## NTTR66 in an RLD (continued)

---

### Replacing an NTTR66 in an RLD

#### *At your current location:*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.
- 3



#### **CAUTION**

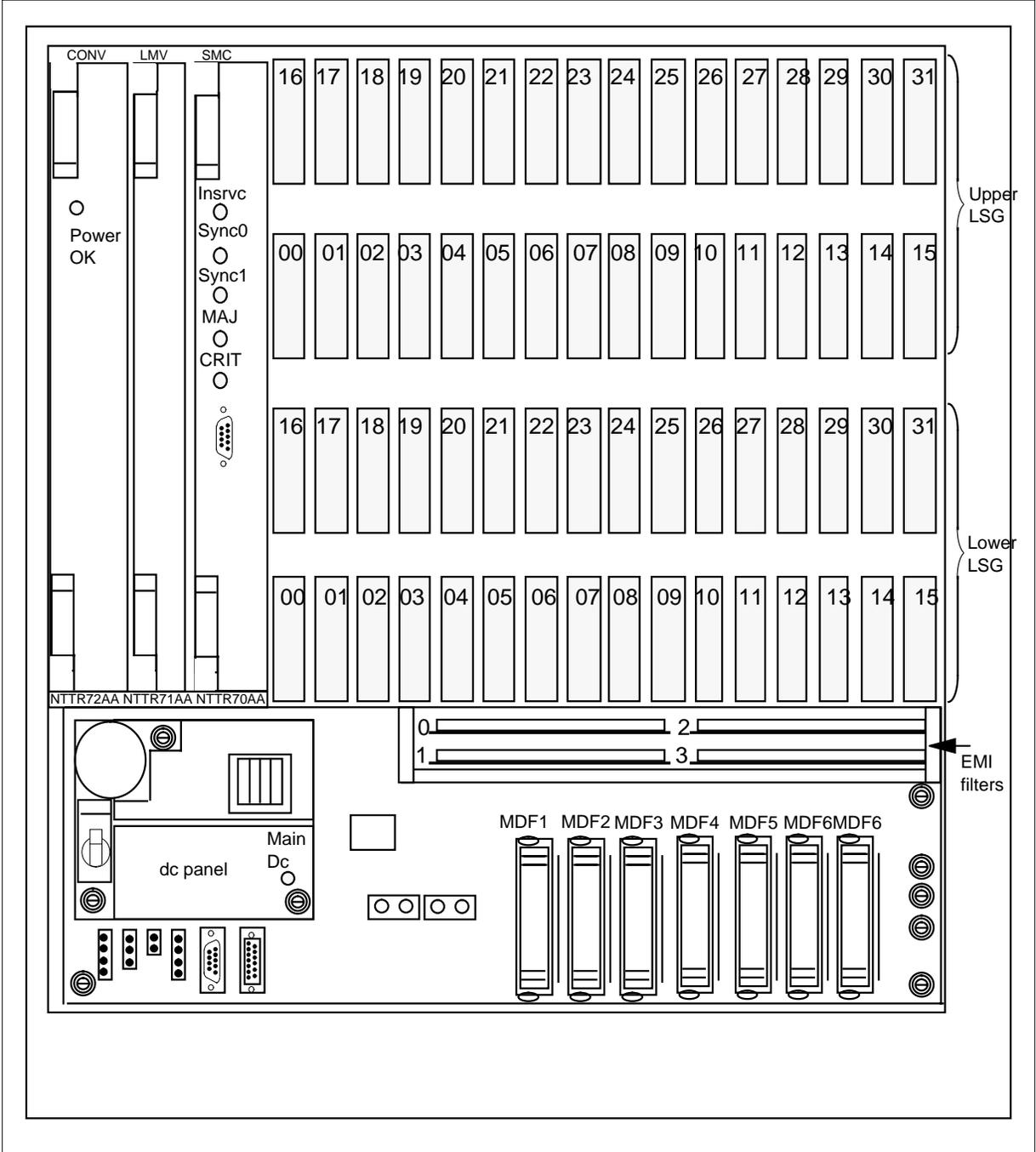
**Service disruption: calls may be dropped!**

Perform this card replacement activity only during a period of low traffic. All calls being handled by the lines connected to the EMI filter card being replaced will be dropped.

Identify the EMI card to be replaced based on the Telephony subsystem (TSS) diagram. The relationship between the EMI card and the affected line cards is identified in the table following the figure. This information is also printed on a label on the back of the front cover of the SRME cabinet and on the inside of the TSS cover of the SRMO cabinet.

# NTTR66 in an RLD (continued)

## Telephony subsystem



## NTTR66 in an RLD (continued)

EMI card number	Line cards affected
0	Lower line subgroup, cards 0-15
1	Lower line subgroup, cards 16-31
2	Upper line subgroup, cards 0-15
3	Upper line subgroup, cards 16-31

- 4 To access the line test position (LTP) level of the MAP terminal and post the lines associated with the EMI card, type

```
>MAPCI;MTC;LNS;LTP;POST L site frame unit lsg ckt_range
```

and press the Enter key.

where

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the faulty card

**unit**

is 0 for the STAR

**lsg**

is the number of the line subgroup with the faulty card (0-35)

**ckt\_range**

is the range of circuits associated with the faulty card, such as 0-15 or 16-31

*Example of a MAP response:*

```
LCC PTY RNG .....LEN..... DN STA F S LTA TE RESULT
RES          REM1 00 0 03 03      7213355 MB
```

- 5 To busy the lines, type

```
>BSY
```

and press the Enter key.

**Note:** The BSY command does not complete until there are no calls in the talking state within the range of the posted lines.

**At the RLD site**

- 6 Get a replacement card with the same product equipment code (PEC), including suffix, as the card you just removed.
- 7 Open the Star Module and access the TSS. Locate the EMI filter to be replaced using the TSS diagram.

## NTTR66 in an RLD (end)

---

8



### WARNING

#### 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.

Carefully remove the EMI card. Place the card you removed in an electrostatic discharge (ESD) protective container.

9 Install the replacement card.

10 Close the TSS cover, if necessary and close the Star Module.

### At the MAP terminal

11 To return the line cards to service, type

```
>RTS lsg ckt_range
```

and press the Enter key.

where

#### **lsg**

is the number of the line subgroup with the faulty card (0-1)

#### **ckt\_range**

is the range of circuits associated with the faulty card, such as 0-15 or 16-31

---

If RTS	Do
--------	----

passed	step 12
--------	---------

failed	step 14
--------	---------

12 Send any cards with faults for repair according to local procedure.

13 Record the following items in office records:

- date the card was replaced
- serial number of the card
- problems that prompted replacement of the card

Go to step 15.

14 Get additional support in replacing this card by contacting the operating company personnel responsible for higher level of support.

15 You have correctly completed this procedure.

**NTTR67  
in an RLD**

---

**Application**

Use this procedure to replace an NTTR67 in a remote line drawer (RLD) in a Star Remote Module Equipment (SRME) or Star Remote Module Outside (SRMO) as identified in the following table.

PEC	Suffixes	Name
NTTR67	AA	dc panel

**Common procedures**

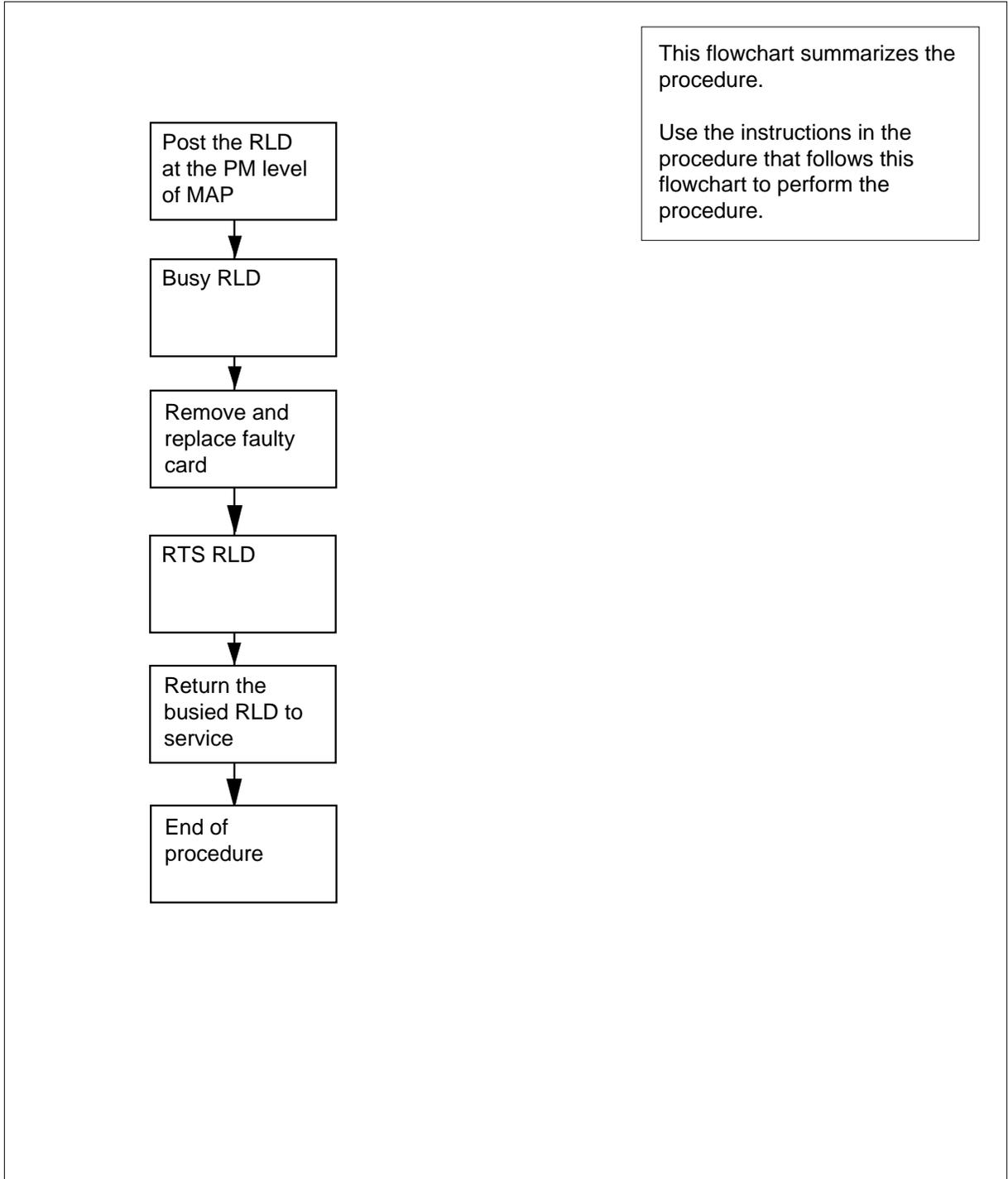
This procedure does not refer to any common procedures.

**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.

**NTTR67**  
**in an RLD** (continued)

**Summary of replacing an NTTR67 in an RLD**



## NTTR67 in an RLD (continued)

### Replacing an NTTR67 in an RLD

#### *At the current location:*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 To post the Star Hub the RLD is connected to, type  
**>MAPCI;MTC;PM;POST STAR site frame unit**  
 and press the Enter key.

*where*

**site**

is the name of the STAR site

**frame**

is the frame number of the STAR (0 to 511)

**unit**

is 0 for the STAR

*Example of a MAP display:*

```

          SysB      ManB      OffL      CBsy      ISTb      InSv
          PM        0         0         0         0         1         130
          STAR      0         0         0         0         1         10
STAR  Reml  OO O ISTb  Links_OOS: CSide 0 PSide 0
Unit 0:  InSv  Mtce TakeOver  /RG: 0
Unit 1:  SysB  Mtce           /RG: 0
DRwr:           11 11 11 11 11 22 22 22 22 22 33 33 33  RG:
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
.. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. .. ..

```

- 4 To post the RLD, type  
**>RLD;POST rld\_no**  
 and press the Enter key.

*where*

**rld\_no**

is the RLD number to be posted

*Example of a MAP display:*

**NTTR67**  
**in an RLD (continued)**

```

          SysB      ManB      OffL      Cbsy      ISTb      InSv
    PM          4          0          10          3          3
    STAR        0          0          0          0          1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb          /RG: 0
Unit 1:  ManB          /RG: 0
Drwr:          11 11 11 11 11 22 22 22 22 22 33 33 33  RG
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -o ss -- -- -- -- -- -- -- -- --
REM9 RLD DRWR  8 SYSB          LogDrwr: 16 17
BANK_0: Active          Links_OOS: 2
BANK_1: Stby          RLD BDch: -
    
```

**5** To busy the posted RLD, type

```
>BSY DRWR
```

and press the Enter key.

*Example of a MAP display:*

```

Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
    
```

**6** To respond affirmatively to the confirmation request, type

```
>Y
```

and press the Enter key.

**At the SRME or SRMO site**

**7** The type of enclosure for the Star Module determines your next action.

**Note:** Because the dc panel has failed, there is no power available for the RLD to support subscribers.

If the RLD is in an	Do
SRME (inside) wall mount	step 8
SRMO (outdoors) cabinet	step 11

**8**



**WARNING**  
**Static electricity damage**  
 Before removing the dc panel, put on a wrist strap and connect it to the wrist strap grounding point on the TSS. This protects the equipment against damage caused by static electricity.

---

**NTTR67**  
**in an RLD (continued)**

---

- Use a slot screwdriver and turn the three 1/4-turn screws at the bottom of the cover. Hold the cover by the left and right sides, lift up, and pull the cover towards you. Set the cover out of the way.
- 9** The dc panel is in the lower left hand corner of the telephony subsystem (TSS). Perform the following steps to remove and replace the rectifier:
- a** Power down the RLD by performing the following steps:
    - i** Set the circuit breaker on the dc panel to OFF.
    - ii** Remove ac power from the RLD as follows.
      - if the enclosure is an indoor wall-mounted SRME, remove power at the local ac power panel
      - disconnect the battery connector
    - iii** Note that the green Power On LED is not lit.
    - iv** The RLD is now powered down.
  - b** Use a slot screwdriver to loosen the three screws that hold the dc panel to the TSS.
  - c** Remove the dc panel.
  - d** Remove the four fuses from the dc panel, recording the fuse size and color to ensure correct installation in the replacement dc panel
  - e** Install a replacement dc panel with one of the same PEC and suffix.
  - f** Install the four fuses that were removed in step 9d
  - g** Use a slot screwdriver to tighten the three screws that hold the dc panel to the TSS.
  - h** Power up the RLD by performing the following steps:
    - i** Provide ac power to the RLD as follows.
      - if the enclosure is an indoor wall-mounted SRME, supply power at the local ac power panel
      - reconnect the battery connector
    - ii** Set the circuit breaker on the dc panel to ON.
    - iii** Reconnect the battery connector
    - iv** Note that the green Power On LED is lit. Make sure no alarm condition is indicated by the LEDs on the SMC card.
    - v** The RLD is now powered up
- 10** Replace the SRME cover. Use a slot screwdriver and turn the three 1/4-turn screws at the bottom of the cover. Go to step 13.

## NTTR67 in an RLD (continued)

---

11



### **WARNING**

#### **Static electricity damage**

Before removing the dc panel, put on a wrist strap and connect it to the wrist strap grounding point in the top left corner of the TSS. This protects the equipment against damage caused by static electricity.

Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm by pulling the interlock switch out. Loosen the two large screws at the left side of the inside TSS cover. Open the TSS cover to access the TSS.

- a** Power down the RLD by performing the following steps:
  - i** Set the circuit breaker on the dc panel to OFF
  - ii** Remove ac power from the RLD as follows:
    - if the enclosure is an outdoor pad or pole-mounted SRMO, set the Rectifier circuit breaker on the ac panel to the OFF position. Then set the Main circuit breaker on the ac panel to the OFF position.
    - disconnect the battery connector
  - iii** Note that the green Power On LED is not lit
  - iv** The RLD is now powered down
- b** Use a slot screwdriver to loosen the three screws that hold the dc panel to the TSS.
- c** Remove the dc panel.
- d** Remove the four fuses from the dc panel, recording the fuse size and color to ensure correct installation in the replacement dc panel.
- e** Install a replacement dc panel with one of the same PEC and suffix.
- f** Install the four fuses that were removed in step 11d
- g** Use a slot screwdriver to tighten the three screws that hold the dc panel to the TSS.
- h** Provide ac power to the RLD as follows:
  - i** if the enclosure is an outdoor pad or pole-mounted SRMO, set the Main circuit breaker on the dc panel to the ON position. Then set the Rectifier circuit breaker on the ac panel to the ON position.
  - ii** reconnect the battery connector
- i** Set the circuit breaker on the dc panel to ON
- j** Reconnect the battery connector
- k** Note that the green Power On LED is lit. Make sure no alarm condition is indicated by the LEDs on the SMC card

---

**NTTR67**  
**in an RLD (end)**

---

I The RLD is now powered up.

