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Wireless Networks

Base/Telecom

Trouble Locating and Clearing Procedures

Volume 2 of 2

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Base/Telecom

Trouble Locating and Clearing Procedures Volume 2 of 2

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About this document

This document describes procedures to locate and clear trouble in a DMS-MTX wireless switch.

Audience for this document

This publication supports technical administrators of DMS-MTX wireless switching systems and networks.

Organization of this document

This two volume publication provides trouble clearing procedures in alphabetical order.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase italic letters:

>BSY CTRL *ctrl_no*

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

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Responses

Responses correspond to the MAP display and are shown in a different type.

```
FP 3 Busy CTRL 0: Command request has been submitted.

FP 3 Busy CTRL 0: Command passed.
```

Indication of hypertext links

Hypertext links in this document are indicated in blue. If viewing a PDF version of this document, click on the blue text to jump to the associated section or page.

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The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but re-released in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

Related documents

There are no related documents.

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Trouble locating and clearing procedures (continued)

This chapter provides trouble locating and clearing procedures, continuing alphabetically from Volume 1. For general information, see the introduction in Volume 1.

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Incorrect DN in incoming callers list

Application

Use this procedure to determine if an error in entry causes a problem with the incoming callers list (ICL). Use this procedure to correct the error.

Definition

A subscriber complaint indicates wrong directory number (DN) information in the ICL. To view the ICL, use softkeys on the Analog Display Services Interface (ADSI) set of the subscriber.

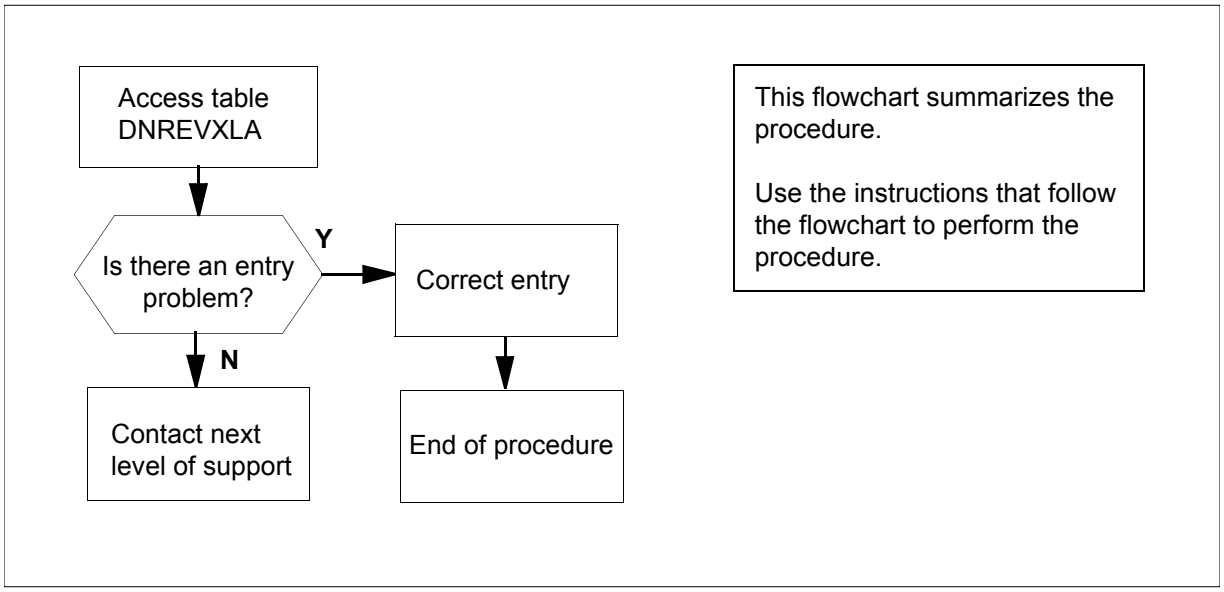
Common procedures

There are no common procedures.

Action

Procedure 1-1 provides steps and actions to determine if an error in entry causes a problem with the ICL and to correct the error, if needed. Figure 1-1 provides an overview of the procedure.

Figure 1-1
Summary of Incorrect DN in incoming callers list



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Procedure 1-1 describes how to determine if an error in entry causes a problem with the incoming callers list (ICL).

Procedure 1-1
Ensuring correct DN in Incoming Caller List

Step	Action
1	At your current location, access table DNREVXLA and check the entries. If all entries are correct, go to step 3. If any entries are wrong, go to step 2.
2	Correct the table DNREVXLA entries and go to step 4.
3	For additional help, contact the next level of support.
4	This procedure is complete.
	—end—

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Incorrect or no displayed calling party name or DN

Application

Use this procedure to determine if a problem with the directory number (DN) results from any of the following:

- a software error
- a line-ended peripheral module (PM) failure
- a possible CLASS modem resource (CMR) card problem

Definition

A subscriber complaint indicates a wrong or missing calling party name or DN information that enters on the line. The subscriber set displays the information.

Common procedures

There are no common procedures.

Action

Procedure 1-2 provides steps and actions to determine the cause of a problem with a directory number. Figure 1-2 through Figure 1-5 provide an overview of the procedure.

> ***Note:*** The CMR card NT6X78 can go out of service in the active unit. If the card goes out of service, the operating company personnel can busy, replace, load, and return the card to service. The operating company personnel do not need to perform these operations on the whole unit.

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Figure 1-2
Summary of Incorrect or no displayed calling party name or DN

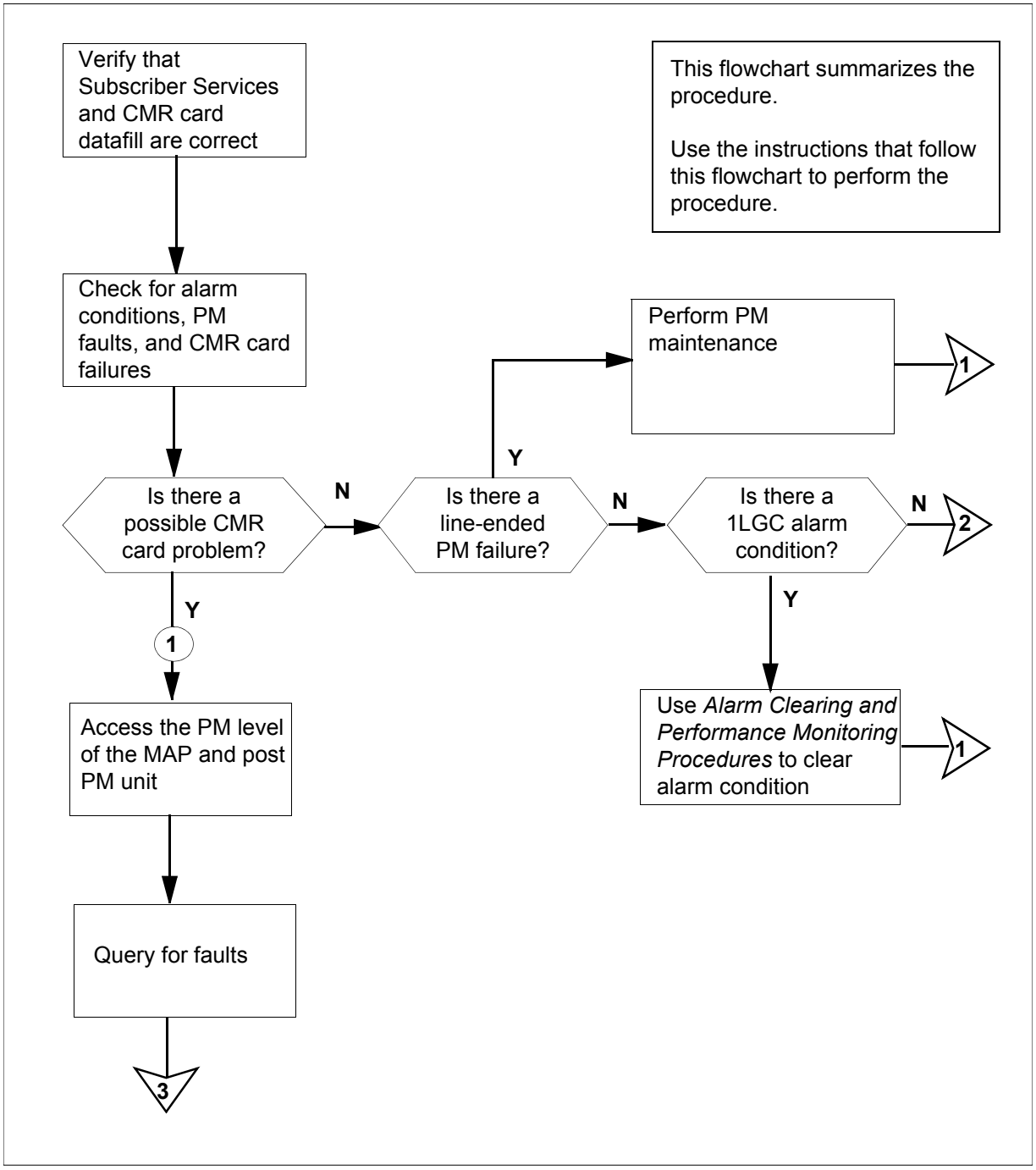

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Figure 1-3
Summary of Incorrect or no displayed calling party name or DN (continued)

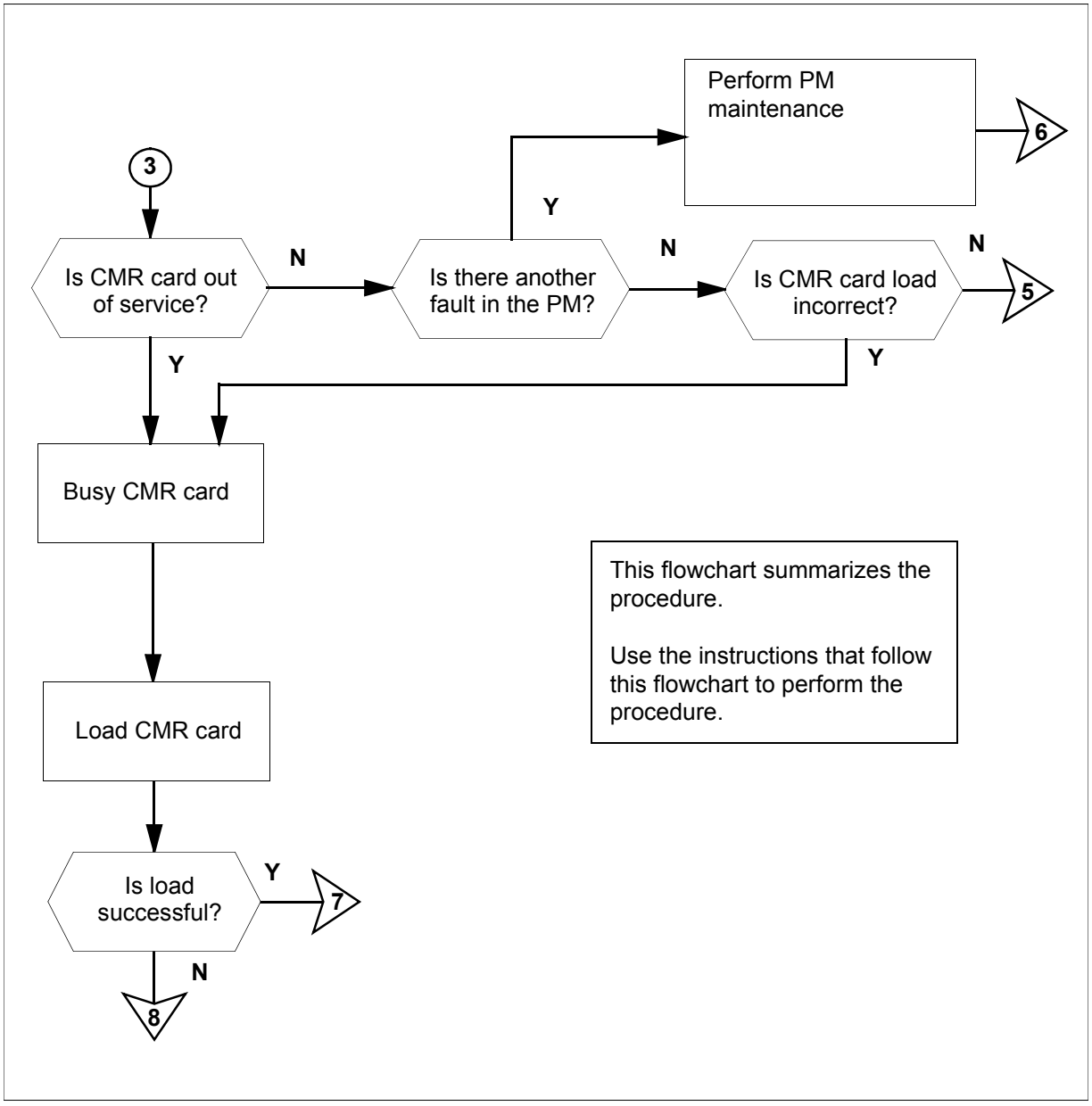

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Figure 1-4
Summary of Incorrect or no displayed calling party name or DN (continued)

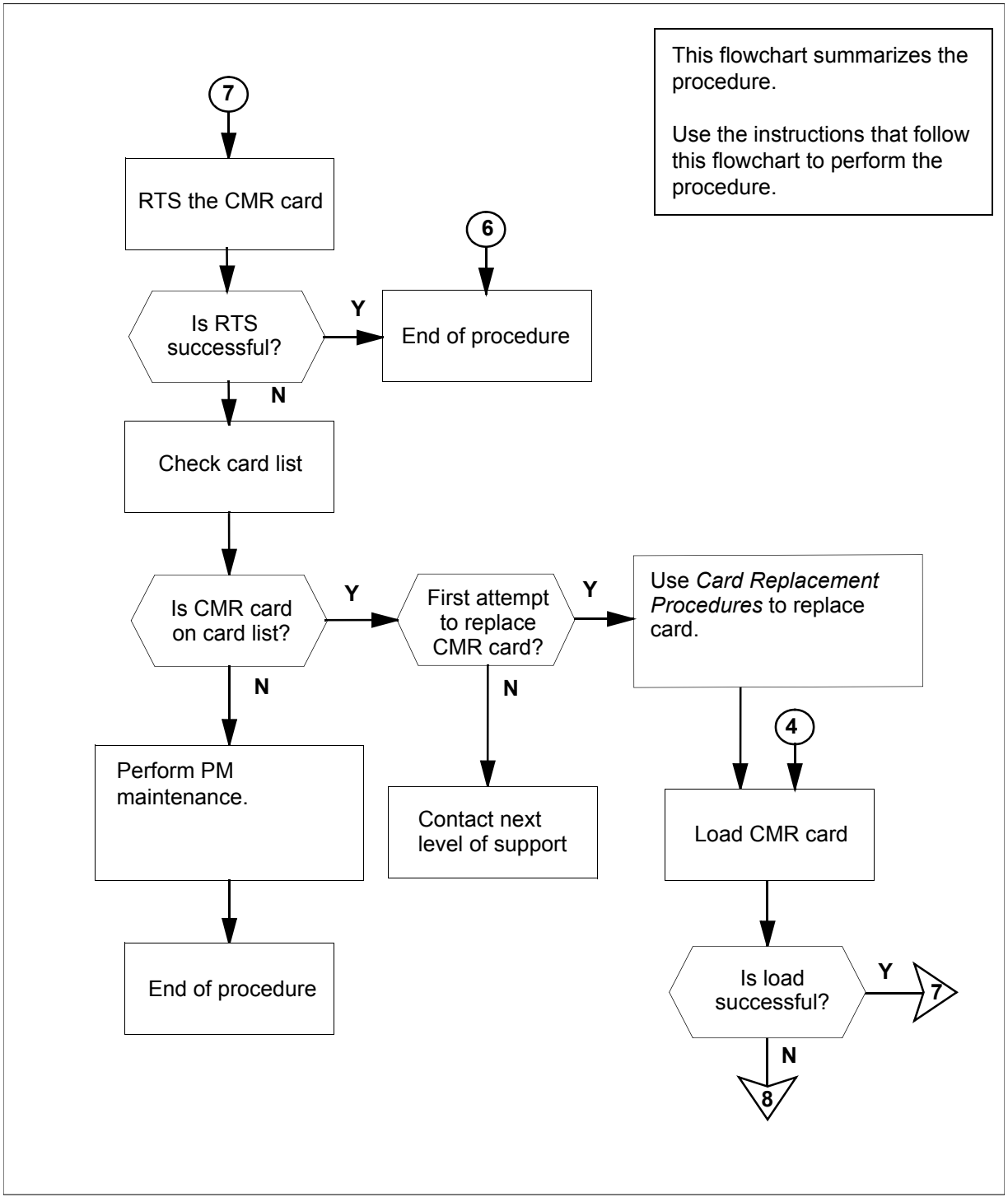

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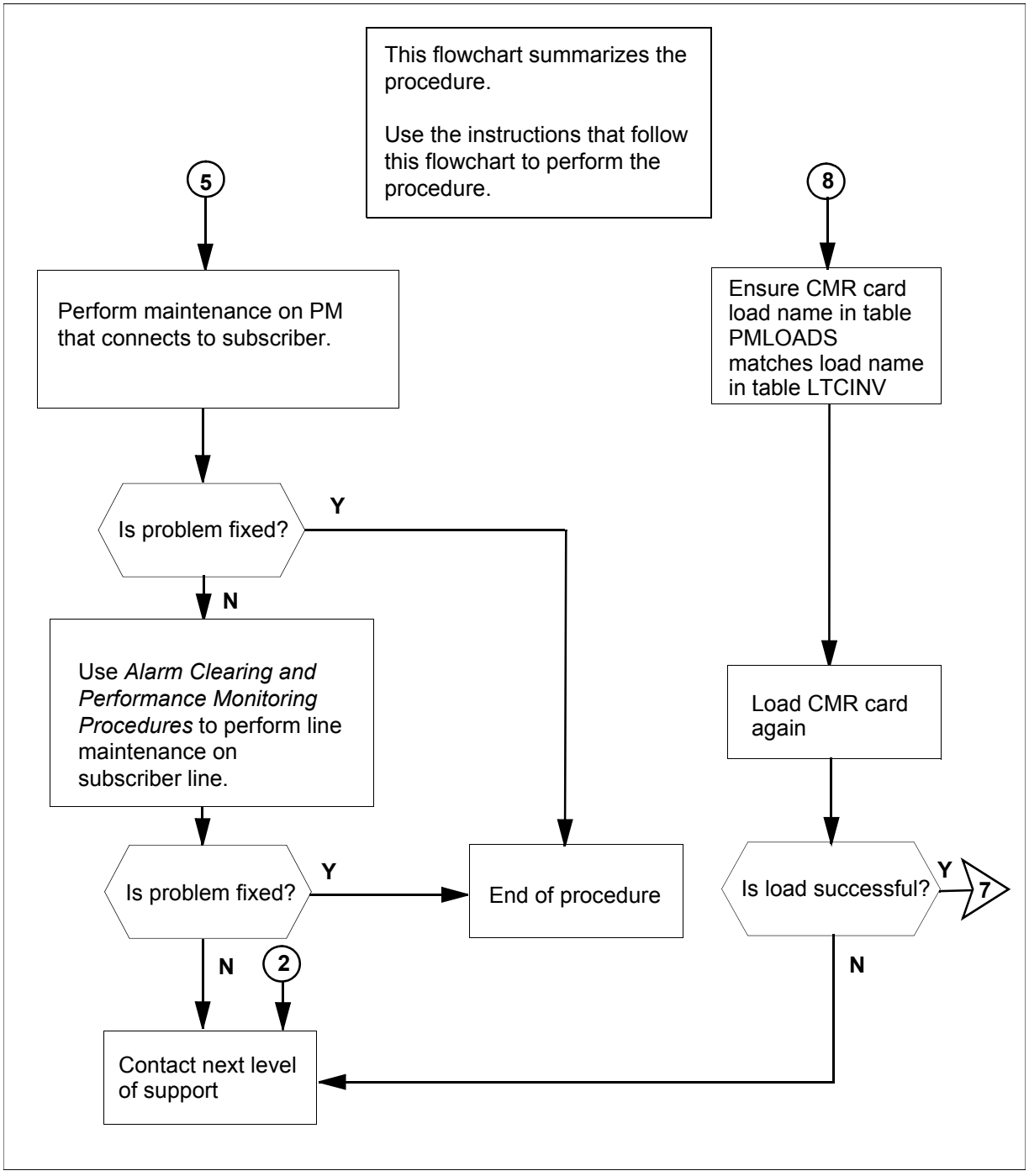
Figure 1-5
Summary of Incorrect or no displayed calling party name or DN (continued)



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Procedure 1-2 describes how to determine if a problem with the directory number (DN) results from either a software error, a line-ended peripheral module (PM) failure, or a possible CLASS modem resource (CMR) card problem.

Procedure 1-2
Ensuring correct and displayed calling party name or DN

Step	Action
1	At your current location, verify that the CMR card and Subscriber Services entries are correct. See the *Base/Telecom Translations Guide for Wireless Networks* (411-3001-220) and any documentation for the peripheral device entries. After verifying CMR card and Subscriber Services entries, return to this step.
2	Check alarm conditions. See appropriate procedures in the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). After checking for alarms, return to this step and do the following: • If a 1LGC alarm condition at the MAPCI display occurs, go to step 3. • If a line-ended PM failure occurs, go to step 5. • If the alarms indicate a possible CMR card problem in the line group controller (LGC), line trunk controller (LTC), remote cluster controller (RCC), Subscriber Carrier Module-100S (SMS), or Subscriber Carrier Module-Urban (SMU), go to step 7. • If the alarms do not indicate a CMR card problem, a line-ended PM failure, or a line maintenance problem, go to step 31.
3	Go to the procedure to clear a peripheral module in-service trouble (PM ISTb) alarm (see the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks*, 411-3001-543). After you complete the procedure, return to this step.
4	Go to step 7.
5	Refer to the maintenance guide for the PM for information on line-ended PM failure, then return to this step.
6	Go to step 7.
7	To access the PM level of the MAP, type **>MAPCI;MTC;PM** and press the **Enter** key.
8	To post the PM unit, type **>POST *pm_type pm_number*** (where *pm_type* is the PM type, either LGC, LTC, RCC, SMS, or SMU, and *pm_number* is the number of the PM, from 0 to 127), then press the **Enter** key.

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Procedure 1-2
Ensuring correct and displayed calling party name or DN (continued)

Step	Action
9	To check for fault indicators, type **>QUERYPM FLT** and press the **Enter** key. If the response is "CLASS MODEM RESOURCE CARD NT6X78 OUT OF SERVICE," go to step 14. If the response is another message that associates with the CMR card, go to step 17. If the response indicates a CMR load mismatch with the Inventory table, go to step 17. If the response indicates that another card in the PM has a fault, go to step 10. If the response indicates no fault, go to step 12.
10	Perform PM maintenance on the PM posted, and return to this point.
11	Go to step 32.
12	Perform PM maintenance on the PM connected to the subscriber. If the problem continues, go to step 13. If the problem does not continue, go to step 32.
13	See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543) to perform line maintenance on subscriber line. If the problem continues, go to step 31. If the problem does not continue, go to step 32.
14	Note the unit of the PM that has the out-of-service CMR card.
15	Go to step 17.
16	Note the unit of the PM that has the suspect CMR card.
17	To busy the CMR card, type **>BSY UNIT *unit_no* CMR** (where *unit_no* is the number of the PM unit, either 0 or 1) and press the **Enter** key. ***Note:*** CMR is an optional parameter that means busy only the CMR card.
18	To return the CMR card to service, type **>RTS UNIT *unit_no* CMR** (where *unit_no* is the number of the PM unit, either 0 or 1) and press the **Enter** key. ***Note:*** CMR is an optional parameter that means return only the CMR card to service. If the RTS passes and data transmission problem is no longer present, go to step 32. If the RTS fails or passes and the problem continues to be present, go to step 19.

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Procedure 1-2
Ensuring correct and displayed calling party name or DN (continued)

Step	Action

19	Examine the generated card list. The step you perform depends on the card list.
	The following card list is a normal message for a CMR card failure.
	`RTS Failed, TESTALL`
	`Diagnostic TESTALL failed.`
	`Fail message received from PM`
	`Replace the Cards in the Card List`
	`and applicable Paddleboards (i.e. 6X12) :`
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 01 D02 LGE 00 18 LGC : 000 13 6X78`
	If the CMR card is on the card list, go to step 22.
	If the CMR is not on the card list, go to step 20.

20	Perform PM maintenance on the posted PM, then return to this step.
21	Go to step 32.
22	See the *Base/Telecom Card Replacement Procedures for Wireless Networks* (411-3001-547), then return to this step.
23	To load the CMR card, type **>LOADPM UNIT *unit_no* CC CMR** (where *unit_no* is the number of the PM unit, either 0 or 1) and press the **Enter** key. ***Note:*** CMR is an optional parameter that means load only the CMR card. If the loading succeeds, go to step 27. If the loading indicates "`CMR FAILED TO LOAD. TASKABORTED WHILE LOADING CMR`," go to step 24. If the loading indicates "`CMR FILE CMRXXXXX NOT FOUND ONDEVICE INDICATED IN TABLEPMLOADS`," go to step 24. ***Note:*** CMRXXXXX is the CMR load name If the loading indicates "`FAILED TO OPEN` successfully," go to step 24.

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Procedure 1-2
Ensuring correct and displayed calling party name or DN (continued)

Step	Action

24	Verify that you can load the CMR card. To determine the CMR load name, type **>QUERYPM CNTRS** and press the **Enter** key.
	
	Example of a MAP response:
	
	`Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0.`
	`Unit 0:`
	`RAM Load: NLG32BU`
	`ROM Load: XPMRKA02`
	`CMR LOAD: CMR33AI5`
	`CMR DEFINERS: 12`
	`MP: 6X45BA/BB`
	`SP: 6X45BA/BB`
	`Unit 1:`
	`RAM Load: NLG32BU`
	`ROM Load: XPMRKA03`
	`CMR LOAD: CMR33AI5`
	`CMR DEFINERS: 12`
	`MP: 6X45BA/BB`
	`SP: 6X45BA/BB`
	
	Note: In this example, the CMR load name is CMR33AI5.

25	Make sure that the CMR card load name in table PMLOADS matches the load name specified in table LTCINV or table RCCINV.
26	To load the CMR card again, type **>LOADPM UNIT *unit_no* CC CMR** (where *unit_no* is the number of the PM unit, either 0 or 1) and press the **Enter** key. ***Note:*** CMR is an optional parameter that means load only the CMR card. If the load passes, go to step 27. If the load fails, go to step 31.

—sheet 4 of 5—

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Procedure 1-2
Ensuring correct and displayed calling party name or DN (continued)

Step	Action

27	To return the CMR card to service, type **>RTS UNIT *unit_no* CMR** (where *unit_no* is the number of the PM unit, either 0 or 1) and press the **Enter** key.
	
	Note: CMR is an optional parameter that means return only the CMR card to service.
	
	The following card list is a normal message for a CMR card failure.
	
	`RTS Failed, TESTALL`
	`Diagnostic TESTALL failed.`
	`Fail message received from PM`
	`Replace the Cards in the Card List`
	`and applicable Paddleboards (i.e. 6X12) :`
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 01 D02 LGE 00 18 LGC : 000 13 6X78`
	
	If the RTS passes and data transmission functions, go to step 32.
	
	If the RTS fails but the CMR card is not on the card list, go to step 28.
	
	If the RTS fails and the CMR card is on the card list, go to step 30.

28	Perform PM maintenance on the posted PM, then return to this step.
29	Go to step 32.
30	Use the following information to determine the next step. If the replacement of the CMR card is occurring for the first time, go to step 22. If the replacement of the CMR card is complete, go to step 31.
31	For additional help, contact the next level of support.
32	The procedure is complete.

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Line state is Call processing busy (CPB)

Application

Use this procedure to troubleshoot a line in the call processing busy (CPB) state.

Definition

The CPB state indicates that integrated services digital network (ISDN) call processing is active. For the DMS packet handler (PH), the CPB state shows for active packet calls.

The BSY command cannot busy an ISDN line that has a permanent virtual circuit (PVC). Contact the next level of support to do a forced release that results in a service interruption. The forced release results in an MB line state. Use the BSY INB command after the line state changes to MB.

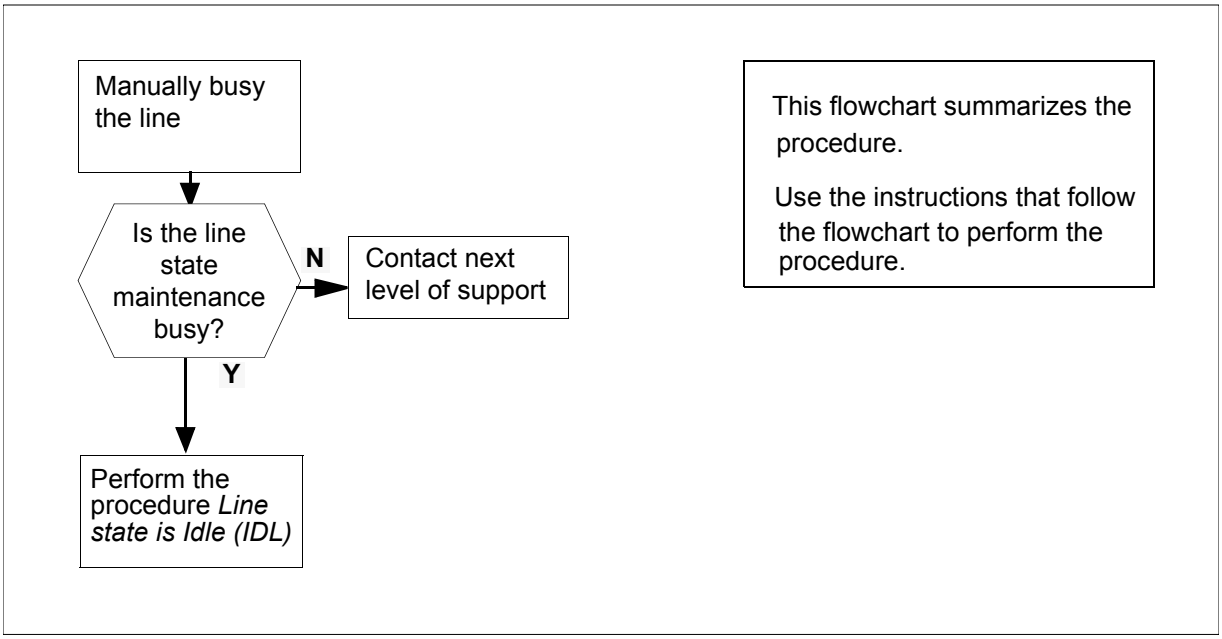
Common procedure

There are no common procedures.

Action

Procedure 1-3 provides steps and actions to troubleshoot a line in the CPB state. Figure 1-6 provides an overview of the procedure.

Figure 1-6
Summary of Line state is Call processing busy (CPB)



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Procedure 1-3 describes how to troubleshoot a line in the call processing busy (CPB) state.

Procedure 1-3
Troubleshooting when line state is Call processing busy

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
3	To manually busy the line, type **>BSY** and press the Enter key.
4	Determine the state of the line. If the state of the line is MB (maintenance busy), go to step 7. If the state of the line is CPD (call processing deload), go to step 5. If the state of the line is DEL (deloaded), go to step 7. If the state of the line is anything else, go to step 6.
5	Wait 5 min. Determine the state of the line. If the state of the line is MB, go to step 7. If the state of the line is anything else, go to step 6.
6	For additional help, contact the next level of support.
7	Perform the procedure “Line state is Idle (IDL)” in this manual. Do not return to this procedure.
	—end—

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Line state is Cut (CUT)

Application

Use this procedure to clear a cut-off (CUT) line state.

Definition

The cut-off relay in the line card for the integrated services digital network (ISDN) is in the operated state. This state disconnects the subscriber loop from the ISDN line card.

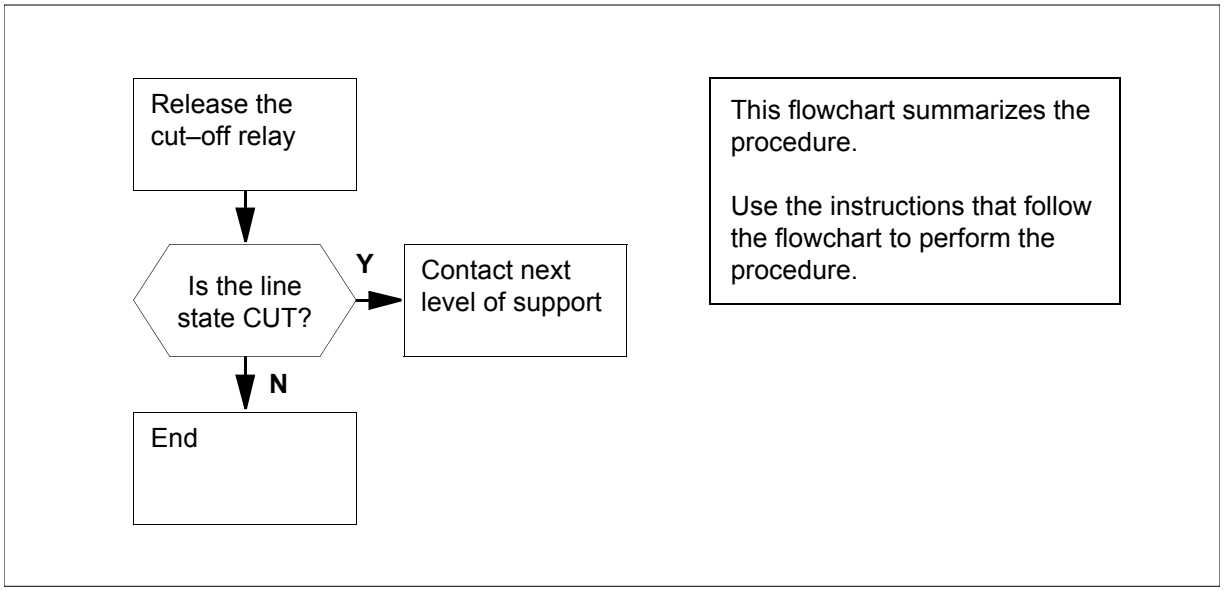
Common procedures

There are no common procedures.

Action

Procedure 1-4 provides steps and actions to clear a CUT line state. Figure 1-7 provides an overview of the procedure.

Figure 1-7
Summary of Line state is Cut (CUT)



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Procedure 1-4 describes how to clear a cut-off (CUT) line state.

Procedure 1-4
Troubleshooting when line state is Cut

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only if you have been directed to this procedure from a step in a maintenance procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
3	Type **>LCO R** and press the **Enter** key to release the line card cutoff relay.
4	Determine the state of the line. If the state of the line is CUT (Cutoff), go to step 5. If the state of the line is anything else, go to step 6.
5	For additional help, contact the next level of support.
6	The procedure is complete.
	—end—

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Line state is D-channel maintenance busy (DMB)

Application

Use this procedure to clear the line state that is D-channel maintenance busy (DMB).

Definition

The D-channel does not connect to the integrated services digital network (ISDN) line for one of the following reasons:

- The D-channel handler (DCH) or enhanced D-channel handler (EDCH) is out of service.
- The connection between the DCH or EDCH and the ISDN line card (ISLC) does not work or is not active.
- The link for the ISDN enhanced line concentrating module (LCME) has faults.
- The DCH channel is out of service due to a layer 1 babbler (DMB inverse video and I fail flag).
- The ISDN service group (ISG) channel is out of service.Call processing for the generic services framework (GSF) supports the EDCH, but not the DCH.

Common procedures

There are no common procedures.

Action

Procedure 1-5 provides steps and actions to clear the line state that is D-channel DMB. Figure 1-8 provides an overview of the procedure.

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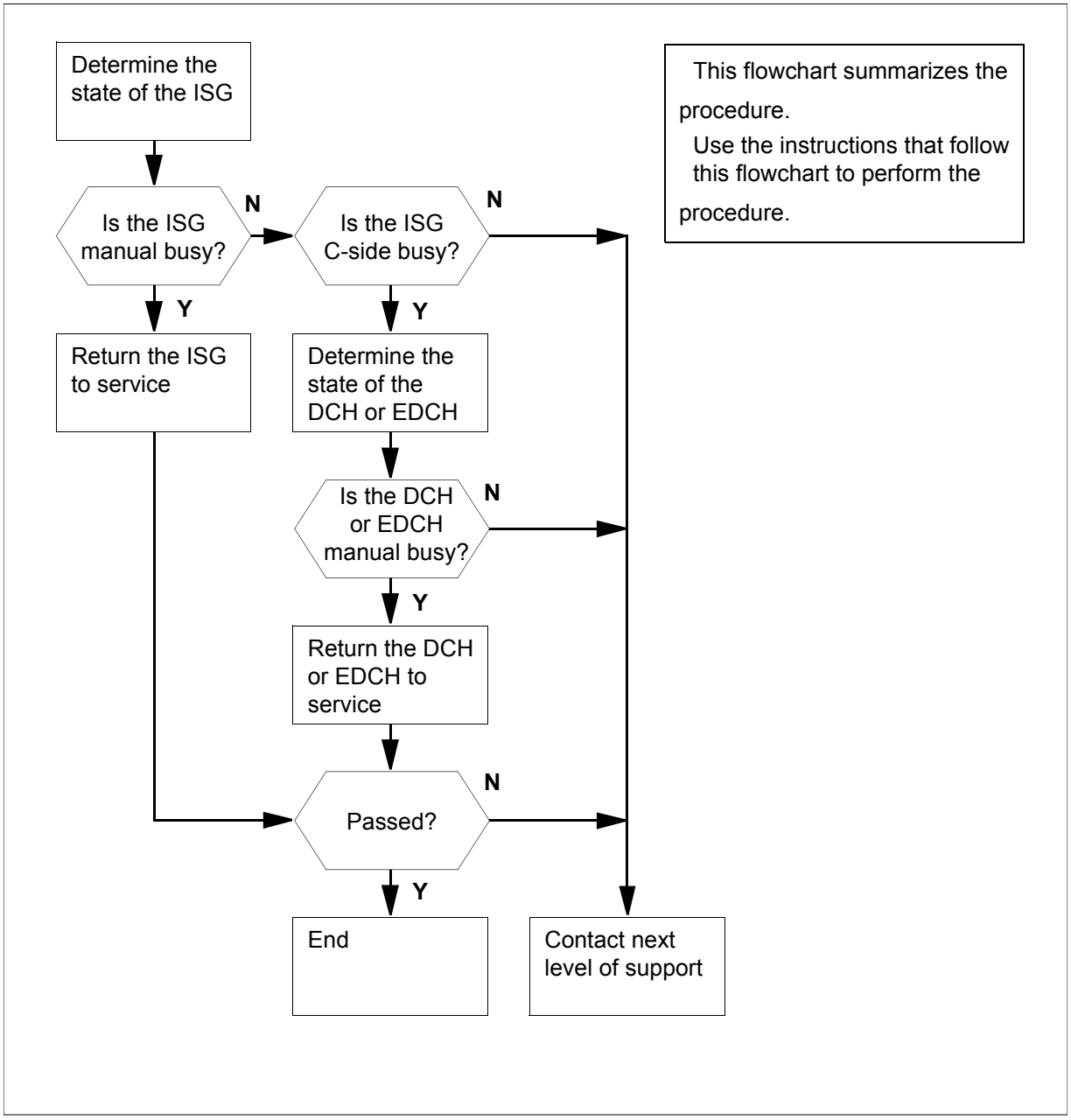
Figure 1-8
Summary of Line state is D-channel maintenance busy (DMB)



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Procedure 1-5 describes how to clear the line state that is D-channel maintenance busy (DMB).

Procedure 1-5
Troubleshooting when line state is D-channel maintenance busy

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to proceed. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.

3	Type **>CKTLOC** to determine the state of the ISG and the DCH or EDCH through the CKTLOC command on the posted line.
	
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot  EqPEC`
	`HOST  00  G04 LCEI 07 18  LCME 07 0  05:07 BX27AA`
	
	`LGC 4   Status: InSv PSLink: 10 Status: OK`
	`LCME    Status: InSv CSLink:  2`
	`DCH 101 Status: ISTb ISG 100  CHNL  8 Status: ManB`
	`ConType: Con  Status: Active  TDM: 4GSF call processing supports the EDCH, but not the DCH.`

4	Record the following: • The number of the ISDN line trunk controller (LTC) or the ISDN line group controller (LGC) • The number of the DCH or the EDCH • The number of the ISG • The number of the channel
5	From the CKTLOC information that appears in step , determine the state of the ISG. If the state of the ISG is ManB (manual busy), go to step 6. If the state of the ISG is CBsy (C-side busy), go to step 13. If the state of the ISG is anything else, go to step 21.

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Procedure 1-5
Troubleshooting when line state is D-channel maintenance busy (continued)

Step	Action
6	Determine from office records or operating company personnel if the ISG channels can return to service. If the ISG channels can return to service, go to step 7. If the ISG channels cannot return to service, go to step 21.
7	To access the PM level of the MAP display and post the LTC or LGC recorded in step 4, type **>PM; POST *pm_type pm_no*** (where *pm_type* is either LTC or LGC and *pm_no* is the number of the LTC or LGC), then press the **Enter** key.
8	To access the ISG level of the MAP, type **>ISG** and press the **Enter** key.

9	To post the ISG, type **>POST *isg_no*** (where *isg_no* is the number of the ISG recorded in step 4) and press the **Enter** key.
	
	Example of a MAP response:
	
	`ISG 1111111111 2222222222 33`
	`123456789 0123456789 0123456789 01`
	`.......M. .......... ..........`
	`....................................`
	
	`ISG 100 DCH 101 ISTb LTC 4 port 17 DCH Chnls BSY`
	
	Note: The example displays the posted ISG 100.

10	Determine the state of the ISG channels. ***Note:*** The state of the ISG channel appears under the channel number. In the example in step 9, the M indicates that channel 8 is manual busy. If one channel is M, go to step 11. If more than one channel is M, go to step 12.
11	To return the ISG channel to service, type **>RTS *channel_no*** (where *channel_no* is the number of the ISG channel recorded in step 4) and press the **Enter** key. If the RTS command passes, go to step 22. If the RTS command fails, go to step 21.
12	To return the ISG to service, type **>RTS ALL** and press the **Enter** key. If the RTS command passes, go to step 22. If the RTS command fails, go to step 21.

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Procedure 1-5
Troubleshooting when line state is D-channel maintenance busy (continued)

Step	Action
13	From the CKTLOC information that appears instep , determine the state of the DCH or EDCH. If the state of the DCH or EDCH is `ManB`, go to step 14. If the state of the DCH or EDCH is anything else, go to step 21.
14	Determine from office records or operating company personnel if you can return the DCHs or EDCHs to service. If the DCHs or EDCHs can return to service, go to step 15. If the DCHs or EDCHs cannot return to service, go to step 21.
15	To access the PM level of the MAP display and post the LTC or LGC, type **>PM;POST *pm_type pm_no*** (where *pm_type* is either LTC or LGC and *pm_no* is the number of the LTC or LGC recorded in step 4), then press the **Enter** key.

16	To access the DCH level of the MAP display, type **>DCH** and press the **Enter** key.
	
	Example of a MAP response:
	
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 0 0 0 0 0 117`
	`LTC 0 0 0 0 0 3`
	`. . . . . .`
	`. . . . . .`
	`DCH 0 2 0 0 0 3`
	
	Note: In the example, two DCHs are manually busy and three DCHs are in service.

17	Determine the state of the DCHs or EDCHs. ***Note:*** The number that appears in the ManB column for DCH or EDCH indicates the number of manual-busy DCHs or EDCHs. If one or two DCHs or EDCHs are manual-busy, go to step 18. If more than two DCHs or EDCHs are manual-busy, go to step 21.
18	To post the manual busy DCHs or EDCHs, type **>POST MANB** and press the **Enter** key.

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Procedure 1-5
Troubleshooting when line state is D-channel maintenance busy (continued)

Step	Action
19	To test the DCHs or EDCHs, type **>TST ALL** and press the **Enter** key. If the TST command passes, go to step 20. If the TST command fails, go to step 21.
20	To return the DCHs or EDCHs to service, type **>RTS ALL** and press the **Enter** key. If the RTS command passes, go to step 22. If the RTS command fails, go to step 21.
21	For additional help, contact the next level of support.
22	The procedure is complete.

—sheet 4 of 4—

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Line state is Idle (IDL)

Application

Use this procedure to troubleshoot a line in the idle (IDL) state.

Definition

The line for the integrated services digital network (ISDN) is idle and available.

Common procedures

This procedure refers to:

- "Reseating a line card"
- "Replacing a line card"
- "Replacing a point-of-use power supply card"

Action

Procedure 1-6 provides steps and actions to troubleshoot a line in the IDL state. Figure 1-9 provides an overview of the procedure.

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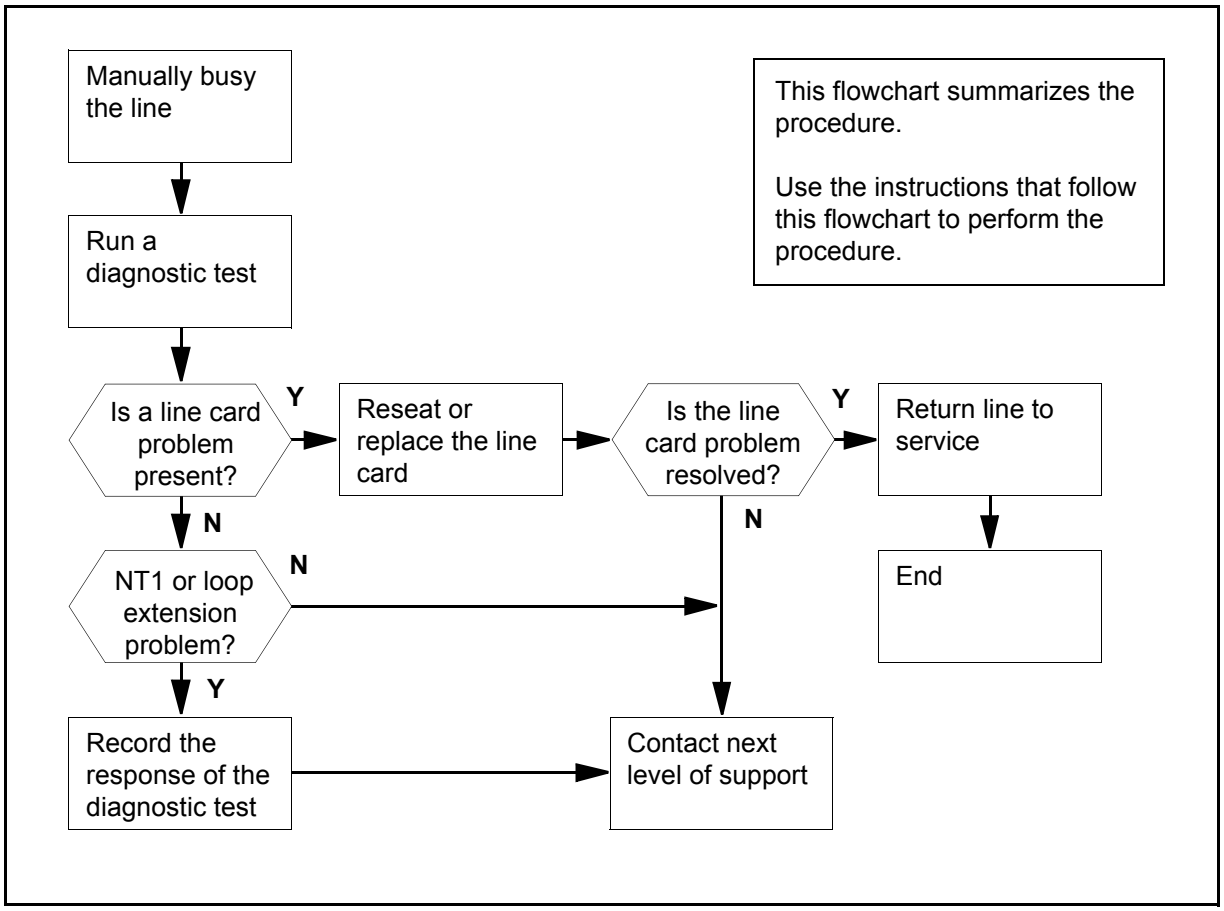
Figure 1-9
Summary of Line state is Idle (IDL)



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Procedure 1-6 describes how to troubleshoot a line in the idle (IDL) state.

Procedure 1-6
Troubleshooting when line state is Idle

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to proceed. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
3	Line extension devices (ISDN mp-eoc line units) are an example of a line configuration. To determine the line configuration, type **>LTPDATA; SUSTATE** and press the **Enter** key. *Example of a MAP response:* Line Equipment Status CO TA LC_Lpbk V_id - - - 0D07 ES_NE/h ES_FE/h ES_NE/d ES_FE/d 0 0 0 0 U_sync U_act T_Lpbk P_pwr S_pwr NTM - - . . - - T_sync T_act - - ISDN mp-eoc Status Line Unit 1 2 3 4 NT1 Status . . . - - ***Note:*** A response that includes “ISDN mp-eoc Status" indicates the status and number of line units on the posted line.

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Procedure 1-6
Troubleshooting when line state is Idle (continued)

Step	Action
4	Record the status for each line unit and NT1. ***Note:*** The . (dot) in the status line indicates the line unit is active. The - (dash) indicates that the line unit lost synchronization with the U-interface and is not active. You will use this information in step 27.
5	Determine the state of the line. If the state of the line is `MB` (maintenance busy), go to step 8. If the line state is anything else, go to step 6.
6	To manually busy the line, type **>BSY** and press the **Enter** key. If the state of the line is `MB`, go to step 8. If the state of the line is `CPD` (call processing deload), go to step 7. If the state of the line is `DEL` (deloaded), go to step 7. If the state of the line is anything else, go to step 34.
7	Wait 5 min. Determine the state of the line. If the state of the line is `MB`, go to step 8. If the state of the line is anything else, go to step 34.

8	To identify the product engineering code (PEC) for the posted line, type **>CKTLOC** and press the **Enter** key.
	Example of a MAP response:
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 00 G04 LCEI 07 18 LCME 07 0 05:07 BX27AA`
	
	`LGC 4 Status: InSv PSLink: 10 Status: OK`
	`LCME Status: InSv CSLink: 2`
	`DCH 101 Status: ISTb ISG 100 CHNL 8 Status: ManB`
	`ConType: Con Status: Active TDM: 4`
	
	If the PEC is BX27AA, go to step 11.
	If the PEC is anything else. go to step 9.

—sheet 2 of 6—

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Procedure 1-6
Troubleshooting when line state is Idle (continued)

Step	Action

9	To run a diagnostic test on the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

10	To confirm the command, type **>YES** and press the **Enter** key. Go to step 13.

11	Run the diagnostic test for the posted line. Use the enhanced display capability that provides in-depth debug information. To run the test, type **>DIAG DISP** and press the **Enter** key.
	Example of a MAP response:
	`EXPECT EXTENSIVE MAP DISPLAY!!!`
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

12	To confirm the command, type **>YES** and press the **Enter** key.
13	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 32. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 14. If the results display anything else, go to step 14.

—sheet 3 of 6—

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Procedure 1-6
Troubleshooting when line state is Idle (continued)

Step	Action
14	Record the MAP response from the diagnostic test. If the response is `PUPS failure detected`, go to step 23. If the response is `FEBE detection test failed`, go to step 31. If the response is `Communications failed to NT1`, go to step 27. If the response is `NT1 not present`, go to step 27. If the response is `LCD is overloaded`, go to step 27. If the response is `LCD is in mateload`, go to step 27. If the response is `NT1 B1 loopback did not release`, go to step 27. If the response is `NT1 B2 loopback did not release`, go to step 27. If the response is `NT1 2B+D loopback did not release`, go to step 27. If the response is `Customer-initiated maintenance`, go to step 27. If the response is `S/T interface not active`, go to step 27. If the response is anything else, go to step 15.
15	Complete the procedure “Reseating a line card,“ then return to this step.

16	To test the line card for the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

17	To confirm the command, type **>YES** and press the **Enter** key.
18	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 32. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 19. If the results display anything else, go to step 19.
19	Complete the procedure “Replacing a line card,” then return to this step.

20	To test the line card for the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

—sheet 4 of 6—

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Procedure 1-6
Troubleshooting when line state is Idle (continued)

Step	Action
21	To confirm the command, type **>YES** and press the **Enter** key.
22	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 32. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 34. If the results display anything else, go to step 34.
23	Complete the procedure “Replacing a point-of-use power supply card,“ then return to this step.

24	To test the line card for the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

25	To confirm the command, type **>YES** and press the **Enter** key.
26	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 32. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 34. If the results display anything else, go to step 34.
27	Determine if an NT1 problem or line extension problem is present. Refer to the information recorded for ISDN mp-eoc units in step . If the MAP response included an ISDN mp-eoc status, go to step 28. If the MAP response did not include an ISDN mp-eoc status, go to step 31.
28	Determine the status of the ISDN mp-eoc units. If the ISDN mp-eoc status is . (active) for the line units, go to step 31. If the ISDN mp-eoc status is - (inactive) for the line units, go to step 29.
29	A - (dash) displayed under any line unit indicates that the line unit lost synchronization with the U-interface. A - (dash) also indicates that the line unit is not active. Restore the line units to service. Refer to local operating company procedures or the documentation of the original equipment manufacturer (OEM). Refer to this documentation for maintenance procedures. Return to this step.

—sheet 5 of 6—

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Procedure 1-6
Troubleshooting when line state is Idle (continued)

Step	Action

30	To check the status of the line extension devices (for example, ISDN mp-eoc line units), type **>LTPDATA; SUSTATE** and press the **Enter** key.
	Example of a MAP response:
	`Line Equipment Status`
	`CO TA LC_Lpbk V_id`
	`- - - 0D07`
	
	`ES_NE/h ES_FE/h ES_NE/d ES_FE/d`
	`0 0 0 0`
	
	`U_sync U_act T_Lpbk P_pwr S_pwr NTM`
	`. . . . .`
	`-`
	`T_sync T_act`
	`. .`
	
	`ISDN mp-eoc Status`
	`Line Unit 1 2 3 4 NT1`
	`Status . . . . .`
	
	If the ISDN mp-eoc status is . (active) for the line units and active for the NT1, go to step 32.
	If the ISDN mp-eoc status is - (inactive) for the line units, go to step 33.
	If the ISDN mp-eoc status is . (active) for the line units and - (inactive) for the NT1, go to step 31.

31	An NT1 problem exists. Refer to the MAP response recorded in step 14. Go to step 34.
32	To return the line to service, type **>RTS** and press the **Enter** key. If the RTS fails, go to step 34. If the RTS passes, go to step 35.
33	For additional help, contact the operating company personnel responsible for the maintenance of the line units.
34	For additional help, contact the next level of support.
35	The procedure is complete.

—sheet 6 of 6—

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Line state is Installation busy (INB)

Application

Use this procedure to clear an installation busy (INB) line state.

Definition

The ISDN line is not available for one of the following reasons:

- The system did not assign data.
- The system made a data change.
- A line test position operator performs maintenance on the ISDN line.

Common procedures

There are no common procedures.

Action

Procedure 1-7 provides steps and actions to clear an INB line state. Figure 1-10 provides an overview of the procedure.

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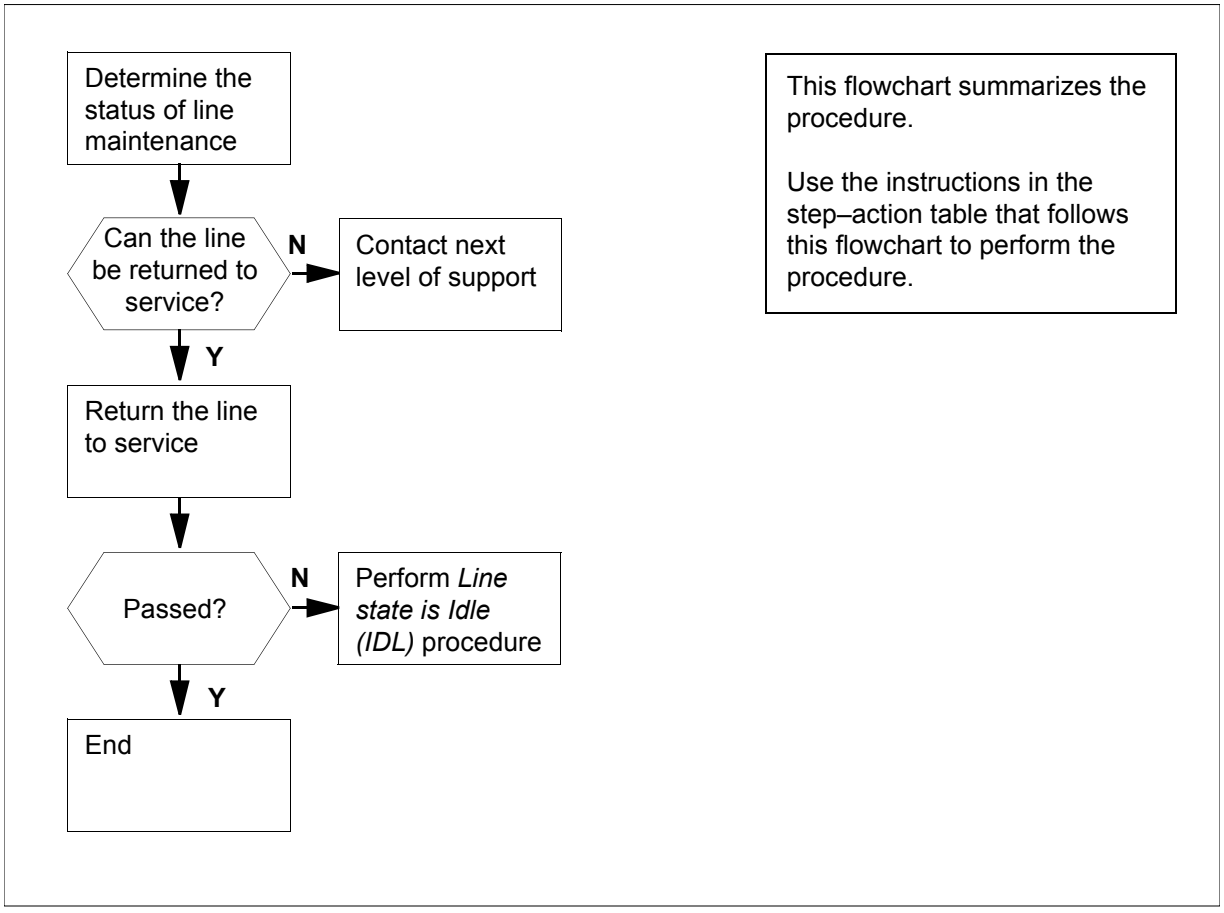
Figure 1-10
Summary of Line state is Installation busy (INB)



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Procedure 1-7 describes how to clear an installation busy (INB) line state.

Procedure 1-7
Troubleshooting when line state is Installation busy

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, determine from office records or operating company personnel if the line can return to service. If the line can return to service, go to step 4. If the line cannot return to service, go to step 7.
2	To manually busy the line, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
3	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
4	Type **>BSY** and press the **Enter** key. If the state of the line is MO (maintenance busy), go to step 5. If the state of the line is anything else, go to step 7.
5	To return the line back into service when the installation is complete, type **>RTS** and press the **Enter** key. If the RTS command fails, go to step 6. If the RTS command passes, go to step 8.
6	Perform the procedure “Line state is Idle (IDL).“ Do not return to this procedure.
7	For additional help, contact the next level of support.
8	The procedure is complete.

—end—

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Line state is Line module busy (LMB)

Application

Use this procedure to clear a line module busy (LMB) line state.

Definition

The ISDN enhanced line concentrating module (LCME), or the line drawer, is out of service.

Common procedures

There are no common procedures.

Action

Procedure 1-8 provides steps and actions to clear an LMB line state. Figure 1-11 provides an overview of the procedure.

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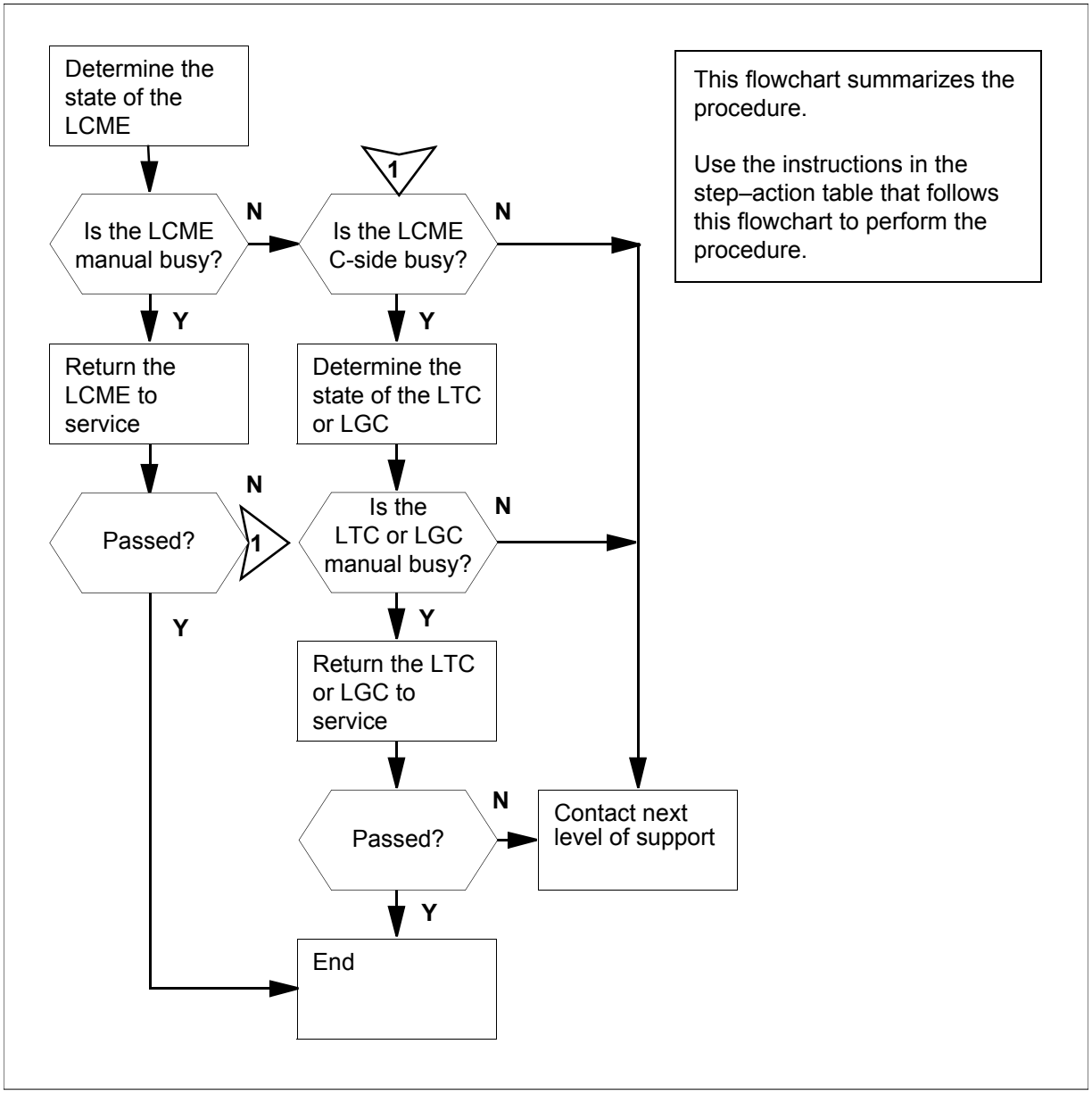
Figure 1-11
Summary of Line state is Line module busy (LMB)



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Procedure 1-8 describes how to clear a line module busy (LMB) line state.

Procedure 1-8
Troubleshooting when line state is Line module busy

Step	Action
1	**CAUTION** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP Terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.

3	To determine the state of the LCME and the LTC or LGC, type **>CKTLOC** and press the **Enter** key.
	
	Example of a MAP response:
	`Site Flr Rpos Bay_id Shf Description Slot EqPEC`
	`HOST 00 G04 LCEI 07 18 LCMI 07 0 05:07 BX25AB`
	
	`LGC 4 Status: ISTb PSLink: 10 Status: CORRECT`
	`LCME Status: ManB CSLink: 2`
	`DCH 101 Status: ISTb ISG 100 CHNL 8 Status: InSv`
	`ConType: Con Status: PMBusy TDM: 4`

4	Record the number of the LCME and number of the LTC or LGC.
5	From the CKTLOC information displayed in step , determine the state of the LCME. If the state of the LCME is `ManB` (manual busy), go to step 6. If the state of the LCME is `CBsy` (C-side busy), go to step 10. If the state of the LCME is anything else, go to step 13.
6	Determine from office records or operating company personnel if you can turn the LCME back on. If the LCME can return to service, go to step 7. If the LCME cannot return to service, go to step 15.
7	To access the PM level of the MAP display, type **>PM** and press the **Enter** key.

—sheet 1 of 2—

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Procedure 1-8
Troubleshooting when line state is Line module busy (continued)

Step	Action

8	To post the manual-busy LCME, type **>POST LCME *pm_no*** (where *pm_no* is the number of the LCME you recorded in step 4) and press the **Enter** key.
	Example of a MAP response:
	`LCME HOST 67 1  SysB  Links OOS: Cside  0`
	`Unit0: SysB`
	`Unit1: SysB`
	`                                          11  11  11  RG: Uneq`
	`Drwr:  01  23  45  67  89  01  23  45`
	`            ..    ..    ..    ..    ..    ..    ..    ..`

9	To return the manual busy LCME to service, type **>RTS PM** and press the **Enter** key. If the RTS command passes, go to step 16. If the RTS command fails, go to step 10.
10	From the CKTLOC information displayed in step , determine the state of the LTC or LGC. If the state of the LTC or LGC is `ManB`, go to step 11. If the state of the LTC or LGC is anything else, go to step 15.
11	Determine from office records or from office personnel if the LTC or LGC can return to service. If the LTC or LGC can return to service, go to step 12. If the LTC or LGC cannot return to service, go to step 15.
12	To access the PM level of the MAP display, type **>PM** and press the **Enter** key.

13	To post the LTC or LGC, type **>POST *pm_type pm_no*** (where *pm_type* is either LTC or LGC and *pm_no* is the number you recorded at step 4), then press the **Enter** key.
	Example of a MAP response:
	`LTC     1 ISTb  Links_OOS: CSide  0 , PSide 3`
	`Unit0:    Act   ISTb`
	`Unit1:    Inact ISTb`

14	To return the manual busy LTC or LGC to service, type **>RTS PM** and press the **Enter** key. If the RTS command passes, go to step 16. If the RTS command fails, go to step 15.
15	For additional help, contact the next level of support.
16	The procedure is complete.

—sheet 2 of 2—

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Line state is Lock out (LO)

Application

Use this procedure to clear a lock out (LO) line state.

Definition

The ISDN line card (ISLC) and the network termination 1 (NT1) or mp-eoc line unit are not synchronized. The S/T ISDN line card (ISLC) does not experience this state.

Common procedures

This procedure makes references to:

- "Reseating a line card"
- "Replacing a line card"

Action

Procedure 1-9 provides steps and actions to clear an LO line state. Figure 1-12 provides an overview of the procedure.

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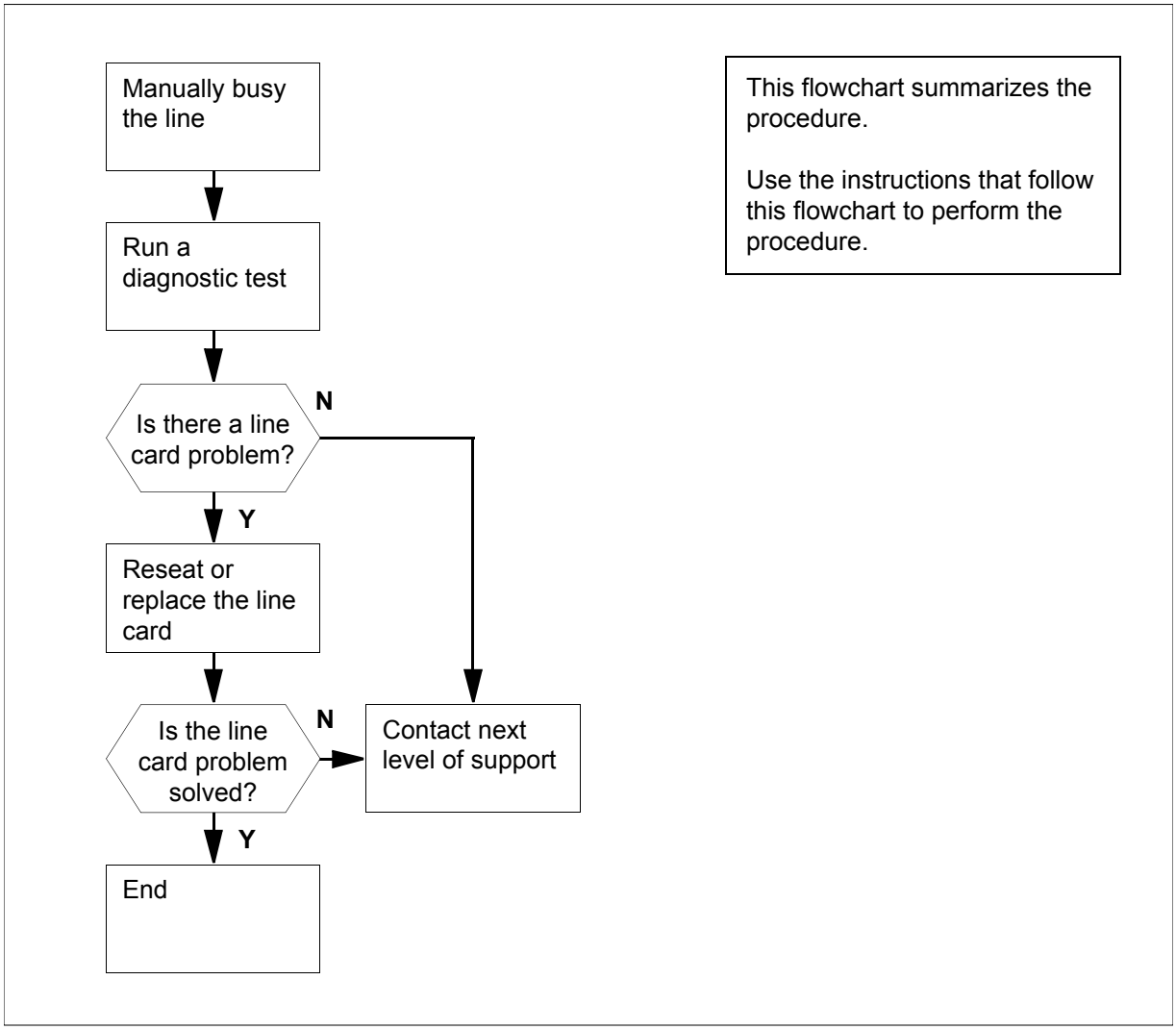
Figure 1-12
Summary of Line state is Lock out (LO)



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Procedure 1-9 describes how to clear a lock out (LO) line state.

Procedure 1-9
Troubleshooting when line state is Lock out

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.

3	To determine the configuration of the line (for example: line extension devices [ISDN mp-eoc line units] are present), type **>LTPDATA; SUSTATE** and press the **Enter** key.
	
	Example of a MAP response:
	`Line Equipment Status`
	`CO TA LC_Lpbk V_id`
	`- - - 0D07`
	
	`ES_NE/h ES_FE/h ES_NE/d ES_FE/d`
	`0 0 0 0`
	
	`U_sync U_act T_Lpbk P_pwr S_pwr NTM`
	`- - . . - -`
	`T_sync T_act`
	`- -`
	
	`ISDN mp-eoc Status`
	`Line Unit 1 2 3 4 NT1`
	`Status . . . - -`
	
	Note: A response that includes “ISDN mp-eoc Status" indicates the status and number of line units on the posted line.

—sheet 1 of 5—

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Procedure 1-9
Troubleshooting when line state is Lock out (continued)

Step	Action
4	Record the status for each line unit and NT1. ***Note:*** The . (dot) in the status line indicates the line unit is active. The - indicates the line unit lost synchronization with the U-interface and is inactive. Use this information in step 21.
5	To manually busy the line, type **>BSY** and press the **Enter** key.
6	Determine the state of the line. If the state of the line is MB (maintenance busy), go to step 7. If the state of the line is anything else, go to step 28.

7	To identify the product engineering code (PEC) for the posted line, type **>CKTLOC** and press the **Enter** key.
	
	Example of a MAP response:
	
	`Site Flr Rpos Bay_id Shf Description Slot  Eq`
	`PECHOST  00  G04 LCEI 07 18  LCME 07 0  05:07 BX27AA`
	
	`LGC 4   Status: InSv PSLink: 10 Status: OK`
	`LCME    Status: InSv CSLink:  2`
	`DCH 101 Status: ISTb ISG 100  CHNL  8 Status: ManB`
	`                ConType: Con  Status: Active   TDM: 4`
	
	If the PEC is BX27AA, go to step 10.
	
	If the PEC is anything else, go to step 8.

8	To run a diagnostic test on the posted line, type **>DIAG** and press the Enter key.
	
	Example of a MAP response:
	
	`Warning - Action may affect Packet Data Service`
	`              Do you wish to continue?`
	`Confirm ("Yes", "Y", "NO", or "N"):`

9	To confirm the command, type **>YES** and press the **Enter** key. Go to step 12.

—sheet 2 of 5—

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Procedure 1-9
Troubleshooting when line state is Lock out (continued)

Step	Action

10	Run the diagnostic test for the posted line. Use the enhanced display capability that provides in-depth debug information. To perform this procedure, type **>DIAG DISP** and press the **Enter** key. This procedure uses the enhanced display capability.
	Example of a MAP response:
	`EXPECT EXTENSIVE MAP DISPLAY!!!`
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

11	To confirm the command, type **>YES** and press the **Enter** key.
12	Record the MAP response from the diagnostic test. If the response is any of the following, go to step 21: • `Loop termination missing` • `Communications failed to NT1` • `NT1 not present` • `NT1 B1 loopback did not release` • `NT1 B2 loopback did not release` • `NT1 2B+D loopback did not release` • `Customer-initiated maintenance` • `S/T interface not active` For any other response, go to step 13.
13	Complete the procedure “Reseating a line card,“ then return to this step.

14	To test the line card for the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

15	To confirm the command, type **>YES** and press the **Enter** key.
16	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 26. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 17. For any other results, go to step 17.

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Procedure 1-9
Troubleshooting when line state is Lock out (continued)

Step	Action
17	Complete the procedure “Replacing a line card,” then return to this step.

18	To test the line card for the posted line, type **>DIAG** and press the **Enter** key.
	Example of a MAP response:
	`Warning - Action may affect Packet Data Service`
	`Do you wish to continue?`
	`Please confirm ("Yes", "Y", "NO", or "N"):`

19	To confirm the command, type **>YES** and press the **Enter** key.
20	Your next step depends on the results of the diagnostic test. If the results display a line 100 log, indicated by `PASS LN_DIAG`, go to step 26. If the results display a line 101 log, indicated by `FAIL LN_DIAG`, go to step 28. For any other results, go to step 28.
21	Determine if an NT1 problem or a line extension problem exists. Refer to the information recorded for ISDN mp-eoc units in step 4. If the response included an ISDN mp-eoc status, go to step 22. If the response did not include an ISDN mp-eoc status, go to step 25.
22	Determine the status of the ISDN mp-eoc units. If the ISDN mp-eoc status is . (active) for the line units, go to step 25. If the ISDN mp-eoc status is - (inactive) for the line units, go to step 26.
23	A - displayed under any of the line units indicates loss of synchronization between the line unit and the U-interface. A - also indicates that the line unit is inactive. Restore the line units to service. Refer to local operating company procedures or the documentation of the original equipment manufacturer (OEM) for correct maintenance procedures. Return to this step.

—sheet 4 of 5—

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Procedure 1-9
Troubleshooting when line state is Lock out (continued)

Step	Action

24	To check the status of the line extension devices (for example, ISDN mp-eoc line units), type **>LTPDATA; SUSTATE** and press the **Enter** key.
	Example of a MAP response:
	`Line Equipment Status`
	`CO TA LC_Lpbk V_id`
	`- - - 0D07`
	
	`ES_NE/h ES_FE/h ES_NE/d ES_FE/d`
	`0 0 0 0`
	
	`U_sync U_act T_Lpbk P_pwr S_pwr NTM`
	`. . . . . .`
	`T_sync T_act`
	`. .`
	
	`ISDN mp-eoc Status`
	`Line Unit 1 2 3 4 NT1`
	`Status . . . . .`
	
	`ISDN TEI Status`
	`TEI 1 2`
	`Status - -`
	
	If the ISDN mp-eoc status is . (active) for the line units and active for the NT1, go to step 26.
	If the ISDN mp-eoc status is - (inactive) for the line units, go to step 27.
	If the ISDN mp-eoc status is . (active) for the line units and - (inactive) for the NT1, go to step 25.

25	An NT1 problem exists. Refer to the MAP response recorded in step 12. Go to step 28.
26	To return the line to service, type **>RTS** and press the **Enter** key. If the RTS command passes, go to step 29. If the RTS command fails, go to step 28.
27	For additional help, contact the person responsible for the maintenance of the line units.
28	For additional help, contact the next level of support.
29	The procedure is complete.

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Line state is Maintenance busy (MB)

Application

Use this procedure to clear a maintenance busy (MB) line state.

Definition

Maintenance personnel or the switch removed the line from service.

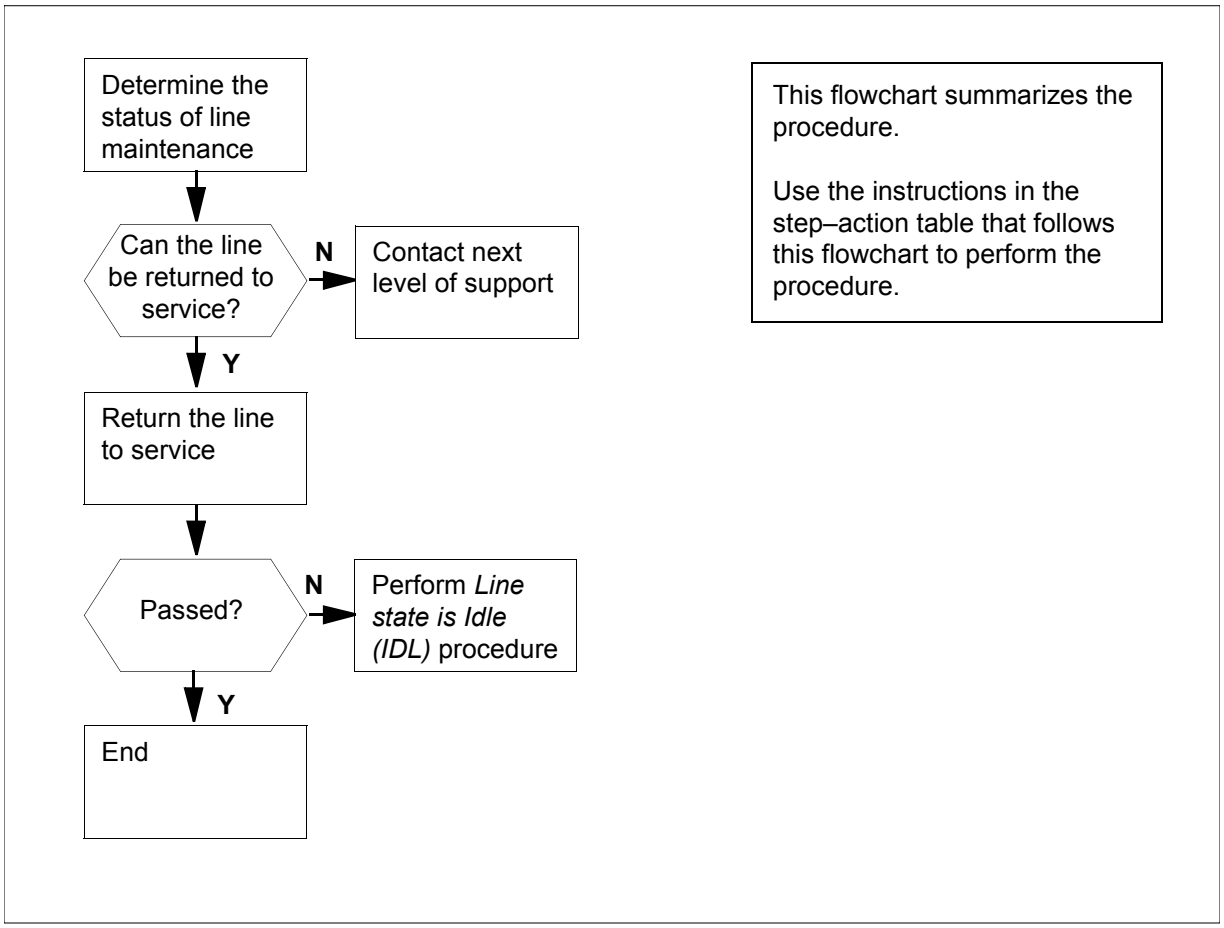
Common procedures

There are no common procedures.

Action

Procedure 1-10 provides steps and actions to clear an MB line state. Figure 1-13 provides an overview of the procedure.

Figure 1-13
Summary of Line state is Maintenance busy (MB)



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Procedure 1-10 describes how to clear a maintenance busy (MB) line state.

Procedure 1-10
Troubleshooting when line state is Maintenance busy

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP Terminal, determine from office records or from operating company personnel if the line can return to service. If the line can return to service, go to step 2. If the line cannot return to service, go to step 6.
2	Type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
3	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
4	To return the line to service when maintenance action is complete, type **>RTS** and press the **Enter** key. If the RTS command passes, go to step 7. If the RTS command fails, go to step 5.
5	Perform the procedure “Line state is Idle (IDL).“ Do not return to this procedure.
6	For additional help, contact the next level of support.
7	The procedure is complete.
	—end—

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Line state is Packet service unavailable

Application

Use this procedure when the line state is packet service unavailable (PSU).

Definition

D-channel or B-channel access to the DMS packet handler (PH) is not available. The PSU state appears under the STA header of the LTP or LTPISDN level of the MAP display. This state also appears in reverse video when you post an idle directory number on the same line equipment number (LEN).

The PSU state indicates a layer three fault. The PSU state does not indicate the state of layer one or layer two. Faults in layer one or layer two also indicate faults in layer three. The displayed state changes from PSU to IDL when you create layer three again. You can have more than one PM.

The most common reasons for layer three faults involve the customer premises equipment (CPE). For example, the CPE can power down or a connection does not exist for the CPE. Another example is the wrong installation or functioning of the CPE. Any of these conditions cause a PSU state.

Another explanation for the faults in layer three is the removal of a channel from service for maintenance activities. For example, removal of a complete X.25/X.75 link interface unit (XLIU) occurred. Another example is that a channel failure in the high-level data link control (HDLC) frame processor (HFP) occurred.

Limits

You cannot post the dn at the LTP menu level for GSF lines. You cannot perform queries about the dn at the CI level. To determine the dn, use the maintenance manager (MMI).

DCH support is not available for GSF lines.

Common procedures

There are no common procedures.

Action

Procedure 1-11 provides steps and actions to recover when the line state is PSU. Figure 1-14 and Figure 1-15 provide an overview of the procedure.

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Figure 1-14
Summary of Line state is Packet service unavailable (PSU)

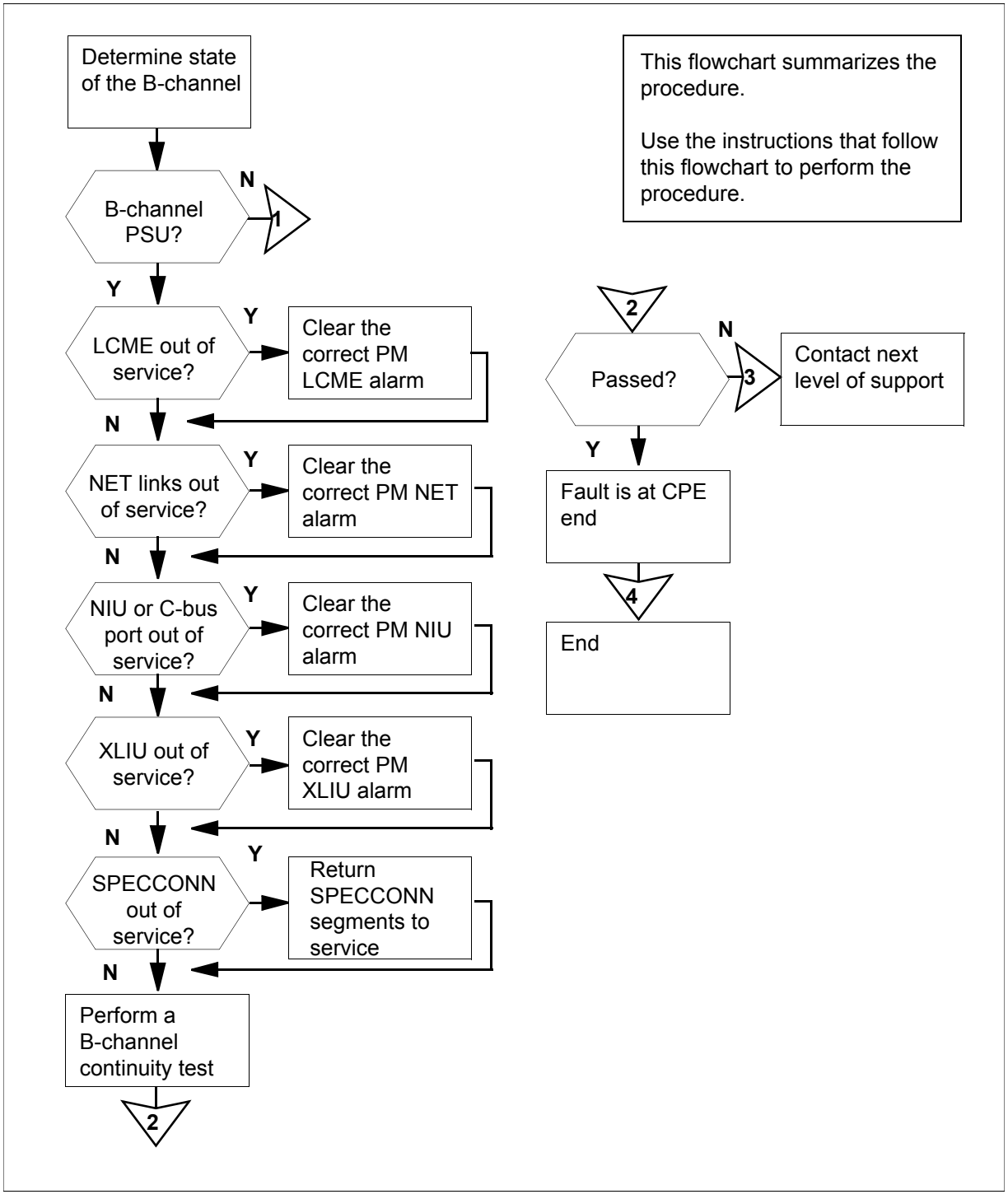

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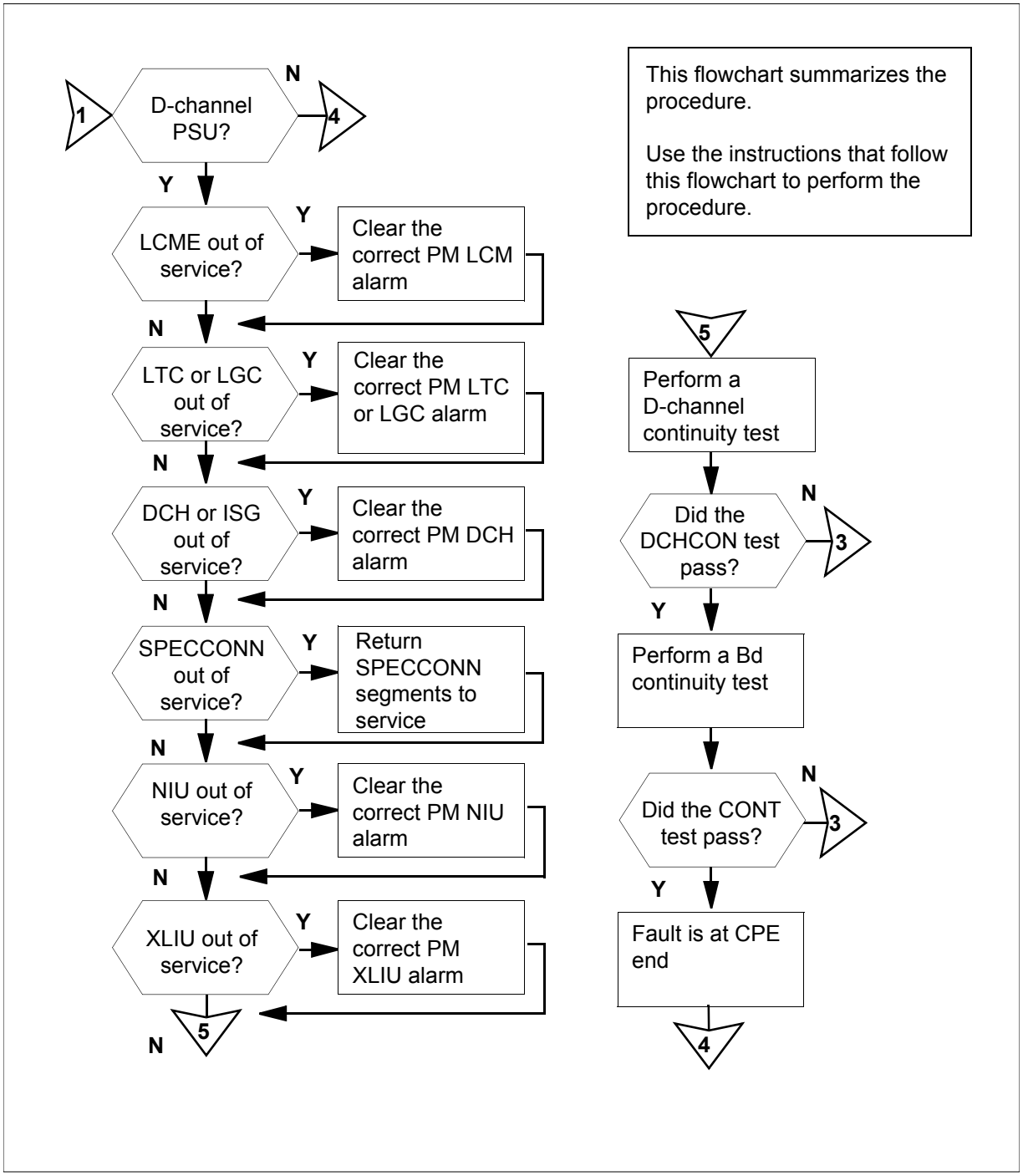
Figure 1-15
Summary of Line state is Packet service unavailable (PSU) (continued)



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Procedure 1-11 describes what actions to take when the line state is packet service unavailable (PSU).