- 12** Close and secure the TSS cover using the two screws on the left side of the TSS. Close and lock the cabinet door.

***At the MAP terminal***

- 13** To return the RLD to service, type

>RTS DRWR

and press the Enter key.

If the RTS	Do
passes	step 14
fails	step 16

- 14** Send any faulty cards for repair according to local procedure.

- 15** Record the following items in office records:

- date the card was replaced
- serial number of the card
- problems that prompted replacement of the card

Go to step 17.

- 16** Get additional support in replacing this card by contacting operating company personnel responsible for a higher level of support.

- 17** You have correctly completed this procedure. Return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

## **NTTR70 in an RLD**

---

### **Application**

Use this procedure to replace an NTTR70 in a remote line drawer (RLD) in a Star Remote Module Equipment (SRME) or Star Remote Module Outside (SRMO) as identified in the following table.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTTR70	AA AB	Star Module Controller (SMC) card

### **Common procedures**

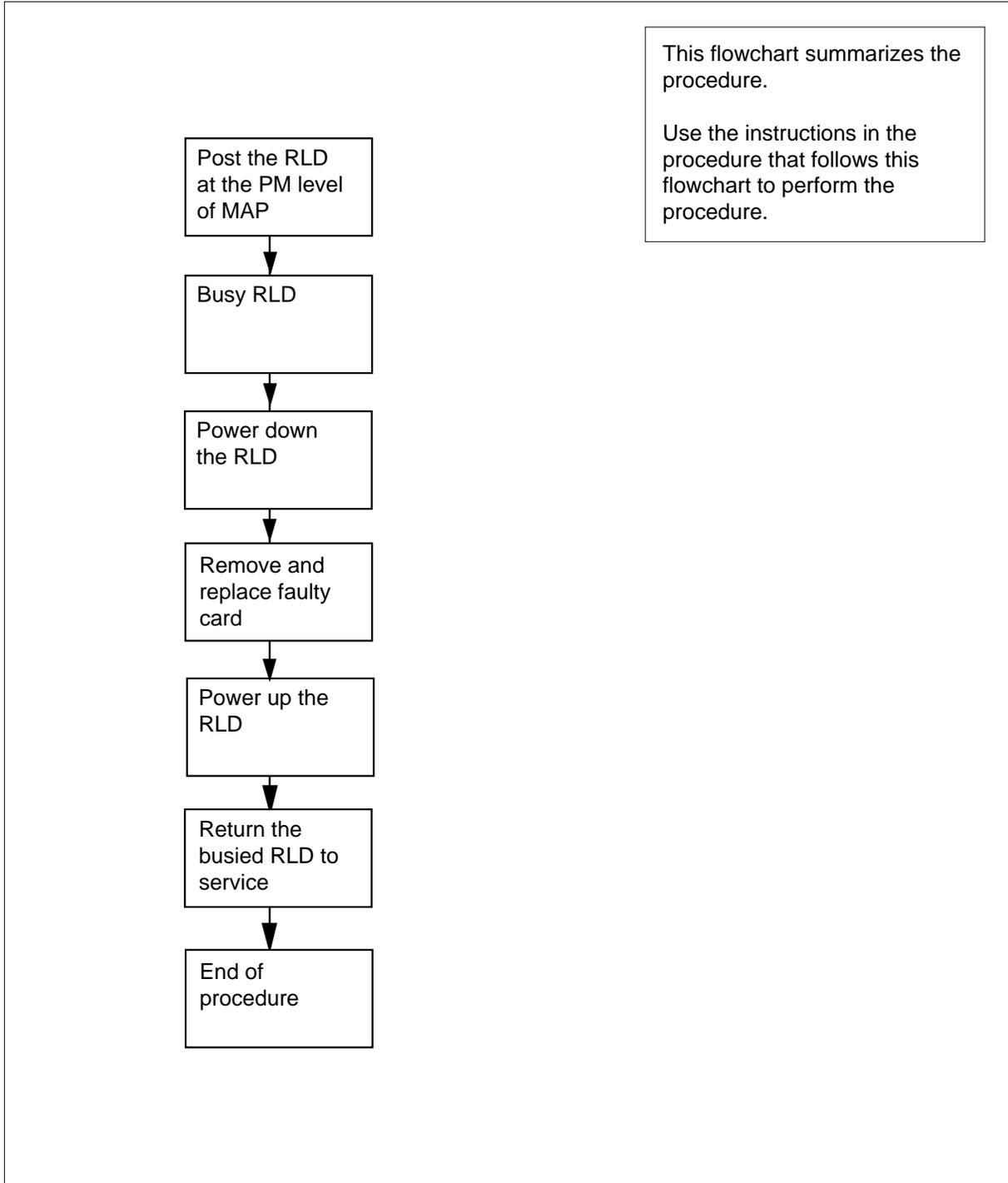
No common procedures are referenced in this procedure.

### **Action**

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

**NTTR70**  
**in an RLD (continued)**

**Summary of replacing an NTTR70 RLD**



# NTTR70 in an RLD (continued)

## Replacing an NTTR70 in an RLD

### At your current location:

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

### At the MAP display

- 3 To access the PM level of the MAP and post the Star Hub where the RLD is connected. Type

**>MAPCI;MTC;PM;POST STAR site frame unit**

and press the Enter key.

where

**site**  
is the name of the STAR site

**frame**  
is the frame number of the STAR (0 to 511)

**unit**  
is 0 for the STAR

Example of a MAP display:

```

          SysB      ManB      OffL      CBSy      ISTb      InSv
          PM        0        0        0        0        1        130
          STAR      0        0        0        0        1        10
STAR  Rem1  OO O  ISTb  Links_OOS: CSide 0 PSide 0
Unit 0:  InSv  Mtce  TakeOver  /RG: 0
Unit 1:  SysB  Mtce  /RG: 0
DRwr:    11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
. . . . . ss . . . . .

```

- 4 To post the RLD, type

**>RLD;POST rld\_no**

and press the Enter key.

where

**rld\_no**  
is the RLD number to be posted

Example of a MAP display:

## NTTR70 in an RLD (continued)

```

                SysB      ManB      OffL      Cbsy      ISTb      InSv
                PM        4          0          10         3          3          3
                STAR      0          0          0          0          1          1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb                    /RG: 0
Unit 1:  ManB                    /RG: 0
Drwr:    11 11 11 11 11 22 22 22 22 22 33 33 33  RG
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -o ss -- -- -- -- -- -- -- -- --
REM9 RLD DRWR  8 SYSB                    LogDrwr:  16  17
BANK_0: Active                    Links_OOS:  2
BANK_1: Stby                    RLD BDch:  -

```

- 5** To busy the posted RLD, type

```
>BSY DRWR
```

and press the Enter key.

*Example of a MAP display:*

```
Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
```

- 6** To respond affirmatively to the confirmation request, type

```
>Y
```

and press the Enter key.

### **At the SRME or SRMO site**

- 7** The type of enclosure the Star Module has determines your next action.

If the RLD is in an	Do
SRME (inside) wall mount	step 8
SRMO (outdoors) cabinet	step 9

- 8** Use a slot screwdriver and turn the 1/4-turn screws at the bottom of the cover. Hold the cover by the left and right sides, lift up, and pull the cover towards you. Set the cover out of the way. Pull the interlock switch out to silence the door alarm at the MAP terminal. Go to step 11.
- 9** Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm by pulling the interlock switch out. Loosen the two large screws at the left side of the inside TSS cover. Open the TSS cover to access the TSS. Pull the interlock switch out to silence the door alarm at the MAP terminal.
- 10** Power down the RLD by performing the following steps:
- a** Set the circuit breaker on the dc panel to OFF.

## NTTR70 in an RLD (continued)

- b Remove ac power from the RLD as follows.
  - if the enclosure is an indoor wall-mounted SRME, remove power at the local ac power panel
  - if the enclosure is an outdoor pad or pole-mounted SRMO, set the Rectifier circuit breaker on the ac panel to the OFF position. Then set the Main circuit breaker on the ac panel to the OFF position.
  - disconnect the battery connector.
  - Note that the green Power On LED is not lit
- c The RLD is now powered down.

11



**WARNING**  
**Static electricity damage**  
 Before removing the SMC card, put on a wrist strap and connect it to the wrist strap grounding point on the TSS. This protects the equipment against damage caused by static electricity.

The NTTR70 is in the right card slot in the upper left side of the TSS.

**Note:** Record the position of the DIP switches on the SMC card.

- 12 Set the DIP switches on the replacement card to the same settings as those on the card you have just removed.

Refer to the following tables for information about correct switch settings.

### SMC DIP switches S1 and S2 settings

		DIP switch settings								
Function	Switch number	1	2	3	4	5	6	7	8	
Grounding receive shield	Disable	1	On	On	On	Off	Off	Off	Off	Off
		2								
Enable Direct	Enable	1	On	On	On	Off	Off	Off	Off	On
	Direct	2								
Enable capacitor	Enable	1	On	On	On	Off	Off	Off	Off	Off
	capacitor	2								On

## NTTR70 in an RLD (continued)

### SMC DIP switch S3 settings

Mode	DIP switch settings				Distance to Star Hub	
	S3-1	S3-2	S3-3	D3-4	Feet	Meters
DS-1 extended superframe (ESF)	Off	Off	Off	Off	0-133	0-41
binary eight bit zero substitution (B8ZS)	Off	Off	Off	On	133-266	41-81
code suppression	Off	Off	On	Off	266-399	81-122
	Off	Off	On	On	399-533	122-163
	Off	On	Off	Off	533-655	163-200

- 13** Replace the SMC card.
- 14** Power up the RLD by performing the following steps:
- a** Provide ac power to the RLD as follows.
    - if the enclosure is an indoor wall-mounted SRME, supply power at the local ac power panel
    - if the enclosure is an outdoor pad or pole-mounted SRMO, set the Main circuit breaker on the ac panel to the ON position. Then set the Rectifier circuit breaker on the ac panel to the ON position.
    - reconnect the battery connector.
  - b** Set the circuit breaker on the dc panel to ON.
  - c** Note that the green Power On LED is lit. Make sure no alarm condition is indicated by the LEDs on the SMC card.
  - d** The RLD is now powered up.
- 15** Wait at least 3 minutes for the Star Module to power up and become stable before continuing to the next step.

#### **At the MAP terminal**

- 16** Load the standby (Stby) flash memory bank on the NTTR70 card. To load the Stby bank, type
- ```
>LOADRLD CC
```
- and press the Enter key.

| If LOADRLD | Do      |
|------------|---------|
| passes     | step 17 |
| fails      | step 24 |

## NTTR70 in an RLD (end)

---

- 17** Switch the activity of the memory banks to make the newly loaded bank active. To switch the activity, type  
>**SWBNK**  
and press the Enter key.
- 18** Load the Stby flash memory bank on the NTTR70 card from the active bank. To load the Stby bank, type  
>**LOADRLD MATE**  
and press the Enter key.
- | <b>If LOADRLD</b> | <b>Do</b> |
|-------------------|-----------|
| passes            | step 19   |
| fails             | step 24   |
- 19** To return the RLD to service, type  
>**RTS DRWR**  
and press the Enter key.
- | <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passes        | step 22   |
| fails         | step 24   |
- 20** Look at the status and alarm LEDs on the SMC card. Make sure the Inservice LED is lit.
- 21** Close the TSS cover, if applicable. Replace the cover on the SRME wall mount. Close and lock the cabinet door on the SRMO cabinet.
- 22** Send any faulty cards for repair according to local procedure.
- 23** Record the following items in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 25.
- 24** Get additional help replacing this card by contacting the operating company personnel responsible for a higher level of support.
- 25** You have correctly completed this procedure.

**NTTR71  
in an RLD**

---

**Application**

Use this procedure to replace an NTTR71 in a remote line drawer (RLD) in a Star Remote Module Equipment (SRME) or Star Remote Module Outside (SRMO) as identified in the following table.

| PEC    | Suffixes | Name                             |
|--------|----------|----------------------------------|
| NTTR71 | AA       | Line maintenance unit (LMU) card |

**Common procedures**

No common procedures are referenced in this procedure.

**Action**

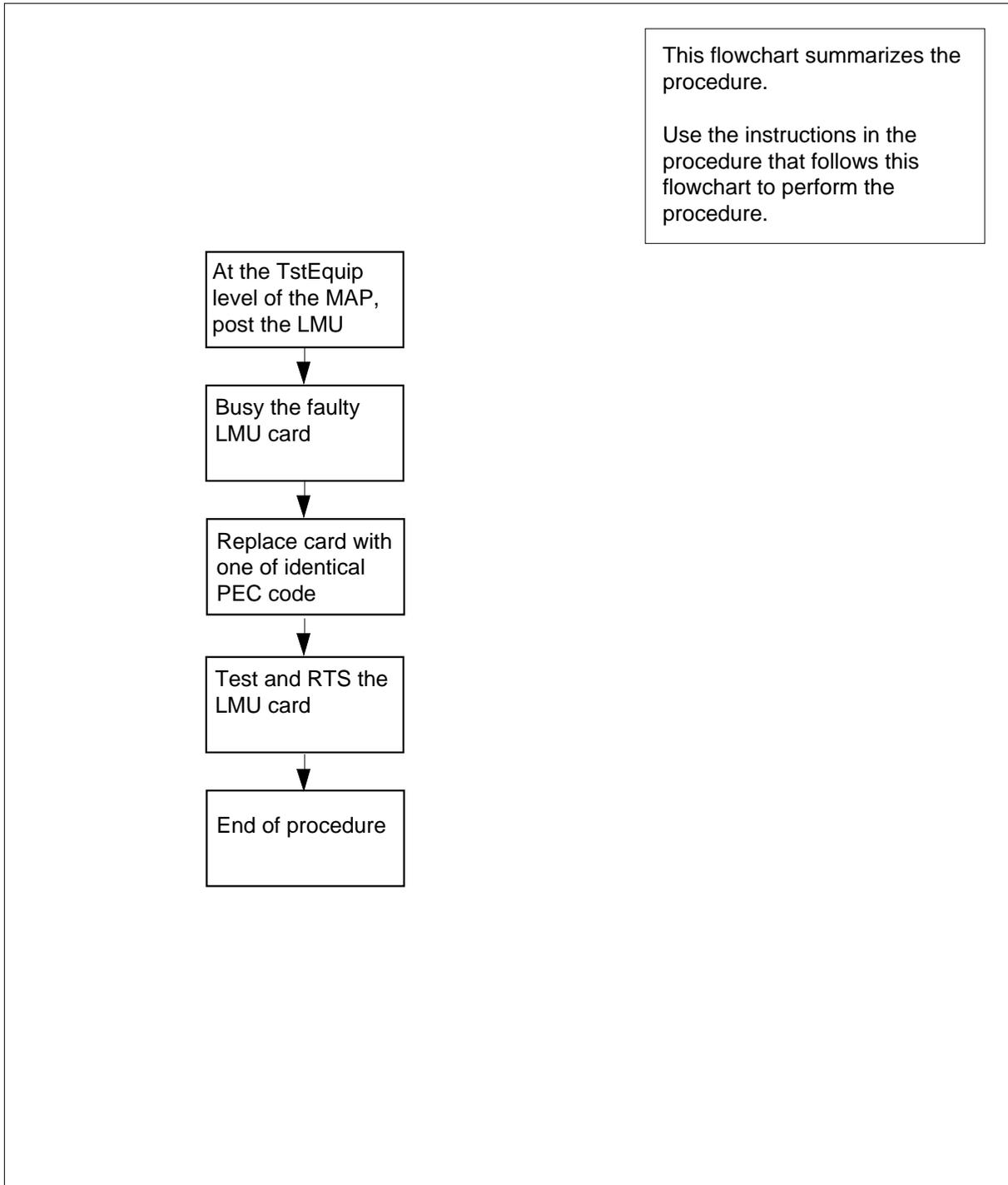
The following flowchart is only a summary of the procedure. To replace the card, use the instructions in the step-action procedure that follows the flowchart.

## NTTR71

### RLD (continued)

---

#### Summary of replacing an NTTR71 in an RLD



## NTTR71 RLD (continued)

### Replacing an NTTR71 in an RLD

#### *At your current location:*

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

#### *At the MAP display*

- 3 To access the test equipment (TSTEQUIP) level and post all LMUs, type  
**>MAPCI;MTC;MTCNA;TSTEQUIP;POST LMU ALL**  
 and press the Enter key.

*Example of a MAP response:*

|          | SysB | ManB | OffL | CBSy | ISTb | InSv |
|----------|------|------|------|------|------|------|
| TSTEQUIP | 0    | 0    | 2    | 0    | 1    | 12   |
| LMU      | 0    | 0    | 2    | 0    | 1    | 9    |

|           | PM | MTE | STATE |
|-----------|----|-----|-------|
| STAR REM1 | 0  | 0   | SYSB  |

- 4 Use the NEXT command to post the next LMU in the posted set until you access the LMU that is in the SysB state.
- 5 To busy the posted SysB LMU card, type  
**>BSY**  
 and press the Enter key.

#### *At the SRME or SRMO site*

- 6 The type of enclosure the Star Module has determines your next action.

| If the RLD is in an      | Do     |
|--------------------------|--------|
| SRME (inside) Wall Mount | step 7 |
| SRMO (outdoors) cabinet  | step 8 |

- 7 Use a slot screwdriver and turn the 1/4-turn screws at the bottom of the cover. Hold the cover by the left and right sides, lift up, and pull the cover towards you. Set the cover out of the way. Pull the interlock switch out to silence the door alarm at the MAP terminal. Go to step 9.
- 8 Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm by pulling the interlock switch out. Loosen the two large screws at the left side of the TSS cover. Open the TSS cover to access the TSS. Pull the interlock switch out to silence the door alarm at the MAP terminal.

## NTTR71

### RLD (continued)

---

9



#### **DANGER**

##### **Static electricity damage**

Before removing the LMU card, put on a wrist strap and connect it to the wrist strap grounding point in the top left corner of the TSS. This protects the equipment against damage caused by static electricity.

The NTTR71 is in the center card slot in the upper left side of the telephony subsystem (TSS).

- 10 Replace the LMU card.
- 11 Look at the status and alarm LEDs on the SMC card. Make sure the Inservice LED is lit.
- 12 Close the TSS cover, if applicable. Replace the cover on the SRME Wall Mount. Close and lock the cabinet door on the SRMO cabinet.

#### **At the MAP terminal**

- 13 To test the new LMU card, type  
>TST  
and press the Enter key.

---

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| fails         | step 17   |
| passes        | step 14   |

---

- 14 To return the new LMU card to service, type  
>RTS  
and press the Enter key.

---

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| fails         | step 17   |
| passes        | step 15   |

---

- 15 Send any faulty cards for repair according to local procedure.
- 16 Record the following items in office records:
  - date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the cardGo to step 18.

**NTTR71**  
**RLD (end)**

---

- 17** Get additional help replacing this card by contacting the operating company personnel responsible for a higher level of support.
- 18** You have correctly completed this procedure.

## **NTTR72 in an RLD**

---

### **Application**

Use this procedure to replace an NTTR72 in a remote line drawer (RLD) in a Star Remote Module Equipment (SRME) or Star Remote Module Outside (SRMO) as identified in the following table.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>                                |
|------------|-----------------|--------------------------------------------|
| NTTR72     | AA              | Power converter and ringing generator card |

### **Common procedures**

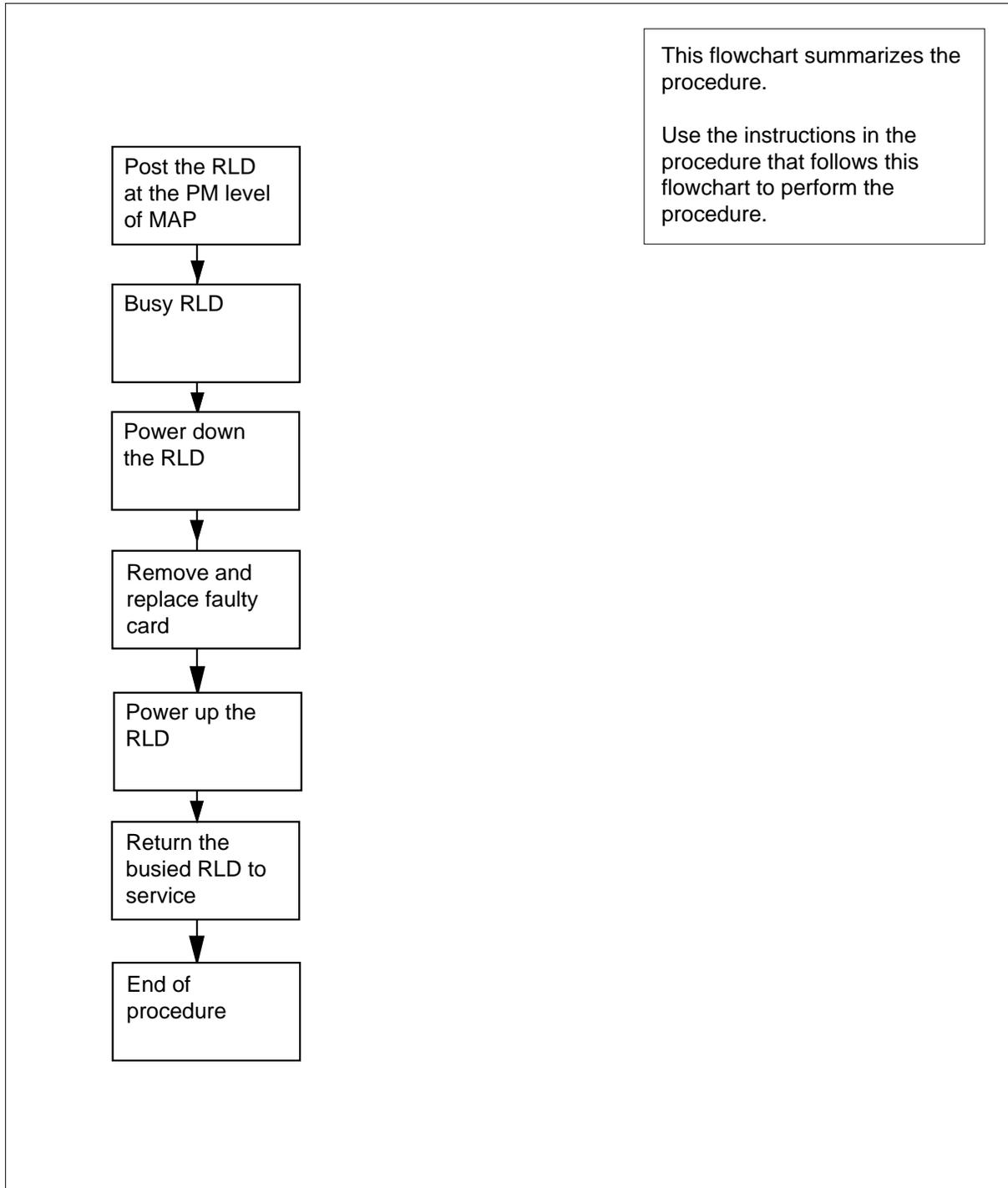
No common procedures are referenced in this procedure.

### **Action**

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

## NTTR72 in an RLD (continued)

### Summary of replacing an NTTR72 RLD



# NTTR72 in an RLD (continued)

## Replacing an NTTR72 in an RLD

### At your current location:

- 1 Proceed only if you were either directed to this card replacement procedure from a step in a maintenance procedure, are using the procedure to check or accept cards, or were directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

### At the MAP display

- 3 To access the PM level of the MAP and post the Star Hub where the RLD is connected, type

**>MAPCI;MTC;PM;POST STAR site frame unit**

and press the Enter key.

where

**site**

is the name of the STAR site

**frame**

is the frame number of the STAR (0 to 511)

**unit**

is 0 for the STAR

Example of a MAP display:

```

          SysB      ManB      OffL      CBsy      ISTb      InSv
          PM       0        0        0        0        1        130
          STAR     0        0        0        0        1        10
STAR  Rem1  OO O  ISTb  Links_OOS: CSide 0 PSide 0
Unit 0:  InSv Mtce TakeOver  /RG: 0
Unit 1:  SysB Mtce           /RG: 0          RG:
DRwr:           11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
. . . . . SS . . . . .

```

- 4 To post the RLD, type

**>RLD;POST rld\_no**

and press the Enter key.

where

**rld\_no**

is the STAR drawer (RLD) number to be posted

Example of a MAP display:

## NTTR72 in an RLD (continued)

```

                SysB      ManB      OffL      CBSy      ISTb      InSv
                PM        4          0          10         3          3
STAR          STAR      0          0          0          0          1          1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:
Unit 0:  ISTb          /RG: 0
Unit 1:  ManB          /RG: 0          RG
Drwr:    11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -o ss -- -- -- -- -- -- -- -- --
REM9 RLD DRWR 8 SYSB          LogDrwr: 16 17
BANK_0: Active          Links_OOS: 2
BANK_1: Stby          RLD BDch: -

```

- 5** To busy the posted RLD, type

```
>BSY DRWR
```

and press the Enter key.

*Example of a MAP display:*

```
Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
```

- 6** To respond affirmatively to the confirmation request, type

```
>Y
```

and press the Enter key.

### **At the SRME or SRMO site**

- 7** The type of enclosure the Star Module has determines your next action.

**Note:** Because the power and ringing card has failed, there is no power or ringing voltage available in the RLD to support subscribers.

| If the RLD is in an      | Do     |
|--------------------------|--------|
| SRME (inside) Wall Mount | step 8 |
| SRMO (outdoors) cabinet  | step 9 |

- 8** Use a slot screwdriver and turn the 1/4-turn screws at the bottom of the cover. Hold the cover by the left and right sides, lift up, and pull the cover towards you. Set the cover out of the way. Pull the interlock switch out to silence the door alarm at the MAP terminal. Go to step 11.
- 9** Unlock and open the cabinet door. The door alarm generates a Major alarm at the MAP terminal. Silence the alarm by pulling the interlock switch out. Loosen the two large screws at the left side of the TSS cover. Open the TSS cover to access the TSS. Pull the interlock switch out to silence the door alarm at the MAP terminal.
- 10** Power down the RLD by performing the following steps:

## NTTR72 in an RLD (continued)

---

- a Set the circuit breaker on the dc panel to OFF.
- b Remove ac power from the RLD as follows:
  - if the enclosure is an indoor wall-mounted SRME, remove power at the local ac power panel
  - if the enclosure is an outdoor pad or pole-mounted SRMO, set the Rectifier circuit breaker on the ac panel to the OFF position. Then set the Main circuit breaker on the ac panel to the OFF position.
  - disconnect the battery connector
  - Note that the green Power On LED is not lit
- c The RLD is now powered down.

11



### WARNING

#### Static electricity damage

Before removing the NTTR72 card, put on a wrist strap and connect it to the wrist strap grounding point on the TSS. This protects the equipment against damage caused by static electricity.

- The NTTR72 is in the left card slot in the upper left area of the telephony subsystem (TSS).
- 12 Replace the NTTR72 card.
  - 13 Power up the RLD by performing the following steps:
    - a Provide ac power to the RLD as follows.
      - if the enclosure is an indoor wall-mounted SRME, supply power at the local ac power panel
      - if the enclosure is an outdoor pad or pole-mounted SRMO, set the Main circuit breaker on the ac panel to the ON position. Then set the Rectifier circuit breaker on the ac panel to the ON position.
    - b Set the circuit breaker on the dc panel to ON.
    - c Re-connect the battery connector.
    - d Note that the green Power On LED is lit. Make sure no alarm condition is indicated by the LEDs on the SMC card.
    - e The RLD is now powered up.
  - 14 Make sure the green Power OK LED is lit on the NTTR72. Wait a few minutes for the Star Module to power up and become stable before proceeding to the next step.
  - 15 Close the TSS cover, if applicable. Replace the cover on the SRME Wall Mount. Close and lock the cabinet door on the SRMO cabinet.

---

**NTTR72**  
**in an RLD (end)**


---

**At the MAP terminal**

**16** To return the RLD to service, type

>RTS DRWR

and press the Enter key.

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| passes        | step 17   |
| fails         | step 19   |

**17** Send any faulty cards for repair according to local procedure.

**18** Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Go to step 20.

**19** Get additional help replacing this card by contacting the operating company personnel responsible for a higher level of support.

**20** You have correctly completed this procedure.

## **NTTR73 in a STAR**

---

### **Application**

Use this procedure to replace the following card in a STAR HUB.

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>                      |
|------------|-----------------|----------------------------------|
| NTTR73     | AA              | Universal maintenance pack (UMP) |

### **Common procedures**

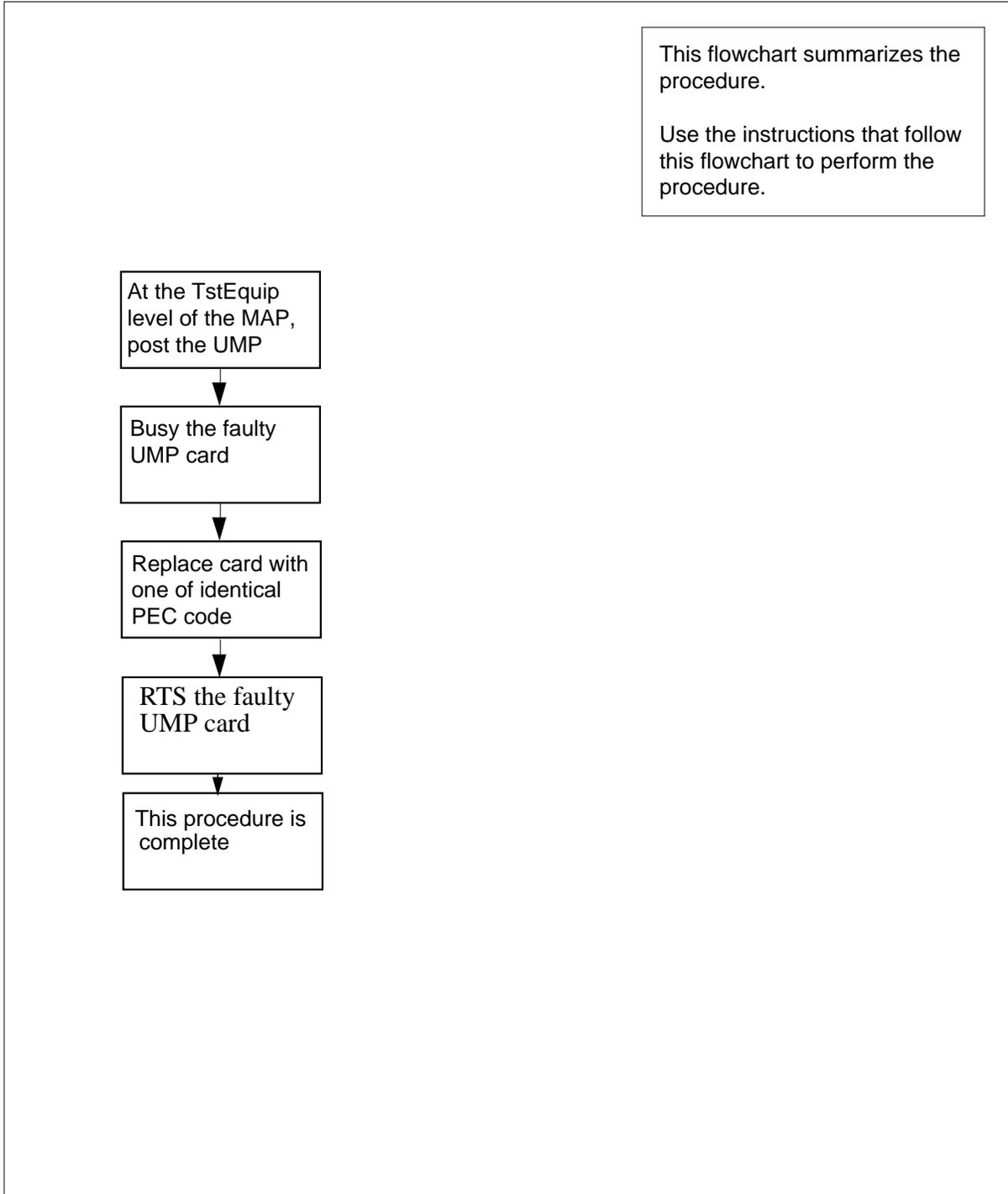
The common replacing a card procedure is referenced in this procedure.

### **Action**

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

## NTTR73 in a STAR (continued)

### Summary of card replacement procedure for an NTTR73 card in a STAR



## NTTR73 in a STAR (continued)

---

### Replacing an NTTR73 card in a STAR

#### *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 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.
- 3 If you were directed to this procedure from another maintenance procedure, go to step 7. Otherwise, continue with step 4.

#### *At the MAP terminal*

- 4 To access the test equipment (TSTEQUIP) level and post all UMPs, type  
**>MAPCI ;MTC ;MTCNA ;TSTEQUIP ;POST UMP ALL**  
and press the Enter key.

*Example of a MAP response:*

|          |          |       |      |      |      |      |
|----------|----------|-------|------|------|------|------|
|          | SysB     | ManB  | OffL | CBsy | ISTb | InSv |
| TSTEQUIP | 0        | 0     | 2    | 0    | 1    | 12   |
| UMP      | 0        | 0     | 2    | 0    | 1    | 9    |
| PM       | MTE      | STATE |      |      |      |      |
| STAR     | REM1 0 0 | 0     | CBSY |      |      |      |

- 5 Use the NEXT command to post the next UMP in the posted set until you access the UMP that is in the SysB state.
- 6 To busy the SysB UMP card posted in step 5, type  
**>BSY**  
and press the Enter key.