Procedure 1-11
Troubleshooting when line state is Packet service unavailable

Step	Action
1	 **WARNING** **Possible equipment damage** Proceed only if a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service. At the MAP terminal, type **>MAPCI;MTC;LNS;LTP;LTPISDN** and press the **Enter** key.
2	Type **>Post D or L <Dir No.> or <Len No.>** and press the **Enter** key.
3	To post the B-channels (B1 and B2) for the directory number (DN) that has faults, type **>POST L f*rame_no unit_no drawer_no circuit_no bchnl*** and press the **Enter** key. Use the following variables: • *frame_no* is the frame number (0 to 511) for the B-channel • *unit_no* is the unit number (0 to 9) for the B-channel • *drawer_no* is the drawer number (0 to 99) for the B-channel • *circuit_no* is the circuit number (0 to 99) for the B-channel • *bchnl* is the B-channel (B1 or B2) *Example input:* **>POST L 7 1 15 10 B1** *Example of a MAP:* LCC PTY RNG .....LEN..... DN STA F S LTA TE RESULT ISDN B1 HOST 7 1 15 10 742 8102 PSU ***Note:*** In the example above, the B-channel B1 is PSU. If one or both B-channels are PSU, go to step 4. If no B-channel is PSU, go to step 36.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

4	Determine the status of the enhanced line concentrating module (LCME), network links, and the network interface unit (NIU). Determine the status of the central bus (C-bus) port, XLIU, and SPECCONN connection for the B-channel that is PSU. To determine the status, type **>CKTLOC** and press the **Enter** key.
	Example of a MAP response:
	`XPM Status: Unkn`
	`LCME Status: InSv`
	`NET 3 -- 51 7: OK`
	`TO 1 -- 58 5: OK`
	`NIU 2 ISTb, CBus Port 2 InSv`
	`SPEC Endpt XSG 2 Channel 7 XLIU 131 Status: SYSb`
	`ConType: Con Status: Active`
	Note: The SPECCONN status appears on the last line of the MAP response to the right of the Status field. In the example above, the SPECCONN status is Active.

5	Record the response information in step 4 for the connection.
6	Your next action depends on the status of the LCME, network links, NIU, C-bus port, and the XLIU. Your next action also depends on the status of the SPECCONN connection for the B-channel that is PSU. If the LCME is out of service, go to step 15. If the NET links are out of service, go to step 18. If the NIU is out of service, go to step 21. the C-bus port is out of service, go to step 24. If the XLIU is out of service, go to step 27. If the SPECCONN status is `PMBusy`, go to step 7. If the SPECCONN status is `Maintenance`, go to step 8. If the SPECCONN status is `NoInteg`, go to step 9. If the SPECCONN status is `InActive`, go to step 9. If all of the above are in service, go to step 30.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
7	One of the nodes in the connection is busy. Wait for the node to return to service. ***Note:*** Wait approximately two minutes. If the SPECCONN status remains `PMBusy`, go to step 9. If the SPECCONN status changes, go to step 4.
8	The connection performs a maintenance action. Wait for the maintenance action to finish. ***Note:*** Wait approximately five minutes. If the SPECCONN status remains `Maintenance`, go to step 9. If the SPECCONN status remains `Maintenance`, go to step 4.

9	To determine the status of the SPECCONN segments, type **>QSCONN SEG XSGCHNL *xsg_no chnl_no*** (where *xsg_no* is the XSG number, from 0 to 749, as determined in step 4 and *chnl_no* is the channel number, from 0 to 31, as determined in step 4), then press the **Enter** key.
	
	Example input:
	
	>QSCONN SEG XSGCHNL 2 7
	
	Example of a MAP response:
	
	`SEG  ENDPOINT1      ENDPOINT2     CONTYPE   STATUS`
	`-----------------------------------------------------`
	`0    XSGCHNL 2 7 XPM_CSIDE NIU 2 2 2 Con Inact`
	`1    JNET 1 58 5 JNET 3 51 7 Con Act`
	`2    XPM_CSIDE LTC 1 12 6 XPM_PSIDE LTC 1 11 24 Con Act`
	`3    LCM_CSIDE 10 24 ISLC HOST 7 1 15 10 B1 Con Act`

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
10	Find the SPECCONN segment that has faults. ***Note:*** For example, the response in step 9 indicates that all SPECCONN segments are in service, except the XSG to NIU segment. THe XSG to NIU segment is inactive. The response indicates either a XLIU has faults or a NIU has faults. If the bad segment is with the LCME, go to step 11. If the bad segment is with the LGC, go to step 11. If the bad segment is with the LTC, go to step 11. If the bad segment is with the NET, go to step 13. If the bad segment is with the NIU, go to step 11. If the bad segment is with the XLIU, go to step 11.
11	Perform the appropriate alarm clearing procedure for the LCME, LGC, LTC, NIU, or XLIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
12	Go to step 14.
13	Perform the appropriate alarm clearing procedure for the NET alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.

14	To determine the status of the SPECCONN segments, type **>QSCONN SEG XSGCHNL *xsg_no chnl_no*** (where *xsg_no* is the XSG number, from 0 to 749, as determined in step 4 and *chnl_no* is the channel number, from 0 to 31, as determined in step 4), then press the **Enter** key.
	
	Example input:
	
	>QSCONN SEG XSGCHNL 2 7
	
	Example of a MAP response:
	
	`SEG ENDPOINT1 ENDPOINT2 CONTYPE STATUS`
	`------------------------------------------------`
	`0 XSGCHNL 2 17 XPM_CSIDE NIU 2 2 2 Con Act`
	`1 JNET 1 58 5 JNET 3 51 7 Con Act`
	`2 XPM_CSIDE LTC 1 12 6 XPM_PSIDE LTC 1 11 24 Con Act`
	`3 LCM_CSIDE 10 24 ISLC HOST 7 1 15 10 B1 Con Act`
	
	If the status of the SPECCON segments is `Act`, go to step 4.
	If the status of the SPECCON segments is other than listed here, go to step 80.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

15	To post the LCME that has faults, type **>MAPCI;MTC;PM;POST LCME *frame_no unit_no*** (where *frame_no* is the frame number, from 0 to 511, as used in step 3 and *unit_no* is the unit number, either 0 or 1, as used in step 3), then press the **Enter** key.
	
	Example input:
	
	>MAPCI;MTC;PM;POST LCME 7 1
	
	Example of a MAP:
	
	`LCME HOST 7 1  SysB  Links OOS: Cside  5`
	`Unit0: SysB`
	`Unit1: SysB  11  11  11  RG: Uneq`
	`Drwr:  01  23  45  67  89  01  23  45`
	`..  ..  ..  ..  ..  ..  ..  ..`
	
	If the LCME is out of service, go to step 16.
	
	If the LCME is in service, go to step 4.

16	Perform the appropriate alarm clearing procedure for the LCME alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
17	Go to step 4.

18	To post the NET links that have faults, type **>MAPCI;MTC;NET;LINKS *link_no*** (where *link_no* is the link number, from 0 to 31, determined in step 4 on the line of the response that follows NET), then press the **Enter** key.
	
	Example of a MAP:
	
	`Net 11111  11111  22222  22222  33`
	`Plane  01234  56789  01234  56789  01234  56789  01`
	`0  . . . . .`
	`1  . . . . .`
	`Net 3 Links 11  1111  1111  2222  2222  2233`
	`Plane  0123  4567  8901  2345  6789  0123  4567  8901`
	`0. . . . . - . . - . - . . - - . . - -  . - - .`
	`1. . . . . P . . . . . - . . - . -  . . - - . .- - .- - .`
	`Links 3333 3333 4444 4444 4455 5555 5555 6666`
	`Plane 2345 6789 0123 4567 8901 2345 6789 0123`
	`0.- - - . . - . . . - .  - . - . . - .S  . - - . .- . . . - . -`
	`1. - - -. . - . . . - . - . - . . - . S . - - . . - . . . - . -`
	
	If the NET links are out of service, go to step 19.
	
	If the NET links are in service, go to step 4.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
19	Perform the appropriate alarm clearing procedure for the NET alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
20	Go to step 4.

21	To post the NIU that has faults, type **>MAPCI;MTC;PM;POST NIU *unit_no*** (where *unit_no* is the unit number, from 0 to 99, as determined in step 4 on the line of the response that follows NIU), then press the **Enter** key.
	Example of a MAP response:
	`NIU 1:  ISTb`
	`Unit 0:  InAct ISTb`
	`Unit 1:  Act   ISTb`
	If the NIU is out of service, go to step 22.
	If the NIU is in service, go to step 4.

22	Perform the appropriate alarm clearing procedure for the NIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
23	Go to step 4.

24	To access the NIU Devices (C-bus) level of the MAP, type **>MAPCI;MTC;PM;POST NIU *unit_no*;DEVICES** (where *unit_no* is the unit number, from 0 to 99, as determined in step 4 on the line of the response that follows NIU), then press the **Enter** key.
	Example of a MAP response:
	`NIU 2:  IstbUnit 0:  Act    IstbUnit 1:  InAct  Istb Net Links`
	`0 1 2 3 CBUS ports OOSPB 0    . . S . 1PB 1 . . S . 1`
	If the C-bus ports are out of service, go to step 25.
	If the C-bus ports are in service, go to step 4.

25	A C-bus port fault produces an NIU alarm. Perform the appropriate alarm clearing procedure for the NIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
26	Go to step 4.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
27	To post the XLIU that has faults, type **>MAPCI;MTC;PM;POST XLIU *unit_no*** (where *unit_no* is the unit number, from 0 to 999, as determined in step 4 on the line of the response that follows XLIU), then press the **Enter** key. *Example of a MAP response:* `XLIU  131 SysB` If the XLIU is out of service, go to step 28. If the XLIU is in service, go to step 4.
28	Perform the appropriate alarm clearing procedure for the XLIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
29	Go to step 4.

30	To perform a B-channel continuity test on the posted loop, type **>MAPCI;MTC;LNS;LTP;LTPISDN;BCHCON** and press the **Enter** key.
	Example of a MAP response:
	`WARNING - Action may affect Packet Data Service`
	`Do you wish to continue ?`
	`Please confirm ("YES", "Y", "NO", or "N"):`

31	To confirm the command, type **>YES** and press the **Enter** key. *Example of a MAP response:* `B1 Bb cont failed, invalid XLIU stateB1 Bb chnl RTS failed, SPECCONN status not active` If the BCHCON test passed, go to step 32. If the BCHCON test failed, go to step 80.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

32	To determine the state of the other B-channel, type **>POST L frame_no unit_no drawer_no circuit_no bchnl** and press the **Enter** key.
	
	Use the following variables:
	• *frame_no* is the frame number (0 to 511) for the B-channel
	• *unit_no* is the unit number (0 to 9) for the B-channel
	• *drawer_no* is the drawer number (0 to 99) for the B-channel
	• *circuit_no* is the circuit number (0 to 99) for the B-channel
	• *bchnl* is the B-channel (B1 or B2)
	
	Example input:
	
	>POST L 7 1 15 10 B2
	
	Example of a MAP response:
	
	`LCC PTY RNG .....LEN.......... DN STA F S LTA TE RESULT`
	`ISDN B2 HOST 7 1 15 10 742 8102 IDL`
	
	Note: In the example above, the B-channel B2 is idle.
	
	If the B-channel state is `PSU`, go to step 4.
	If the B-channel state is `IDL`, go to step 34.
	If the B-channel state is anything else, go to step 33.

33	Perform the correct trouble locating procedure in this book.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

34	To post the damaged directory number, type **>POST D *dn*** (where *dn* is the DN that has faults, as determined in step 32 on the response line under DN), then press the **Enter** key.
	Example input:
	>POST D 7428118
	Example of a MAP:
	`LCC PTY RNG .....LEN.....  DN  STA F S LTA  TE  RESULT`
	`ISDN LOOP  HOST  7 1 15 10  742 8118 PSU`
	Note: In the example above, the DN 742-8118 is PSU.
	If the DN state is PSU, go to step 36.
	If the DN state is IDL, go to step 81.
	If the DN state is anything else, go to step 35.

35	Perform the correct trouble locating procedure.

36	Determine the status of the LTC, LCME, DCH, ISG Bd channel, and SPECCONN connection for the D-channel. To determine the status, type **>CKTLOC** and press the **Enter** key.
	DCH support is not available for GSF lines.
	Example of a MAP response:
	`LCC PTY RNG .....LEN.....  DN  STA F S LTA  TE  RESULT`
	`ISDN LOOP  HOST  7 1 15 10  742 8118 PSU`
	`Site Flr RPos  Bay_id  Shf  Description  Slot  EqPEC`
	`HOST  01  C07  LCEI  7  32  LCME  7 1  15:10  BX26AA`
	`LTC  1  Status: ISTb  PSLink: 11  Status: OK`
	`LCME  Status: ISTb  CSLink:  1`
	`DCH  51  Status: ISTb  ISG  203  CHNL  7  Status: SYSB`
	`ConType: Con  Status: Active  TDM: 2`
	Note: The SPECCONN status appears on the last line of the MAP to the right of the Status field. In the example above, the SPECCONN status is Active.

37	Record the PM names and numbers from the step 36 response for the connection. The information appears below the Site header and response line.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
38	Your next action depends on the status of the LTC, LCME, DCH, ISG Bd channel, and SPECCONN connection for the D-channel.DCH support is not available for GSF lines. If the LTC or LGC is out of service, go to step 49. If the LCME is out of service, go to step 52. If the DCH is out of service, go to step 55. If the ISG CHNL is out of service, go to step 58. If the SPECCONN status is `PMBusy`, go to step 39. If the SPECCONN status is `Maintenance`, go to step 40. If the SPECCONN status is `NoInteg`, go to step 41. If the SPECCONN status is `InActive`, go to step 41. If all of the above are in service, go to step 61.
39	One of the nodes in the connection is busy. Wait for the node to return to service. ***Note:*** Wait approximately two minutes. If the SPECCON status remains `PMBusy`, go to step 41. If the SPECCON status changes, go to step 36.
40	The connection performs a maintenance action. Wait for the maintenance action to finish. ***Note:*** Wait approximately two minutes. If the SPECCONN status remains `Maintenance`, go to step 41. If the SPECCONN status changes, go to step 36. You cannot query the dn at the CI level for GSF lines. To query dn information, use the maintenance manager (MMI).

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

41	To determine the XSG for the DN, type **>QPHF DN *dn*** (where *dn* is the directory number) and press the **Enter** key.
	
	Example input:
	
	>QPHF DN 7428118
	
	Example of a MAP response:
	
	`DN INFORMATION (D Channel)`
	`----------------------------------------`
	`NUI: NO FSA: NO RCA: NO TCN: NO ICB: NO FCPN:`
	`NO RPOAB: NO LCP: NO CUGS: NO OCB: NO`
	`IMPS: 128 OMPS: 128 NDPS: YES`
	`DTCA: NO IDTCA: 9600 ODTCA: 9600`
	`SLCN: 1 NPVC: 0 NOWI: 0 NNRC: 10 NOWO: 0`
	`PLSQ: MOD8 IPLWS: 7 OPLWS: 7 NDWS: YES`
	`ICS: NO`
	
	`MAPPING`
	`-----------`
	`LTID: PKT 118`
	`CHANNEL: 5 X.25 Bd`
	`XSG: 4`

42	Record the XSG and channel numbers for the DN

43	To determine the status of the SPECCONN segments, type **>QSCONN SEG XSGCHNL *xsg_no chnl_no*** (where *xsg_no* is the XSG number, from 0 to 749, as determined in step 41 and *chnl_no* is the channel number, from 0 to 31, as determined in step 41), then press the **Enter** key.
	
	Example input:
	
	>QSCONN SEG XSGCHNL 4 5
	
	Example of a MAP response:
	
	`SEG ENDPOINT1 ENDPOINT2 CONTYPE STATUS`
	`-----------------------------------------------`
	`0 XSGCHNL 4 5 XPM_CSIDE NIU 1 2 25 Con Inact`
	`1 JNET 1 51 25 JNET 3 51 4 Con Act`
	`2 XPM_CSIDE LTC 1 12 4 DCHCHNL 203 30 Con Act`

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
44	Find the SPECCONN segment that has faults. ***Note:*** For example, the MAP response in step 43 indicates that all the SPECCONN segments are in service, except the XSG to NIU segment. The XSG to NIU segment is inactive. This response indicates either a XLIU that has faults or a NIU that has faults.DCH support is not available for GSF lines. If the damaged segment is with the DCH, go to step 45. If the damaged segment is with the LGC, go to step 45. If the damaged segment is with the LTC, go to step 45. If the damaged segment is with the NET, go to step 47. If the damaged segment is with the NIU, go to step 45. If the damaged segment is with the XLIU, go to step 45.
45	Perform the appropriate alarm clearing procedure for the LCME, LGC, LTC, NIU, or XLIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
46	Go to step 48.
47	Perform the appropriate alarm clearing procedure for the NET alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.

48	To determine the status of the SPECCONN segment, type **>QSCONN SEG XSGCHNL *xsg_no chnl_no*** (where *xsg_no* is the XSG number, from 0 to 749, as determined in step 41 and *chnl_no* is the channel number, from 0 to 31, as determined in step 41), then press the **Enter** key.
	
	Example input:
	
	>QSCONN SEG XSGCHNL 4 5
	
	Example of a MAP response:
	
	`SEG  ENDPOINT1      ENDPOINT2    CONTYPE     STATUS`
	`-----------------------------------------------------`
	`0    XSGCHNL 4 5    XPM_CSIDE NIU 1 2 25 Con Act`
	`1    JNET 1 51 25   JNET 3 51 4           Con Act`
	`2    XPM_CSIDE LTC  1 12 4 DCHCHNL 203 30 Con Act`
	
	If all SPECCONN segments are `Act`, go to step 36.
	If all SPECCONN segments are anything else, go to step 80.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

49	To post the LTC or LGC that have faults, type **>MAPCI;MTC;PM;POST *pm unit_no*** (where *pm* is the peripheral module, either LTC or LGC, as determined in step 36 and *unit_no* is the unit number, from 0 to 99, as determined in step 36), then press the **Enter** key.
	
	Example input:
	
	>MAPCI;MTC;PM;POST LTC 1
	
	Example of a MAP:
	
	`LTC 1 ISTb Links_OOS: CSide 0 , PSide 3`
	`Unit0: Act ISTb`
	`Unit1: Inact ISTb`
	
	If the LTC or LGC is out of service, go to step 50.
	
	If the LTC or LGC is in service, go to step 36.

50	Perform the appropriate alarm clearing procedure for the LTC or LGC alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
51	Go to step 36.

52	To post the LCME that has faults, type **>MAPCI;MTC;PM;POST LCME *frame_no unit_no*** (where *frame_no* is the frame number, from 0 to 511, used in step 3 and *unit_no* is the unit number, either 0 or 1, used in step 3), then press the **Enter** key.
	
	Example of a MAP:
	
	`LCME HOST 67 1 SysB Links OOS: Cside 0`
	`Unit0: SysB`
	`Unit1: SysB 11 11 11 RG: Uneq`
	`Drwr: 01 23 45 67 89 01 23 45`
	`.. .. .. .. .. .. .. ..`
	
	If the LCME is out of service, go to step 53.
	
	If the LCME is in service, go to step 36.

53	Perform the appropriate alarm clearing procedure for the LCME alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.
54	Go to step 36.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

55	To post the DCH that has faults, type **>MAPCI;MTC;PM;POST *pm pm_unit_no*;DCH;POST *dch_unit_no*** and press the **Enter** key.
	
	Use the following variables:
	• *pm* is the peripheral module (LTC or LGC) recorded in step 37
	• *pm_unit_no* is the peripheral module unit number (0 to 99) recorded in step 37
	• *dch_unit_no* is the DCH unit number (0 to 99) recorded in step 37
	
	DCH support is not available for GSF lines.
	
	Example input:
	
	>MAPCI;MTC;PM;POST LTC 1;DCH;POST 51
	
	Example of a MAP:
	
	`LTC 1 ISTb Links_OOS: CSide 0 , PSide 3`
	`Unit0: Act ISTb`
	`Unit1: Inact ISTB`
	
	`DCH 0 0 0 3 0 0`
	
	`DCH 51 ISG 203 ISTb LTC 1 port 15`
	
	If the DCH is out of service, go to step 56.
	
	If the DCH is in service, go to step 36.

56	Perform the appropriate alarm clearing procedure for the DCH alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step. DCH support is not available for GSF lines.
57	Go to step 36.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

58	To post the ISG that has faults, type **>MAPCI;MTC;PM;POST *pm pm_unit_no*;ISG;POST *isg_unit_no*** and press the **Enter** key.
	
	Use the following variables:
	• *pm* is the peripheral module (LTC or LGC) recorded in step 37.
	• *pm_unit_no* is the peripheral module unit number (0 to 99) recorded in step 37.
	• *isg_unit_no* is the ISG unit number (0 to 255) recorded in step 37.
	
	Example input:
	
	>MAPCI;MTC;PM;POST LTC 1;ISG;POST 203
	
	Example of a MAP response:
	
	`LTC 1 ISTb Links_OOS: CSide 0 , PSide 3`
	`Unit0: Act ISTb`
	`Unit1: Inact ISTB`
	
	`ISG 1111111111 2222222222 33`
	`123456789 0123456789 0123456789 01`
	`. . . . . . . . . . . . . . . . . . . . .`
	`. . . . . . . . . . S .`
	
	`ISG 203 DCH 51 ISTb LTC 1 port 15`
	
	If the DCH is out of service, go to step 59.
	
	If the DCH is in service, go to step 36.

59	ISG faults produce a DCH alarm. Perform the appropriate alarm clearing procedure for the DCH alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step. DCH support is not available for GSF lines.
60	Go to step 36.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
61	To determine the XSG for the DN, type **>QPHF DN *dn*** (where *dn* is the directory number) and press the **Enter** key. *Example input:* **>QPHF DN 7428118** *Example of a MAP response:* DN INFORMATION (D Channel) ---------- NUI: NO FSA: NO RCA: NO TCN: NO ICB: NO FCPN: NO RPOAB: NO LCP: NO CUGS: NO OCB: NO IMPS: 128 OMPS: 128 NDPS: YES DTCA: NO IDTCA: 9600 ODTCA: 9600 SLCN: 1 NPVC: 0 NOWI: 0 NNRC: 10 NOWO: 0 PLSQ: MOD8 IPLWS: 7 OPLWS: 7 NDWS: YES ICS: NO MAPPING ---------- LTID: PKT 118 CHANNEL: 5 X.25 Bd XSG: 4
62	Record the XSG and channel numbers from the response in step 61 for the DN. ***Note:*** You cannot be query the dn at the CI level for GSF lines. To query the dn information, use the maintenance manager (MMI).

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

63	To determine the NIU for the DN, type **>QSCONN SEG XSGCHNL *xsg_no chnl_no*** (where *xsg_no* is the XSG number, from 0 to 749, recorded in step 62 and *chnl_no* is the channel number, from 0 to 31, recorded in step 62), then press the **Enter** key.
	
	Example input:
	
	>QSCONN SEG XSGCHNL 4 5
	
	Example of a MAP response:
	
	`SEG  ENDPOINT1        ENDPOINT2         CONTYPE  STATUS`
	`----------------------------------------------------------`
	`0    XSGCHNL 4 5      XPM_CSIDE NIU 1 2 25  Con PMB`
	`1    JNET 1 51 25     JNET 3 51 4           Con Act`
	`2    XPM_CSIDE LTC 1 12 4 DCHCHNL 203 30   Con Act`
	
	Note: In the example above, the NIU associated with the D-channel is NIU 1.

64	Record the NIU unit number from the response in step 63 for the connection. This information appears below the ENDPOINT2 header and in the XSGCHNL response line.

65	To determine the state of the NIU, type **>MAPCI;MTC;PM;POST NIU *unit_no*** (where *unit_no* is the unit number, from 0 to 99, recorded in step 64), then press the **Enter** key.
	
	Example of a MAP:
	
	`NIU 1:  SYSb`
	`Unit 0:  InAct SYSb`
	`Unit 1:  Act   SYSb`
	
	If the NIU is in service, go to step 67.
	
	If the NIU is not in service, go to step 66.

66	Perform the appropriate alarm clearing procedure for the NIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

67	To determine the XLIU for the XSG, type **>QPHF XSG *xsg_no*** (where *xsg_no* is the XSG number, from 0 to 749, recorded in step 62), then press the **Enter** key.
	Example of a MAP response:
	`XSG INFORMATION`
	`----------`
	`XSG EXT INDEX: 4  CURRENT NUMBER OF LINKS: 54`
	`XLIU INDEX: 124  MAXIMUM NUMBER OF CHANNELS:30`
	
	`MAPPING`
	`----------`
	`CHANNEL: 1 X.25 PB`
	`CHANNEL: 2 X.25 PB`
	`CHANNEL: 3 X.25 PB`
	`CHANNEL: 4 X.25 Bd`
	`CHANNEL: 5 X.25 Bd`
	`CHANNEL: 6 X.75 B`
	`CHANNEL: 7 X.75 B`
	`CHANNEL: 8 X.75 B`
	`CHANNEL: 9 X.75 B`
	`CHANNEL: 10 X.75 B`
	`CHANNEL: 11 X.75 B`

68	Record the XLIU unit number next to the XLIU INDEX header in the response in step 67.
69	To post the XLIU, type **>MAPCI;MTC;PM;POST XLIU *unit_no*** (where *unit_no* is the unit number, from 0 to 999, recorded in step 68) and press the **Enter** key. *Example of a MAP:* `XLIU 124 SysB` If the XLIU is in service, go to step 71. If the XLIU is out of service, go to step 70.
70	Perform the appropriate alarm clearing procedure for the XLIU alarm. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). Complete the procedure and return to this step. DCH support is not available for GSF lines.

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

71	To perform a D-channel continuity test between the DCH and the line card of the posted loop, type **>MAPCI;MTC;LNS;LTP;LTPISDN;DCHCON** and press the **Enter** key.
	Example of a MAP response:
	`WARNING - Action may affect Packet Data Service`
	`Do you wish to continue ?`
	`Please confirm ("YES", "Y", "NO", or "N"):`

72	To confirm the response, type **>YES** and press the **Enter** key. *Example of a MAP response:* `DCH continuity test passed` If the DCHCON test passes, go to step 73. If the DCHCON test fails, go to step 80. DCH support is not available for GSF lines.

73	To post the ISG recorded in step 37, type **>MAPCI;MTC;PM;POST *pm pm_unit_no*;ISG;POST *isg_unit_no*** and press the **Enter** key.
	Use the following variables:
	• *pm* is the peripheral module (LTC or LGC) recorded in step 37
	• pm_unit_no is the peripheral module unit number (0 to 99) recorded in step 37
	• isg_unit_no is the ISG unit number (0 to 255) recorded in step 37
	Example input:
	>MAPCI;MTC;PM;POST LTC 1;ISG;POST 203
	Example of a MAP response:
	`LTC 1 ISTb Links_OOS: CSide 0 , PSide 3`
	`Unit0: Act ISTb`
	`Unit1: Inact ISTb`
	`ISG 1111111111 2222222222 33`
	`123456789 0123456789 0123456789 01`
	`. . . . . .`
	`. . . . . S.`
	`ISG 203 DCH 51 ISTb LTC 1 port 15 DCH Chnls BSY`

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action

74	To determine the Bd channel for the LEN, type **>QLEN *frame_no unit_no drawer_no circuit_no*** and press the **Enter** key.
	
	Use the following variables:
	• *frame_no* is the frame number (0 to 511) for the B-channel used in step 3
	• *unit_no* is the unit number (0 to 9) for the B-channel used in step 3
	• *drawer_no* is the drawer number (0 to 99) for the B-channel used in step 3
	• *circuit_no* is the circuit number (0 to 99) for the B-channel used in step 3
	
	Example of a MAP response:
	`LEN: HOST 7 1 15 10`
	`ISG: 203 DCH: 51 ISG BRA CHANNEL: 7`
	`CARDCODE: BX26AA PADGRP: NPDGP`
	`PM NODE NUMBER : 131`
	`PM TERMINAL NUMBER : 487`
	`LEN HAS ONE NAILEDUP B-CHANNEL`
	
	`TEI LTID CS PS BCH/ISG Bd`
	`--- ------------ -- -- -----------------`
	`1 PKT 118 N D ISG Bd: 30`
	`2 PKT 119 N D ISG Bd: 30`
	`3 PKT 120 N D ISG Bd: 30`
	`4 PKT 121 N D ISG Bd: 30`
	`5 PKT 122 N D ISG Bd: 30`
	`6 PKT 123 N D ISG Bd: 30`
	`7 PKT 124 N D ISG Bd: 30`
	`- PKT 102 N B B1`
	
	Note: In the example above, the Bd channel is 30.

75	Record the Bd channel number below the BCH/ISG Bd header in the response in step 74.

76	To manually busy the Bd channel between the DCH (ISG) and the XLIU (XSG), type **>BSY *bd _chnl_no*** (where *bd_chnl_no* is the Bd channel number, from 30 or 31, recorded in step 75) and press the **Enter** key.
	
	Example of a MAP response:
	`27 associated LTIDs will be affected`
	`Please confirm ("YES", "Y", "NO", or "N"):`

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Procedure 1-11
Troubleshooting when line state is Packet service unavailable (continued)

Step	Action
77	To confirm the command, type **>YES** and press the **Enter** key. *Example of a MAP response:* `ISG 203 channel 30 BD Bsy Passed`

78	To perform a continuity test on the Bd channel, type **>CONT *bd _chnl_no*** (where *bd_chnl_no* is the Bd channel number, from 30 or 31, recorded in step 75) and press the **Enter** key.
	Example of a MAP response:
	`XSG loop point set passed`
	`Loop point removed`
	`Internal continuity test passed`
	If the CONT test passes, go to step 79.
	If the CONT test fails, go to step 80.

79	Terminals at the customer premises end have possible design and connection problems. Terminals with these problems will not allow layer two and layer three to appear. As a result, PSU appears. Direct the customer or the service representative to troubleshoot the customer premises end.
80	For additional help, contact the next level of support.
81	The procedure is complete.

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Manually switching to a backup D-channel ISDN PRI primary and backup D-channels

Application

Use this procedure to switch manually from a primary D-channel to a backup D-channel.

Definition

The primary D-channel is in the in-service (INS) state and the backup D-channel is in the standby (STB) state. The switch can generate log reports ISDN110 or ISDN113.

In a problem condition, the system automatically switches the activities on the D-channels. For example, an automatic switch occurs when

- a carrier or trunk at the far end office fails
- when hardware problems occur at the DMS-100 switch

When you busy an in-service D-channel, a switch of activities to the standby D-channel occurs automatically.

Common procedures

There are no common procedures.

Action

Procedure 1-12 provides steps and actions to switch manually from a primary D-channel to a backup D-channel. Figure 1-16 provides an overview of the procedure.

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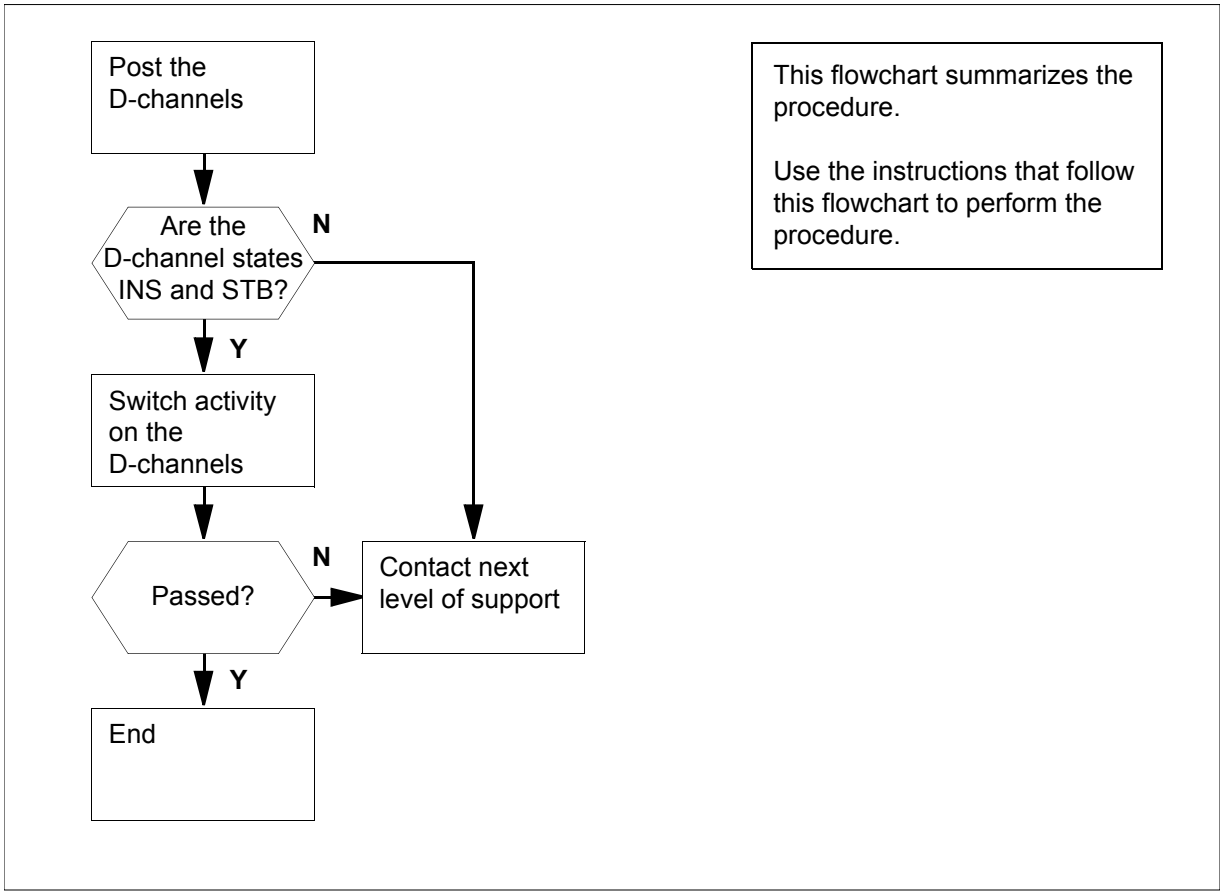
Figure 1-16
Summary of Manually switching to a backup D-channel



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Procedure 1-12 describes how to switch manually from a primary D-channel to a backup D-channel.

Procedure 1-12
Manually switching to a backup D-channel

Step	Action
1	Using office records or operating company personnel, determine the name of the trunk group.
2	At the MAP display, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key to access the TTP level of the MAP display.

3	To post the D-channels, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F5678935PAV
	Example of a MAP response:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS LTC 2 3 24 F5678935PAV D1 INS`
	`LTC 2 5 24 F5678935PAV D2 STB R`
	`SHORT CLLI IS: F56789`
	`OK,CKT POSTED`

4	Determine the states of the D-channels. ***Note:*** The MAP lists the state of the D-channel on the right side of the DCHL header. If one D-channel is `INS` and the other is `STB`, go to step . If one D-channel is `INS` and the other is not `STB`, go to step 7. If neither D-channel is `INS`, go to step 7.

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Procedure 1-12
Manually switching to a backup D-channel (continued)

Step	Action

5	
	CAUTION
	PRI service interruption
	The following step affects PRI service when the switch of activities occurs. Perform this procedure during periods of low traffic.
	
	To switch activity on the D-channels, type **>SWACT** and press the **Enter** key.
	
	Example of a MAP response:
	`WARNING: THIS WILL CAUSE D-CHANNEL SWACT`
	`AND AFFECT THE SERVICE.`
	`Please confirm (”YES”, ”Y”, ”NO” or ”N”):`

6	To confirm the command, type **>YES** and press the **Enter** key. If the SWACT command passes, go to step 8. If the SWACT command fails, go to step 7.
7	For additional help, contact the next level of support.
8	The procedure is complete.

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Modifying provisioned data for resource modules DMS-Spectrum Peripheral Module

Application

Use this procedure to modify the provisioned datafill for DMS-Spectrum Peripheral Modules (SPM) resource modules (RM), such as digital signal processors (DSP) and voice signal processors (VSP). Provisioned configuration data is changed in table MNCKTPAK.

Sparing actions between multiple RMs may have occurred since the original data download from the computing module (CM) to the common equipment module (CEM). Also, the services being provided by the RM may or may not be the same as the provisioned services for that RM.

Definition

Perform the specific steps of the procedure to modify provisioned datafill for an RM.

Common procedures

None

Action

Procedure 1-13 provides steps and actions to modify the provisioned datafill for SPM resource modules, such as DSPs and VSPs. Figure 1-17 provides an overview of the procedure.

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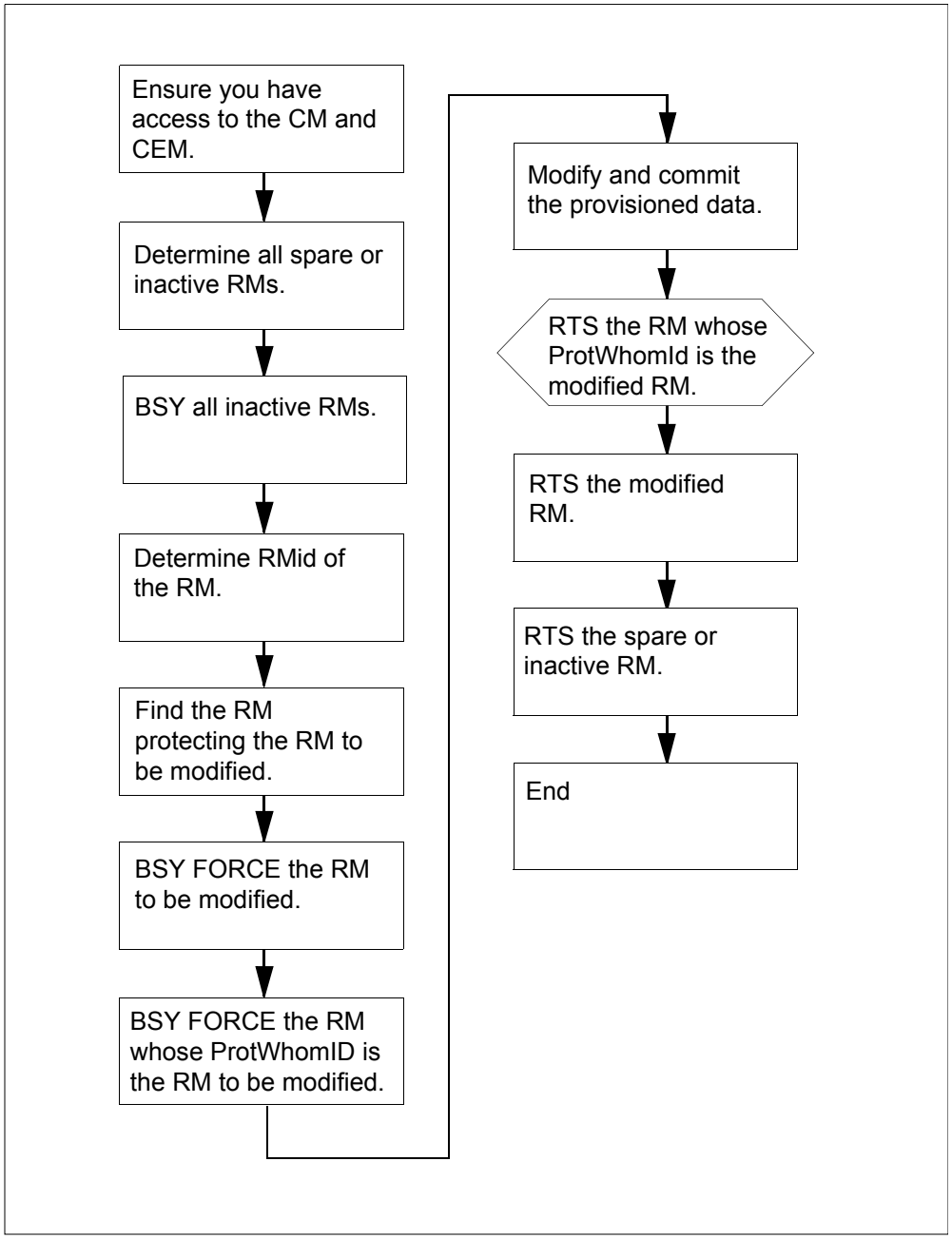
Figure 1-17
Modify provisioned data for SPM resource modules



Note: For detailed information and definitions, refer to "Supplementary information," "table MNCKTPAK," in the appropriate Data Schema Reference Manual.

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Procedure 1-13 describes how to modify the provisioned datafill for DMS-Spectrum Peripheral Modules (SPM) resource modules (RM), such as digital signal processors (DSP) and voice signal processors (VSP).

Procedure 1-13
Modifying provisioned data for resource modules

Step	Action
1	At the MAP terminal, ensure you have access to both the CM and the CEM.
2	Determine all spare or inactive RMs in the same protection group as the RM to be modified by entering the following: **CI>table mncktpak** **>lis all** ***Note:*** The RM whose datafill is to be changed belongs to a particular protection group. To prevent sparing actions from taking place while the datafill procedures are being executed, all inactive RMs in the same protection group as the RM to be modified must be busied. Use table MNCKTPAK to determine all inactive RMs that are in the same protection group and on the same SPM as the RM to be modified.
3	BSY all inactive RMs by entering the following: **CI>mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy**
4	Determine RMid of the RM to be modified. The RM whose provisioned data is to be modified must be a working RM. The RMid of this RM is determined by a combination of its shelf and slot numbers. RMid = (shelf number x 14) + slot number.

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Procedure 1-13
Modifying provisioned data for resource modules (continued)

Step	Action
5	Find the RM that is protecting the services of the to-be-modified RM by entering the following: **CI> remlogin spm <<#> <<1|0>** *You are now logged into the SPM debug shell.* Type `help' to see the available shell commands.  **dSH> cd resman**  **dSH> configdata all verbose**  *Example:*  In the following example, X is the ProtWhomId of RMid Y. This means that Y is currently configured with the provisioned data of X.  `Service Configuration data for rmId Y` `Desired configuration` `COT ECAN DTMF FTR TONESYN ABBIT MF` `0 210 0 0 0 0 0` `Actual configuration` `COT ECAN DTMF FTR TONESYN ABBIT MF` `0 210 0 0 0 0 0`  `This RM is currently protecting the services provisioned on RM X`
6	BSY FORCE the RM whose datafill is to be modified by entering the following: **CI> mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy force** To change datafill, the RM must be in the state MANB. Since the spare or inactive RM has already been busied, the BSY FORCE command may need to be used to change the state of this RM.
7	BSY FORCE the RM whose ProtWhomId is the RM to be modified by entering the following: **CI> mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy force**

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Procedure 1-13
Modifying provisioned data for resource modules (continued)

Step	Action
8	Modify and commit the provisioned data for the RM in table MNCKTPAK for RM by entering the following: **CI>table mncktpak** `TABLE: MNCKTPAK` **>pos spm <<#> <<shelf#> <slot#>** **> cha** **> ...**
9	RTS the RM whose ProtWhomId is the modified RM by entering the following: **CI> mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy rts** When the RM whose ProtWhomId is the modified RM is returned to service, it resumes protecting the services of the modified RM. Therefore, the RM will be configured with the new provisioned data of the modified RM. If the RM described is the RM that was modified, go to step 11.
10	RTS the modified RM by entering the following: **CI> mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy rts**
11	RTS the spare or inactive RMs that were busied in step 3 by entering the following: **CI> mapci;mtc;pm;post spm <<#>;select [DSP|VSP] <<#>;bsy rts**
12	The modification to the provisioned data is complete.

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Monitoring call processing busy trunk circuits

Application

Use this procedure to monitor trunk circuits that are call processing busy (CPB). Monitor CPB trunk circuits for conditions like noise, transmit (TX) level problems, and receive (RX) level problems.

Definition

This procedure monitors CPB trunk circuits. To monitor these circuits, the procedure establishes a three-party conference circuit. The conference circuit operates between the circuit in the control position, the circuit linked to it, and the headset circuit.

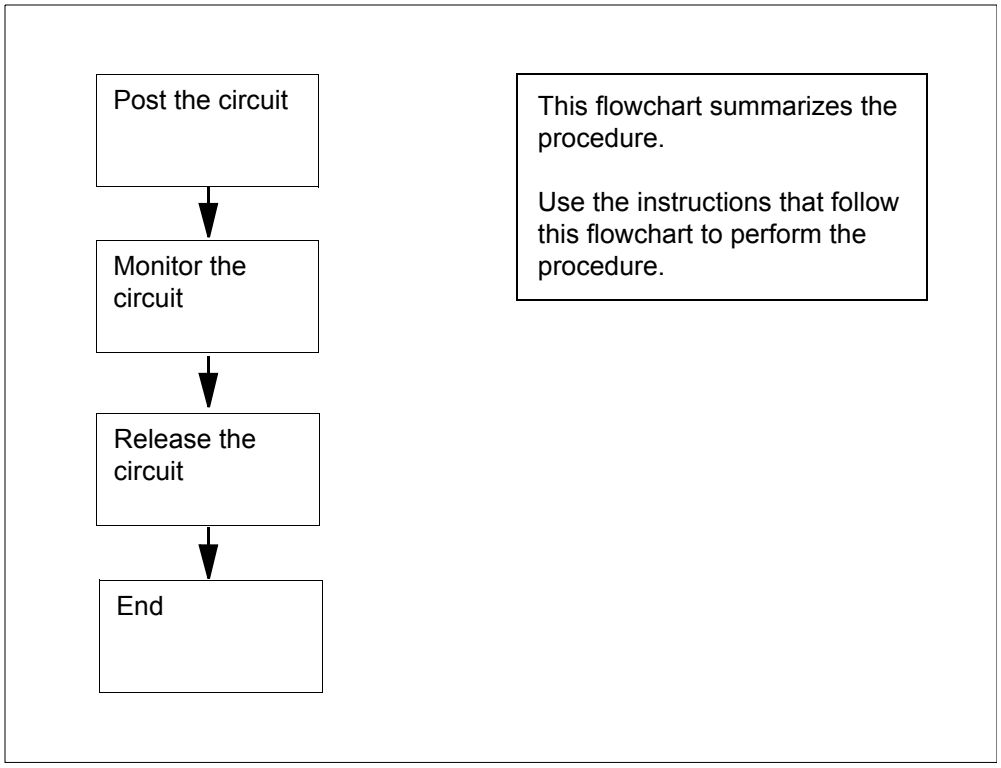
Common procedures

There are no common procedures.

Action

Procedure 1-14 provides steps and actions to monitor trunk circuits that are in CPB state. Figure 1-18 provides an overview of the procedure.

Figure 1-18
Summary of Monitoring call processing busy trunk circuits



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Procedure 1-14 describes how to monitor trunk circuits that are call processing busy (CPB).

Procedure 1-14
Monitoring call processing busy trunk circuits

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;TRKS;TTP;MONITOR** and press the **Enter** key to access the MONITOR level of the MAP display.
2	Determine if you require a list of the different methods to post a trunk circuit. If you require a list, go to step 3. If you do not require a list, go to step 5.

3	To list the first circuit posting parameters, type **>POST** and press the **Enter** key.
	Example of a MAP response:
	`INVALID PARM 1, IT IS`
	`{A,B,D,E,G,P,S,T,TB,TM,CPTERMERR,`
	`BC,WB}`
	`A - POST ALL CKT BY STATE IND. B - POST`
	`BSYQ CKT OR LEAVE`
	`OUT OFF SERVICE CKT IN POST SET.D -`
	`POST DIGITAL CKT ON DEQ.`
	`E - POST ECHO SUPR CKT ON DES. G - POST`
	`A GRP OF CKT BY CLLI`
	`P/TM - POST CKT ON PERIPHERAL MODULE. S`
	`- SELECT CKT BY STATE`
	`INDICATED FROM POST SET. T - POST`
	`INDIVIDUAL CKT BY CLLI  NAME.`
	`TB - BY TROUBLE BUFFER. CPTERMERR -`
	`POST CPTERMERR QUE`
	`UE`
	`BC - POST THE TRK CIRCUITS INVOLVED IN`
	`A  BROADCAST CALL`
	`WB - POST THE TRK CIRCUITS INVOLVED IN`
	`A  WIDEBAND CALL`

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Procedure 1-14
Monitoring call processing busy trunk circuits (continued)

Step	Action
4	To list the second circuit posting parameters, type **>POST *parm_1*** (where *parm_1* is the first circuit posting parameter) and press the **Enter** key. *Example input:* **>POST D** *Example of a MAP response:* Next par is: <DEQNM> {DCM, LTC, DTC, DCA, DCT, IDTC, ILTC, RCC, PDTC, TDTC, TLTC, TRCC, IAC, RCCI, DTCI, ICP, TMS, RCC2, SRCC} Enter: <DEQNM> <DEQ_NO> [<CARR_NO>] [<TS_NO>] [<TO>] <TS_NO>

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Procedure 1-14
Monitoring call processing busy trunk circuits (continued)

Step	Action

5	To post the circuits that you want to monitor, type **>POST *parm_1 parm_2*** (where *parm_1* is the first circuit posting parameter and *parm_2* is the second circuit posting parameter) and press the **Enter** key.
	Example input:
	>POST G MAIDBNR
	Example of a MAP response:
	`CKT TYPE PM NO. COM LANG`
	`STA S R DOT TE RESULT`
	`2W S7 S7 DTC 0 3 1 MAIDBNR`
	`1 IDL`

6	Wait for the circuit state (STA) to change to CPB.
7	To connect the headset trunk to the CPB circuit, type **>MONTALK *mode conn_length*** (where *mode* is the monitoring mode, either talk [T] or listen [L], and *conn_length* is the connection length in minutes, from 1 to 36), then press the **Enter** key. *Example input:* **>MONTALK L 5** *Example of a MAP response:* `OK,MONITOR TALK CONNECTION SET`
8	Monitor the circuit.
9	To release the circuit, type **>RLS** and press the **Enter** key. ***Note:*** If the circuit state (STA) changes, the monitor connection automatically releases. If the RLS command passes, go to step 11. If the RLS command fails, go to step 10.
10	For additional help, contact the next level of support.
11	The procedure is complete.

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Performing an external continuity test on a DS-1 or PCM30 link ISDN PRI single D-channel

Application

Use this procedure to perform an external continuity test on a DS-1 or a PCM30 link.

Definition

The external continuity test requires operating company personnel at the far-end office to create a DS-1 or a PCM30 carrier loopback for you.

Common procedures

There are no common procedures.

Action

Procedure 1-15 provides steps and actions to perform an external continuity test on a DS-1 or a PCM30 link. Figure 1-19 provides an overview of the procedure.

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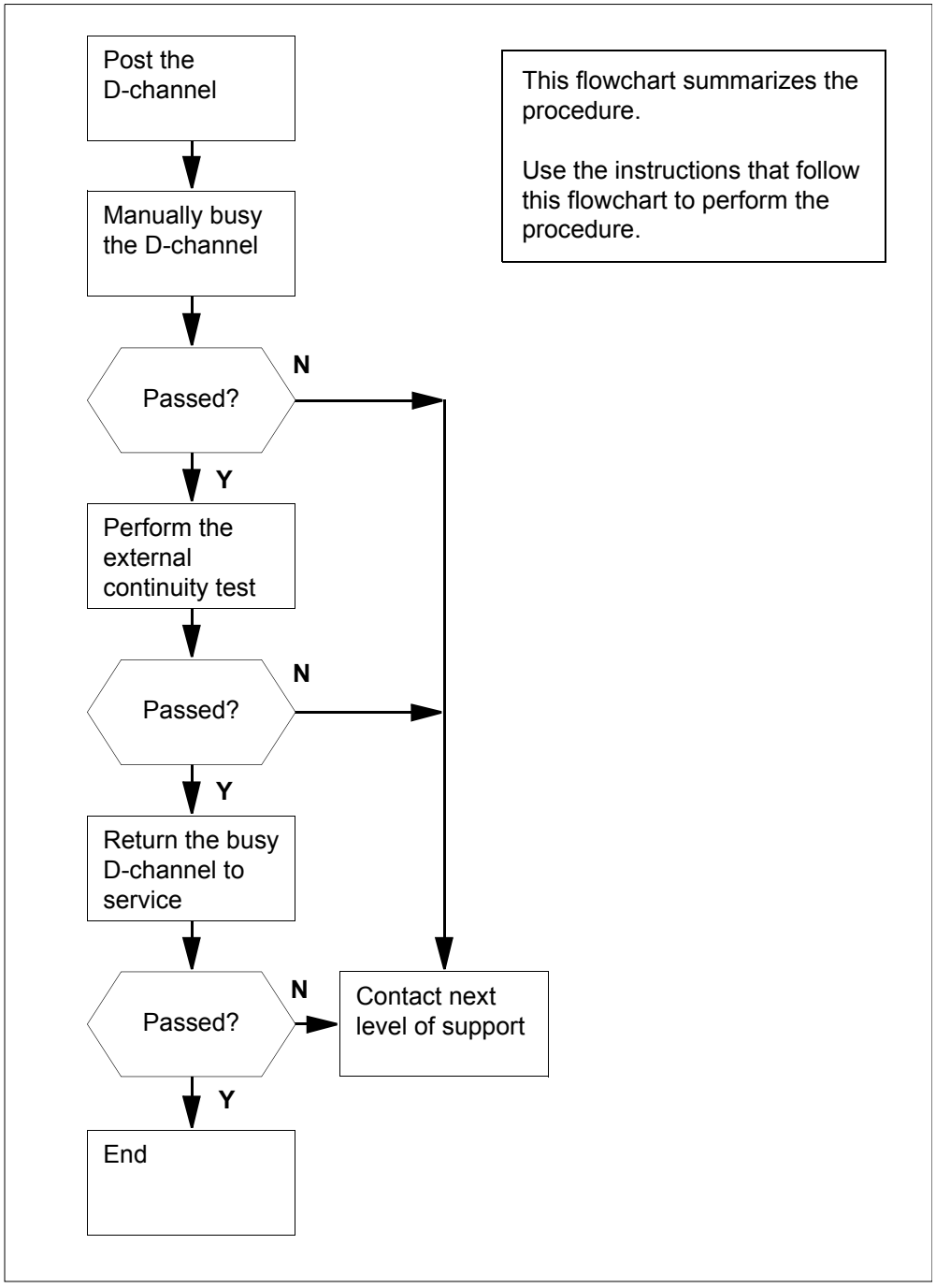
Figure 1-19
Summary of Performing an external continuity test on a DS-1 or PCM30 link



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Procedure 1-15 describes how to perform an external continuity test on a DS-1 or a PCM30 link.

Procedure 1-15
Performing an external continuity test on a DS-1 or PCM30 link

Step	Action
1	From office records or operating company personnel, determine the name of the trunk group.
2	At the MAP Terminal, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key to access the PRADCH level of the MAP display.

3	To post the D-channel, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F9876035PRAPRV
	Example of a MAP display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS DTCIPDTC 2 3 24 F9876035PRAPRV DCHL INS`
	`R`
	Example of a MAP response:
	`LAST CKT 3 24`
	`POSTED CKT IDLED`
	`SHORT CLLI IS: F98760`
	`OK,CKT POSTED`

—sheet 1 of 3—

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Procedure 1-15
Performing an external continuity test on a DS-1 or PCM30 link (continued)

Step	Action

4	**CAUTION**
	PRI service interruption
	The following step takes an in-service D-channel out of service. When you take an in-service D-channel out of service, the backup D-channel automatically switches into service.
	
	To busy the D-channel manually, type **>BSY** and press the **Enter** key.
	
	Example of a MAP response:
	`STATE CHANGED`
	`or`
	`THIS WILL PUT DTCIPDTC 2 3 24 DCH OUT-OF-SERVICE.`
	`Active calls will be killed`
	`Please confirm ("YES", "Y", "NO", or "N"):`

5	To confirm the command, type **>YES** and press the **Enter** key. ***Note:*** The D-channel state changes to manual busy (MB). If the BSY command passes, go to step 6. If the BSY command fails, go to step 11.
6	Ask operating company personnel at the far-end office to create a DS-1 or PCM30 loopback.

7	Operating Company Personnel at the far-end office will notify you about the created loopback. To start the external continuity test after the operating company personnel notifies you, type **>CONT EXT** and press the **Enter** key.
	
	Example of a MAP response:
	`EXTERNAL CONTINUITY TEST STARTED`
	`EXTERNAL CONTINUITY TEST PASSED`
	
	If the external continuity test passes, go to step 8.
	
	If the external continuity test fails, go to step 10.

8	Ask operating company personnel at the far-end office to remove the DS-1 or PCM30 loopback.

—sheet 2 of 3—

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Procedure 1-15
Performing an external continuity test on a DS-1 or PCM30 link (continued)

Step	Action
9	To return the busy D-channel to service, type **>RTS** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes (INS state), go to step 12. If the RTS command fails, go to step 11.
10	Ask the operating company personnel at the far-end office to remove the DS-1 or PCM30 loopback.
11	For additional help, contact the next level of support.
12	The procedure is complete.

—sheet 3 of 3—

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Performing an external continuity test on a DS-1 link ISDN PRI primary and backup D-channels

Application

Use this procedure to perform an external continuity test on a DS-1 link.

Definition

The external continuity test requires operating company personnel at the far-end office to create a DS-1 carrier loopback for you.

Common procedures

There are no common procedures.

Action

Procedure 1-16 provides steps and actions to perform an external continuity test on a DS-1 link. Figure 1-20 provides an overview of the procedure.

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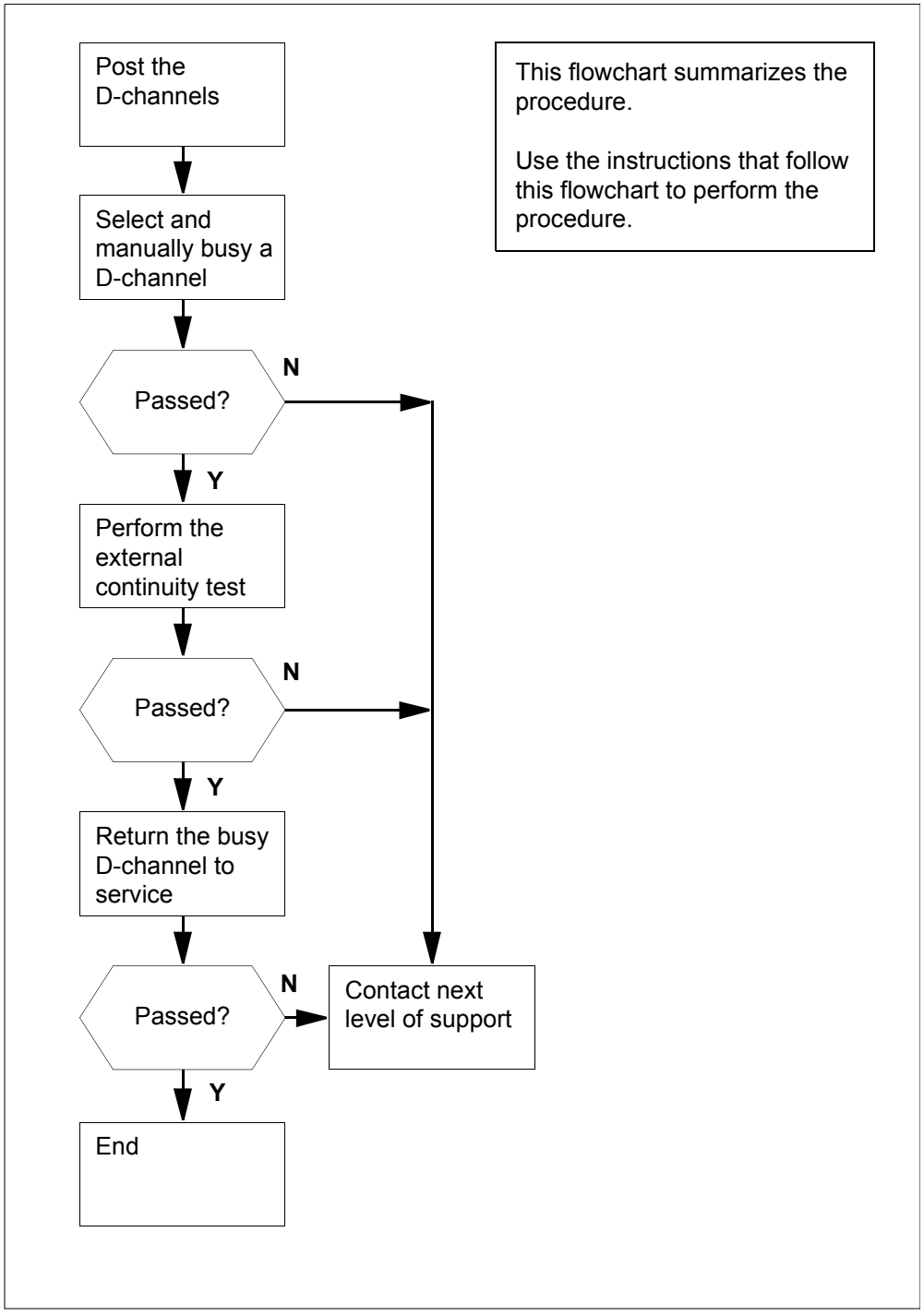
Figure 1-20
Summary of Performing an external continuity test on a DS-1 link



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Procedure 1-16 describes how to perform an external continuity test on a DS-1 link.

Procedure 1-16
Performing an external continuity test on a DS-1 link

Step	Action
1	From office records or operating company personnel, determine the name of the trunk group.
2	At the MAP Terminal, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key to access the PRADCH level of the MAP display.

3	To post the D-channels, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F5678935PAV
	Example of a MAP display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS LTC 2 3 24 F5678935PAV D1 STB`
	`LTC 2 5 24 F5678935PAV D2 INS R`
	Example of a MAP response:
	`SHORT CLLI IS: F56789`
	`OK,CKT POSTED`

4	Choose the D-channel for the external continuity test. Write down its identifier (D1 or D2). ***Note 1:*** The MAP display lists the state of the D-channel on the right side of the DCHL header. The MAP display lists the identifier under the LANG header. ***Note 2:*** In-service (INS) is the normal operation state for the primary D-channels. Standby (STB) is the normal operation state for the backup D-channels. The STB state occurs for a backup D-channel when the primary D-channel is INS. ***Note 3:*** You must use the same identifier (D1 or D2) for all steps used in the external continuity test.

—sheet 1 of 3—

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Procedure 1-16
Performing an external continuity test on a DS-1 link (continued)

Step	Action

5	
	CAUTION
	PRI service interruption
	The following step takes an in-service D-channel out of service. When you take an in service D-channel out of service, the backup D-channel automatically switches into service.
	
	To manually busy the D-channel, type **>BSY *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key.
	
	Example of a MAP response:
	`D1: STATE CHANGED`
	or
	`THIS WILL PUT DTCI 2 5 24 D2 OUT-OF-SERVICE.`
	`Active calls will be killed`
	`Please confirm ("YES", "Y", "NO" or "N"):`

6	To confirm the command, type **>YES** and press the **Enter** key. *The D-channel state changes to manual busy.* If the BSY command passes, go to step 7. If the BSY command fails, go to step 12.
7	Ask the operating company personnel at the far-end office to create a DS-1 loopback.

8	Operating company personnel at the far-end office will notify you when they establish a loopback. To perform an external continuity test after the operating company personnel notifies you, type **>CONT EXT *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key.
	
	Example of a MAP response:
	`EXTERNAL CONTINUITY TEST STARTED`
	`D2: EXTERNAL CONTINUITY TEST PASSED`
	
	If the external continuity test passes, go to step 9.
	
	If the external continuity test fails, go to step 11.

9	Ask the operating company personnel at the far-end office to remove the DS-1 loopback.

—sheet 2 of 3—

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Procedure 1-16
Performing an external continuity test on a DS-1 link (continued)

Step	Action
10	To return the D-channel to service, type **>RTS *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key. *Example of a MAP response:* `D2: STATE CHANGED` If the RTS command passes (INS or STB state), go to step 13. If the RTS command fails, go to step 12.
11	Ask the persons at the far-end office to remove the DS-1 loopback.
12	For additional help, contact the next level of support.
13	The procedure is complete.

—sheet 3 of 3—

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Performing an internal continuity test on a DS30 link ISDN PRI primary and backup D-channels

Application

Use this procedure to perform an internal continuity test on a DS30 link or DS30A link.

Definition

The test checks the internal link between the DS30 or DS30A and the ISDN digital trunk controller (DTCI).

Common procedures

There are no common procedures.

Action

Procedure 1-17 provides steps and actions to perform an internal continuity test on a DS30 link or DS30A link. Figure 1-21 provides an overview of the procedure.

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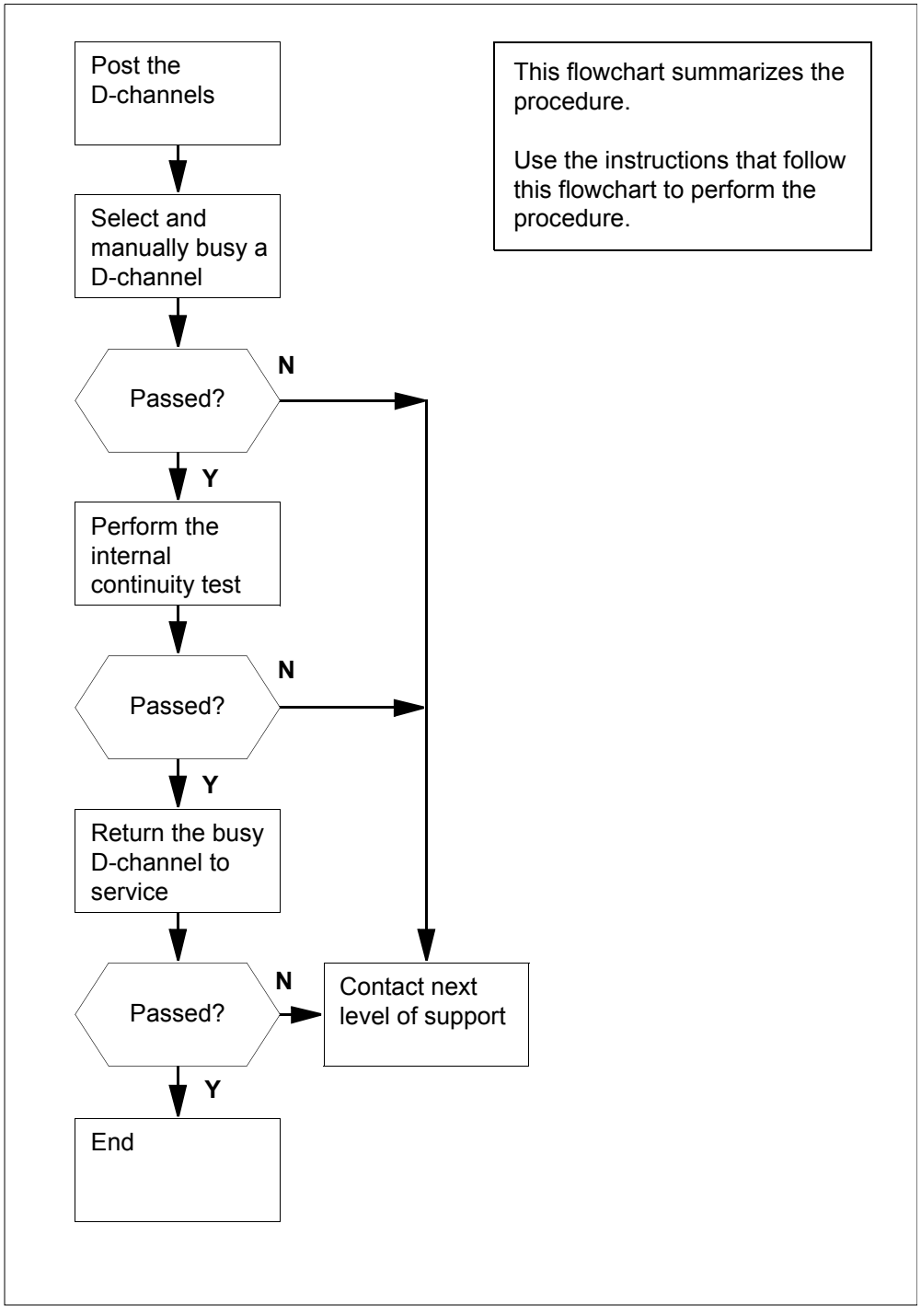
Figure 1-21
Summary of Performing an internal continuity test on a DS30 link



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Procedure 1-17 describes how to perform an internal continuity test on a DS30 link or DS30A link.

Procedure 1-17
Performing an internal continuity test on a DS30 link

Step	Action
1	From office records or operating company personnel, determine the name of the trunk group.
2	At the MAP terminal, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key to access the PRADCH level of the MAP display.

3	To post the D-channels, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F5678935PAV
	Example of a MAP display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS LTC 2 3 24 F5678935PAV D1 STB`
	`LTC 2 5 24 F5678935PAV D2 INS R`
	Example of a MAP response:
	`SHORT CLLI IS: F56789`
	`OK,CKT POSTED`

4	Choose the D-channel for the internal continuity test. Write down its identifier (D1 or D2). ***Note 1:*** The MAP display lists the state of the D-channel on the right side of the DCHL header. The MAP display lists the identifier under the LANG header. ***Note 2:*** In-service (INS) is the normal operation state for the primary D-channels. Standby (STB) is the normal operation state for the backup D-channels. The STB state occurs for a backup D-channel when the primary D-channel is INS. ***Note 3:*** You must use the same identifier (D1 or D2) for all steps used in the internal continuity test.

—sheet 1 of 3—

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Procedure 1-17
Performing an internal continuity test on a DS30 link (continued)

Step	Action

5

CAUTION
PRI service interruption
The following step takes an in-service D-channel out of service. When you take an in-service D-channel out of service, the backup D-channel automatically switches into service.

To manually busy the D-channel, type **>BSY *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key.

Example of a MAP response:

```
D1: STATE CHANGED
     or
THIS WILL PUT DTCI  2  5  24 D2 OUT-OF-SERVICE.
Active calls will be killed
Please confirm ("YES", "Y", "NO" or "N"):
```

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

Note: The D-channel state changes to manual busy.

If the BSY command passes, go to step 7.

If the BSY command fails, go to step 9.

7 To perform an internal continuity test, type **>CONT INT *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key.

Example of a MAP response:

```
INTERNAL CONTINUITY TEST STARTED
D2: INTERNAL CONTINUITY TEST PASSED
```

If the internal continuity test passes, go to step 8.

If the internal continuity test passes, go to step 9.

—sheet 2 of 3—

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Procedure 1-17
Performing an internal continuity test on a DS30 link (continued)

Step	Action
8	To return the D-channel to service, type **>RTS *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key. *Example of a MAP response:* `D2: STATE CHANGED` If the RTS command passes (INS or STB state), go to step 10. If the RTS command fails, go to step 9.
9	For additional help, contact the next level of support.
10	The procedure is complete.

—sheet 3 of 3—

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Performing an internal continuity test on a DS30 link ISDN PRI single D-channel

Application

Use this procedure to perform an internal continuity test on a DS30 link or DS30A link.

Definition

The test checks the internal link between the DS30 or DS30A and the ISDN digital trunk controller offshore (DTCO).

Common procedures

There are no common procedures.

Action

Procedure 1-18 provides steps and actions to perform an internal continuity test on a DS30 link or DS30A link. Figure 1-22 provides an overview of the procedure.

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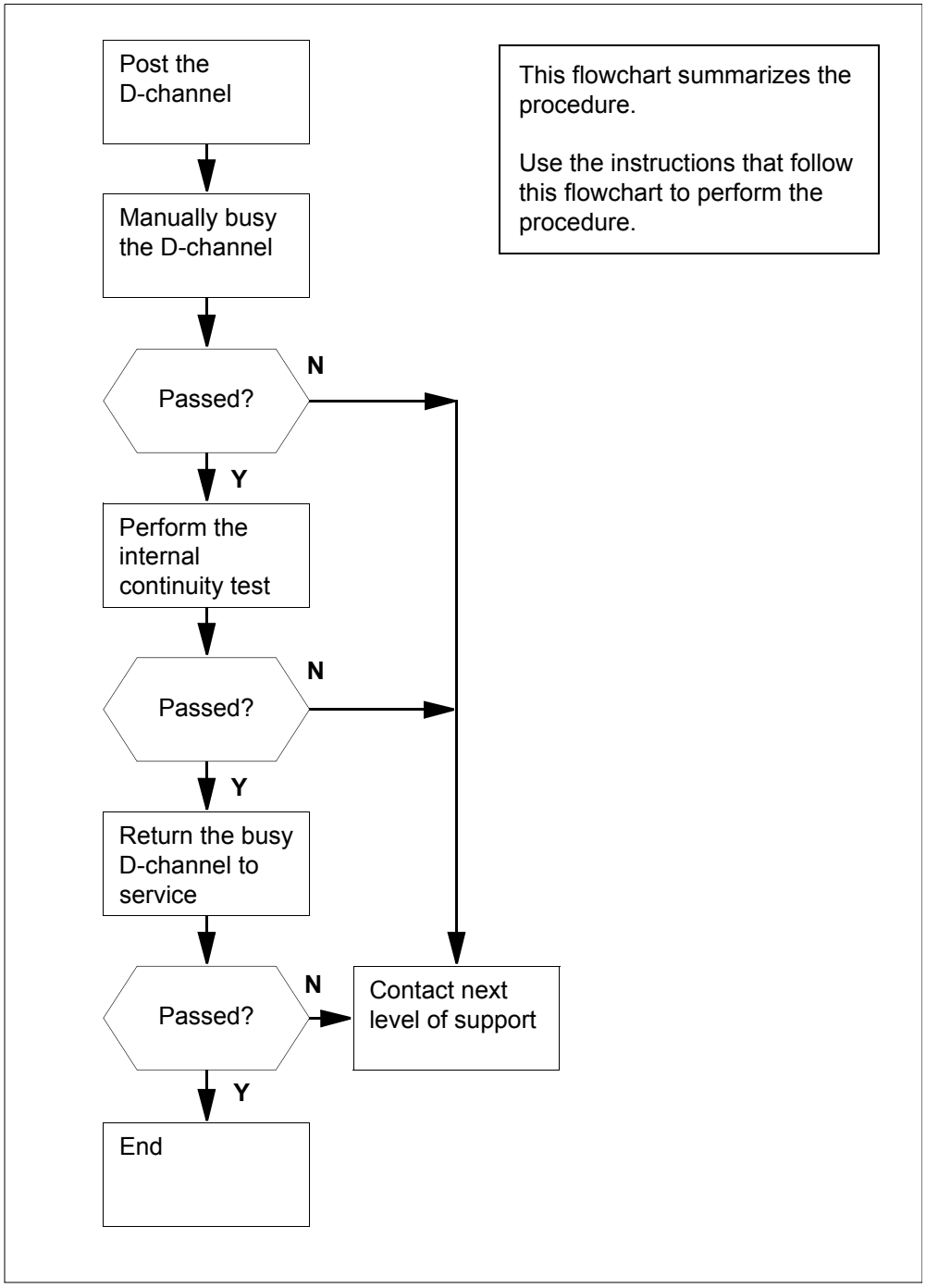
Figure 1-22
Summary of Performing an internal continuity test on a DS30 link



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Procedure 1-18 describes how to perform an internal continuity test on a DS30 link or DS30A link.

Procedure 1-18
Performing an internal continuity test on a DS30 link

Step	Action
1	From office records or operating company personnel, determine the name of the trunk group.
2	At the MAP terminal, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key to access the PRADCH level of the MAP display.

3	To post the D-channel, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F9876035PRAPRV
	Example of a MAP Display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS DTCIPCM30 2 3 24 F9876035PRAPRV DCHL INS`
	`R`
	Example of a MAP response:
	`LAST CKT 3 24`
	`POSTED CKT IDLED`
	`SHORT CLLI IS: F98760`
	`OK,CKT POSTED`

—sheet 1 of 3—

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Procedure 1-18
Performing an internal continuity test on a DS30 link (continued)

Step	Action

4	
	CAUTION
	PRI service interruption
	The following step takes an in-service D-channel out of service. When you take an in-service D-channel out of service, the backup D-channel automatically switches into service.
	
	To manually busy the D-channel, type **>BSY** and press the **Enter** key.
	Example of a MAP response:
	`STATE CHANGED`
	or
	`THIS WILL PUT DTCIPDTC 2 3 24 DCH OUT-OF-SERVICE.`
	`Active calls will be killed`
	`Please confirm ("YES", "Y", "NO", or "N"):`

5	To confirm the command, type **>YES** and press the **Enter** key. ***Note:*** The D-channel state changes to manual busy (MB). If the BSY command passes, go to step 6. If the BSY command fails, go to step 8.

6	To perform an internal continuity test, type **>CONT INT** and press the **Enter** key.
	Example of a MAP response:
	`INTERNAL CONTINUITY TEST STARTED`
	`INTERNAL CONTINUITY TEST PASSED`
	
	If the internal continuity test passes, go to step 7.
	If the internal continuity test fails, go to step 8.

—sheet 2 of 3—

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Procedure 1-18
Performing an internal continuity test on a DS30 link (continued)

Step	Action
7	To return the D-channel to service, type **>RTS** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes (INS state), go to step 9. If the RTS command fails, go to step 8.
8	For additional help, contact the next level of support.
9	The procedure is complete.

—sheet 3 of 3—

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Performing a manual MTCTST test on a CM

Application

Use this procedure to perform a manual maintenance test (MTCTST) on a computing module (CM).

Definition

The MTCTST test executes CPU and memory class tests on an inactive CPU on the CM. Perform a manual maintenance test (MTCTST) to detect faults on new hardware installations or hardware that may have faults.

Common procedures

This procedure refers to card replacement procedures.

Next level of maintenance

Repeat this procedure if it is not successful when you first perform the procedure.

A problem can occur that requires the help of the local maintenance personnel. Gather all important logs, reports, and system information (that is, product type and current software load) for analysis. The related logs, maintenance notes, and system information help make sure that the next level of maintenance and support can find the problem. More detail about logs appears in the *Log Report Reference Manual*.

Action

Procedure 1-19 provides steps and actions to perform a manual MTCTST on a CM. Figure 1-23 provides an overview of the procedure.

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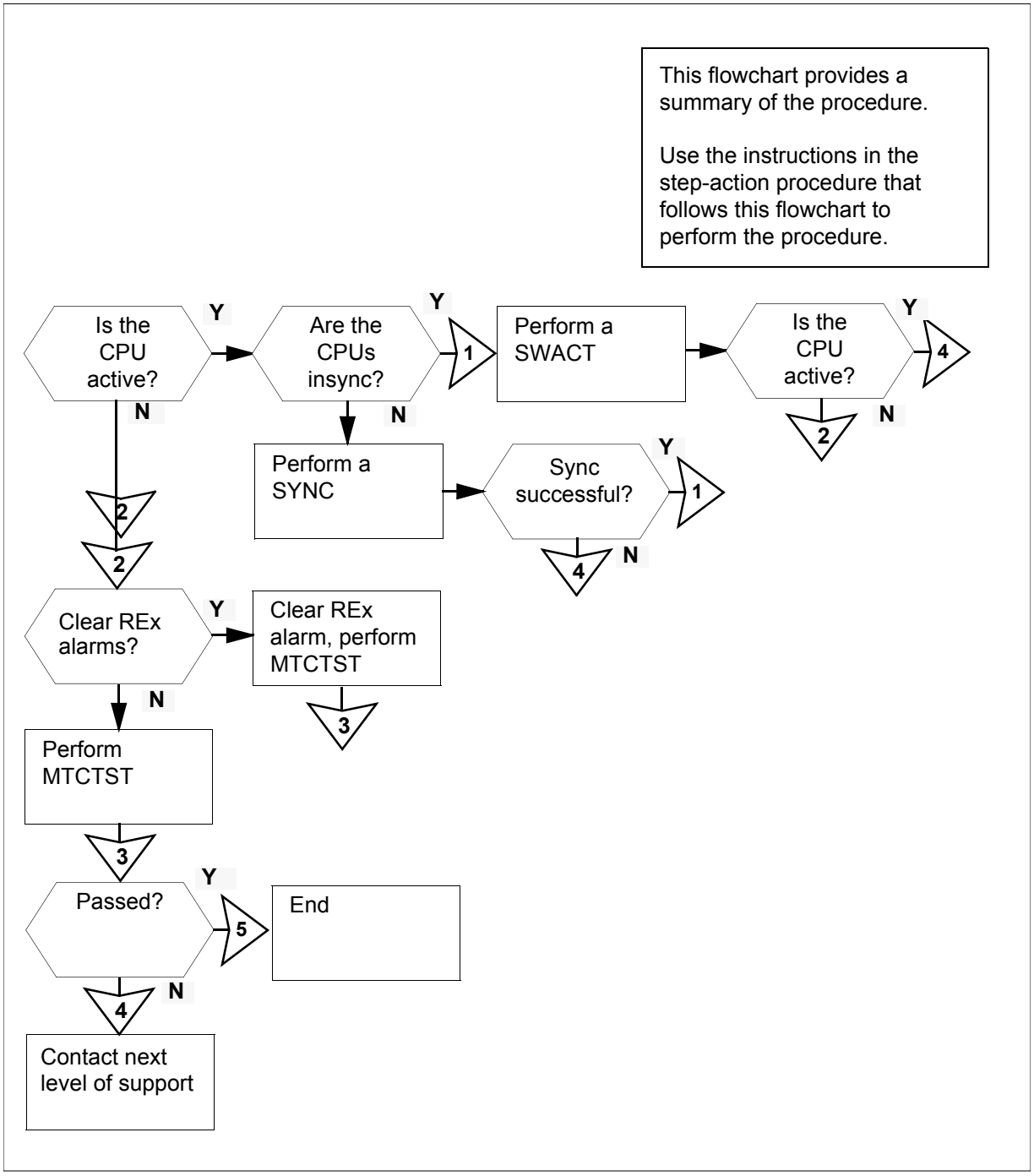
Figure 1-23
Summary of Performing a manual MTCTST test on a CM



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Procedure 1-19 describes how to perform a manual maintenance test (MTCTST) on a computing module (CM).

Procedure 1-19
Performing a manual MTCTST on a CM

Step	Action

1	At the MAP terminal, type **>MAPCI;MTC;CM** and press the **Enter** key to access the CM level of the MAP display.
	Example of a MAP display:
	`CM MS IOD Net PM CCS Lns Trks Ext APPL`
	`CM Flt . . . . . . . . .`
	`M . . . . .`
	`CM CM Sync Act CPU0 CPU1 Jam Memory CMMnt MC PMC`
	`0 Quit 0 no cpu 0 . flt flt SLMLIM cbsy tbl`
	`2 CMMnt`
	`3 Memory MAPCI;`
	`4 MC MTC;`
	`5 PMC CM;`
	`6 Tst`
	`7`
	`8`
	`9`
	`10`
	`11`
	`12 MtcTst`
	`13 SwAct`
	`14 Sync`
	`15 DpSync`
	`16`
	`17`
	`18 Locate_`

2	Determine which CPU to test.
3	Confirm that the CPU to be tested is not active. ***Note:*** An active CPU cannot be tested. If the CPU to be tested is active, go to step 4. If the CPU to be tested is not active, go to step 9.
4	Determine the next action. If the CPUs are in sync, go to step 6. If the CPUs are out of sync, go to step 5.

—sheet 1 of 4—

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Procedure 1-19
Performing a manual MTCTST on a CM (continued)

Step	Action
5	To synchronize the CM, type **>SYNC** and press the **Enter** key. If the response indicates that the SYNC command was successful, go to step 6. If the response indicates anything else, go to step 19.
6	To perform a switch of activity, type **>SWACT** and press the **Enter** key. *Example of a MAP display:* `Switch of activity will cause the CM to be running on the inactive CPU's processor clock. System will drop SYNC and then re-SYNC in order to switch to the active CPU's clock. Do you wish to continue? Please confirm ("YES", "Y", "NO", or "N"):`
7	To confirm the command, type **>YES** and press the **Enter** key.
8	Determine the next action. If the CPU to be tested is active, go to step 19. If the CPU to be tested is not active, go to step 9.
9	Determine the next action. If REx alarms that are raised by memory or CPU faults are present, go to step 10. If REx alarms that are raised by memory or CPU faults are not present, go to step 15.
10	Decide whether to clear the REx alarms raised by MEM or CPU faults on the inactive CPU. To clear Mem REx fault alarms, go to step 11. To clear CPU REx fault alarms, go to step 12. To continue with this procedure without clearing the REx alarms, go to step 15.
11	To clear a REx alarm raised by memory faults on the inactive CPU and run the MTCTST, type **>MTCTST MEM CLRREXALARM** and press the **Enter** key. *Example of a MAP display:* `Caution: CM will drop sync when MTCTST is running. Please confirm ("YES", "Y", "NO", or "N"):` Go to step 13.

—sheet 2 of 4—

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Procedure 1-19
Performing a manual MTCTST on a CM (continued)

Step	Action

12	To clear a REx alarm raised by CPU faults on the inactive CPU and run the MTCTST, type **>MTCTST CLRREXALARM** and press the **Enter** key.
	
	Note: The default class option is CPU.
	
	Example of a MAP display:
	`Caution: CM will drop sync when MTCTST is running.`
	`Please confirm ("YES", "Y", "NO", or "N"):`

13	To confirm the command, type **>YES** and press the **Enter** key. If the response is `maintenance action submitted .. ..mtctst passed`, go to step 20. If the response lists instructions to clear the REx alarm, go to step 14.
14	Perform the instructions described in the map response and return to step 9.

15	To perform a MTCTST test on the CM, type **>MTCTST** and press the **Enter** key.
	
	Example of a MAP display:
	`Caution: CM will drop sync when MTCTST is running.`
	`Please confirm ("YES", "Y", "NO", or "N"):`

16	To confirm the command, type **>YES** and press the **Enter** key. *Example of a MAP display:* `Maintenance action submitted.`

—sheet 3 of 4—

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Procedure 1-19
Performing a manual MTCTST on a CM (continued)

Step	Action
17	Determine the next action. If the response is `MTCTST aborted. Detected a mismatch or SWACT during CM MTCTST. Please check logs`, go to step 18. If the response is `MTCTST: Inactive FOOTPRINT transfer in progress ..MTCTST: Inactive FOOTPRINT transfer passed.MTCTST Failed. Test name: <test name>`, go to step 19. If the response is `Termination timed out`, go to step 19. If the response is `Maintenance action not performed, resources in use`, go to step 19. If the response is `MTCTST passed`, go to step 20. If the response is anything else, go to step 19.
18	Check logs and record reason for failure. Contact the next level of support.
19	Contact the next level of support.
20	The procedure is complete.