#### *At the STAR control shelf*

- 7 Replace the NTTR73 card using the common replacing a card procedure in this document. When the card is replaced, return to this point.

#### *At the MAP terminal*

- 8 To load the UMP card, type  
**>LOADTE**  
and press the Enter key.
- 9 If you were directed to this procedure from another maintenance procedure, return now to the alarm clearing procedure that directed you here. Otherwise, continue with step 10.

---

**NTTR73**  
**in a STAR (end)**

---

**At the MAP terminal**

- 10** To test the new UMP card, type  
>**TST**  
and press the Enter key.

| <b>If TST</b> | <b>Do</b> |
|---------------|-----------|
| fails         | step 14   |
| passes        | step 11   |

- 11** To return the new UMP card to service, type  
>**RTS**  
and press the Enter key.

| <b>If RTS</b> | <b>Do</b> |
|---------------|-----------|
| fails         | step 14   |
| passes        | step 12   |

- 12** Send any faulty cards for repair according to local procedure.

- 13** Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Proceed to step 15.

- 14** Get additional help replacing this card by contacting the personnel responsible for a higher level of support.

- 15** You have correctly completed this procedure.

## **NTTR74 in a STAR**

---

### **Application**

Use this procedure to replace the following card in a STAR frame supervisory panel (FSP).

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>    |
|------------|-----------------|----------------|
| NTTR74     | AA              | FSP alarm card |

### **Common procedures**

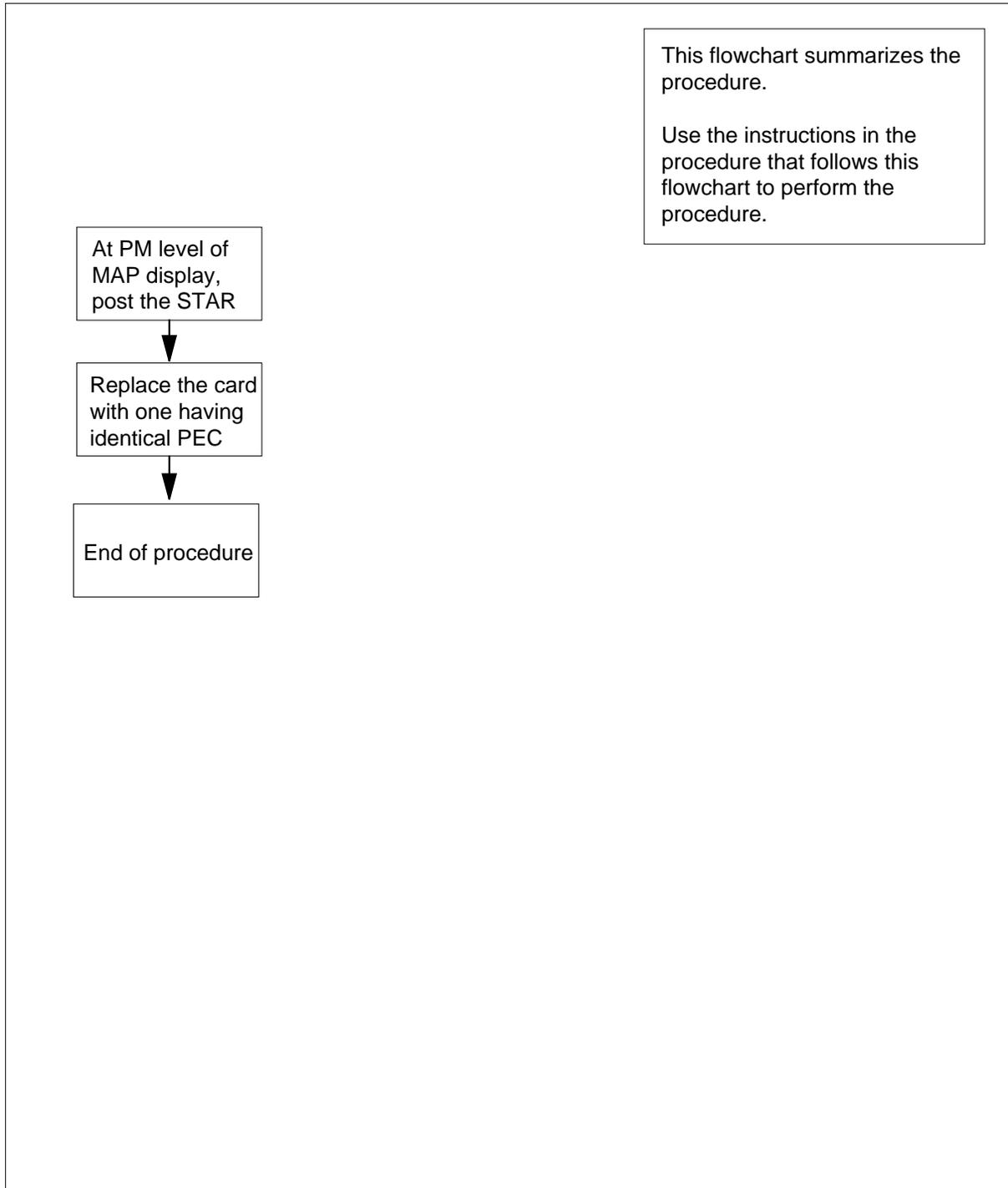
None

### **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.

**NTTR74**  
**in a STAR** (continued)

**Summary of replacing an NTTR74 in a STAR**



## NTTR74 in a STAR (continued)

---

### Replacing an NTTR74 in a STAR



#### **CAUTION**

##### **Loss of service**

This procedure contains directions to offline the STAR. Since putting the STAR in an offline state seriously affects subscriber service, replace the FSP alarm card only during periods of low traffic.



#### **DANGER**

##### **Risk of electrocution**

Some of the terminals inside the FSP have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

#### ***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 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### ***At the MAP terminal***

- 3 To access the PM level and post the STAR, type  
`>MAPCI;MTC;PM;POST STAR site frame unit`  
and press the Enter key.

*where*

**site**

is the site name of the STAR (alphanumeric)

**frame**

is the frame number of the STAR (0-511)

**unit**

is 0 for the STAR

**NTTR74**  
**in a STAR** (continued)

---

**At the SRHE frame**

**4**



**DANGER**

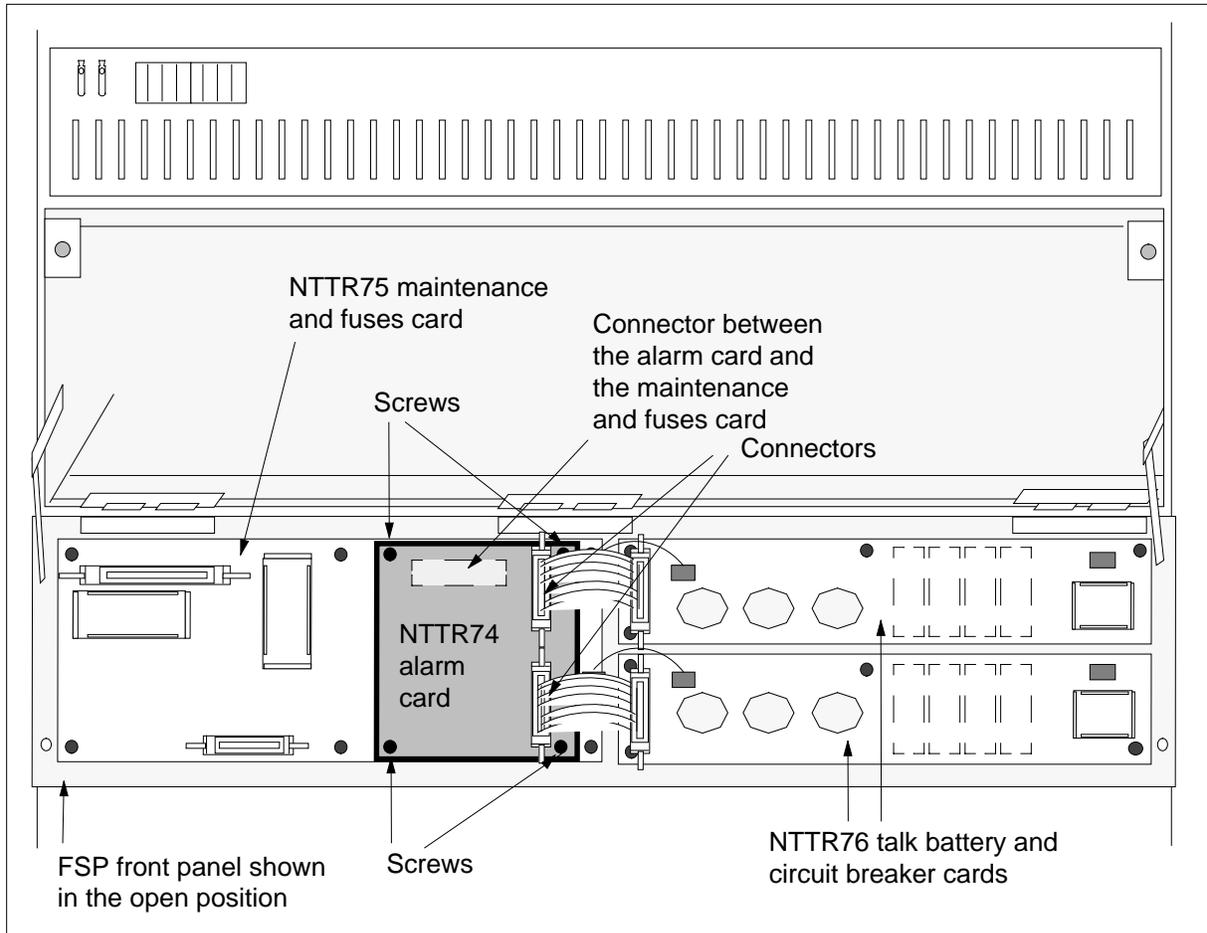
**Static electricity damage**

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.

Using a slot screwdriver, unscrew the two screws located in the upper left- and right-hand corners of the FSP front panel.

- 5** Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.
- 6** With the FSP front panel open, locate the NTTR74 alarm card. Use the following diagram to assist you.

## NTTR74 in a STAR (continued)



- 7 Remove the alarm card by performing the following steps:
  - a Disconnect the two cable connectors on the alarm card and note the connector numbers.
  - b Using a Phillips head screwdriver, unscrew the four Phillips head screws and remove the lock washers and flat washers that secure the NTTR74 alarms card to the NTTR75. Gently pull with a rocking motion until the pins on the underside of the alarm card are clear of the connector between the alarm card and the maintenance and fuses card.
  - c Place the card you have removed in an electrostatic discharge (ESD) protective container.
  - d Obtain a replacement card with the same product equipment code (PEC), including suffix, as the card you just removed.
- 8 Install the new alarm card by performing the following steps:
  - a Carefully install the new alarm card, positioning it to correctly align the pins to the connector on the maintenance and fuses card where the alarm card was removed from in step 7a

---

## NTTR74 in a STAR (end)

---

- b Gently press the card in place on the connector.
  - c Install the four Phillips head screws, lock washers, and flat washers in the NTTR74 alarms card to secure it to the NTTR75 Tighten the screws after all four screws are installed.
  - d Reconnect the two cable connectors that were disconnected in step 7a
- 9 Close the FSP front panel. Secure the FSP front panel by tightening the two screws that were loosened in step 4.

### **At the MAP terminal**

- 10 Determine if either unit is ISTB.

| If                  | Do      |
|---------------------|---------|
| either unit is ISTb | step 11 |
| the STAR is InSv    | step 12 |

- 11 To perform an in-service test on the ISTb unit, type

```
>TST UNIT unit_no
```

and press the Enter key.

where

**unit\_no**  
is the STAR unit in the ISTb state

| If TST | Do      |
|--------|---------|
| passes | step 12 |
| fails  | step 14 |

- 12 Send any faulty cards for repair according to local procedure.

- 13 Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Proceed to step 16.

- 14 Get additional help by contacting the personnel responsible for a higher level of support.

- 15 If alarms are displayed, proceed to the appropriate alarm clearing procedure in this manual.

- 16 You have correctly completed this procedure.

## **NTTR75 in a STAR**

---

### **Application**

Use this procedure to replace the following card in the STAR frame supervisory panel (FSP).

| <b>PEC</b> | <b>Suffixes</b> | <b>Name</b>                |
|------------|-----------------|----------------------------|
| NTTR75     | AA              | Maintenance and fuses card |

### **Common procedures**

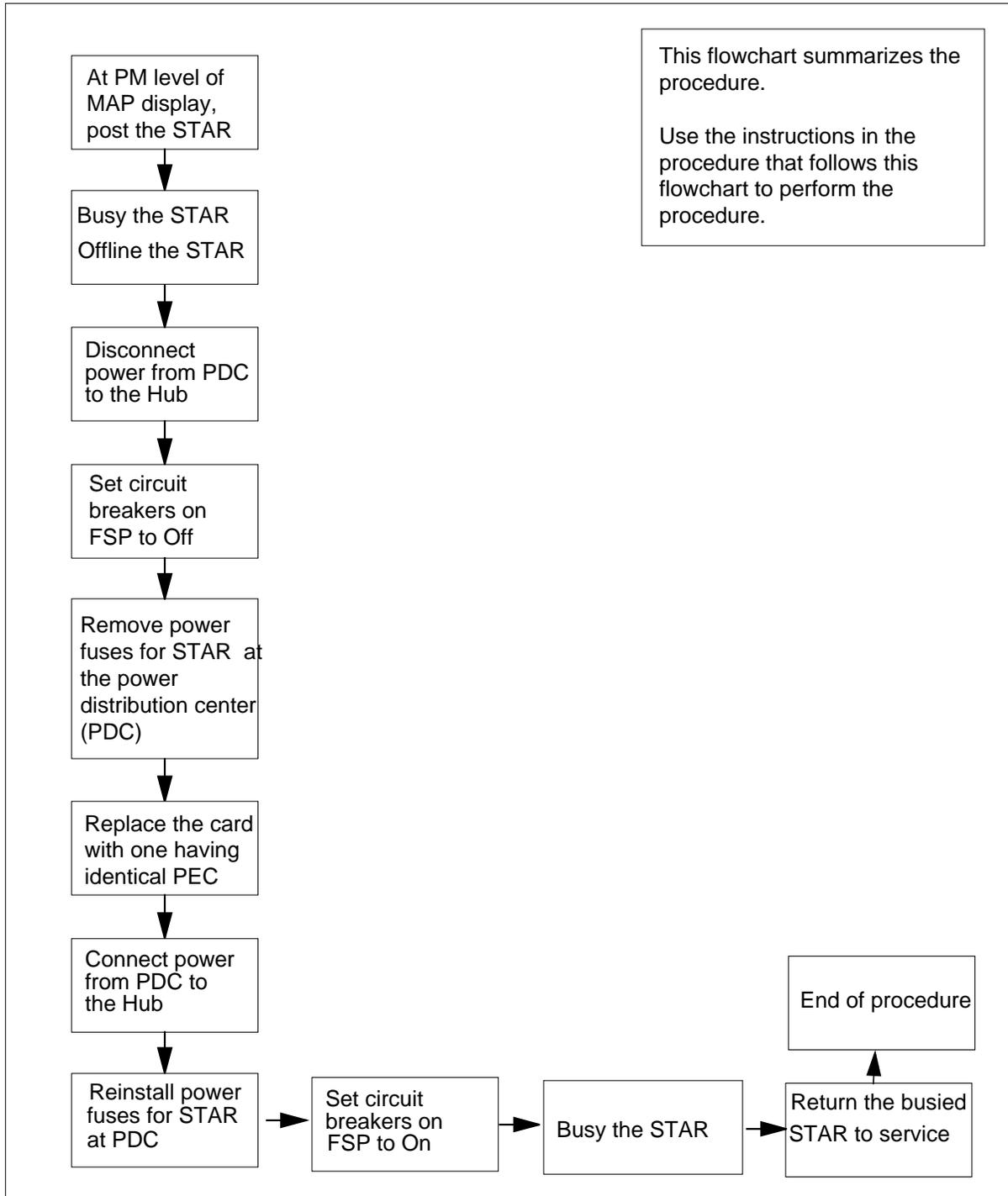
None.

### **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.

## NTTR75 in a STAR (continued)

### Summary of replacing a/an NTTR75 in a STAR



## NTTR75 in a STAR (continued)

---

### Replacing an NTTR75 in a STAR



#### **CAUTION**

##### **Loss of service**

This procedure contains directions to offline the STAR. Since putting the STAR in an offline state seriously affects subscriber service, replace the FSP alarm card only during periods of low traffic.



#### **DANGER**

##### **Risk of electrocution**

Some of the terminals inside the FSP have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

#### ***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 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

#### ***At the MAP terminal***

- 3 To access the PM level and post the STAR, type  
`>MAPCI;MTC;PM;POST STAR site frame unit`  
and press the Enter key.  
*where*  
**site**  
is the site name of the STAR (alphanumeric)  
**frame**  
is the frame number of the STAR (0-511)  
**unit**  
is 0 for the STAR
- 4 To busy the STAR containing the faulty card, type  
`>BSY PM`  
and press the Enter key.

## NTTR75 in a STAR (continued)

- 5 To offline the STAR containing the faulty card, type  
>OFFL PM  
and press the Enter key.

### **At the SRHE frame**

- 6 Disconnect the power from the PDC to the Star Hub.
- 7 On the FSP front panel, power down the ringing generators, power converters, line drawers and NTTR73 universal maintenance pack (UMP) in the control shelf by setting the circuit breakers listed in the following table to the Off position.

| If Circuit breaker label | DoPurpose                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------|
| PS00, Slot 3             | NT6X53 power converter in unit 0, slot 3                                                       |
| PS01, Slot 5             | NT6X53 power converter in unit 0, slot 5                                                       |
| PS10, Slot 20            | NT6X53 power converter in unit 1, slot 20                                                      |
| PS11, Slot 18            | NT6X53 power converter in unit 1, slot 18                                                      |
| Ring 0, Slot 1           | NTTR60 ringing generator in unit 0, slot 1                                                     |
| Ring 1, Slot 22          | NTTR60 ringing generator in unit 1, slot 22                                                    |
| Talk A                   | Talk battery A feed to the 9 line drawers 1 - 4, 9 - 13 and UMP cards in unit 0/1, slot 11/13  |
| Talk B                   | Talk battery B feed to the 9 line drawers 5 - 8, 14 - 18 and UMP cards in unit 0/1, slot 11/13 |

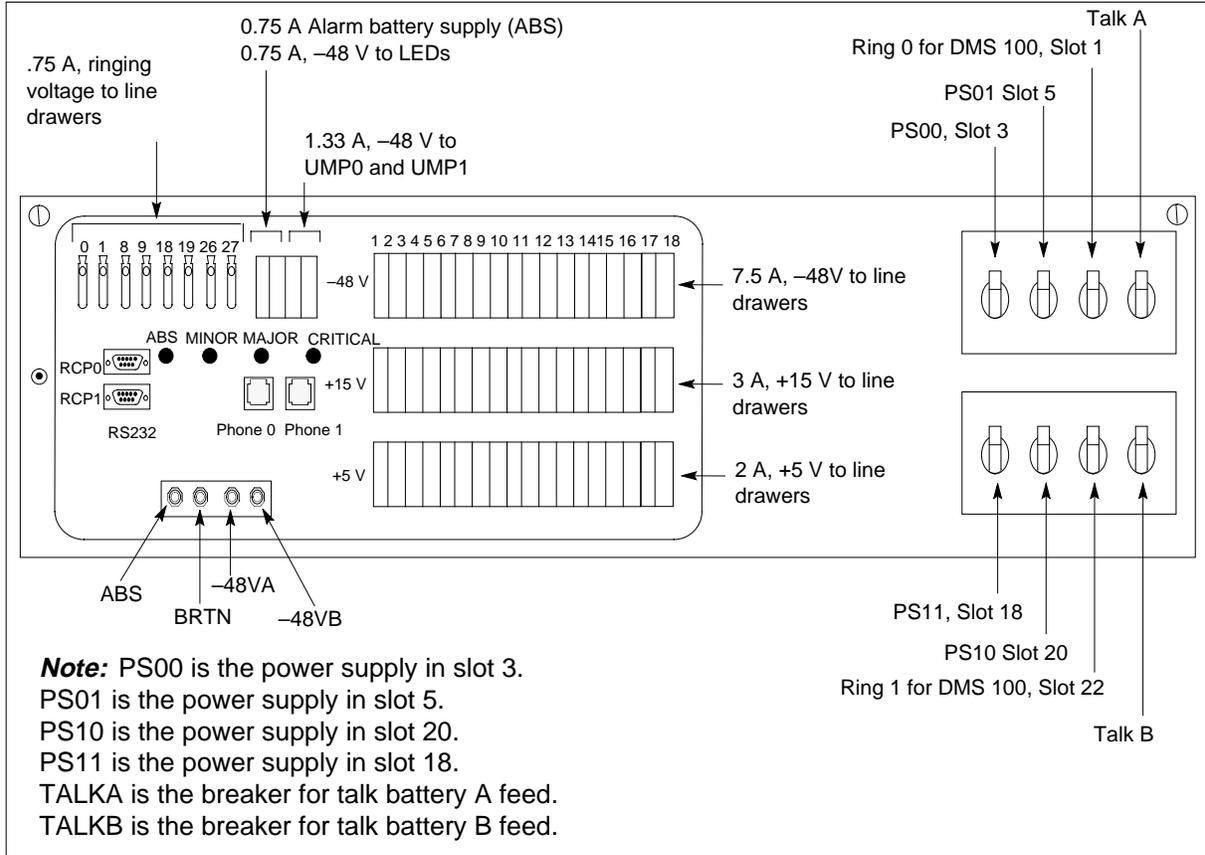
- 8 Use a fuse puller to remove the following fuses on the FSP front panel
- one -48 V alarm and battery supply (ABS) fuse
  - one -48 V LED
  - two -48 V to universal maintenance packs (UMP)
  - eight ringing voltage to line drawers
  - 18 -48 V to line drawers
  - 18 +15 V to line drawers
  - 18 +5 V to line drawers

**Note:** Store and group the fuses by size to simplify reinstallation into the replacement card.

Use the following figure to locate the fuses and breakers and their labels.

# NTTR75 in a STAR (continued)

## FSP front panel



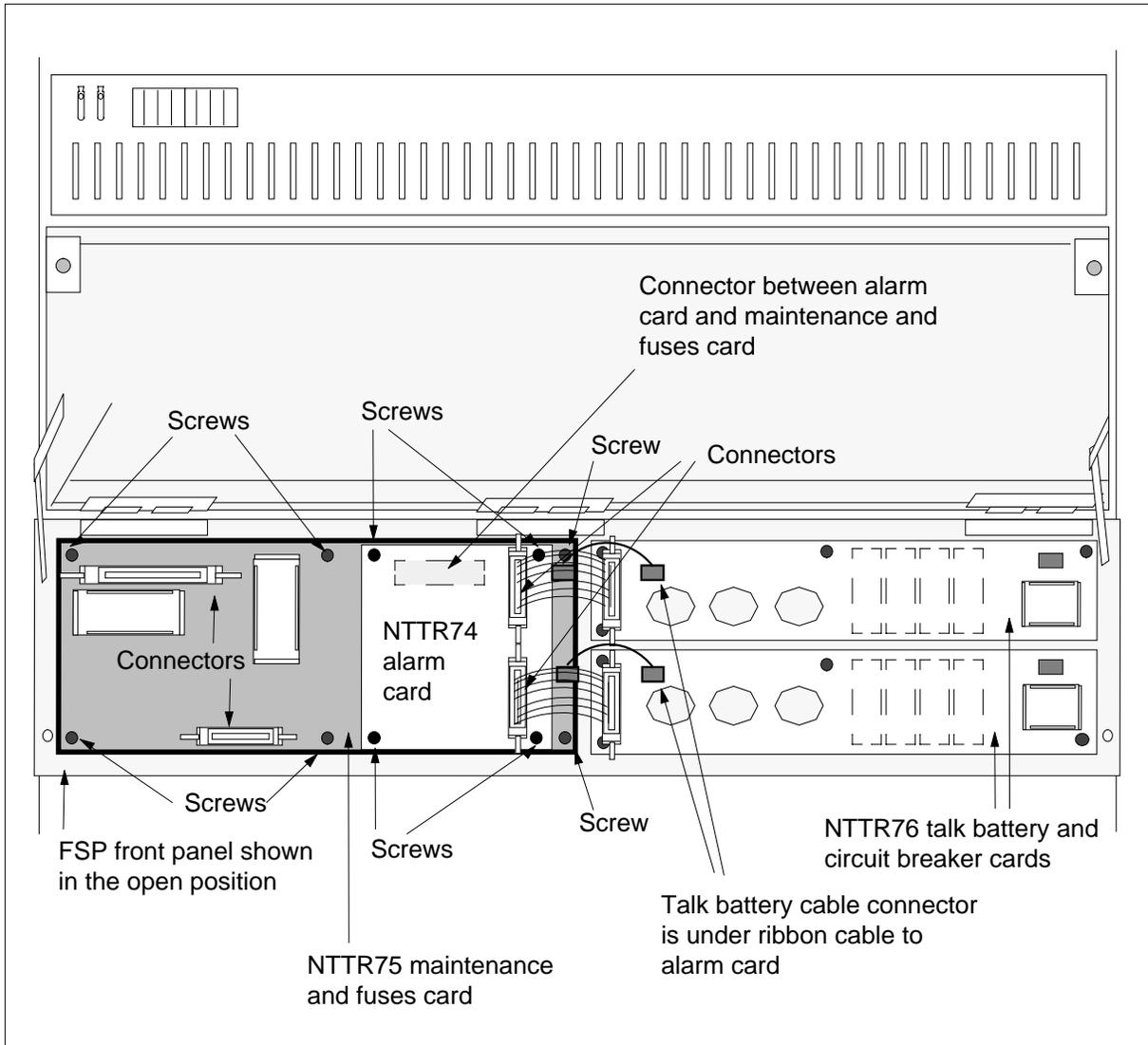
9



**WARNING**  
**Static electricity damage**  
 Wear a wrist strap connected to the wrist strap grounding point on the FSP while handling cards. This precaution protects the cards against damage caused by static electricity.

- Use a slot screwdriver to unscrew the two screws located in the upper left- and right-hand corners of the FSP front panel.
- 10** Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.
- 11** With the FSP front panel open, locate the NTTR74 alarm card. Use the following diagram to assist you.

## NTTR75 in a STAR (continued)



- 12** Remove the NTTR75 maintenance and fuses card by performing the following steps:
- a** Disconnect the two cable connectors on the NTTR74 alarm card and note the connector numbers.
  - b** Using a Phillips head screwdriver, unscrew the four Phillips head screws and remove the lock washers and flat washers that secure the NTTR74 alarm card to the NTTR75. Gently pull with a rocking motion until the pins on the underside of the alarm card are clear of the connector between the alarm card and the maintenance and fuses card.
  - c** Carefully remove the alarm card.

## NTTR75 in a STAR (continued)

---

- d Place the card you have removed in an electrostatic discharge (ESD) protective container.
  - e Disconnect the four cable connectors on the left half of the NTTR75 maintenance and fuses card and note the connector numbers. Then, disconnect the two talk battery cables on the right end of the card noting the connector labels.
  - f Using a Phillips head screwdriver, unscrew the six Phillips head screws and remove the lock washers and flat washers that secure the NTTR75 maintenance and fuses card to the back of the FSP front panel.
  - g Carefully remove the maintenance and fuses card.
  - h Place the card you have removed in an electrostatic discharge (ESD) protective container.
  - i Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card you just removed.
- 13** Install the new maintenance and fuses card by performing the following steps:
- a Install the new maintenance and fuses card, positioning it to correctly connect the cable connectors that were disconnected in step 12e.
  - b Install the six Phillips head screws, lock washers, and flat washers in the NTTR75 maintenance and fuses card to secure it to the back of the FSP front panel. Tighten the screws after all six screws are installed.
  - c Connect the four cable connectors and the two talk battery cables on the NTTR75 maintenance and fuses card that were disconnected in step 12e.
  - d Carefully install the alarms card, positioning it to correctly align the pins to the connector on the maintenance and fuses card that was disconnected in step 12b
  - e Gently press the card in place on the connector.
  - f Install the four Phillips head screws, lock washers, and flat washers in the NTTR74 alarms card to secure it to the NTTR75. Tighten the screws after all four screws are installed.
  - g Reconnect the two cable connectors that were disconnected in step 12a.
- 14** Close the FSP front panel. Secure the FSP front panel by tightening the two screws that were loosened in step 9.
- 15** Connect the power from the PDC to the Hub.
- 16** Install the fuses in the FSP front panel that were removed in step 8. Use the figure titled "FSP front panel" to aid in correct fuse placement.
- 17** Restore power to the STARs ringing generators, power converters, line drawers, and UMP cards by setting the circuit breakers to the On position that were listed in the table and turned Off in step 7.
- 18** Observe the fuses on the FSP front panel. Determine if there are blown fuses.

---

| If                       | Do      |
|--------------------------|---------|
| there are no blown fuses | step 19 |

---

---

**NTTR75**  
**in a STAR (end)**

---

| <b>If</b>             | <b>Do</b> |
|-----------------------|-----------|
| there are blown fuses | step 23   |

---

**At the MAP terminal**

**19** To busy the STAR that was offlined in step 5, type

>BSY PM

and press the Enter key.

**20** To return to service the STAR, type

>RTS PM

and press the Enter key.

| <b>If RTS</b>                                                | <b>Do</b> |
|--------------------------------------------------------------|-----------|
| passes                                                       | step 21   |
| fails and a card list appears<br>(an alarm condition exists) | step 24   |

---

**21** Send any faulty cards for repair according to local procedure.

**22** Record the following items in office records:

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Proceed to step 25.

**23** Get additional help by contacting the personnel responsible for a higher level of support.

**24** If alarms are displayed, go to the appropriate alarm clearing procedure in this manual.

**25** You have correctly completed this procedure.

---

**NTTR76  
in a STAR**

---

**Application**

Use this procedure to replace the following card in the STAR frame supervisory panel (FSP).

| PEC    | Suffixes | Name                                   |
|--------|----------|----------------------------------------|
| NTTR76 | AA       | Talk battery and circuit breakers card |

**Common procedures**

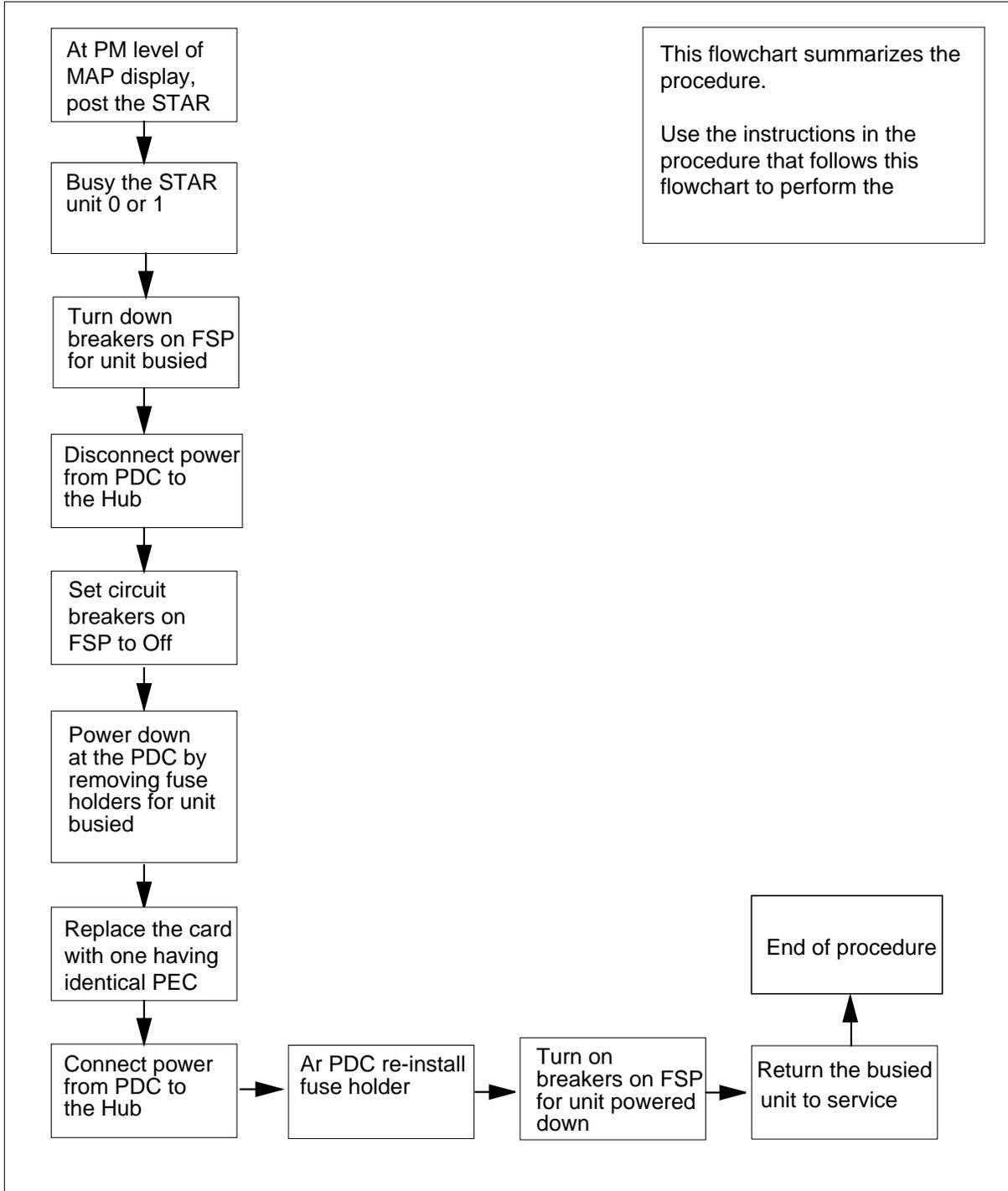
None

**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.

## NTTR76 in a Star (continued)

### Summary of replacing an NTTR76 in a STAR



## NTTR76 in a Star (continued)

### Replacing an NTTR76 in a STAR



**DANGER**  
**Risk of electrocution**

Some of the terminals inside the FSP have an electrical potential of -48 V dc. Remove all jewelry before replacing a card in the FSP. Do not touch any terminal inside the FSP.