—sheet 4 of 4—

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Performing a manual REx test on an LIM

Application

Use this procedure to perform a manual routine exercise (REx) test on a link interface module (LIM).

Definition

The manual REx test is a test of software and hardware that you perform as required.

Common procedures

There are no common procedures.

Action

Procedure 1-20 provides steps and actions to perform a manual REx test on an LIM. Figure 1-24 provides an overview of the procedure.

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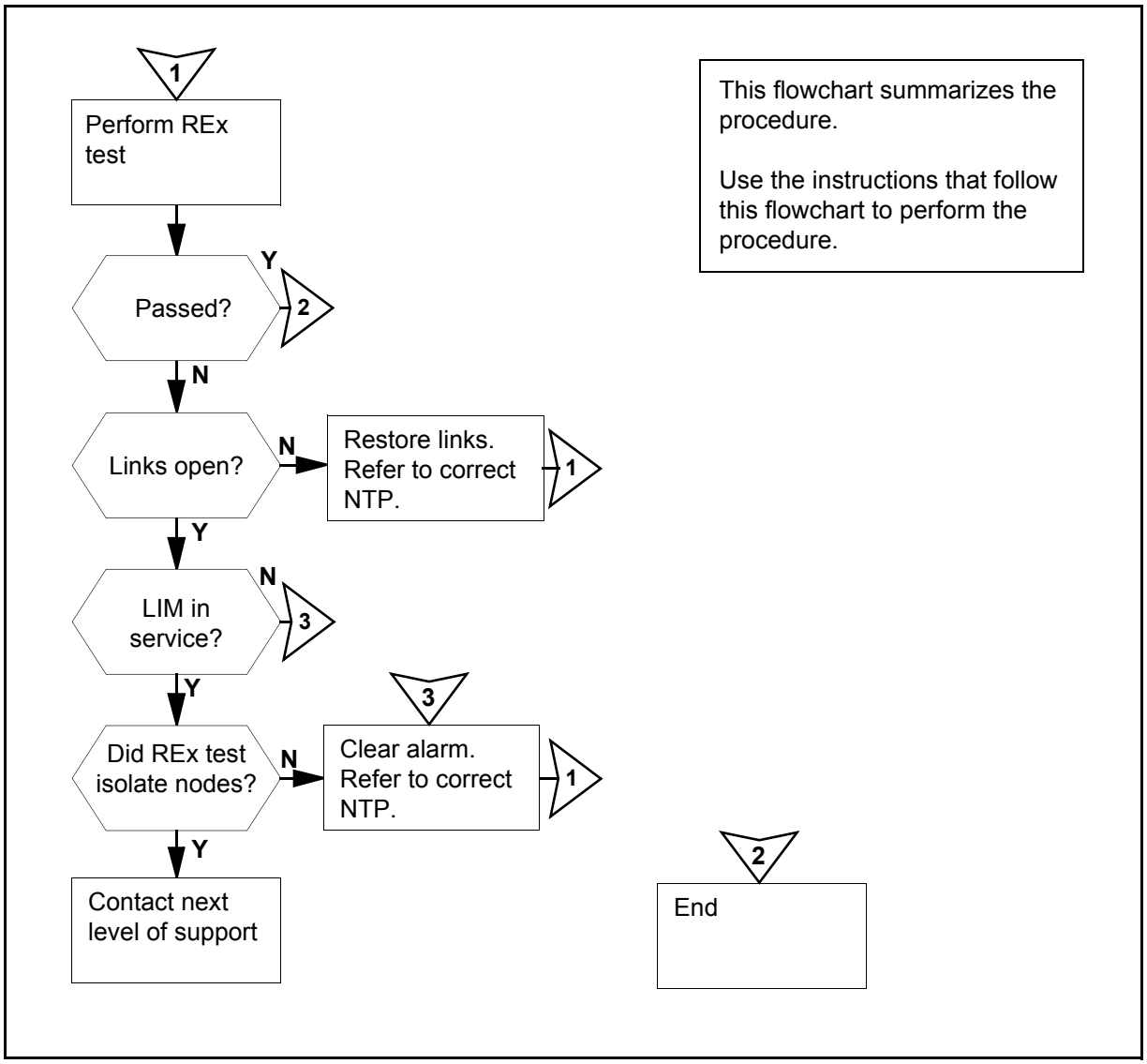
Figure 1-24
Summary of Performing a manual REx test on an LIM



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Procedure 1-20 describes how to perform a manual routine exercise (REx) test on a link interface module (LIM).

Procedure 1-20
Performing a manual REx test on an LIM

Step	Action

1	
	CAUTION
	Possible performance degradation
	Perform this procedure during a period of low traffic. If you perform a REx test during a period of high traffic, system performance degrades.
	
	At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM level of the MAP display.
	
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 0 0 0 0 0 39`

2	To post the LIM that you want to perform the REx test on, type **>POST LIM *lim_no*** (where *lim_no* is the number of the LIM, from 0 to 16) and press the **Enter** key.
	
	Example of a MAP display:
	
	`LIM 0 OffL`
	`Links_OOS Taps_OOS`
	`Unit0: OffL 6 3`
	`Unit1: OffL 6 3`

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Procedure 1-20
Performing a manual REx test on an LIM (continued)

Step	Action

3	To perform a manual REx test on the posted LIM, type **>REX PM** and press the **Enter** key.
	
	Note: In the following table, the variable x refers to a LIM number of 0 to 16, and the variables y and z refer to LIM unit numbers.
	
	If the response is the following, go to step 4:
	
	`LIM x UNIT y routine exercise cannot be performed because not all of the links on the LIM are open.`
	
	If the response is the following, go to step 6:
	
	`LIM x UNIT y routine exercise cannot be performed because it would isolate other nodes.`
	
	If the response is the following, go to step 8:
	
	`LIM x UNIT y routine exercise cannot be performed unless it is InSv.`
	
	If the response is the following, go to step 14:
	
	`LIM x UNIT y routine exercise failed due to outstanding faults.`
	
	If the response is the following, go to step 10:
	
	`Imaging is currently in progress on LIM x UNIT y. At this time a Routine Exercise is not allowed on this LIM.`
	
	If the response is the following, go to step 12:
	
	`Imaging is currently in progress on LIM x UNIT y and UNIT z. At this time a Routine Exercise is not allowed on this LIM.`
	
	If the response is the following, go to step 14:
	
	`LIM x UNIT y ROUTINE EXERCISE PASSED`

4	A problem with the links of the LIM unit is present. Perform the procedure “Restoring LIM unit cross-links in Alarm and Performance Monitoring Procedures,“ then return to this step.
5	Go to step .
6	There is a problem with the taps on the F-bus. Perform the procedure “Testing F-bus taps in the Routine Maintenance Procedures,” then return to this step. **CAUTION** **Possible loss of service** Isolating LIM nodes on the F-bus of the LIM you are testing removes them from service.

—sheet 2 of 3—

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Procedure 1-20
Performing a manual REx test on an LIM (continued)

Step	Action
7	Go to step .
8	A failed REx test on one or both LIM units will produce a LIM alarm. Perform the correct procedure in the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). After clearing the alarm, return to this step.
9	Go to step .
10	Imaging is being performed on one of the units of the LIM you want to REx test. The command is aborted. Wait until imaging is completed, then return to this step.
11	Go to step .
12	Imaging is being performed on both units of the LIM you want to REx test. The command is aborted. Wait until imaging is completed, then return to this step.
13	Go to step .
14	For additional help, contact the next level of support.
15	The procedure is complete.

—sheet 3 of 3—

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Performing a manual REx test on an NIU

Application

Use this procedure to perform a manual routine exercise (REx) test on a network interface unit (NIU) that is in service.

Definition

A REx test is a series of software and hardware integrity tests.

Common procedures

There are no common procedures.

Action

Procedure 1-21 provides steps and actions to perform a manual REx test on an NIU that is in service. Figure 1-25 provides an overview of the procedure.

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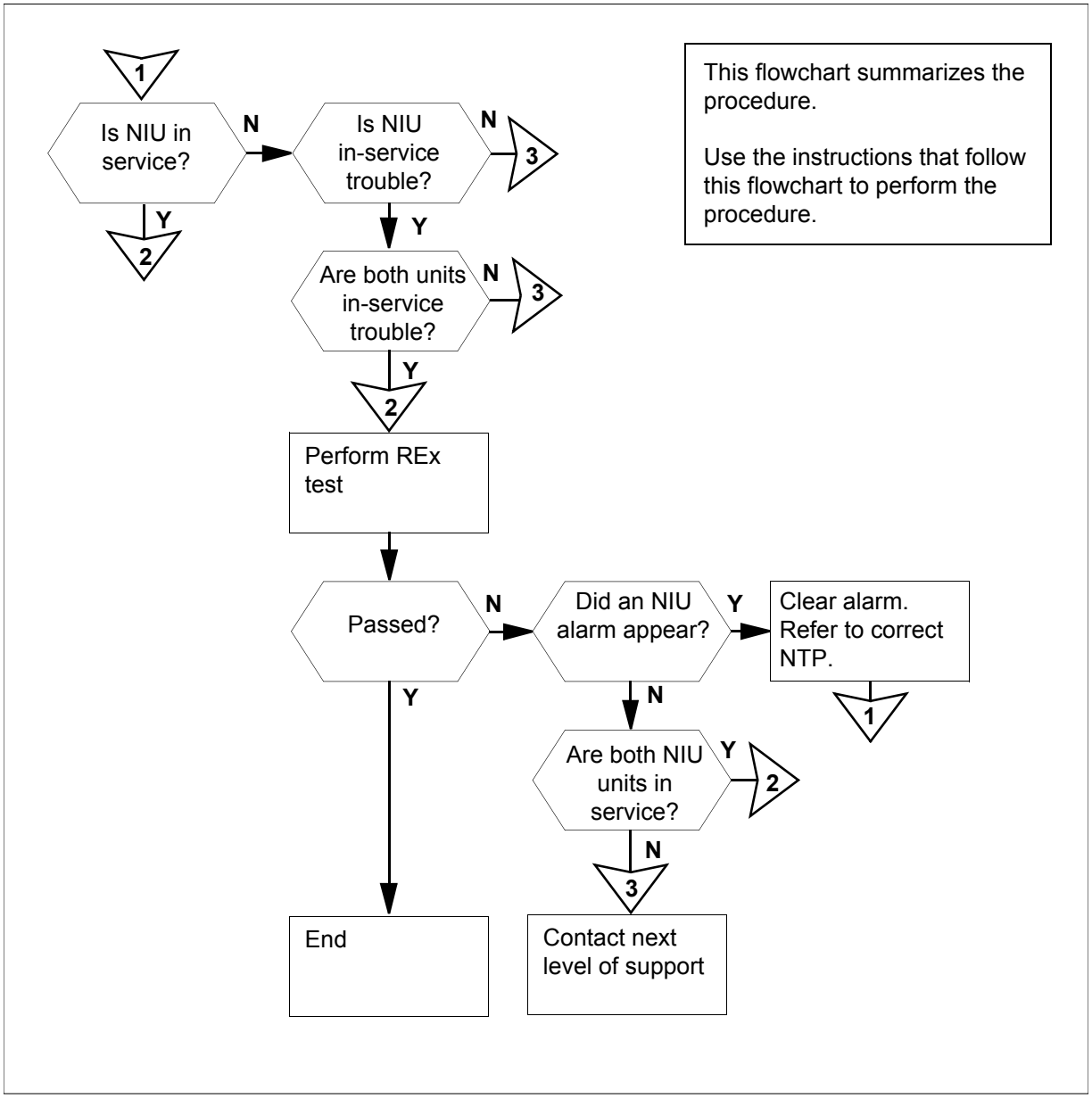
Figure 1-25
Summary of Performing a manual REx test on an NIU



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Procedure 1-21 describes how to perform a manual routine exercise (REx) test on a network interface unit (NIU) that is in service.

Procedure 1-21
Performing a manual REx test on an NIU

Step	Action

1	**CAUTION**
	Possible performance degradation
	Perform this procedure during a period of low traffic. If you perform a REx test during a period of high traffic, you will degrade system performance.
	
	At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM level of the MAP display.
	
	Example of a MAP:
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 0 0 0 0 0 39`

2	To post the NIU that you want to perform the REx test on, type **>POST NIU *niu_no*** (where *niu_no* is the number of the NIU, 0 to 29) and press the **Enter** key.
	
	Note: In the example, NIU 3 is posted. The state of NIU 3 is INSV. Unit 0 of NIU 3 is the active unit. The state of unit 0 is INSV. Unit 1 of NIU 3 is the inactive unit. The state of unit 1 is INSV.
	
	Example of a MAP display:
	`NIU 3: InSv`
	`Unit 0: Act InSv`
	`Unit 1: InAct InSv`

3	Determine the state of the NIU. If the state of the NIU is `InSv`, go to step 7. If the state of the NIU is `ISTb`, go to step 4. If the state of the NIU is anything else, go to step 5.
4	Determine the state of the units of the ISTb NIU. If both units are `ISTb`, go to step 7. If both units are anything else, go to step 5.

—sheet 1 of 4—

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Procedure 1-21
Performing a manual REx test on an NIU (continued)

Step	Action
5	At least one of the NIU units has faults. An REx test cannot be performed on NIU units that are out of service. Perform the procedure “Clearing a PM NIU minor alarm in the Alarm and Performance Monitoring Procedures,” then return to this step.
6	Go to step .

7	To perform a REx test on the posted NIU, type **>TST REX NOW** and press the **Enter** key.
	Example of a MAP response:
	`Warning: Unit states will change and a SwAct will be performed during REx test. Please confirm (”YES”, ”Y”, ”NO”, or ”N”):`
	If the response is the following, go to step 8:
	`Imaging is in progress on NIU x UNIT y currently. Routine Exercise will cause imaging on this NIU to be aborted. WARNING Unit states will change and a SwAct will be performed during REx test.`
	If the response is anything else, go to step 10.

8	Imaging is being performed on one of the units of the NIU you want to REx test. Wait until imaging is completed, then return to this step.
9	Go to step .
10	To confirm the command, type **>YES** and press the **Enter** key.

—sheet 2 of 4—

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Procedure 1-21
Performing a manual REx test on an NIU (continued)

Step	Action

11	Determine the required action.
	If the response is the following, go to step 19:
	`Command passed`
	If the response is the following, go to step 12:
	`Command rejected. Permission to run REx was not given by the node.`
	If the response is the following, go to step 14:
	`Command rejected. Permission to run REx was not given by the System REx Controller.`
	If the response is the following, go to step 16:
	`Command failed.`
	If the response is the following, go to step 16:
	`Command rejected. Incorrect unit states for the test command.`
	If the response is the following, go to step 17:
	`Command failed. Rex failed due to a SwAct failure.`
	If the response is the following, go to step 17:
	`Command rejected. Test failed due to a communication problem with the mate unit.`

12	Perform the procedure “Clearing a PM NIU minor alarm” in the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543). After you complete the procedure, return to this step.
13	Go to step 3.
14	Determine if the manual REx test on the NIU is on the first or second attempt. If the REx test is the first attempt, go to step 15. If the REx test is the second or subsequent attempt, go to step 18.
15	Wait 10 minutes before you use the TST REX command, then go to step 7.
16	Determine if both units of the NIU are in service. If the two NIU units are `InSv` or `ISTb`, go to step 17. If the two NIU units are not `InSv` and not `ISTb`, go to step 18.

—sheet 3 of 4—

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Procedure 1-21
Performing a manual REx test on an NIU (continued)

Step	Action
17	Determine if the manual REx test on the NIU is on the first or second attempt. If the REx test is the first attempt, go to step 7. If the REx test is the second or subsequent attempt, go to step 18.
18	For additional help, contact the next level of support.
19	The procedure is complete.

—sheet 4 of 4—

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Prioritizing CCS alarms

Application

Use this procedure to redefine the order of importance of the CCS alarms that relate to the message transfer part (MTP). You can add, modify, or delete tuples from table CCSALARM.

Definition

Table CCSALARM redefines the priority of CCS alarms within a given alarm class. Table CCSALARM redefines the priority when the alarm class is critical, major, or minor.

The default order of selection of CCS alarms is as follows:

- 1 RSC (routeset critical)
- 2 LSSC (local subsystem critical)
- 3 PCC (point code critical)
- 4 RSSC (remote subsystem critical)
- 5 LKM (linkset major)
- 6 RSM (routeset major)
- 7 LSSM (local subsystem major)
- 8 RSSM (remote subsystem major)
- 9 LK (linkset minor)
- 10 PC (point code minor)11 SEAS_SysB (SEAS system busy minor)12 SEAS_ISTb (SEAS in-service trouble minor)13 SEAS_ManB (SEAS manual busy minor)

Do not change the order of alarm classes. Critical has the highest value, and minor has the lowest value.

Common procedures

There are no common procedures.

Action

Procedure 1-22 provides steps and actions to redefine the order of importance of the CCS alarms that relate to the MTP. Figure 1-26 provides an overview of the procedure.

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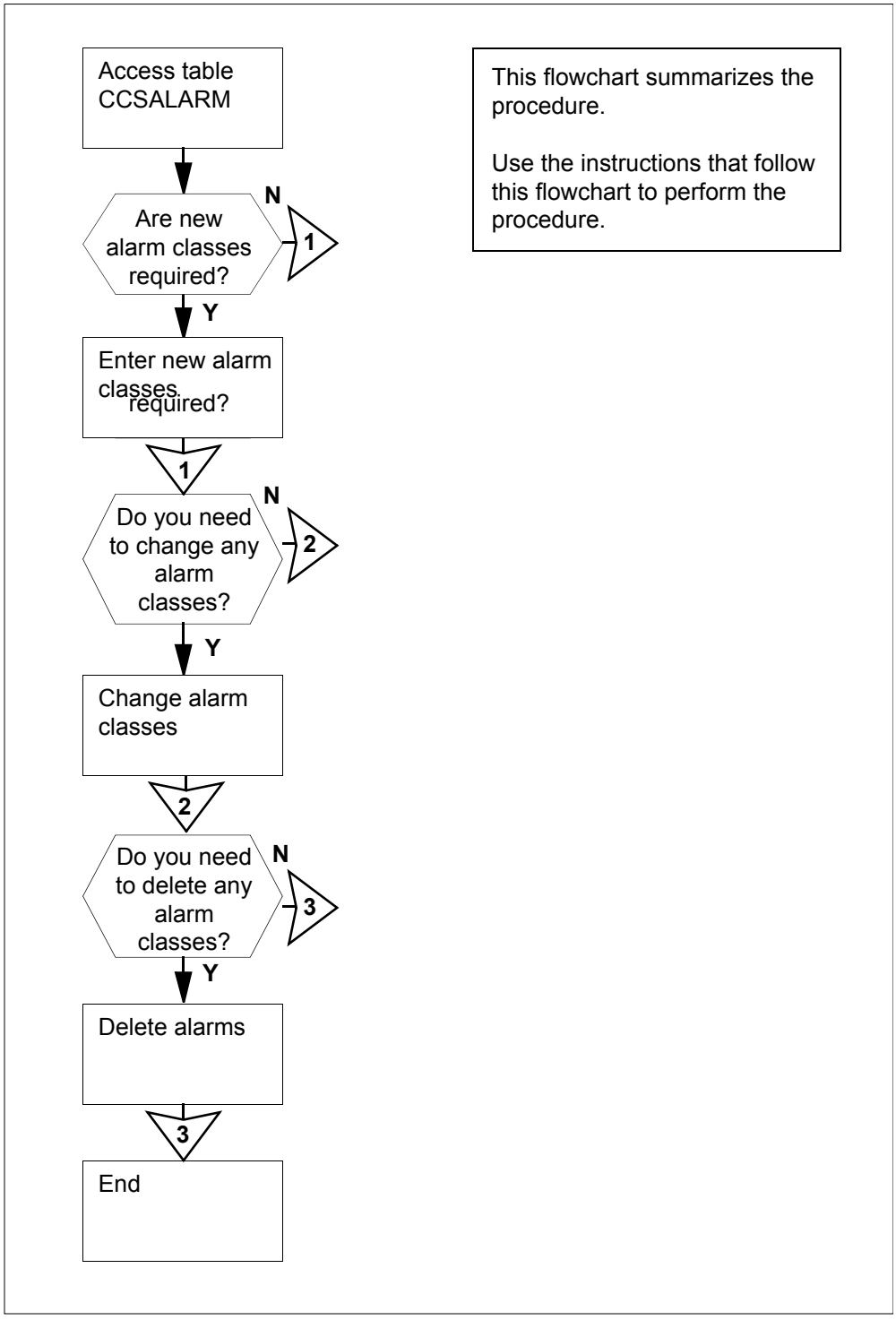
Figure 1-26
Summary of Prioritizing CCS alarms



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Procedure 1-22 describes how to redefine the order of importance of the CCS alarms that relate to the message transfer part (MTP).

Procedure 1-22
Prioritizing CCS alarms

Step	Action
1	At the CI level of the MAP terminal, type **>TABLE CCSALARM** and press the **Enter** key to access table CCSALARM. *MAP response:* `TABLE: CCSALARM`

2	To display the contents of table CCSALARM, type **>LIST ALL** and press the **Enter** key.
	Example of a MAP response:
	`TOP`
	`ALARMKEY ALARMS`
	`---`
	`0 CCS7 CRITICAL (RTESET) ( LSS) ( PC) ( RSS)$`
	`BOTTOM`
	To add tuples, go to step 3.
	To modify tuples, go to step 11.
	To delete tuples, go to step 19.
	To quit table CCSALARM (work with CCS alarm priority is complete), go to step 23.

3	Record the number of the last alarm key in the table. ***Note:*** In the example in step 2, the last alarm key is the last number in the column ALARMKEY.
4	To specify that you want to add tuples, type **>ADD** and press the **Enter** key. *MAP response:* `ALARMKEY:`

—sheet 1 of 7—

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action
5	To enter an alarm key, type ***>alarm_key*** (where *alarm_key* is one higher than the number recorded at step three) and press the **Enter** key. ***Note:*** Enter alarm keys in ascending order; for example, alarm key 0 comes before alarm key 1. If the response at step 2 is EMPTY TABLE, use 0 as the alarm key value. *MAP response:* `CCSTYPE:`
6	To specify that the alarm is a CCS7 alarm, type **>CCS7** and press the **Enter** key. *MAP response:* `SEVERITY:`
7	To specify the alarm class, type ***>alarm_class*** (where *alarm_class* is either CRITICAL, MAJOR, or MINOR) and press the **Enter** key. *MAP response:* `ALARMSET:`

—sheet 2 of 7—

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action

8

CAUTION
Possible loss of service
Enter the correct number and names of alarm types for the alarm class that you identified. Failure to enter the correct number and names can result in loss of service.

To specify an alarm type for the alarm class that you defined in step 7, type ***>alarm_type*** and press the **Enter** key.

Use the following for *alarm_type*:

- for a CRITICAL alarm class is either RTESET (routeset), LSS (local subsystem), PC (point code), or RSS (remote subsystem)
- for a MAJOR alarm class is RTESET (routeset), LKSET (linkset), or LSS (local subsystem)
- for a MINOR alarm class is RTESET (routeset), LKSET (linkset), PC (point code), LM (link minor), or SEAS (Signaling, Engineering, and Administration System)

MAP response:

```
ALARMSET:
```

9 Repeat step until you define all alarm types for the alarm class.

Note: When you define all alarm types for minor alarm classes, enter $ to indicate the end.

Example of a MAP response:

```
TUPLE TO BE ADDED:
o    CCS7 CRITICAL (  LSS) (RTESET) (  RSS) (    PC)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action
10	After you entered the final alarm type for the alarm class, confirm the added tuple. Type **>Y** and press the **Enter** key. *MAP response:* `TUPLE ADDED` Go to step 2.
11	From the list displayed in step 2, choose the alarm key for the tuple you want to change.
12	To position on the tuple you want to change, type **>POSITION *alarm_key*** (where *alarm_key* is the alarm key chosen in step 11) and press the **Enter** key. *Example of a MAP response:* `1 CCS7 MAJOR ( LKSET) (RTESET) ( LSS)$`
13	To initiate the change routine, type **>CHANGE** and press the **Enter** key. *Example of a MAP response:* `CCSTYPE: CCS7` ***Note:*** The current value of each field appears on the right side of the CCSTYPE header in the MAP response.
14	To enter a new value for the alarm type for CCS7, type **>CCS7** and press the **Enter** key. *Example of a MAP response:* `SEVERITY: MAJOR` ***Note:*** When you change a tuple, the current value of the tuple appears in the MAP response. The current value appears on the right side of the SEVERITY header in the MAP response. To keep the current value (without change to the entry) for a tuple, press the Enter key.

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action
15	To enter a new value for the alarm severity, type ***>alarm_class*** (where *alarm_class* is either CRITICAL, MAJOR, or MINOR) and press the **Enter** key. *Example of a MAP response:* `ALARMSET: RTESET`
16	**CAUTION** **Possible loss of service** Enter the correct number and names of alarm types for the alarm class that you identified. Failure to enter the correct number and names can result in loss of service. To enter a new value for the alarm type, type ***>alarm_type*** and press the **Enter** key. Use the following for *alarm_type*: • for a CRITICAL alarm class is either RTESET (routeset), LSS (local subsystem), PC (point code), or RSS (remote subsystem) • for a MAJOR alarm class is RTESET (routeset), LKSET, (linkset), or LSS (local subsystem) • for a MINOR alarm class is RTESET (routeset), LKSET (linkset), or PC (point code), or SEAS (Signaling, Engineering, and Administration System) ***Note:*** The highest priority for the alarm type appears on the right side of the ALARMSET header in the MAP response. *Example of a MAP display:* `ALARMSET: LKSET`

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action

17	Repeat step until you define all the alarm types again for the alarm class.
	Example of a MAP response:
	`TUPLE TO BE CHANGED:`
	`1 CCS7 MAJOR ( LKSET) (RTESET) ( LSS)$`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

18	After you defined the final alarm type again for the alarm class, confirm the changed tuple. Type **>Y** and press the **Enter** key. *MAP response:* `TUPLE CHANGED` Go to step 2.
19	From the list in step 2, choose the alarm key for the tuple you want to delete.
20	To position on the tuple you want to delete, type **>POSITION *alarm_key*** (where *alarm_key* is the alarm key chosen in step 19) and press the **Enter** key. *Example of a MAP response:* `1 CCS7 MAJOR ( LKSET) (RTESET) ( LSS)$`

21	To delete the tuple, type **>DELETE** and press the **Enter** key.
	Example of a MAP display:
	`TUPLE TO BE DELETED:`
	`1 CCS7 MAJOR ( LKSET) (RTESET) ( LSS)$`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

22	To confirm the command, type **>Y** and press the **Enter** key. *MAP response:* `TUPLE DELETED` Go to step 2.

—sheet 6 of 7—

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Procedure 1-22
Prioritizing CCS alarms (continued)

Step	Action
23	To quit the table level, type **>QUIT** and press the **Enter** key.
24	The procedure is complete.

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Recovering a stuck HLIU or HSLR

Application

Use this procedure to recover a stuck high-speed link interface unit (HLIU) or a high-speed link router (HSLR).

Definition

An HLIU or HSLR is stuck when both F-bus taps of the individual HLIU or HSLR are not accessible (NA).

Common procedures

None

Action

Procedure 1-23 provides steps and actions to recover a stuck HLIU or HSLR. Figure 1-27 provides an overview of the procedure.

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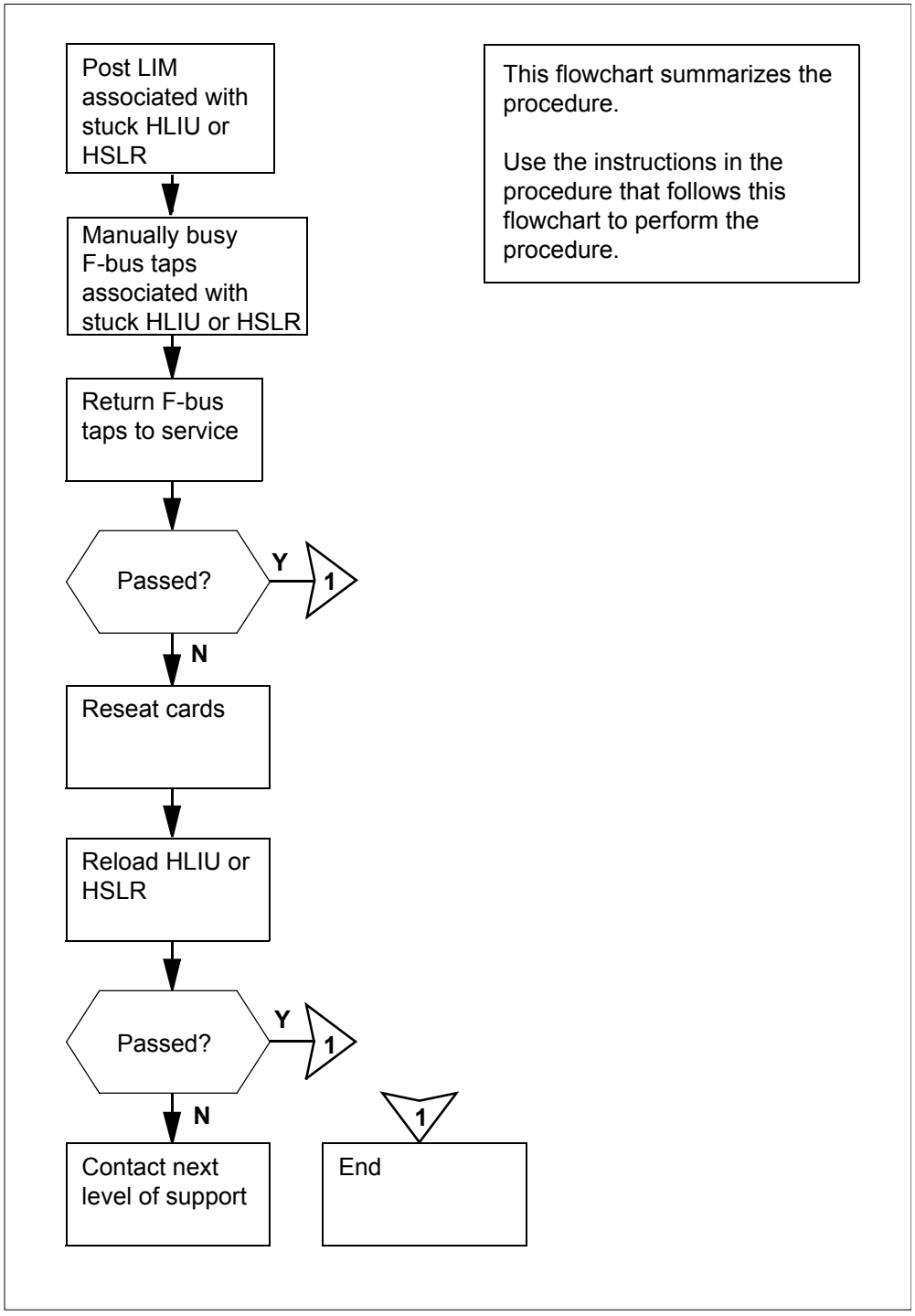
Figure 1-27
Summary of Recovering a stuck HLIU or HSLR



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Procedure 1-23 describes how to recover a stuck high-speed link interface unit (HLIU) or a high-speed link router (HSLR).

Procedure 1-23
Recovering a stuck HLIU or HSLR

Step	Action
1	**DANGER** **Contact your next level of support** Do not attempt this procedure before contacting your next level of support. At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM level of the MAP display.
2	To post the system-busy not accessible HLIU or HSLR type **>POST HLIU SYSB** and press the **Enter** key or type **>POST HSLR SYSB** and press the **Enter** key. If the state of the HLIU or HSLR is SysB (NA), go to step 5. If the state of the HLIU or HSLR is SysB, go to step 3.
3	Display the next system-busy HLIU or HSLR by typing **>NEXT** and pressing the **Enter** key.
4	Repeat step 3 until you find the system-busy not accessible (NA) HLIU or HSLR.

5	Determine the LIM associated with the stuck HLIU or HSLR by typing **>QUERYPM** and pressing the **Enter** key.
	
	Example of a MAP response:
	
	`QueryPM`
	`PM type:  HLIU    PM NO.: 0    Status: SysB`
	`LIM: 0  Shelf: 1  Slot: 8      LIU FTA  4240 1000`
	`Default Load:  HCA11AV`
	`Running Load:  HCA11AV`
	`Potential service affecting conditions:`
	`Msg Channel #1  NA`
	`TAP #0 OOS/NA`
	`TAP #1 OOS/NA`
	`LMS States  :  InSv      InSv`
	`Auditing    :  No        No`
	`Msg Channels:  Acc       No`
	`TAP 0       :  I (NA)    S (NA)`
	`Reserved HLIU forms part of CCS7 Linkset :HSL172001000 SLC:0`
	`LIU is not allocated`

—sheet 1 of 4—

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Procedure 1-23
Recovering a stuck HLIU or HSLR (continued)

Step	Action
6	Post the LIM associated with the stuck HLIU or HSLR by typing **>POST LIM *lim_no*** (where *lim_no* is the number of the LIM, from 0 to 16) and pressing the **Enter** key.
7	Post the LIS associated with the stuck HLIU or HSLR by typing **>POST LIS *lis_no*** (where *lis_no* is the number of the shelf, from 1 to 3) and pressing the **Enter** key.

8	Determine which F-bus taps are associated with the stuck HLIU or HSLR by typing **>TRNSL *fbus_no*** (where *fbus_no* is the number of the FBus, either 0 or 1) and pressing the **Enter** key.
	Example of a MAP response for HLIU:
	`LIM 8 LIS 2 FBus 0 Tap 0 is unequipped.`
	`LIM 8 LIS 2 FBus 0 Tap 1 is unequipped`
	`LIM 8 LIS 2 FBus 0 Tap 2 is on HLIU 1`
	`LIM 8 LIS 2 FBus 0 Tap 3 is on HSLR 1`
	`LIM 8 LIS 2 FBus 0 Tap 4 is unequipped`

9	Manually busy the F-bus taps associated with the stuck HLIU or HSLR by typing **>BSY FBUS *fbus_no tap_no*** (where *fbus_no* is the number of the F-bus, either 0 or 1, and *tap_no* is the number of the F-bus tap, from 0 to 11) and pressing the **Enter** key. Perform this step for both F-bus taps associated with the stuck HLIU or HSLR.
10	Return the F-bus taps associated with the stuck HLIU or HSLR to service by typing **>RTS FBUS *fbus_no tap_no*** (where *fbus_no* is the number of the F-bus, either 0 or 1, and *tap_no* is the number of the F-bus tap, from 0 to 11) and pressing the **Enter** key. Perform this step for both F-bus taps associated with the stuck HLIU or HSLR. *Example of a MAP response:* `LIM lim_no FBus fbus_no Tap tap_no Return to Service initiated.` If the RTS command passes, go to step 28. If the RTS command fails, go to step 11.
11	Access the PM level of the MAP display by typing **>PM** and pressing the **Enter** key.
12	Post the stuck HLIU or HSLR by typing **>POST HLIU *liu_no*** or **>POST HSLR *liu_no*** (where *liu_no* is the number of the stuck HLIU or HSLR, from 0 to 511) and pressing the **Enter** key.
13	Manually busy the HLIU or HSLR by typing **>BSY** and pressing the **Enter** key.
14	Confirm the command by typing **>YES** and pressing the **Enter** key.

—sheet 2 of 4—

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Procedure 1-23
Recovering a stuck HLIU or HSLR (continued)

Step	Action
15	Prepare to unseat and reseat the cards belonging to the stuck HLIU or HSLR.
16	 **WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) while handling cards. This method protects the cards against damage caused by static electricity. At the ELPP, locate the NTEX22 card belonging to the stuck HLIU or HSLR.
17	Carefully pull the card 25 mm (1 in.) toward you. Figure 1-28 and Figure 1-29 show actions to remove the card.
18	Leave the NTEX22 sitting in its slot on the link interface shelf (LIS).
19	Verify the type of PM. If the PM is an HLIU, go to step 20. If the PM is an HSLR, go to step 21.
20	Repeat step through step 19 for the NTEX76 card belonging to the stuck HLIU. If you have already unseated the NTEX76 card, go to step 21.
21	Carefully slide the NTEX22 card back into the LIS. Figure 1-30 shows the action to slide the card into the card cage.
22	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is in the shelf. b. Close the locking levers. Figure 1-31 shows actions to seat and lock the card.
23	Verify the type of PM. If the PM is an HLIU, go to step 24. If the PM is an HSLR, go to step 25.

—sheet 3 of 4—

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Procedure 1-23
Recovering a stuck HLIU or HSLR (continued)

Step	Action
24	Repeat step 21 through step 23 for the NTEX76 card that belongs to the stuck HLIU. If you have already reseated both cards, go to step 25.
25	At the MAP terminal, type >LOADPM and press the Enter key to reload the HLIU or HSLR. If the LOADPM command passes, go to step 26. If the LOADPM command fails, go to step 27.
26	Return the HLIU or HSLR to service by typing **>RTS** and pressing the **Enter** key. If the RTS command passes, go to step 28. If the RTS command fails, go to step 27.
27	For further assistance, contact the personnel responsible for the next level of support.
28	You have completed this procedure.

—sheet 4 of 4—

Figure 1-28
Pulling card levers

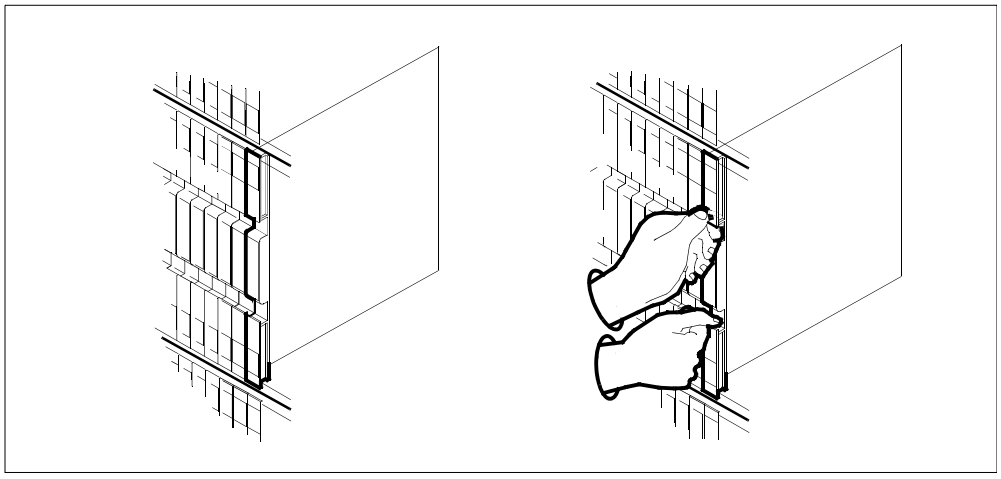

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Figure 1-29
Removing a card

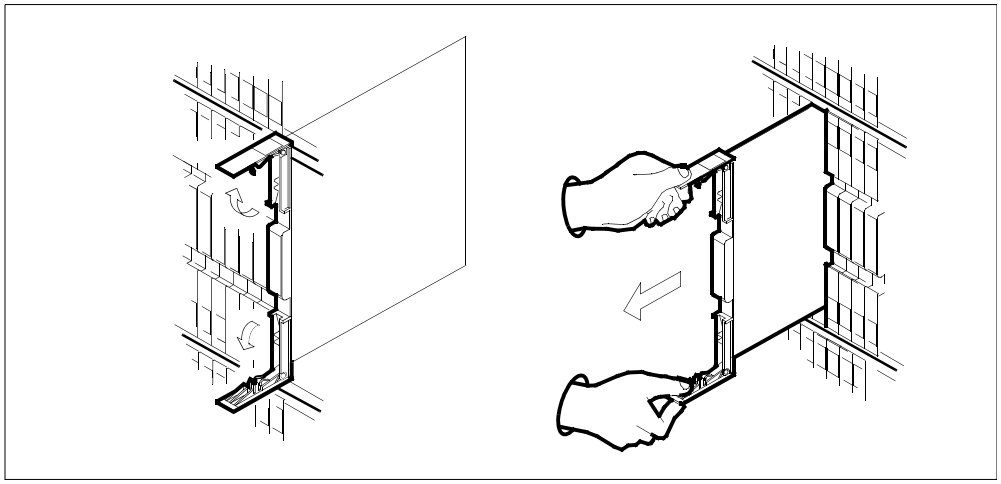

Figure 1-30
Sliding a card into the card cage

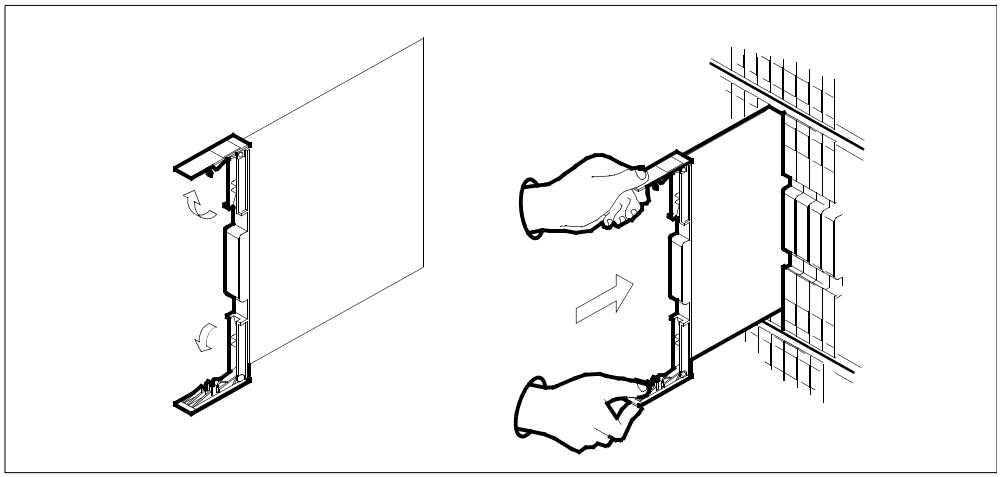

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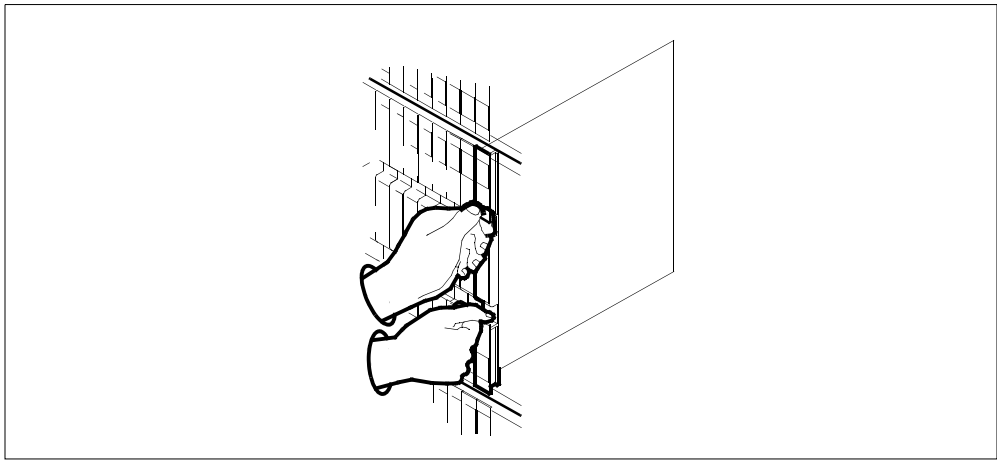
Figure 1-31
Seating and locking a card



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Recovering a stuck two-slot LIU7

Application

Use this procedure to recover a stuck CCS7 link interface unit (LIU7). This procedure applies only to two-slot LIU7s.

Definition

An LIU7 is stuck when both of its F-bus taps are not accessible (NA).

Common procedures

None

Action

Procedure 1-24 provides steps and actions to recover a stuck two-slot LIU7. Figure 1-32 provides an overview of the procedure.

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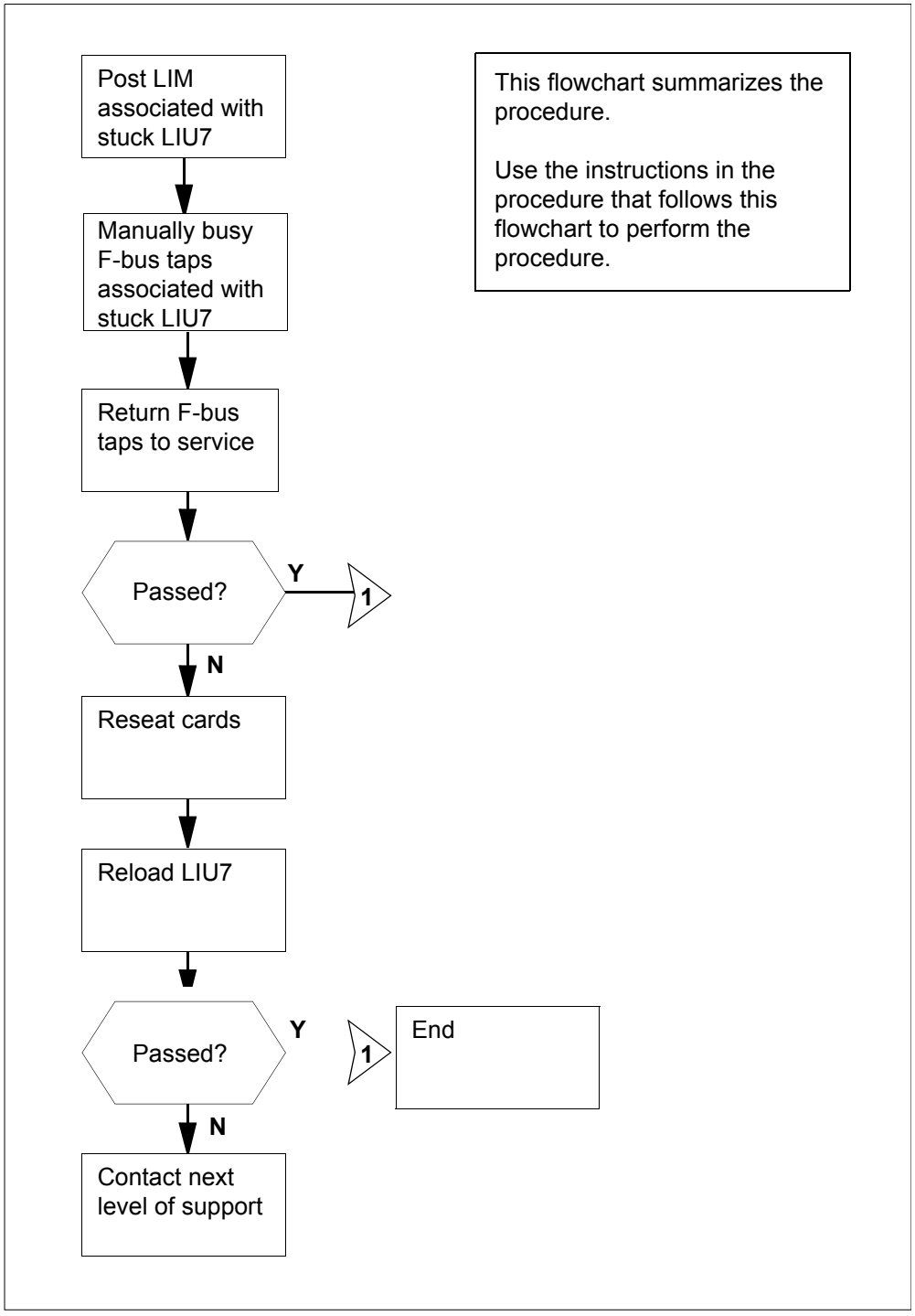
Figure 1-32
Summary of Recovering a stuck two-slot LIU7



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Procedure 1-24 describes how to recover a stuck CCS7 link interface unit (LIU7). This procedure applies only to two-slot LIU7s.

Procedure 1-24
Recovering a stuck two-slot LIU7

Step	Action
1	**DANGER** **Contact your next level of support** Do not attempt this procedure before contacting your next level of support. At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM level of the MAP display.
2	Post the system-busy not accessible LIU7 by typing **>POST LIU7 SYSB** and pressing the **Enter** key. If the state of the LIU7 is SysB (NA), go to step 6. If the state of the LIU7 is SysB, go to step 3.
3	Display the next system-busy LIU7 by typing **>NEXT** and pressing the **Enter** key.
4	Repeat step 3 to find the system-busy not accessible LIU7.
5	Determine the location of the LIU7.
6	Determine the LIM associated with the stuck LIU7 by typing **>QUERYPM** and pressing the **Enter** key.
7	Post the LIM associated with the stuck LIU7 by typing **>POST LIM *lim_no*** (where *lim_no* is the number of the LIM, either 0 or 1) and pressing the **Enter** key.

8	Access the F-bus level of the MAP display by typing **>FBUS** and pressing the **Enter** key.
	
	Example of a MAP display:
	`Tap: 0 4 8 12 16 20 24 28 32`
	
	`FBus0:ISTb(NA) .... .... ...S .... .... .... .... .... ..-.`
	`FBus1:InSv .... .... ...S .... .... .... .... ..... ..-.`
	
	Note: In the example, S means that F-bus taps are system busy.

—sheet 1 of 4—

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Procedure 1-24
Recovering a stuck two-slot LIU7 (continued)

Step	Action

9	Determine which F-bus taps are associated with the stuck LIU7 by typing **>TRNSL *fbus_no*** (where *fbus_no* is the number of the F-bus, either 0 or 1) and pressing the **Enter** key.
	Example of a MAP response:
	`LIM lim_no FBus fbus_no Tap tap_no is unequipped.`
	`LIM lim_no FBus fbus_no Tap tap_no is on LIU7 liu_no.`
	`LIM lim_no FBus fbus_no Tap tap_no is on LIU7 liu_no.`

10	Manually busy the F-bus taps associated with the stuck LIU7 by typing **>BSY FBUS *fbus_no tap_no*** (where *fbus_no* is the number of the F-bus, either 0 or 1, and *tap_no* is the number of the F-bus tap, from 0 to 35), then press the **Enter** key. Perform this step for both F-bus taps associated with the stuck LIU7.
11	Return the F-bus taps associated with the stuck LIU7 to service by typing **>RTS FBUS *fbus_no tap_no*** (where *fbus_no* is the number of the F-bus, either 0 or 1, and *tap_no* is the number of the F-bus tap, from 0 to 35), then press the **Enter** key. Perform this step for both F-bus taps associated with the stuck LIU7. *Example of a MAP response:* `LIM lim_no FBus fbus_no Tap tap_no Return to Service initiated.` If the RTS command passes, go to step 27. If the RTS command fails, go to step 12.
12	Access the PM level of the MAP display by typing **>PM** and pressing the **Enter** key.
13	Post the stuck LIU7 by typing **>POST LIU7 *liu_no*** (where *liu_no* is the number of the stuck LIU7, from 0 to 511) and pressing the **Enter** key.
14	Manually busy the LIU7 by typing **>BSY** and pressing the **Enter** key.
15	Confirm the command by typing **>YES** and pressing the **Enter** key.
16	Prepare to unseat and reseat the cards that belong to the stuck LIU7.

—sheet 2 of 4—

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Procedure 1-24
Recovering a stuck two-slot LIU7 (continued)

Step	Action
17	**WARNING** **Static electricity damage** Wear a wrist strap connected to the wrist-strap grounding point of a frame supervisory panel (FSP) while handling cards. This protects the cards against damage caused by static electricity. At the LPP, locate the NTEX22 card that belongs to the stuck LIU7.
18	Carefully pull the card 25 mm (1 in.) toward you. Figure 1-33 and Figure 1-34 shows actions to unlatches and pull the card.
19	Leave the NTEX22 sitting in its slot on the link interface shelf (LIS).
20	Repeat step through step 19 for the NT9X76 card that belongs to the stuck LIU7.
21	Carefully slide the NTEX22 card back into the LIS. Figure 1-35 shows actions to slide the card into the card cage.
22	Seat and lock the card, as follows: a. Using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is in the shelf. b. Close the locking levers. Figure 1-36 shows actions to seat and lock the card.
23	Repeat step 21 and step 22 for the NT9X76 card that belongs to the stuck LIU7.
24	At the MAP terminal, type >LOADPM and press the Enter key to reload the LIU7. If the LOADPM command passes, go to step 25. If the LOADPM command fails, go to step 26.
25	Return the LIU7 to service by typing **>RTS** and pressing the **Enter** key. If the RTS command passes, go to step 27. If the RTS command fails, go to step 26.

—sheet 3 of 4—

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Procedure 1-24
Recovering a stuck two-slot LIU7 (continued)

Step	Action
26	For further assistance, contact the personnel responsible for the next level of support.
27	You have completed this procedure.

—sheet 4 of 4—

Figure 1-33
Using card latches

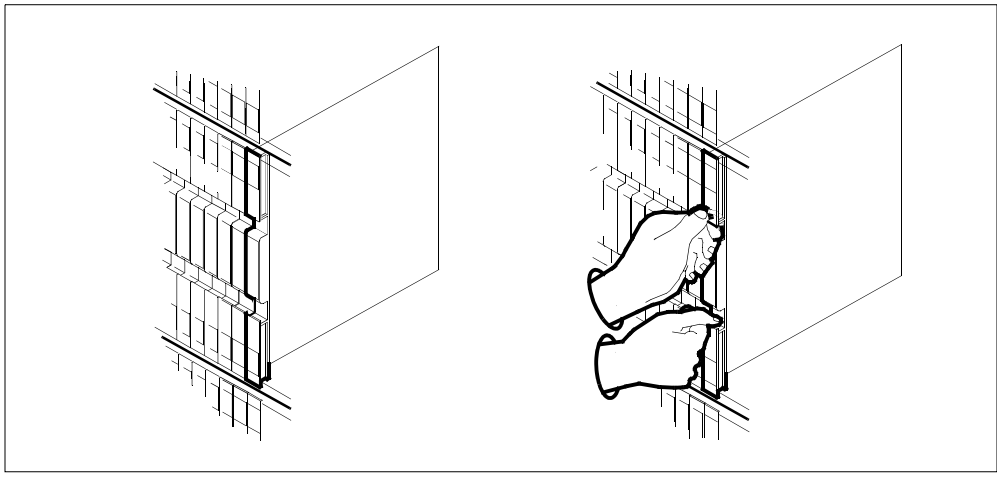

Figure 1-34
Pulling a card

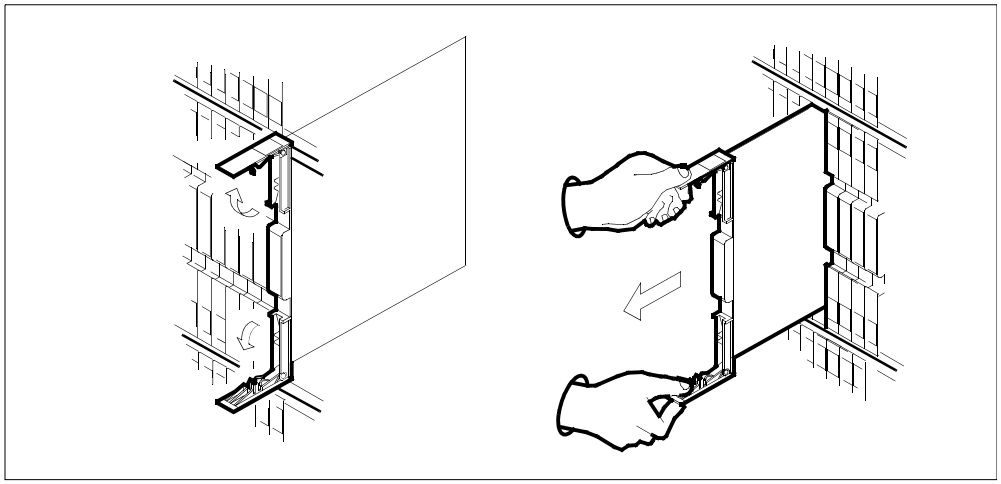

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Figure 1-35
Sliding a card into the card cage

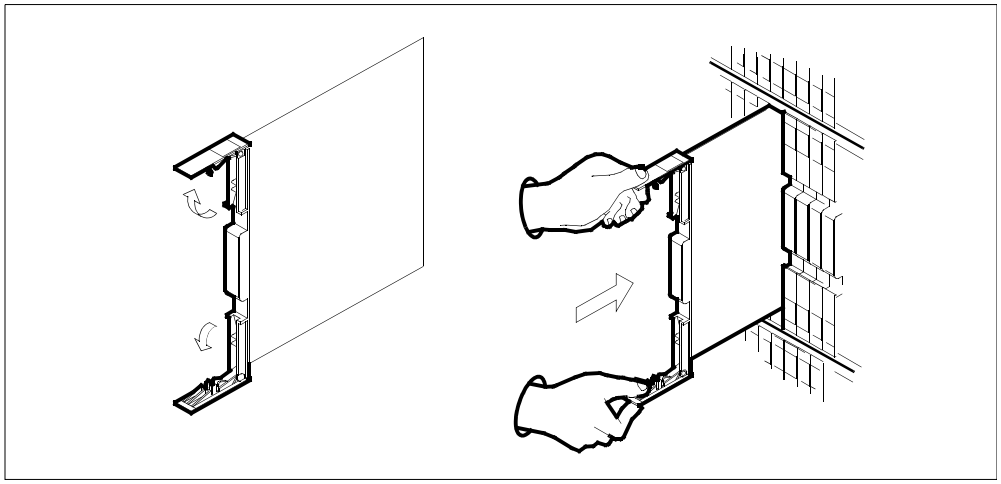
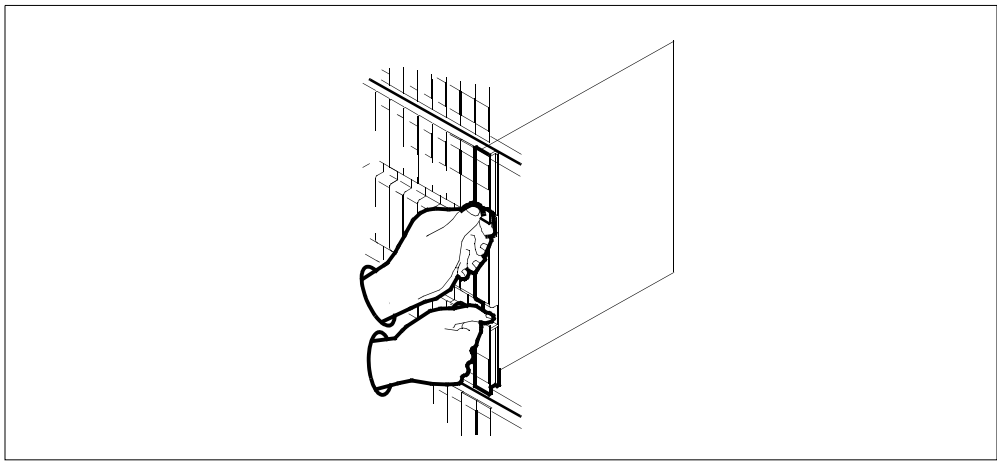


Figure 1-36
Seating and locking a card



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Repairing an NTBX63AA cooling unit on the bench top

Application

Use this procedure to repair an NTBX63AA cooling unit on the bench top. Check for a fault with any of the front three fans. Do the check while the unit remains in the ISDN line concentrating equipment (LCEI) frame. If a fault exists, you can repair the unit while the unit remains in the frame. Check the air flow sensors on the front three fans while the unit remains in the frame.

A fault in a NTBX63AA cooling unit results from one of the following:

- a loose or broken wiring harness
- a fan motor has faults
- a switch of the air flow sensor has faults

Definition

The cooling unit provides forced air to cool the cards in the line card drawer.

Common procedures

There are no common procedures.

Action

Procedure 1-25 provides steps and actions to repair an NTBX63AA cooling unit on the bench top. Figure 1-37 provides an overview of the procedure.

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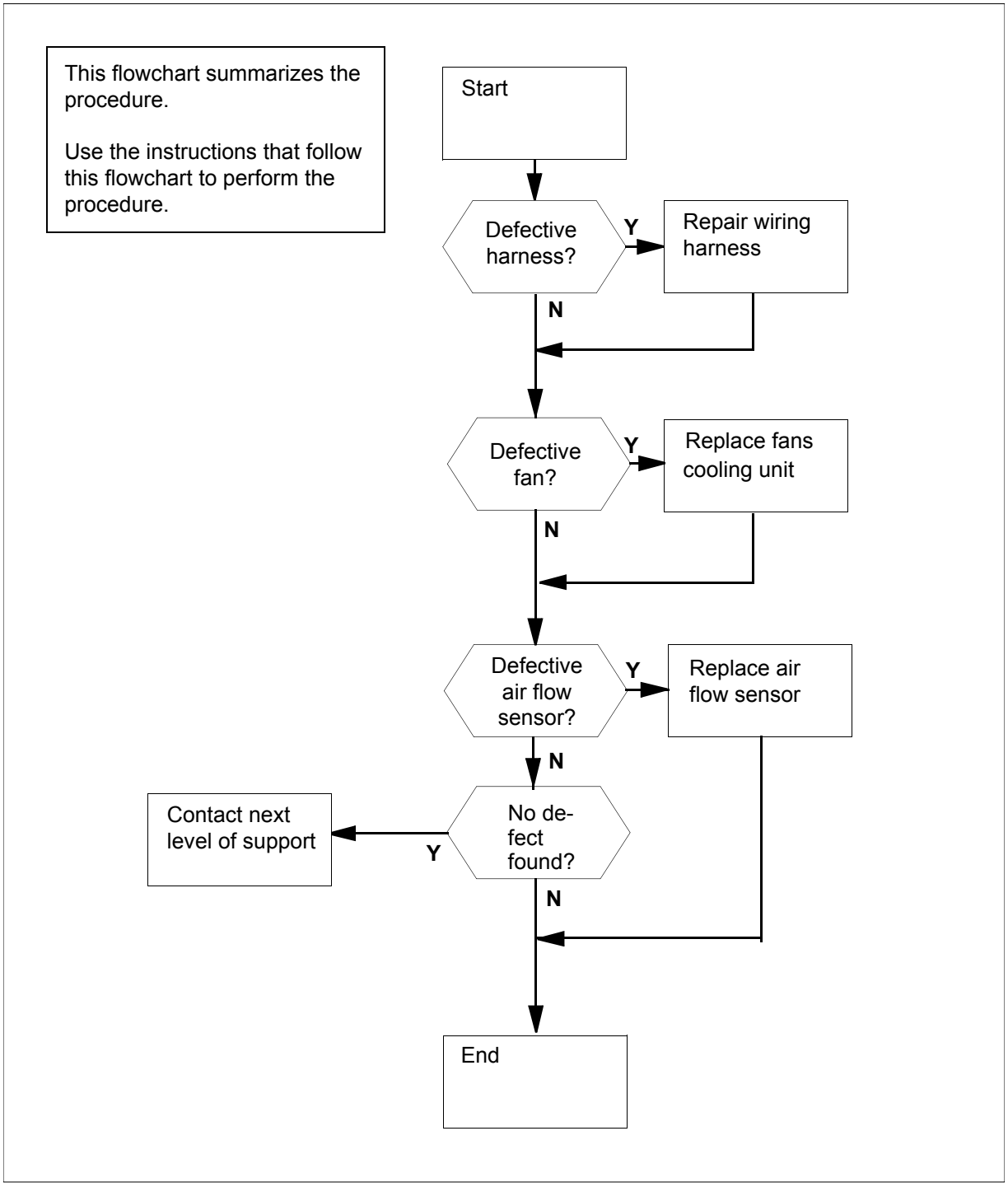
Figure 1-37
Summary of Repairing an NTBX63AA cooling unit on the bench top



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Procedure 1-25 describes how to repair an NTBX63AA cooling unit on the bench top.

Procedure 1-25
Repairing an NTBX63AA cooling unit on the bench top

Step	Action
1	At your current location, place the NTBX63AA cooling unit that has faults on a bench. **ATTENTION** The cooling unit configuration in the frame can differ from the following description. If you encounter an important difference, contact your next level of support.
2	 **WARNING** **Incorrect fuse values** Always use replacement fuses of the correct rating, or damage to the equipment can result. Check the five fuses at the front of the unit and replace any blown fuses.
3	 **WARNING** **Temporary power supply** Ensure that you have an acceptable power supply to run the unit without damage. Connect the unit to an acceptable 48 V dc power supply.
4	Inspect the fan operation. If the fans work correctly, go to step 21. If the fans do not work correctly, go to step 5.

—sheet 1 of 3—

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Procedure 1-25
Repairing an NTBX63AA cooling unit on the bench top (continued)

Step	Action
5	Inspect the unit wiring harness for damage or loose switch connections. If the harness is damaged or loose, go to step 6. If the harness is not damaged or loose, go to step 10.
6	Disconnect the 48 V dc power supply.
7	Replace or repair the harness that has faults. Tighten the loose connections.
8	Reconnect the 48 V dc power supply.
9	Inspect the fan operation. If the fans work correctly, go to step 35. If the fans do not work correctly, go to step 10.
10	Note that the fans that do not work correctly.
11	Disconnect the power supply.
12	Disconnect the power supply wiring to the fan (or fans) that has faults noted in step 10.
13	Note the position of the sensor switch on the fan that has faults.
14	Remove the four screws that secure the fan and the screw that secures the sensor switch.
15	Mount the new fan so that air flows toward the top, as indicated on the label.
16	Replace the sensor switch of the last installation. Secure the sensor with the mounting screw.
17	Reconnect the power supply to the new fan.
18	If necessary, repeat step 12 through step 17 for any other fan that does not work.
19	Turn ON the power switch on the unit.
20	Inspect the fan operation. If the fans work correctly, go to step 35. If the fans do not work correctly, go to step 34.
21	Inspect the sensor sails and adjust or replace any sails that appear to have faults.
22	Disconnect the wiring from one of the sensor switches. Note which wire connects to each terminal.

—sheet 2 of 3—

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Procedure 1-25
Repairing an NTBX63AA cooling unit on the bench top (continued)

Step	Action
23	Connect an ohm meter to the two connected terminals of the sensor switch. Figure 1-38 shows a sensor switch.
24	Lift the sail of the air flow sensor. If the ohm meter indicates a closed sensor switch, go to step 25. If the ohm meter indicates an open sensor switch, go to step 26.
25	An ohm meter that has a closed circuit with the sail in the up position indicates a sensor has faults. Note the sensor and go to step 27.
26	An ohm meter that has an open circuit with the sail in the up position indicates a sensor operates correctly. Reconnect the wiring to the sensor switch.
27	Repeat step 22 through step 26 to test all sensor switches.
28	Disconnect power to the unit.
29	Locate any sensor switch (or switches) that has faults, as determined in step 24 through step 27. Note the position of the switch (or switches).
30	Remove the sensor switch that has faults from the switch bracket.
31	Attach the replacement sensor switch to the switch bracket. Secure the sensor in position with screws, nuts, and washers.
32	Reconnect the wiring to the sensor switch, as noted in step 22.
33	Repeat step 29 through step 32 for each sensor switch. Replace any switches that have faults.
34	Contact the next level of support. If you found no problems with the unit, go to step 34. If repair to the unit was not possible, go to step 34. If you found and repaired the problems, go to step 35.
35	Disconnect the power supply from the cooling unit and store the unit for future use.
36	The procedure is complete.

—sheet 3 of 3—

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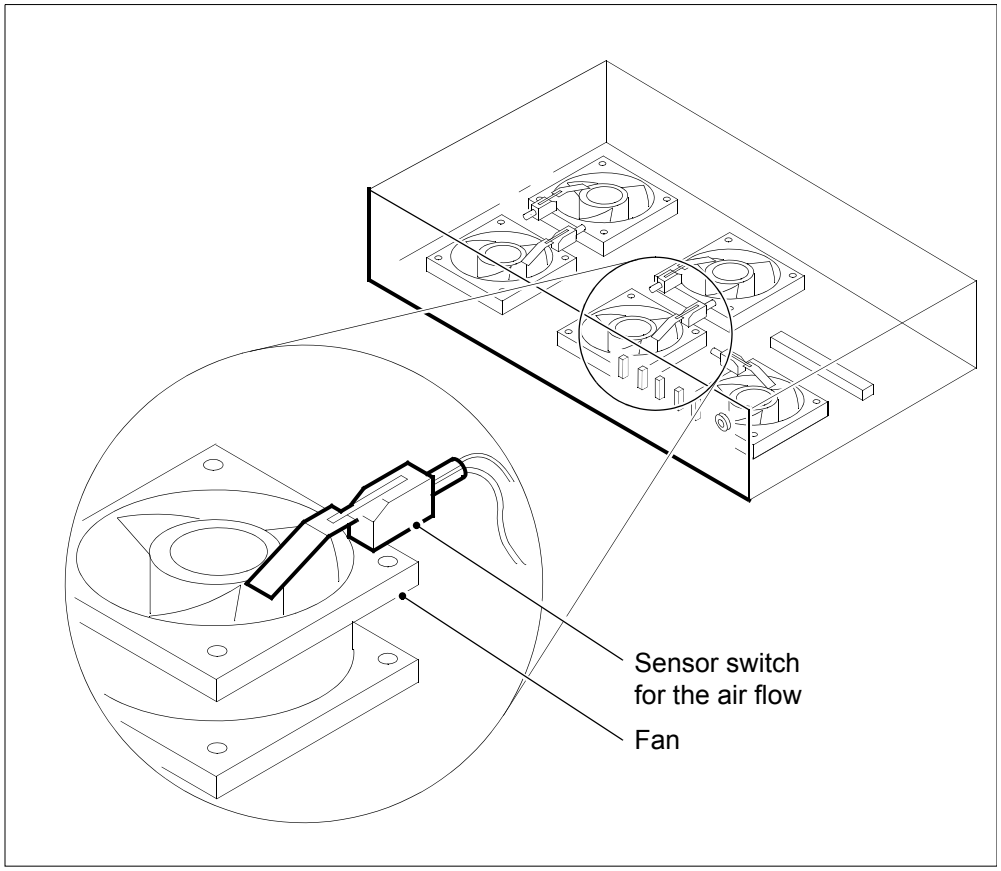
Figure 1-38
Sensor switch



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Repairing and replacing NT3X90AA cooling units

Application

Use this procedure to repair or replace NT3X90AA cooling units in the following frames:

- LGE, DTE, LTE and SME
- ILGE and IDTE
- DSNE
- MS7E, ST6E and ST7E
- SNPC
- CPEI

A fault in a NT3X90AA cooling unit results from one of the following:

- a dirty filter
- a loose or broken wiring harness
- a blown fuse for inverter on PDC frame
- an inverter has faults
- an air flow sensor switch has faults
- a fan motor has faults

Definition

The cooling unit provides forced air to cool the equipment and cards in the frames.

Common procedures

There are no common procedures.

Action

Procedure 1-26 provides steps and actions to repair or replace NT3X90AA cooling units. Figure 1-39 provides an overview of the procedure.

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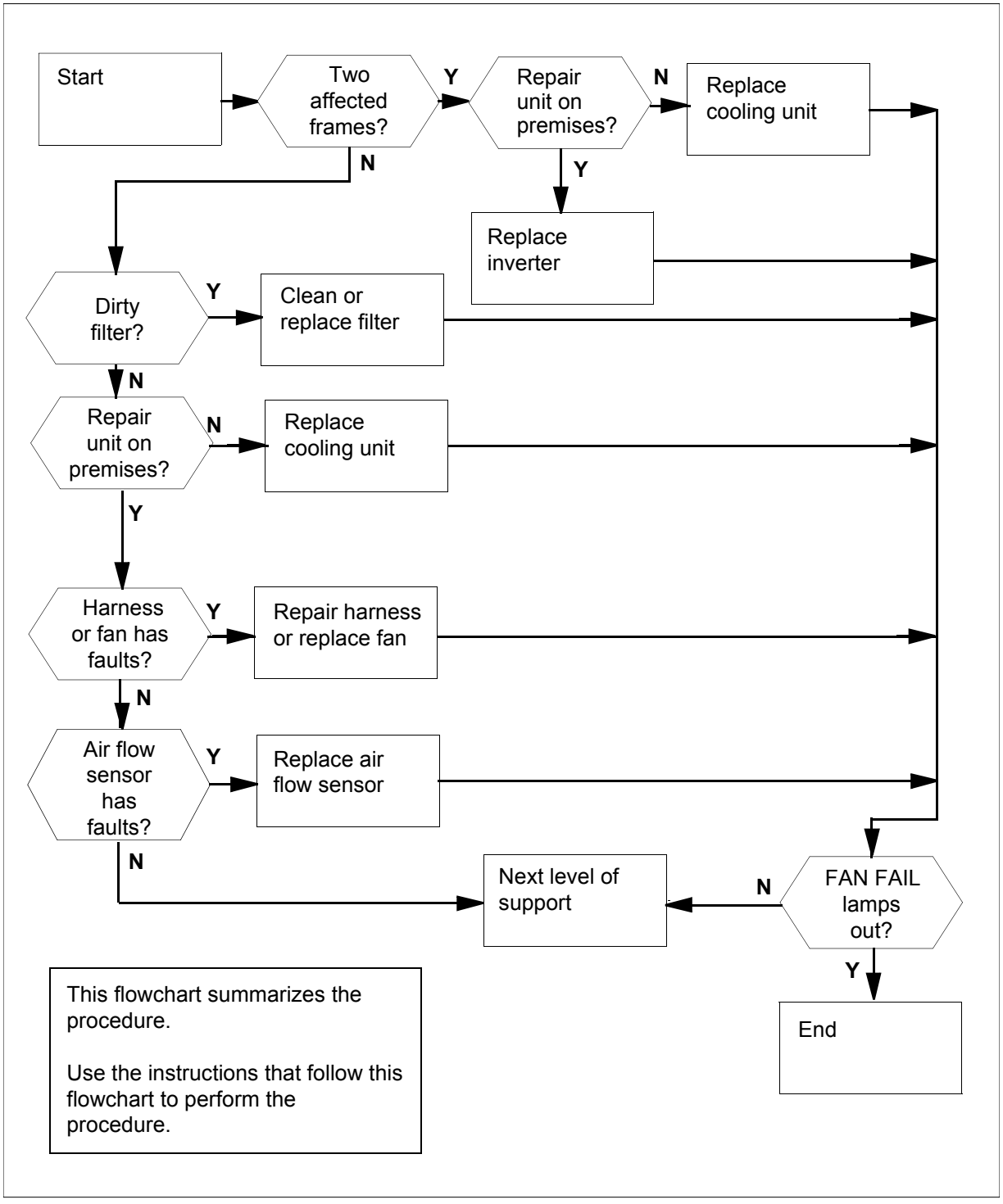
Figure 1-39
Summary of Repairing and replacing NT3X90AA cooling units



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Procedure 1-26 describes how to repair or replace NT3X90AA cooling units.

Procedure 1-26
Repairing and replacing NT3X90AA cooling units

Step	Action
1	At the FSP, identify the frame, or the pair of frames, where the lit FAN FAIL lamp is on the Frame Supervisory Panel (FSP). **ATTENTION** The cooling unit configuration in the frame can differ from the following description. If you encounter an important difference, contact your next level of support. ***Note:*** NT3X90AA power supplies for the cooling unit connect in pairs. A problem in one unit on a pair can cause an interruption in the operation of both units of the pair. Frames that are near each other will house the pairs.
2	To silence the alarm, turn ON the FAN FAIL OVERRIDE switch (or switches). If the lit FAN FAIL lamp is on only one frame, go to step 3. If the lit FAN FAIL lamp is on two frames, go to step .
3	At the frame, remove the air intake grill and filter assembly from the front of the affected cooling unit.
4	Determine if the FAN FAIL lamp darkened on the Frame Supervisory Panel (FSP) when you removed the filter. If the FAN FAIL lamp darkens, go to step 5. If the FAN FAIL lamp remains on, go to step 8.
5	Remove the filter and intake grill to a location away from the switch room. To clean the fan air intake, use a dust cloth and vacuum.
6	Vacuum or wash the filter in soap and water, according to the filter type.
7	Replace the filter in the grill and reinstall the grill at the front of the cooling unit.
8	Turn OFF the FAN FAIL OVERRIDE switch. If your company procedures direct you to do repairs, go to step 9. If your company procedures do not direct you to do repairs, go to step 71.
9	At the front of the cooling unit, remove the screws that secure the side rail covers to the frame.

—sheet 1 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
10	Remove the eight screws that secure the brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
11	 **WARNING** **Loss of frame cooling** Removal of the cooling unit for an extended period of time can cause the equipment in the frame to overheat. Ease the cooling unit toward you until it is half-way out of the frame.
12	Inspect the fans in the cooling unit. Note any fans that do not work. If fans work correctly, but the FAN FAIL lamp remains on, go to step 33. The operation of all fans with a lit FAN FAIL lamp indicates that an air flow sensor has faults. If one fan does not work, go to step 13. If you find any other problem with fans, go to step . ***Note:*** A fan that does not work indicates a wiring harness, loose connections, or a fan that requires replacement.
13	Inspect the wiring harness for the cooling unit. Look for damage and/or a loose connection at the fans or terminal blocks.
14	At the back of the frame, unplug the connector at the back of the unit.
15	A harness requires replacement. At the cooling unit, replace the harness and tighten any loose connections.
16	At the back of the frame, reconnect the connector at the back of the cooling unit.
17	At the front of the cooling unit, inspect the fan operation. If the fan works correctly, go to step 62. If the fan still does not work correctly, go to step 18.
18	Unplug the connector at the back of the cooling unit.
19	At the cooling unit, disconnect the wiring to the airflow sensor switch from the fan. Note the position and color of the wires. Figure 1-40 shows the airflow sensor switch.

—sheet 2 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
20	Note the position of the airflow sensor switch on the fan.
21	Remove the sensor switch from the switch bracket. Lay the switch to one side.
22	Cut the two tie wraps that secure the power cord to the fan.
23	Remove the four screws, spacers, nuts, and washers that secure the fan to the cooling unit.
24	Disconnect the power cord at the fan terminals.
25	Remove the fan.
26	Plug a new fan into the power cord.
27	Mount the new fan. Ensure that you install the fan to allow air to flow toward the top, as indicated on the label. Secure with screws, spacers, nuts and washers.
28	Secure the power cord to the fan with new tie wraps.
29	Reinstall the wiring to the sensor switch, as noted in step 19.
30	Reinstall the sensor switch to the switch bracket. Secure the sensor in position with screws, nuts, and washers.
31	At the back of the frame, reconnect the connector at the back of the cooling unit.
32	Inspect the fan operation. If the fan works correctly, go to step 62. If the fan still does not work correctly, go to step .
33	Inspect the sails of the air flow sensors. Replace or repair any sails that appear to have faults.
34	Disconnect the wiring to one of the sensor switches. Note the position and color of the wires. If the FAN FAIL lamp remains on after you disconnect the wiring to the air flow sensor, go to step 37. If the FAN FAIL lamp does not remain on after you disconnect the wiring to the air flow sensor, go to step 35. ***Note:*** A FAN FAIL lamp that turns OFF when you disconnect the wiring to the sensor indicates a sensor switch that has faults.
35	Remove the sensor switch.

—sheet 3 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
36	Attach the replacement sensor switch to the switch bracket. Secure the switch in position with screws, nuts, and washers.
37	Reconnect the wiring to the sensor switch, as noted in step 34.
38	Repeat step 34 through step 37 to check all sensor switches. If the FAN FAIL lamp is off, go to step 62. If the FAN FAIL lamp is on, go to step .
39	 **DANGER** **Possible arcing** Electricity can arc when you remove cooling unit fuses. Wear eye protection. At the PDC frame, remove the fuses that power the inverters.
40	Do you have a blown fuse? If a fuse is blown, go to step . If a fuse is not blown, go to step 44.
41	 **WARNING** **Incorrect fuse values** Use replacement fuses of the correct rating, or damage to the equipment may result. Replace the fuses in the PDC. Replace the blown fuse with a new fuse. If FAN FAIL lamps at the FSPs are dark, go to step 42. If FAN FAIL lamps at the FSPs are lit, go to step 44.
42	At the FSPs, turn OFF the FAN FAIL OVERRIDE switches.
43	Go to step 86.
44	Remove the air intake grill and filter assembly from the front of both cooling units.

—sheet 4 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
45	Inspect the fans in both cooling units. If a complete row of fans do not work in each cooling unit, go to step 46. Otherwise, go to step .
46	Locate the toggle switches at the back right corner of each inverter. ***Note:*** The toggle switches are the ON/OFF power switches for the inverters.
47	Cycle the toggle switches on both inverters to find the inverter that powers the rows of fans that do not work. If company procedures direct you to do repairs, go to step 50. If company procedures do not direct you to do repairs, go to step 48. ***Note:*** Each inverter powers the row of three fans. The front of the cooling unit houses the row of fans. Each inverter also powers the row of two fans at the back of the paired unit.
48	Identify the cooling unit with the inverter that powers the fans that do not operate. Replace this cooling unit.
49	Go to step 71.
50	Turn OFF the inverter that powers the row of fans that have faults.
51	At the PDC frame, remove the fuse for the inverter that powers the fans.
52	At the frame, disconnect the connector at the back left corner of the inverter.
53	Use a pair of needle-nosed pliers to remove the four plastic mounting pins that hold the inverter card.
54	Lift the inverter out of the cooling unit. Replace the inverter with a new inverter.
55	Mount the new inverter on the four plastic mounting pins.
56	Attach the connector at the back left corner of the new inverter.
57	At the PDC frame, check the fuse to the inverter. A blown fuse requires a replacement. Replace the fuse in the PDC.

—sheet 5 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
58	At the frame, turn ON the toggle switch of the new inverter. If the fans work correctly and the FAN FAIL lamp is not on, go to step 59. Otherwise, go to step .
59	Install the air intake grill and filter assembly at the front of the cooling unit.
60	At the FSP, turn OFF the FAN FAIL OVERRIDE switch (or switches).
61	Go to step 86.
62	Ease the cooling unit back completely into the frame.
63	Insert the eight screws that secure the brackets to the sides of the cooling unit. To insert the screws, use a 5/16-inch ratchet and extension.
64	Reinstall the side rail on the front of the frame.
65	At the PDC frame, if you removed the fuse (or fuses) that powers the inverter card (or cards), reinstall it.
66	Locate the toggle switch near the back right side of the inverter card (or cards).
67	If the switches operated during this procedure, ensure that you turn back ON the switches.
68	Reinstall the air intake grill and filter assembly at the at the front of the cooling unit.
69	Turn OFF the FAN FAIL OVERRIDE switch on the FSP.
70	Go to step 86.
71	At the PDC frame, remove the fuses that power the inverter cards on the cooling unit that requires replacement.
72	At the back of the cooling unit, disconnect the plug that connects the wiring to the cooling unit.
73	At the front of the cooling unit, remove the screws that secure the side rail covers to the frame.
74	Remove the eight screws that secure the brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
75	Ease the cooling unit toward you and out of the frame.
76	Ease the replacement cooling unit into the frame.

—sheet 6 of 7—

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Procedure 1-26
Repairing and replacing NT3X90AA cooling units (continued)

Step	Action
77	Insert the eight screws that secure the brackets to the sides of the cooling unit. To insert the Use a 5/16-inch ratchet and extension.
78	Reinstall the side rail on the front of the frame.
79	At the back of the cooling unit, reconnect the plug that connects the wiring to the cooling unit.
80	At the PDC frame, reinstall the fuses that power the inverter cards.
81	At the front of the cooling unit, locate the toggle switches near the back right side of the inverter cards.
82	Ensure that you turn ON the toggle switches.
83	Reinstall the air intake grill and filter assembly at the at the front of the cooling unit.
84	Turn OFF the FAN FAIL OVERRIDE switch (or switches) on the FSP (or FSPs).
85	 **WARNING** **Loss of frame cooling** Do not leave a cooling unit that has faults in the frame. If you cannot repair the cooling unit immediately, go to step 71. Follow the necessary parts of the procedure to replace the unit with one that work correctly. For additional help, contact the next level of support.
86	The procedure is complete.

—sheet 7 of 7—

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Figure 1-40
Sensor switch

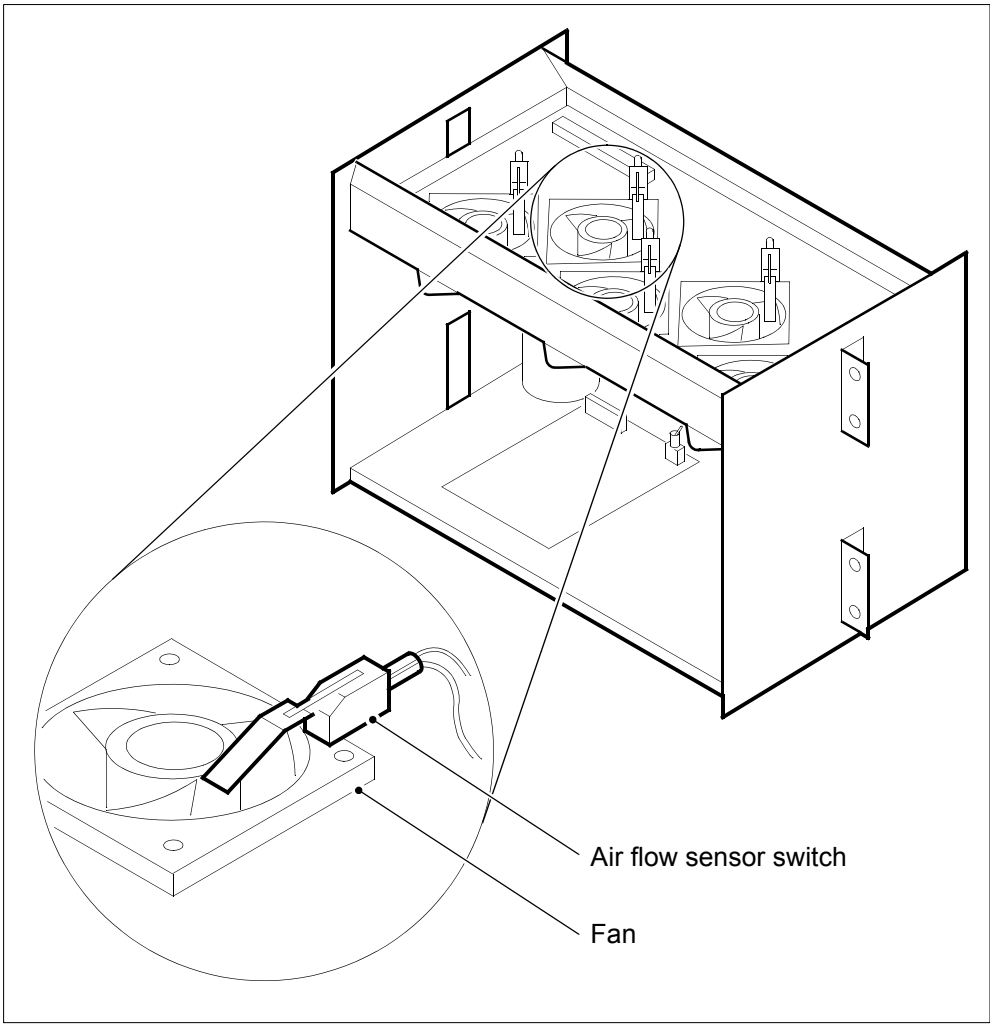

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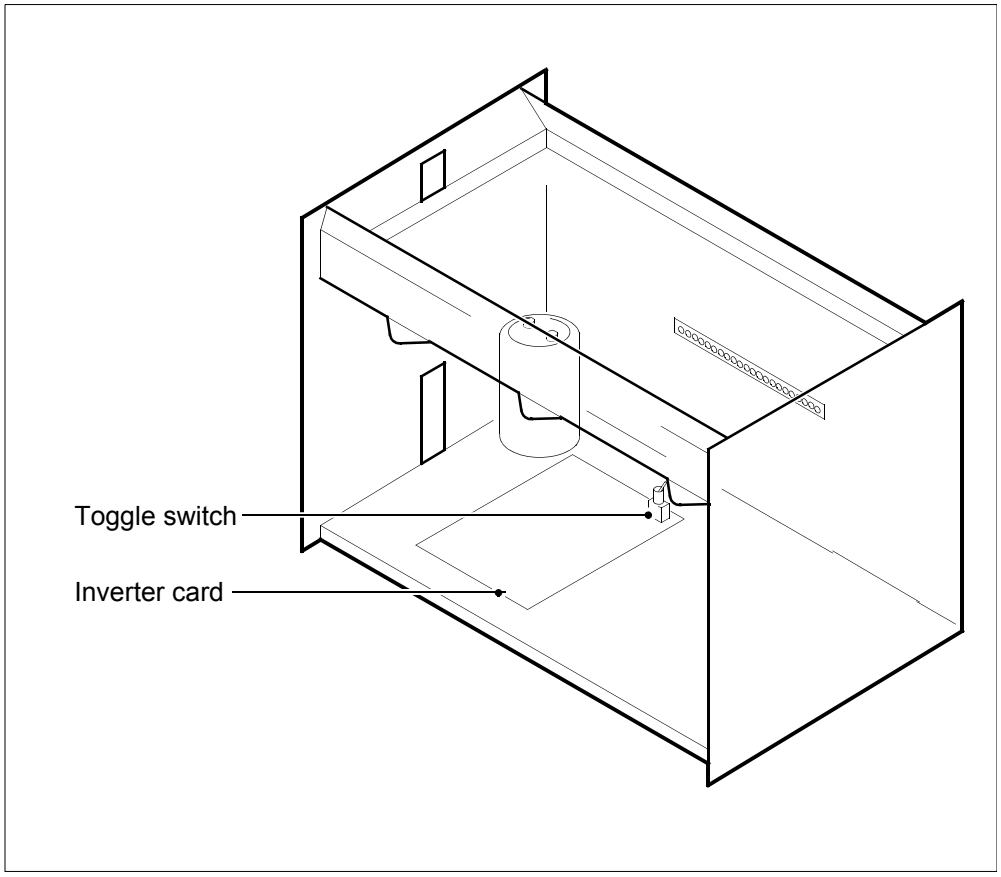
Figure 1-41
Toggle switch and inverter card



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Repairing and replacing NT3X90AB cooling units

Application

Use this procedure to repair or replace NT3X90AB cooling units in the following frames:

- LGE, DTE, LTE and SME
- ILGE and IDTE
- DSNE
- PMTC
- MS7E, ST6E and ST7E
- RCE
- CPEI

A fault in a NT3X90AB cooling unit results from one of the following:

- a dirty filter
- a loose or broken wiring harness
- a blown fuse for inverter on PDC frame
- a inverter has faults
- a air flow sensor switch has faults
- a fan motor has faults

Definition

The cooling unit provides forced air to cool the equipment and cards in the frames.

Common procedures

There are no common procedures.

Action

Procedure 1-27 provides steps and actions to repair or replace NT3X90AB cooling units. Figure 1-42 provides an overview of the procedure.

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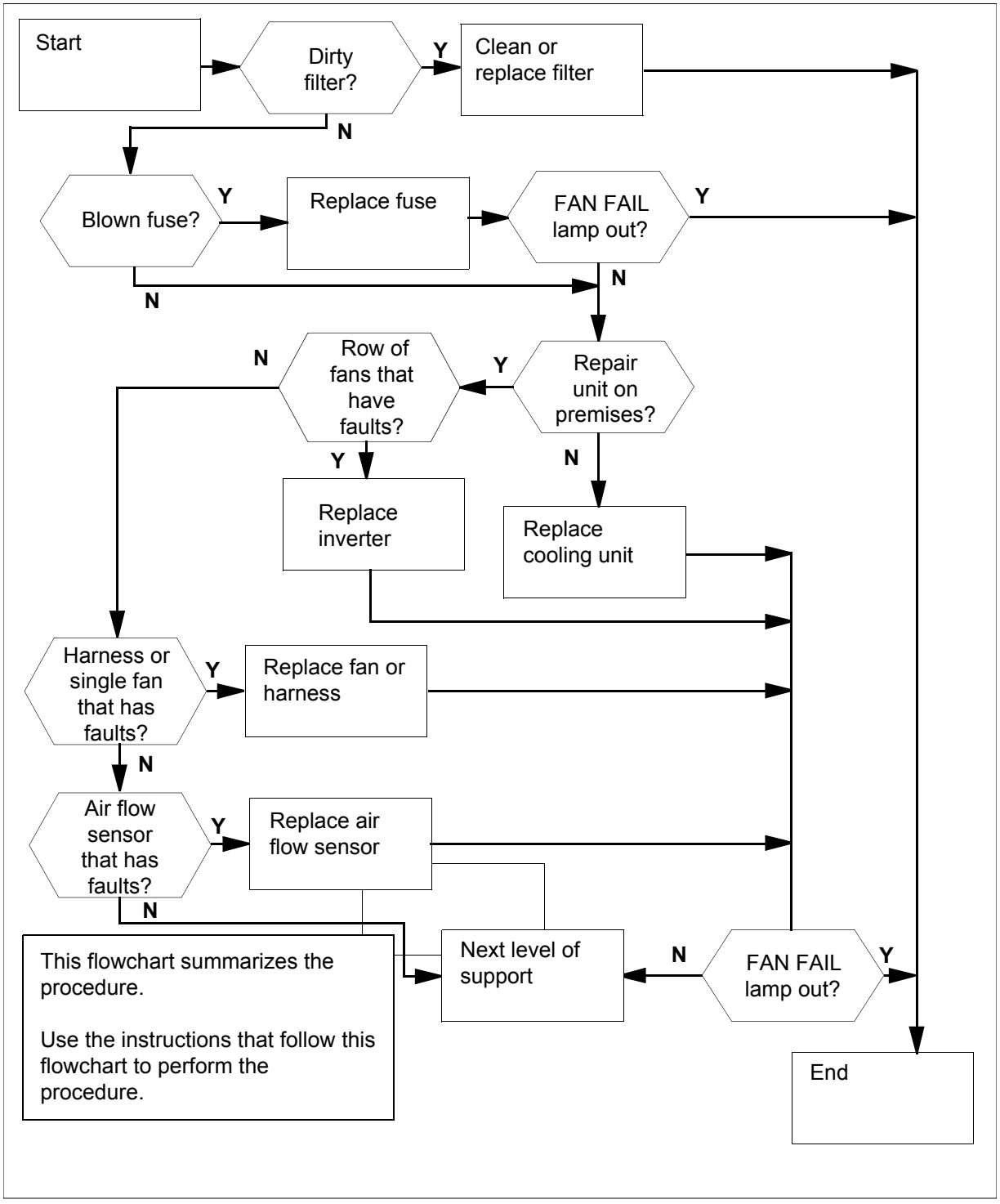
Figure 1-42
Summary of Repairing and replacing NT3X90AB cooling units



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Procedure 1-27 describes how to repair or replace NT3X90AB cooling units.

Procedure 1-27
Repairing and replacing NT3X90AB cooling units

Step	Action
1	**DANGER** **Next level of support** The cooling unit configuration in the frame can differ from the following description. If you encounter an important difference, contact your next level of support. At the FSP, turn ON the FAN FAIL OVERRIDE switch to silence the alarm.
2	At the frame, remove the air intake grill and filter assembly from the front of the cooling unit.
3	Determine if the FAN FAIL lamp darkened on the frame supervisory panel (FSP) when you removed the filter. If the FAN FAIL lamp darkened, go to step 4. If the FAN FAIL lamp remained on, go to step .
4	Remove the filter and grill to a location away from the switch room. Use a dust cloth and vacuum to clean the fan air intake.
5	Vacuum or wash the filter in soap and water, according to the filter type.
6	Replace the filter in the grill and reinstall the filter in the cooling unit.
7	Turn OFF the FAN FAIL OVERRIDE switch.
8	Go to step 79.
9	**DANGER** **Possible arcing** Electricity can arc when you remove cooling unit fuses. Wear eye protection. At the PDC frame, remove the fuses that power the inverters.

—sheet 1 of 7—

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
10	Do you have a blown fuse? If yes, go to step . If no, go to step 13.
11	 **WARNING** **Incorrect fuse values** Use replacement fuses of the correct rating, or damage to the equipment can result. At the PDC frame, replace the fuse in the PDC with a new one.
12	Replace the filter in the grill. If the FAN FAIL lamp is off, go to step 14. If the FAN FAIL lamp is on, go to step 13.
13	Turn OFF the FAN FAIL OVERRIDE switch. If your company procedures direct you to do repairs, go to step 14. If your company procedures do not direct you to do repairs, go to step 64.
14	At the front of the frame, remove the screws that secure the side rail covers to the frame.
15	Remove the eight screws that secure the brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
16	 **WARNING** **Loss of frame cooling** Removal of the cooling unit for an extended period of time can cause the equipment in the frame to overheat. Ease the cooling unit toward you until it is half-way out of the frame.

—sheet 2 of 7—

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
17	Inspect the fans in the cooling unit. Determine how many fans work. If the fans work correctly but the FAN FAIL lamp remains on, go to step 49. If one fan does not work, go to step 29. If both fans in the back row or all three fans in the front row do not work, go to step 18. ***Note 1:*** A complete row of fans that have faults indicates an inverter that powers the row is at fault. The row of fans that have faults also indicates a blown fuse on the PDC frame for the inverter that has faults. ***Note 2:*** One fan that does not operate indicates a damaged wiring harness, loose connections, or a fan that requires replacement. ***Note 3:*** All fans that operate normally with a lit FAN FAIL lamp indicate a air flow sensor that has faults.
18	Locate the toggle switches at the back right corner of each inverter card. ***Note:*** The toggle switches are the ON/OFF power switches for the inverters.
19	Cycle the toggle switches on both inverters until you find the inverter that powers the row of fans that have faults.
20	Switch OFF the inverter that provides power to the row of fans that have faults.
21	At the PDC frame, remove the fuse for the damaged inverter.
22	At the frame, disconnect the connector at the back left corner of the inverter.
23	Use a pair of needle-nosed pliers to disconnect the four plastic mounting pins.
24	Lift the old inverter out of the cooling unit. Replace the old inverter with a new inverter.
25	Mount the new inverter on the four plastic mounting pins.
26	Plug the connector into the back left corner of the inverter.
27	At the PDC frame, examine the fuse to the inverter. If the fuse is a blown fuse, obtain a new fuse. Replace the fuse in the PDC.
28	At the frame, turn ON the toggle switch of the new inverter. If the fans work normally and the FAN FAIL lamp does not turn on, go to step 55. Otherwise, go to step .

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
29	To turn OFF the inverters, use the toggle switches at the back right corner of the inverters.
30	Inspect the cooling unit wiring harness for damage and/or a loose connection at the fans or terminal blocks.
31	Replace a defective harness. Tighten any loose connections.
32	To turn ON the inverters, use the toggle switches at the back right corner of the inverters.
33	Inspect the fan operation. If the fan works correctly, go to step 55. If the fan does not work correctly, go to step 34.
34	To turn OFF the inverters, use the toggle switches at the back right corner of the inverters.
35	Disconnect the wiring to the sensor switch from the fan that has faults. Note the position and color of the wires.
36	Note the position of the air flow switch on the fan (or fans) that has faults.
37	Remove the sensor switch from the switch bracket. Lay the switch to one side.
38	Cut the two tie wraps that secure the power cord to the fan.
39	Remove the four screws, spacers, nuts, and washers that secure the fan to the cooling unit.
40	Disconnect the power cord at the fan terminals.
41	Remove the fan.
42	Plug a new fan into the power cord.
43	Mount the new fan. Install the fan so that air flows toward the top, as indicated on the label. Secure the fan with screws, spacers, nuts, and washers.
44	Use new tie wraps to secure the power cord to the fan.
45	Reconnect the wiring to the sensor switch, as noted in step 35.
46	Attach the sensor switch to the switch bracket. Secure the switch in position with screws, nuts, and washers.
47	To switch ON the inverters, use the toggle switches at the back right corner of the inverters.

—sheet 4 of 7—

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
48	Inspect the fan operation. If the fan works correctly, go to step 55. If the fan does not work correctly, go to step .
49	Inspect the sails of the air flow sensors. Replace or repair any that appear to have faults.
50	Disconnect the wiring to one of the sensor switches. Note the position and color of the wires. If the FAN FAIL lamp remained on when you disconnected the sensor wiring for the air flow, go to step 53. If the FAN FAIL lamp did not remain on when you disconnected the sensor wiring for the air flow, go to step 51. ***Note:*** A FAN FAIL lamp that turned OFF when you disconnected the sensor wiring indicates a sensor switch that has faults.
51	Remove the defective sensor switch.
52	Attach the replacement sensor switch to the switch bracket. Secure the new sensor in position with screws, nuts, and washers.
53	Reconnect the wiring to the sensor switch, as noted in step 50.
54	Repeat step 50 through step 53 to check all sensor switches. If the FAN FAIL lamp turns off, go to step 55. If the FAN FAIL lamp remains on, go to step .
55	Ease the cooling unit completely back into the frame.
56	Insert the eight screws that secure the brackets to the sides of the cooling unit. To insert the screws, use a 5/16-inch ratchet and extension.
57	Reinstall the side rail on the front of the frame.
58	Locate the toggle switch near the back right corner of each inverter card.
59	If the switches worked during this procedure, turn back ON the switches.
60	At the PDC frame, inspect the fuses that power the inverter cards. Replace any blown fuses.

—sheet 5 of 7—

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
61	At the FSP, replace the air intake grill and filter assembly at the front of the cooling unit. If the FAN FAIL lamp is off, go to step 79. If the FAN FAIL lamp is on, go to step .
62	Turn OFF the FAN FAIL OVERRIDE switch on the FSP.
63	Go to step 79.
64	At the PDC frame, remove the fuses that power the inverter cards.
65	Disconnect the plug that connects the wiring to the back of cooling unit.
66	At the front of the cooling unit, remove the screws that secure the side rail covers to the frame.
67	Remove the eight screws that secure the brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
68	Ease the cooling unit toward you and out of the frame.
69	Ease the replacement cooling unit into the frame.
70	Secure the brackets to the sides of the cooling unit. To secure the brackets, use a 5/16-inch ratchet and extension.
71	Reinstall the side rail on the front of the frame.
72	At the back of the cooling unit, reconnect the plug that connects the wiring to the cooling unit.
73	At the PDC frame, insert the fuses that power the inverter cards.
74	At the front of the cooling unit, locate the toggle switches near the back right corner of the inverter cards.
75	Make sure you turn ON the toggle switches.
76	Reinstall the air intake grill and filter assembly at the front of the cooling unit.
77	Turn ON the FAN FAIL OVERRIDE switch on the FSP.

—sheet 6 of 7—

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Procedure 1-27
Repairing and replacing NT3X90AB cooling units (continued)

Step	Action
78	 **WARNING** **Loss of frame cooling** Do not leave a cooling unit that has faults in the frame. If you cannot repair the cooling unit immediately, replace it with a cooling unit that works correctly. Go to step 64 and follow the necessary parts of the procedure. For additional help, contact the next level of support.
79	The procedure is complete.

—sheet 7 of 7—

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Figure 1-43
Sensor switch

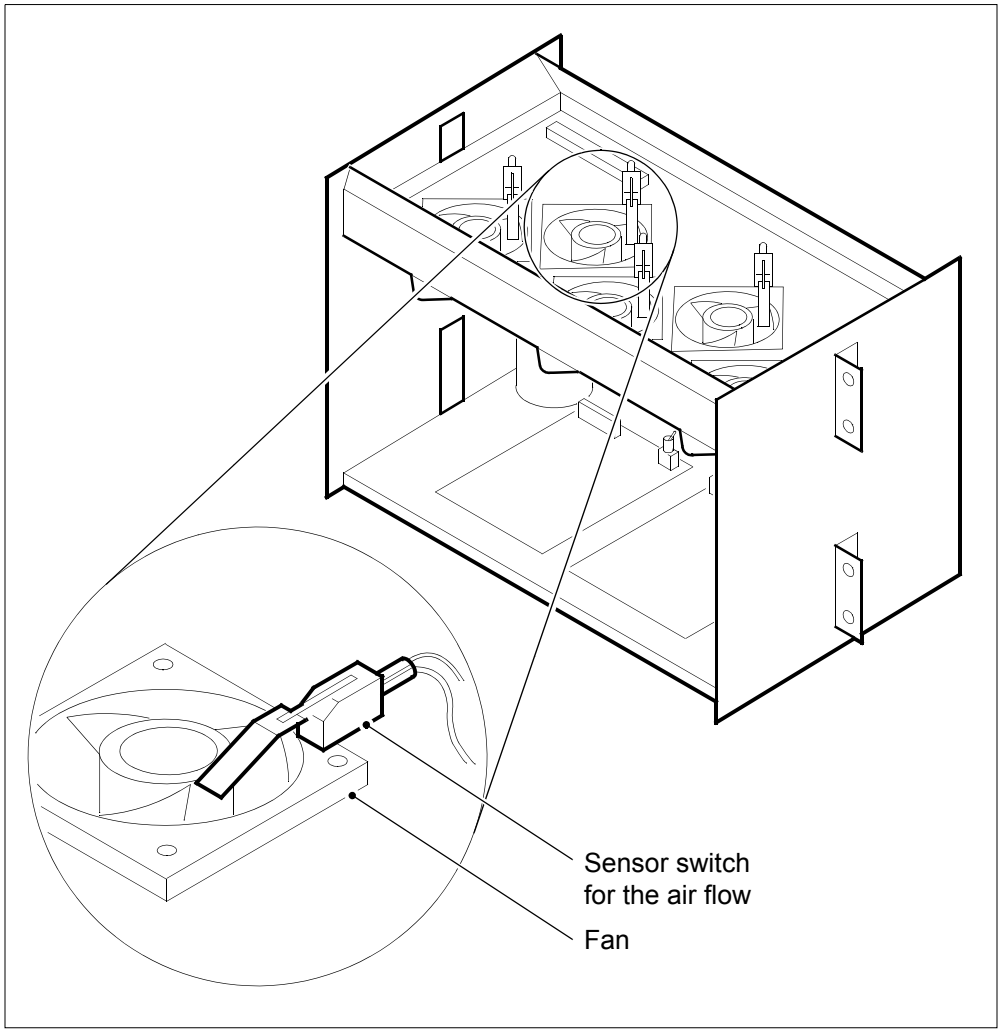

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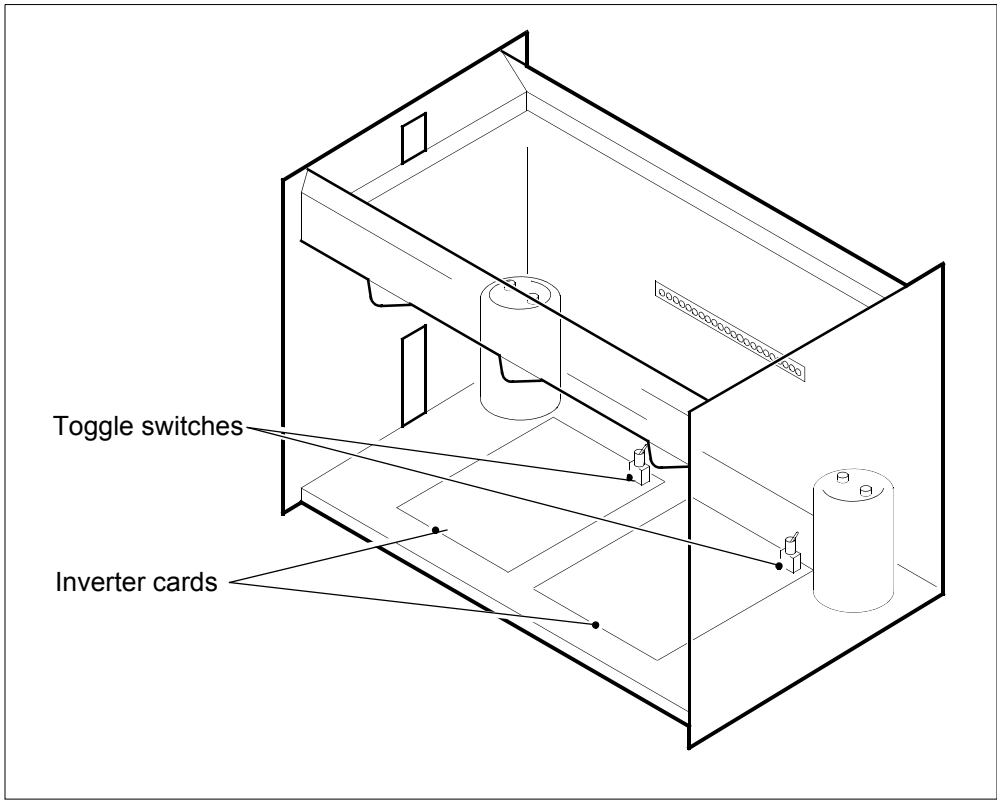
Figure 1-44
Toggle switches and inverter cards



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Repairing and replacing NT3X90AC cooling units

Application

Use this procedure to replace NT3X90AC cooling unit components in the following frames:

- LGE, DTE, LTE and SME
- LGEI, DTEI, and LTEI
- ILGE and IDTE
- DSNE
- MS6E, MS7E, ST6E and ST7E
- RCE and RCEI
- DSNE
- CPEI

A problem in a NT3X90AC cooling unit results from one of the following:

- a dirty filter
- a loose or broken wiring harness
- a blown fuse in the front panel of the cooling unit
- a switch of the air flow sensor has faults
- a fan motor has faults

Definition

The cooling unit provides forced air to cool the equipment and cards in the frames.

Common procedures

There are no common procedures.

Action

Procedure 1-28 provides steps and actions to replace NT3X90AC cooling unit components. Figure 1-45 provides an overview of the procedure.

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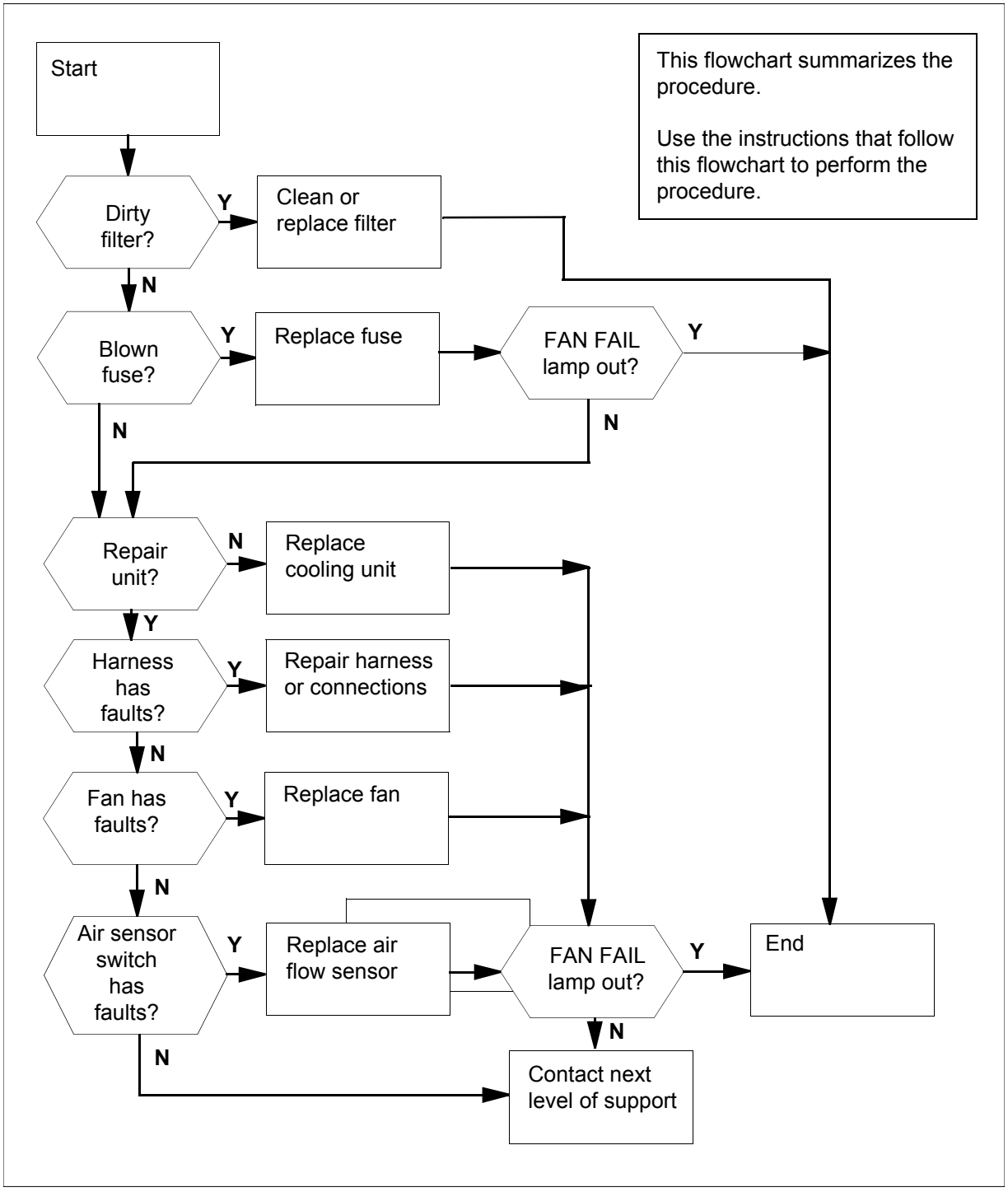
Figure 1-45
Summary of Repairing and replacing NT3X90AC cooling units



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Procedure 1-28 describes how to replace NT3X90AC cooling unit components.

Procedure 1-28
Repairing and replacing NT3X90AC cooling units

Step	Action
1	**DANGER** **Next level of support** The cooling unit configuration in the frame can differ from the following description. If you encounter an important difference, contact your next level of support. At the FSP, turn ON the FAN FAIL OVERRIDE switch to silence the alarm.
2	At the frame, remove the air intake grill and filter assembly from the front of the cooling unit.
3	Determine if the FAN FAIL lamp darkened on the frame supervisory panel (FSP) when you removed the filter. If the FAN FAIL lamp darkened, go to step 4. If the FAN FAIL lamp remained on, go to step 9.
4	Remove the filter and grill to a location away from the switch room. Use a dust cloth and vacuum to clean the fan air intake.
5	Vacuum or wash the filter in soap and water, according to the filter type.
6	Replace the filter in the grill.
7	At the FSP, turn OFF the FAN FAIL OVERRIDE switch.
8	Go to step 60.
9	Locate the seven fuses at the front of the cooling unit and check each one.

—sheet 1 of 5—

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Procedure 1-28
Repairing and replacing NT3X90AC cooling units (continued)

Step	Action
10	**WARNING** **Incorrect fuse values** Use replacement fuses of the correct rating, or damage to the equipment can result. If one or more fuses blow, replace the blown fuses with new fuses. If the FAN FAIL lamp darkened when you replaced the fuses, go to step 11. If the FAN FAIL lamp remained on when you replaced the fuses, go to step 14.
11	Replace the air intake grill and filter assembly at the front of the cooling unit.
12	At the FSP, turn OFF the FAN FAIL OVERRIDE switch.
13	Go to step 60.
14	Proceed as directed below: If your company procedures direct you to do repairs, go to step 26. If your company procedures direct you to not do repairs, go to step 15.
15	Disconnect the plug that connects the wiring to the back of cooling unit.
16	At the front of the cooling unit, remove the screws that secure the side rail covers to the frame.
17	Remove the eight screws that secure the brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
18	Ease the cooling unit toward you and out of the frame.
19	Ease the replacement cooling unit into the frame.
20	Insert the eight screws that secure the brackets to the sides of the cooling unit. To insert the screws, use a 5/16-inch ratchet and extension.
21	Reinstall the side rail on the front of the frame.
22	Reconnect the plug that connects the wiring to the back of the cooling unit.
23	At the front of the cooling unit, locate the air intake grill and filter at the front of the unit.
24	At the FSP, turn OFF the FAN FAIL OVERRIDE switch.

—sheet 2 of 5—

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Procedure 1-28
Repairing and replacing NT3X90AC cooling units (continued)

Step	Action
25	Go to step .
26	At the front of the cooling unit, remove the screws that secure the side rail covers to the frame.
27	Remove the eight screws that secure the side brackets to the sides of the cooling unit. To remove the screws, use a 5/16-inch ratchet and extension.
28	 **WARNING** **Loss of frame cooling** Removal of the cooling unit for an extended period of time can cause the equipment in the frame to overheat. Ease the cooling unit toward you until the unit is half way out of the frame.
29	Inspect the fans in the cooling unit and determine how many fans work. If all fans work correctly but the FAN FAIL lamp remains on, go to step 47. If one or more fans do not work, go to step 30. ***Note 1:*** The failure of one or more fans to work indicates a wiring harness that has faults or loose connections. The failure of one or more fans to operate can indicate one or more fans that require replacement. ***Note 2:*** All fans can operate correctly but the FAN FAIL lamp remains on. This occurrence indicates an air flow sensor that has faults.
30	Remove the fuses from the front of the cooling unit.
31	Inspect the wiring harness of the cooling unit for damaged and/or a loose connection at the fans or terminal blocks.
32	If you find a bad harness, replace the harness. Tighten any loose connections.
33	Replace the fuses at the front of the cooling unit. If all fans work correctly and the FAN FAIL lamp is off, go to step 53. If one or more fans do not work, go to step 34.
34	Disconnect the wiring to the sensor switch from the fan that has faults. Note the position and color of the wires.
35	Note the position of the sensor switch on the fan that has faults.

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Procedure 1-28
Repairing and replacing NT3X90AC cooling units (continued)

Step	Action
36	Remove the sensor switch from the switch bracket and lay the sensor to one side.
37	Cut the two tie wraps that secure the power cord to the fan.
38	Remove the four screws, spacers, nuts, and washers that secure the fan to the cooling unit.
39	Disconnect the power cord at the fan terminals.
40	Remove the fan that has faults.
41	Connect a new fan to the power cord.
42	Mount the new fan. Install the fan so that air flows toward the top, as indicated on the label. Secure the new fan with screws, spacers, nuts, and washers.
43	Use new tie wraps to secure the power cord to the fan.
44	Reattach the wiring to the sensor switch as noted in step 34.
45	Reconnect the sensor switch to the switch bracket. Secure the switch in position with screws, nuts, and washers.
46	Inspect the fan operation. If all fans work correctly, go to step 53. If any fan does not work correctly, go to step .
47	Inspect the sails of the air flow sensors and replace or repair any sails that appear defective.
48	Disconnect the wiring to one of the sensor switches. Note the position and color of the wires. If the FAN FAIL lamp remained on when you disconnected the wiring of the air flow sensor, go to step 51. If the FAN FAIL lamp did not remain on when you disconnected the wiring of the air flow sensor, go to step 49. ***Note:*** A FAN FAIL lamp that did not remain on when you disconnected the wiring indicates a sensor switch that has faults.
49	Remove the sensor switch that has faults.
50	Attach the replacement of the sensor switch to the switch bracket. Secure the new sensor in position with screws, nuts, and washers.
51	Reconnect the wiring to the sensor switch, as noted in step 48.

—sheet 4 of 5—

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Procedure 1-28
Repairing and replacing NT3X90AC cooling units (continued)

Step	Action
52	Repeat step 48 through step 51 to check all sensor switches. If the FAN FAIL lamp is off, go to step 53. If the FAN FAIL lamp is on, go to step .
53	Ease the cooling unit completely into the frame.
54	Insert the eight screws that secure the brackets to the sides of the cooling unit. To insert the screws, use a 5/16-inch ratchet and extension.
55	Reinstall the side rail on the front of the frame. If the FAN FAIL lamp is off, go to step 56. If the FAN FAIL lamp is on, go to step .
56	Reinstall the air intake grill and filter assembly at the front of the cooling unit.
57	Turn OFF the FAN FAIL OVERRIDE switch on the FSP.
58	Go to step 60.
59	**WARNING** **Loss of frame cooling** Do not leave a cooling unit that has faults in the frame. If you cannot repair the bad cooling unit immediately, replace it with a unit that operates correctly. Go to step 15 and follow the necessary parts of the procedure. For additional help, contact the next level of support.
60	The procedure is complete.

—sheet 5 of 5—

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Replacing a 3.5 inch disk drive unit NTFX32BA

Application

Use this procedure to replace a 3.5 in. (89-mm) disk drive unit (DDU) NTFX32BA.

Contact the next level of support before you start this procedure.

Definition

The DDU is a data storage device on the storage media card NTFX32AA in the input/output module (IOM). The integrated services module (ISM) shelf contains the IOM. Replace any DDU that has a fault. Do not copy files from a DDU that has a fault; backup files are available on the parallel device.

Common procedures

There are no common procedures.

Action

Procedure 1-29 provides steps and actions to replace a 3.5 in. (89-mm) DDU NTFX32BA. Figure 1-46 provides an overview of the procedure.

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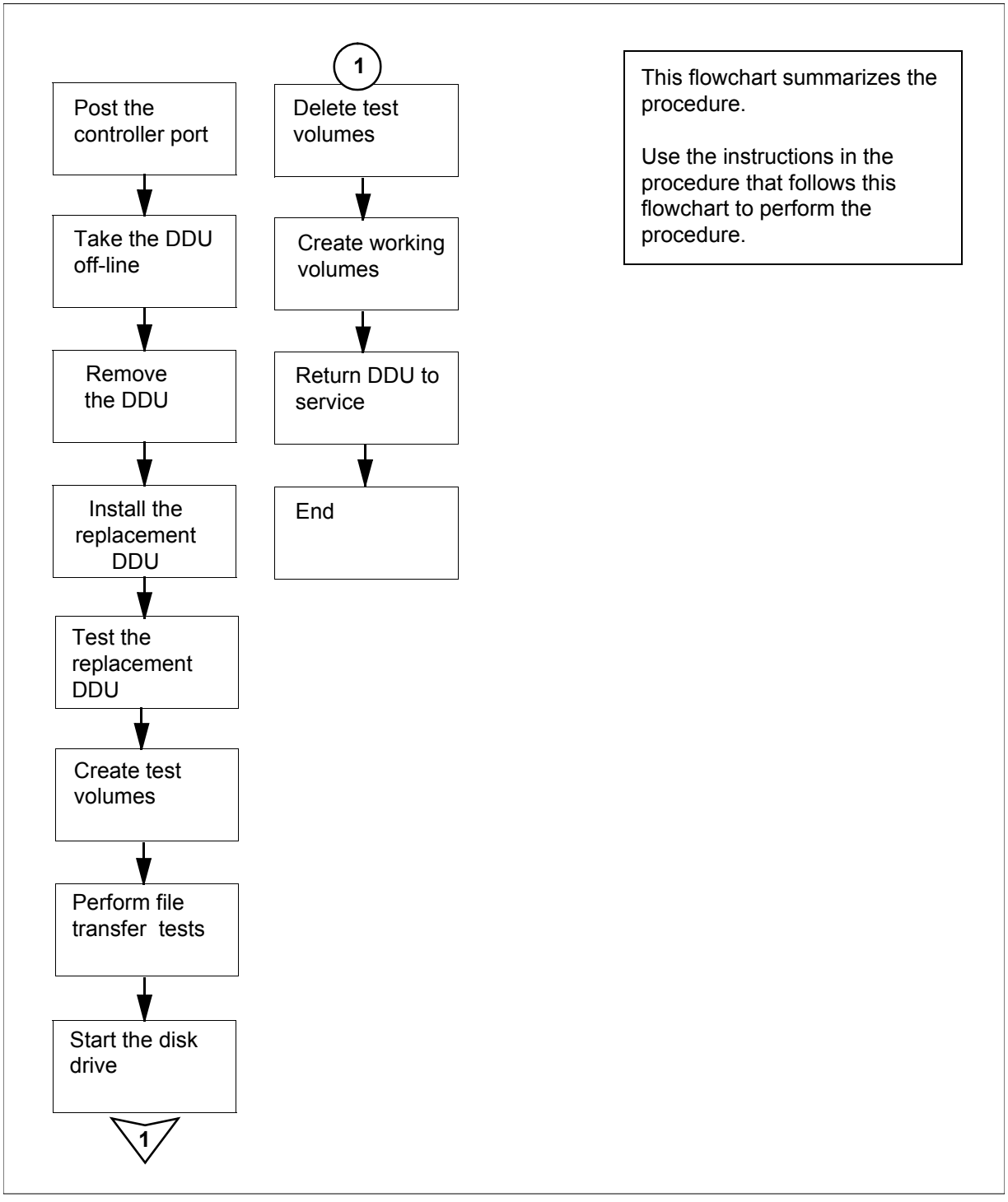
Figure 1-46
Summary of Replacing a 3.5 in. disk drive unit NTFX32BA



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Procedure 1-29 describes how to replace a 3.5 in. (89-mm) disk drive unit (DDU) NTFX32BA.

Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA

Step	Action

1

CAUTION
Loss of service
Disk allocation is difficult and dangerous errors are possible. Contact the next level of support before you perform this procedure.

Obtain the following items:

- replacement DDU
- flat-blade screwdriver with 1/4-in. (3-mm) blade
- A shipping carton for the replaced DDUs

When possible, use the carton of the new DDUs.

At the MAP terminal, type **>MAPCI;MTC;IOD** and press **Enter** to access the IOD level of the MAP display.

Example of a MAP display:

```
IOD
IOC  0  1  2  3
STAT .  .  .  S

DIRP: SMDR B XFER:   .   SLM :   .   NPO:   .   NX25:  .
MLP :   .    DPPP:   .   DPPU:   .   SCAI :
```

2 To post the input/output module (IOM) controller for the replaced DDU, type **>IOC *ioc_no*** (where *ioc_no* is the number of the affected IOM) and press **Enter**.

Example of a IOM MAP display:

```
IOC   PORT 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
(IOM) STAT . . . - . . - - - .  -  -  -  -  -  -  -  -
0     TYPE C C C   C M       M                    S  S
           O O O   O T       P                    C  C
           N N N   N D       C                    S  S
```

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action

3	To post the port for the replaced DDU, type **>PORT *port_no*** (where *port_no* is the port number of the DDU device) and press **Enter**.
	Example of a IOM MAP display:
	`Port 16 Unit 0`
	`(SCSI) User system Drive_State`
	`Status Ready On_line`

4	Record the unit number of the replaced DDU. ***Note:*** In the example in step 3, the number of the DDU is 0.
5	Determine the state of the DDU. The state of the disk drive is under the Drive_State header on the MAP display. If the DDU is in an allocated state, go to step 6. It the DDU is in any other state, go to step 38.

6	To determine if open files exist on the DDU, type **>ALLOC** and press **Enter**.
	Example of a MAP display:
	`VOLID VOL_NAME SERIAL_NO BLOCKS ADDR TYPE R/O FILES_OPEN`
	`0 IMAGE 2800 45000 D000 0 NO 0`
	`1 XPMLOADS 2801 35000 D000 0 NO 0`
	`2 RTMLOADS 2802 20000 D000 0 NO 0`
	`.`
	`.`
	`.`
	`7 SMDR 2807 5000 D000 0 NO 0`
	`8 AMA1 2808 5000 D000 0 NO 0`
	`9 TST 2809 50 D000 0 NO 0`
	`10 AMA2 280A 500 D000 0 NO 0`
	If open files are present, go to step 37.
	If open files are not present, go to step 7.

7	Record the name and size (in blocks) of all disk volumes.

—sheet 2 of 7—

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action

8	To test the DDU, type **>TST** and press **Enter**.
	Example of a MAP display:
	`Process may take up to 3 min`
	`Failed`
	`Drive is disconnected`
	`.`
	`Site Flr RPos Bay-Id Shf Description Slot EqPec`
	`HOST 01 A00 ISME 03 32 IOC 0 DDU 04 FX30AA`
	`HOST 01 A00 ISME 03 32 IOC 0 DDU 04 FX31AA`
	If the test passes, go to step 32.
	If the test fails, go to step 9.

9	From the MAP response in step 8, record the location (floor, row, bay, and shelf) of the replaced DDU.
10	Notify all users that there will be an interruption of service for the device. Wait until all users stop use of the device before you proceed to the next step.

11	To manually busy the DDU, type **>BSY** and press **Enter**.
	Example of a MAP display:
	`bsy`
	`OK`
	If the BSY command passes, go to step 12.
	If the BSY command fails, go to step 38.

12	To manually stop the DDU, type **>STOP** and press **Enter**. *Example of a MAP display:* `Disk stop successful` ***Note:*** When the DDU spins down, proceed to step 13. The status code appears under the Drive_State on the MAP display. If the STOP command passes, go to step 13. If the STOP command fails, go to step 38.

—sheet 3 of 7—

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action
13	To take the DDU off-line, type **>OFFL** and press **Enter**.
14	At the ISM shelf, locate the NTFX32BA DDU that has a fault in the IOM storage media card NTFX32AA in slot 4 of the ISM shelf. Figure 1-47 provides a graphic. Check the LED on the media card faceplate. If the LED is lit, go to step . If the LED is not lit, go to step 15.
15	Perform the correct procedure in the *Card Replacement Procedures* to replace the media card NTFX32.
16	**WARNING** **Static electricity damage** To handle the DDU, wear a wrist-strap that connects to the wrist-strap grounding point on the modular supervisory panel (MSP). The wrist-strap protects against static electricity damage. Unscrew the spring loaded lock mechanism on the faceplate of the disk carrier, as shown in Figure 1-48. The disk carrier electrically connects the DDU to the media card. Unscrew the lock mechanism to its complete limit before you use the ejector to remove the unit. *After the drive disconnects, the red LED will be ON and the green LED will be OFF.*
17	Pull down on the ejector to push the DDU carrier away from the media card, as shown in Figure 1-49.
18	Remove the DDU and the carrier by pulling the DDU and the carrier straight out of the media card, as shown in Figure 1-50.

—sheet 4 of 7—

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action
19	 **WARNING** **Ejector arm damage** Ensure that the ejector arm is flat and in the up position on the faceplate. Insert the DDU in the media card faceplate. Complete this procedure to avoid damage to the ejector arm. Insert the new DDU through the aperture in the media card faceplate. Ensure that the connector at the end of the unit will plug into the receptacle on the card. Reconnect the DDU electrically with the media card. Turn the spring-loaded lock mechanism to the right to make the connection between the new DDU and the media card. After the drive connects, the green LED will be ON and the red LED will remain OFF.

20	At the MAP terminal, type **>BSY** and press **Enter** to manually busy the DDU.
	
	Example of a MAP display:
	`bsy`
	`OK`
	
	If the BSY command passes, go to step 21.
	
	If the BSY command fails, go to step 38.

21	To start the DDU, type **>START** and press **Enter**. *Example of a MAP response:* `Disk start successful`

22	To test the DDU, type **>TST** and press **Enter**.
	
	Example of a MAP display:
	`Process may take up to 3 minutes.`
	`Test OK`
	
	If the TST command passes, go to step 23.
	
	If the TST command fails, go to step 38.

—sheet 5 of 7—

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action
23	To perform volume allocation tests, follow the procedure *Allocating test volumes on 8-in., 5.25-in., or 3.5 in. DDUs* in *Routine Maintenance Procedures*. When the procedure is complete, return to this point.
24	To perform interference and file transfer tests, follow the procedure *Performing DDU interference and file transfer tests* in *Routine Maintenance Procedures*. When the procedure is complete, return to this point.
25	To access the CI level of the MAP display, type **>QUIT ALL** and press **Enter**.
26	To access the allocation utility, type **>DSKALLOC *ddu_no*** (where *ddu_no* is the recorded DDU number in step 4) and press **Enter**.
27	To confirm the command, type **>YES** and press **Enter**.
28	To add a volume to the DDU, type **>ADD *vol_name vol_size*; DIRADD *vol_name*** (where *vol_name* is the recorded volume name in step 7 and *vol_size* is the recorded volume size in step 7), then press **Enter**.
29	Repeat step 28 for each disk volume that remains.

30	To enforce the allocation of the volumes, type **>UPDATE** and press **Enter**.
	Example of a MAP response:
	`WARNING: A break HX of this process may cause severe corruption on the disk that may require it to be reformatted.`
	`Writing label of volume IMAGE`
	`Successful`
	`Starting initialization of volume IMAGE`
	`A break HX of this process may cause severe corruption on this volume that may require reinitialization of all non-initialized volumes.`
	`Number of bad blocks=0`
	`Successful`
	`Update done`

31	To quit the allocation utility, type **>QUIT** and press **Enter**.
32	To post the IOM controller port for the DDU, type **>MAPCI;MTC;IOD;IOC *ioc_no*;PORT *port_no*** (where *ioc_no* is the number of the input/output controller and *port_no* is the number of the DDU port) and press **Enter**.

—sheet 6 of 7—

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Procedure 1-29
Replacing a 3.5 inch disk drive unit NTFX32BA (continued)

Step	Action

33	To return the DDU to service, type **>RTS** and press **Enter**.
	Example of a MAP display:
	`Port 16 Unit 0`
	`(SCSI) User system Drive_State`
	`Status BSY Online`
	If the RTS command passes, go to step 34.
	If the RTS command fails, go to step 38.

34	Pack the replaced DDU in a carton and send it to the correct repair location. ***Note:*** For additional information on the return of equipment, refer to the correct procedure in this document.
35	Record the following information in your office records: • the date of replacement of the damaged DDU • the serial number of the damaged DDU • the indications that prompted the DDU replacement
36	A major or minor alarm can rise under the IOD header of the MAP display at the start of this procedure. Determine if the alarm cleared. If the alarm clears, go to step 39. If the alarm does not clear, go to step 38.
37	You cannot busy the IOM controller card when files are open. If you busy the card, loss of billing data can result. For additional help, contact the person responsible for the next level of support.
38	For additional help, contact the person responsible for the next level of support.
39	The procedure is complete.

—sheet 7 of 7—

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Figure 1-47
IOM storage media card NTFX32AA

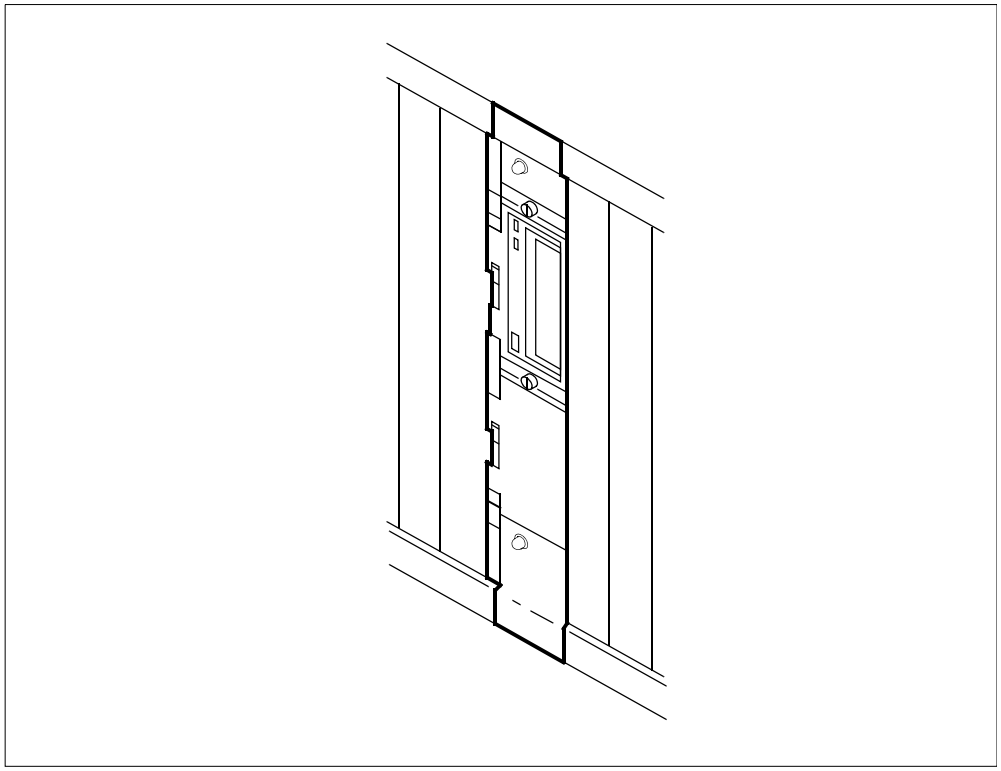

Figure 1-48
Unscrewing the lock mechanism

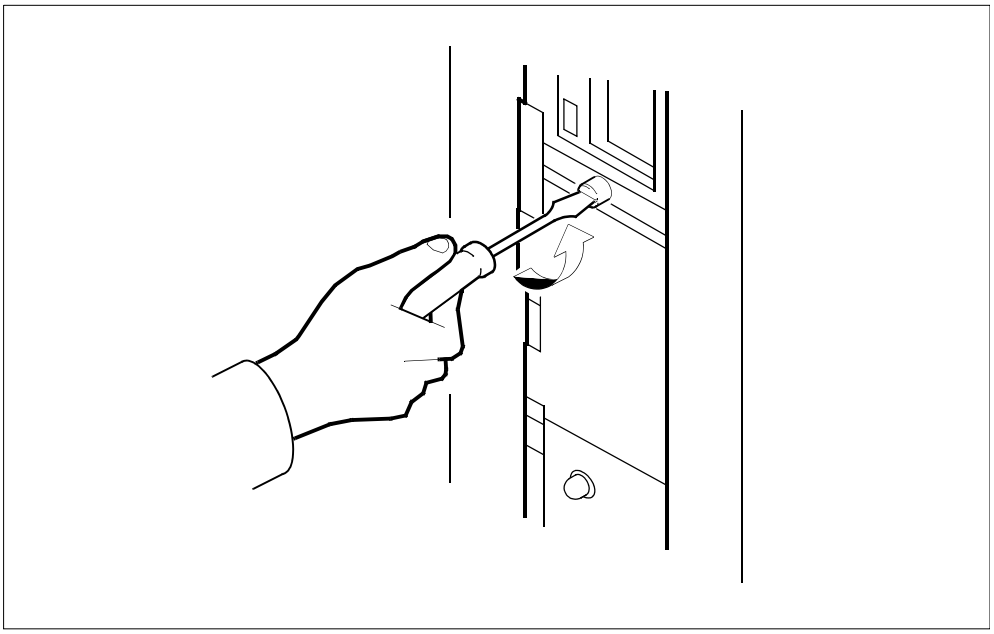

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Figure 1-49
Pulling down ejector and pushing DDU carrier away from media card

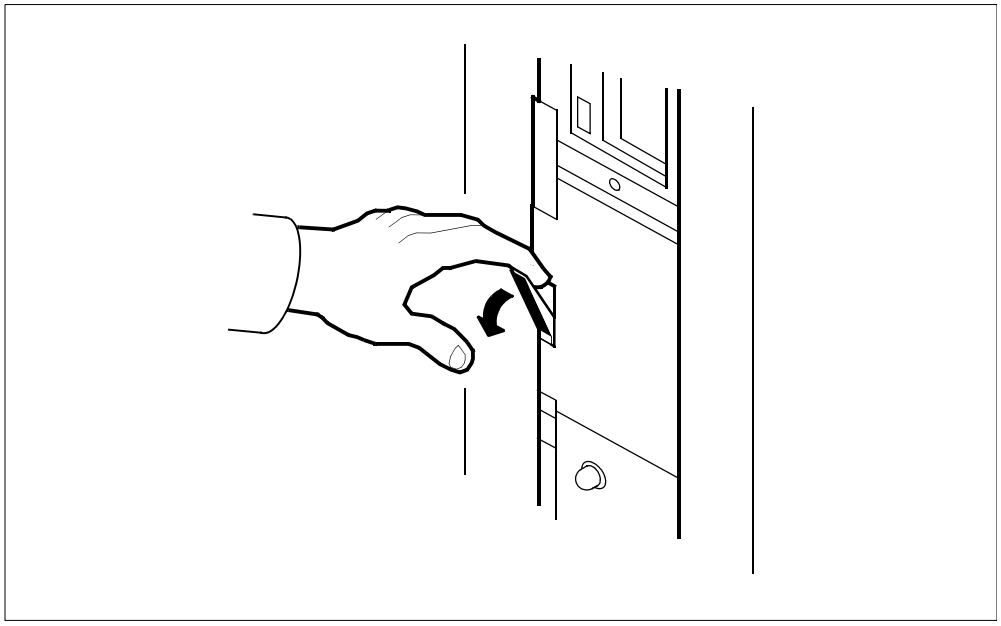
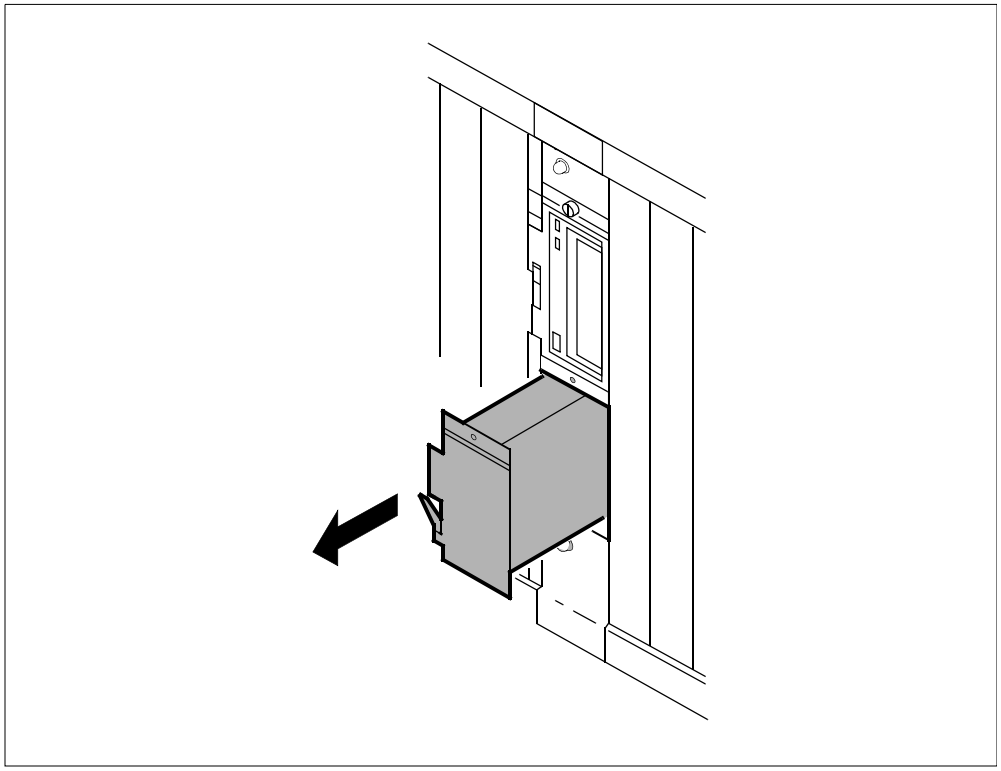


Figure 1-50
Pulling the DDU and the carrier straight out of the media card



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Replacing an 8-inch or a 5.25-in. disk drive unit

Application

Use this procedure to replace an 8-inch (203-mm) or a 5.25-inch (133-mm) disk drive unit (DDU).

Contact the next level of support before you start this procedure.

Definition

The DDU is a data storage device on the DMS-100 switch. Replace a DDU when faults occur and the device cannot record. Do not copy the files from a DDU that has a fault. Backup files are available on the parallel device.

Common procedures

There are no common procedures.

Action

Procedure 1-30 provides steps and actions to replace an 8-inch (203-mm) or a 5.25-inch (133-mm) DDU. Figure 1-51 provides an overview of the procedure.

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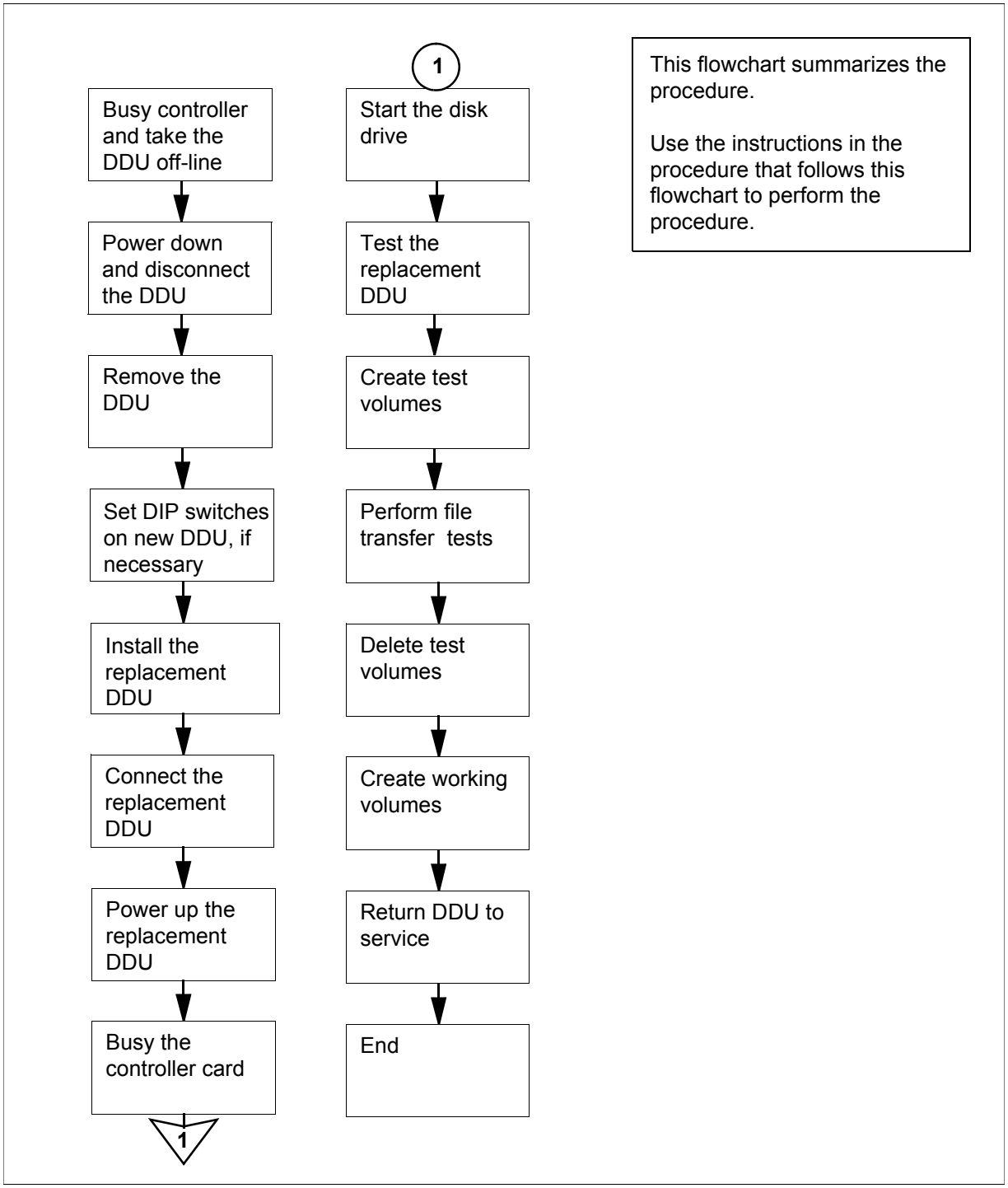
Figure 1-51
Summary of Replacing an 8-inch or a 5.25-inch disk drive unit



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Procedure 1-30 describes how to replace an 8-inch (203-mm) or a 5.25-inch (133-mm) disk drive unit (DDU).

Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit

Step	Action

1

CAUTION
Loss of service
Disk allocation is difficult and dangerous errors are a possibility. Contact the next level of support before you perform this procedure.

At the MAP terminal, obtain the following items:

- replacement DDU
- flat-bladed screwdriver with 1/4-in. (3-mm) blade
- 5/16-in. (7-mm) Allen wrench

2 Obtain a strong shipping carton for the DDU you will replace. If possible, use the carton of the new DDU.

To access the IOD level of the MAP display, type **>MAPCI;MTC;IOD** and press **Enter**.

Example of a MAP display:

```
IOD
IOC      0    1
STAT     L    .
```

3 To post the IOC for the replaced DDU, type **>IOC *ioc_no*** (where *ioc_no* is the number of the input/output controller that holds the controller card for the DDU, from 0 to 9), then press Enter.

Example of a MAP display:

```
IOC CARD   0    1    2    3    4    5    6    7    8
 2  PORT  0123 0123 0123 0123 0123 0123 0123 0123 0123
   STAT  .... .... ---- .--- ---- P--- ---- .--- .---
   TYPE  CONS CONS      MPC       MPC       MPC  DDU
```

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action

4	To post the controller card for the DDU, type **>CARD *card_no*** (where *card_no* is the number of the controller card, from 0 to 8)and press **Enter**.
	
	In the example in step 3, the number of the controller card is 8.
	
	Example of a MAP display:
	
	`Card 8  Unit    0`
	`       User    SYSTEM  Drive_State`
	`       Status  BSY     spinning`

5	Record the number of the replaced DDU. In the example in step 4, the number of the DDU is 0.
6	Determine the state of the disk drive. The Drive_State header displays the state of the disk drive on the MAP display. If the disk drive is `being allocated`, go to step 68. If the disk drive is anything else, go to step 9.

7	To determine if any files are open on the DDU, type **>ALLOC** and press **Enter**.
	
	Example of a MAP response:
	
	`VOLID  VOL_NAME  SERIAL_NO  BLOCKS  ADDR  TYPE  R/O  FILES_OPEN  0`
	`IMAGE  2800  45000  D000  0  NO  0  1  XPMLOADs`
	`2801  35000  D000  0  NO  0  2  RTMLOADS  2802`
	`20000  D000  0  NO  0  .  .  .  7  SMDR  2807`
	`5000  D000  0  NO  0  8  AMA1  2808  5000  D000`
	`0  NO  0  9  TST  2809  50  D000  0  NO`
	`0  10  AMA2  280A  500  D000  0  NO  0`
	
	If open files are present, go to step 67.
	
	If open files are not present, go to step 8.

8	Record the name and size (in blocks) of each disk volume.

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action

9	To test the disk drive, type **>TST** and press **Enter**.
	Example of a MAP response:
	`Process may take up to 3 minutes.`
	`Failed`
	`Drive is disconnected`
	
	`Site Flr RPos Bay-id Shf Description Slot EqPec`
	`HOST 01 A00 IOE 00 04 IOC 0 DDU 02 1X62`
	`HOST 01 A00 IOE 00 04 IOC 0 DDU 22 0X67`

10	From the MAP response in step 9, record the area (floor, row, bay, and shelf) of the DDU that requires replacement.
11	To manually busy the controller, type **>BSY** and press **Enter**. If the BSY command passes, go to step 12. If the BSY command fails, go to step 67.
12	To stop the DDU manually, type **>STOP** and press **Enter**. Wait until the DDU spins down before you proceed to step 13. The status code `spun_down` appears under the Drive_State header on the MAP display. If the STOP command passes, go to step 13. If the STOP command fails, go to step 68.
13	To off-line the disk drive, type **>OFFL** and press **Enter**.
14	 **WARNING** **Static electricity damage** To handle the DDU, wear a wrist-strap that connects to a grounding point. Grounding points are on the frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist-strap protects against static electricity damage. At the front of the DDU shelf, set the power switch on the power converter to the OFF position.
15	Ensure that the converter fail LED on the power converter card lights. The lit fail LED of the power converter card indicates that the power is OFF.

—sheet 3 of 9—

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action
16	Remove the four mounting screws to remove the panel in front of the DDU.
17	The next action depends on the mounting configuration for the DDU. If the DDU mounts vertically on tracks, go to step 18. If the DDU mounts horizontally on a 14-inch DDU drawer frame, go to step 38.
18	At the back of the DDU shelf, disconnect the power cable from the back of the DDU, as shown in Figure 1-52.
19	**WARNING** **Equipment damage** Retaining clips holds the ribbon cable in place, and the cable disconnects when the clips release. Do not pull on the cable to disconnect it because you might rip the connector socket away from the disk drive unit. Release the retaining clips to unplug the connector. This action disconnects the DDU end of the ribbon cable. See Figure 1-52.
20	Carefully slide the DDU from the frame until the spring clip on the upper slider causes the DDU to stop, as shown in Figure 1-53.
21	Determine if Allen screws are present. If Allen screws are present, go to step 22. If Allen screws are not present, go to step 23.
22	Remove Allen screws with an Allen wrench.
23	Press the spring clip and pull the DDU free of the frame.
24	At a work table, place the DDU on its front end on a flat surface where room is available to work on two DDUs. ***Note:*** The front end of the DDU is opposite the end that has the power and ribbon cable connectors.

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action
25	Complete a return label and secure it to the removed DDU. ***Note:*** For additional information on the return equipment, refer to the correct procedure in this document.
26	Remove the replacement DDU from the box. Place the DDU on its front end on a flat surface.
27	The replacement DDU can have dip switches. Ensure that you set the dip switches to the same settings as the dip switches on the removed DDU.
28	To remove the upper slider from the removed DDU, remove the two screws that hold the slider in place, as shown in Figure 1-54.
29	Attach the upper slider to the top of the replacement DDU.
30	To remove the lower slider assembly from the removed DDU, remove the four screws that hold the slider assembly in place, as shown in Figure 1-55.
31	To remove the rectangle-shaped slider mounting plate from the removed DDU, remove the two screws that hold the plate in place, as shown in Figure 1-56.
32	Attach the slider mounting plate to the bottom of the replacement DDU. See Figure 1-56.
33	Attach the lower slider assembly to mounting plate. See Figure 1-55.
34	At the front of the DDU shelf, slide the replacement DDU into the tracks on the frame. Slide the DDU until the spring clip on the upper slider causes the DDU to stop. See Figure 1-53.
35	Press the spring clip and slide the DDU the rest of the way into the frame.
36	**DANGER** **Loss of data** Do not twist the ribbon cable. Failure to route the ribbon cable correctly can result in signal interference, which can cause a loss of data. At the rear of the DDU shelf, reconnect the ribbon cable. Hold the connector in place and snap the retainer clips into place. See Figure 1-52.
37	Connect the power cable into the back of the DDU. Go to step 47.

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action
38	Disconnect the power cable from the back of the DDU.
39	**WARNING** **Equipment damage** The retaining clips hold the ribbon cable in place, and the cable disconnects when the clips release. Do not pull on the cable to disconnect it because you might rip the connector socket away from the disk drive unit. To disconnect the DDU end of the ribbon cable, release the retaining clips to unplug the connector.
40	At the front of the DDU shelf, carefully slide the DDU out of the frame. Slide the DDU until the spring clips on the sides of sliders cause the DDU to stop.
41	Remove the four screws that mount the DDU to the two mounting brackets on the drawer, as shown in Figure 1-57.
42	Remove the DDU from the drawer.
43	Place the replacement DDU in position between the mounting brackets. ***Note:*** Position the DDU so that the ribbon cable connector is near the top edge of the DDU. Position the DDU so that the connector is at the back of the DDU shelf.
44	Attach the DDU to the mounting brackets. See Figure 1-57.
45	Press the spring clips on the sliders and slide the DDU back into the frame.
46	Connect the ribbon and power cables.
47	At the front of the frame, reset the power converter: a. Set the power switch on the converter to ON. b. Press and hold the RESET button on the power converter. c. When the CONVERTER FAIL lamp turns off, release the RESET button.

—sheet 6 of 9—

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action
48	At the MAP terminal, type **>BSY** and press **Enter** to manually busy the controller. If the BSY command passes, go to step 49. If the BSY command fails, go to step 68.
49	To start the disk drive motor, type **>START** and press **Enter**. *MAP response:* `Disk Start Successful`

50	To test the disk drive, type **>TST** and press **Enter**.
	Example of a MAP display:
	`Card 8  Unit    0`
	`       User    SYSTEM  Drive_State`
	`       Status  BSY     spinning`
	If the TST command passes, go to step 51.
	If the TST command fails, go to step 68.

51	To perform volume selection tests, follow the procedure, *Allocating test volumes on 8-in., 5.25-in., or 3.5-in. DDUs* in *Routine Maintenance Procedures*. When the procedure is complete, return to this point.
52	To perform interference and file transfer tests, follow the procedure *Performing DDU interference and file transfer tests* in *Routine Maintenance Procedures*. When the procedure is complete, return to this point.
53	To access the CI level of the MAP display, type **>QUIT ALL** and press **Enter**.
54	To access the selection utility, type **>ALLOC *ddu_no*** (where *ddu_no* is the DDU number, from 0 to 9, recorded in step 5) and press **Enter**.
55	To confirm the command, type **>YES** and press **Enter**.
56	To add a volume to the disk, type **>ADD *vol_name vol_size*** (where *vol_name* is the volume name recorded in step 8 and *vol_size* is the volume size recorded in step 8) and press **Enter**.
57	To add the volume to the root directory, type **>DIRADD *vol_name*** (where *vol_name* is the volume name recorded in step 8) and press **Enter**.
58	Repeat step 55 through step 57 for each of the remaining disk volumes.

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action

59	To enforce the allocation of the volumes, type **>UPDATE** and press **Enter**.
	Example of a MAP response:
	`WARNING: A break HX of this process may cause severe corruption on the disk that may require it to be reformatted.`
	`Writing label of Volume IMAGE`
	`Successful`
	`Starting Initialization of Volume IMAGE`
	`A break HX of this process may cause severe corruption on this volume that may require reinitialization of all non initialized volumes.`
	`Number of Bad Blocks = 0`
	`Successful`
	`Update Done`

60	To quit the allocation utility, type **>QUIT** and press **Enter**.
61	To post the controller card for the DDU, type **>MAPCI;MTC;IOD;IOC *ioc_no*;CARD *card_no*** (where *ioc_no* is the number of the input/output controller that holds the controller card for the DDU, from 0 to 9 and *card_no* is the number of the controller card, from 0 to 8), then press **Enter**.

62	To return the disk drive to service, type **>RTS** and press **Enter**.
	Example of a MAP display:
	`Card 8 Unit 0`
	`User SYSTEM Drive_State`
	`Status BSY on-line`
	If the RTS command passes, go to step 63.
	If the RTS command fails, go to step 68.

63	At the front of the DDU shelf, reinstall the panel in front of the DDU.
64	At the back of the DDU shelf, pack the DDU that you put in a carton. Send the carton to the correct repair location. ***Note:*** For additional information on the return of equipment, refer to the correct procedure in this document.

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Procedure 1-30
Replacing an 8-inch or a 5.25-inch disk drive unit (continued)

Step	Action
65	Record the information below in your office records: • the date of DDU replacement • the serial number of the new DDU • the problems that prompted the DDU replacement
66	A major or minor alarm can rise under the IOD header of the MAP display at the start of this procedure. If an alarm rises, determine if the alarm cleared. If the alarm cleared, go to step 69. If the alarm did not clear, go to step 68.
67	You cannot busy the controller card if files are open. This action can result in loss of billing data.
68	For additional help, contact the person responsible for the next level of support.
69	The procedure is complete.

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Figure 1-52
Disconnecting the power cable

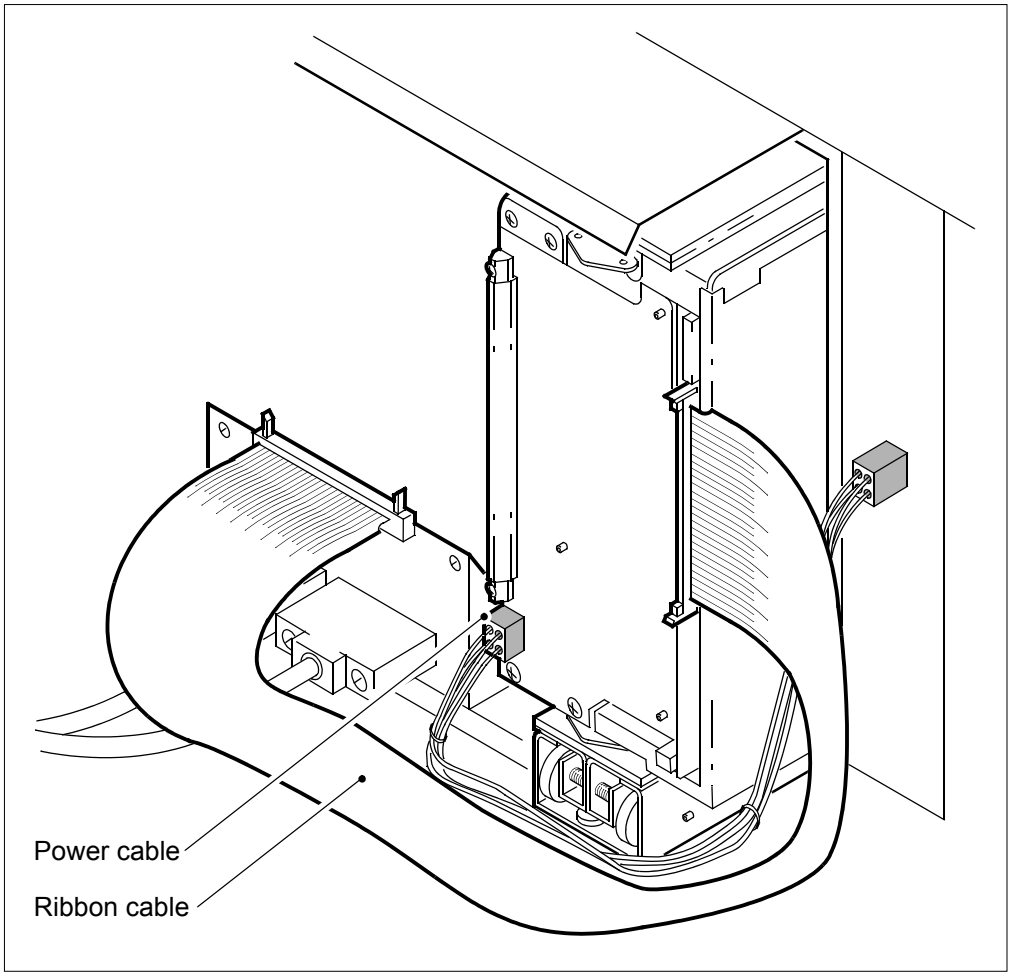

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Figure 1-53
Sliding the DDU from the frame

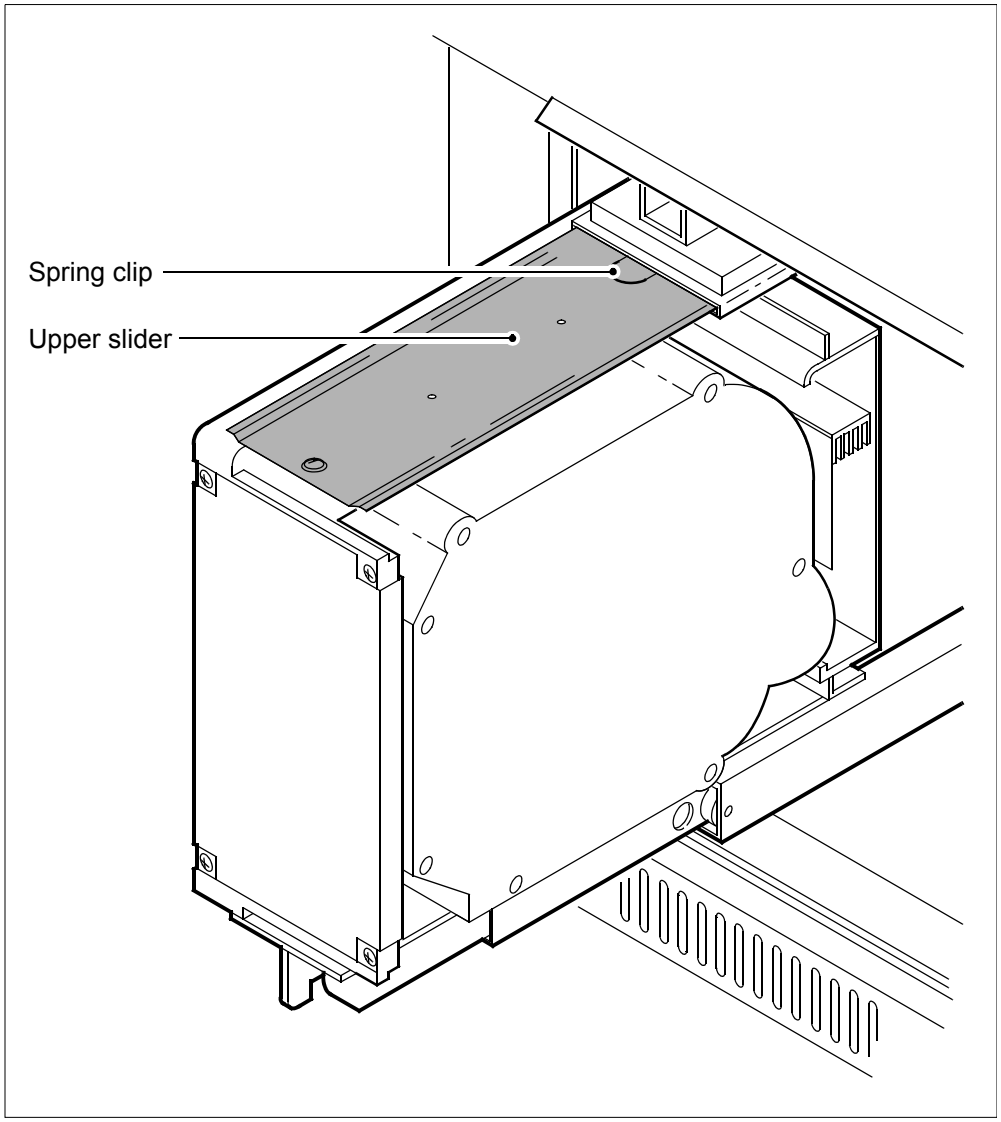

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Figure 1-54
Removing the upper slider

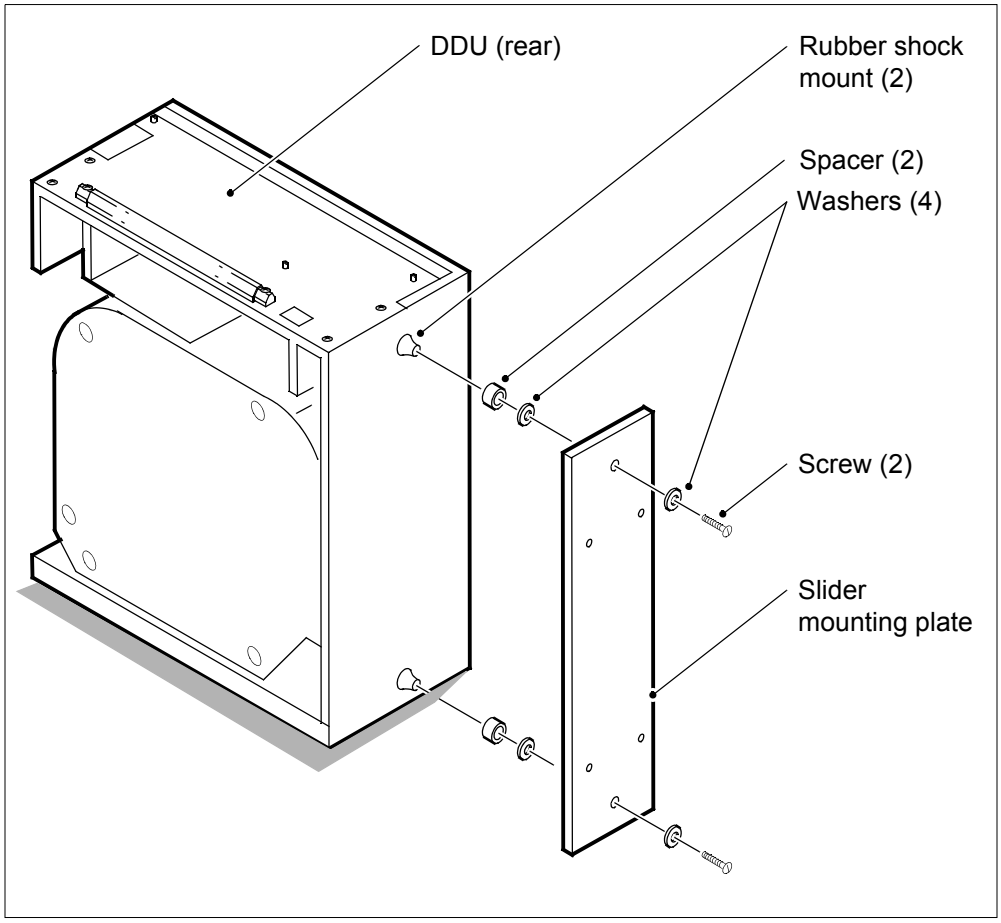

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Figure 1-55
Removing the lower slider

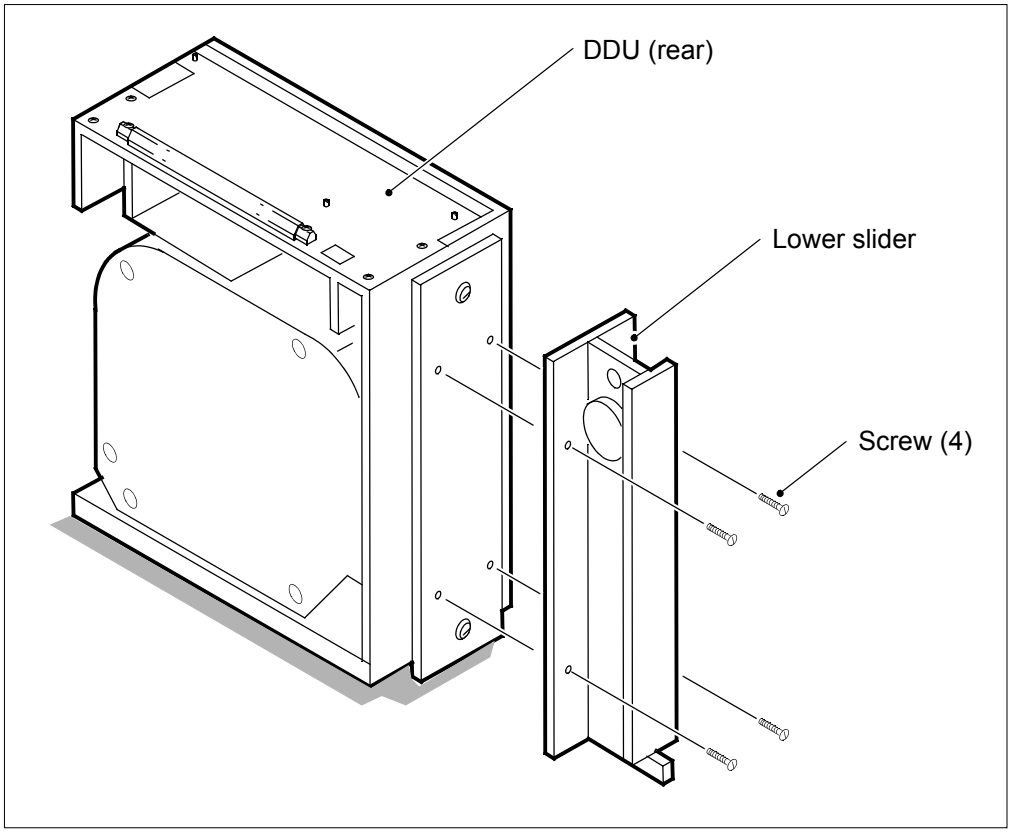

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Figure 1-56
Removing the slider mounting plate

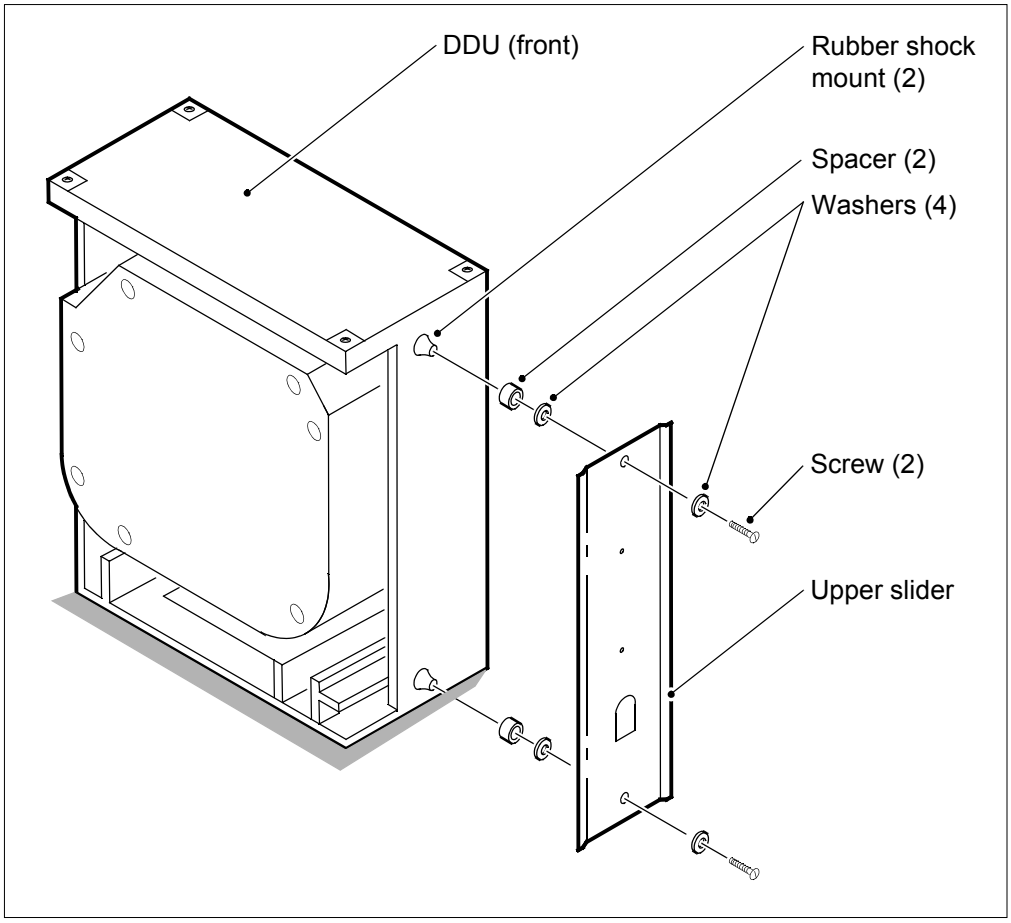

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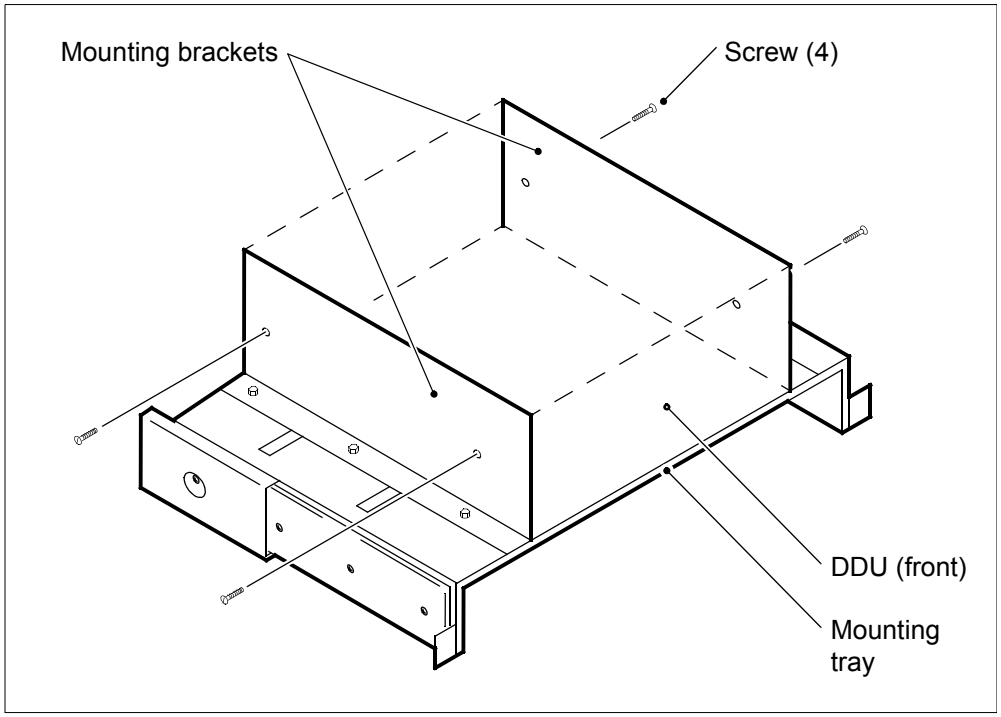
Figure 1-57
Removing DDU mounting screws



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Replacing a 14-inch disk drive unit

Application

Use this procedure to remove a 14-inch (355-cm) disk drive unit (DDU) and replace it with another 14-inch DDU. Contact your next level of support before you perform this procedure.

Definition

The DDU is a storage device on the DMS-100 switch. Replace a DDU that has faults and cannot record. Do not copy the files from a DDU that has faults. Backup files are available on the parallel device.

Common procedures

There are no common procedures.

Action

Procedure 1-31 provides steps and actions to remove a 14-inch (355-cm) DDU
and replace it with another 14-inch DDU. Figure 1-58 provides an overview of the procedure. Figure 1-59 shows a 14-inch DDU.

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Figure 1-58
Summary of Replacing a 14-inch disk drive unit

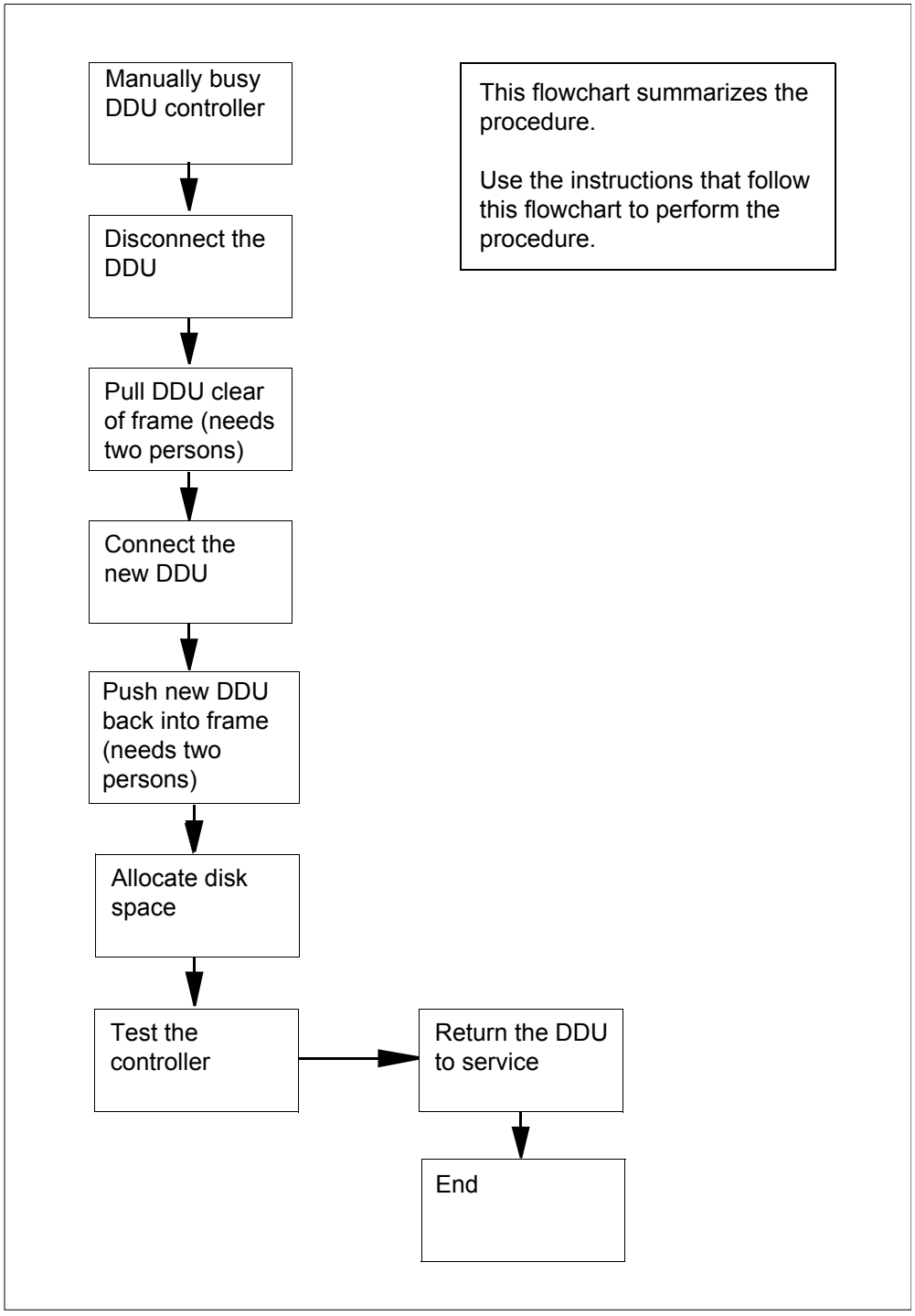

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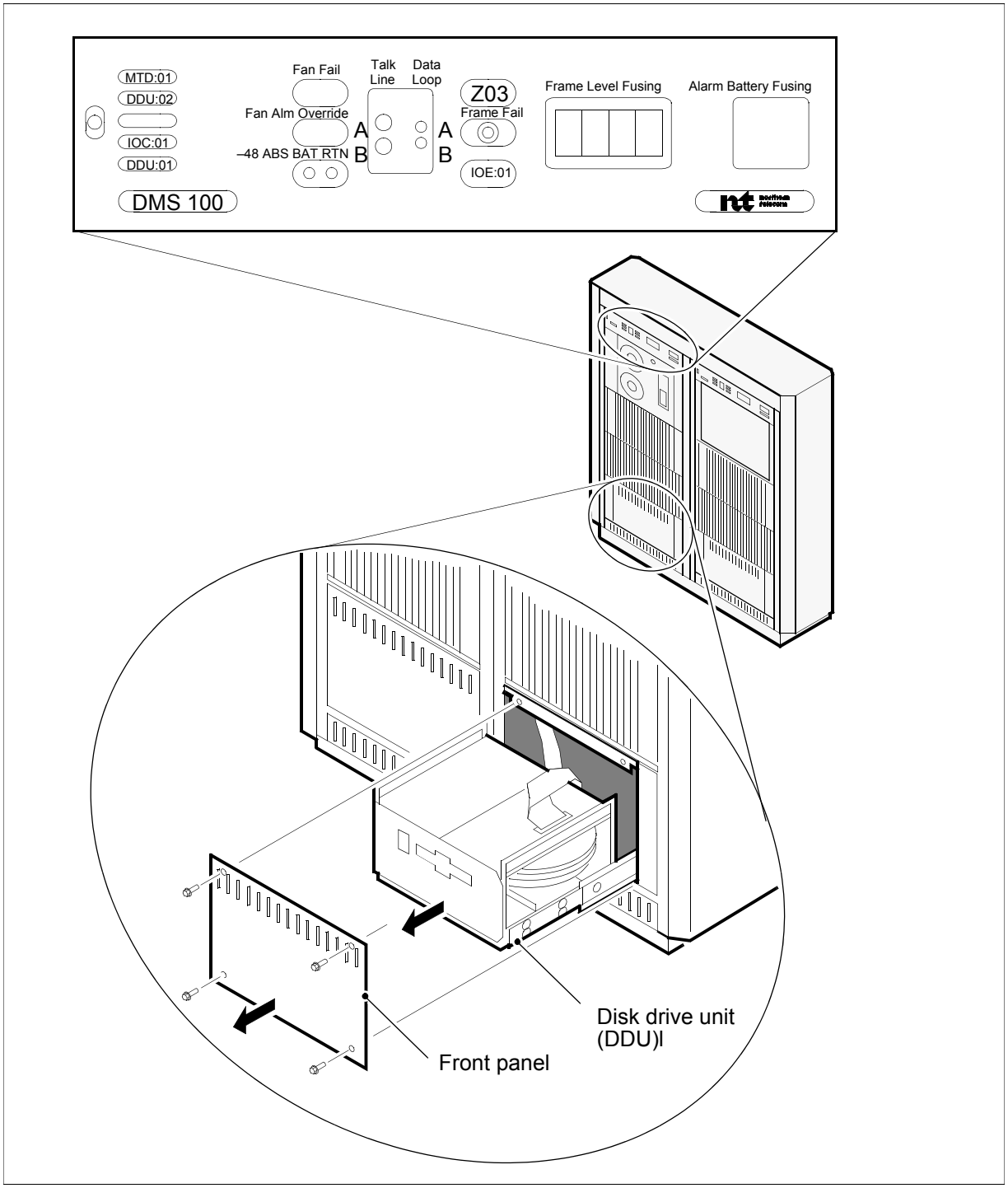
Figure 1-59
14-inch disk drive unit



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Procedure 1-31 describes how to remove a 14-inch (355-cm) disk drive unit (DDU) and replace it with another 14-inch DDU.

Procedure 1-31
Replacing a 14-inch disk drive unit

Step	Action
1	**CAUTION** **Loss of service** Disk allocation is difficult and the possibility for a severe error exists. Contact the next level of support before you perform this procedure. At your current position, obtain the following items: • a light source • a mirror • a set of nut driver • a 1/4-inch flat-bladed screwdriver • side cutters • cable ties
2	Obtain a shipping carton for the DDU that has faults and you will replace. If possible, use the carton that stores the new DDU.
3	At the MAP terminal, type **>MAPCI;MTC;IOD** and press the **Enter** key to access the IOD level of the MAP display. *Example of a MAP display:* IOD IOC 0 1 STAT L .
4	Note any alarm under the IOD header and the type of alarm.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action

5	To post the IOC for the DDU that has faults, type **>IOC *ioc_no*** (where *ioc_no* is the number of the input/output controller that holds the controller card for the DDU, from 0 to 19) and press the **Enter** key.
	Example of a MAP display:
	`IOC CARD  0    1    2    3    4    5    6    7    8`
	`2   PORT  0123 0123 0123 0123 0123 0123 0123 0123 0123`
	`    STAT  .... .... ---- .--- ---- P--- ---- .--- .---`
	`    TYPE  CONS CONS      MPC       MPC       MPC  DDU`

6	Record the number of the controller card for the DDU replacement.

7	To post the controller card for the DDU, type **>CARD *card_no*** (where *card_no* is the number of the controller card recorded in step 6) and press the **Enter** key.
	Example of a MAP display:
	`Card 8  Unit    0`
	`       User    SYSTEM  Drive_State`
	`       Status  BSY     spinning`

8	Record the number of the DDU in use. ***Note:*** In the display example in step 7, the number of the DDU is 0.
9	Find the state of the disk drive recorded in step 8. If the state of the disk drive is `being allocated`, go to step 81. If the state of the disk drive is anything else, go to step 10.

10	To determine if open files exist on the DDU, type **>ALLOC** and press the **Enter** key.
	Example of a MAP response:
	`VOLID VOL_NAME SERIAL_NO BLOCKS ADDR TYPE R/O FILES_OPEN`
	`  0   RTMLOADS    2800     50000 D000   0   NO       0`
	`  1   XPMLOADS    2801     65000 D000   0   NO       0`
	`  2   PMLOADS     2802     30000 D000   0   NO       0`
	If files are open, go to step 80.
	If files are not open, go to step 11.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
11	Record the name and size (in blocks) of each volume on the disk.
12	Determine if an alarm is under the IOD header of the alarm banner. If the IOD header displays a minor alarm, go to step 13. If the IOD header displays a major alarm, go to step .

13	To test the disk drive controller, type **>TST** and press the **Enter** key.
	Example of a MAP response:
	`Process may take up to 3 minutes.`
	`Failed`
	`Drive is disconnected`
	
	`Site Flr RPos Bay-id Shf Description Slot EqPec`
	`HOST 01 A00 IOE 00 04 IOC 0 DDU 02 1X62`
	`HOST 01 A00 IOE 00 04 IOC 0 DDU 22 0X67`

14	From the MAP response in step 13, record the bay, shelf, and number of the DDU that you will replace.
15	To manually busy the controller card, type **>BSY** and press the **Enter** key. ***Note:*** Wait until the DDU spins down before you proceed to the next step. When the DDU spins down, the Drive_state header on the MAP display will show `spun_down`. If the BSY command passes, go to step 16. If the BSY command fails, go to step 81.
16	To offline the disk drive, type **>OFFL** and press the **Enter** key.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
17	 **WARNING** **Static electricity damage** When you handle the DDU, wear a wrist strap that connects to a wrist-strap grounding point. A grounding point will be on the frame supervisory panel (FSP) or a modular supervisory panel (MSP). The wrist-strap protects against static electricity damage. At the front of the DDU shelf, find the DDU. If the DDU is in a packaged-core power module (PCPM) or packaged-core maintenance module (PCMM) frame of a switch package, go to step . If the DDU is anything else, go to step 18.
18	Turn OFF the power switch on the power converter next to the DDU. Ensure that the LED on the power converter is on. A lit LED indicates that the power switch is OFF.
19	 **CAUTION** **Remove the correct fuse.** Make sure that you remove the correct fuse. If you remove the wrong fuse, loss of service or a shutdown of MAP terminals and printers can result. Loss of recording space for billing information can occur. Remove the fuse that powers the DDU. ***Note:*** The fuse that powers the DDU is on the frame supervisory panel. If the DDU is not a DMS-100P and the DDU is on shelf 04, go to step 20. If the DDU is not a DMS-100P and the DDU is on shelf 18, go to step 21. If the DDU is not a DMS-100P and the DDU is on shelf 32, go to step 22. If the DDU is in a packaged core power module (PCPM) or a packaged core memory module (PCMM) frame on a DMS-100P switch package, go to step 23.
20	Remove fuse F03. Go to step 25.

—sheet 4 of 11—

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
21	Remove fuse F02. Go to step 25.
22	Remove fuse F01. Go to step 25.
23	Contact your next level of support to obtain the correct fuse numbers.
24	Remove the FSP fuse from the PCPM or PCMM.
25	Remove the panel that covers the DDU. To locate the mounting screws, see Figure 1-59.
26	Carefully slide the DDU out of the frame until the DDU stops. Figure 1-60 shows the spring clips on the sides of the slide rails that cause the DDU to stop.
27	**DANGER** **Risk of personal injury** Do not touch the parts that rotate on the bottom of the DDU. Use the flashlight and the mirror. Look under the DDU to determine if the disk rotation continues. If disk rotation stops, go to step 29. If disk rotation continues, go to step 28.
28	Wait until the disk rotation stops.
29	Locate the carriage and head-locking levers of the DDU. See Figure 1-61.
30	**WARNING** **Damage to the DDU** Make sure that the disk rotation stopped before you lock the carriage and heads. If the disk continues to rotate, damage occurs to the locking mechanism. Set the lever (or levers) so that the carriage and heads lock.
31	Disconnect the power cable from the DDU.

—sheet 5 of 11—

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
32	 **WARNING** **Possible equipment damage** Retainer clips hold the ribbon cable in place. The ribbon cable connector releases when the retainer clips release. Do not pull on the ribbon cable to release it. If you pull the cable, you can damage the ribbon cable or the ribbon cable socket on the DDU. To disconnect the DDU end of the ribbon cable, squeeze the retainer clips.
33	Verify that the power cable on the switch is compatible with the power connector on the replacement DDU. If the power cable is compatible, go to step 35. If the power cable is not compatible, go to step 34.
34	Obtain an adapter from office stores.
35	Remove the two retaining screws that secure the DDU to the slide rails, as shown in Figure 1-62.
36	You need two persons to perform this step. One person stands at the front of the frame, and the other person stands at the back of the frame. The person at the front grasps the rails of the DDU. The front person tilts the front of the DDU to a 45-degree angle and lifts the DDU forward. The front person slowly pulls the DDU clear of the frame. The person at the back ensures that the hardware in the frame does not catch the cables.
37	 **WARNING** **Damage to printed circuit board** If you place the DDU on its sides or its top, you can damage the printed circuit board. At a work table, place the DDU in a vertical position on a flat surface.
38	Obtain a label in order to return the DDU that has faults for repair. Secure the label to the DDU that has faults.

—sheet 6 of 11—

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
39	Unpack the replacement DDU. ***Note:*** Store the DDU that has faults in the box from the new DDU. The other option is to store the DDU that has faults in the box found in step 2.
40	Use the old DDU as a guide to set the top DIP switches on the new DDU. Match the DIP switches on the new DDU to the DIP switches on the old DDU. The other option is to set the top DIP switches on the new DDU to the settings that follow:

DDU: single-PCB 10K Model 6650-10
split-PCB 1J Model 15450-10

Switch #	Function	Setting
1	unit select 1	on
2	unit select 2	off
3	unit select 3	off
4	unit select 4	off
5	skip defect protection	on
6	write enable	on
7	clock transmit	on
8	clock phase	on

DDU: single-PCB 11K Model 6650-10
split-PCB 9F Model 15450-10

Switch #	Function	Setting
1	1 selector/track	off
2	2 selectors/track	on
3	4 selectors/track	off
4	8 selectors/track	off
5	16 selectors/track	on
6	32 selectors/track	off
7	64 selectors/track	off
8	reserved	

41	Completely extend the DDU slide rails.
42	You need two persons to perform this step. One person stands at the front of the frame and the other person stands at the back of the frame. ***Note:*** The person at the front tilts the front of the DDU to a 45-degree angle. The person at the back lifts the DDU into place on the slide rails. The back of the DDU frame must butt against the stops of the slide rails.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
43	Insert and secure the two retaining screws that hold the front cover of the DDU to the frame.
44	To remove the slider assembly from the DDU that has faults, remove the two screws that secure the slider assembly in place, as shown in Figure 1-63.
45	To mount the slider assembly to the replacement DDU, secure the two mounting screws.
46	Connect the power cable from the power converter to the replacement DDU. To make the connection, plug the end of the power cable with the free ground lead to connector J3. Connector J3 is on the bottom of the main PCB on the DDU.
47	Secure the ground lead to the PCB with the provided hardware.
48	Route the cable toward the back of the DDU. Route the cable along the upper rail of the DDU frame on the converter side of the DDU.
49	Use three evenly-spaced plastic cable ties to secure the cable to the upper rail of the DDU.
50	Make sure that you position the cable to avoid interference with the frame hardware or converter when the DDU drawer closes.
51	Plug the converter end of the DDU power cable into connector C04 on the back of the power converter.
52	Obtain the model number of the DDU from the label on the inside red of the DDU. If the model number is 15450, go to step 53. If the model number is anything else, go to step 54.
53	Make sure that you remove the strap at location W3 on the main PCB of the DDU.
54	You need two persons to perform this step. One person stands at the front of the frame and the other person stands at the back of the frame. The person at the front of the frame presses the release buttons on the DDU slide rails. The front person slowly slides the DDU until it closes. The person at the back makes sure that the hardware in the frame does not catch the cables.

—sheet 8 of 11—

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
55	**CAUTION** **Make sure that the ribbon cable is routed correctly.** Route the ribbon cable as shown in the figure that follows. Failure to route the cable correctly can result in loss of information caused by signal interference. At the back of the frame, route the ribbon cable as shown in Figure 1-64.
56	Release the carriage and head-locking levers.
57	Insert the fuse removed from the FSP in step .
58	Reset the power converter as follows: a. Press and hold the RESET button on the power converter. b. Turn ON the power switch on the converter. c. Release the RESET button.
59	At the MAP terminal, type **>BSY** and press the Enter key to manually busy the controller card. If the BSY command passes, go to step 60. If the BSY command fails, go to step 81.
60	To start the disk drive motor, type **>START** and press the **Enter** key. *MAP response:* `DISK START SUCCESSFUL`
61	To test the disk drive controller, type **>TST** and press the **Enter** key. ***Note:*** The test will fail. Ignore the results.
62	To allocate disk space, type **>DSKALLOC *ddu_no*** (where *ddu_no* is the number of the DDU) and press the **Enter** key.
63	To confirm the command, type **>YES** and press the **Enter** key.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
64	To perform volume allocation tests, perform the procedure *Allocating test volumes on 14-inch DDUs* in the *Routine Maintenance Procedures.* Complete the procedure and return to this point.
65	Perform interference and transfer tests. To perform these tests, perform the procedure *Performing DDU interference and file transfer tests* in the *Routine Maintenance Procedures.* Complete the procedure and return to this point.
66	Obtain the office records. Determine the names and sizes of the volumes that you will create on the DDU.
67	To add a volume to the disk, type **>ADD *volname blocks*** (where *volname* is the name of the additional volume and *blocks* is the number of blocks in the volume) and press the **Enter** key.
68	Determine if you need to add any more volumes. If you need to add more volumes, go to step 67. If you do not need to add more volumes, go to step 69.
69	To add the names of the volumes to the directory, type **>DIRADD** and press the **Enter** key.
70	Determine if you need to add more volumes to the directory. If you need to add more volumes, go to step 69. If you do not need to add more volumes, go to step 71.

71	To enforce the allocation of the volumes, type **>UPDATE** and press the **Enter** key.
	Example of a MAP response:
	`WARNING: A break HX of this process may cause severe corruption on the disk that may require it to be reformatted.`
	`Writing label of Volume IMAGE`
	`Successful`
	`Starting Initialization of Volume IMAGE`
	`A break HX of this process may cause severe corruption on this volume that may require reinitialization of all non initialized volumes.`
	`Number of Bad Blocks = 0`
	`Successful`
	`Update Done`

72	To quit the software utility for disk allocation, type **>QUIT** and press the **Enter** key.

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Procedure 1-31
Replacing a 14-inch disk drive unit (continued)

Step	Action
73	To test the DDU controller, type **>TST** and press the **Enter** key. If the TST command passes, go to step 74. If the TST command fails, go to step 81.
74	To return the DDU to service, type **>RTS** and press the **Enter** key. If the RTS command passes, go to step 75. If the RTS command fails, go to step 81.
75	Determine if an IOD alarm is present. If an IOD alarm is present, go to step 81. If an IOD alarm is not present, go to step 76.
76	At the front of the frame, use the screwdriver to replace the four screws that secure the DDU faceplate to the frame. To locate the mounting screws, see Figure 1-59
77	Record the information that follows in your office records: • The date that you replaced the DDU. • The serial number of the DDU. • The problems that prompted the DDU replacement.
78	Return the DDU that has faults to the correct office for repair. ***Note:*** For additional information on the return of equipment, refer to the card return procedure for the correct country in this document. Go to step 81.
79	You cannot busy the controller card if files are open. If you busy the card while files are open, a loss of billing data can result.
80	For additional help, contact the next level of support.
81	The procedure is complete.

—sheet 11 of 11—

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Figure 1-60
Sliding the DDU out of the frame

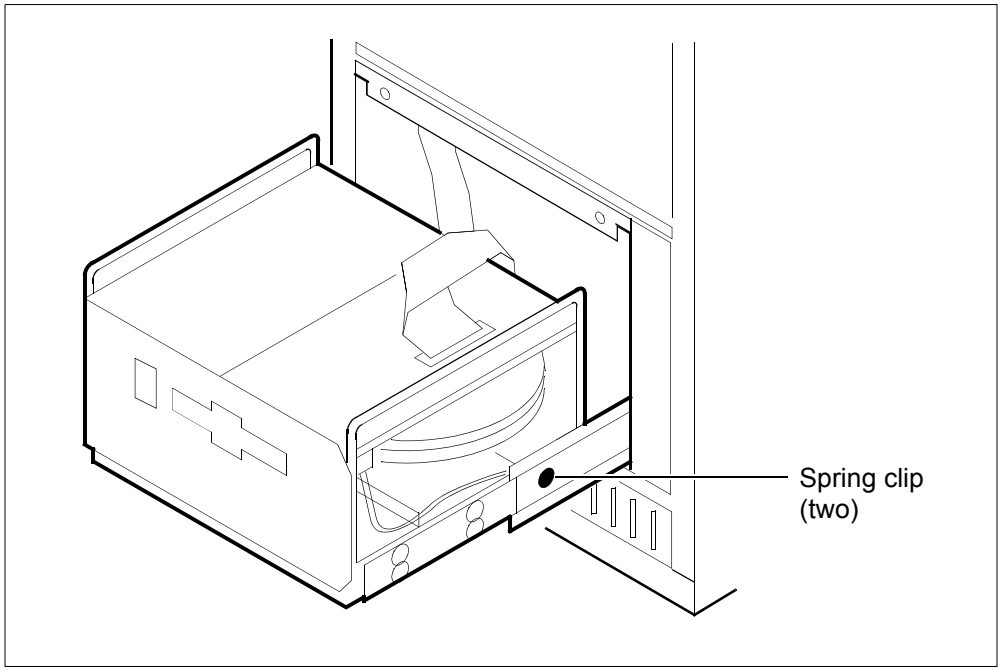

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Figure 1-61
Locations of locks and heads on the DDU

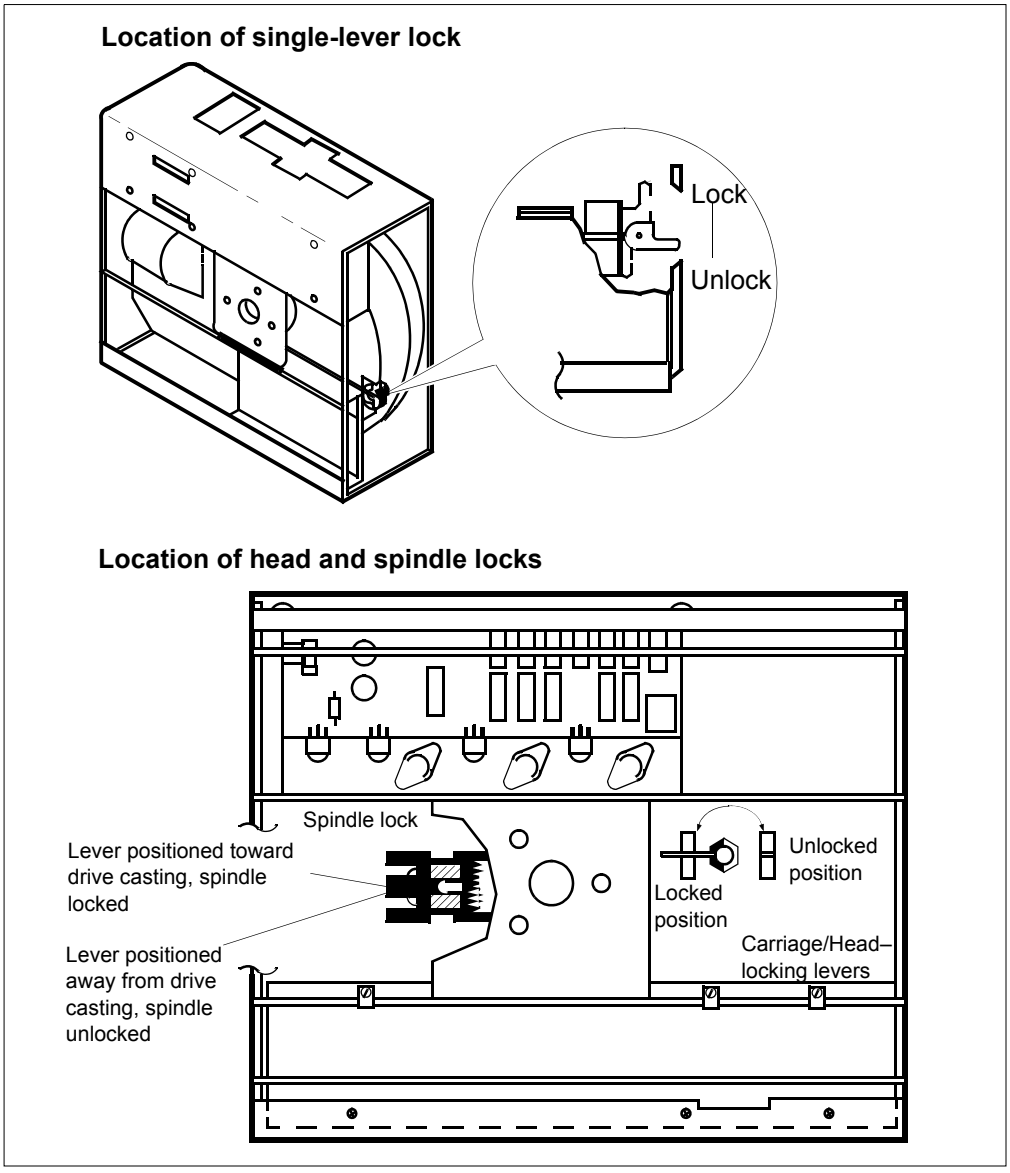

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Figure 1-62
Removing retaining screws

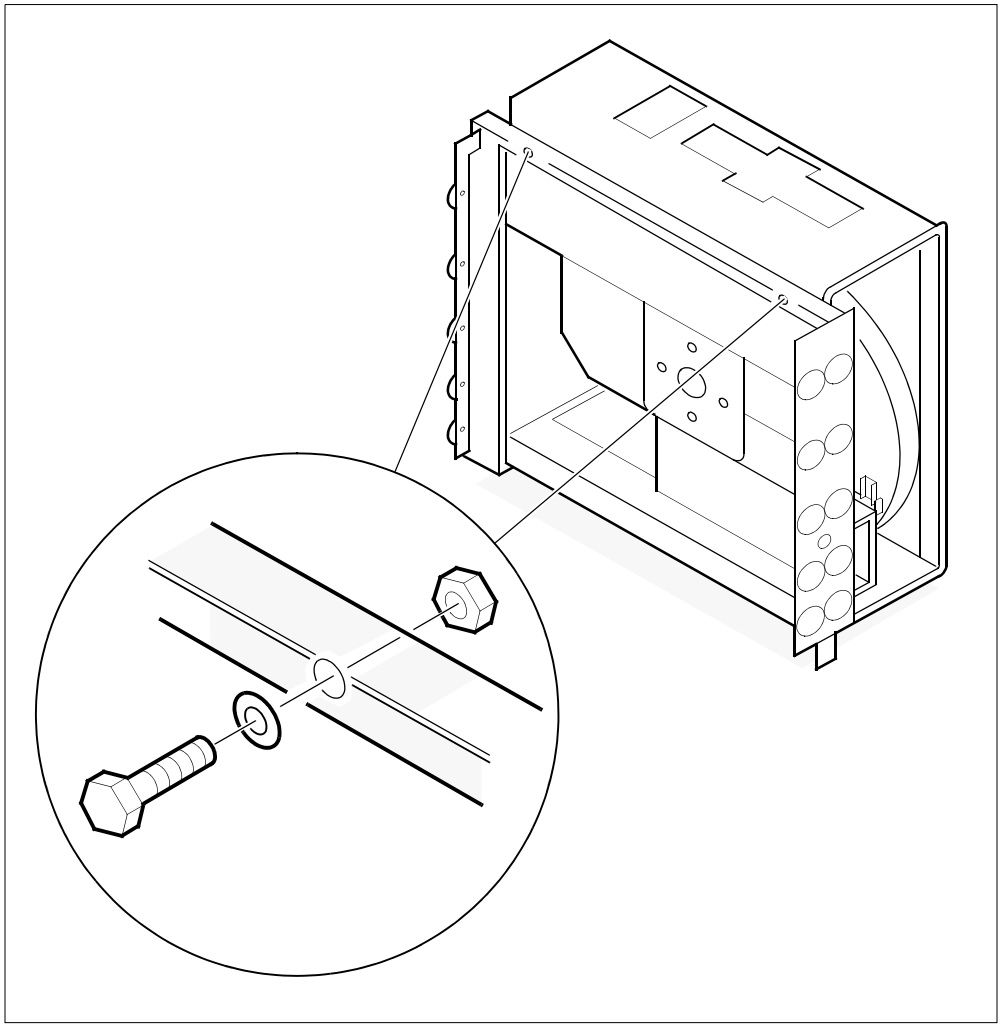

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Figure 1-63
Removing slider assembly screws

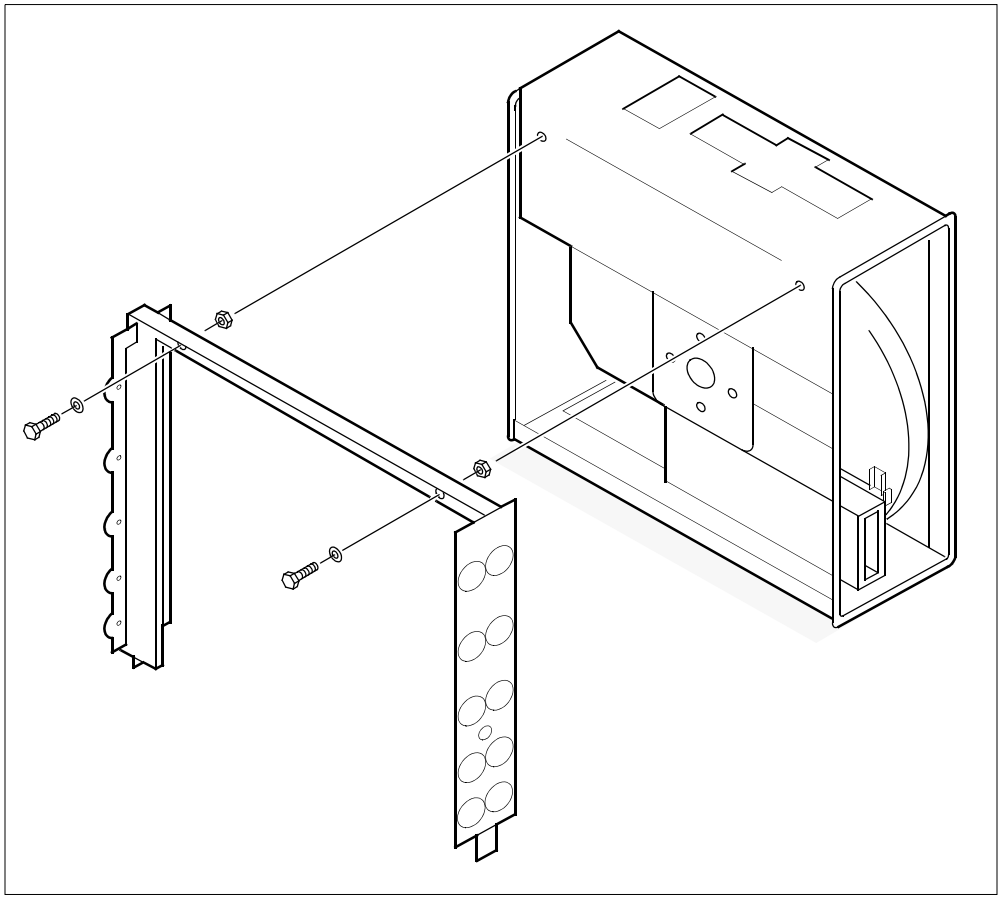

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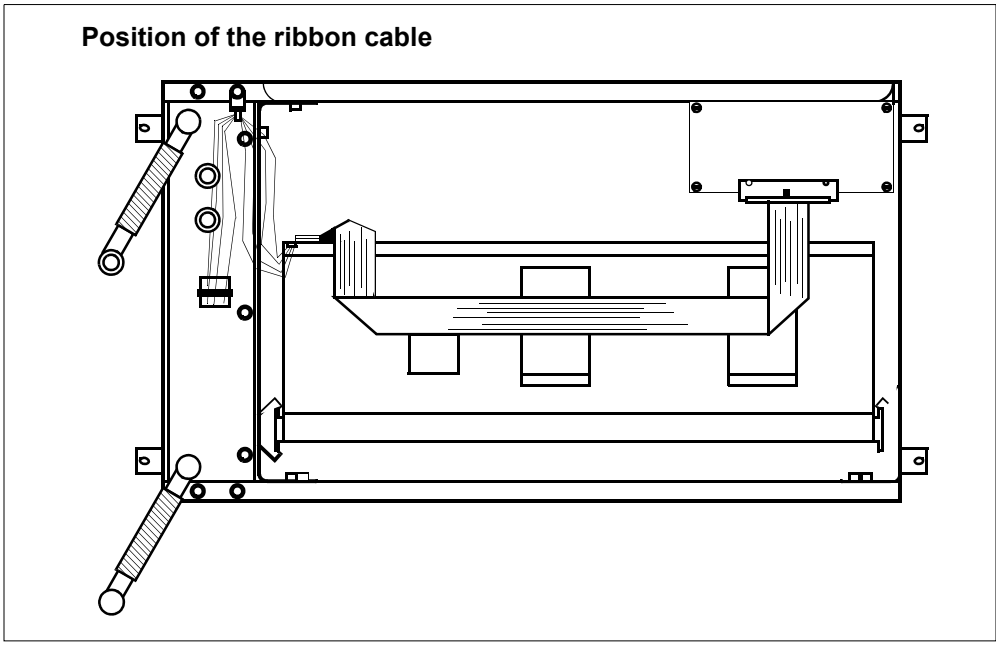
Figure 1-64
Routing the ribbon cage



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Replacing a bulkhead gasket

Application

Use this procedure to replace a defective bulkhead gasket on model C28 (28-inch) and C42 (42-inch) cabinets.

On a model C28 cabinet, use the bulkhead gasket with the product code P0739662. On a model C42 cabinet, use the bulkhead gasket with the product code P0739662.

Definition

Perform this procedure on a gasket that has faults.

Common procedures

There are no common procedures.

Action

Procedure 1-32 provides steps and actions to replace a defective bulkhead gasket on model C28 (28-inch) and C42 (42-inch) cabinets. Figure 1-65 provides an overview of the procedure.

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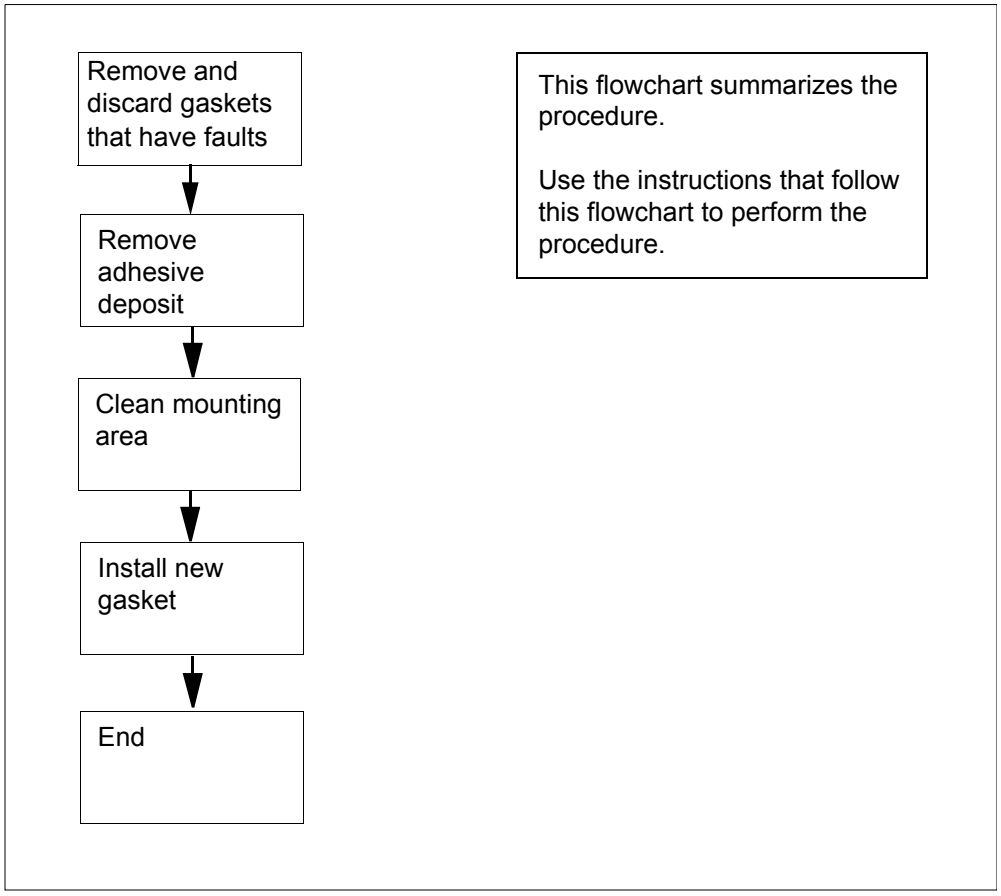
Figure 1-65
Summary of Replacing a bulkhead gasket



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Procedure 1-32 describes how to replace a defective bulkhead gasket on model C28 (28-inch) and C42 (42-inch) cabinets.

Procedure 1-32
Replacing a bulkhead gasket

Step	Action
1	At the front of the cabinet, remove and discard the gasket that has faults.
2	Remove the adhesive deposit from the mounting surface of the bulkhead. ***Note:*** Apply a petroleum-based cleaner with a lint-free industrial wiper.
3	Use a lint-free industrial wiper to clean the mounting area with a degreasing solvent (for example, isopropyl alcohol). Let the surface dry before you install the new gasket.
4	Peel the release tape from the adhesive backing of the gasket. Install the gasket base in the groove. ***Note 1:*** Press the gasket down to ensure that it adheres correctly to the surface of the bulkhead. ***Note 2:*** Cut off any excess gasket.
5	Close the doors carefully. Allow the adhesive to cure for 24 hours.
6	The procedure is complete.
	—end—

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Replacing a cooling unit assembly in a 42-inch cabinet CPC A0377580, A0382102, A0383322, A0383323

Application

Use this procedure to replace a cooling unit assembly. The cooling unit assembly must have one of the following common product codes (CPC), in a 42-inch (1.07-m) cabinet:

- A0377580
- A0382102
- A0383322
- A0383323

Note: The product engineering codes for a 42-inch cabinet are NT9X95AA, NT9X95BA, NT9X95CU, and NT9X95GU.

The A0383323 version of the cooling unit can replace the A0377580 unit.

Definition

A cooling unit assembly cools the cabinet components.

Common procedures

There are no common procedures.

Action

Procedure 1-33 provides steps and actions to replace a cooling unit assembly. Figure 1-66 provides an overview of the procedure.

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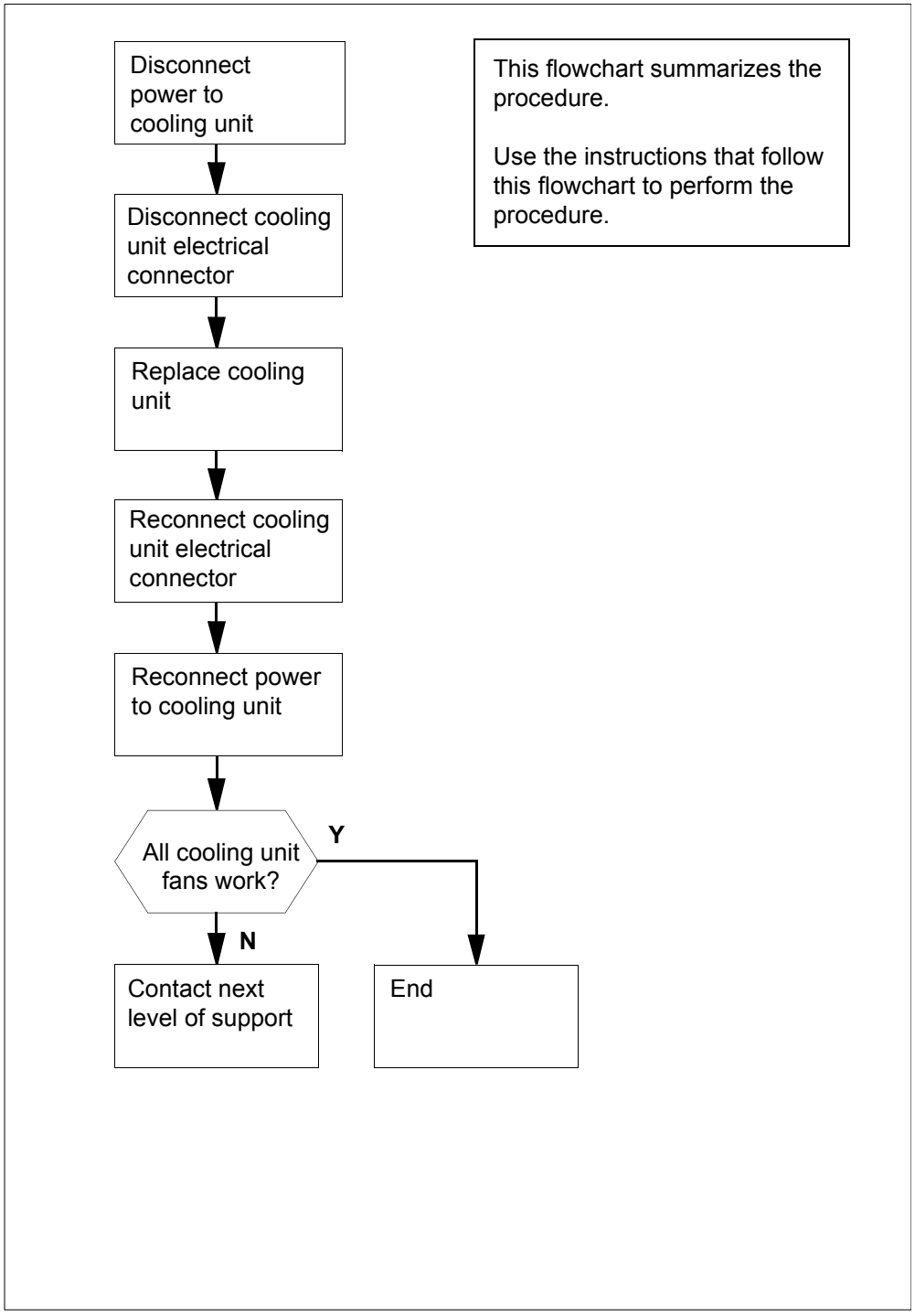
Figure 1-66
Summary of Replacing a cooling unit assembly in a 42-inch cabinet



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Procedure 1-33 describes how to replace a cooling unit assembly.

Procedure 1-33
Replacing a cooling unit assembly in a 42-inch cabinet

Step	Action
1	**DANGER** **Risk of injury or damage to equipment** When you replace a cooling unit, do not wear jewelry (for example, rings, bracelets, or necklaces). **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended power removal can cause the equipment to overheat and cause damage At your current location, obtain a replacement for the cooling unit assembly.
2	At the front of the cabinet, record the cabinet number. ***Note:*** Locate the cabinet number (for example, D00) above the doors on the front of the cabinet.
3	Consult office records or operating company personnel. Determine if power to the cooling unit connects through a power distribution center (PDC) or a cabinetized PDC (CPDC). If power to the cooling unit connects through a PDC, go to step 4. If power to the cooling unit connects through a CPDC, go to step 6.
4	At the front of the PDC, locate the cooling unit fuses. See Figure 1-67. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse cartridge is for the side A power feed. The other fuse cartridge is for the side B power feed. The cabinet number (recorded in step 2) is above each fuse cartridge. The letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 5—

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Procedure 1-33
Replacing a cooling unit assembly in a 42-inch cabinet (continued)

Step	Action
5	**DANGER** **Risk of injury** Electricity can arc when you remove a fuse cartridge. Wear eye protection. **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuses, pull the fuse cartridges straight out from the front panel of the PDC. See Figure 1-68. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
6	At the front of the CPDC, locate the circuit breaker for the cooling unit. See Figure 1-69. The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step 2) is above each breaker. The letters SN CU (SuperNode cooling unit) are below each breaker.

—sheet 2 of 5—

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Procedure 1-33
Replacing a cooling unit assembly in a 42-inch cabinet (continued)

Step	Action
7	**DANGER** **Risk of injury** Electricity can arc when you throw the cooling unit breaker. Wear eye protection. **CAUTION** **Possible loss of service** Ensure that you disconnect power to the cooling unit before you throw the cooling unit breaker. If you throw the wrong breaker, you can disconnect power to a critical hardware component and cause loss of service. Throw the circuit breakers for the cooling unit. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
8	At the back of the cabinet, open the cabinet doors.
9	**DANGER** **Risk of electrocution** Do not touch the cabinet wiring. Contact with wiring can result in electric shock. Pull out the electrical connector of the cooling unit at the bottom of the cabinet. See Figure 1-70.
10	At the front of the cabinet, open the cabinet doors.
11	To remove the filter, pull on the two filter tabs. See Figure 1-71.

—sheet 3 of 5—

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Procedure 1-33
Replacing a cooling unit assembly in a 42-inch cabinet (continued)

Step	Action
12	**DANGER** **Risk of injury** The cooling unit weighs approximately 41 kg (90 lbs). To remove or insert the cooling unit requires two or more persons. Remove the four bolts that fasten the cooling unit assembly to the cabinet. See Figure 1-72.
13	Slide the cooling unit assembly out of the cabinet.
14	Slide the replacement for the cooling unit assembly into the cabinet.
15	At the back of the cabinet, reconnect the electrical connector of the cooling unit. ***Note:*** See step for the location of the connector.
16	Close the cabinet doors.
17	At the front of the cabinet, use the four mounting bolts to fasten the cooling unit assembly to the cabinet. ***Note:*** Ses step for the location of the mounting bolts.
18	Insert the filter that you removed in step 11 into the replacement cooling unit. ***Note:*** Insert the filter with the arrows on the front that point up.
19	Determine if the power to the cooling unit connects through a PDC or a CPDC. If the power to the cooling unit connects through a PDC, go to step 20. If the power to the cooling unit connects through a CPDC, go to step .
20	To insert the cooling unit fuses, push the fuse cartridges straight into the front panel of the PDC. Go to step 22.

—sheet 4 of 5—

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Procedure 1-33
Replacing a cooling unit assembly in a 42-inch cabinet (continued)

Step	Action
21	**DANGER** **Risk of injury** Electricity can arc when you throw a circuit breaker. Wear eye protection. At the front of CPDC, throw the circuit breakers for the cooling unit.
22	At the front of the cabinet, determine if all cooling unit fans are operating. ***Note:*** If one or more of the cooling unit fans is not operating, the fan failure lamp turns on. The fan failure lamp is at the top of the cabinet between the doors. If all fans are operating, go to step 23. If any fans are not operating, go to step 24.
23	Close the cabinet doors. Go to step 25.
24	For additional help, contact the next level of support.
25	The procedure is complete.

—sheet 5 of 5—

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Figure 1-67
Front of the PDC

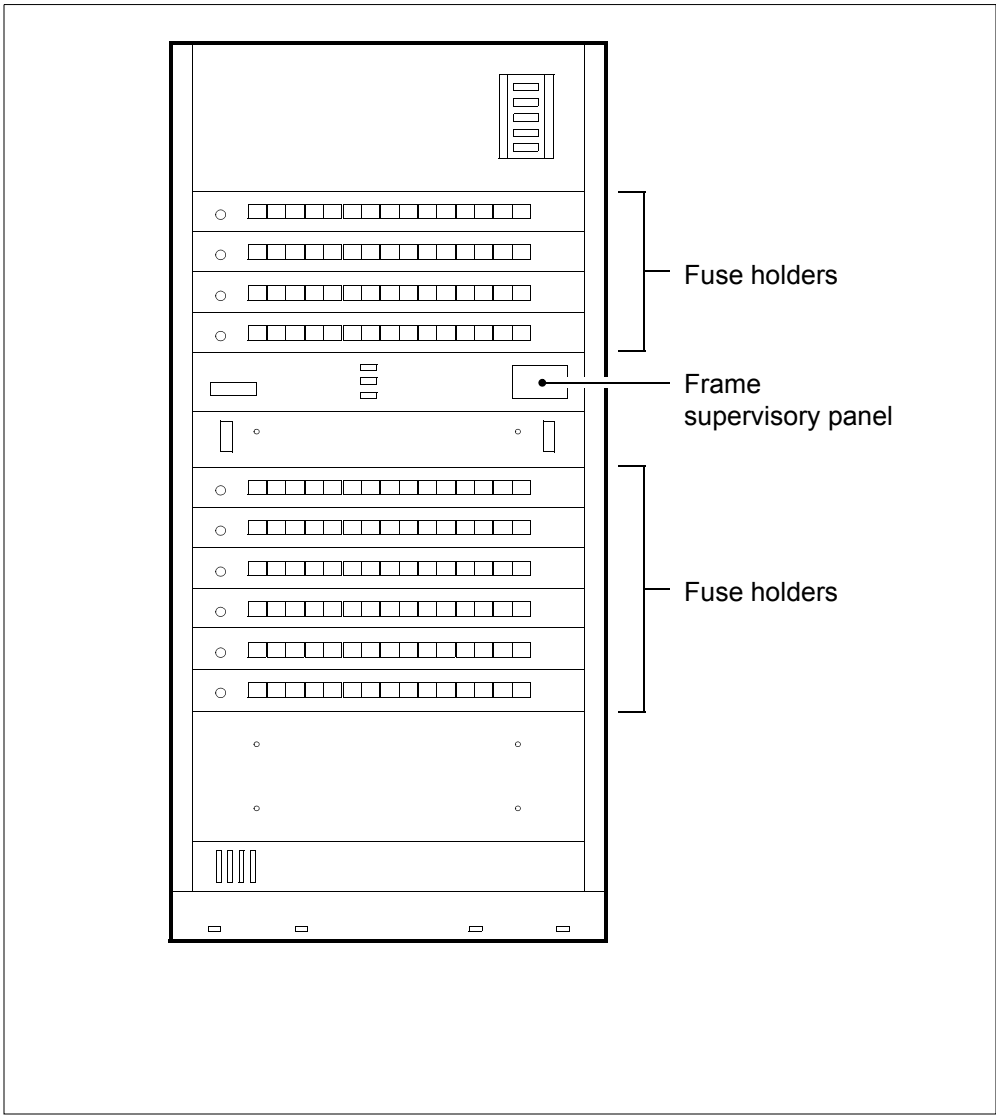

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Figure 1-68
Fuse cartridges

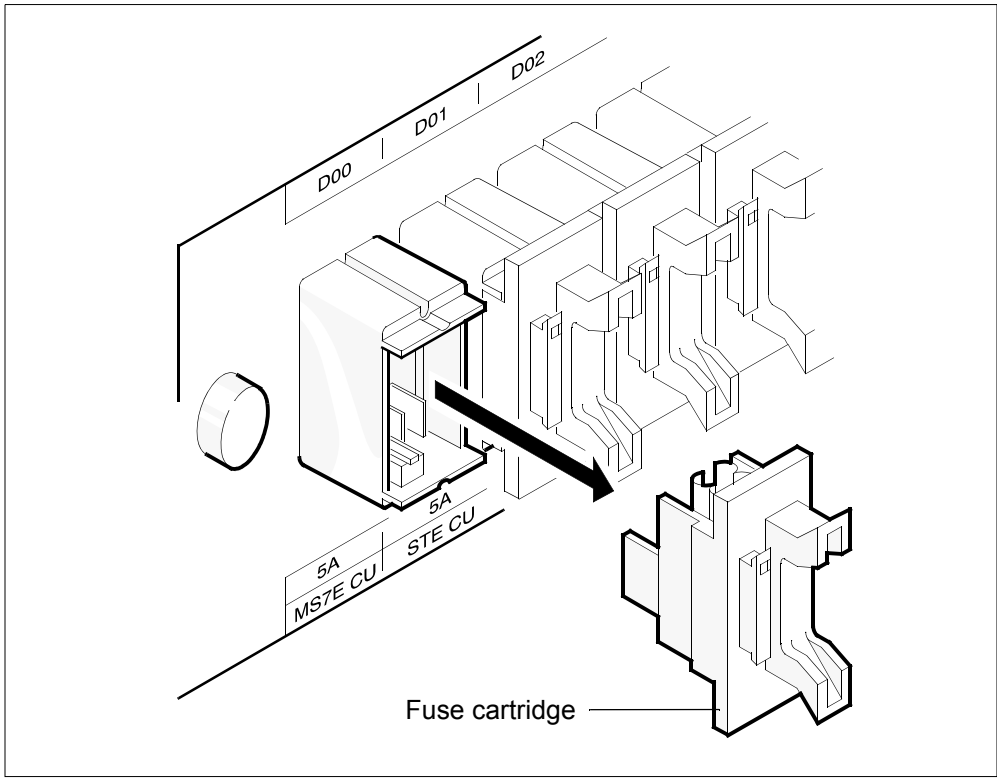

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Figure 1-69
Front of the CPDC

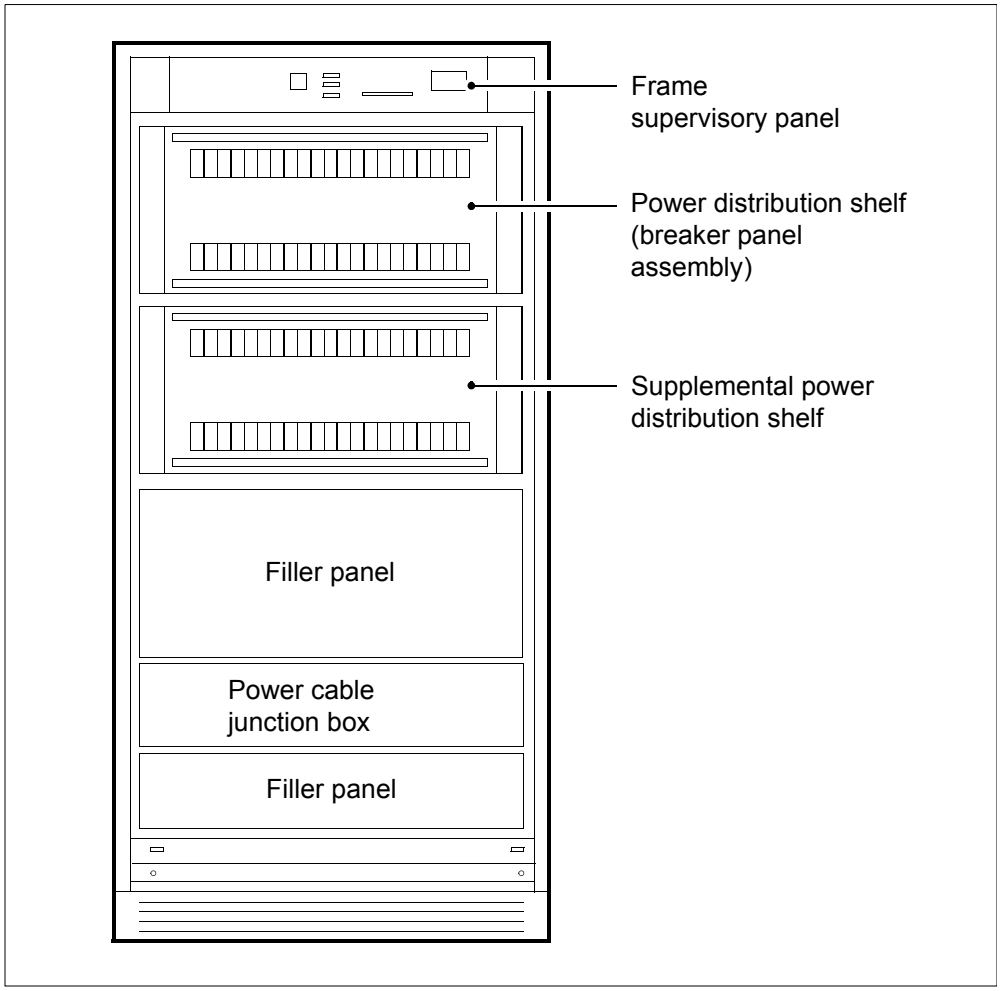

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Figure 1-70
Pulling out the electrical connector

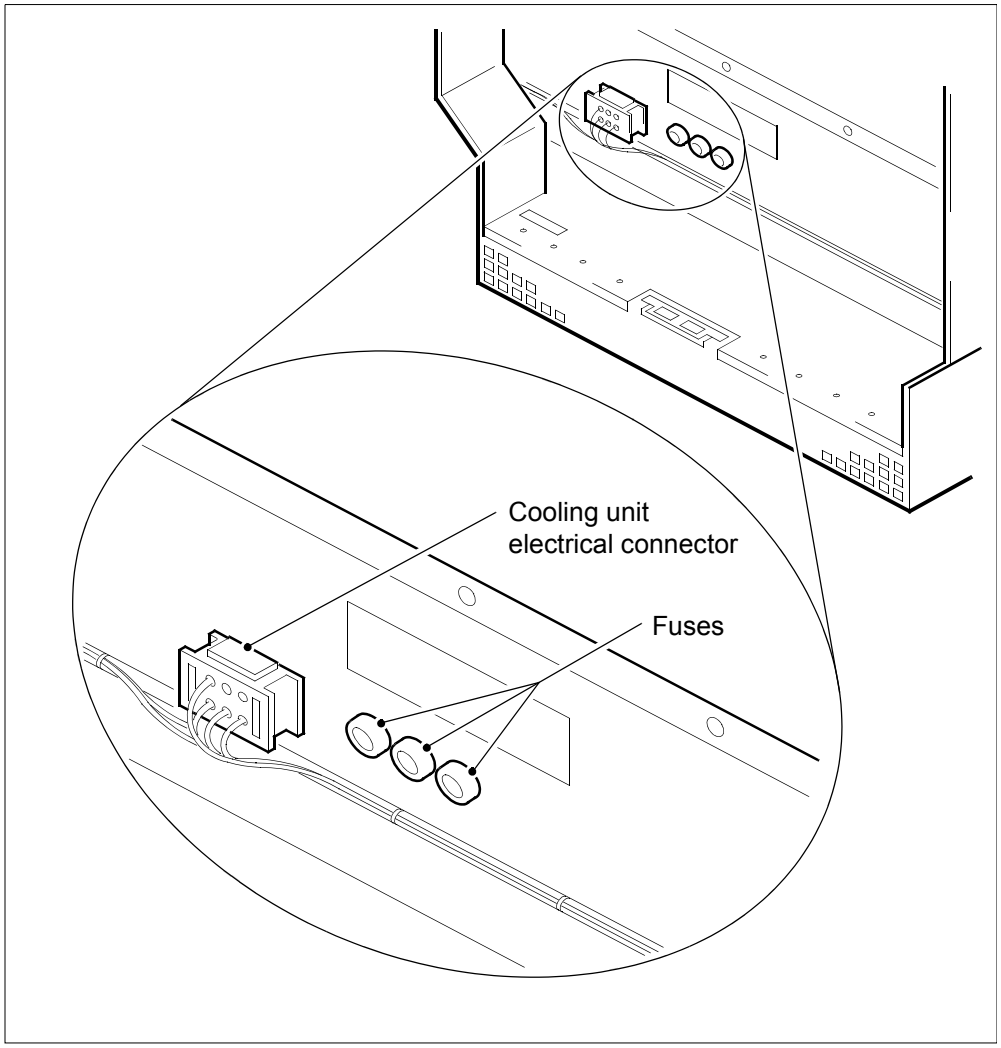

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Figure 1-71
Removing the filter

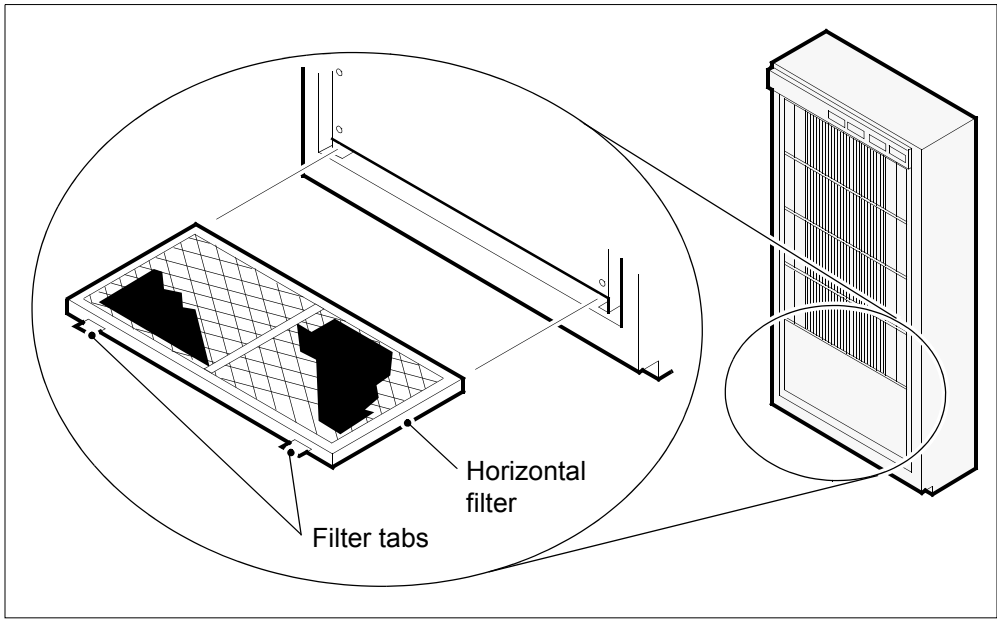
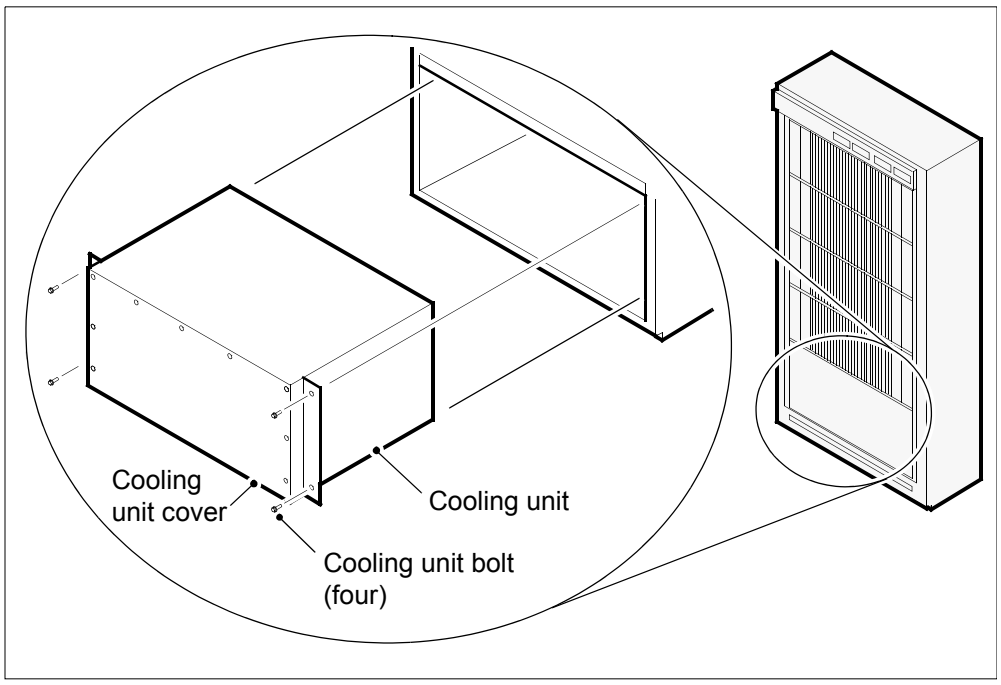


Figure 1-72
Removing bolts on the cooling unit assembly



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Replacing a cooling unit electronic module CPC A0383326, A0383327, A0383984

Application

Use this procedure to replace a cooling unit electronic module. Use this procedure when an electronic module has one of the following common product codes (CPC), in a 42-inch (1.07-m) DMS cabinet:

- A0383326
- A0383327
- A0383984

Note: The product engineering codes for a 42-inch DMS cabinet are NT9X95AA and NT9X95BA.

Definition

An electronic module for the cooling unit provides the external alarm connection. The module also provides power and fusing for the cooling unit fans.

Common procedures

There are no common procedures.

Action

Procedure 1-34 provides steps and actions to replace a cooling unit electronic module. Figure 1-73 provides an overview for the procedure.

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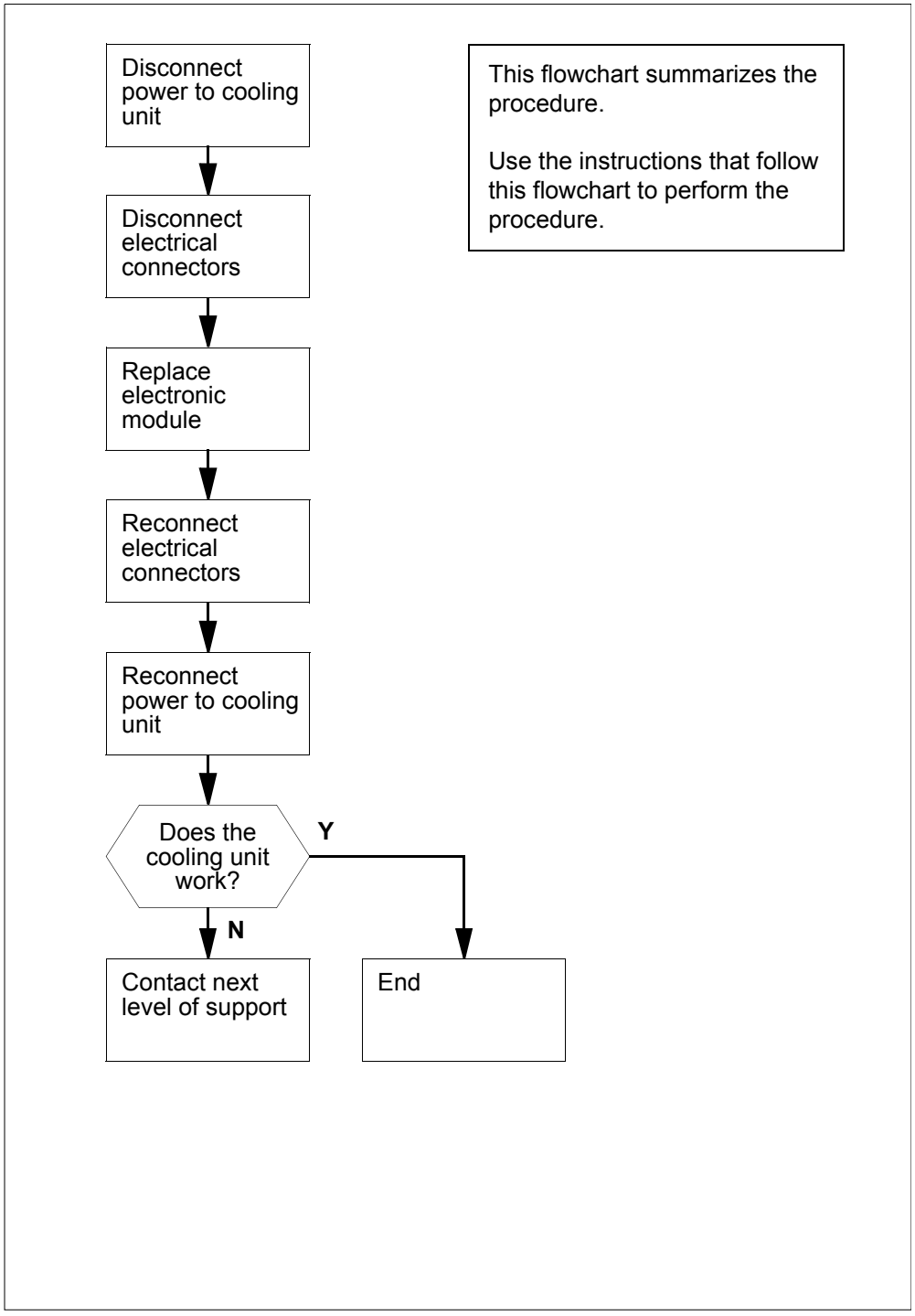
Figure 1-73
Summary of Replacing a cooling unit electronic module



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Procedure 1-34 describes how to replace a cooling unit electronic module.

Procedure 1-34
Replacing a cooling unit electronic module

Step	Action
1	 **DANGER** **Risk of injury or damage to equipment** When you replace an electronic module for the cooling unit, do not wear jewelry (for example, rings, bracelets, or necklaces).  **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended removal of power can cause the unit to overheat and cause damage. At your current location, obtain a replacement electronic module for the cooling unit.
2	At the front of the cabinet, record the cabinet number. ***Note:*** The cabinet number (for example, A10) is on the front of the cabinet, above the doors.
3	Consult office records or operating company personnel. Determine if power for the cooling unit connects through a power distribution center (PDC) or a cabinetized PDC (CPDC). If power to the cooling unit connects through a PDC, go to step 4. If power to the cooling unit connects through a CPDC, go to step 6.
4	At the front of the PDC, locate the two cooling unit fuses. See Figure 1-74. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse is for the A side power feed. The other fuse is for the B side power feed. The cabinet number (recorded in step 2) is above each fuse cartridge and the letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 5—

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Procedure 1-34
Replacing a cooling unit electronic module (continued)

Step	Action
5	**DANGER** **Risk of injury** Electricity can arc when you remove a fuse cartridge from the cooling unit. Wear eye protection. **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuses, pull the fuse cartridges straight out from the front panel of the PDC as shown in Figure 1-75. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit can cause the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
6	At the front of the CPDC, locate the circuit breakers for the cooling unit. See Figure 1-76. The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step 2) is above each circuit breaker. The letters SN CU (SuperNode cooling unit) are below each circuit breaker.

—sheet 2 of 5—

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Procedure 1-34
Replacing a cooling unit electronic module (continued)

Step	Action
7	**DANGER** **Risk of injury** Electricity can arc when you throw the circuit breakers for the cooling unit. Wear eye protection. **CAUTION** **Possible loss of service** Disconnect power to the cooling unit before you throw the circuit breakers. If you throw the wrong breakers, you can disconnect power to a critical hardware component and cause loss of service. Throw the circuit breakers for the cooling unit. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit can cause the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
8	At the front of the cabinet, open the cabinet doors.
9	To remove the cooling unit cover at the bottom of the cabinet, remove the nine mounting screws from the cover. See Figure 1-77. Do not remove the four bolts that fasten the cooling unit to the cabinet. The procedure *Replacing a cooling unit assembly* in this document shows the location of the screws.
10	At the back of the cabinet, remove the two screws that fasten the electronic module to the cooling unit assembly. ***Note:*** The screws are near the upper left-hand corner of the backplate of the cooling unit.
11	Disconnect the power connector from the electronic module. ***Note:*** The power connector is near the upper left-hand corner of the backplate of the cooling unit.

—sheet 3 of 5—

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Procedure 1-34
Replacing a cooling unit electronic module (continued)

Step	Action
12	**CAUTION** **Possible equipment damage or service interruption** Label all electrical connectors before you disconnect them. If you reconnect to the wrong electrical connector, you can cause equipment damage or service interruption. At the front of the cabinet, disconnect the four electrical connectors at the front of the electronic module. Use both hands to disconnect the connectors. Grasp the top of the connector in one hand and the bottom of the connector in the other hand. Press the releases at the sides of the connector top and pull on the connector bottom.
13	Slide out cooling unit electronic module (shown in Figure 1-78).
14	Slide the replacement cooling unit electronic module until the module touches the cooling unit backplate.
15	Reconnect the four electrical connectors that you removed in step . To reconnect each connector, press the releases on the connector top. Insert the connector bottom until it locks in place. If you cannot insert the connector bottom, turn it one-half turn and try to insert it again,