**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 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card to be removed.

**At the MAP terminal**

- 3 To access the PM level and post the STAR, type  

```
>MAPCI;MTC;PM;POST STAR site frame unit
```

 and press the Enter key.  
 where  
     **site**  
       is the site name of the STAR (alphanumeric)  
     **frame**  
       is the frame number of the STAR (0-511)  
     **unit**  
       is 0 for the STAR
- 4 Check for REX tst by typing  

```
>tst rex query
```

 and press the Enter key.  
 If the MAP response is  

```
STAR SHUB 00 0 REX test is ON
```

 type the following  

```
>tst rex off
```

 the MAP response should be  

```
STAR SHUB 00 0 REX test is OFF
```
- 5 To busy the STAR unit containing the faulty card, type  

```
>BSY UNIT unit_no
```

**NTTR76**  
**in a Star** (continued)

and press the Enter key.

*where*

**unit**

is the STAR unit (0 or 1) associated with the faulty talk battery and circuit breakers card

**6** To offline the STAR unit, type

**>OFFL UNIT unit\_no**

and press the Enter key.

*where*

**unit**

is the STAR unit (0 or 1) associated with the faulty talk battery and circuit breakers card

**At the SRHE frame**

**7** Disconnect the power from the PDC to the Star Hub by removing the fuses from the relevant NTTR76 units.

**8** On the FSP front panel, power down the ringing generators, power converters, line drawers and NTTR73 universal maintenance pack (UMP) in the control shelf by setting the circuit breakers listed in the following table to the OFF position.

| <b>Circuit breaker label</b> | <b>Unit number</b> | <b>Purpose</b>                                                                                  |
|------------------------------|--------------------|-------------------------------------------------------------------------------------------------|
| PS00, Slot 3                 | Unit 0             | NT6X53 power converter, slot 3                                                                  |
| PS01, Slot 5                 | Unit 0             | NT6X53 power converter, slot 5                                                                  |
| Ring 0, Slot 1               | Unit 0             | NTTR60 ringing generator, slot 1                                                                |
| Talk A                       | Unit 0             | Talk battery A feed to the 9 line drawers 1 - 4, 9 -13 and UMP packs, in unit 0/1, slot 11/13   |
| PS10, Slot 20                | Unit 1             | NT6X53 power converter, slot 20                                                                 |
| PS11, Slot 18                | Unit 1             | NT6X53 power converter, slot 18                                                                 |
| Ring 1, Slot 22              | Unit 1             | NTTR60 ringing generator, slot 22                                                               |
| Talk B                       | Unit 1             | Talk battery B feed to the 9 line drawers 5 - 8, 14 - 18 and UMP packs, in unit 0/1, slot 11/13 |

**If**

**Do**

you are replacing both NTTR76 cards      step 9

---

## NTTR76 in a Star (continued)

---

| If                                                          | Do      |
|-------------------------------------------------------------|---------|
| else do not remove the fuses from the NTTR75 card and go to | step 10 |

---

### ***At the FSP front panel***

**9** Use a fuse puller to remove the following fuses on the FSP front panel

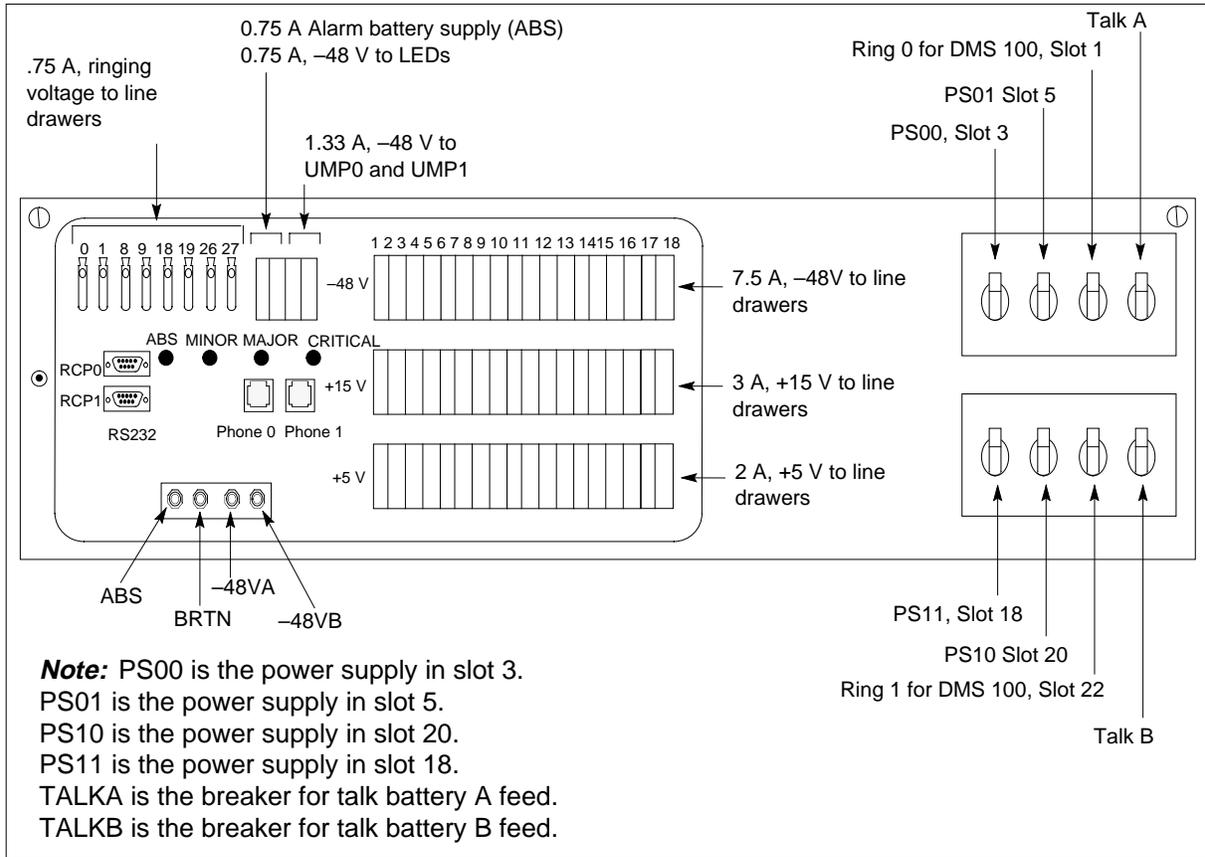
- one -48 V alarm and battery supply (ABS) fuse
- one -48 V LED
- two -48 V to universal maintenance packs (UMP)
- eight ringing voltage to line drawers
- 18 -48 V to line drawers
- 18 +15 V to line drawers
- 18 +5 V to line drawers

**Note:** Store and group the fuses by size to simplify reinstallation into the panel.

Use the following figure to locate the fuses and breakers and their labels.

# NTTR76 in a Star (continued)

## FSP front panel



### At the SRHE frame

10



#### DANGER

##### Static electricity damage

Wear a wrist strap connected to the wrist strap grounding point on the FSP while handling cards. This precaution protects the cards against damage caused by static electricity.

Remove the metal cover.

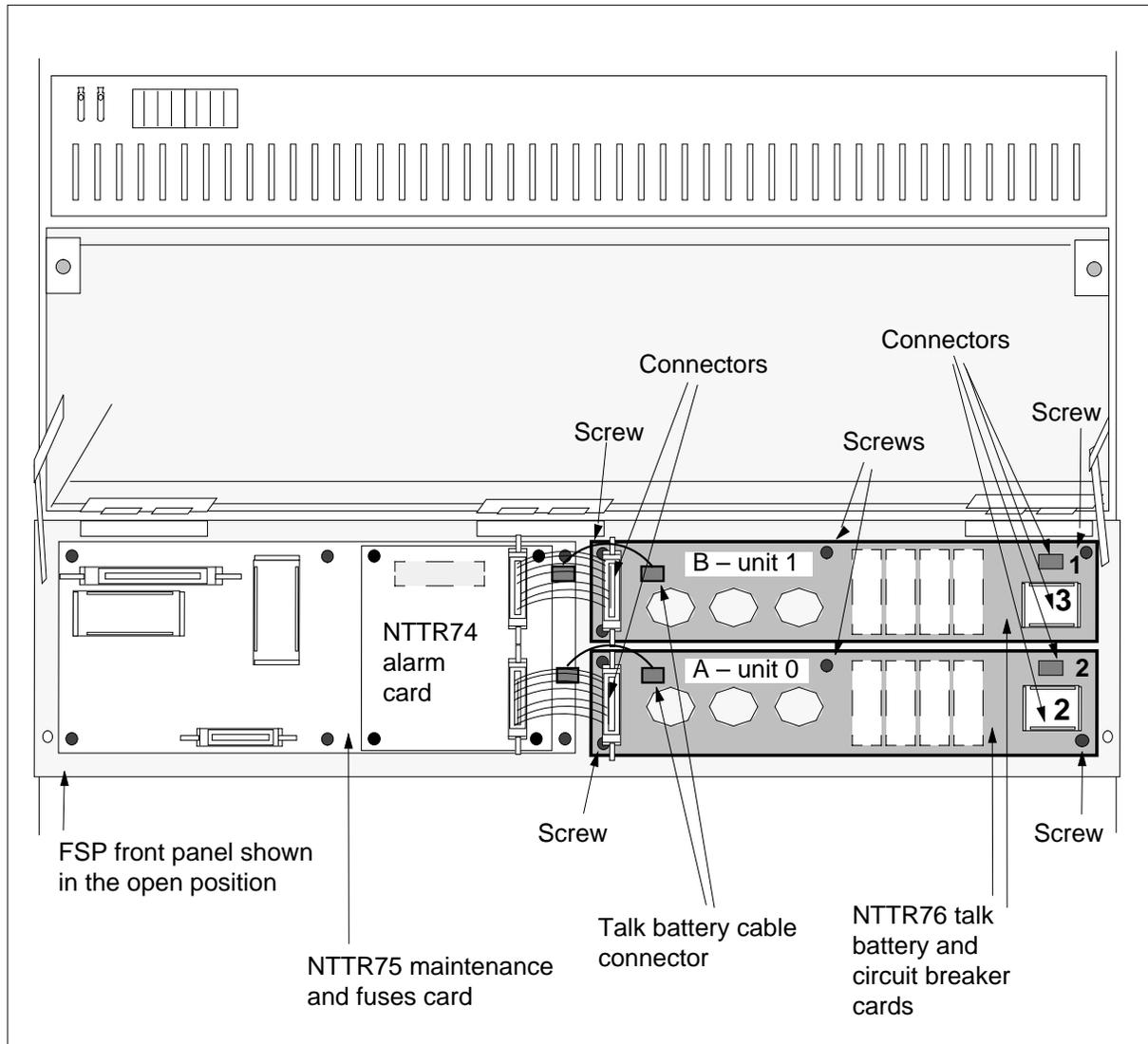
Using a slot screwdriver, unscrew the two screws located in the upper left and right hand corners of the FSP front panel.

11

Swing the FSP front panel downward to expose the interior of the FSP and the cards located on the back of the FSP front panel.

## NTTR76 in a Star (continued)

- 12** With the FSP front panel open, locate the NTTR76 talk battery and circuit breaker cards. Use the following diagram to assist you. Determine the correct card to remove, based on whether the problem is related to the A or the B feed or a defective circuit breaker. Note in the following diagram where the NTTR76 cards are labeled A and B and the unit number they support. The A relates to the A feed and the B relates to the B feed.



- 13** Remove the appropriate NTTR76 card by performing the following steps:
- a Disconnect the four cable connectors on the NTTR76 card.
  - b Remove the cover.

**NTTR76**  
**in a Star** (end)

- c Using a Phillips head screwdriver, unscrew the five Phillips head screws and remove the screws, lock washers, and flat washers that secure the NTTR76 card to the back of the FSP front panel.
  - d Carefully remove the NTTR76 card.
  - e Place the card you have removed in an electrostatic discharge (ESD) protective container.
  - f Ensure the replacement card has the same product equipment code (PEC), including suffix, as the card you just removed.
- 14 Install the new NTTR76 talk battery and circuit breaker card by performing the following steps:
- a Install the new NTTR76 card.
  - b Install the five Phillips head screws, lock washers, and flat washers in the NTTR76 card to secure the card to the back of the FSP front panel. Tighten the screws after all five screws are installed.
  - c Install the cover.
  - d Reconnect the four cable connectors on the NTTR76 card that were disconnected in step 13a
- 15 Close the FSP front panel. Secure the FSP front panel by tightening the two screws that were loosened in step 10.
- 16 Connect the power from the PDC to the Star Hub by restoring the fuses to the relevant NTTR76 units.
- 17 Install the fuses in the FSP front panel that were removed in Step 9. Use the figure titled "FSP front panel" to aid in correct fuse placement.
- 18 Restore power to the unit's ringing generators, power converters, line drawers, and UMP cards by setting the circuit breakers to the On position that were turned Off in step 8. Refer to the table in step 8.
- 19 Busy the STAR unit that was offlined in steps 5 and 6 by typing

```
>BSY UNIT unit_no
```

and press the Enter key

- 20 Observe the fuses on the FSP front panel. Determine if there are blown fuses.

| If                       | Do      |
|--------------------------|---------|
| there are no blown fuses | step 21 |
| there are blown fuses    | step 25 |

**At the MAP terminal**

- 21 To return to service the STAR, type
- ```
>RTS UNIT unit_no
```
- and press the Enter key.
- where*

---

**unit**  
is the STAR unit (0 or 1) that was busied in step 5

	<b>If RTS</b>	<b>Do</b>
	passes	step 23
	fails and a card list appears (an alarm condition exists)	step 26
<b>22</b>	Turn REX tst back on by typing <code>&gt;tst rex on</code> and press the enter key. The MAP response should be STAR SHUB 00 0 REX test is ON	
<b>23</b>	Send any faulty cards for repair according to local procedure.	
<b>24</b>	Record the following items in office records: <ul style="list-style-type: none"> <li>• date the card was replaced</li> <li>• serial number of the card</li> <li>• indications that prompted replacement of the card</li> </ul> Proceed to step 27.	
<b>25</b>	Get additional help by contacting the personnel responsible for higher level of support.	
<b>26</b>	If alarms are displayed, proceed to the appropriate alarm clearing procedure in this manual.	
<b>27</b>	You have correctly completed this procedure.	



**NTTR77  
in a STAR**

---

**Application**

Use this procedure to replace the following card in a STAR.

PEC	Suffixes	Name
NTTR77	AA	Remote controller pack (RCP)

**Common procedures**

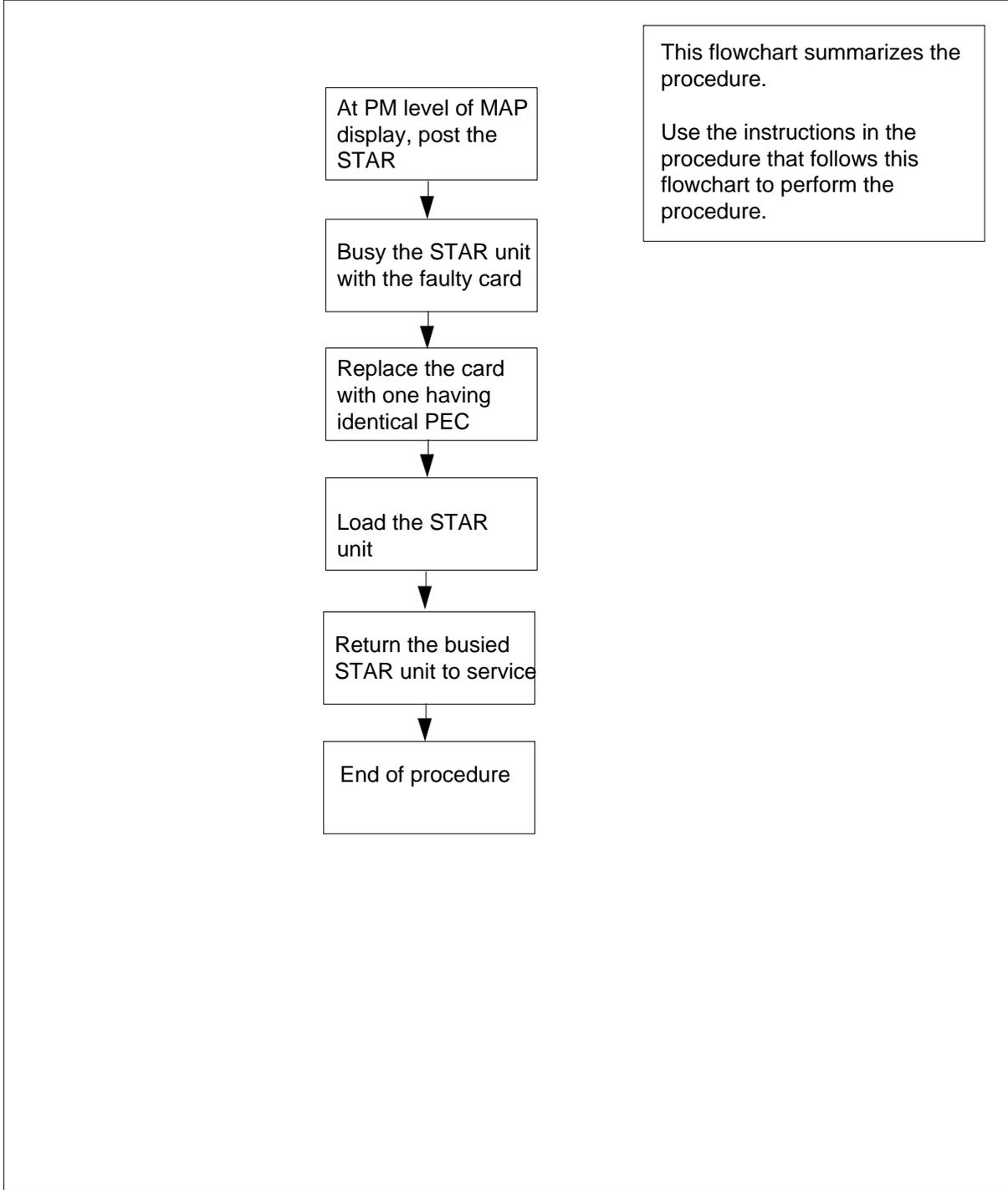
None

**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.

**NTTR77**  
**in a STAR** (continued)

**Summary of card replacement procedure for an NTTR77 card in a STAR**



---

**NTTR77**  
**in a STAR** (continued)

---

**Replacing an NTTR77 card in a STAR**

**ATTENTION**

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.

**At your current location**

**1**



**CAUTION**

**Loss of service**

This procedure includes directions to manually busy one or more peripheral module (PM) units. Since manually busying a PM unit can cause service degradation, perform this procedure only if necessary to restore out-of-service components. Otherwise, carry out this procedure during periods of low traffic.

Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

- 2** If you were directed to this procedure from another maintenance procedure, go to step 6; otherwise, continue with step 3.

**At the MAP display**

- 3** To access the PM level and post the STAR, type  
**>MAPCI;MTC;PM;POST STAR site frame unit**  
and press the Enter key.

*where*

**site**

is the site name of the STAR (alphanumeric)

**frame**

is the frame number of the STAR (0-511)

**unit**

is 0 for the STAR

**NTTR77**  
**in a STAR** (continued)

4 Determine the state of the PM unit associated with the card you are replacing.

If the state of the PM unit is	Do
SysB , Cbsy, ISTb, InSv	step 5
ManB	step 6
Of fl	step 30

5 To busy the STAR unit containing the faulty card, type

`>BSY UNIT unit_no`

and press the Enter key.

where

**unit\_no**  
is the STAR unit to be busied (0 or 1)

**At the SRHE frame**

6



**DANGER**

**Static electricity damage**

Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) while handling circuit cards. This protects the cards against damage caused by static electricity.

Replace the NTTR77 card using the procedure "Replacing a card." When the card has been replaced, return to this point.

7 If you were directed to this procedure from another maintenance procedure, return now to the procedure that directed you here and continue as directed. Otherwise, continue with step 9.

8 To load the STAR unit, type

`>LOADPM UNIT star_unit CC`

and press the Enter key.

where

**star\_unit**  
is the STAR unit to be loaded (0 or 1)

If	Do
message "loadfile not found in directory" displays at the MAP terminal	step 10

---

**NTTR77**  
**in a STAR** (continued)

---

	<b>If</b>	<b>Do</b>
	load passes	step 9
	load fails	step 29
<b>9</b>	To return the STAR unit to service, type >RTS UNIT <b>unit_no</b> and press the Enter key. <i>where</i> <b>unit_no</b> is the STAR busied in step 5 (0 or 1)	
	<b>If RTS</b>	<b>Do</b>
	passes	step 27
	fails	step 29
<b>10</b>	Determine the type of device where the PM load files are located.	
	<b>If load files are located on</b>	<b>Do</b>
	IOC disk	step 17
	SLM disk	step 22
<b>11</b>	Locate the tape that contains the PM load files.	
	<b>At the IOE frame</b>	
<b>12</b>	Mount the tape on a magnetic tape drive.	
	<b>At the MAP display</b>	
<b>13</b>	To download the tape, type >MOUNT <b>tape_no</b> and press the Enter key. <i>where</i> <b>tape_no</b> is the number of the tape drive containing the PM load files	
<b>14</b>	To list the contents of the tape in your user directory, type >LIST T <b>tape_no</b> and press the Enter key. <i>where</i> <b>tape_no</b> is the number of the tape drive containing the PM load files	

---

## NTTR77 in a STAR (continued)

---

- 15** To demount the tape drive, type  
>DEMOUNT T **tape\_no**  
and press the Enter key.  
*where*  
**tape\_no**  
is the number of the tape drive containing the PM load files
- 16** Go to step 26.
- 17** From office records, determine and note the number of the input/output controller (IOC) disk and the name of the volume that contains the PM load files.
- 18** To access the disk utility level of the MAP, type  
>DSKUT  
and press the Enter key.
- 19** To list the IOC file names into your user directory, type  
>LISTVOL **volume\_name** ALL  
and press the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 17
- 20** To leave the disk utility, type  
>QUIT  
and press the Enter key.
- 21** Go to step 26.
- 22** From office records, determine and note the number of the system load module (SLM) disk and the name of the volume that contains the PM load files.
- 23** To access the disk utility level at the MAP display, type  
>DISKUT  
and press the Enter key.
- 24** To list the SLM file names into your user directory, type  
>LV CM;LF **volume\_name**  
and press the Enter key.  
*where*  
**volume\_name**  
is the name of the volume that contains the PM load files, obtained in step 22
- 25** To leave the disk utility, type  
>QUIT

---

**NTTR77**  
**in a STAR (end)**

---

- and press the Enter key.
- 26** To load the STAR unit, type  
`>LOADPDM UNIT star_unit CC`  
 and press the Enter key.  
*where*  
**star\_unit**  
 is the STAR unit to be loaded (0 or 1)
- | <b>If</b>   | <b>Do</b> |
|-------------|-----------|
| load fails  | step 29   |
| load passes | step 9    |
- 27** Send any faulty cards for repair according to local procedure.
- 28** Record the following items in office records:
- date the card was replaced
  - serial number of the card
  - indications that prompted replacement of the card
- Go to step 31.
- 29** Get additional help replacing this card by contacting the personnel responsible for a higher level of support.
- 30** Consult office personnel to determine why the component is offline. Continue as directed by office personnel.
- 31** You have correctly completed this procedure.

## **NTTR87 in a STAR**

---

### **Application**

Use this procedure to replace an NTTR87 card in a STAR.

<b>PEC</b>	<b>Suffixes</b>	<b>Name</b>
NTTR87	AA	Quad frame carrier card

### **Common procedures**

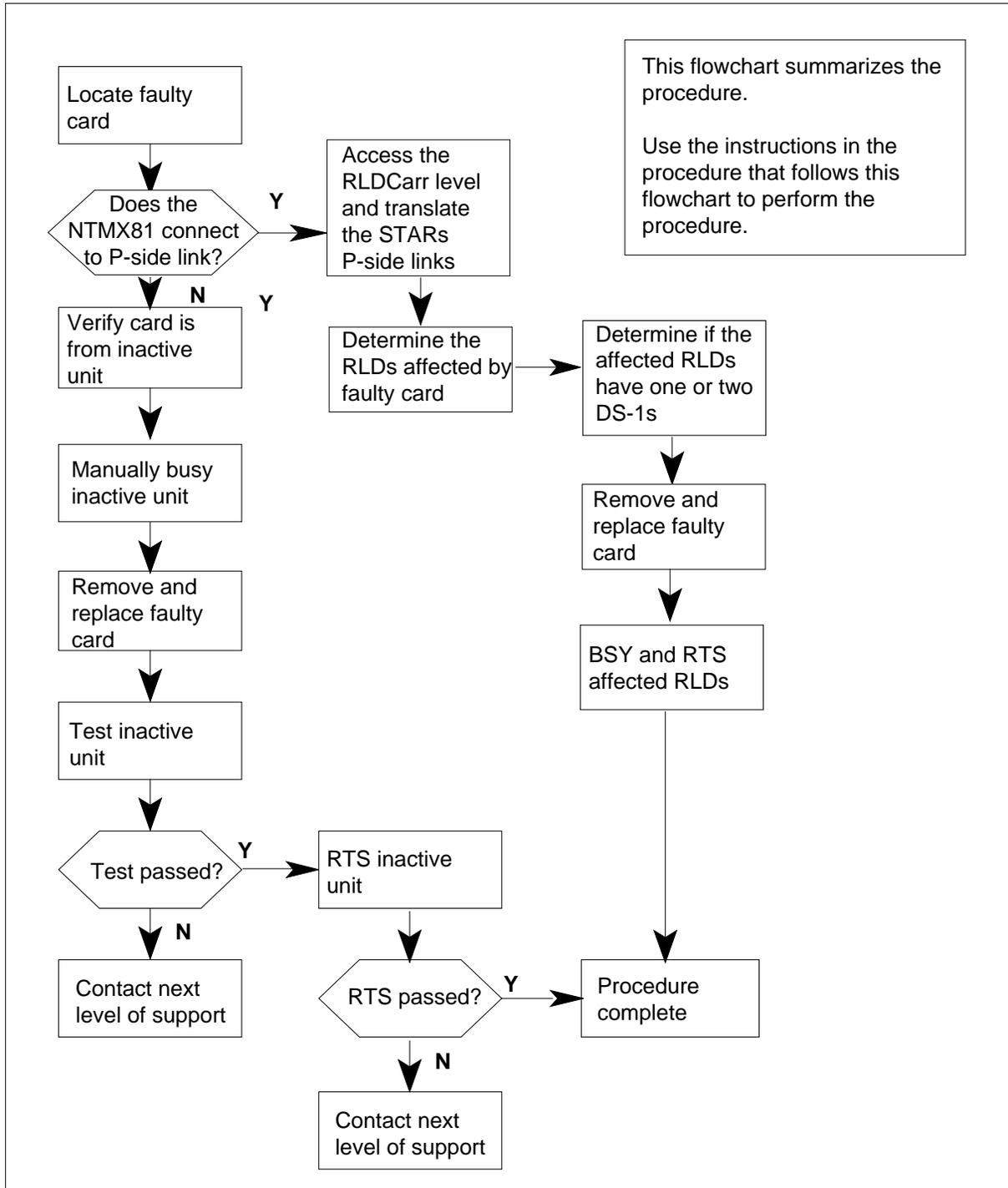
None

### **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.

## NTTR87 in a STAR (continued)

### Summary of card replacement procedure for an NTTR87 card in a STAR



# NTTR87 in a STAR (continued)

## Replacing an NTTR87 card in a STAR

### 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 checking or accepting cards, or have been directed to this procedure by your maintenance support group.
- 2 Get a replacement card. Make sure the replacement card has the same product equipment code (PEC), including suffix, as the card that is to be removed.

### At the MAP terminal

- 3 To make sure the PM level of the MAP display is currently displayed, type **>MAPCI;MTC;PM;POST STAR site frame unit** and press the Enter key.

where

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the card with faults (0 to 511)

**unit**

is 0 for the STAR

Example of a MAP response:

```

PM          SysB      ManB      OffL      CBSy      ISTb      InSv
STAR        0         0         2         0         1         12
STAR REM1 00 0   ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb      /RG: 0
Unit 1:  InSv     /RG: 0
Drwr:      11 11 11 11 11 22 22 22 22 22 33 33 33  Pref 0 InSv
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
. . . . .

```

- 4 Determine the slot location of the NTTR87 with faults.

---

**If the NTTR87 is in slot**

**Do**

8 or 16 (C-side DS-1 links to host PM)      step 5

9, 10, 14, or 15 (P-side DS-1 links to Star Module)      step 12

- 5 Display and record the C-side link status of the posted STAR connected to the NTTR87 card with faults. To display the C-side links, type

**>TRNSL C**

## NTTR87 in a STAR (continued)

and press the Enter key.

*Example of a MAP response*

```
LINK 0   LTC 0 0;CAP MS: STATUS SysB MSGCOND CLS RESTRICT
LINK 1   LTC 0 1;CAP S: STATUS SysB
LINK 2   LTC 0 2;CAP MS: STATUS OK MSGCOND OPN UNRESTRICT
LINK 3   LTC 0 3;CAP S: STATUS OK
LINK 4   LTC 0 4;CAP S: STATUS SysB
LINK 5   LTC 0 5;CAP S: STATUS SysB
```

- 6** To busy the inactive STAR unit, type

```
>bsy unit unit_no
```

and press the Enter key.

*where*

**unit\_no**

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

- 7** From the display in step 5, determine the C-side host PM where the STAR is connected. To post the host PM, type

```
>POST pm_type pm_no
```

and press the Enter key.

*where*

**pm\_type**

is the host PM type, such as LTC, LGC, RCC2

**pm\_no**

is the number of the host PM

*Example of a MAP display:*

	SysB	ManB	OffL	CBsy	ISTb	In
PM	0	0	1	0	4	1
LTC	0	0	2	0	2	
LTC 0	ISTb	Links_OOS:	CSide	0, PSide	4	
Unit0:	Act	InSv				
Unit1:	Inact	InSv				

- 8** To display the P-side link information for the host PM, type

```
>TRNSL P
```

and press the Enter key.

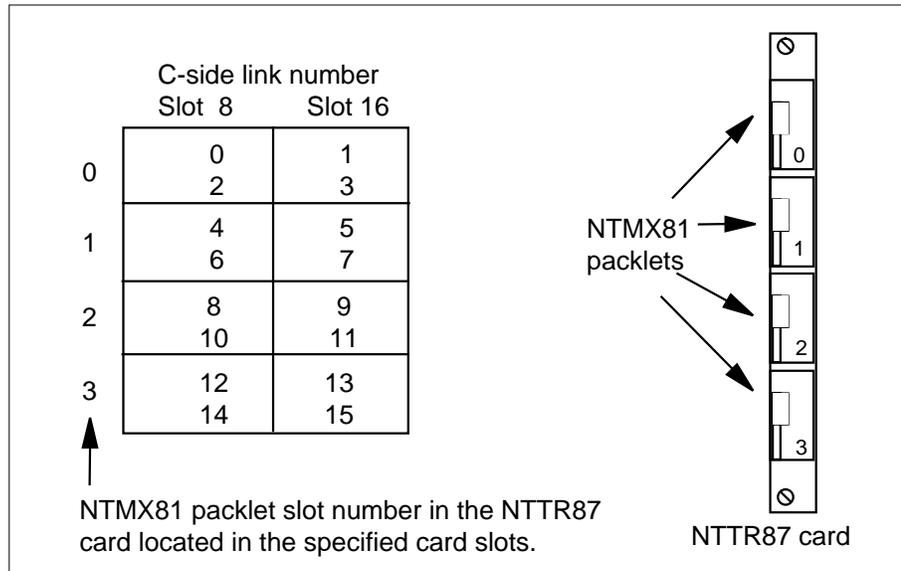
*Example of a MAP response*

```
LINK 0: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 1: STAR REM1 00 0 1;CAP MS:STATUS SBsy MSGCOND: CLS
LINK 2: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 3: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
LINK 4: STAR REM1 00 0 0;CAP MS:STATUS OK MSGCOND: OPN
LINK 5: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
LINK 6: STAR REM1 00 0 0;CAP MS:STATUS SBsy MSGCOND: CLS
LINK 7: STAR REM1 00 0 1;CAP MS:STATUS OK MSGCOND: OPN
```

## NTTR87 in a STAR (continued)

- 9 Record the numbers of the links with status not OK.

After identifying the link with faults, use the following chart to determine which NTTR87 card to remove by matching the provisioned link number with the slot number and the packet number to the left of the table.



- 10 To manually busy the links connected to the NTTR87 card with faults, type  
>BSY LINK link\_no  
and press the Enter key.

where

**link\_no**

is the number of the link connected to the NTTR87 card with faults

**Note:** All provisioned links in the slot must be busied.

Go to step 17.

### At the MAP terminal

- 11 To access the RLDCarr level and display the C-side links from all RLDs to the posted STAR, type

>RLDCARR;TRNSL

and press the Enter key.

*Example of a MAP display:*

## NTTR87 in a STAR (continued)

```
Port 0: Unit 0 RLD 0 0;CAP MS;STATUS: InSv
Port 1: Unit 1 RLD 0 1;CAP MS;STATUS: InSv
Port 2: Unit 0 RLD 1 0;CAP MS;STATUS: InSv
Port 3: Unit 1 RLD 1 1;CAP MS;STATUS: InSv
```

```
Port 14: Unit 0 RLD 7 0;CAP MS;STATUS: InSv
Port 15: Unit 1 RLD 7 1;CAP MS;STATUS: InSV
Port 16: Unit 0 RLD 8 0;CAP MS;STATUS: SysB
Port 17: Unit 1 RLD 8 1;CAP MS;STATUS: InSv
Port 18: Unit 0 RLD 9 0;CAP MS;STATUS: SysB
Port 19: Unit 1 RLD 9 1;CAP MS;STATUS: InSv
```

Record the RLDs with link faults that connect to the STAR posted in step 3.

- 12** To access the RLD MAP level, type

```
>RLD
```

and press the Enter key.

- 13** Post the first RLD. To post the RLD, type

```
>POST rld_no
```

and press the Enter key.

*where*

**rld\_no**

is the number of the RLD with the C-side link that has faults

*Example of a MAP display:*

```

          SysB      ManB      OffL      Cbsy      ISTb      InSv
          PM        4        0        10        3        3        3
          STAR      0        0        0        0        1        1
STAR REM1 00 0  ISTb  Links_OOS: CSide 0 PSide 0 UMP OOS:0
Unit 0:  ISTb                      /RG: 0
Unit 1:  ManB                      /RG: 0
Drwr:           11 11 11 11 11 22 22 22 22 22 33 33 33  RG
01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45  Stby 1 InSv
MM .M -- -- -- -- -- -- -o ss -- -- -- -- -- -- -- --

REM9 RLD DRWR  8 SYSB                      LogDrwr: 16 17
BANK_0: Active                      Links_OOS: 1
BANK_1: Stby                          RLD BDch: -

```

- 14** To display the C-side links for the posted RLD, type

```
>TRNSL
```

and press the Enter key.

*Example of a MAP response*

```
Port 16: HUB Owner Unit 0 RLD 8 Link 0; Cap MS; Status: SysB
Port 17: HUB Owner Unit 1 RLD 8 Link 1; Cap MS; Status: Istb
```

## NTTR87 in a STAR (continued)

- 15 Use the following table and figure to determine which NTTR87 card to remove by matching the provisioned link number with the slot number.

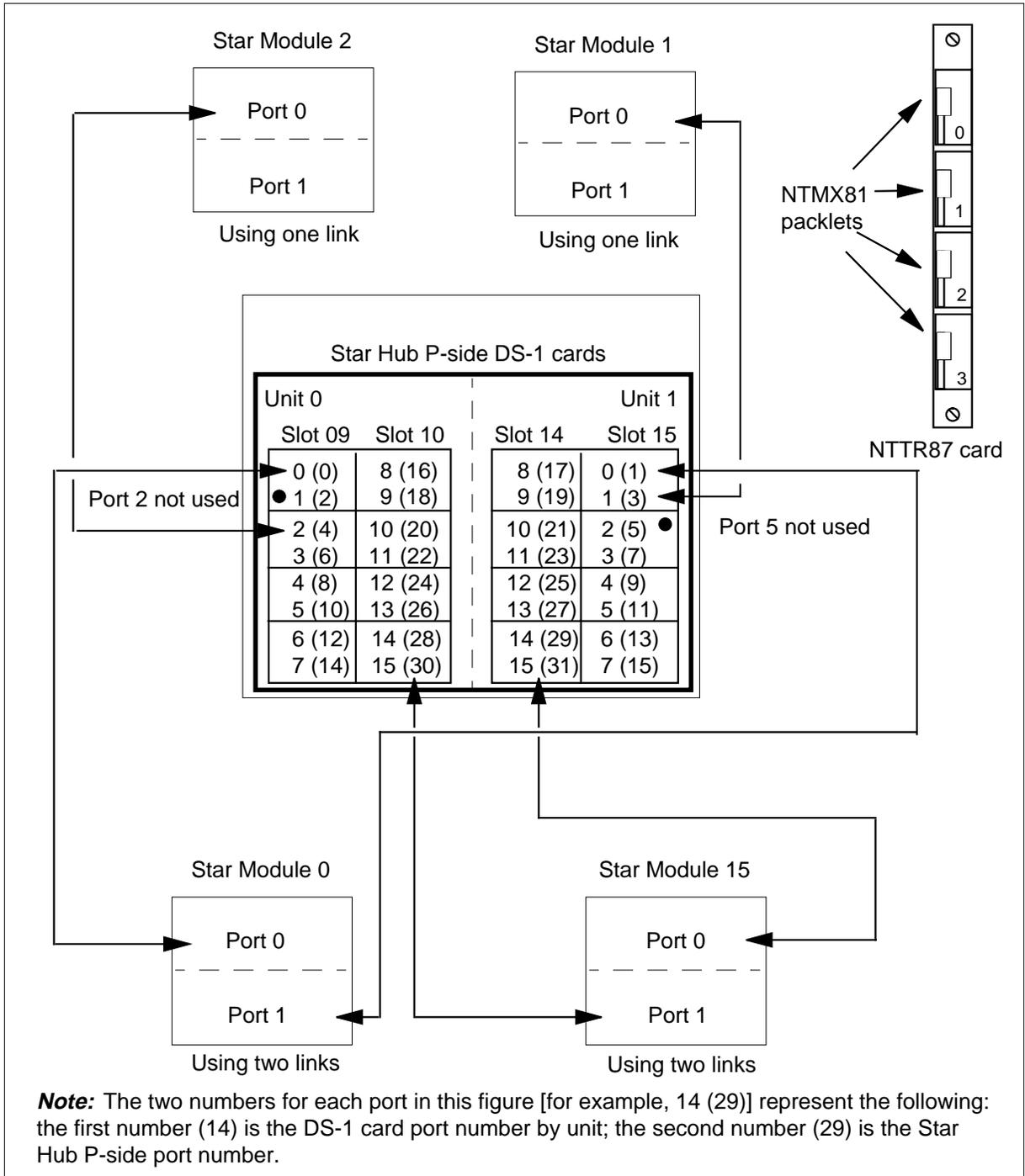
**Note:** When replacing an NTTR87 card, determine if the RLDs affected by the card change have one or two DS-1 links. If the RLDs have one link, then each RLD must be posted, busied, and returned to service. If the RLD has two DS-1 links, the system automatically returns to service the DS-1 link.

### Mapping Star Module ports to DS-1 slot and port numbers

Star Module and link numbers	Star Hub DS-1 slot and port numbers	Star Hub P-side port numbers	Star Module and link numbers	Star Hub DS-1 slot and port numbers	Star Hub P-side port numbers
Module 0 link 0	Slot 9, port 0	0	Module 8 link 0	Slot 10, port 8	16
Module 0 link 1	Slot 15, port 0	1	Module 8 link 1	Slot 14, port 8	17
Module 1 link 0	Slot 9, port 1	2	Module 9 link 0	Slot 10, port 9	18
Module 1 link 1	Slot 15, port 1	3	Module 9 link 1	Slot 14, port 9	19
Module 2 link 0	Slot 9, port 2	4	Module 10 link 0	Slot 10, port 10	20
Module 2 link 1	Slot 15, port 2	5	Module 10 link 1	Slot 14, port 10	21
Module 3 link 0	Slot 9, port 3	6	Module 11 link 0	Slot 10, port 11	22
Module 3 link 1	Slot 15, port 3	7	Module 11 link 1	Slot 14, port 11	23
Module 4 link 0	Slot 9, port 4	8	Module 12 link 0	Slot 10, port 12	24
Module 4 link 1	Slot 15, port 4	9	Module 12 link 1	Slot 14, port 12	25
Module 5 link 0	Slot 9, port 5	10	Module 13 link 0	Slot 10, port 13	26
Module 5 link 1	Slot 15, port 5	11	Module 13 link 1	Slot 14, port 13	27
Module 6 link 0	Slot 9, port 6	12	Module 14 link 0	Slot 10, port 14	28
Module 6 link 1	Slot 15, port 6	13	Module 14 link 1	Slot 14, port 14	29
Module 7 link 0	Slot 9, port 7	14	Module 15 link 0	Slot 10, port 15	30
Module 7 link 1	Slot 15, port 7	15	Module 15 link 1	Slot 14, port 15	31

## NTTR87 in a STAR (continued)

### Star Hub P-side links mapping



## NTTR87 in a STAR (continued)

---

- 16 Determine if additional RLDs connect to the NTTR87.

If additional RLDs are	Do
connected	step 13
not connected	step 17

---

### At the SRHE frame

- 17



#### **DANGER**

##### **Static electricity damage**

Before removing any cards, put on a wrist strap and connect it to the wrist strap grounding point on the left side of the frame supervisory panel (FSP) of the STAR. This protects the equipment against damage caused by static electricity.



#### **DANGER**

##### **Equipment damage**

Take the following precautions when removing or inserting a card.

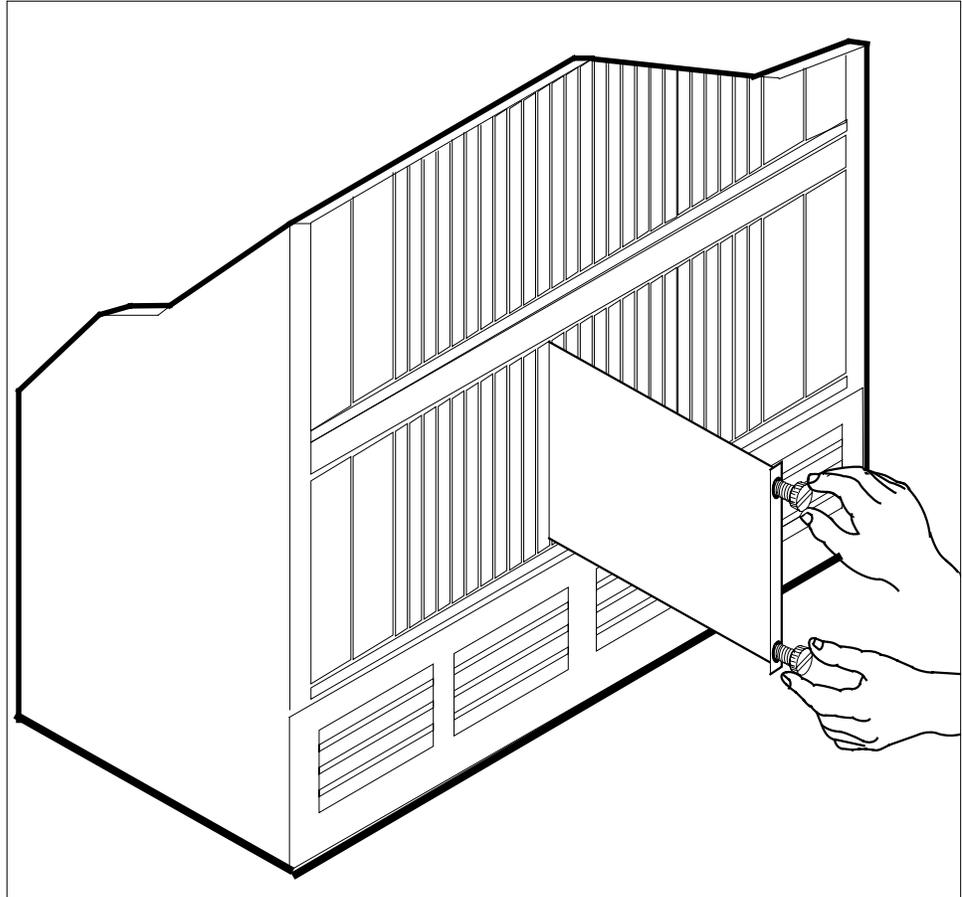
1. Do not apply direct pressure to the components.
2. Do not force the cards into the slots.

Put on a wrist strap.

Remove the NTMX81 packlets as described in the following steps:

- a Locate the NTMX81 packlets to be removed on the appropriate NTTR87 quad carrier card slot.
  - b Open the locking lever on the NTMX81 packlet. Carefully pull the packlet toward you until it clears the shelf. Repeat this step for all four packlets.
  - c Make sure the NTMX81 packlets are stored in an electrostatic discharge (ESD) container for protection of the circuit card until the packlets are installed again in the NTTR87 quad carrier card.
- 18 Using the T9908 wrist grounding strap and a T1324 screwdriver, remove the NTTR87 card. Insert the new card and tighten the screws.

## NTTR87 in a STAR (continued)



- 19** Replace the NTMX81 packlets previously removed. Align the packlet with the slots in the shelf. Carefully slide the packlet into the circuit card slot in the NTTR87 circuit card.
- 20** Seat and lock the packlet.
- a** Using your fingers or thumbs, push on the upper and lower edges of the faceplate of the packlet to ensure the packlet is fully seated in the slot.
  - b** Close the locking lever.
- 21** Use the following information to determine the next step in this procedure.

If you entered this procedure from	Do
alarm clearing procedures	step 33
other	step 22

## NTTR87 in a STAR (continued)

- 22** Use the following table to determine the next step in this procedure.

<b>If you replaced an NTTR87 that housed DS-1 links for the</b>	<b>Do</b>
Star Hub C-side	step 23
Star Hub P-side	step 27

**At the MAP terminal**

- 23** To test the busied network links from step 9, type

`>TST LINK link_no`

and press the Enter key.

where

**link\_no**

is the number of the link that was manually busied in step 10.

**Note 1:** This step must be performed for each manually busied link.

**Note 2:** To test the other links connected to the STAR, perform this step for each link until all links are tested.

<b>If TST</b>	<b>Do</b>
passes	step 24
fails	step 34

- 24** To return to service the P-side links, type

`>RTS LINK link_no`

and press the Enter key.

where

**link\_no**

is the number of the link manually busied in step 10.

**Note 1:** This step must be performed for each link that is manually busied.

**Note 2:** To RTS the other links connected to the STAR, perform the procedures in this step for each link until all links are returned to service.

<b>If RTS</b>	<b>Do</b>
passes	step 25
fails	step 34

- 25** To post the STAR where the NTTR87 card is located, type

`>POST STAR site frame unit`

and press the Enter key.

---

## NTTR87 in a STAR (continued)

---

where

**site**

is the name of the site where the STAR is located

**frame**

is the frame number of the STAR with the card with faults (0 to 511)

**unit**

is 0 for the STAR

- 26** To return the inactive STAR unit to service, type

**>RTS UNIT unit\_no**

and press the Enter key.

where

**unit\_no**

is the number of the STAR unit busied in step 6

If RTS	Do
passes	step 31
fails	step 34

- 27** Determine how many DS-1 links connect to the RLD affected by the NTMX81 card replacement.

If the RLD affected by the card replacement has	Do
one DS-1 link	step 28
two DS-1 links, the affected link returns to service automatically	step 31

**Note:** If there are two RLDs, each with one DS-1 link affected by this card change, both RLDs must be busied and returned to service.

- 28** To busy the posted RLD, type

**>BSY DRWR**

and press the Enter key.

*Example of a MAP display:*

```
Warning: Calls on RLD may be affected.
Do you wish to continue?
Please confirm ("YES", "Y", "NO", "N")
```

- 29** To respond affirmatively to the confirmation request, type

**>Y**

and press the Enter key.

**NTTR87**  
**in a STAR** (end)

---

- 30** To return the RLD to service, type  
>**RTS DRWR**  
and press the Enter key.

---

**If RTS**

**Do**

---

passes and there are no more RLDs to RTS      step 31

passes and there are more RLDs to return to service      step 28

fails      step 34

---

- 31** Send any cards with faults for repair according to local procedure.

- 32** Record the following items in office records

- date the card was replaced
- serial number of the card
- indications that prompted replacement of the card

Go to step 35.

- 33** Return to "Star Remote System alarm clearing procedures" in this manual or the other procedure that directed you to this procedure. At the point where a faulty card list was produced, identify the next faulty card on the list and go to the appropriate card replacement procedure for that card in this manual.

- 34** Get additional help in replacing this card by contacting the personnel responsible for a higher level of support.

- 35** You have correctly completed this procedure. Remove the sign from the active unit and return to the maintenance procedure that directed you to this card replacement procedure and continue as directed.

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# Index

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## C

### Card

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