16	At the back of the cabinet, insert the screws that fasten the electronic module into the cooling unit assembly. (You removed these screws in step 10.)
17	Reconnect the power connector that you disconnected in step 11.
18	At the front of the cabinet, determine if power for the cooling unit connects through a PDC or a CPDC. If the power for the cooling unit connects through a PDC, go to step 19. If the power for the cooling unit connects through a CPDC, go to step 20.
19	At the front of PDC, to insert the cooling unit fuses, push the fuse cartridges straight into the front panel of the PDC. Go to step 21.
20	At the front of CPDC, throw the circuit breakers for the cooling unit.

—sheet 4 of 5—

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Procedure 1-34
Replacing a cooling unit electronic module (continued)

Step	Action
21	At the front of the cabinet, determine if all the cooling unit fans work. If one or more of the cooling unit fans does not work, the fan failure lamp turns ON. The fan failure lamp is at the top of the cabinet between the doors. If all fans work, go to step 22. If any fans do not work, go to step 24.
22	To reinstall the cooling unit cover, insert the mounting screws into the cover. ***Note:*** See step 9 for the location of the mounting screws.
23	Close the cabinet doors. Go to step 25.
24	For additional help, contact the next level of support.
25	The procedure is complete.

—sheet 5 of 5—

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Figure 1-74
Front of the PDC

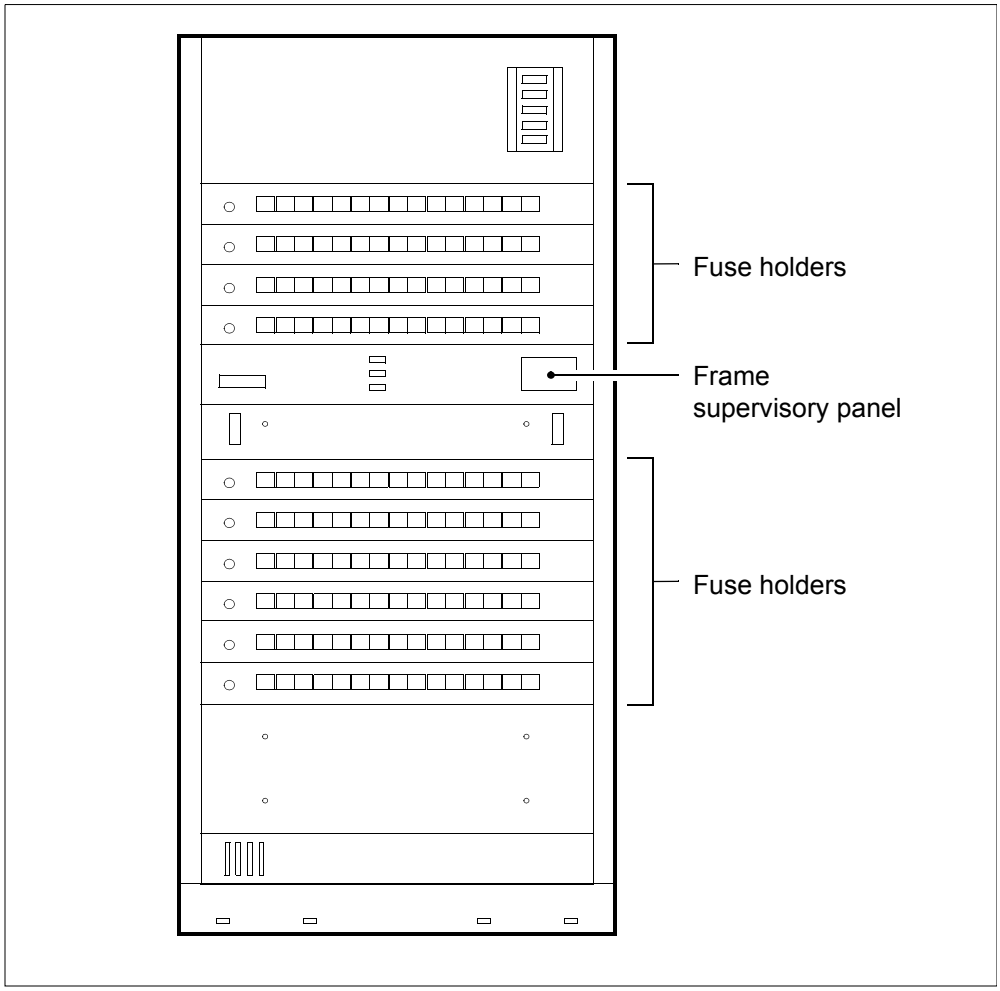

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Figure 1-75
Removing cooling unit fuses

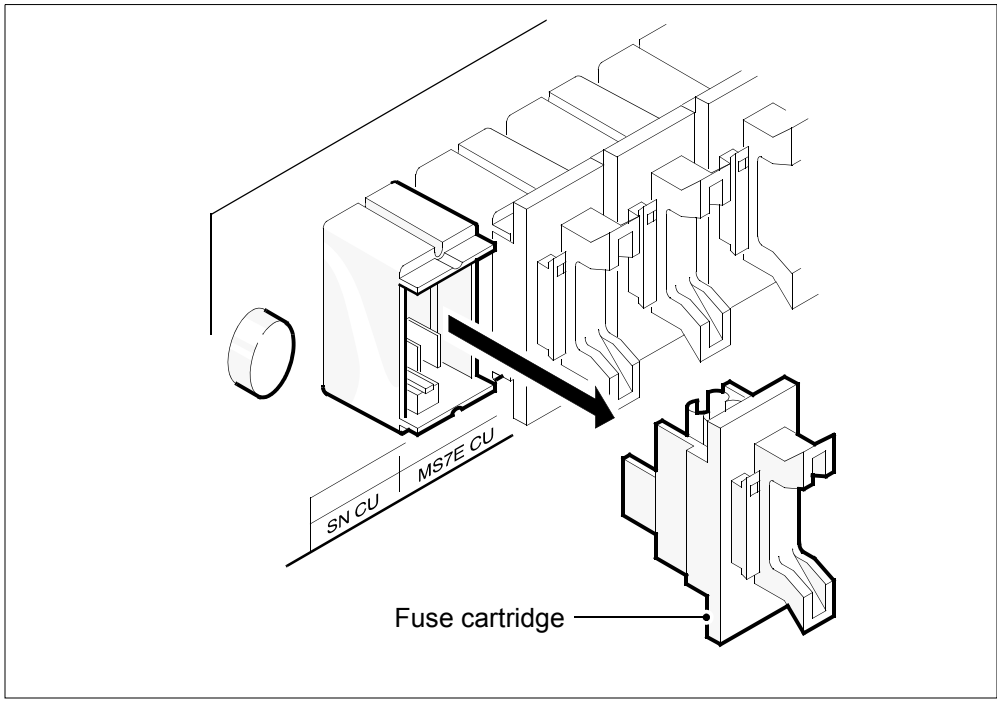

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Figure 1-76
Front of the CPDC

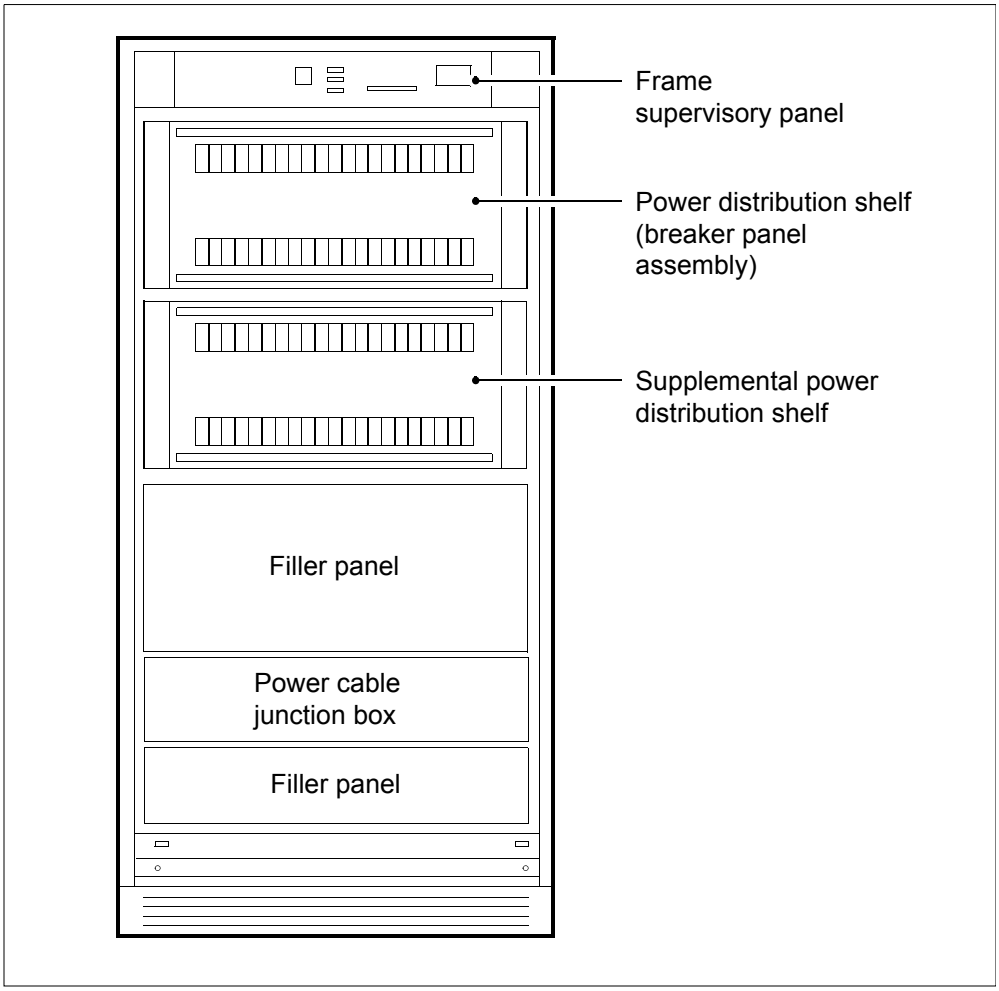

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Figure 1-77
Removing the cooling unit cover

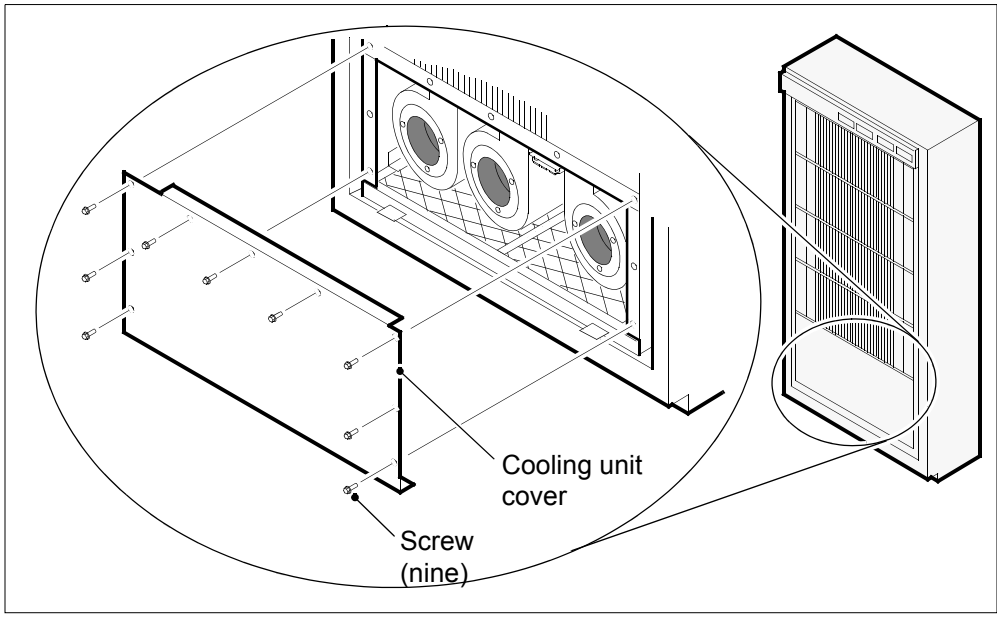

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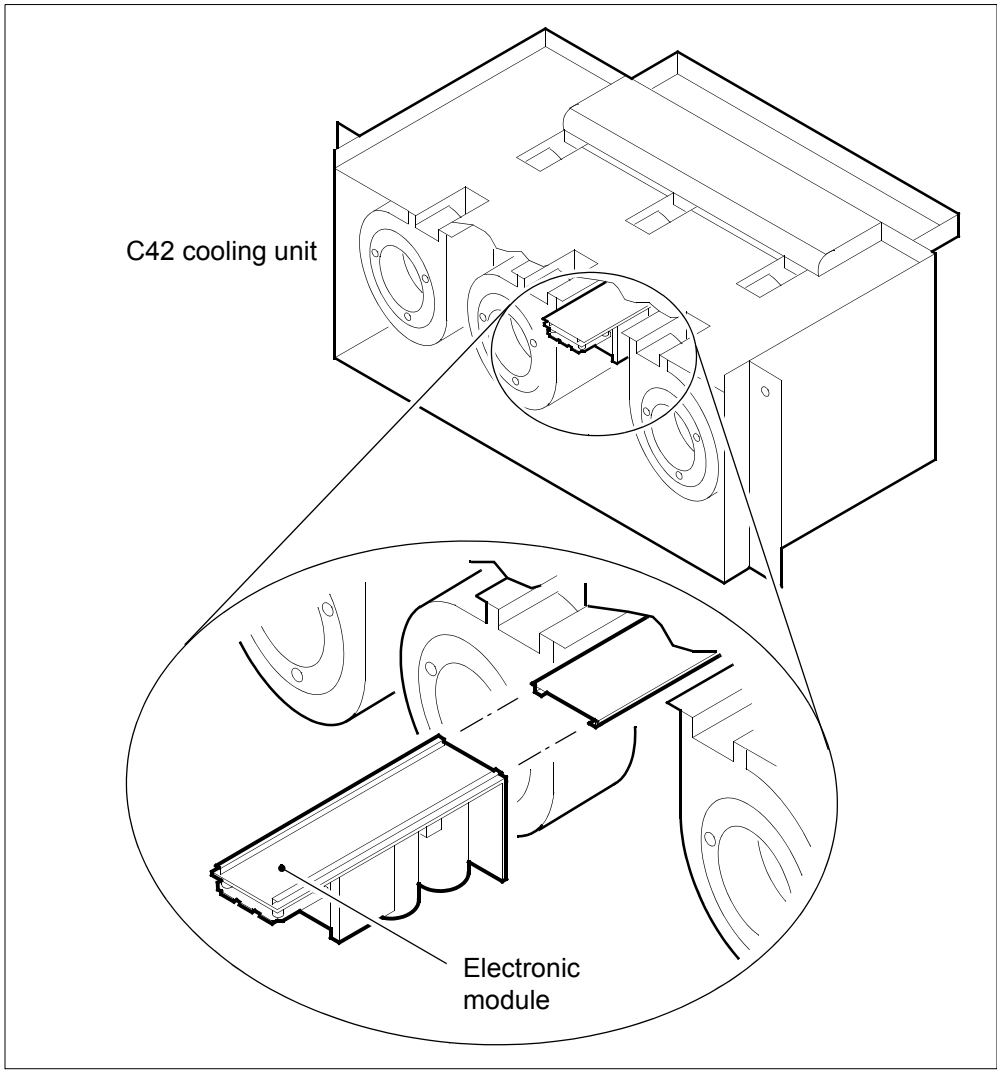
Figure 1-78
Cooling unit electric module



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Replacing a cooling unit fan CPC A0345301

Application

Use this procedure to replace a cooling unit fan with the common product codes (CPC) A0345301, in a 42-inch DMS cabinet.

> ***Note:*** The product engineering codes (PEC) for a 42-inch DMS cabinet are NT9X0104 and NT9X0113.

Definition

Cooling unit fans cool the cabinet components.

Common procedures

There are no common procedures.

Action

Procedure 1-35 provides steps and actions to replace a cooling unit fan (CPC A0345301) in a 42-inch DMS cabinet. Figure 1-79 provides an overview of the procedure.

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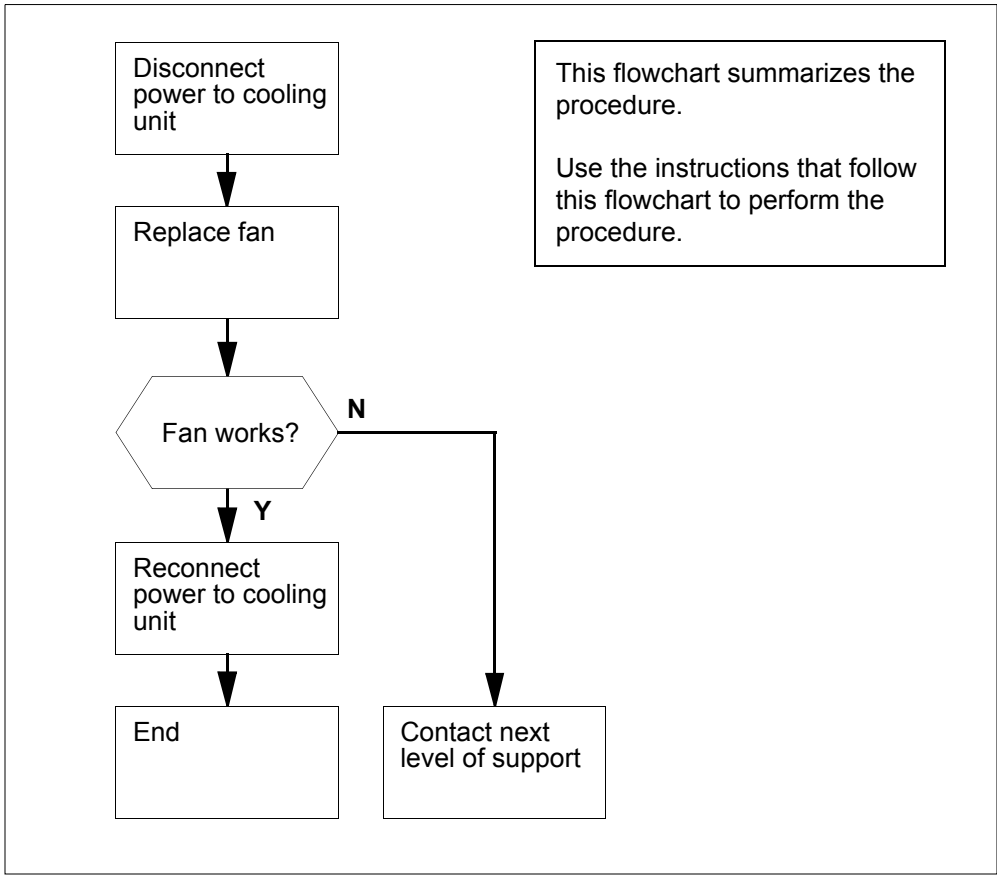
Figure 1-79
Summary of Replacing a cooling unit fan



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Procedure 1-35 describes how to replace a cooling unit fan with the common product codes (CPC) A0345301, in a 42-inch DMS cabinet.

Procedure 1-35
Replacing a cooling unit fan

Step	Action
1	**DANGER** **Risk of injury or damage to equipment** When you replace a cooling unit, do not wear jewelry (for example, rings, bracelets, or necklaces). **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended removal of power can cause the unit to overheat and cause damage. At your current location, obtain a replacement for the cooling unit fan. Record the cabinet number. (The cabinet number - for example, D00 - is on the front of the cabinet, above the doors.)
2	At the front of the cabinet, consult office records or operating company personnel. Determine if power to the cooling unit connects through a power distribution center (PDC), or a cabinetized PDC (CPDC). If power to the cooling unit connects through a PDC, go to step 3. If power to the cooling unit connects through a CPDC, go to step 5.
3	Locate the cooling unit fuses. See Figure 1-80. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse is for the side A power feed. The other fuse is for the side B power feed. The cabinet number (recorded in step) is above each fuse cartridge. The letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 5—

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Procedure 1-35
Replacing a cooling unit fan (continued)

Step	Action
4	 **DANGER** **Risk of injury** Electricity can arc when you remove the fuse cartridges for the cooling unit. Wear eye protection.  **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuses, pull the fuse cartridges straight out from the front panel of the PDC as shown in Figure 1-81. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
5	Locate the cooling unit circuit breakers (shown in Figure 1-82). The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step) is above each breaker. The letters SN CU (SuperNode cooling unit) are below each breaker.

—sheet 2 of 5—

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Procedure 1-35
Replacing a cooling unit fan (continued)

Step	Action
6	**CAUTION** **Possible loss of service** Make sure you remove only the cooling unit fuses before you throw this circuit breaker. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. Throw the circuit breaker for the cooling unit. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
7	At the front of the cabinet, open the cabinet doors.
8	Remove the two intake grills for the cooling unit at the bottom of the cabinet. As shown in Figure 1-83, remove the four screws that hold the intake grills in place.
9	To remove the filter basket, pull on the handles.
10	To remove the kickplate assembly, remove the mounting screws and mounting bolts that hold the assembly in place. The four mounting screws are along the bottom of the kickplate. The two mounting bolts are at the sides of the kickplate.
11	**DANGER** **Electrocution** Avoid contact with the cabinet wiring. Contact with the wiring can result in electric shock. Disconnect the electrical connector of the fan that has faults from the corresponding electrical connector of the cabinet, as shown in Figure 1-84. The connector for each fan is above the fan.
12	Slide the fan that has faults the rest of the way out of the cabinet, as shown in Figure 1-85.
13	Slide the replacement fan into the cabinet.

—sheet 3 of 5—

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Procedure 1-35
Replacing a cooling unit fan (continued)

Step	Action
14	Connect the electrical connector of the replacement fan to the corresponding electrical connector of the cabinet.
15	Determine if power for the cooling unit connects through a circuit breaker at the CPDC. If the power for the cooling unit connects through a PDC, go to step 16. If the power for the cooling unit connects through a CPDC, go to step .
16	At the front of the PDC, insert the cooling unit fuses by pushing the fuse cartridges straight into the front panel of the PDC. Then go to step 18.
17	**DANGER** **Risk of injury** Electricity can arc when you throw a circuit breaker for the cooling unit. Wear eye protection. At the front of the CPDC, throw the circuit breakers for the cooling unit.
18	At the front of the cabinet, determine if the replacement fan works. If the replacement fan works, go to step 19. If the replacement fan does not work, go to step 23.
19	Reinstall the kickplate assembly. ***Note:*** See step 8 for the location of the kickplate assembly.
20	Reinstall the filter basket. ***Note:*** See step 8 for the location of the filter basket.
21	Reinstall the cooling unit intake grill. ***Note:*** See step 8 for the location of the cover mounting screws for the intake grill.
22	Close the cabinet doors. Go to step 24.

—sheet 4 of 5—

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Procedure 1-35
Replacing a cooling unit fan (continued)

Step	Action
23	For additional help, contact the next level of support.
24	The procedure is complete.

—sheet 5 of 5—

Figure 1-80
Front panel of the PDC

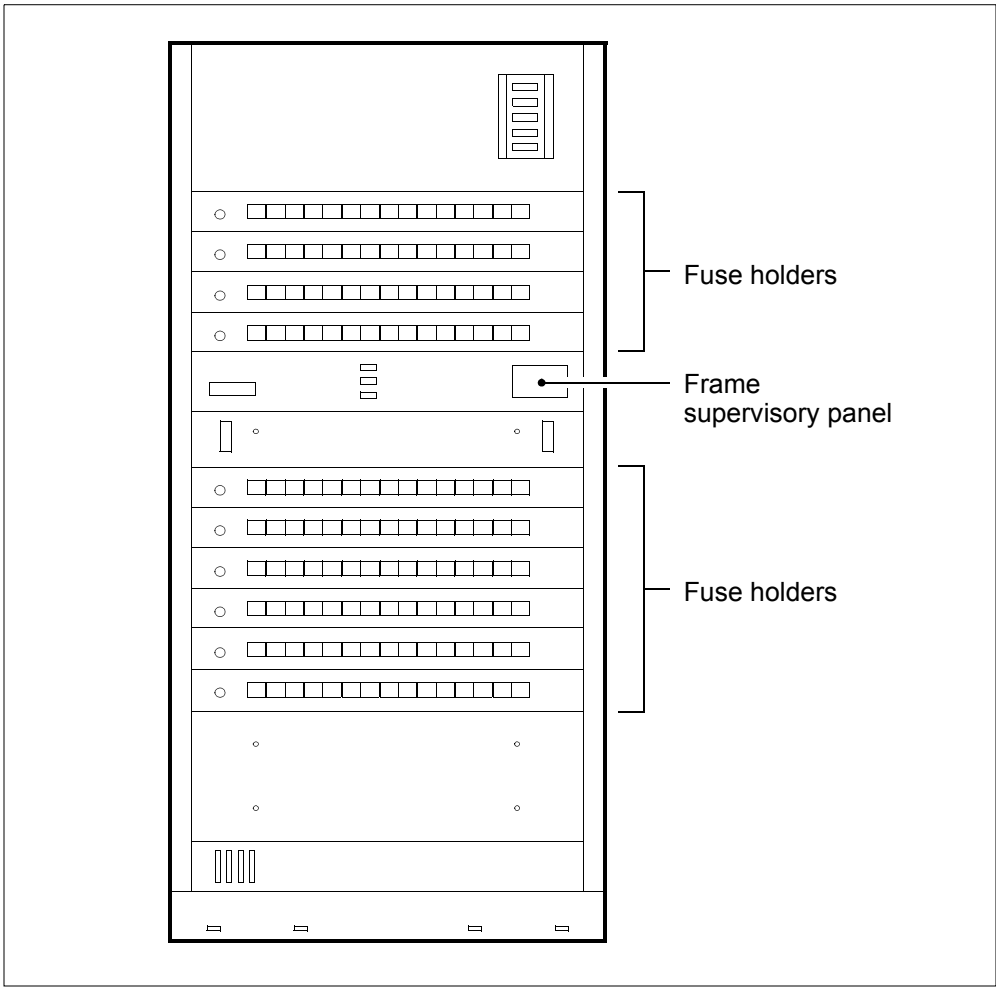

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Figure 1-81
Removing the cooling unit fuses

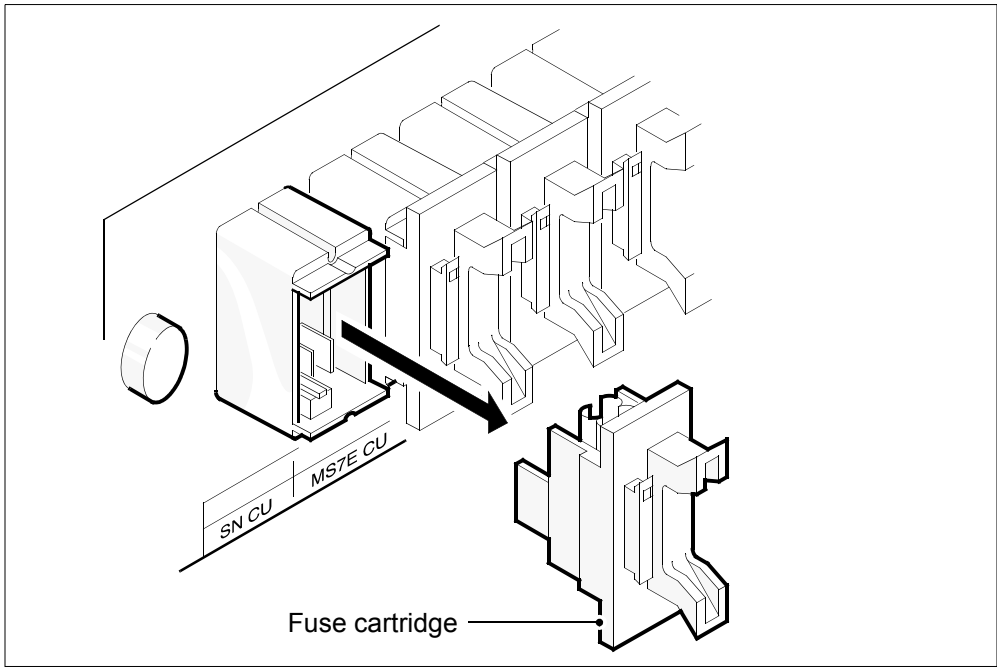

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Figure 1-82
Cooling unit circuit breakers

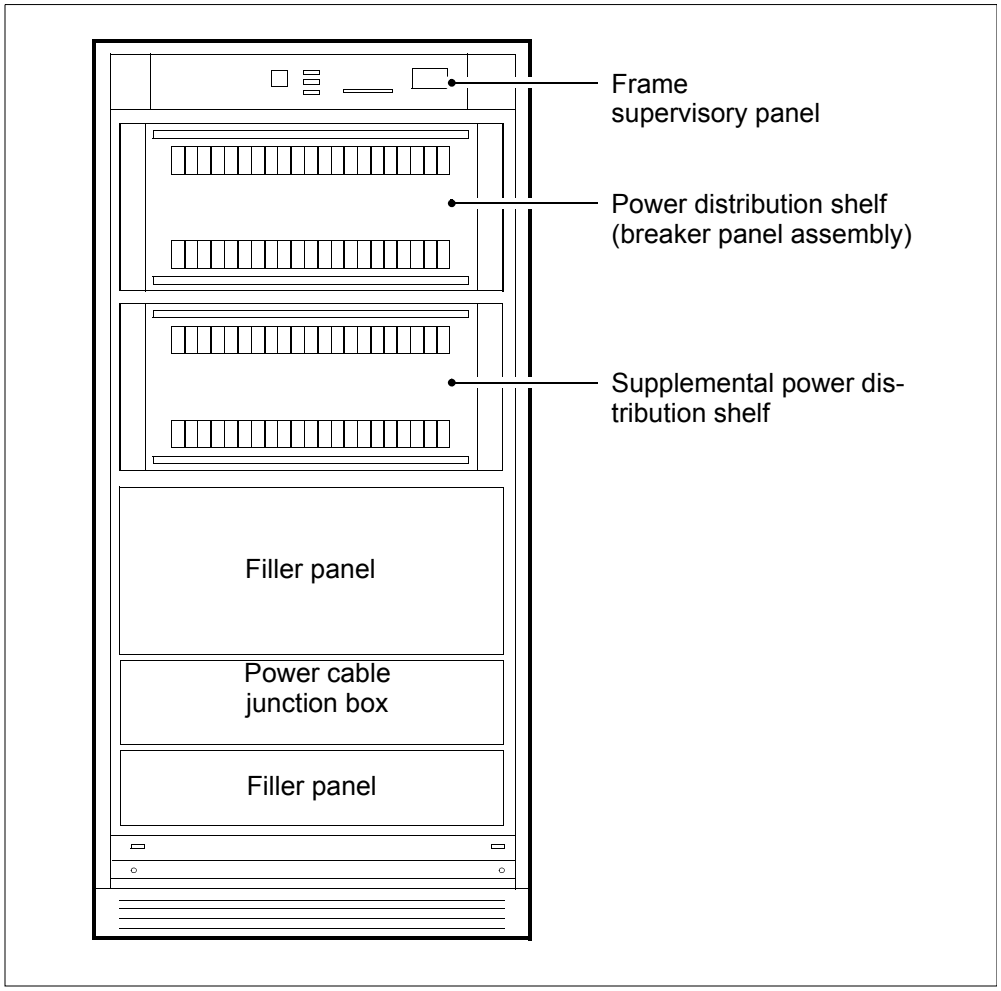

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Figure 1-83
Removing intake grills

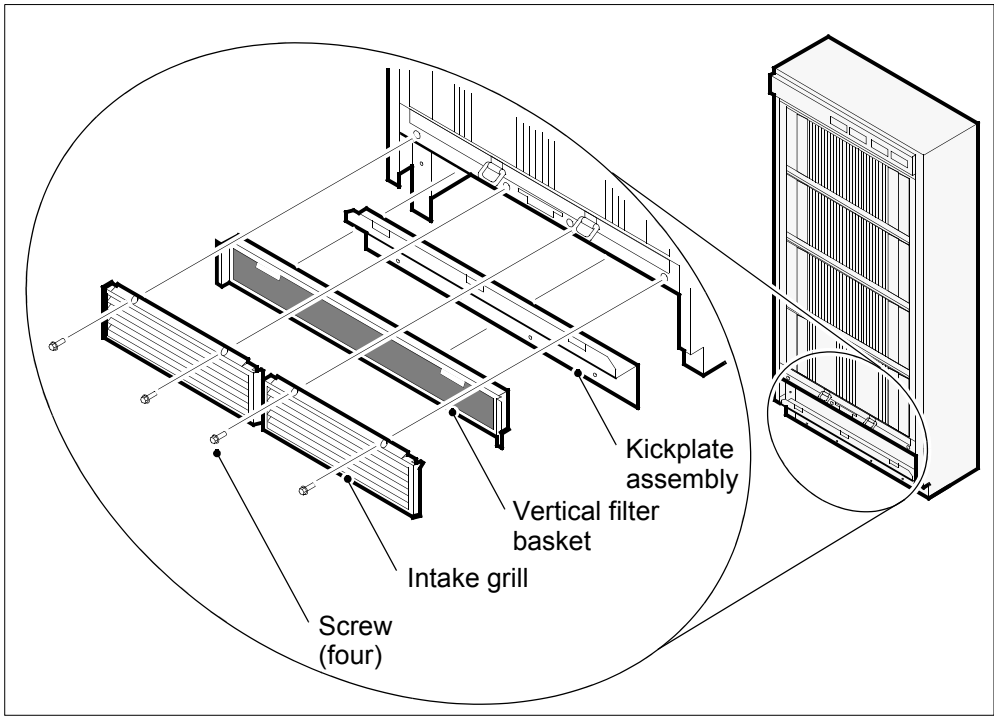

Figure 1-84
Disconnecting electrical connector for fan

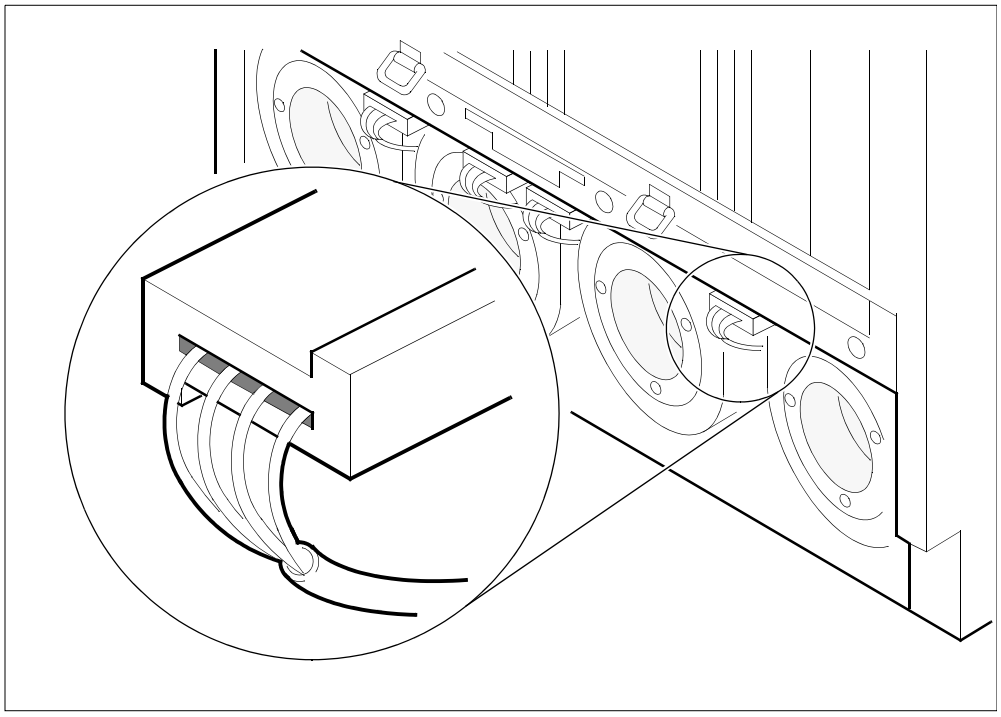

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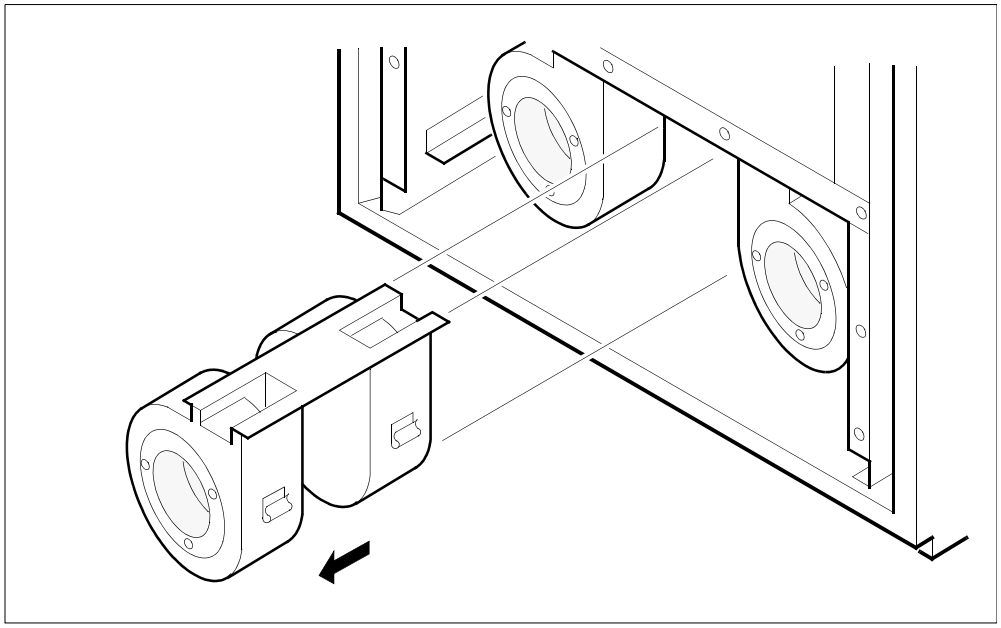
Figure 1-85
Sliding out the fan



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Replacing a cooling unit fan CPC A0381714, A0382103, A0383325

Application

Use this procedure to replace a cooling unit fan in a 42-inch DMS cabinet. Use this procedure when the fan has one of the following common product codes (CPC):

- A0381714
- A0382103
- A0383325

Note: The product engineering codes (PEC) for a 42-inch DMS cabinet are NT9X95AA and NT9X95BA.

Definition

Cooling unit fans cool the cabinet parts.

Common procedures

There are no common procedures.

Action

Procedure 1-36 provides steps and actions to replace a cooling unit fan. Figure 1-86 provides an overview of the procedure.

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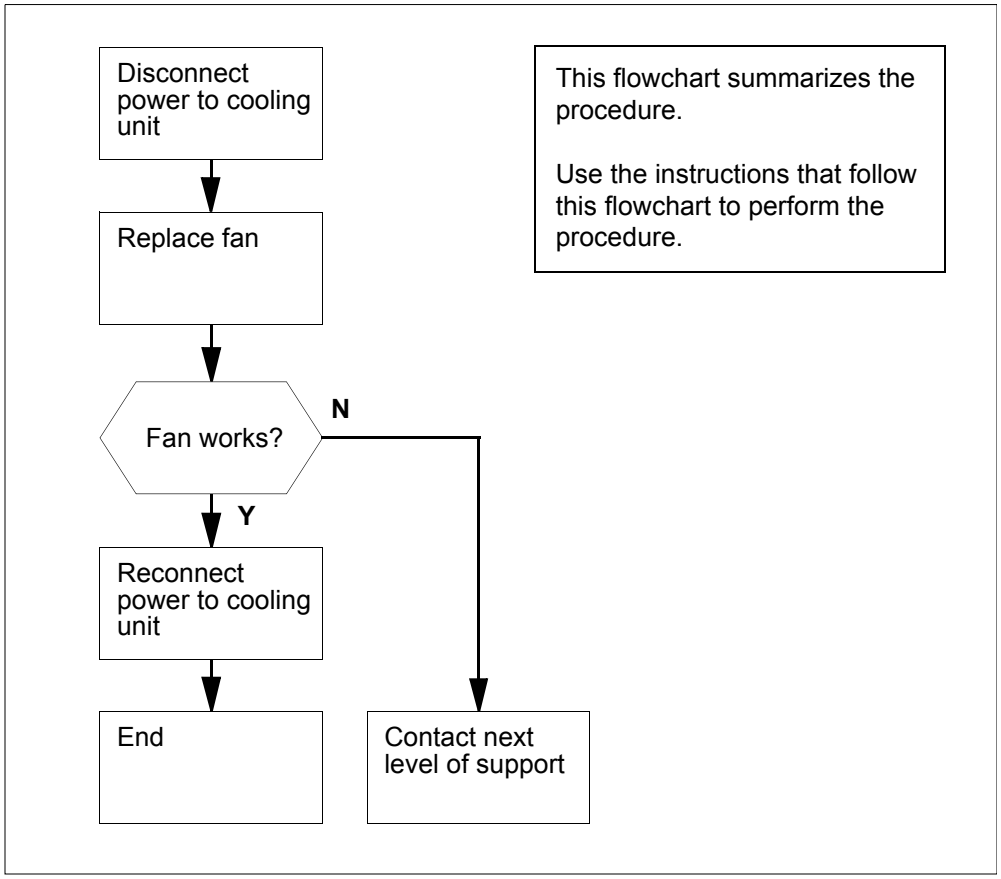
Figure 1-86
Summary of Replacing a cooling unit fan



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Procedure 1-36 describes how to replace a cooling unit fan in a 42-inch DMS cabinet.

Procedure 1-36
Replacing a cooling unit fan

Step	Action
1	**DANGER** **Risk of injury or damage to equipment** When you replace a cooling unit, do not wear jewelry (for example, rings, bracelets, or necklaces). **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended removal of power can cause the unit to overheat and cause damage. At your current location, obtain a replacement for the cooling unit fan. Record the cabinet number. (The cabinet number - for example, D00 - is on the front of the cabinet, above the doors.)
2	At the front of the cabinet, consult office records or operating company personnel. Determine if power to the cooling unit connects through a power distribution center (PDC) or a cabinetized PDC (CPDC). If power to the cooling unit connects through a PDC, go to step 3. If power to the cooling unit connects through a CPDC, go to step 5.
3	Locate the cooling unit fuses. See Figure 1-87. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse is for the side A power feed. The other fuse is for the side B power feed. The cabinet number (recorded in step) is above each fuse cartridge. The letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 4—

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Procedure 1-36
Replacing a cooling unit fan (continued)

Step	Action
4	**DANGER** **Risk of injury** Electricity can arc when you remove a fuse cartridge from the cooling unit. Wear eye protection. **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuses, pull the fuse cartridges straight out from the front panel of the PDC, as shown in Figure 1-88. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
5	Locate the circuit breakers for the cooling unit. See Figure 1-89. The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step) is above each breaker. The letters SN CU (SuperNode cooling unit) are below each breaker.

—sheet 2 of 4—

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Procedure 1-36
Replacing a cooling unit fan (continued)

Step	Action
6	 **DANGER** **Risk of injury** Electricity can arc when you throw circuit breakers for the cooling. Wear eye protection.  **CAUTION** **Possible loss of service** Make sure that you remove only the cooling unit fuses before you throw the circuit breakers. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. Throw the circuit breaker for the cooling unit. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit can cause the fan failure lamp to turn on. The fan failure lamp is at the top of the cabinet between the doors.
7	At the front of the cabinet, open the cabinet doors.
8	The cooling unit cover is at the bottom of the cabinet. As shown in Figure 1-90, remove the nine mounting screws from the cover. Do not remove the four bolts that fasten the cooling unit to the cabinet. The procedure *Replacing a cooling unit assembly* in this document shows the location of the screws.
9	Slide the fan that has faults out of the cabinet so that you can disconnect the four-pin electrical connector of the fan. See Figure 1-91.
10	Disconnect the four-pin connector of the fan that has faults from the corresponding four-pin connector of the cabinet.
11	Slide the fan that has faults the rest of the way out of the cabinet, as shown in Figure 1-92.
12	Slide the replacement fan part way into the cabinet.

—sheet 3 of 4—

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Procedure 1-36
Replacing a cooling unit fan (continued)

Step	Action
13	Connect the four-pin electrical connector of the replacement fan to the corresponding four-pin electrical connector of the cabinet. ***Note:*** See step 9 for the location of the connector.
14	Slide the replacement fan the rest of the way into the cabinet.
15	Determine if power for the cooling unit connects through a circuit breaker at the CPDC. If the power for the cooling unit connects through a PDC, go to step 16. If the power for the cooling unit connects through a CPDC , go to step .
16	At the front of the PDC insert the cooling unit fuses by pushing the fuse cartridges straight into the front panel of the PDC. Then go to step 18.
17	**DANGER** **Risk of injury** Electricity can arc when you throw a circuit breaker for the cooling unit. Wear eye protection. At the front of the CPDC, throw the circuit breakers for the cooling unit.
18	At the front of the cabinet, determine if the replacement fan works. If the replacement fan works, go to step 19. If the replacement fan does not work, go to step 21.
19	Replace the cooling unit cover. ***Note:*** See step 8 for the location of the cover mounting screws.
20	Close the cabinet doors. Go to step 22.
21	For additional help, contact the next level of support.
22	The procedure is complete.

—sheet 4 of 4—

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Figure 1-87
Front of the PDC

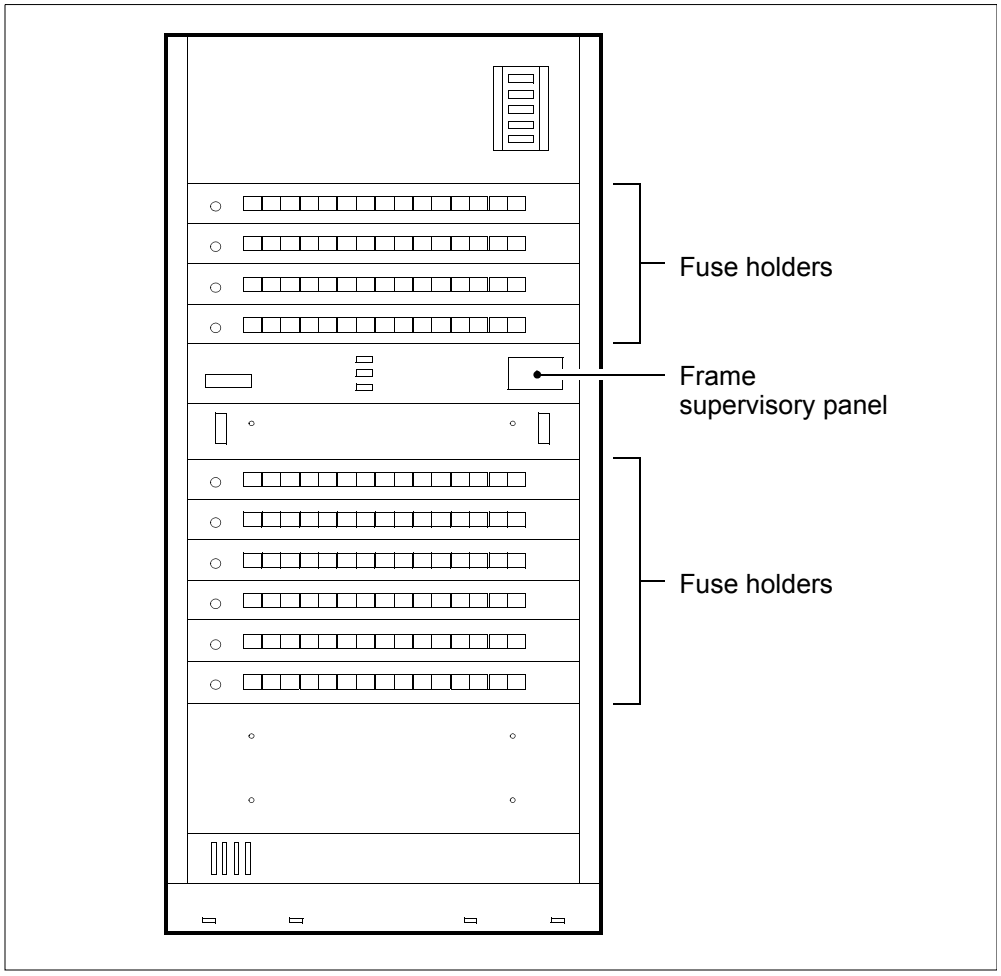

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Figure 1-88
Removing cooling unit fuses

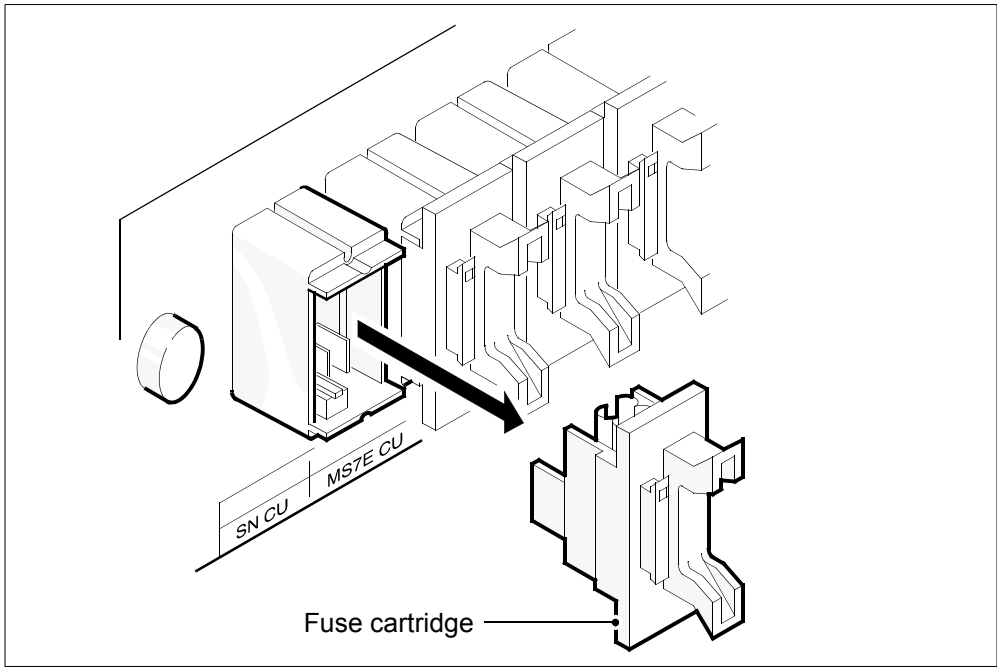

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Figure 1-89
Front of the CPDC

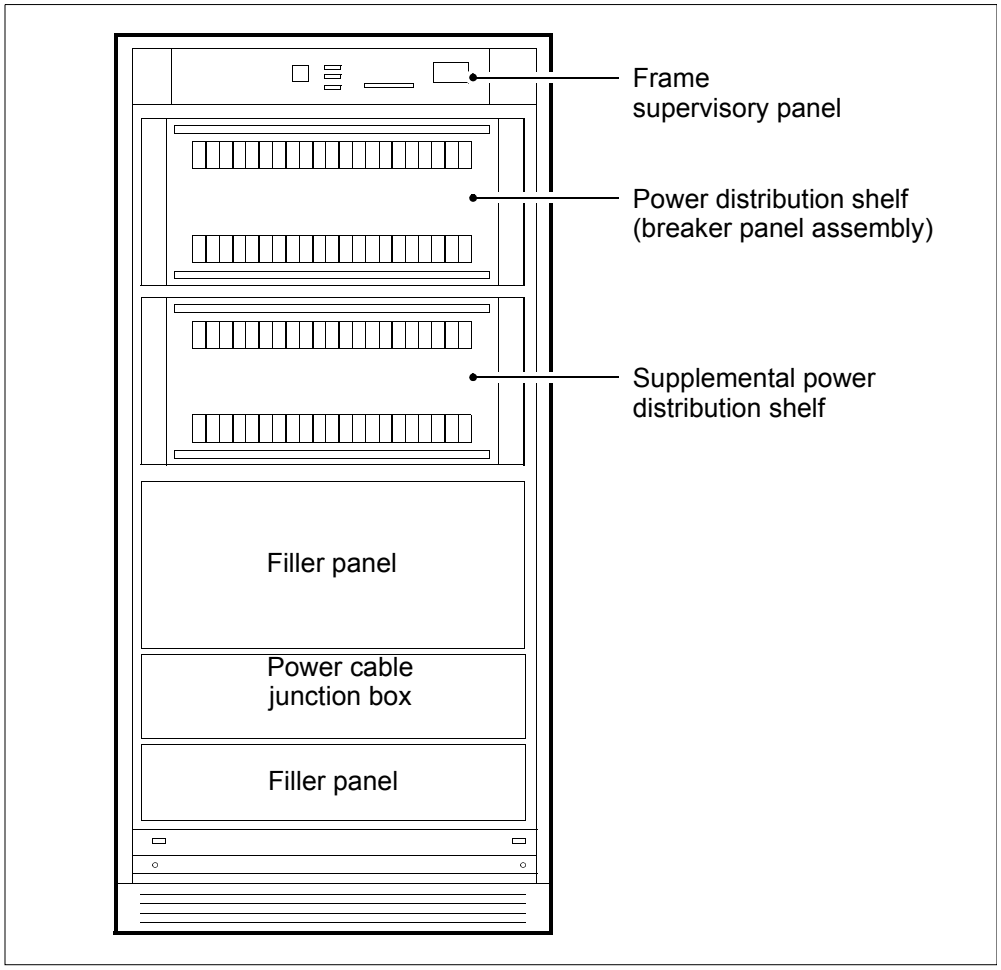

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Figure 1-90
Removing the cooling unit cover

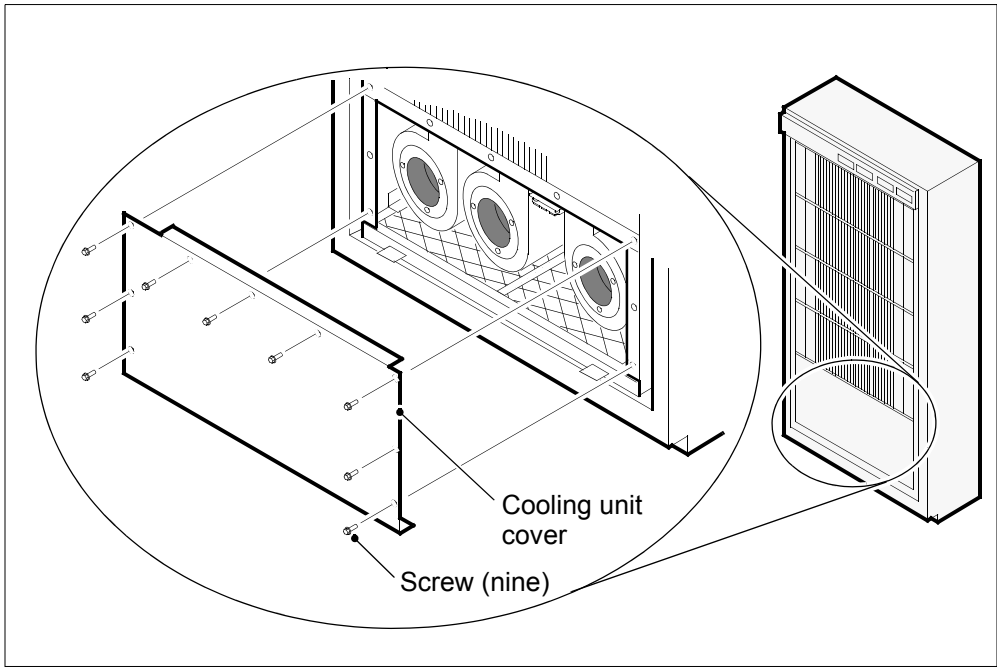

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Figure 1-91
Disconecting electrical connectors for fan

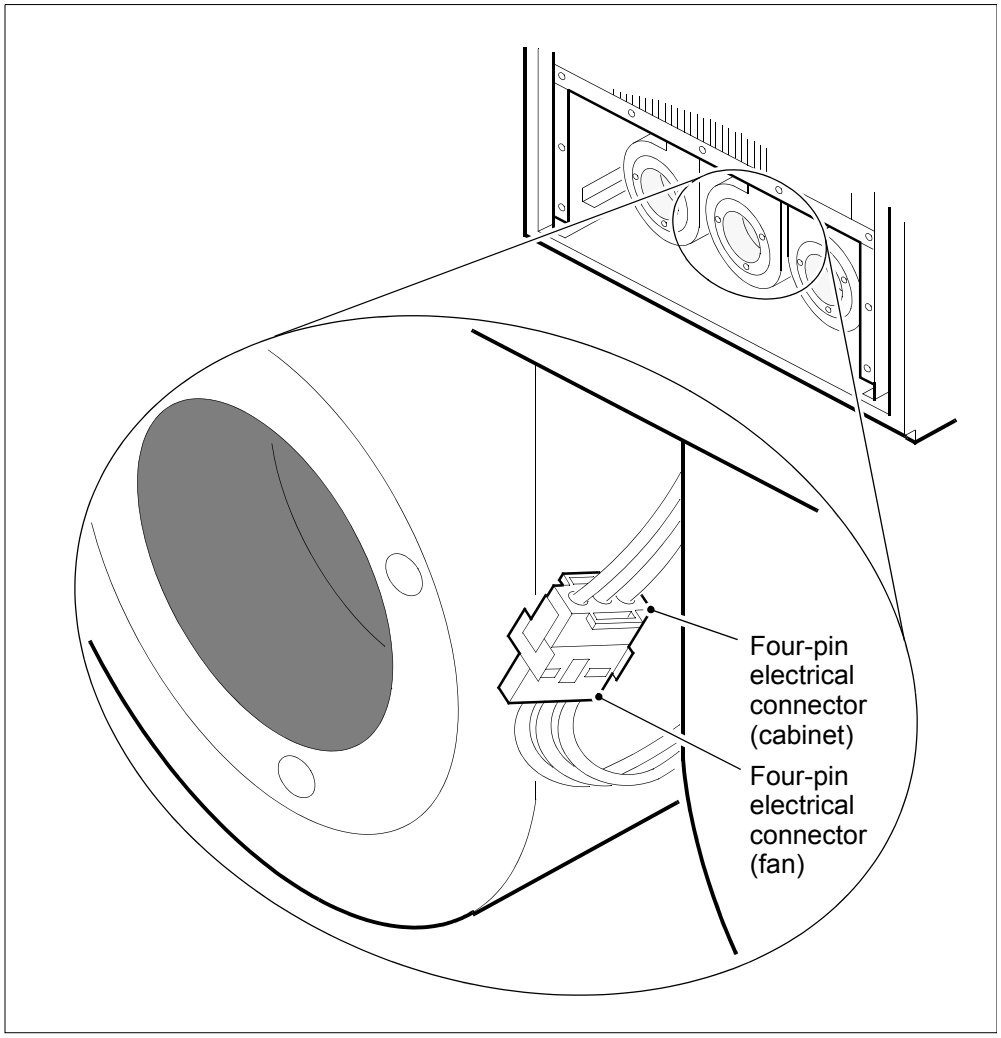

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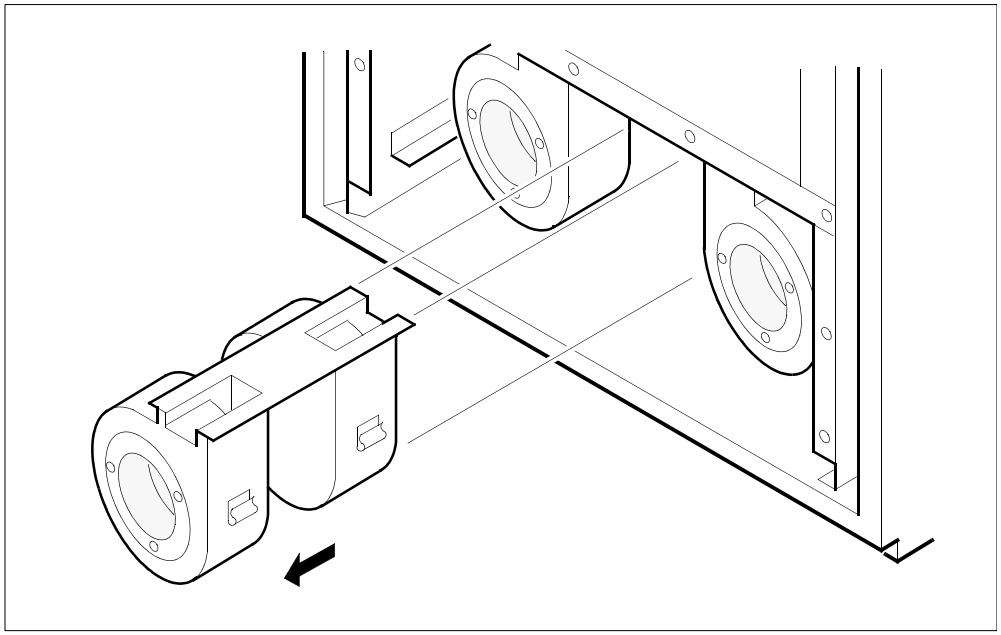
Figure 1-92
Sliding the fan out



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Replacing cooling unit NTRX91AA

Application

Use this procedure to replace a cooling unit (NTRX91AA) that has faults in the following cabinetized frames:

- NTMX89FA; cabinetized remote switching center/line card module (CRSC/LCM)
- NTMX89FB: cabinetized remote switching center/integrated services digital network (CRSC/ISDN)
- NTMX90AB: Global Peripheral Platform (GPP) cabinet
- NTRX89FC: cabinetized extension module (CEXT)

Definition

Perform this procedure on a cooling unit that has faults. The illumination of the FAN FAIL indicator on the front of the modular supervisory panel (MSP) indicates a cooling unit that has faults.

Common procedures

There are no common procedures.

Action

Procedure 1-37 provides steps and actions to replace a cooling unit (NTRX91AA). Figure 1-93 provides an overview of the procedure.

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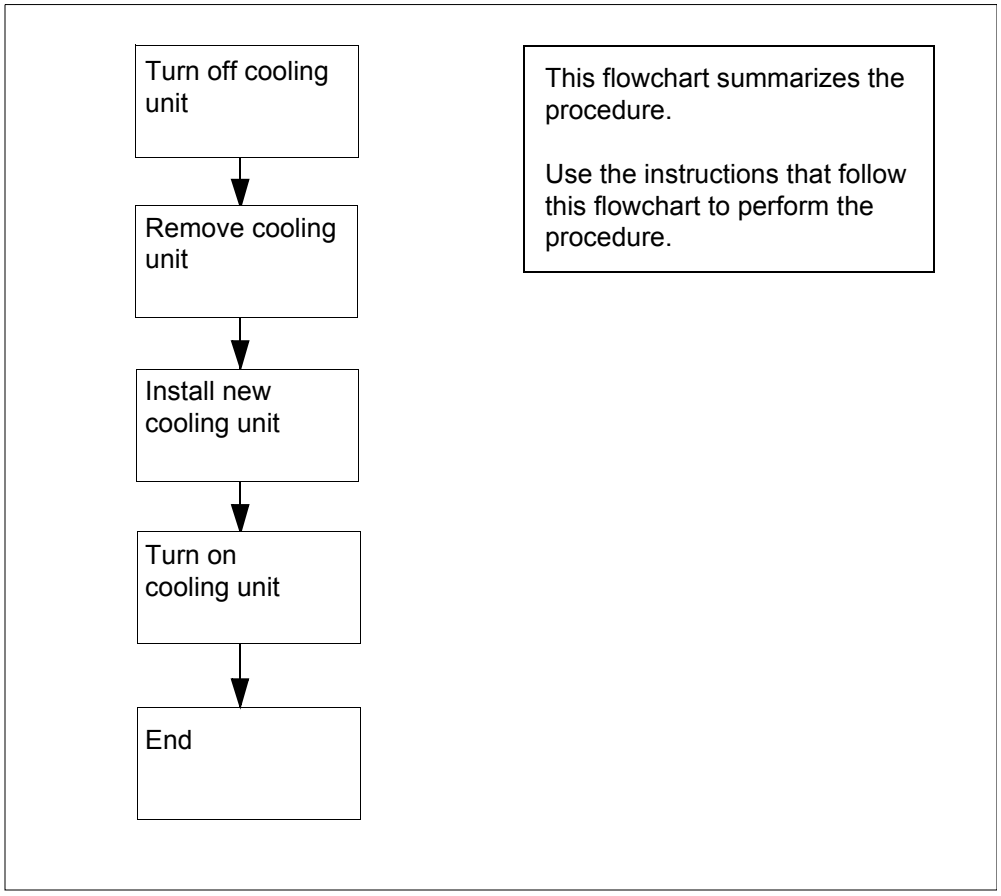
Figure 1-93
Summary of Replacing cooling unit NTRX91AA



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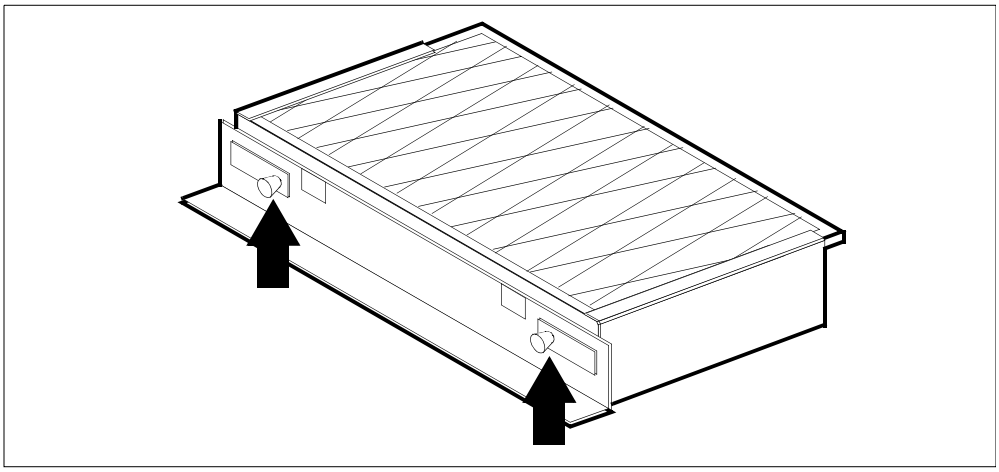
Procedure 1-37 describes how to replace a cooling unit (NTRX91AA) that has faults.

Procedure 1-37
Replacing cooling unit NTRX91AA

Step	Action
1	**DANGER** **To prevent overheating** Do not turn off the cooling unit for longer than 30 mins. At your current location, make sure that the cooling unit fans are off by removing the two fuses on the faceplate of the modular supervisory panel (MSP).
2	Turn the two knobs on the front panel of the cooling unit counter-clockwise. Slide the cooling unit out, as shown in Figure 1-94.
3	Slide in the new cooling unit (NTRX91AA) until both sides lock into place.
4	Replace the two fuses that you removed in step .
5	The procedure is complete.
	—end—

Figure 1-94
Turning knobs on front panel



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Replacing a CU voltage limiter and filter in a 28-inch cabinet

Application

Use this procedure to replace a cooling unit (CU) voltage limiter and filter (NTNX13CA) in a 28-inch (0.711-m) cabinet.

Definition

The CU voltage limiter and filter limits the input voltage to 56 V.

Common procedures

There are no common procedures.

Action

Procedure 1-38 provides steps and actions to replace a CU voltage limiter and filter (NTNX13CA) in a 28-inch (0.711-m) cabinet. Figure 1-95 provides an overview of the procedure.

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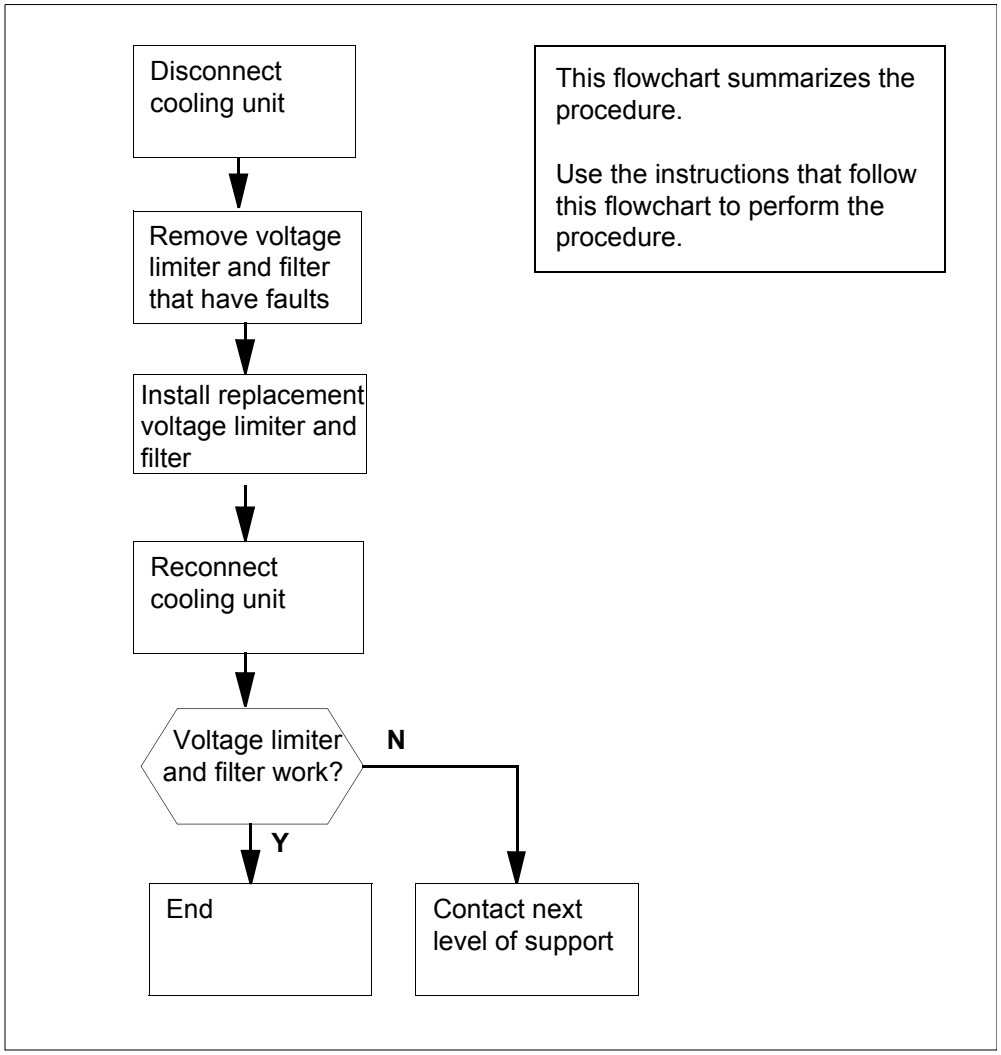
Figure 1-95
Summary of Replacing a CU voltage limiter and filter in a 28-inch cabinet



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Procedure 1-38 describes how to replace a cooling unit (CU) voltage limiter and filter (NTNX13CA) in a 28-inch (0.711-m) cabinet.

Procedure 1-38
Replacing a CU voltage limiter and filter in a 28-inch cabinet

Step	Action
1	**WARNING** **Loss of cabinet cooling** Disconnection of the cooling unit for an extended period of time can cause the equipment in the cabinet to overheat. At the rear of the cabinet, open the cabinet doors.
2	Disconnect the 15-pin electrical connector of the fan tray from the cabinet. The connector of the fan tray at the bottom of the cabinet corresponds to the 15-pin connector of the cabinet.
3	At the front of the cabinet, open the cabinet doors.
4	Loosen the two screws that hold the fan tray in place, as shown in Figure 1-96.
5	Slide the fan tray out of the cabinet.
6	**WARNING** **Static electricity damage** To handle circuit cards, wear a wrist strap that connects to a wrist-strap grounding point. A grounding point will be on the modular supervisory panel (MSP), or a frame supervisory panel (FSP). The wrist strap protects against static electricity damage. Unplug the two connectors on the NTNX13CA card.
7	To remove the NTNX13CA card from the fan tray, pull on the card near each standoff that supports the fan tray. The standoffs have a snapoff tip so that the card pulls off without the requirement of any tools.
8	Align the holes of the new card with the standoffs.
9	Press down on the card near the standoffs until the card snaps into place.
10	Reconnect the two connectors to the replacement NTNX13CA.

—sheet 1 of 2—

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Procedure 1-38
Replacing a CU voltage limiter and filter in a 28-inch cabinet (continued)

Step	Action
11	Slide the fan tray back into the cabinet.
12	Tighten the two screws that hold the fan tray in place.
13	At the back of the cabinet, reconnect the 15-pin electrical connector of the fan tray.
14	Close the cabinet doors.
15	**DANGER** **Risk of personal injury** Contact with unshielded cabinet wiring can result in electric shock. Do not touch the cabinet wiring. At the front of the cabinet, open the filter access panel at the bottom of the cabinet. To open the panel, slide the catches toward each other (A) and swing the panel downward (B). See Figure 1-97.
16	Determine if the replacement NTNX13CA card operates. ***Note:*** The LED on the NTNX13CA card is off, if the unit operates correctly. If the LED is off, go to step 17. If the LED is on, go to step 19.
17	Close the filter access panel.
18	Close the cabinet doors. Go to step 20.
19	For additional help, contact the next level of support.
20	The procedure is complete.

—sheet 2 of 2—

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Figure 1-96
Loosening fan tray screws

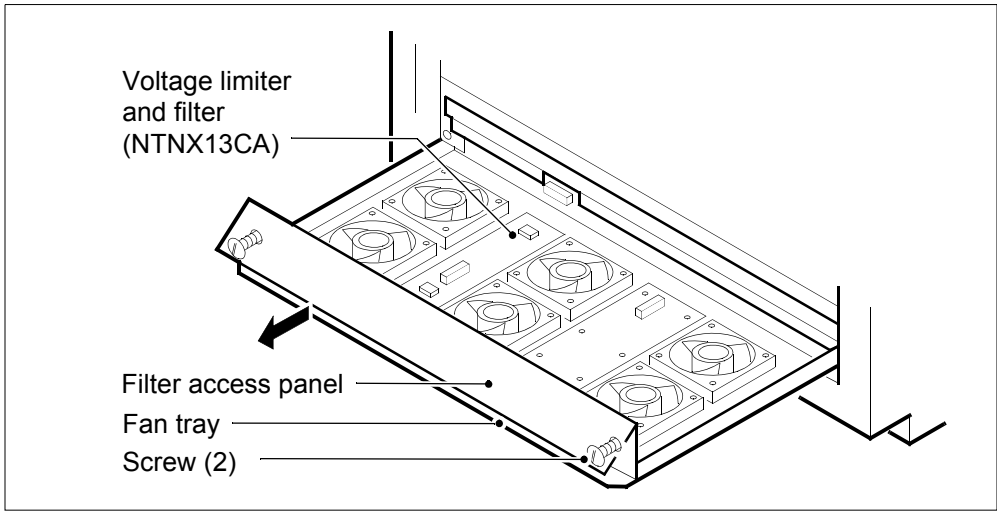
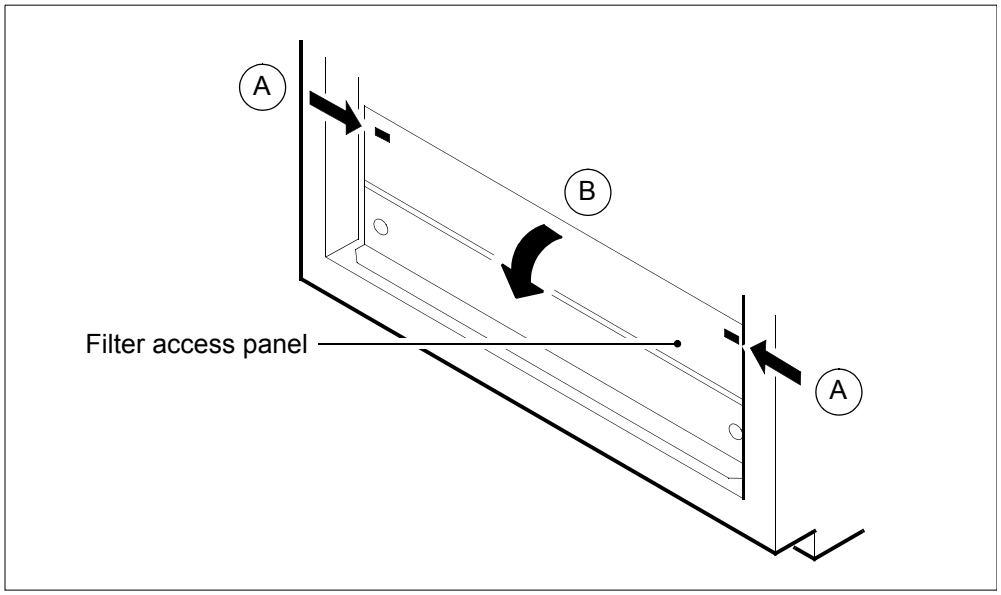


Figure 1-97
Opening the filter access panel



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Replacing a digital audio tape (DAT) drive NTFX32CA

Application

Use this procedure to replace a digital audio tape (DAT) drive NTFX32CA.

Definition

The digital audio tape (DAT) drive is a data storage device on the storage media card NTFX32AA. Card NTFX32AA is in the input/output module (IOM). The integrated service module (ISM) shelf contains the IOM Replace any drive that has a fault and can no longer record. Do not copy files from any drive that has a fault. Backup files are available on the parallel device.

Common procedures

There are no common procedures.

Action

Procedure 1-39 provides steps and actions to replace a DAT drive (NTFX32CA). Figure 1-98 provides an overview of the process.

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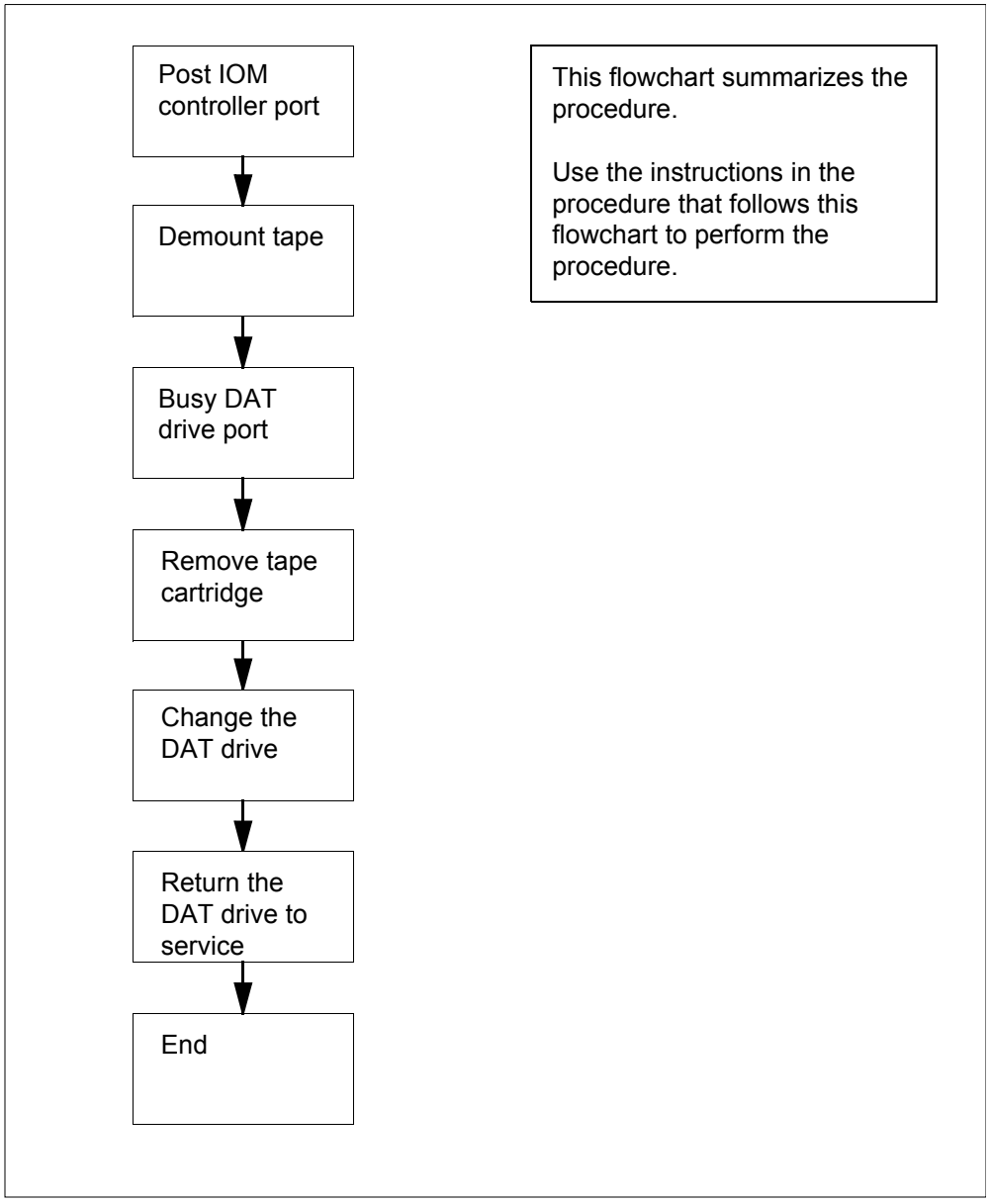
Figure 1-98
Summary of Replacing a DAT drive



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Procedure 1-39 describes how to replace a digital audio tape (DAT) drive NTFX32CA.

Procedure 1-39
Replacing a digital audio tape (DAT) drive

Step	Action

1	At your current location, obtain the following items:
	• replacement tape drive assembly
	• flat-blade screwdriver with a 1/4 in. (3-mm) blade
	
	Obtain a shipping carton for the DAT drive that you will replace. When possible, use the carton of the new drive.
	
	To access the IOD level of the MAP display, type **>MAPCI;MTC;IOD** and press **Enter**.
	
	Example of a MAP display:
	`IOD`
	`IOC 0 2 3`
	`STAT . . S`
	
	`DIRP: SMDR B XFER: . SLM: . NPO: . NX25:`
	`MLP : . DPPP: . DPPU: . SCAI:`

2	To post the input/output module (IOM) controller for the replaced DAT drive, type **>IOC *ioc_no*** (where *ioc_no* is the number of the affected IOM) and press **Enter**.
	
	Example of a MAP display:
	`IOC PORT 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17`
	`(IOM) STAT . . . - . . - - - - . - - - - - - . .`
	`TYPE C C C C M M S S`
	`O O O O T P C C`
	`N N N N D C S S`

3	To post the port for the replaced DAT drive, type **>PORT *port_no*** (where *port_no* is the port number of the DDU device) and press **Enter**.
	
	Example of a MAP display:
	`Port 16 MTD 1 DevType DAT`
	`(SCSI) TapeName User`
	`Status Idle`

4	Record the number of the replaced DAT drive.
5	Notify all users that there will be an interruption in service for the device. Wait until all users stop use of the DAT drive before you proceed to the next step.

—sheet 1 of 4—

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Procedure 1-39
Replacing a digital audio tape (DAT) drive (continued)

Step	Action
6	To demount a mounted DAT tape, type **>DEMOUNT T*mtd_no*** (where *mtd_no* is the number of the affected MTD, or DAT) and press **Enter**.

7	To manually busy the DAT drive port, type **>BSY** and press **Enter**.
	Example of a MAP display:
	`bsy`
	`OK`
	If the BSY command passes, go to step 8.
	If the BSY command fails, go to step 19.

8	At the ISM shelf, find the NTFX32CA DAT drive unit that has a fault in the IOM storage media card NTFX32AA in slot 4 of the ISM shelf. See Figure 1-99. Check the LED on the media card faceplate. If the LED is lit, go to step . If the LED is off, go to step 9.
9	To replace the media card NTFX32, perform the correct procedure in *Card Replacement Procedures*.
10	**DANGER** **Possible loss of data** Force eject to recover a cartridge only for emergency purposes. Never use the method as a quick way to eject the cartridge. Data can become lost or the tape can format in the wrong way. Press the unload button at the front of the unit to remove the tape cartridge. The drive will perform an unload sequence. The tape rewinds to the beginning of partition (BOP) for partition 0. When the tape is write-enabled, the copy of the tape log writes back to tape. The tape rewinds to the beginning of media. The tape also unthreads and ejects from the mechanism.

—sheet 2 of 4—

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Procedure 1-39
Replacing a digital audio tape (DAT) drive (continued)

Step	Action
11	**WARNING** **Static electricity damage** To handle the drive unit, wear a wrist-strap that connects to a wrist-strap grounding point on the modular supervisory panel (MSP). The wrist-strap protects against static electricity damage. Unscrew the spring-loaded lock mechanism located on the faceplate of the drive carrier, as shown in Figure 1-100. The drive carrier connects the DAT drive to the media card. After the drive disconnects, the red LED will be ON and the green LED will be OFF. Unscrew the lock mechanism to its complete limit, before you use the ejector to remove the unit.
12	Pull down on the lock latch to push the DAT drive carrier away from the media card, as shown in Figure 1-101.
13	Remove the DAT drive and the carrier, as shown in Figure 1-102. Pull the drive and carrier straight out of the media card.
14	**WARNING** **Ejector arm damage** Ensure that the ejector arm on the faceplate is flat and in the up position before you insert the DDU in the media card faceplate. Failure to complete this procedure can result in ejector arm damage. Insert the new DAT unit through the aperture in the media card faceplate. Ensure that the connector at the end of the unit plugs into the receptacle on the card. Lock the unit in position with the lock latch. Reconnect the drive unit with the media card. Turn the spring-loaded lock mechanism to the right to make the connection between the new unit and the media card. After the drive connects, the green LED will be ON and the red LED will stay OFF.

—sheet 3 of 4—

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Procedure 1-39
Replacing a digital audio tape (DAT) drive (continued)

Step	Action
15	**DANGER** **Use correct tape cartridges** Use cartridges with the digital data storage (DDS) logo on a label. The drive unit will support DDS/DDS-1 cartridges only. The drive will reject DDS-2 cartridges during the load operation. Insert the tape cartridge that you removed in step into the drive. The drive will take the cartridge and perform a load sequence.

16	At the MAP display, access the port level of the MAP display for the DAT drive. Type **>MAPCI;MTC;IOC *ioc_no*;PORT *port_no*** (where *ioc_no* is the number of the input/output module that houses the DAT unit you are working on and *port_no* is the number of the IOM port connected to the DAT unit), then press **Enter**.
	
	Example of a MAP display:
	`Port 16 MTD 1 DevType DAT`
	`(SCSI) TapeName User`
	`Status Idle`

17	To return the DAT to service, type **>RTS** and press **Enter**. If the RTS command passes, go to step 18. If the RTS command fails, go to step 19.
18	To remount the removed tape, type **>MOUNT *mtd_no*** (where *mtd_no* is the number of the MTD - DAT) and press **Enter**. Go to step 20.
19	For additional help, contact the person responsible for the next level of support.
20	The procedure is complete.

—sheet 4 of 4—

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Figure 1-99
DAT drive in ISM shelf

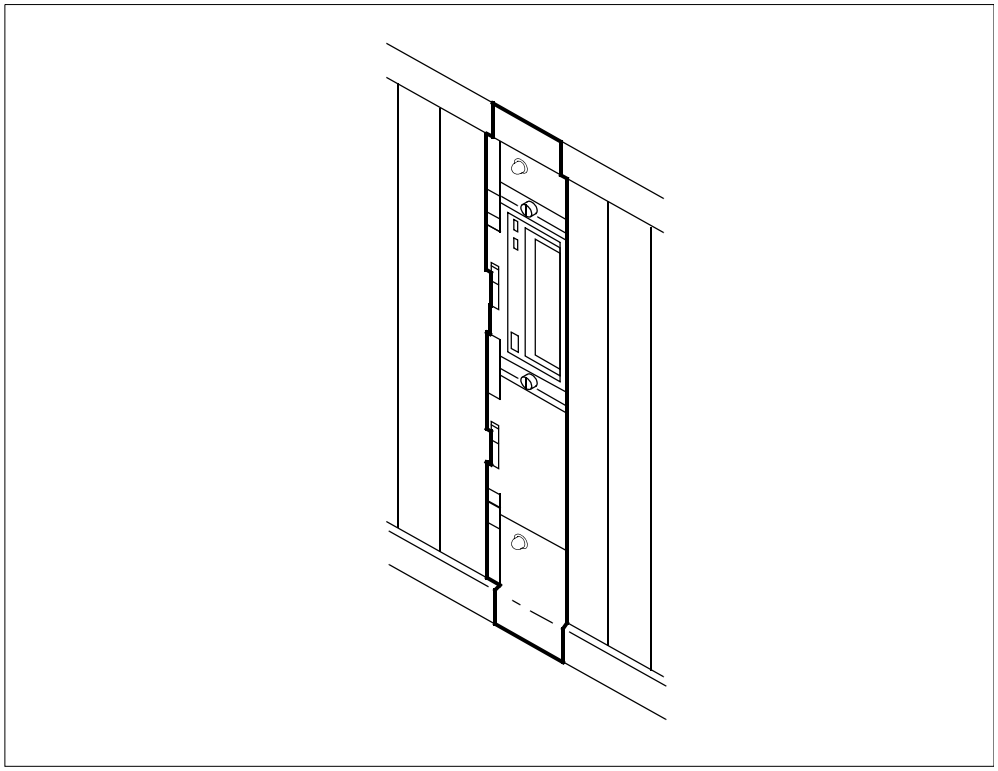

Figure 1-100
Unscrewing the lock mechanism

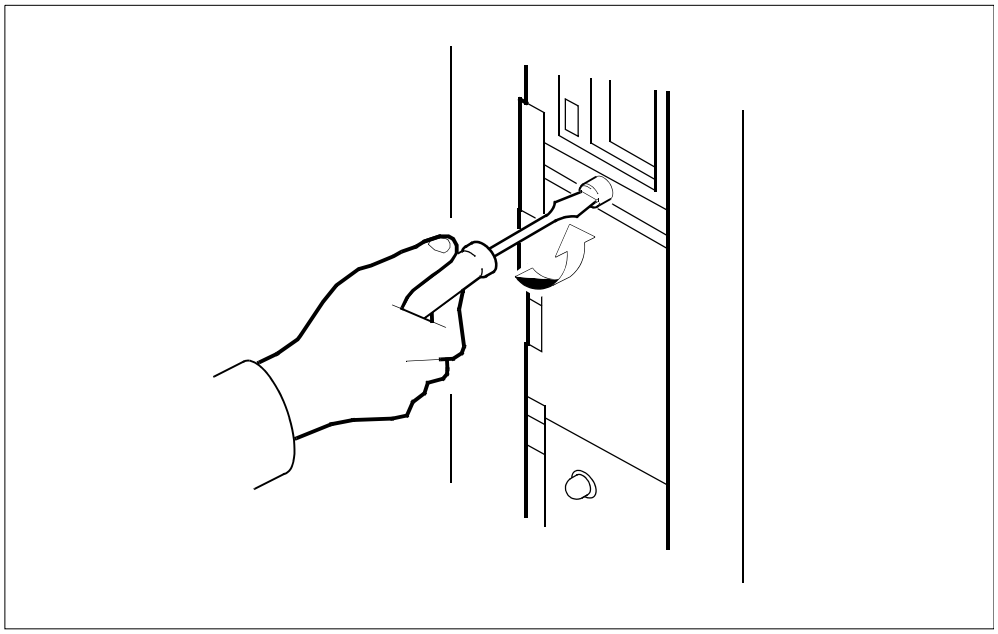

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Figure 1-101
Pulling down the lock latch

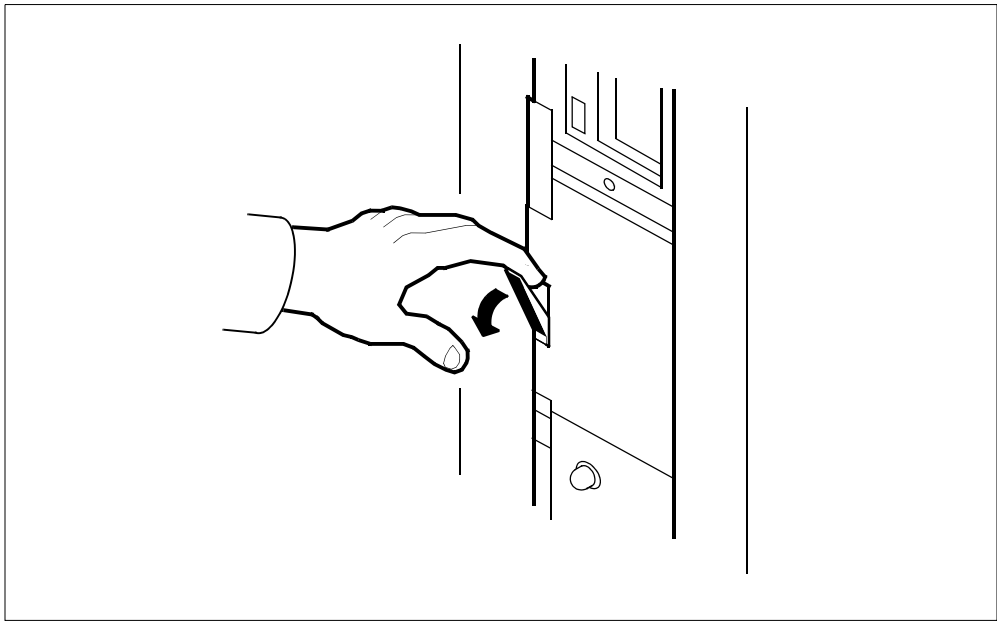
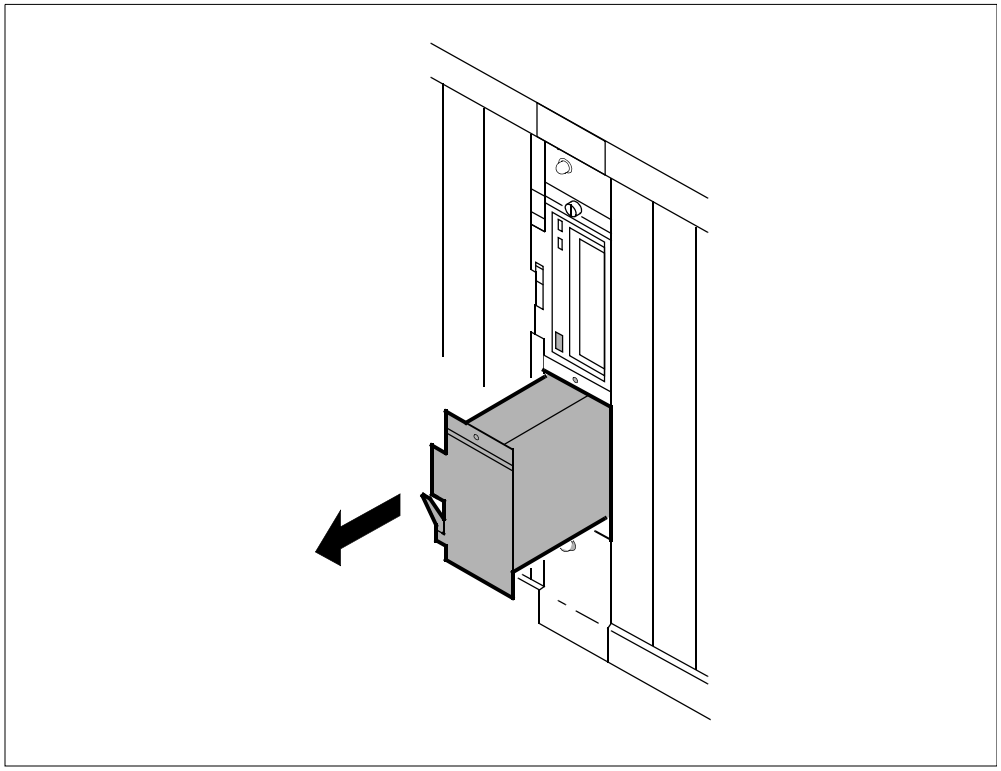


Figure 1-102
Removing the DAT



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Replacing a door gasket

Application

Use this procedure to replace a door gasket that has faults. The door gasket is on model A C28, model B C28, or model A C42 doors.

The following product codes are available on model A C28 door:

- P0691073 (EMI gasket, vertical)
- P0691074 (EMI gasket, horizontal)

The following product codes are available on model B C28 door:

- P0738895 (EMI gasket, vertical)
- P0738894 (EMI gasket, horizontal)

The following product codes are available on model A C42 door:

- P0691073 (EMI gasket, vertical)
- P0691074 (EMI gasket, horizontal)

Note: This procedure does not apply to gaskets for model B C28 (release issue 2) and model B C42 doors. These doors use a gasket that does not have an adhesive backing.

Definition

Perform this procedure if a gasket has faults.

Common procedures

There are no common procedures.

Action

Procedure 1-40 provides steps and actions to replace a faulty door gasket on model A C28, model B C28, or model A C42 doors. Figure 1-103 provides an overview of the procedure.

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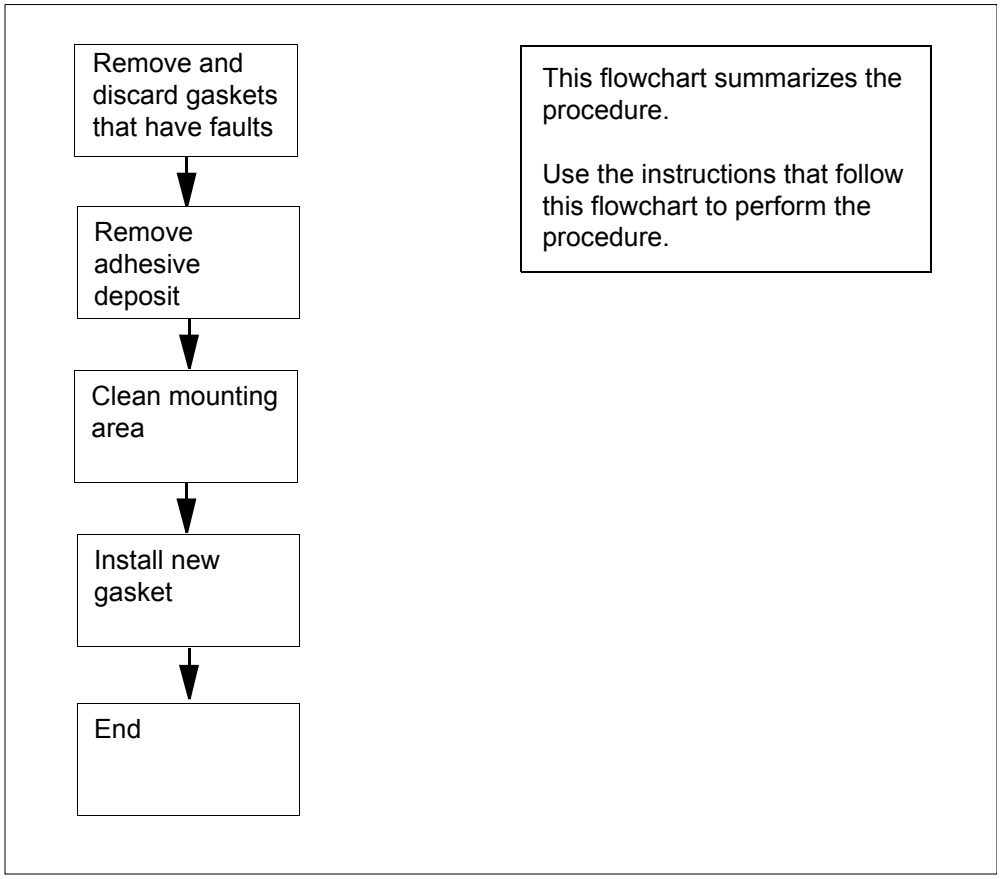
Figure 1-103
Summary of Replacing a door gasket



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Procedure 1-40 describes how to replace a door gasket that has faults.

Procedure 1-40
Replacing a door gasket

Step	Action
1	At the front of the cabinet, remove and discard the gasket that has faults.
2	Remove the adhesive deposit from the mounting surface of the inside door panel. ***Note:*** Apply a petroleum-based cleaner with a lint-free industrial wiper.
3	Use a lint-free industrial wiper to clean the mounting area with a degreasing solvent (for example, isopropyl alcohol). ***Note:*** Let the surface dry before you install the new gasket.
4	Peel off the release tape from the adhesive backing of the gasket. Install the gasket in place. ***Note:*** Press the gasket down to ensure that it adheres correctly to the surface of the door.
5	Close the doors carefully. Allow the adhesive to cure for 24 hours.
6	The procedure is complete.
	—end—

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Replacing a fan in a 28-inch cabinet

Application

Use this procedure to replace a fan in a 28-inch (0.711-m) cabinet.

Definition

A fan cools the components of the cabinet.

Common procedures

There are no common procedures.

Action

Procedure 1-41 provides steps and actions to replace a fan in a 28-inch (0.711-m) cabinet. Figure 1-104 provides an overview of the procedure.

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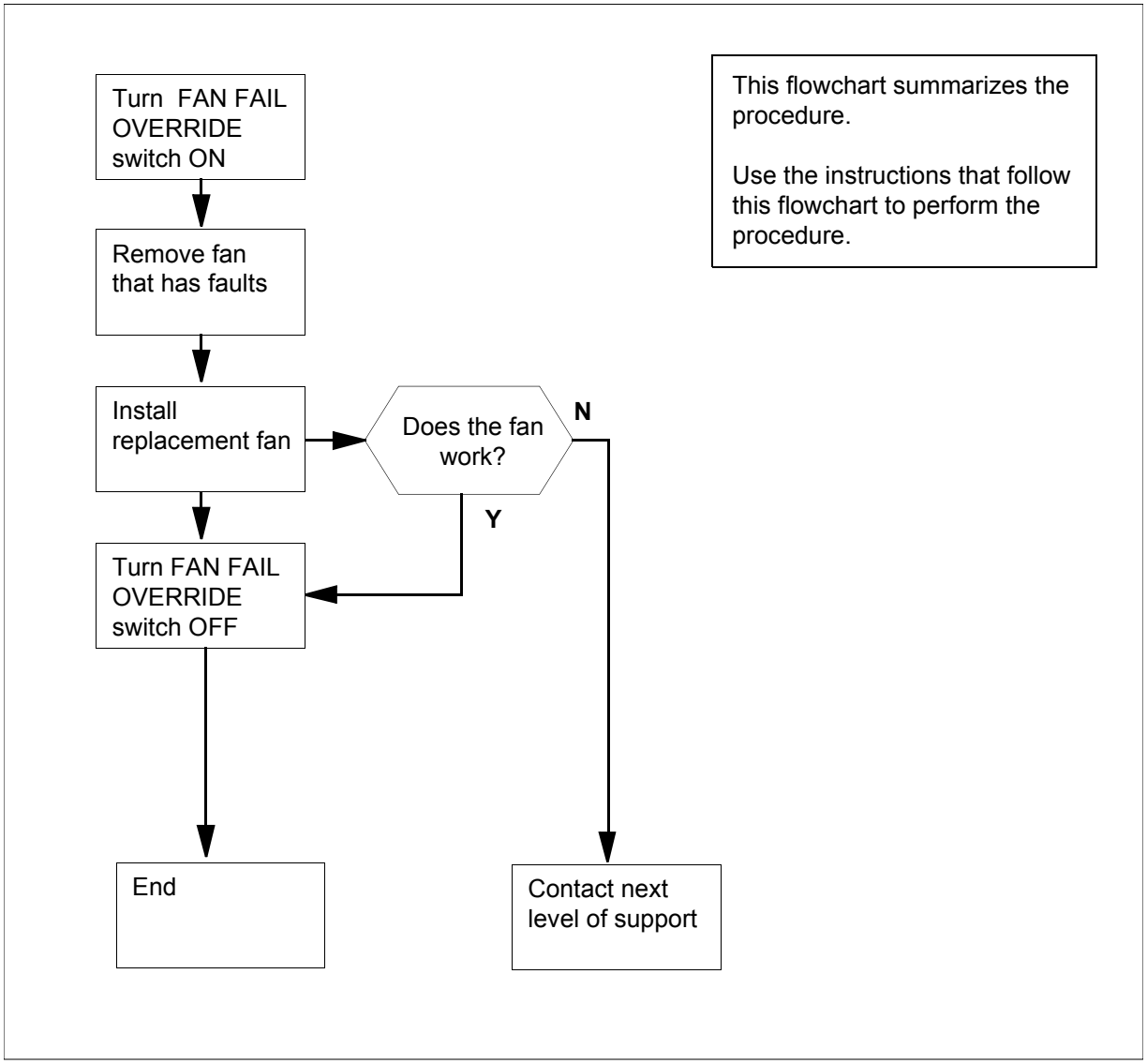
Figure 1-104
Summary of Replacing a fan in a 28-in cabinet



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Procedure 1-41 describes how to replace a fan in a 28-inch (0.711-m) cabinet.

Procedure 1-41
Replacing a fan in a 28-inch cabinet

Step	Action
1	At the front of the cabinet, open the cabinet doors.
2	**DANGER** **Risk of personal injury** A risk of electrocution exists. Avoid contact with the cabinet wiring. **DANGER** **Risk of personal injury** Avoid contact with the rotating fan blades. Turn the FAN FAIL OVERRIDE switch ON.
3	Locate the filter access panel at the bottom of the cabinet. To open the panel, slide the catches toward each other (A) and swing the panel down (B), as shown in Figure 1-105.
4	Record which fan has faults.
5	At the back of the cabinet, open the cabinet doors.
6	**WARNING** **Loss of cabinet cooling** The equipment can overheat if you leave the fan disconnected for an extended period. Locate the ten-pin electrical connector for the fan tray at the bottom of the cabinet. Disconnect the fan tray connector from the corresponding ten-pin connector on the cabinet.
7	At the front of the cabinet, loosen the two screws that hold the fan tray in place, as shown in Figure 1-106.
8	Slide the fan tray out of the cabinet

—sheet 1 of 2—

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Procedure 1-41
Replacing a fan in a 28-inch cabinet (continued)

Step	Action
9	Note the positive and negative electrical connections of the fan.
10	Locate the two electrical connectors on the fan tray. Unplug the two electrical connectors on the fan tray from the corresponding connectors on the fan that has faults.
11	Note the position of the fan that has faults (top and bottom, left and right).
12	Unscrew the four bolts that hold the fan in place, as shown in Figure 1-107.
13	Remove the fan that has faults.
14	Position the replacement fan on the fan tray in the same position used for the fan that has faults.
15	Screw the four bolts into the fan from the bottom of the tray.
16	Plug the two electrical connectors on the fan tray into the corresponding connectors on the fan.
17	Slide the fan tray back into the cabinet.
18	Tighten the two screws that hold the fan tray in place.
19	At the back of the cabinet, connect the ten-pin electrical connector on the fan again.
20	Close the cabinet doors.
21	At the front of the cabinet, determine if the replacement fan works. If the replacement fan works, go to step 22. If the replacement fan does not work, go to step 25.
22	Close the filter access panel.
23	Turn OFF the FAN FAIL OVERRIDE switch.
24	Close the cabinet doors. Go to step 26.
25	For additional help, contact the next level of support.
26	The procedure is complete.

—sheet 2 of 2—

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Figure 1-105
Opening the panel

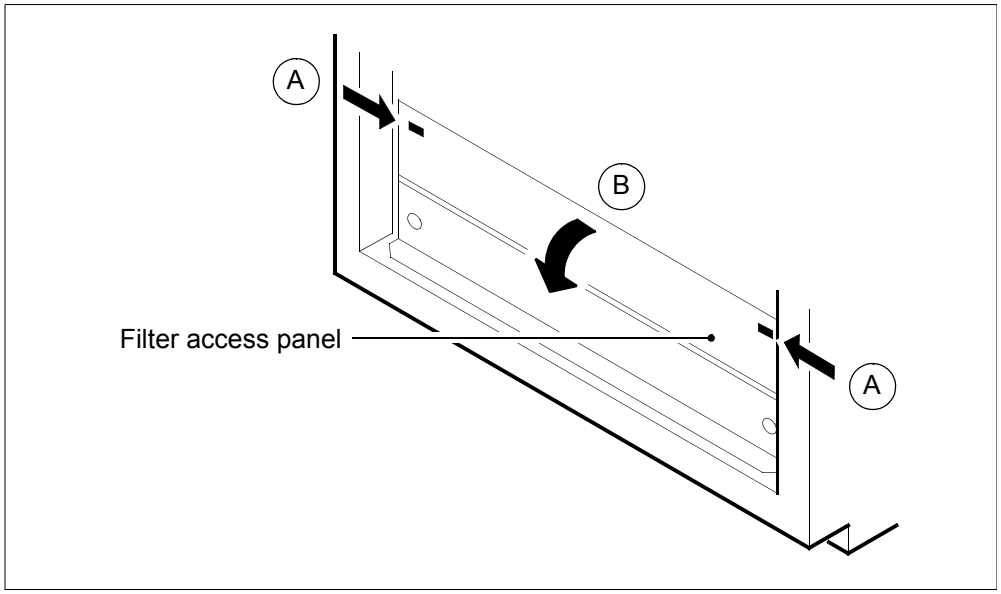

Figure 1-106
Loosening fan tray screws

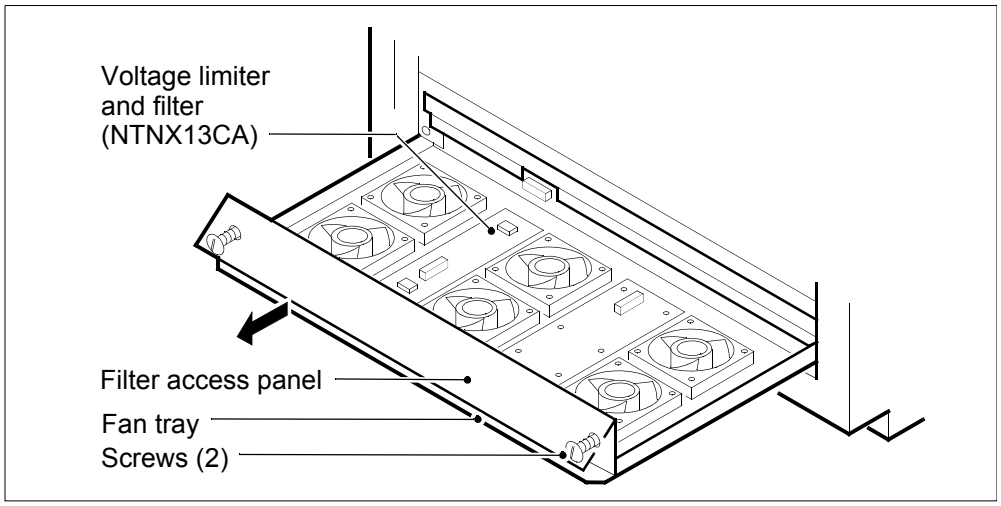

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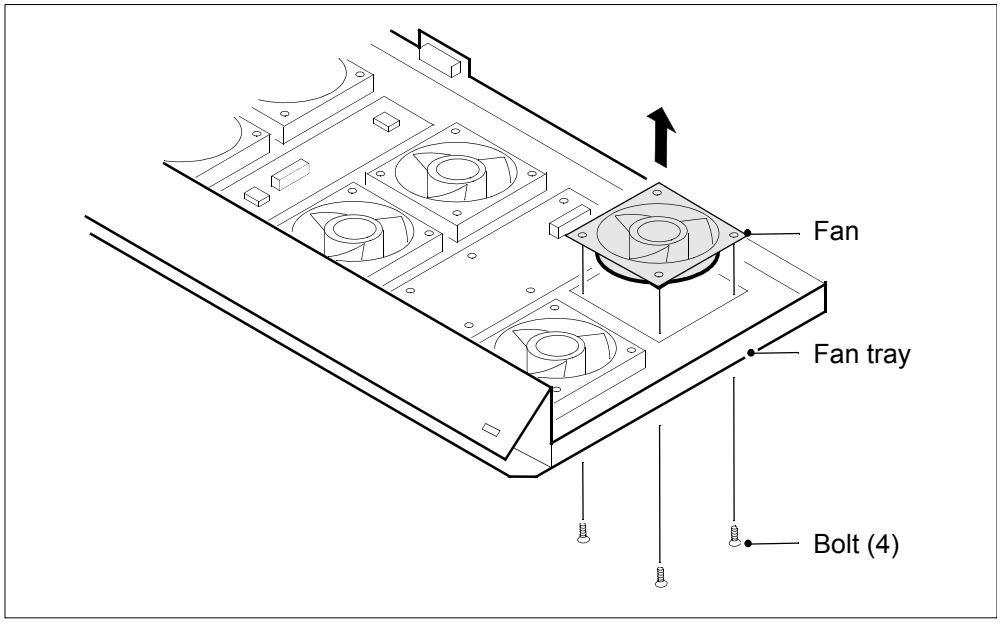
Figure 1-107
Unscrewing four fan bolts



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Replacing a fan in a 28-inch frame

Application

Use this procedure to replace a fan in a 28-inch (0.635-m) frame.

Definition

A fan cools the components of a frame.

Common procedures

There are no common procedures.

Action

Procedure 1-42 provides steps and actions to replace a fan in a 28-inch (0.635-m) frame. Figure 1-108 and Figure 1-109 provide an overview of the procedure.

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Figure 1-108
Summary of Replacing a fan in a 28-inch frame

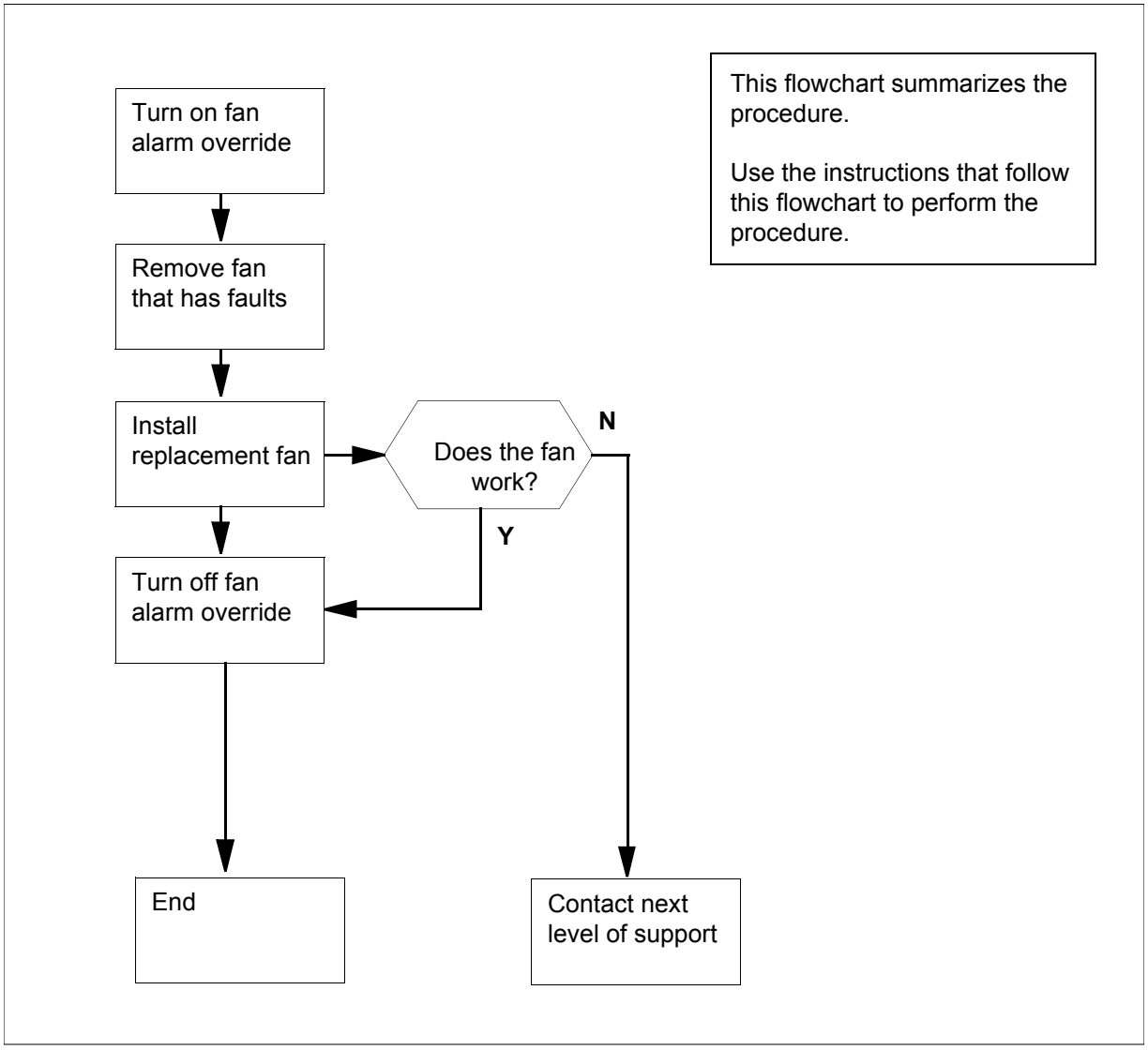

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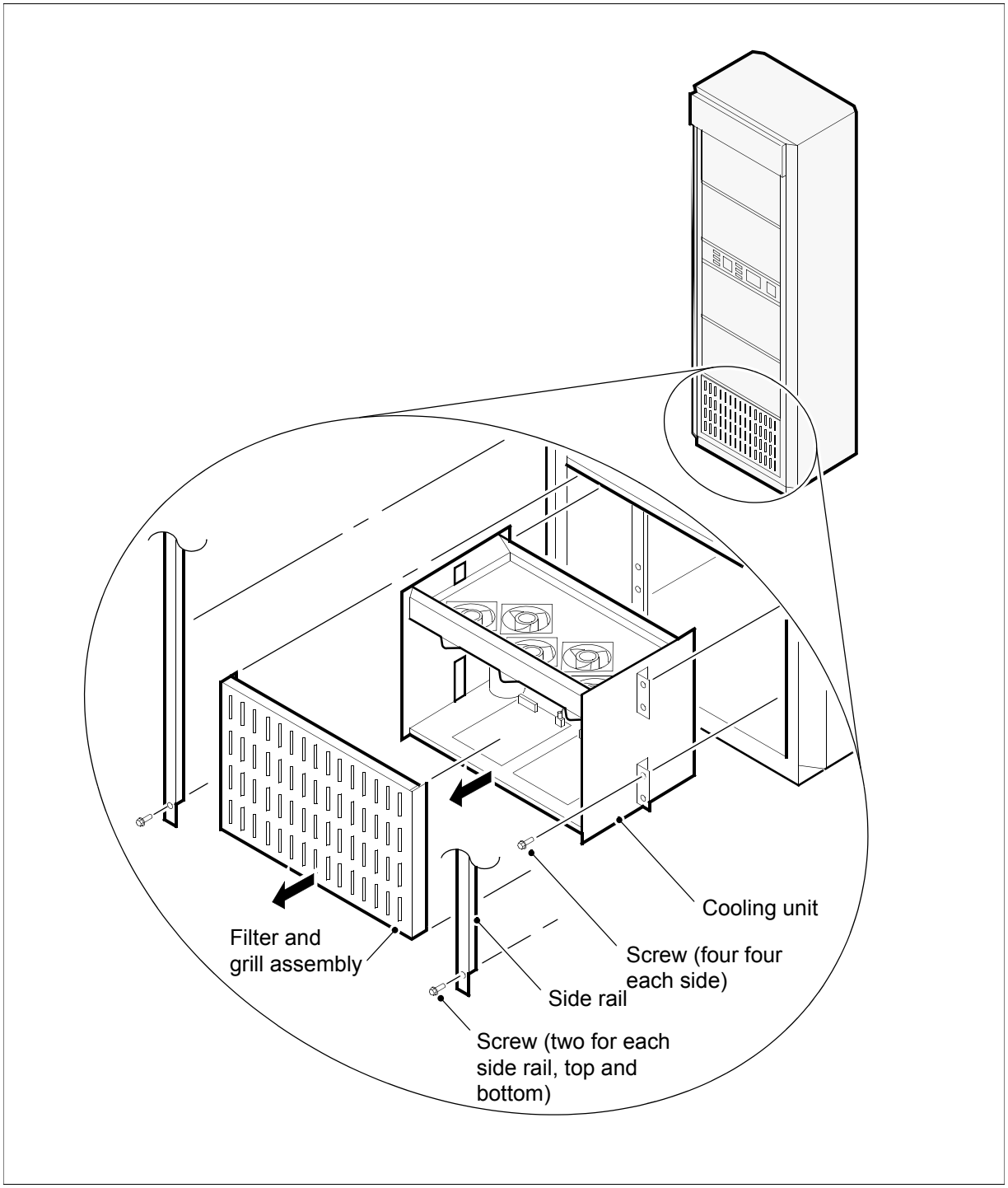
Figure 1-109
Summary of Replacing a fan in a 28-inch frame



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Procedure 1-42 describes how to replace a fan in a 28-inch (0.635-m) frame.

Procedure 1-42
Replacing a fan in a 28-inch frame

Step	Action
1	At the front of the frame, turn ON the override switch for the fan alarm on the frame supervisory panel (FSP).
2	Remove the filter panel at shelf 04.
3	To determine the fan that has faults, look from below the fan tray.
4	**DANGER** **Risk of injury** Avoid contact with the cabinet wiring to prevent risk of electrocution. Remove the side rails on the frame.
5	**DANGER** **Loss of frame cooling** Disconnection of the fan for an extended period of time can cause the equipment in the frame to overheat. Remove the four screws on each side of the cooling unit.
6	Turn OFF the two switches on each of the inverter cards, as shown in Figure 1-110.
7	Slide the fan tray out of the frame.
8	Note the positive and negative electrical connections of the fan that has faults.
9	Unplug the electrical connector of the fan that has faults.
10	Unplug the electrical connectors to each of the inverter cards.
11	Note the position of the fan that has faults (top and bottom, left and right).
12	Remove the fan.
13	Position the replacement fan that has faults on the fan tray with the same position as the fan.

—sheet 1 of 2—

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Procedure 1-42
Replacing a fan in a 28-inch frame (continued)

Step	Action
14	Screw the four bolts into the fan from the bottom of the tray.
15	Plug the two electrical connectors on the fan tray into the corresponding connectors of the fan.
16	Plug the electrical connector on the fan that has faults.
17	 **DANGER** **Risk of injury** Avoid contact with the fan blades that rotate. Plug the electrical connectors into each of the inverter cards.
18	To determine if the replacement fan operates, turn ON the toggle on the correct inverter card. If the replacement fan works, go to step 19. If the replacement fan does not work, go to step 24.
19	Turn OFF the switch on the inverter card. Slide the fan tray back into the frame.
20	Turn ON the switches on the two inverter cards.
21	Mount the four screws on each side of the cooling unit.
22	Mount the screws on the side rails of the frame.
23	Turn OFF the override switch for the fan alarm.
24	For additional help, contact the next level of support.
25	The procedure is complete.

—sheet 2 of 2—

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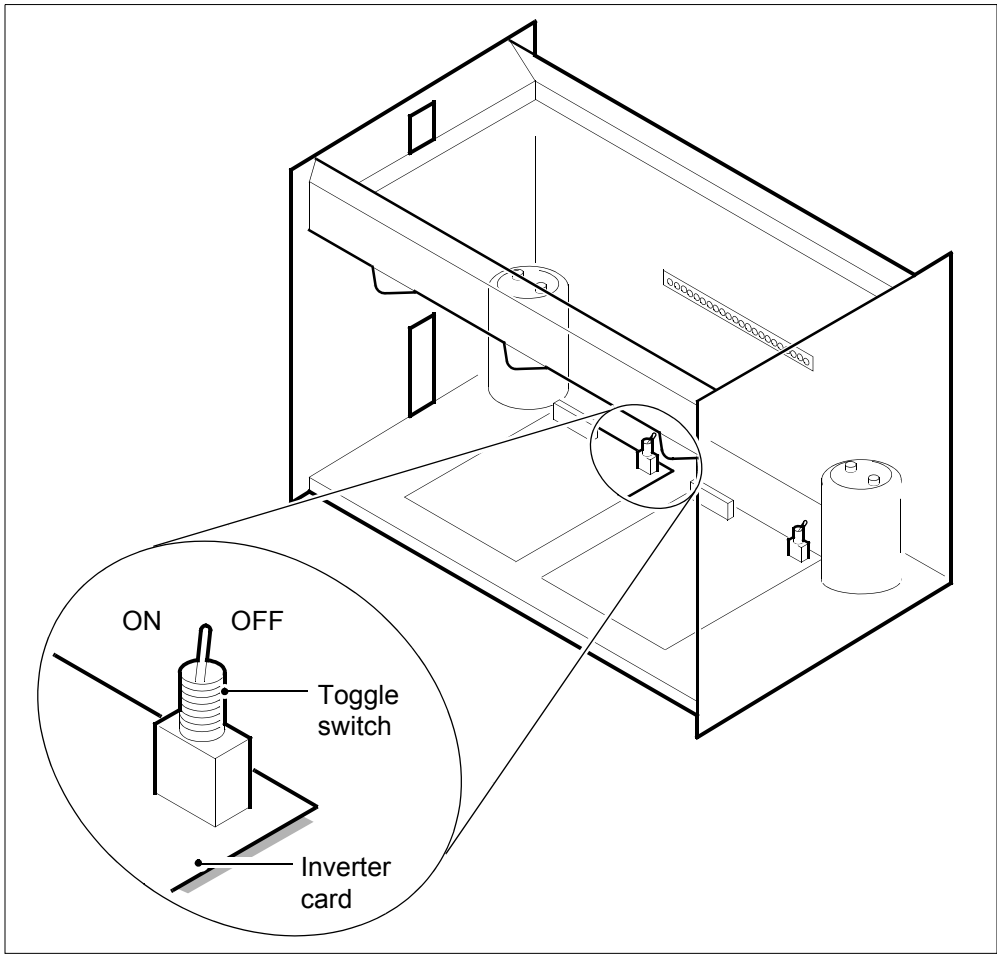
Figure 1-110
Turning off switches on inverter cards



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Replacing a fan in a 42-inch cabinet

Application

Use this procedure to replace a fan with one of the following common product codes (CPC) in a 42-inch (1.07 m) DMS cabinet:

- A0381714
- A0383325
- A0382103

Note: The product engineering codes for a 42-inch DMS cabinet are NT9X95AA and NT9X95BA.

Definition

Cooling unit fans cool the cabinet components.

Common procedures

There are no common procedures.

Action

Procedure 1-43 provides steps and actions to replace a fan in a 42-inch (1.07 m) DMS cabinet. Figure 1-111 provides an overview of the procedure.

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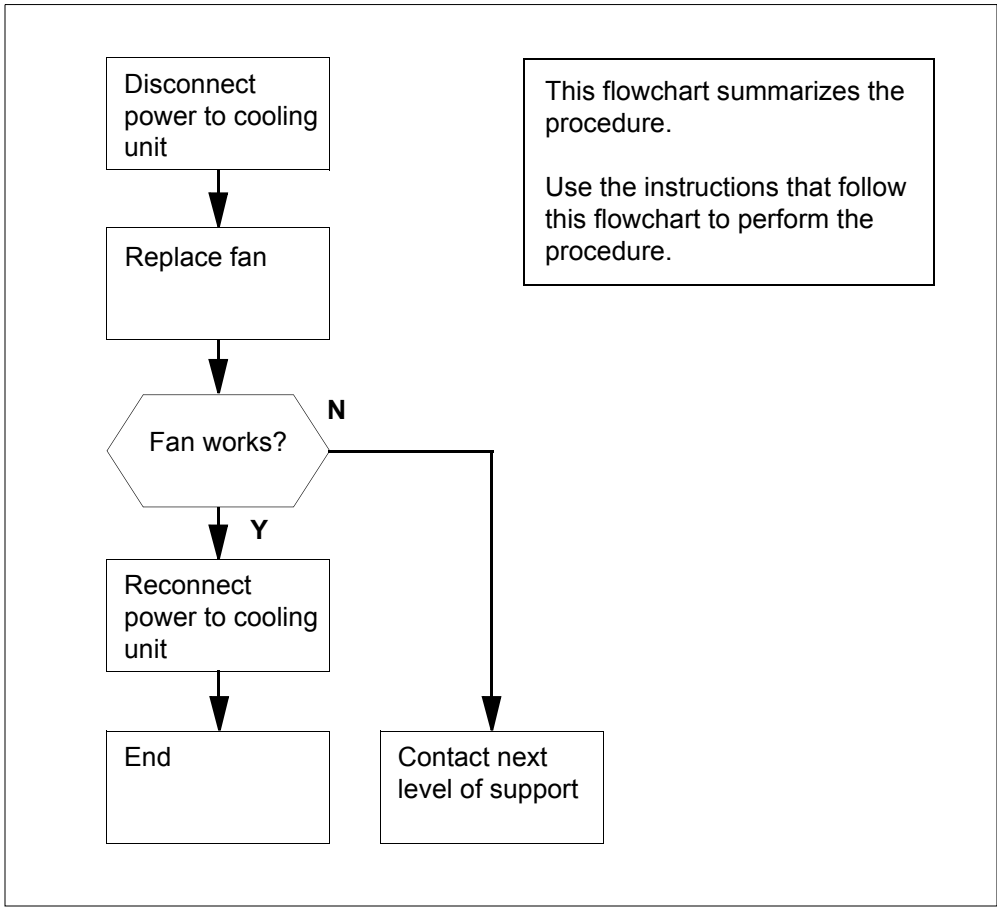
Figure 1-111
Summary of Replacing a fan in a 42-inch cabinet



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Procedure 1-43 describes how to replace a A0381714, A0383325 or A0382103 fan in a 42-inch (1.07 m) DMS cabinet.

Procedure 1-43
Replacing a fan in a 42-inch cabinet

Step	Action
1	 **DANGER** **Risk of injury or damage to equipment** When you replace a cooling unit, do not wear jewelry, (for example, rings, bracelets or necklaces).  **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended removal of power can cause the equipment to overheat and cause damage. At your current Location, obtain a replacement for the cooling unit fan.
2	At the front of the cabinet, record the cabinet number. ***Note:*** The cabinet number (for example D00) is on the front of the cabinet, above the doors.
3	Consult office records or operating company personnel. Determine if power to the cooling unit connects through a power distribution center (PDC) or a cabinetized PDC (CPDC). If power to the cooling unit connects through a PDC, go to step 4 If power to the cooling unit connects through a CPDC, go to step 6.
4	At the front of the PDC, locate the cooling unit fuses. See Figure 1-112. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse is for the side A power feed and the other fuse for the side B power feed. The cabinet number (recorded in step 2) is above each fuse cartridge. The letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 4—

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Procedure 1-43
Replacing a fan in a 42-inch cabinet (continued)

Step	Action
5	**DANGER** **Risk of injury** Electricity can arc when you remove a fuse cartridge. Wear eye protection when you remove fuse holders for the cooling unit. **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuse, pull the fuse holder straight out from the front panel of the PDC, as shown in Figure 1-113. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn on. The fan failure lamp is at the top of the cabinet between the doors.
6	At the front of the CPDC, locate the cooling unit circuit breaker. See Figure 1-114. The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step 2) is above each circuit breaker. The letters SN CU (SuperNode cooling unit) are below each circuit breaker.

—sheet 2 of 4—

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Procedure 1-43
Replacing a fan in a 42-inch cabinet (continued)

Step	Action
7	**DANGER** **Risk of injury** Electricity can arc when you throw the breaker. Wear eye protection. **CAUTION** **Possible loss of service** Before you throw the circuit breakers, make sure that you disconnect power to the cooling unit. If you throw the wrong breakers, you can disconnect power to a critical hardware component and cause loss of service. Throw the cooling unit circuit breakers. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
8	At the front of the cabinet, open the cabinet doors.
9	To remove the cooling unit cover at the bottom of the cabinet, remove the nine mounting screws from the cover. See Figure 1-115. Do not remove the four bolts that fasten the cooling unit to the cabinet. The procedure *Replacing a cooling unit assembly in a 42-inch cabinet* in this document shows the location of the screws.
10	Slide the fan that has faults out of the cabinet to disconnect the electrical connector on the fan, as shown in Figure 1-116. Do not strain the wiring harness while you disconnect the connector.
11	Disconnect the electrical connector on the fan that has faults from the corresponding electrical connector on the cabinet.
12	Slide the fan that has faults the rest of the way out of the cabinet, as shown in Figure 1-117.
13	Slide the replacement fan half-way into the cabinet.

—sheet 3 of 4—

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Procedure 1-43
Replacing a fan in a 42-inch cabinet (continued)

Step	Action
14	Connect the electrical connector on the replacement fan to the corresponding electrical connector on the cabinet. ***Note:*** See step 10 for the location of the connector.
15	Slide the replacement fan the rest of the way into the cabinet.
16	Determine if power to the cooling unit connects through a circuit breaker at the CPDC. If power to the cooling unit connects through a PDC, go to step 17. If power to the cooling unit connects through a CPDC, go to step .
17	At the front of CPDC, insert the cooling unit fuses by pushing the fuse cartridges straight into the front panel of the PDC. Go to step 19.
18	**DANGER** **Risk of injury** Electricity can arc when you throw a cooling unit breaker. Wear eye protection. At the front of the PDC, throw the cooling unit circuit breaker.
19	At the front of the cabinet, determine if the replacement fan works. If the replacement fan works, go to step 20. If the replacement fan does not work, go to step 22.
20	Reinstall the cooling unit cover. ***Note:*** See step 9 for the location of the cover mounting screws.
21	Close the cabinet doors. Go to step 23.
22	For additional help, contact the next level of support.
23	The procedure is complete.

—sheet 4 of 4—

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Figure 1-112
Front of the PDC

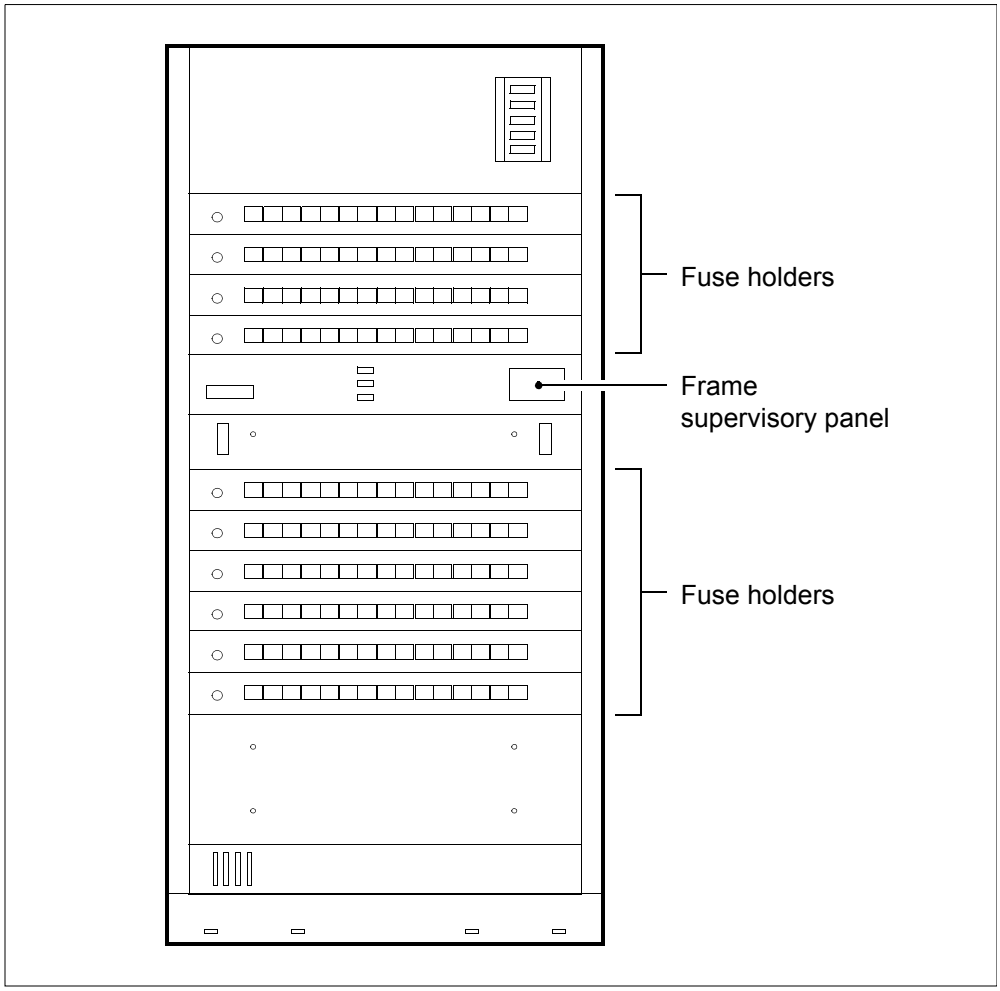

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Figure 1-113
Removing cooling unit fuses

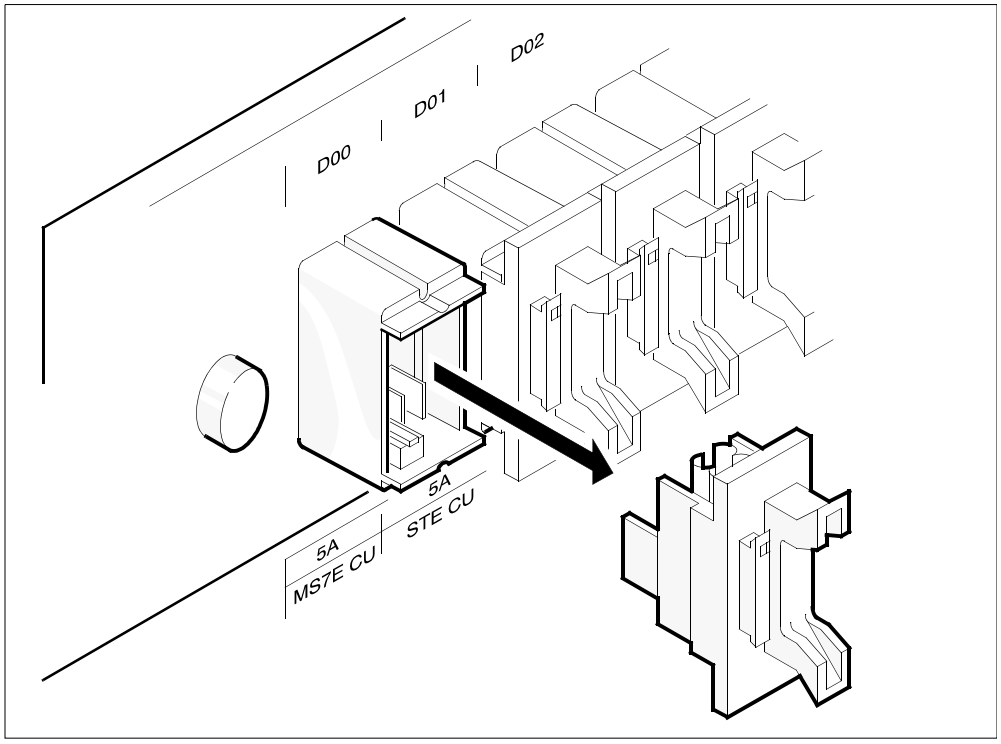

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Figure 1-114
Front of the PCDC

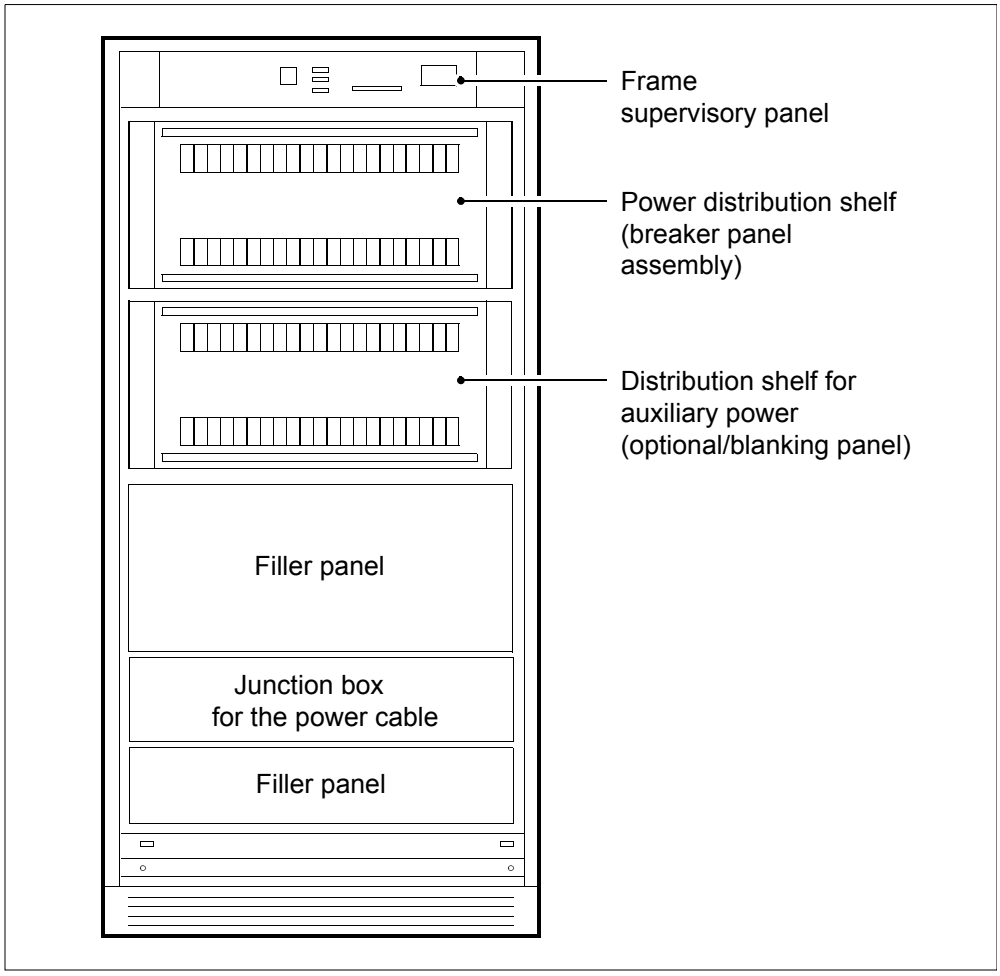

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Figure 1-115
Removing the cooling unit cover

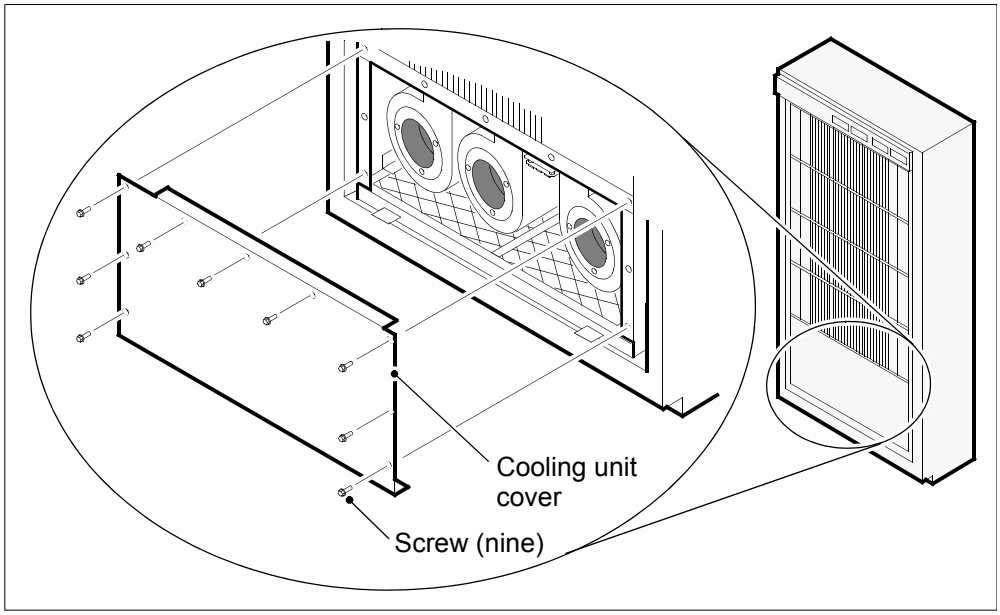

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Figure 1-116
Disconnecting fan electrical connector

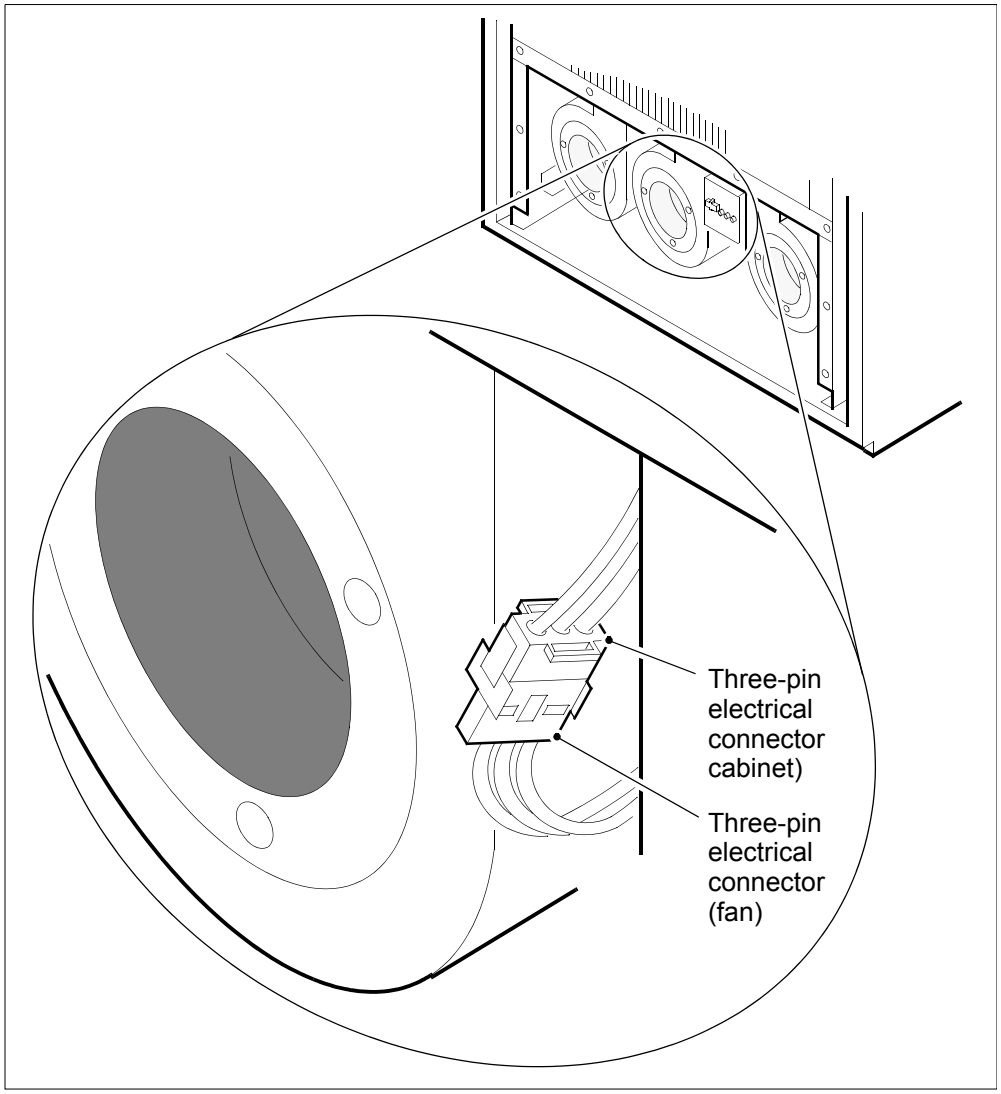

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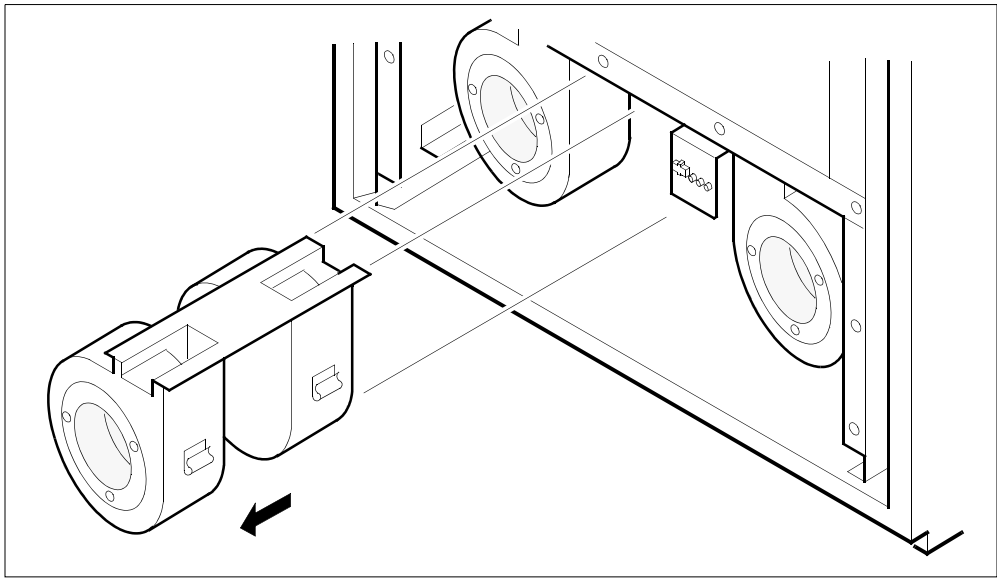
Figure 1-117
Sliding the fan out



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Replacing a line card

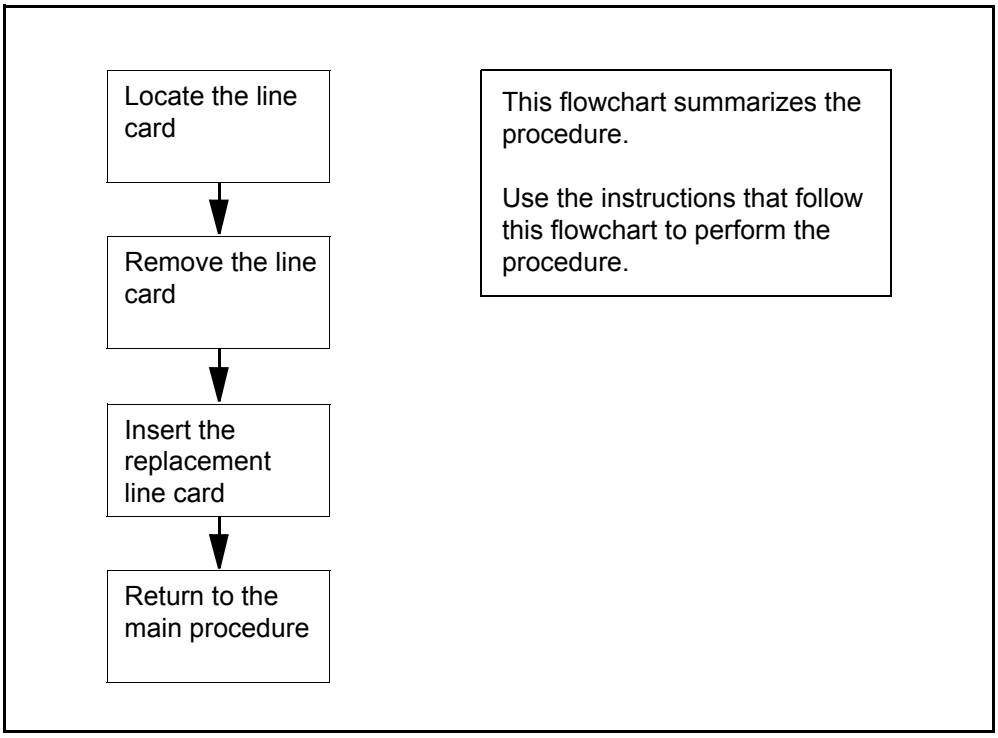
Task

Use this procedure to replace a line card in an ISDN enhanced line concentrating module (LCME).

Action

Procedure 1-44 provides steps and actions to replace a line card in an ISDN enhanced line concentrating module (LCME). Figure 1-118 provides an overview of the procedure.

Figure 1-118
Summary of replacing a line card



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Procedure 1-44 describes how to replace a line card in an ISDN enhanced line concentrating module (LCME).

Procedure 1-44
Replacing a line card

Step	Action

1

WARNING
Possible equipment damage
Proceed only when a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service.

At the MAP, type **>MAPCI;MTC;PM;POST LCME <LCME_NO>;QUERYPM** and press the **Enter** key to display the location and product engineering code (PEC) for the line card.

Example of a MAP display:

```
>MAPCI  NODISP;  MTC;  PM;  POST  LCME36  0;  QUERYPM
MAPCI:
MTC:
PM:
POST:
PM TYPE: LCME Int. No.: 10 Status index: 5 Node_No: 177
LCME HOST 36 0 Memory Size-Unit 0: 256K, Unit 1: 256K
Loadnames: LCMINV - LCME81BA, Unit0: LCME81BA,
Unit1: LCME81BA
LCM REX is ON; PASSED on TUE. 1997/10/28 at 01:30:05

Node Status: {OK, FALSE}
Unit 0 Status: {OK, FALSE}       /RG: 1
Unit 1 Status: {OK, FALSE}       /RG: 1
Ring Generator Status:
             RG 0 Status: {OK}        Preferred
             RG 1 Status: {OK}        Standby
             RG in Overload : NO
Site Flr RPos Bay_id  Shf Description Slot EqPEC
HOST  03 CC06 LCEI 36  04  LCME 36 0       BX30AB
Services : ISDN Equipped
```

—sheet 1 of 3—

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Procedure 1-44
Replacing a line card

Step	Action
	The following information describes the location of the line card in this example: • **Site** in the HOST office • **Flr** on the 3rd floor • **RPos** in row C that contains the line equipment bay, 01, • **Bay_id** in ISDN-line concentrating equipment, bay 01 • **Shf** on shelf 18 • **Description** in hardware device LCME, bay 01 • **Slot** in slot 02, drawer 09 ***Note:*** In this example, the PEC of the line card is BX27AA.
2	To replacing a line card, record the location and PEC for the line card.
3	 **WARNING** **Static electricity damage** When you handle circuit cards, wear a wrist-strap that connects to the wrist strap grounding point of a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage. At the shelf, locate the drawer for the line card. Use the information you recorded in step 2.
4	Press the small thumb-latch button on the lower left edge of the drawer. Carefully pull the drawer toward you until it stops. See Figure 1-119.

—sheet 2 of 3—

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Procedure 1-44
Replacing a line card

Step	Action
5	**DANGER** **Risk of personal injury** The large flat rectangular component mounted on the front edge can be very hot. To avoid burns to your fingers, use the insertion and withdrawal tool to remove the card, as shown in Figure 1-120. Locate the card that needs replacement (it can be either a 3-in or a 6-in card).
6	Clamp the insertion and withdrawal tool to the front edge of the card, as shown in Figure 1-120. Carefully remove the card from the connector pins.
7	Place the removed card into an electrostatic discharge (ESD) protective container.
8	Make sure the replacement card has the same PEC and PEC suffix as the removed card.
9	Clamp the insertion and withdrawal tool to the front edge of the replacement card, as shown in step 6. Align the card with the connector pins and carefully insert the card.
10	Make sure the card sits in a secure position.
11	Carefully push the drawer back into the shelf until the thumb-latch button locks.
12	The procedure is complete. Return to the main procedure that sent you to this procedure and follow the directions.

—sheet 3 of 3—

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Figure 1-119
Removing the drawer

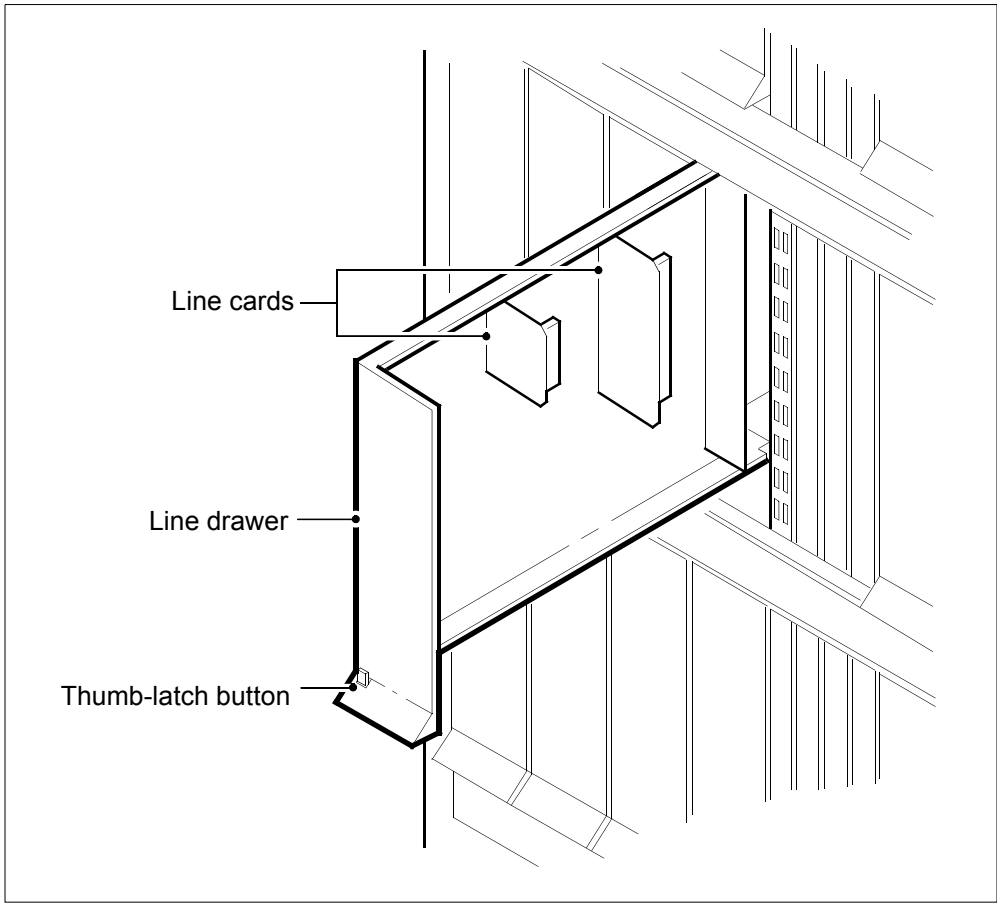

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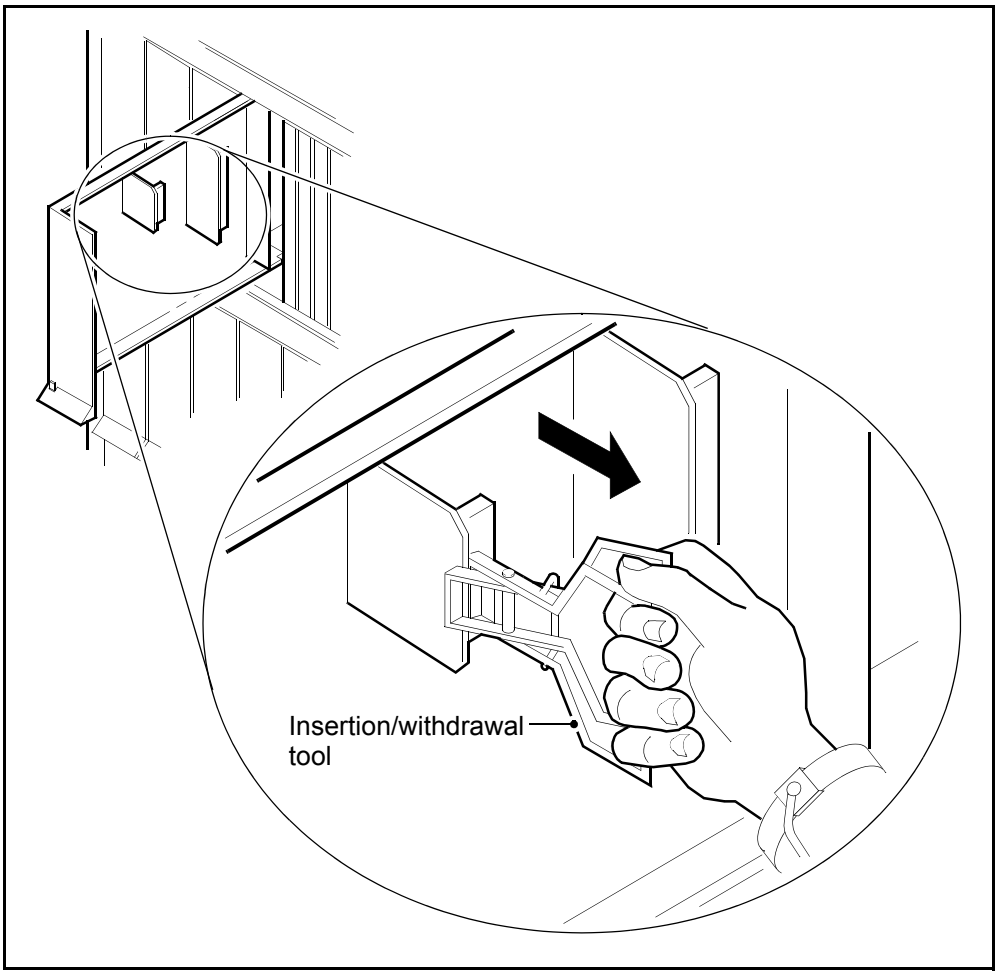
Figure 1-120
Using insertion and withdrawal tool to remove card



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Replacing an NT9X95 card in a cooling unit

Application

Use this procedure to replace an NT9X95SA card in a cooling unit electronic module. Use this procedure when the electronic module has one of the following common product codes (CPC), in a 42-inch DMS cabinet:

- A0383326
- A0383327

Note: The product engineering codes (PEC) for a 42-in. DMS cabinet are NT9X95AA and NT9X95BA.

Definition

An NT9X95SA card refers to a card that has faults and requires replacement.

Common procedures

There are no common procedures.

Action

Procedure 1-45 provides steps and actions to replace an NT9X95SA card in a cooling unit electronic module. Figure 1-121 provides an overview of the procedure.

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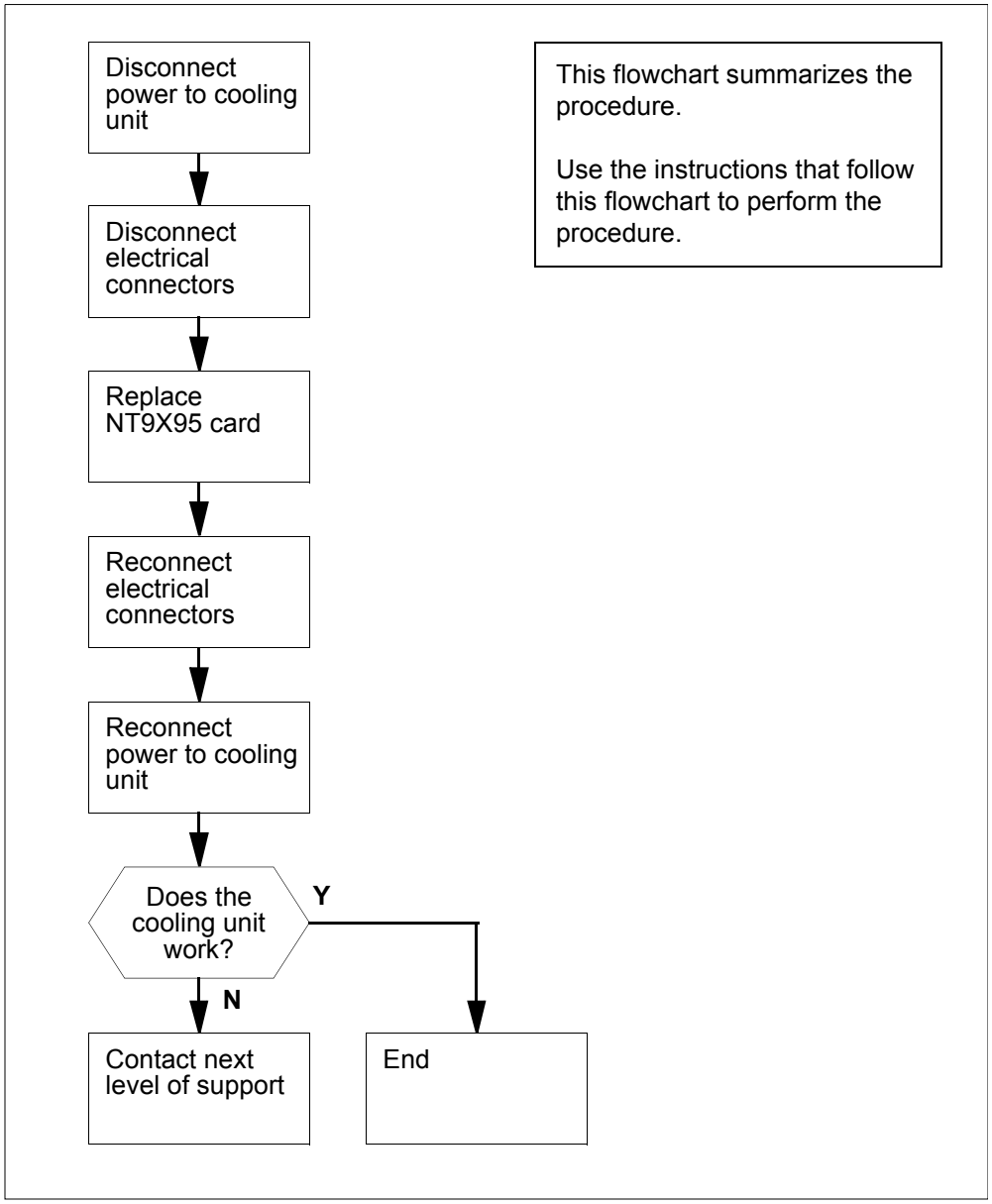
Figure 1-121
Summary of Replacing an NT9X95 card in a cooling unit



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Procedure 1-45 describes how to replace an NT9X95SA card in a cooling unit electronic module.

Procedure 1-45
Replacing an NT9X95 card in a cooling unit

Step	Action
1	**DANGER** **Risk of injury or damage to equipment** When you replace an electronic module for the cooling unit, do not wear jewelry (for example, rings, bracelets or necklaces). **WARNING** **Possible equipment damage** Do not remove power to the cooling unit for more than 30 minutes. Extended removal of power can cause the unit to overheat and cause damage. At your current location, obtain a replacement electronic module for the cooling unit. Ensure that the replacement card has the same product engineering code (PEC) and PEC suffix as the card that you remove.
2	At the front of the cabinet, find the cabinet number. Record it. The cabinet number (for example, D00) is on the front of the cabinet, above the doors.
3	Consult office records or operating company personnel. Determine if power to the cooling unit connects through a power distribution center (PDC) or a cabinetized PDC (CPDC). If power for the cooling unit connects through a PDC, go to step 4. If power for the cooling unit connects through a CPDC, go to step 6.
4	At the front of the PDC, locate the cooling unit fuses. See Figure 1-122. The cooling unit fuse cartridges are on the front panel of the PDC. The fuse cartridges contain two cooling unit fuses. One fuse is for the side A power feed, and one fuse is for the side B power feed. The cabinet number (recorded in step 2) is above each fuse cartridge. The letters SN CU (SuperNode cooling unit) are below each fuse cartridge.

—sheet 1 of 5—

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Procedure 1-45
Replacing an NT9X95 card in a cooling unit (continued)

Step	Action
5	**DANGER** **Risk of injury** Electricity can arc when you remove a fuse cartridge from the cooling unit. Wear eye protection. **CAUTION** **Possible loss of service** Remove only the cooling unit fuses. Removal of the wrong fuses can disconnect power to a critical hardware component and cause loss of service. To remove the cooling unit fuses, pull the fuse cartridges straight out from the front panel of the PDC, as shown in Figure 1-123. When you remove the fuse cartridges, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn on. The fan failure lamp is at the top of the cabinet between the doors.
6	At the front of the CPDC, locate the circuit breakers for the cooling unit. See Figure 1-124. The two cooling unit circuit breakers are on the front panel of the CPDC. One circuit breaker is for the side A power feed. The other circuit breaker is for the side B power feed. The cabinet number (recorded in step 2) is above each breaker. The letters SN CU (SuperNode cooling unit) are below each breaker.

—sheet 2 of 5—

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Procedure 1-45
Replacing an NT9X95 card in a cooling unit (continued)

Step	Action
7	**DANGER** **Risk of injury** Electricity can arc when you throw a cooling unit circuit breaker. Wear eye protection. **CAUTION** **Possible loss of service** Make sure that you disconnect power to the cooling unit before you throw the circuit breakers. If you throw the wrong breakers, you can disconnect power to a critical hardware component and cause loss of service. Throw the circuit breakers for the cooling unit. When you throw the circuit breakers, you remove power from the cooling unit. Removal of power from the cooling unit causes the fan failure lamp to turn ON. The fan failure lamp is at the top of the cabinet between the doors.
8	At the front of the cabinet, open the cabinet doors.
9	To remove the cooling unit cover at the bottom of the cabinet, remove the nine mounting screws from the cover. See Figure 1-125. Do not remove the four bolts that fasten the cooling unit to the cabinet. The procedure *Replacing a cooling unit assembly* in this document shows the location of these screws.
10	At the back of the cabinet, remove the two screws that fasten the electronic module to the cooling unit assembly. ***Note:*** The screws are near the upper left-hand corner of the back plate of the cooling unit.
11	Disconnect the power connector from the electronic module. ***Note:*** The power connector is near the upper left-hand corner of the back plate of the cooling unit.

—sheet 3 of 5—

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Procedure 1-45
Replacing an NT9X95 card in a cooling unit (continued)

Step	Action
12	**CAUTION** **Possible equipment damage or service interruption** Label all electrical connectors before you disconnect them. If you reconnect to the wrong electrical connector, you can cause equipment damage or service interruption. At the front of the cabinet, disconnect the four electrical connectors at the front of the electronic module. Use both hands to disconnect the connectors. Grasp the top of the connector in one hand and the bottom of the connector in the other hand. Press the releases at the sides of the connector top and pull on the connector bottom.
13	Slide out the electronic module for the cooling unit, as shown in Figure 1-126.
14	Disconnect the electrical connector that connects the NT9X95 card to the electronic module.
15	To remove the NT9X95 card, remove the four screws that mount the card to the electronic module.
16	To install the replacement NT9X95 card, insert the four screws that mount the card to the electronic module.
17	Reconnect the electrical connector that you disconnected in step 14.
18	Slide the electronic module back in until the module touches the cooling unit backplate.
19	Reconnect the four electrical connectors you disconnected in step . To reconnect each connector, press the releases on the connector top and insert the connector bottom until it locks in place. If you cannot insert the connector bottom, turn it one-half turn and try to insert it again.
20	At the back of the cabinet, insert the screws that fasten the electronic module back into the cooling unit assembly. (You removed these screws in step 10.)
21	Reconnect the power connector you disconnected in step 11.
22	Determine if power for the cooling unit connects through a PDC or a CPDC. If power for the cooling unit connects through a PDC, go to step 23. If power for the cooling unit connects through a CPDC, go to step .

—sheet 4 of 5—

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Procedure 1-45
Replacing an NT9X95 card in a cooling unit (continued)

Step	Action
23	At the front of PDC, insert the cooling unit fuses into the front panel of the PDC. Push the fuse cartridges straight into the front panel. Go to step 25.
24	 **DANGER** **Risk of injury** Electricity can arc when you throw a circuit breaker for the cooling unit. Wear eye protection. At the front of CPDC, throw the cooling unit circuit breakers.
25	At the front of the cabinet, determine if all cooling unit fans work. If one or more of the cooling unit fans does not work, the fan failure lamp turns on. The fan failure lamp is at the top of the cabinet between the doors. If all fans work, go to step 26. If any fans do not work, go to step 28.
26	Replace the cooling unit cover. ***Note:*** See step 9 for the location of the mounting screws.
27	Close the cabinet doors. Go to step 29.
28	For additional help, contact the next level of support.
29	The procedure is complete.

—sheet 5 of 5—

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Figure 1-122
Front of the PDC

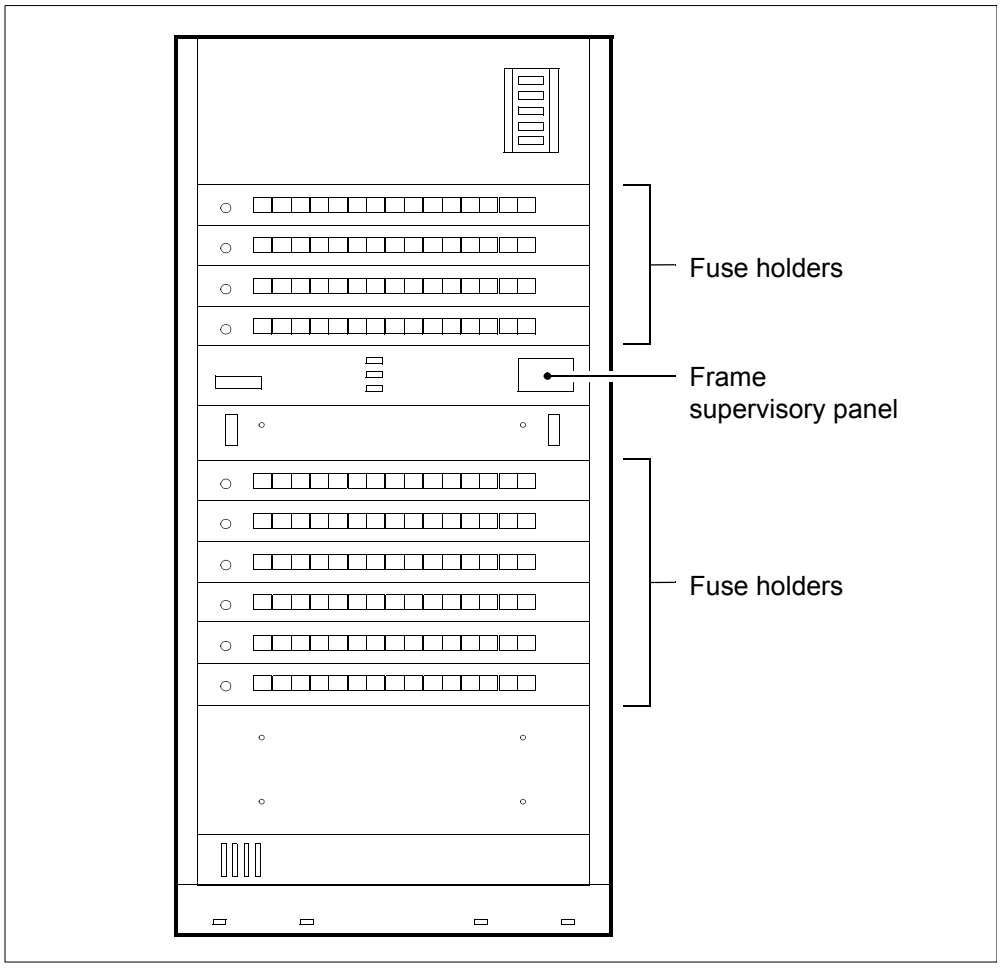

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Figure 1-123
Removing cooling unit fuses

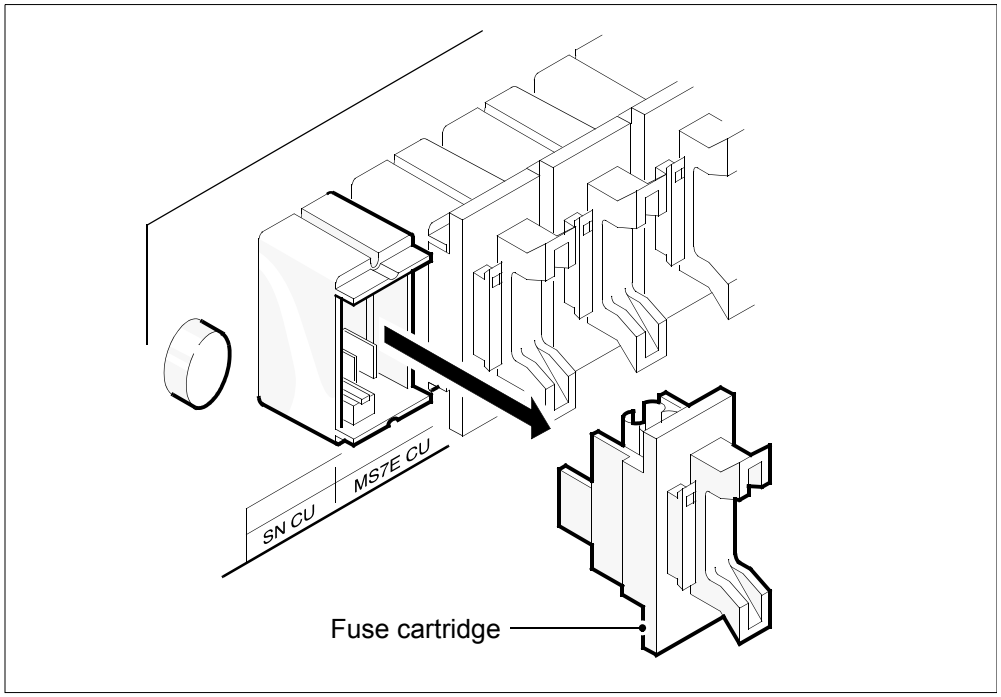

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Figure 1-124
Front of CPDC

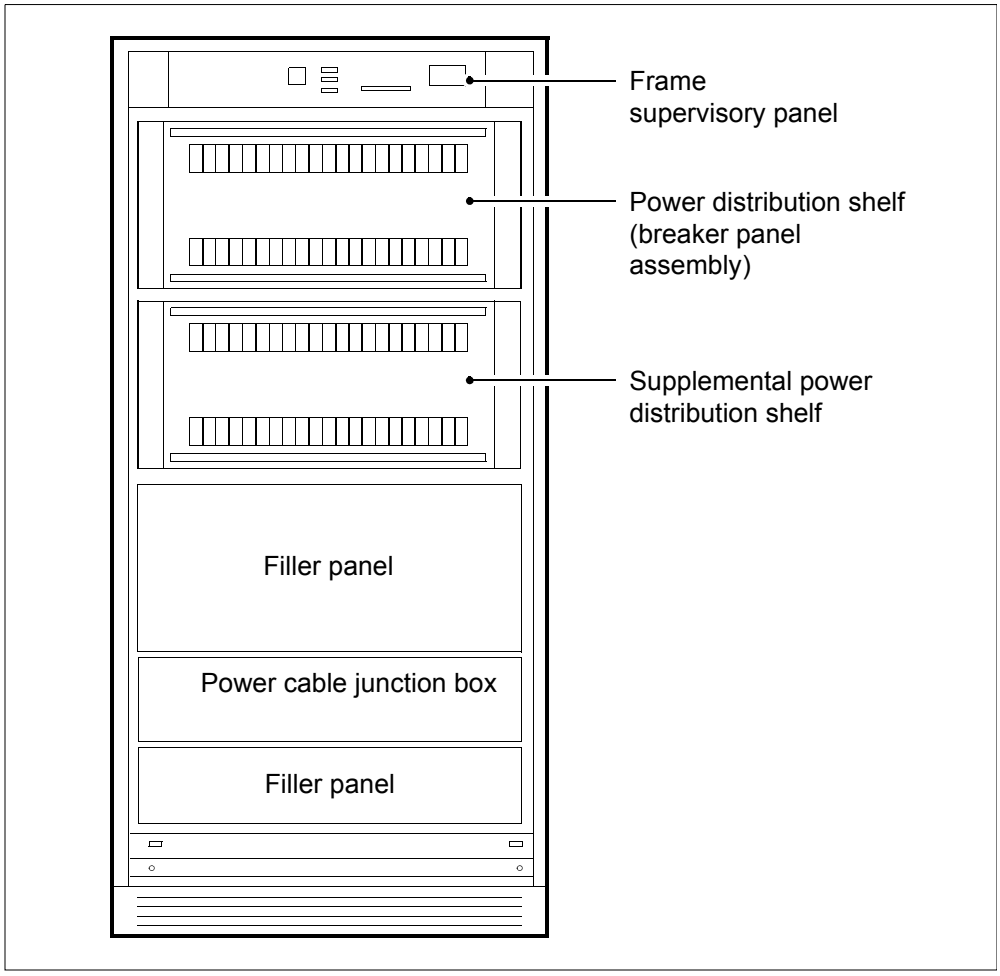

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Figure 1-125
Removing the cooling unit cover

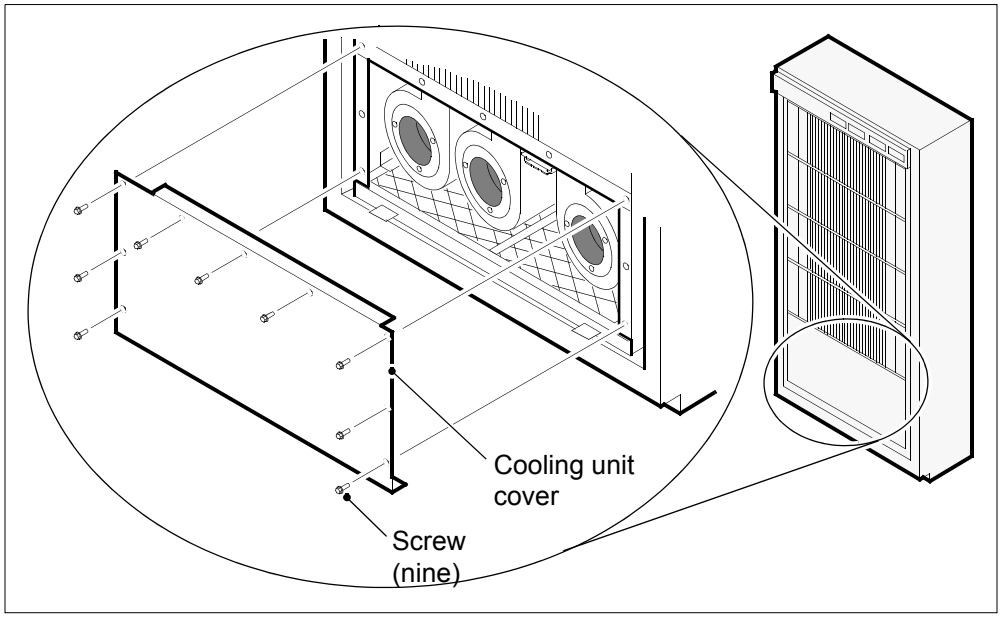

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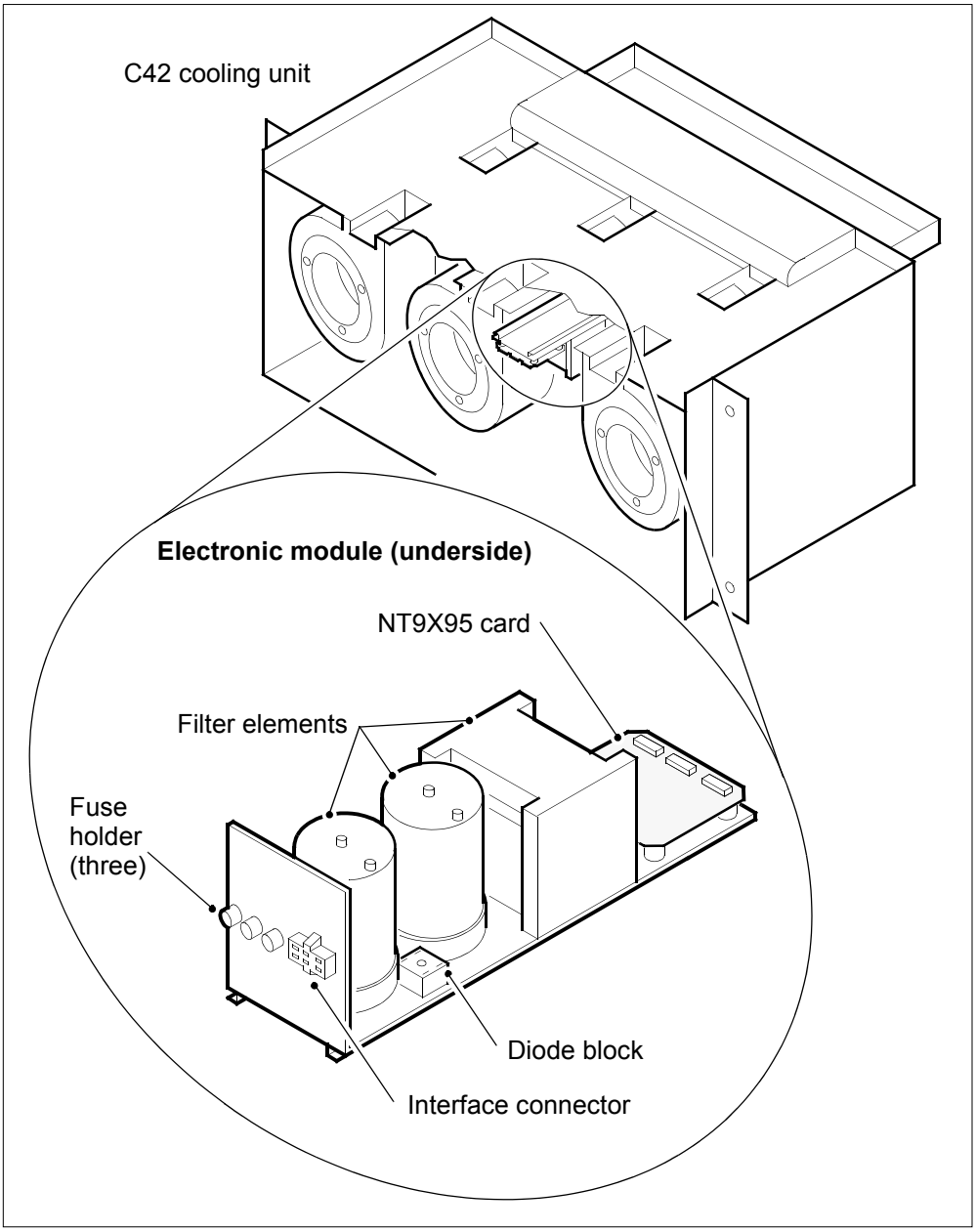
Figure 1-126
Sliding out the electrical module



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Replacing an NTFX39 bulkhead splitter unit

Application

Use this procedure to replace a bulkhead splitter unit.

Definition

The bulkhead splitter unit is a connection unit that mounts on the cabinetized integrated services module (CISM) bulkhead. The unit connects the input/output module (IOM) paddle boards on the integrated service module (ISM) shelf to the input/output devices (IOD).

Common procedures

There are no common procedures.

Action

Procedure 1-46 provides steps and actions to replace a bulkhead splitter unit. Figure 1-127 provides an overview of the procedure.

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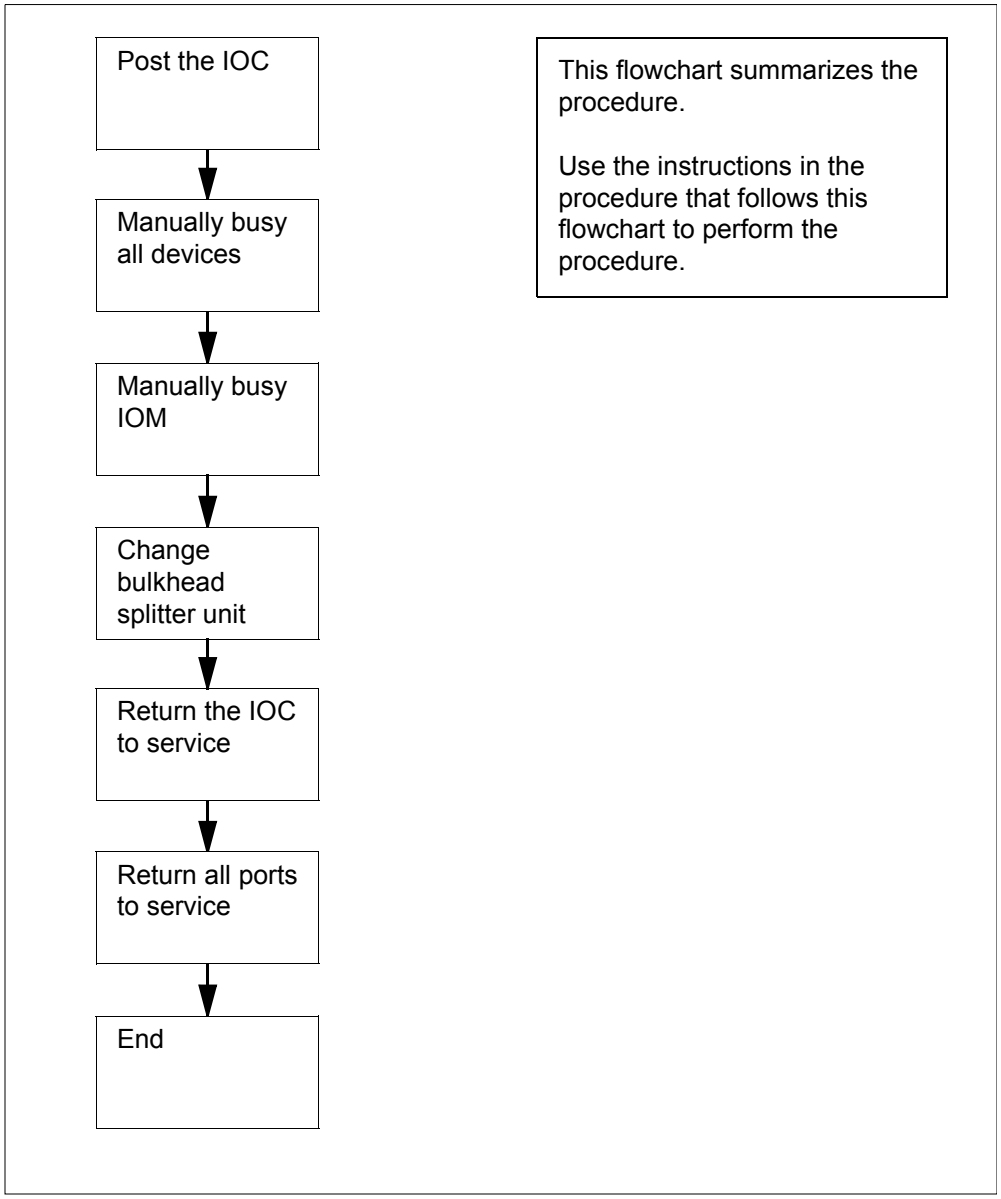
Figure 1-127
Summary of Replacing an NTFX39 bulkhead splitter unit



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Procedure 1-46 describes how to replace a bulkhead splitter unit.

Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit

Step	Action

1

ATTENTION
This procedure includes directions to manually busy the controller card for the IOM. Perform this procedure from a MAP terminal that does not connect to the IOM that has the manual-busy controller card.

CAUTION
Loss of service
This procedure instructs you to disconnect the IOM controller card and the connected devices to replace the splitter unit. Perform this procedure to recover out-of-service components. Perform this procedure during periods of low traffic.

At the MAP terminal, obtain a replacement splitter unit. Ensure that the replacement unit has the same PEC and PEC suffix as the removed unit.

2 To access the IOD level of the MAP display, type **>MAPCI;MTC;IOD** and press **Enter**.

Example of a MAP display:

```
IOD
IOC  0  1  2  3
STAT .  .  .  S

DIRP: SMDR B XFER:   .   SLM :   .   NPO:   .   NX25:  .
MLP :   .    DPPP:   .   DPPU:   .   SCAI :
```

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action
3	To post the configured IOM controller, type **>IOC *ioc_no*** (where *ioc_no* is the IOM identification number) and press **Enter**. *Example of a IOM MAP display:* IOD IOC 0 1 2 3 STAT . . . S DIRP: SMDR B XFER: . SLM : . NPO: . NX25: . MLP : . DPPP: . DPPU: . SCAI : IOC PORT 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 (IOM) STAT . . . - . . - - - . - - - - - - - - 0 TYPE C C C C M M S S O O O O T P C C N N N N D C S S
4	Determine if any terminal controller ports are on the shelf. If terminal controller ports are on the shelf, go to step 5. If terminal controller ports are not on the shelf, go to step 10.
5	Note the CONS ID and status for each port. If ports are ManBsy, go to step 9. If one or more ports are Offl, go to step 55. If one or more ports are . (dot) in service, go to step 6. If ports are in any other state that is out of service, go to step 8.
6	Inform office personnel of the removal from service of the CONS IDs for the controller card. Wait until all persons cease activity for these CONS IDs.
7	To post the port for the replaced CONS, type **>PORT *port_no*** (where *port_no* is the port identification number) and press **Enter**. *Example of a IOM MAP display:* Port 0 Status 0 Cons Id MAP ConType CYB

—sheet 2 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action
8	To manually busy the port, type **>BSY *port_no*** (where *port_no* is the port identification number) and press **Enter**. If the BSY command passes, go to step 9. If the BSY command fails, go to step 57.
9	Repeat step 8 until you manually busy all CONS ports.
10	The next action depends on any provisioned multiprotocol controller (MPC) ports that are on the controller card. If provisioned MPC ports are present, go to step 11. If provisioned MPC ports are not present, go to step 18.

11	To post a port for the MPC, type **>PORT *port_no*** (where *port_no* is the port identification number) and press **Enter**.
	Example of a IOM MAP display:
	`Port 9  Unit        0`
	`         User        SYSTEM  PROTOCOL  LINK`
	`         Status      Ready   X2584     COMACT ENABLED`

12	Determine the state of the port. If the port state is ManB, go to step 17. If the port state is OFFL, go to step 55. If the port state is anything else, go to step 13.

13	To display status information on current MPC conversations, type **>QCONV** and press **Enter**.
	Example of a MAP response:
	`MPC  L  LCN  STATUS  CCC  SEC  PARDEV  INP  OPEN  OWNER`
	`---  -  ---  ------  ---  ---  ------  ---  ----  -----`
	`0  3  1  INACTIVE none  none  none  FIL  0  none`
	`0  3  2  INACTIVE none  none  none  FIL  0  none`
	If one or more sessions is active, go to step 14.
	If all sessions are inactive, go to step 15.

14	Notify all users that there will be an interruption in the MPC service. Wait until all sessions are inactive before you proceed. Repeat step 13 to verify MPC session activity.

—sheet 3 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action

15	To manually busy the port and the port links, type **>BSY FORCE** and press **Enter**.
	Example of MAP response:
	`TYPE YES TO VERIFY FORCE, NO TO CANCEL COMMAND`
	`Please confirm ("YES", "Y", "NO", or "N")`

16	To confirm the command, type **>YES** and press **Enter**.
	Example of MAP response:
	`REQUEST PASSED FOR PORTS`
	`REQUEST PASSED FOR LINKS`
	If the BSY command passes, go to step 17.
	If the BSY command passes, go to step 57.

17	Repeat step 11 through step 16 for each MPC port on the IOM controller card.
18	The next action depends on any provisioned disk drive units (DDU) ports that are on the controller card. If provisioned DDU ports are on the shelf, go to step 19. If provisioned DDU ports are not on the shelf, go to step 24.

19	To post a port for the DDU, type **>PORT *port_no*** (where *port_no* is the port identification number) and press **Enter**.
	Example of a IOM MAP display:
	`Port 16  Unit       0`
	`(SCSI)       User       system      Drive_State`
	`Status     Ready       On_line`

20	Determine the state of the port. If the port state is ManB, go to step 24. If the port state is OFFL, go to step 55. If the port state is anything else, go to step 21.

—sheet 4 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action

21	To determine if open files on the DDU exist, type **>ALLOC** and press **Enter**.
	Example of a MAP display:
	`VOLID VOL_NAME SERIAL_NO BLOCKS ADDR TYPE R/O FILES_OPEN`
	`0 IMAGE 2800 45000 D000 0 NO 0`
	`1 XPMLOADS 2801 35000 D000 0 NO 0`
	`2 RTMLOADS 2802 20000 D000 0 NO 0`
	`.`
	`.`
	`.`
	`7 SMDR 2807 5000 D000 0 NO 0`
	`8 AMA1 2808 5000 D000 0 NO 0`
	`9 TST 2809 50 D000 0 NO 0`
	`10 AMA2 280A 500 D000 0 NO 0`
	If files are open, go to step 56.
	If files are not open, go to step 22.

22	To manually busy the port on the controller card, type **>BSY** and press **Enter**.
	Example of MAP response:
	`bsy`
	`OK`

23	Repeat step 19 through step 22 for the second DDU in the occurrence of two provisioned DDUs.
24	The next action depends on any provisioned magnetic tape drive (MTD) ports that are on the controller card. If provisioned MTD ports are on the shelf, go to step 25. If provisioned MTD ports are not on the shelf, go to step 30.

25	To post a port for the MTD, type **>PORT *port_no*** (where *port_no* is the port identification number) and press **Enter**.
	Example of a IOM MAP display:
	`Port 5 MTD 0 DevType`
	`TapeName User`
	`Status Idle`

—sheet 5 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action
26	Determine the state of the port. If the port state is ManB, go to step 30. If the port state is OFFL, go to step 55. If the port state is Idle, go to step 28. If the port state is anything else, go to step 27.
27	Notify all users that there will be an interruption in service for the device. Wait until all users stop use of the device before you proceed to the next step.

28	To manually busy the port, type **>BSY** and press **Enter**.
	Example of MAP response:
	`bsy`
	`OK`

29	Repeat step 24 through step 28 for all magnetic tape drive ports provisioned on the controller card.
30	To return to the IOC level of the MAP display, type **>QUIT** and press **Enter**.
31	Determine the state of the IOM. If the state of the IOM is M, go to step . If the state of the IOM is anything else, go to step 32.

32	To manually busy the IOM controller card, type **>BSY IOC** and press **Enter**.
	Example of MAP response:
	`bsy`
	`OK`

33	Repeat step 3 through step 32 for other IOM units configured on the splitter unit.

—sheet 6 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action
34	 **WARNING** **Static electricity damage** To handle circuit cards, wear a wrist-strap that connects to a wrist-strap grounding point of a modular supervisory panel (MSP). The wrist-strap protects the cards against static electricity damage. At the modular supervisory panel, put on a wrist strap.
35	At the rear of the ISM shelf, locate bulkhead splitter unit and disconnect the four cable connectors (C05 to C08) from the harness. Disconnect the shrouded pin unit connections at the rear of the splitter unit. Note the pin unit positions.
36	Remove the nuts in the back of the splitter unit.
37	Replace the splitter unit.
38	Secure the replacement unit with the nuts.
39	Reconnect the four cable connectors (C05 to C08) at the front of the splitter unit. Reconnect the shrouded pin unit connections at the back of the unit.
40	Repeat step 36 for the cable connectors and shrouded pin connections on the second IOM.
41	The next action depends on the reason for the performance of this procedure. If a maintenance procedure directed you to this procedure, go to step 42. If a maintenance procedure did not direct you to this procedure, go to step 43.
42	Return to the maintenance procedure that sent this procedure and continue as directed.
43	At the MAP terminal, type **>RTS IOC** and press **Enter** to return an IOM to service.
44	The next action depends on any provisioned consoles, disk drives and magnetic tape drives. If provisioned consoles, disk drives, and magnetic tape drive ports are present, go to step 45. If not, go to step 48.
45	To post the device port, type **>PORT *port_no*** (where *port_no* is the port identification number, from 0 to 17) and press **Enter**.

—sheet 7 of 8—

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Procedure 1-46
Replacing an NTFX39 bulkhead splitter unit (continued)

Step	Action
46	To return the device to service, type **>RTS** and press **Enter**.
47	Repeat step 45 and step 46 for all provisioned disk drives, consoles, and magnetic tape drive ports.
48	The next action depends on any provisioned MPC ports. If provisioned MPC ports are present, go to step 49. If not, go to step 50.
49	To post the MPC port, type **>PORT *port_no*** (where *port_no* is the port identification number, from 0 to 17) and press **Enter**.

50	To return the MPC to service, type **>RTS** and press **Enter**.
	Example of MAP response:
	`REQUEST PASSED FOR UNIT`
	`REQUEST PASSED FOR LINKS`

51	Check the status of MPC components If the system status is Ready, the port status is COMACT, and the link status is enabled for each provisioned link, go to step 52. Otherwise, go to step 57.
52	Repeat step 49 through step 51 for each provisioned port on the shelf.
53	Notify users that MPC service is available.
54	Repeat step 43 through step 53 to put the second IOM back into service.
55	Consult an office person to determine why the component is off-line. Continue as directed by the office person.
56	You cannot busy the controller if files are open. The result can be the loss of billing data. For additional help, contact the person responsible for the next level of support.
57	For additional help, contact the person responsible for the next level of support.
58	The procedure is complete.

—sheet 8 of 8—

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Replacing a point-of-use power supply card

Application

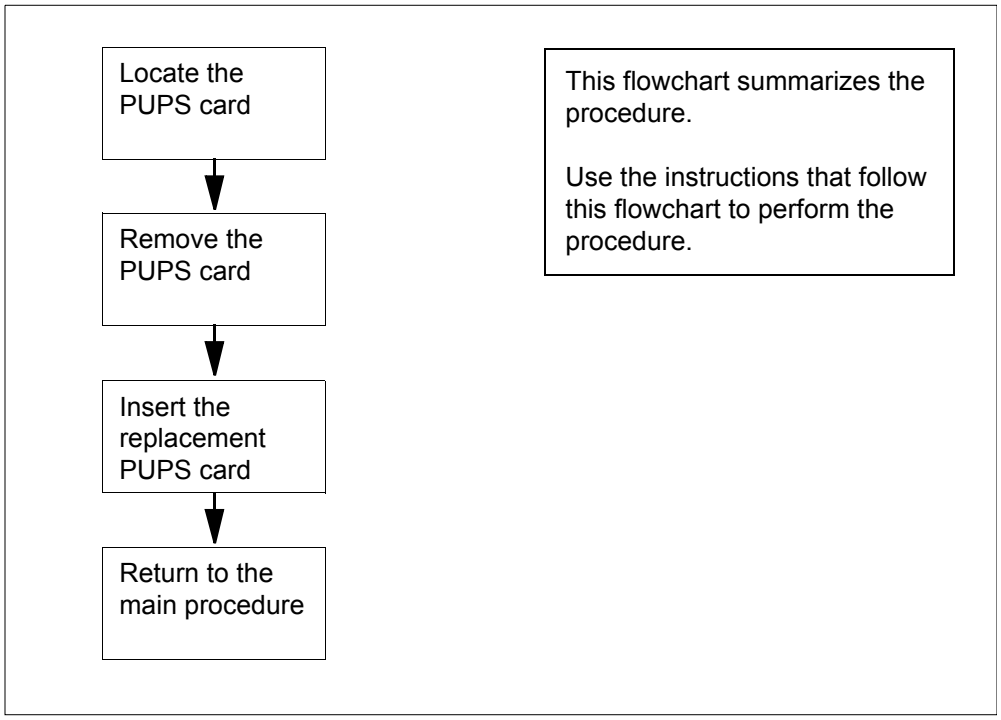
Use this procedure to replace a point-of-use power supply (PUPS) card in an ISDN enhanced line concentrating module (LCME).

Action

Procedure 1-47 provides steps and actions to replace a PUPS card in an ISDN enhanced LCME. Figure 1-128 provides an overview of the procedure.

Note: The ISDN lines in the drawer require only the PUPS card. A PUPS failure does not affect the lines other than ISDN.

Figure 1-128
Summary of Replacing a point-of-use power supply card



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Procedure 1-47 describes how to replace a point-of-use power supply (PUPS) card in an ISDN enhanced line concentrating module (LCME).

Procedure 1-47
Replacing a point-of-use power supply card

Step	Action
1	

WARNING
Possible equipment damage
Proceed only when a step in a maintenance procedure directs you to this procedure. Separate use of this procedure can cause equipment damage or loss of service.

At the MAP terminal, to display the location and product engineering code (PEC) for the line card for the PUPS card, type the following:

- **>MAPCI;MTC;LNS;LTP;LTPISDN**
- **>Post D or L <Dir No.> or <Len No.>**
- **>CKTLOC**

Then press the **Enter** key.

Example of a MAP response:

```
CKTLOC
Site  Flr RPos Bay_id  Shf Description Slot  EqPEC
HOST  03  C04  LCEI36  18  LCME 00 01  02:09 BX27AA
```

The following items explain this example:

- **Site** in the HOST office
- **Flr** on the 3rd floor
- **RPos** in row C, position 04
- **Bay_id** in ISDN LCME, bay 36 (identifies the type of equipment in the bay)
- **Shf** on shelf 18
- **Description** in LCME module 00, unit 01
- **Slot** in slot 02, logical drawer 09

Note: In this example, the PEC of the line card is BX27AA.

—sheet 1 of 4—

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Procedure 1-47
Replacing a point-of-use power supply card (continued)

Step	Action
2	Record the location of the line card. ***Note:*** The PUPS card is in the same drawer as the line card.
3	To access the PM level of the MAP display, type **>PM** and press the **Enter** key.

4	To post the LCME that contains the line card, type **>POST LCME HOST *frame_no module_no*** (where *frame_no* is the frame number of the LCEI and *module_no* is the module number of the LCME, either 00 or 01), then press the **Enter** key.
	
	Example of a MAP display:
	`LCME HOST 67 1  SysB  Links OOS: Cside  0`
	`Unit0: SysB`
	`Unit1: SysB  11  11  11  RG: Uneq`
	`Drwr:  01  23  45  67  89  01  23  45`
	`..  ..  ..  ..  ..  ..  ..  ..`

5	**CAUTION**
	Loss of service
	When the drawer busies, there will be a loss of subscriber service on all lines in the drawer.
	
	To manually busy the drawer, type **>BSY DRWR *drawer_no*** (where *drawer_no* is the logical number for the line drawer, from 00 to 15) and press the **Enter** key.
	
	Example of a MAP display:
	`WARNING this action will affect both drawers 0 and 1`
	`LCME HOST 07 1 Drwr 0 will be out of service`
	`Confirm ("YES", "Y", "NO", or "N"):`

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

—sheet 2 of 4—

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Procedure 1-47
Replacing a point-of-use power supply card (continued)

Step	Action
7	**WARNING** **Static electricity damage** When you handle circuit cards, wear a wrist-strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage. At the shelf, to locate the PUPS card, use the recorded information in step .
8	Press the small thumb-latch button on the lower left edge of the drawer. Carefully pull the drawer forward to its limit.
9	To latch the drawer, use the notch cut into the end of the bottom plate. The notch cut into the bottom plate is behind the back plate (shown in Figure 1-129). The notch fits the end of a flange. Shift the bottom of the drawer toward you to allow the notch to slide over the end of the flange.
10	**DANGER** **Possible loss of device** Drawers 06/07 or 14/15 are near the fuse panels. When you work in these drawers, make sure that you do not snag the projecting fuse blocks as you withdraw the PUPS card. A power outage can result. Locate the PUPS card. The PUPS card occupies the two top rows at the back of the drawer.
11	Fit the two-slot guide over the PUPS card and the line card next to it, as shown in Figure 1-130. ***Note:*** If no line card exists next to the PUPS card, do not use the two-slot guide.
12	If you use the two-slot guide, hold it in place with your left hand. With your right hand, clamp the insertion and withdrawal tool to the front edge of the PUPS card. Carefully remove the card from the socket (as illustrated in step 11).
13	Leave the two-slot guide tool in place as a guide for the installation of the replacement PUPS card.

—sheet 3 of 4—

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Procedure 1-47
Replacing a point-of-use power supply card (continued)

Step	Action
14	Place the removed card in an electrostatic discharge (ESD) protective container.
15	Make sure that the replacement card has the same PEC and PEC suffix as the removed card.
16	Clamp the insertion and withdrawal tool to the front edge of the replacement card, as shown in step 11. Align the card with the socket and carefully insert the card.
17	Make sure the card sits in a secure position.
18	Carefully push the drawer back into the shelf until the thumb-latch button locks.
19	To return the drawer to service, type **>RTS DRWR *drawer_no*** (where *drawer_no* is the logical number of the line drawer, from 00 to 15) and press the **Enter** key.
20	The procedure is complete. Return to the main procedure that sent you to this procedure and continue to follow the directions.

—sheet 4 of 4—

Figure 1-129
Flange, notch, bottom plate, and backplate

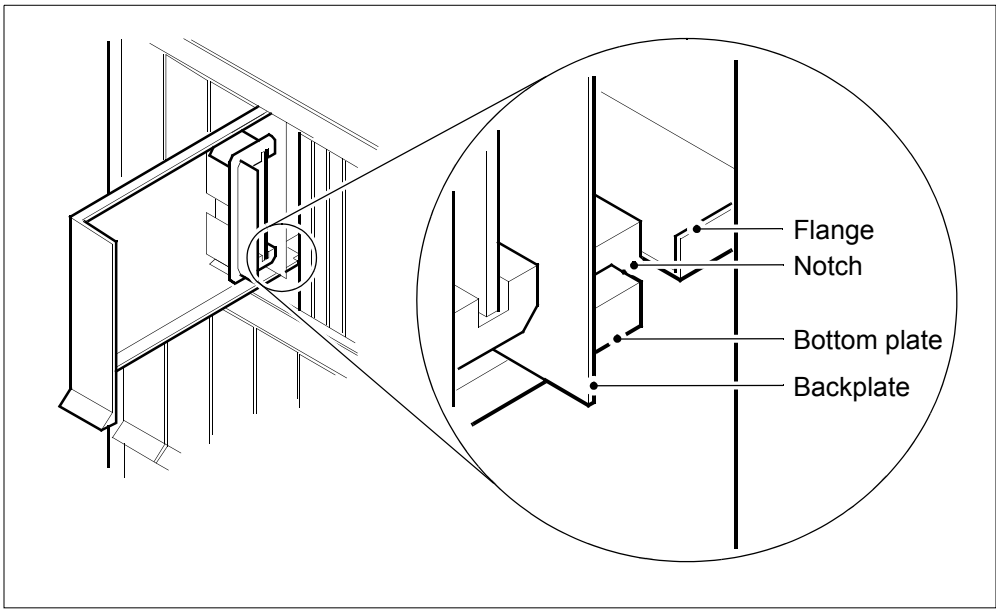

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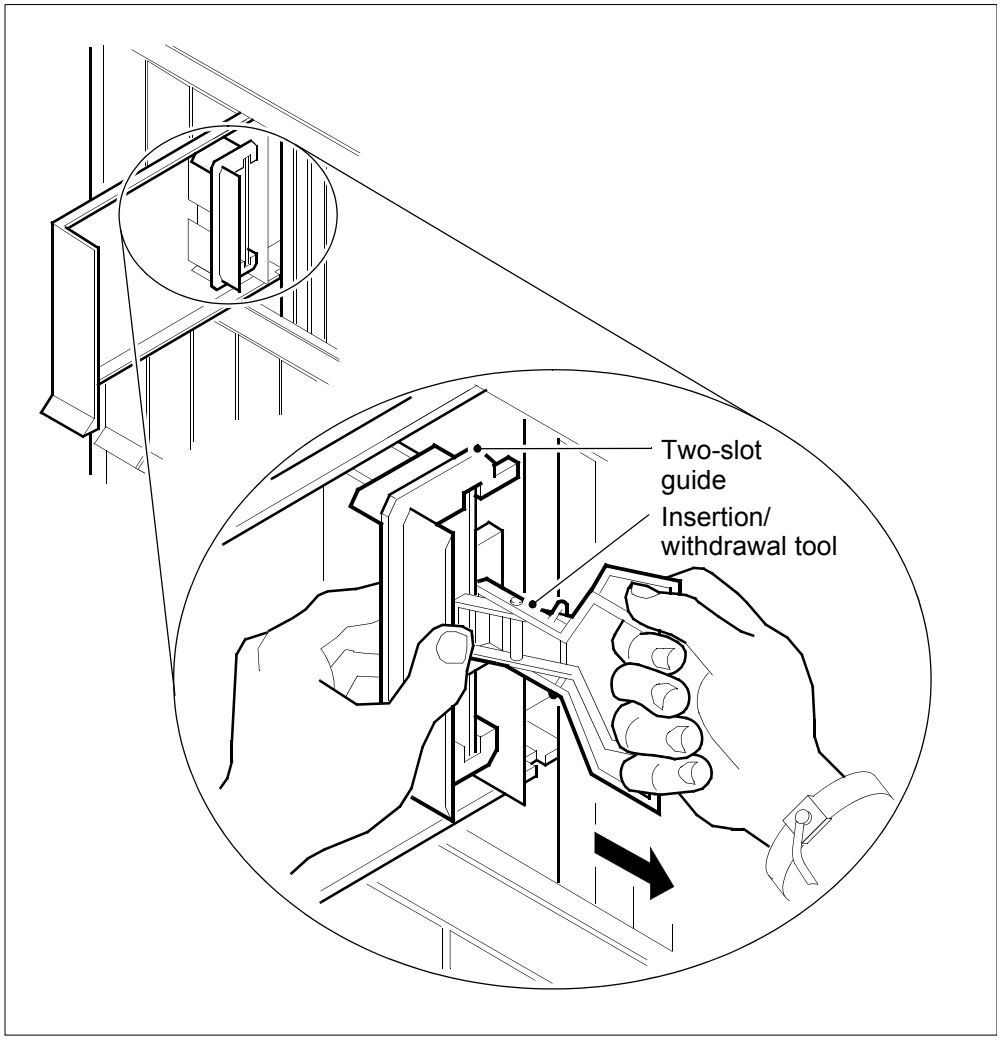
Figure 1-130
Fitting two-slot guide over PUPS card and line card



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Reseating a line card

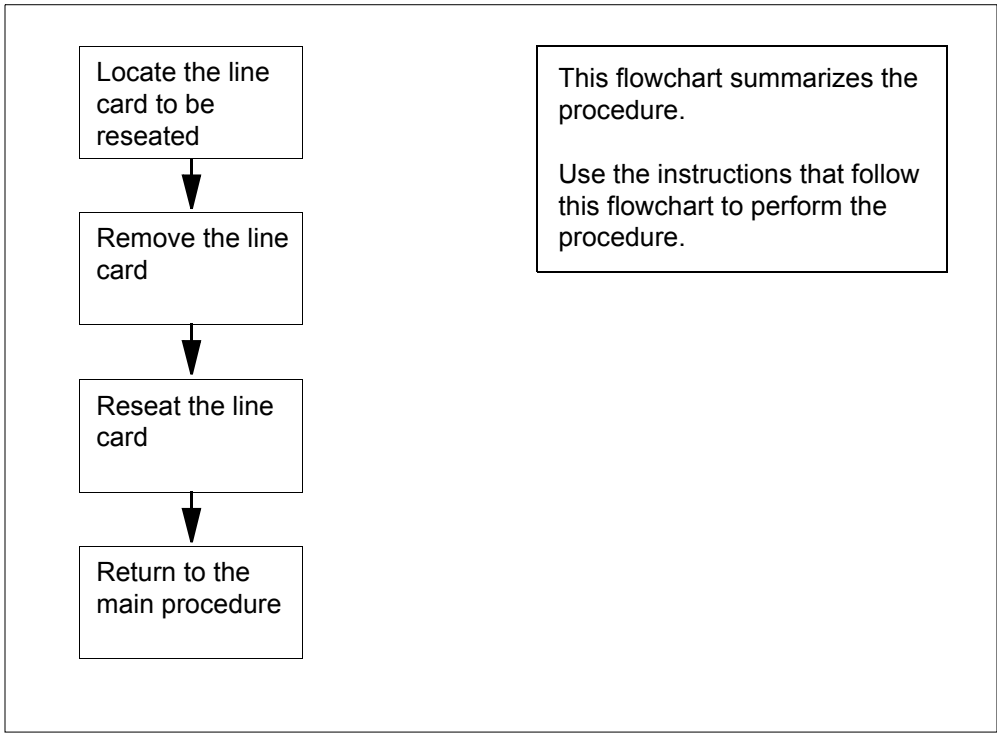
Application

Use this procedure to reseat a line card in an ISDN enhanced line concentrating module (LCME). This procedure ensures the correct electrical connection between the line card and the connector pins on the drawer.

Action

Procedure 1-48 provides steps and actions to reseat a line card in an ISDN enhanced LCME. Figure 1-131 provides an overview of the procedure.

Figure 1-131
Summary of Reseating a line card



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Procedure 1-48 describes how to reseat a line card in an ISDN enhanced line concentrating module (LCME).

Procedure 1-48
Reseating a line card

Step	Action

1	
	WARNING
	Possible equipment damage
	Proceed only when a step in a maintenance procedure directs you to this procedure. Independent use of this procedure can cause equipment damage or loss of service.
	
	At the MAP terminal, to display the location and product engineering code (PEC) for the line card, type the following:
	• **>MAPCI;MTC;LNS;LTP;LTPISDN**
	• **>Post D or L <Dir No.> or <Len No.>**
	• **>CKTLOC**
	Then press the **Enter** key.
	Example of a MAP response:
	`CKTLOCSite  Flr RPos Bay_id  Shf Description Slot  EqPECHOST  03`
	`C01  LCEI01  18  LCME 01     02:09 BX27AA`
	
	The following explain the location of the line card in the example:
	• **Site** in the HOST office
	• **Flr** on the 3rd floor
	• **RPos** in row C and in line equipment bay 01
	• **Bay_id** in ISDN line concentrating equipment, bay 01
	• **Shf** on shelf 18
	• **Description** in hardware device LCME, bay 01
	• **Slot** in slot 02, drawer 09
	
	Note: In this example, the PEC of the line card PEC is BX27AA.

2	Record the location of the line card.

—sheet 1 of 2—

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Procedure 1-48
Reseating a line card (continued)

Step	Action
3	**WARNING** **Static electricity damage** When you handle circuit cards, wear a wrist-strap that connects to the wrist-strap grounding point of a frame supervisory panel (FSP). The wrist-strap protects the cards against static electricity damage. At the shelf, use the information that your recorded in step 2 to locate the drawer for the line card.
4	Press the small thumb-latch button on the lower left edge of the drawer. Carefully pull the drawer forward. See Figure 1-132.
5	**DANGER** **Risk of personal injury** The large, flat rectangular component mounted on the front edge can be very hot. To avoid burns to your fingers, use the insertion and withdrawal tool. Use the tool to remove and reseat the card as illustrated in Figure 1-133. Locate the card you want to remove (it can be either a 3-in or a 6-in card).
6	Clamp the insertion and withdrawal tool to the front edge of the card, as illustrated in Figure 1-133. Carefully remove the card from the connector pins.
7	Align the card with the connector pins and carefully reseat the card.
8	Ensure the card sits in a secure position.
9	Carefully push the drawer back into the shelf until the thumb-latch button locks.
10	You have completed this procedure. Return to the main procedure that sent you to this procedure and continue to follow the directions.

—sheet 2 of 2—

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Figure 1-132
Pulling the drawer forward

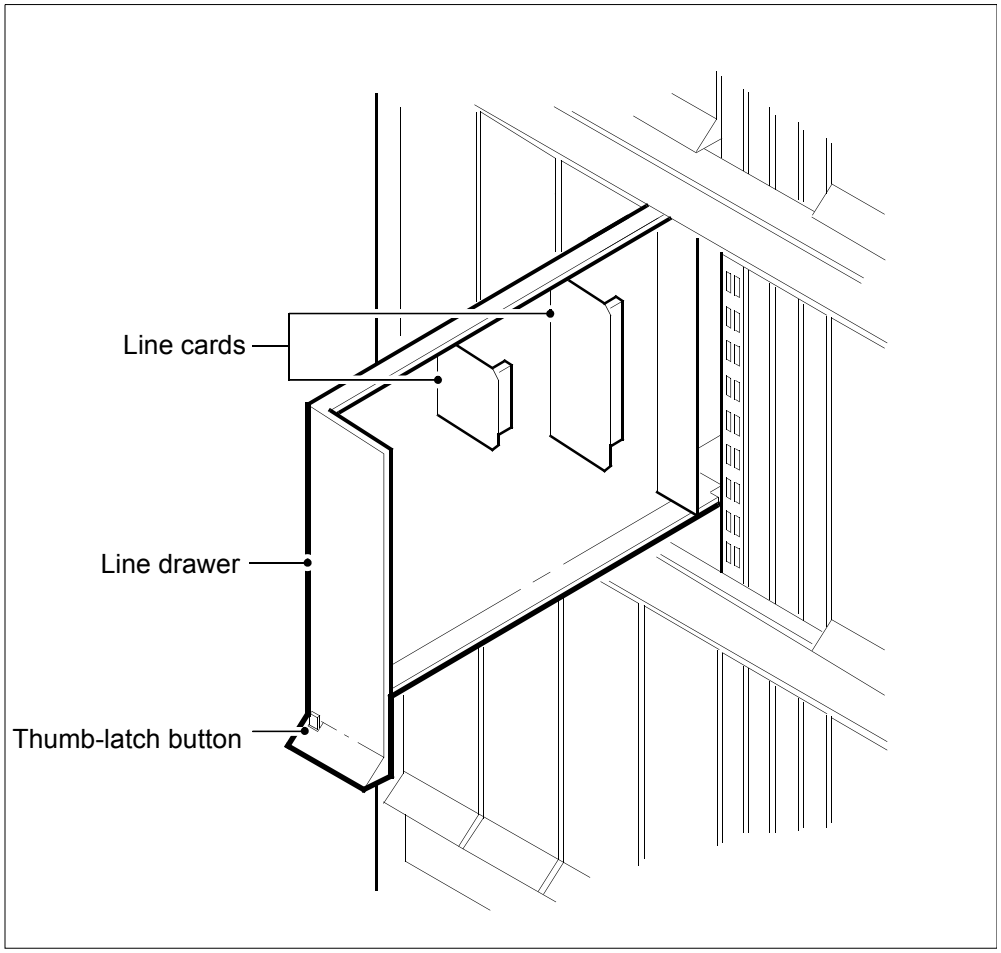

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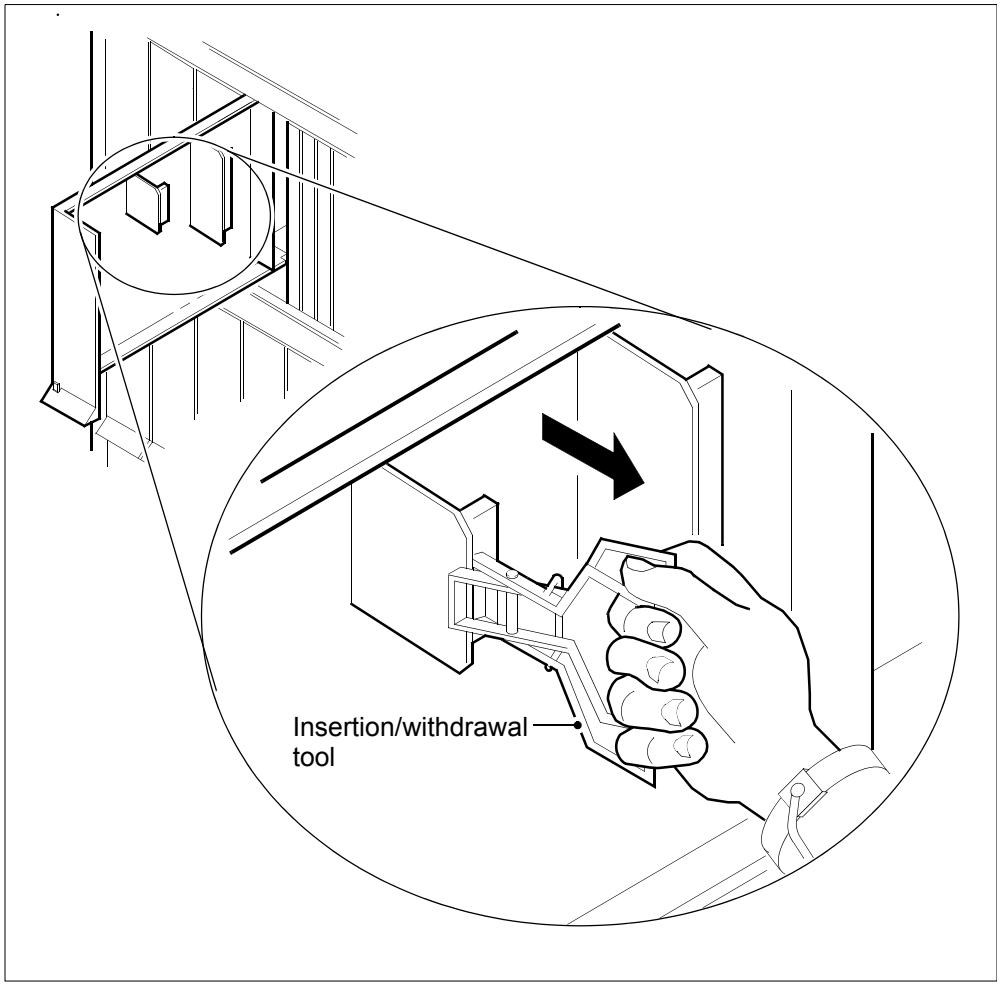
Figure 1-133
Using the insertion and withdrawal tool



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Responding to TRMS301 logs

Application

Use this procedure to reply to a TRMS301 log.

Definition

A TRMS301 log indicates that the transactional record management system (TRMS) cannot delete an old database log file. When LOGUTIL is in the EXPERT mode, the log also contains a fault-tolerant file system (FTFS) error code. The FTFS error code explains the problem why the system cannot delete the old log file.

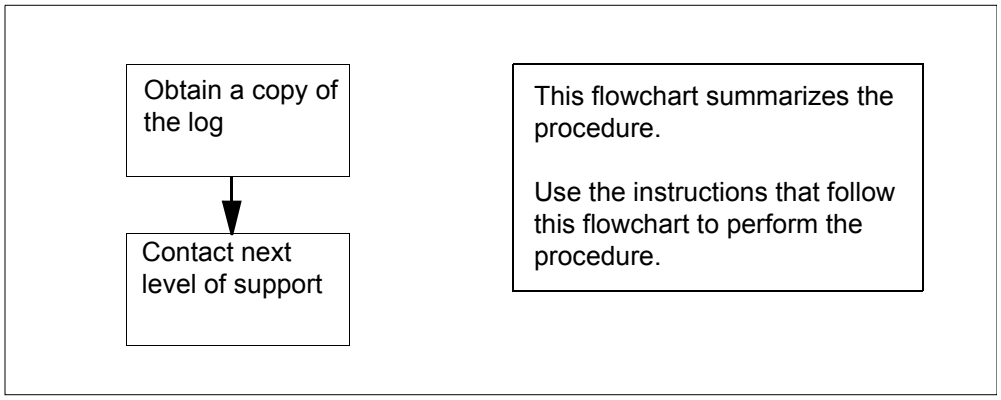
Common procedures

There are no common procedures.

Action

Procedure 1-49 provides steps and actions to reply to a TRMS301 log. Figure 1-134 provides an overview of the procedure.

Figure 1-134
Summary of Responding to TRMS301 logs



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Procedure 1-49 describes how to reply to a TRMS301 log.

Procedure 1-49
Responding to TRMS301 logs

Step	Action
1	At your current location, obtain a copy of the TRMS301 log.
2	Note the information contained in the TRMS301 log that follows: • the location of the TRMS failure (for example, FP4) • the database log name (for example, 800PLUS__SLAVE__0.LOG002)
3	For additional help, contact the next level of support.
	—end—

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Restoring far-end service for a D-channel ISDN PRI primary and backup D-channels

Application

Use this procedure to return a D-channel back into service when the far-end office is out of service.

Definition

The D-channel is in the remote not responding (RNR) state. The RNR state indicates that the far-end office does not respond. Logs ISDN111, ISDN112, or ISDN114 can generate.

Common procedures

There are no common procedures.

Action

Procedure 1-50 provides steps and actions to return a D-channel back into service when the far-end office is out of service. Figure 1-135 provides an overview of the procedure.

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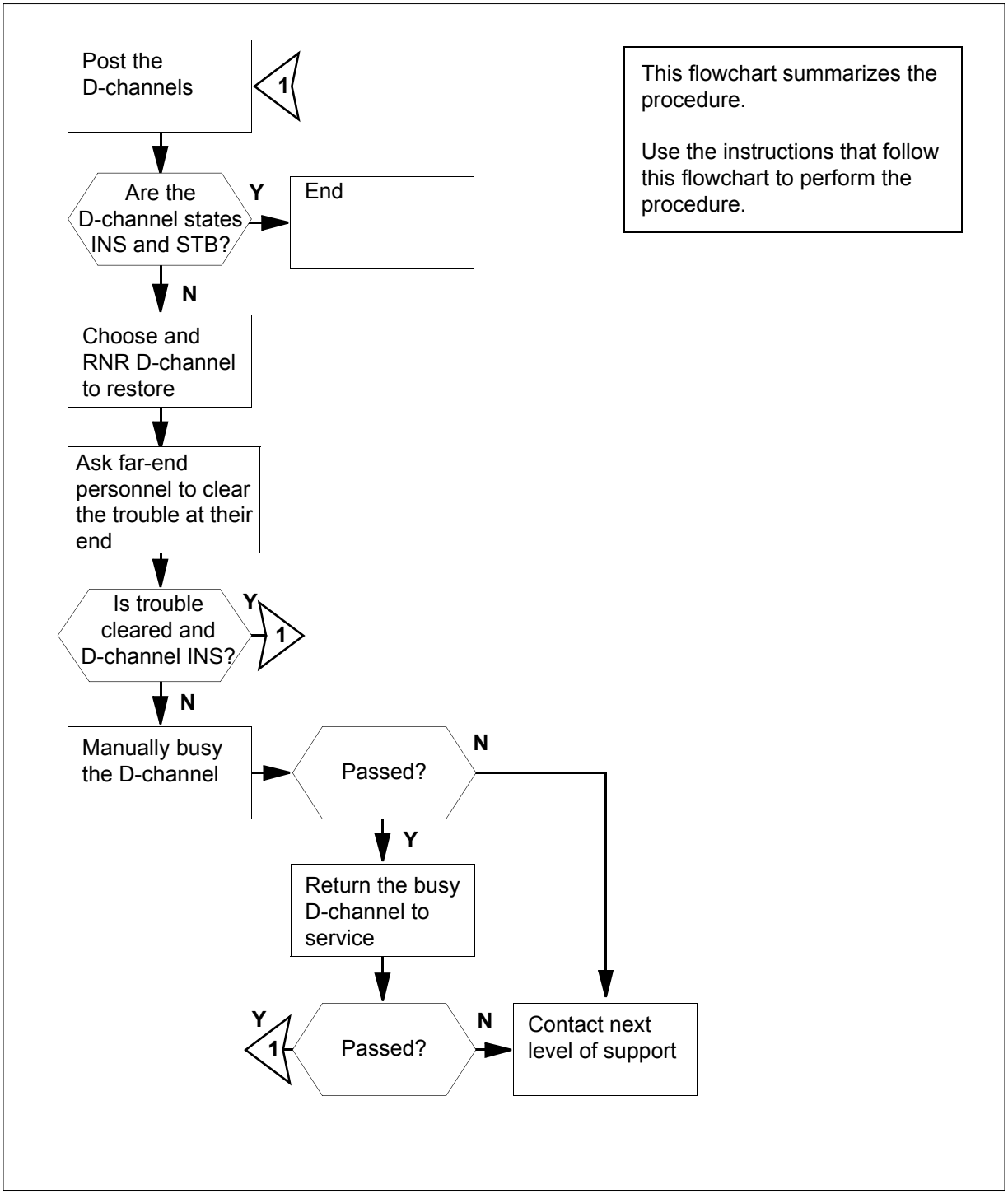
Figure 1-135
Summary of Restoring far-end service for a D-channel



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Procedure 1-50 describes how to return a D-channel back into service when the far-end office is out of service.

Procedure 1-50
Restoring far-end service for a D-channel

Step	Action
1	At the MAP terminal, determine the name of the trunk group from office records or operating company personnel.
2	Determine your next step. If directions to this procedure came from *Determining the D-channel state*, go to step 5. Otherwise, go to step 3.
3	To access the PRADCH level of the MAP display, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key.

4	To post the D-channels, type **>POST GD *group_name*** (where *group_name* is the trunk group name) and press the **Enter** key.
	Example input:
	>POST GD F5678935PAV
	Example of a MAP display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS LTC 2 3 24 F5678935PAV D1 INS`
	`LTC 2 5 24 F5678935PAV D2 RNR R`
	Example of a MAP response:
	`SHORT CLLI IS: F56789`
	`OK,CKT POSTED`

5	Determine the states of the D-channels. ***Note:*** The MAP display lists the state of the D-channel to the right side of the DCHL header. If one D-channel is `INS` (in service) and the other is `STB` (standby), go to step 12. If one D-channel is `RNR` (remote not responding), and the other is in a different out-of-service state or `INS`, go to step 6. If both D-channels are `RNR`, go to step 6.

—sheet 1 of 3—

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Procedure 1-50
Restoring far-end service for a D-channel (continued)

Step	Action
6	Choose an RNR D-channel to restore and record its identifier (D1 or D2). ***Note 1:*** Do not choose an INS or STB D-channel to clear. An INS D-channel is a normal operation state for the primary D-channels. An STB D-channel is a normal operation state for the backup D-channels. The STB state occurs for a backup D-channel when the primary D-channel is INS. ***Note 2:*** You must use the same identifier (D1 or D2) for all procedures and steps used to clear the chosen D-channel. The MAP display lists the identifier under the LANG header. ***Note 3:*** When both D-channels are out of service, restore each channel separately. The first restored D-channel becomes the primary and goes into the INS state. The the second restored D-channel becomes the backup and goes into the STB state.
7	Ask operating company personnel at the far-end office to isolate and correct the problem at their end. If the state of the D-channel is `INS` after the personnel at the far-end correct their problem, go to step 12. If the state of the D-channel is not `INS` after the personnel at the far-end correct their problem, go to step .

8	**CAUTION**
	PRI service interruption
	The following step takes an in-service D-channel out of service. When you take an in-service D-channel out of service, the backup D-channel automatically switches into service.
	
	To manually busy the D-channel, type **>BSY *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press **Enter**.
	
	Example of a MAP response:
	
	`D1: STATE CHANGED`
	or
	`THIS WILL PUT LTC 2 5 24 D2  OUT-OF-SERVICE`
	`Please confirm (”YES”, ”Y”, ”NO”, or ”N”):`

—sheet 2 of 3—

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Procedure 1-50
Restoring far-end service for a D-channel (continued)

Step	Action
9	To confirm the command, type **>YES** and press the **Enter** key. *The D-channel state changes to manual busy.* If the BSY command passes, go to step 10. If the BSY command fails, go to step 11.
10	To return the busy D-channel to service, type **>RTS *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key. *Example of a MAP response:* `D2: STATE CHANGED` If the RTS command passes (INS or STB state), go to step 4. If the RTS command fails, go to step 11.
11	For additional help, contact the next level of support.
12	The procedure is complete.

—sheet 3 of 3—

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Restoring far-end service for a D-channel ISDN PRI single D-channel

Application

Use this procedure to return a D-channel to service when the far end office is out of service.

Definition

The D-channel is in the remote-not-responding (RNR) state. The RNRstate indicates that the far-end office is not responding. Log ISDN105 can generate.

Common procedures

There are no common procedures.

Action

Procedure 1-51 provides steps and actions to return a D-channel to service when the far end office is out of service. Figure 1-136 provides an overview of the procedure.

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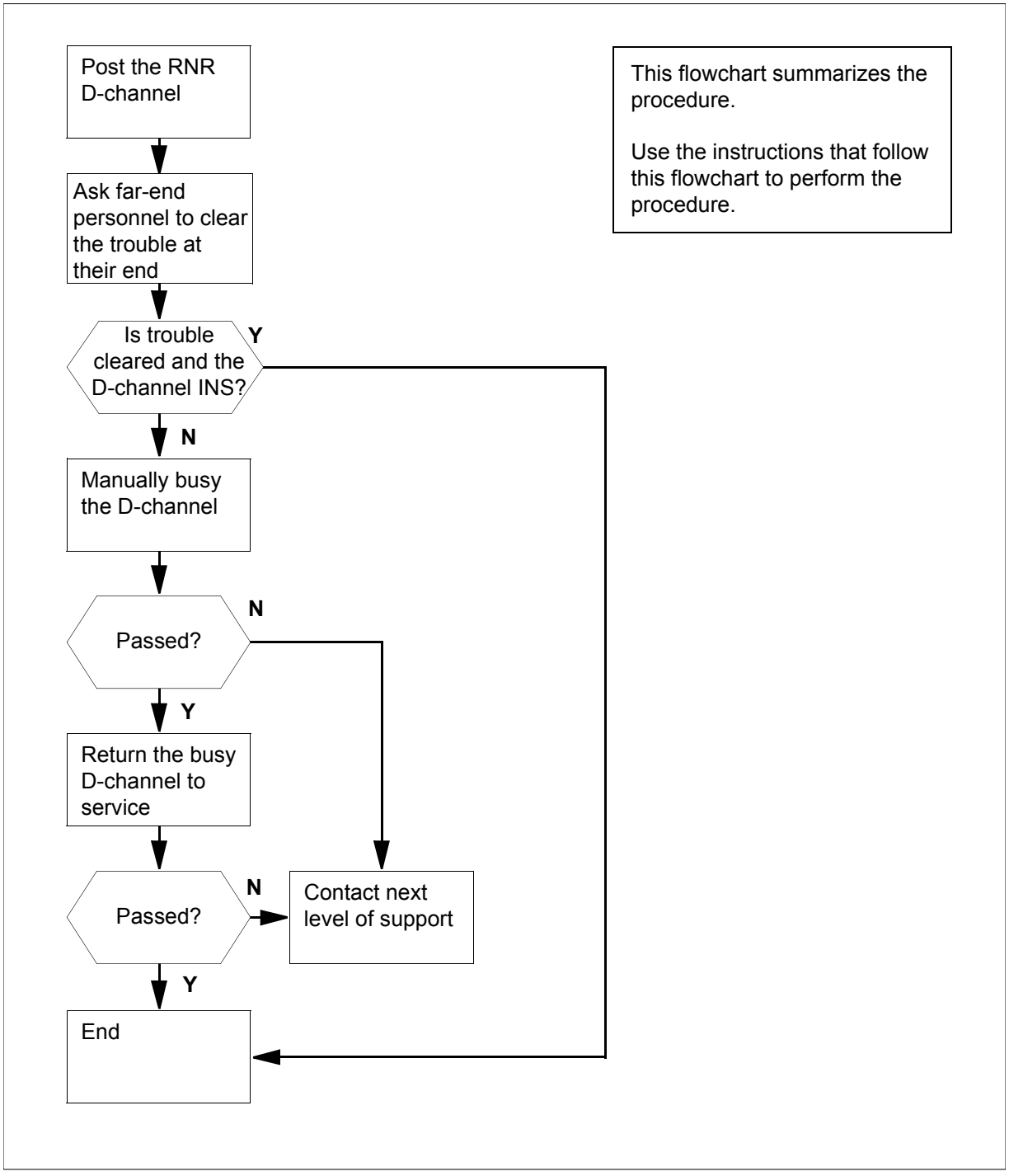
Figure 1-136
Summary of Restoring far-end service for a D-channel



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Procedure 1-51 describes how to return a D-channel to service when the far end office is out of service.

Procedure 1-51
Restoring far-end service for a D-channel

Step	Action
1	At the MAP terminal, determine the name of the trunk group from office records or operating company personnel.
2	Determine your next step. If directions to this procedure came from *Determining the D-channel state*, go to step 5. Otherwise, go to step 3.
3	To access the PRADCH level of the MAP display, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key.

4	To post the RNR D-channel, type **>POST GD *group_name*** (where *group_name* is the trunk group name) and press the **Enter** key.
	Example input:
	>POST GD F9876035PRAPRV
	Example of a MAP display:
	`POST DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS DTCI 2 3 24 F9876035PRAPRV DCHL RNR R`
	Example of a MAP response:
	`LAST CKT 3 24`
	`POSTED CKT IDLED`
	`SHORT CLLI IS: F98760`
	`OK,CKT POSTED`

—sheet 1 of 2—

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Procedure 1-51
Restoring far-end service for a D-channel (continued)

Step	Action
5	Ask operating company personnel at the far-end office to isolate and correct the problem at their end. ***Note:*** The MAP terminal lists the state of the D-channel to the right side of the DCHL header. If the state of the D-channel is `INS` (in service) after the persons at the far-end office correct their problem, go to step 9. If the state of the D-channel is not `INS` after the persons at the far-end office correct their problem, go to step 6.
6	To manually busy the D-channel, type **>BSY** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` ***Note:*** The D-channel state changes to MB (manual busy). If the BSY command passes, go to step 7. If the BSY command fails, go to step 8.
7	To return the D-channel to service, type **>RTS** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes (INS state), go to step 9. If the RTS command fails, go to step 8.
8	For additional help, contact the next level of support.
9	The procedure is complete.

—sheet 2 of 2—

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Returning a busy D-channel to service ISDN PRI primary and backup D-channels

Application

Use this procedure to return a busy D-channel to service.

Definition

The D-channel is in

- the installation busy (INB) state. This state indicates an installed D-channel that is not in service
- the manual-busy (MB) state. This state indicates the manual removal of the D-channel from service

The PRI trunk is D-channel manual busy (DMB). A DMB PRI trunk indicates the manual removal from service of the D-channel associated with the trunk group. Trunk group members associated with the out-of-service D-channel remain DMB until the restoration of the D-channel. Only members that are INB do not remain DMB until the restoration of the D-channel. Logs ISDN111, ISDN112, or ISDN114 can generate.

An out-of-service D-channel addresses problem conditions. Normal activity continues on an in-service D-channel. In this event, you perform a procedure that clears problems on the out-of-service D-channel only. Both D-channels can be out of service. Perform a procedure that clears problems for each D-channel. Start with the condition that affects service the most severely. The first restored D-channel becomes the primary D-channel and is in service (INS). The second restored D-channel becomes the backup D-channel and is standby (STB).

Common procedures

There are no common procedures.

Action

Procedure 1-52 provides steps and actions to return a busy D-channel to service. Figure 1-137 provides an overview of the procedure.

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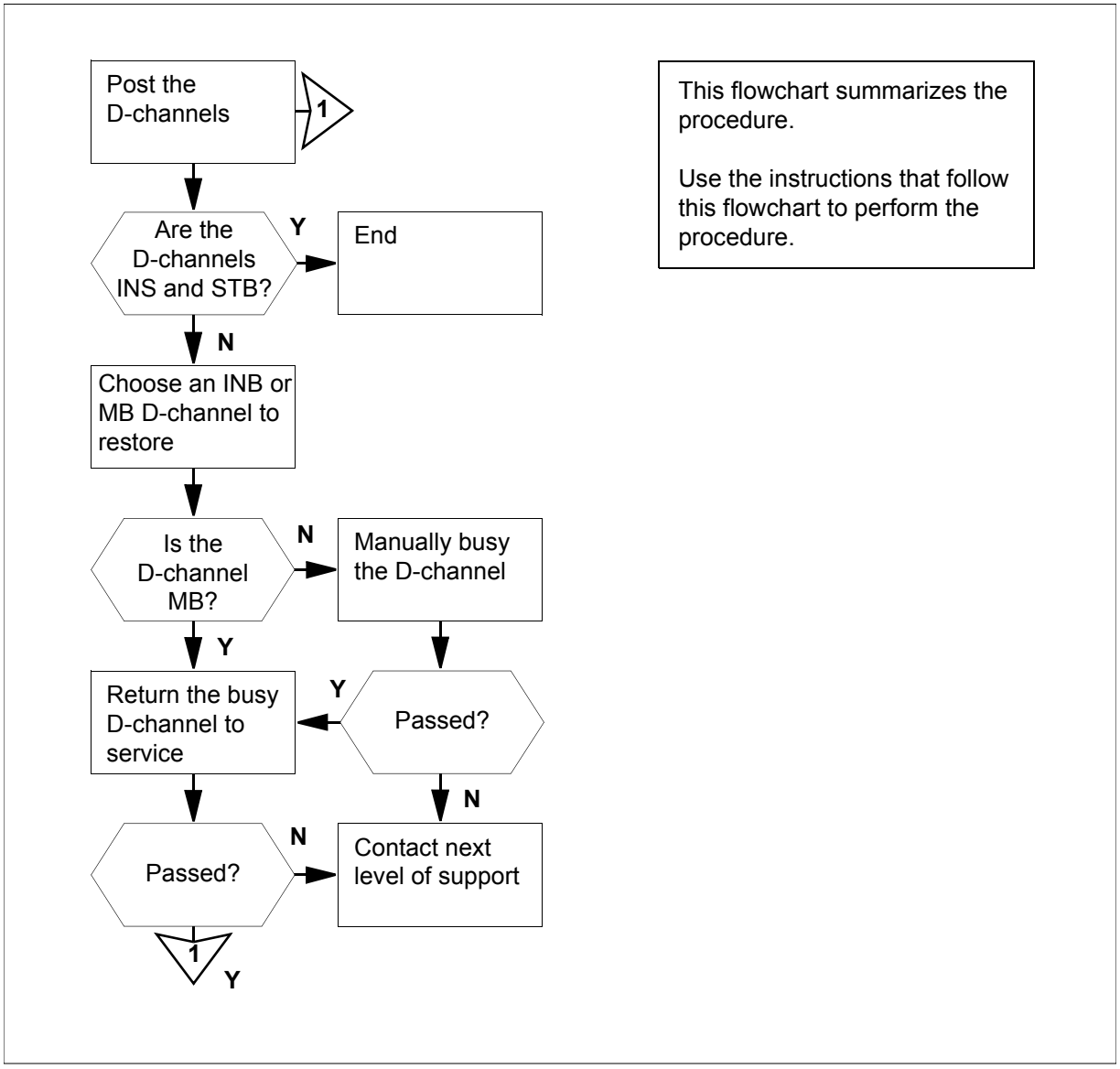
Figure 1-137
Summary of Returning a busy D-channel to service



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Procedure 1-52 describes how to return a busy D-channel to service.

Procedure 1-52
Returning a busy D-channel to service

Step	Action
1	At the MAP terminal, determine the name of the trunk group from office records or operating company personnel.
2	Determine your next step. If directions to this procedure come from *Determining the D-channel state*, go to step 4. Otherwise, go to step 3.
3	To access the PRADCH level of the MAP display, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key.

4	To post the D-channels, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F5678935PAV
	Example of a MAP display:
	`POST 1 DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS LTC 2 3 24 F5678935PAV D1 INS`
	`LTC 2 5 24 F5678935PAV D2 MB R`
	Example of a MAP response:
	`SHORT CLLI IS: F56789`
	`OK,CKT POSTED`

5	Determine the state of the D-channel. ***Note:*** The MAP display lists the state of the D-channel to the right side of the DCHL header. If one D-channel is `INS` (in service) and the other is `STB` (standby), go to step 10. If one D-channel is `INB` (installation busy) or `MB` (manual busy), and the other is in a different out-of-service state or `INS`, go to step 6. If both D-channels are either `INB` or `MB`, go to step 6.

—sheet 1 of 3—

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Procedure 1-52
Returning a busy D-channel to service (continued)

Step	Action
6	Choose an INB or MB D-channel to restore. Record the channel identifier (D1 or D2). ***Note 1:*** Do not choose an in-service (INS) or standby (STB) D-channel to clear. An INS D-channel is a normal operation state for the primary D-channel. An STB D-channel is a normal operation state for the backup D-channel. The STB state occurs for a backup D-channel when the primary D-channel is INS. ***Note 2:*** You must use the same identifier (D1 or D2) for all procedures and steps used to clear the chosen D-channel. The MAP display lists the identifier under the LANG header. ***Note 3:*** When both D-channels are out of service, restore each channel separately. The first restored D-channel becomes the primary and is INS. The second restored D-channel becomes the backup and is STB. If the state of the D-channel is INB, go to step . If the state of the D-channel is MB, go to step 8.
7	**CAUTION** **PRI service interruption** The following step takes an in-service D-channel out of service. When you take an in-service D-channel out of service, the backup D-channel automatically switches into service. To manually busy the D-channel, type **>BSY *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key. *Example of a MAP response:* `D2: STATE CHANGED` ***Note:*** The D-channel state changes to manual busy. If the BSY command passes, go to step 8. If the BSY command fails, go to step 9.

—sheet 2 of 3—

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Procedure 1-52
Returning a busy D-channel to service (continued)

Step	Action
8	To return the busy D-channel to service, type **>RTS *d_channel*** (where *d_channel* is the D-channel identifier, either D1 or D2) and press the **Enter** key. *Example of a MAP response:* `D2: STATE CHANGED` If the RTS command passes (INS or STB state), go to step 4. If the RTS command fails, go to step 9.
9	For additional help, contact the next level of support.
10	The procedure is complete.

—sheet 3 of 3—

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Returning a busy D-channel to service ISDN PRI single D-channel

Application

Use this procedure to return a busy D-channel to service.

Definition

The D-channel is in

- the installation busy (INB) state. This state indicates an installed D-channel that is not in service
- the manual-busy (MB) state. This state indicates the manual removal of the D-channel from service

The PRI trunk is D-channel manual busy (DMB). The DMB PRI trunk indicates the manual removal from service of the D-channel associated with the trunk group. Trunk group members associated with the out-of-service D-channel remain DMB until the restoration of the D-channel. Only members that are INB do not remain DMB until the restoration of the D-channel.

Common procedures

There are no common procedures.

Action

Procedure 1-53 provides steps and actions to return a busy D-channel to service. Figure 1-138 provides an overview of the procedure.

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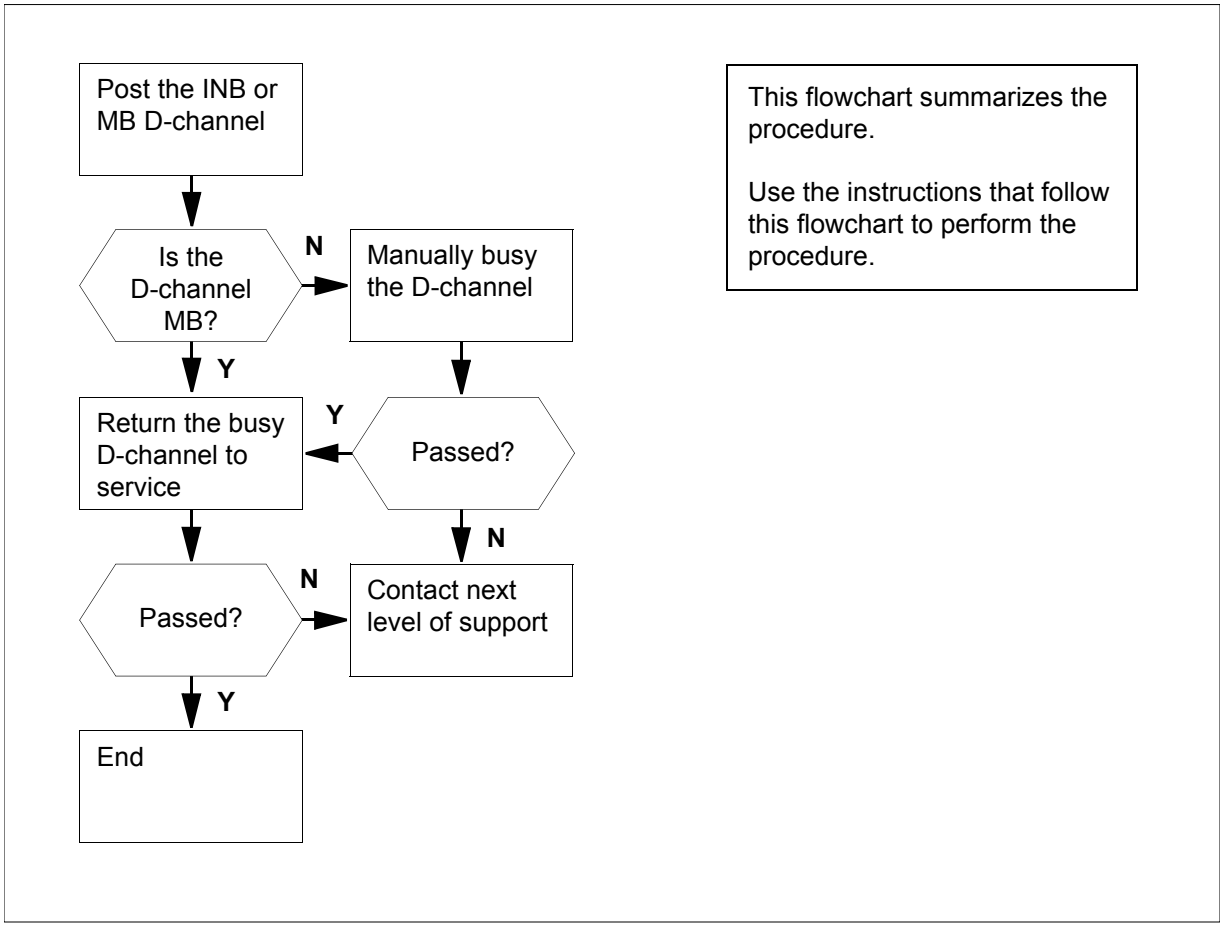
Figure 1-138
Summary of Returning a busy D-channel to service



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Procedure 1-53 describes how to return a busy D-channel to service.

Procedure 1-53
Returning a busy D-channel to service

Step	Action
1	At the MAP terminal, from office records or operating company persons, determine the name of the trunk group.
2	Determine your next step. If directions to this procedure came from *Determining the D-channel state*, go to step 4. Otherwise, go to step 3.
3	To access the PRADCH level of the MAP display, type **>MAPCI;MTC;TRKS;TTP;PRADCH** and press the **Enter** key.

4	To post the installation busy or manual busy D-channel, type **>POST GD *group_name*** (where *group_name* is the name of the trunk group) and press the **Enter** key.
	Example input:
	>POST GD F9876035PRAPRV
	Example of a MAP display:
	`POST DELQ BUSYQ DIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`2W IS IS DTCI 2 3 24 F9876035PRAPRV DCHL MBR`
	Example of a MAP response:
	`LAST CKT 3 24`
	`POSTED CKT IDLED`
	`SHORT CLLI IS: F98760`
	`OK,CKT POSTED`

5	Determine the state of the D-channel. ***Note:*** The MAP display lists the state of the D-channel to the right side of the DCHL header. If the state of the D-channel is `INB` (installation busy), go to step 6. If the state of the D-channel is `MB` (manual busy), go to step 7.

—sheet 1 of 2—

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Procedure 1-53
Returning a busy D-channel to service (continued)

Step	Action
6	To manually busy the D-channel, type **>BSY** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` ***Note:*** The D-channel state changes to manual busy (MB). If the BSY command passes, go to step 7. If the BSY command fails, go to step 8.
7	To return the D-channel to service, type **>RTS** and press the **Enter** key. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes (INS state), go to step 9. If the RTS command fails, go to step 8.
8	For additional help, contact the next level of support.
9	The procedure is complete.

—sheet 2 of 2—

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Returning a busy PRI trunk to service ISDN PRI trunk

Application

Use this procedure to return a busy PRI trunk (B-channel) to service.

Definition

The PRI trunk is installation busy (INB). INB indicates that the PRI trunk is installed but is not in service. The PRI trunk can be manual busy (MB). A PRI trunk that is MB is an indication of the manual removal of the PRI trunk from service.

Common procedures

There are no common procedures.

Action

Procedure 1-54 provides steps and actions to return a busy PRI trunk (B-channel) to service. Figure 1-139 provides an overview of the procedure.

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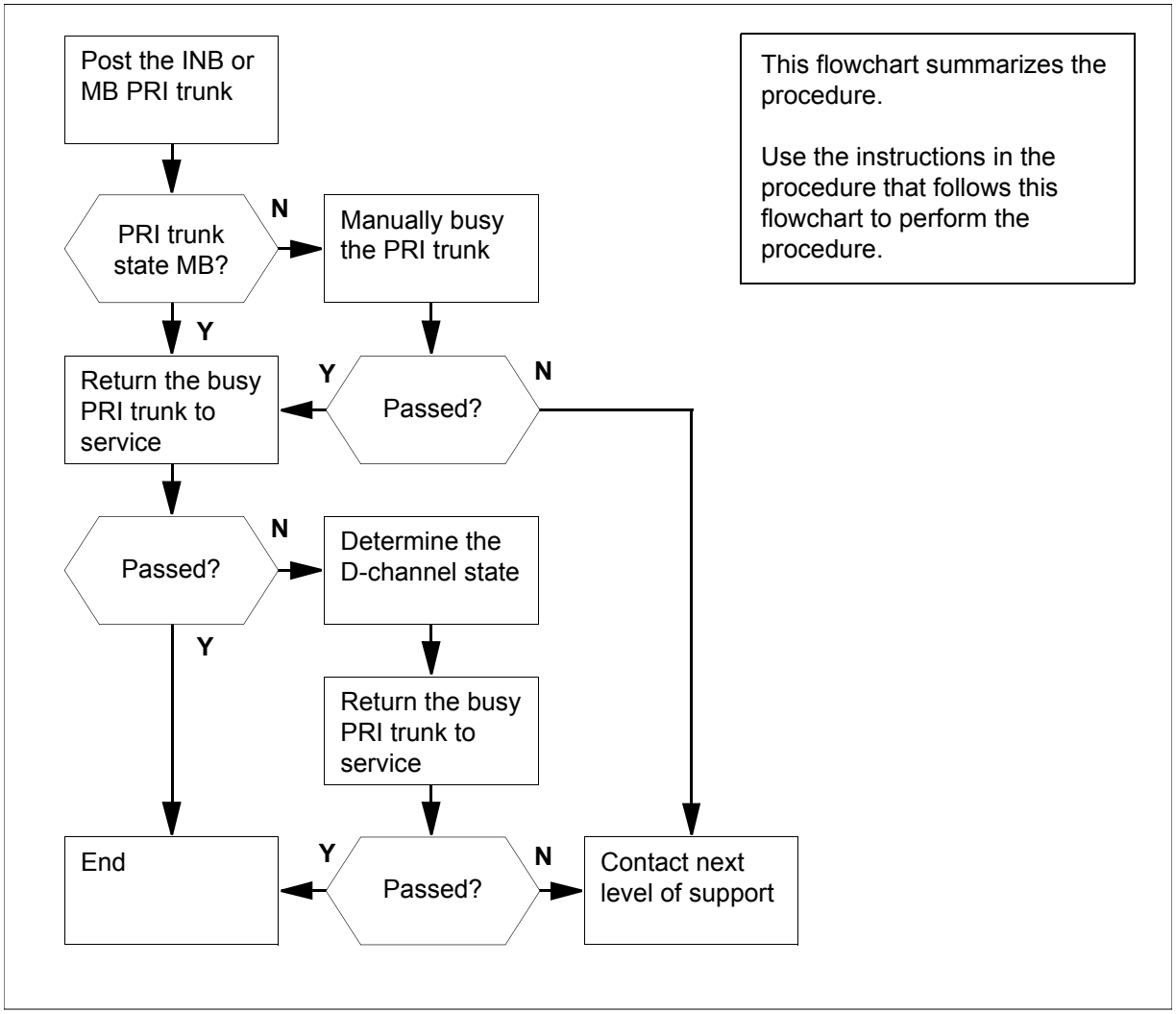
Figure 1-139
Summary of Returning a busy PRI trunk to service



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Procedure 1-54 describes how to return a busy PRI trunk (B-channel) to service.

Procedure 1-54
Returning a busy PRI trunk to service

Step	Action
1	At the MAP terminal, determine your next step. If the system directed you to this procedure from "Determining the PRI trunk state," go to step 5. Otherwise, go to step 2.
2	Determine the name of the trunk group from office records or an office person.
3	To access the TTP level of the MAP display, type **>MAPCI;MTC;TRKS;TTP** and press **Enter**.

4	To post the installation busy or manual-busy PRI trunk, type **>POST G *group_name*** (where *group_name* is the name of the trunk group) and press **Enter**.
	Example input:
	>POST G F1AAA105IPTLA
	Example of a MAP display:
	`POST DELQ BUSY QDIG`
	`TTP 6-005`
	`CKT TYPE PM NO COM LANG STA S R DOT TE RESULT`
	`IC IS DTCI 7 9 1 F1AAA105IPTLA MB R`
	Example of a MAP response:
	`LAST CKTN = 9`
	`POSTED CKT IDLED`
	`SHORT CLLI IS: F1AAA1`
	`OK,CKT POSTED`

5	Determine the state of the PRI trunk. The PRI trunk state appears under the STA header on the MAP display. If the state of the PRI trunk is INB, go to step 6. If the state of the PRI trunk is MB, go to step 7.

—sheet 1 of 2—

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Procedure 1-54
Returning a busy PRI trunk to service (continued)

Step	Action
6	To manually busy the PRI trunk, type **>BSY** and press **Enter**. *Example of a MAP response:* `STATE CHANGED` ***Note:*** The state of the PRI trunk changes to manual busy. If the BSY command passes, go to step 7. If the BSY command fails, go to step 11.
7	To return the PRI trunk to service, type **>RTS** and press **Enter**. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes, go to step 12. If the RTS command fails for a single D-channel, go to step 8. If the RTS command fails for both primary and backup D-channels, go to step 9.
8	Perform the procedure “Determining the D-channel state ISDN PRI single D-channel” in this document. Then go to step 10.
9	Perform the procedure “D-channels Determining the D-channel state ISDN PRI primary and backup“ in this document. Then go to step 10.
10	To return the PRI trunk to service, type **>RTS** and press **Enter**. *Example of a MAP response:* `STATE CHANGED` If the RTS command passes, go to step 12. If the RTS command fails, go to step 11.
11	For additional help, contact the person responsible for the next level of support.
12	The procedure is complete.

—sheet 2 of 2—

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Returning a card or assembly in Canada

Application

This procedure applies to a circuit card or an assembly, for example, a power converter. Use the procedure to return the card or assembly to Nortel Networks for repair or replacement in Canada.

Interval

Perform this procedure as required.

Common procedures

There are no common procedures.

Action

Procedure 1-55 provides steps and actions to return the card or assembly to Nortel Networks for repair or replacement in Canada. Figure 1-140 provides an overview of the procedures.

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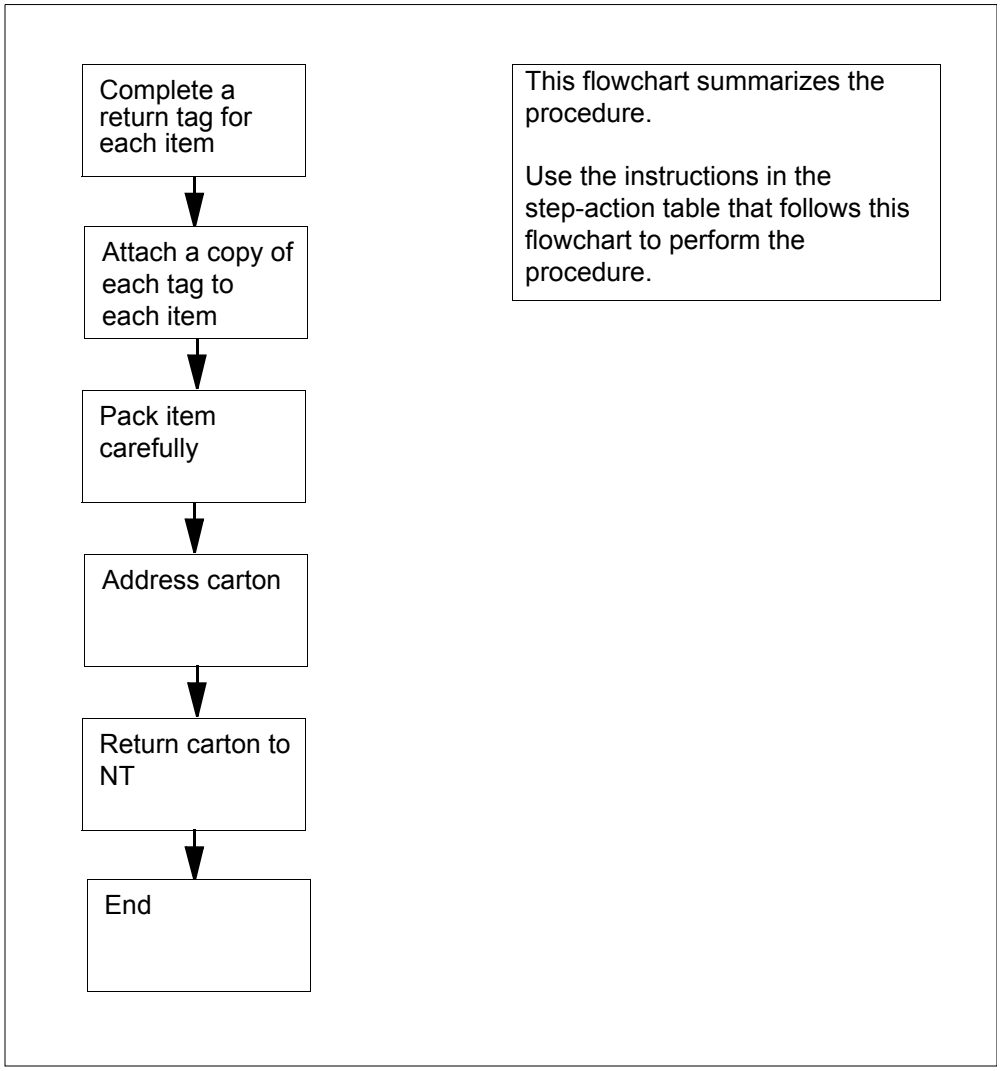
Figure 1-140
Summary of Returning a card or assembly in Canada



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Procedure 1-55 describes how to return the card or assembly to Nortel Networks for repair or replacement in Canada.

Procedure 1-55
Returning a card or assembly in Canada

Step	Action
1	At your Current Location, put the card or assembly that you return into a protective bag for electrostatic discharge (ESD).
2	Complete one return label (form 24-115) for each card or assembly that you return. Ensure that you include the following information: • return authorization number from customer service • NT product engineering code (PEC) • serial number • release number • BCS software release used at the time of replacement • if necessary, include peripheral module (PM) software load name • description of the failure and action taken for repairs • the code that describes the fault • name of your company • office identifier code • your name • site name If you need help to complete the return label, go to step 3. If you do not need help to complete the return label, go to step 4.
3	Call the following number for help to complete the return label: • days: 416-454-2808, or 1-800-668-5511 • evenings: 416-457-9555
4	Attach one copy of the return label for each item you return.
5	Keep the other copies of the label for your records.
6	Pack the card or assembly in a Northern Telecom shipping carton. Seal the carton. If a Northern Telecom carton is available, go to step 8. If a Northern Telecom carton is not available, go to step 7.

—sheet 1 of 2—

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Procedure 1-55
Returning a card or assembly in Canada (continued)

Step	Action
7	Use any acceptable carton. Ensure that • packing paper encloses each card or assembly • bubble pack or foam surrounds each card or assembly • the carton secures each card or assembly to prevent movement of the contents during shipment
8	Address the carton to: Northern Telecom Canada Limited Customer Service Operations c/o Wes Bell Transport Unit 3, Door 41630 Trinity Road Mississauga, Ontario L5T 1L6
9	Return the carton to Northern Telecom.
10	The procedure is complete.

—sheet 2 of 2—

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Returning a card or assembly in Germany

Application

This procedure applies to a circuit card or an assembly, for example, a power converter. Use this procedure to return the card or assembly to Nortel Networks for repair or replacement in Germany.

Interval

Perform this procedure as required.

Common procedures

There are no common procedures.

Action

Procedure 1-56 provides steps and actions to return the card or assembly to Nortel Networks for repair or replacement in Germany. Figure 1-141 provides an overview of the procedure.

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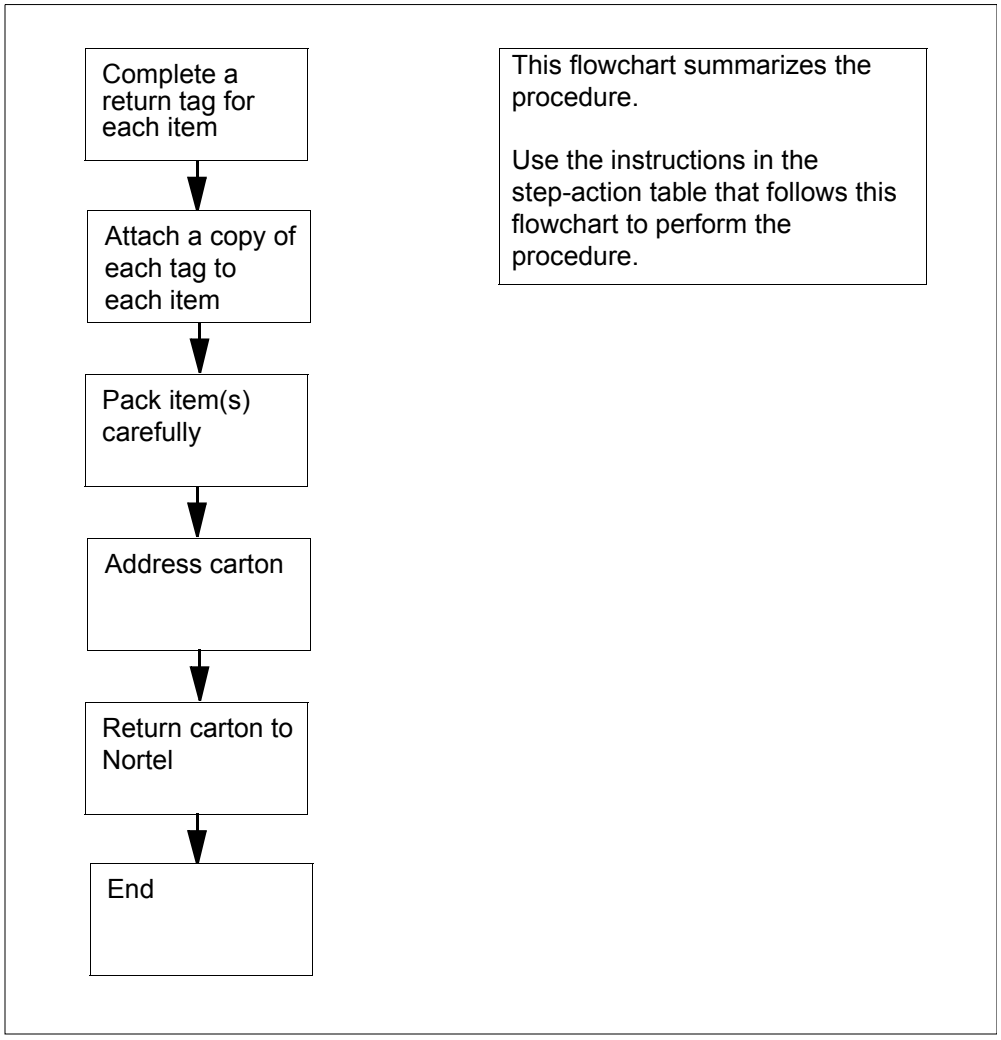
Figure 1-141
Summary of Returning a card or assembly in Germany



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Procedure 1-56 describes how to return the card or assembly to Nortel Networks for repair or replacement in Germany.

Procedure 1-56
Returning a card or assembly in Germany

Step	Action
1	At your Current Location, put the card or assembly that you return into a protective bag for electrostatic discharge (ESD).
2	Complete one return label (form 24-115) for each card or assembly that you return. Ensure that you include the following information: • return authorization number from customer service • NT product engineering code (PEC) • serial number • release number • BCS software release used at the time of replacement • if necessary, include peripheral module (PM) software load name • description of the failure and action taken for repairs • the code that describes the fault • name of your company • office identifier code • your name • site name
3	Attach one copy of the return label for each item you return.
4	Keep the other copies of the label for your records.
5	Pack the card or assembly in a Northern Telecom shipping carton. Seal the carton. If a Northern Telecom carton is available, go to step 7. If a Northern Telecom carton is not available, go to step 6.
6	Use any acceptable carton. Ensure that • packing paper encloses each card or assembly • bubble pack or foam surrounds each card or assembly • the carton secures each card or assembly to prevent movement of the contents during shipment

—sheet 1 of 2—

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Procedure 1-56
Returning a card or assembly in Germany (continued)

Step	Action
7	Address the carton to: Northern Telecom GmbHLogistik-Zentrum Neiderhofheimer Str. 56D-6238 Hofheim/Taunus
8	Return the carton to Nortel Networks.
9	The procedure is complete.

—sheet 2 of 2—

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Returning a card or assembly in Japan

Application

This procedure applies to a circuit card or an assembly, for example, a power converter. Use this procedure to return the card or assembly to Nortel Networks for repair or replacement in Japan.

Interval

Perform this procedure as required.

Action

Procedure 1-57 provides steps and actions to return the card or assembly to Nortel Networks for repair or replacement in Japan. Figure 1-142 provides an overview of the procedure.

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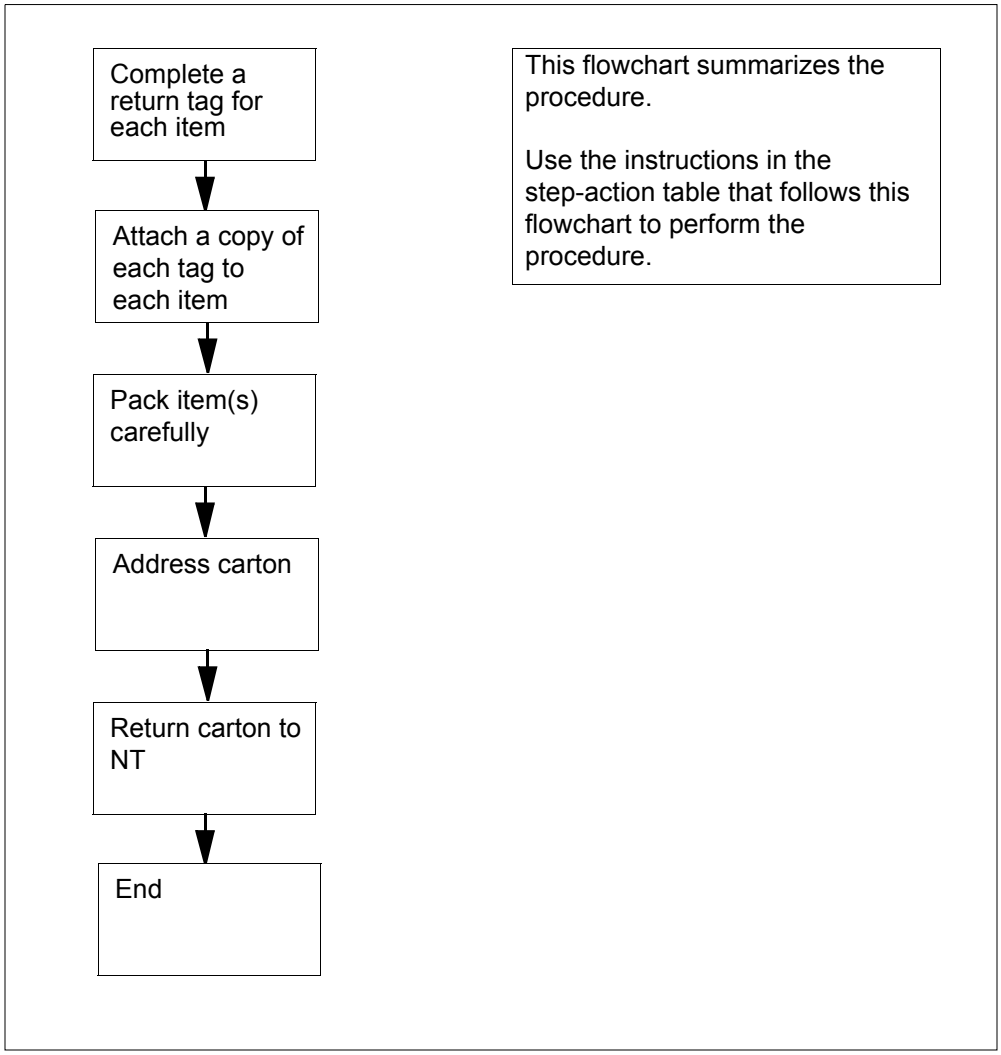
Figure 1-142
Summary of Returning a card or assembly in Japan



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Procedure 1-57 describes how to return the card or assembly to Nortel Networks for repair or replacement in Japan.

Procedure 1-57
Returning a card or assembly in Japan

Step	Action
1	At your current location, put the card or assembly that you return into a protective bag for electrostatic discharge (ESD).
2	Complete one return label (form 24-115) for each card or assembly that you return. Ensure that you include the following information: • return authorization number from customer service • NT product engineering code (PEC) • serial number • release number • BCS software release used at the time of replacement • if necessary, include peripheral module (PM) software load name • description of the failure and action taken for repairs • the code that describes the fault • name of your company • office identifier code • your name • site name
3	Call the number 03-5696-0302 for help to complete the return label.
4	Attach one copy of the return label.
5	Keep the other copies of the label for your records.
6	Pack the card or assembly in a Northern Telecom shipping carton. Seal the carton. If a Northern Telecom carton is available, go to step 8. If a Northern Telecom carton is not available, go to step 7.

—sheet 1 of 2—

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Procedure 1-57
Returning a card or assembly in Japan (continued)

Step	Action
7	Use any acceptable carton. Ensure that • packing paper encloses each card or assembly • bubble pack or foam surrounds each card or assembly • the carton secures each card or assembly to prevent movement of the contents during shipment
8	Address the carton to: Northern Telecom Japan Inc. Attn: Mr. Y. Harada, c/o Fuji Logitec Inc. 3-5-1 Rinkai-cho 3FEdogawa-ku, Tokyo Tel: 03-3877-2816/7; Fax: 03-3877-2818
9	Return the carton to Northern Telecom.
10	The procedure is complete.

—sheet 2 of 2—

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Returning a card or assembly in the United States of America

Application

This procedure applies to a circuit card or an assembly, for example, a power converter. Use this procedure to return the card or assembly to Nortel Networks for repair or replacement in the United States.

Interval

Perform this procedure as required.

Action

Procedure 1-58 provides steps and actions to return the card or assembly to Nortel Networks for repair or replacement in the United States. Figure 1-143 provides an overview of the procedure.

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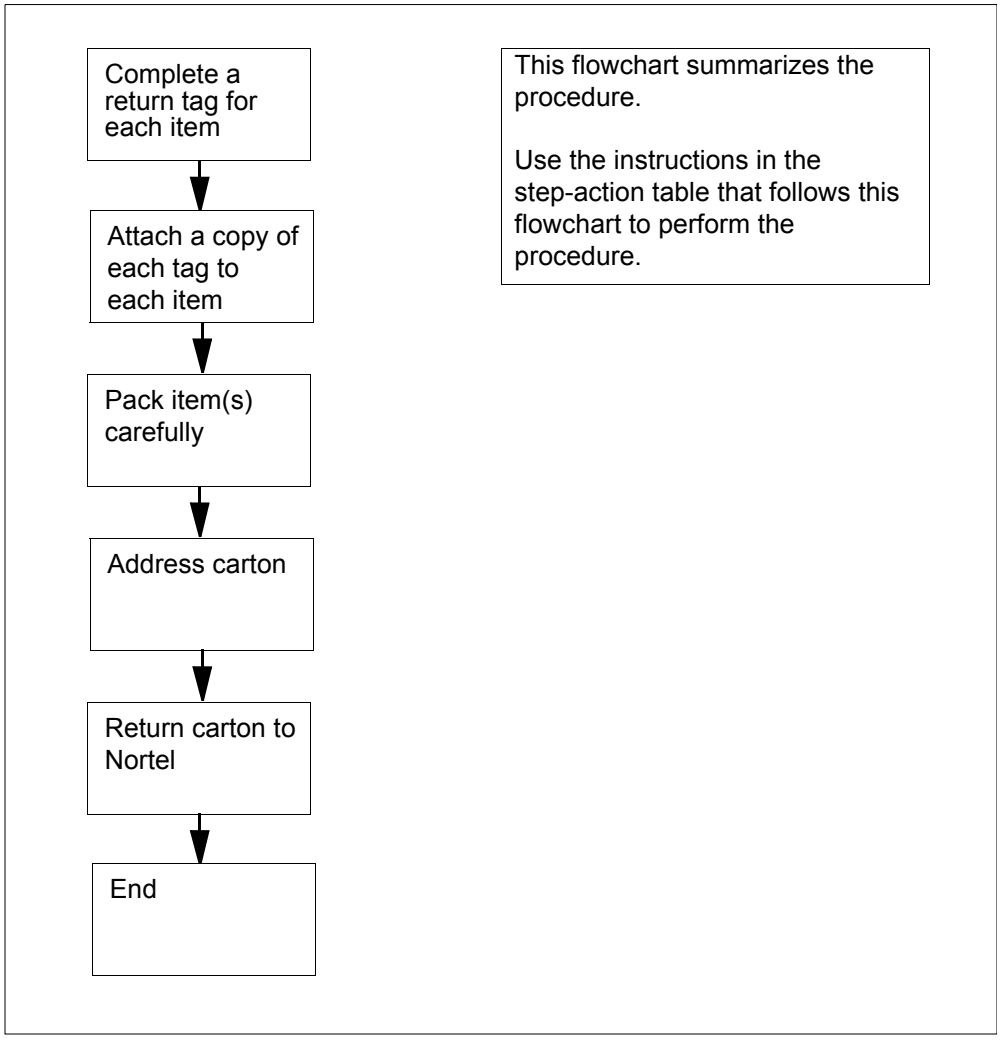
Figure 1-143
Summary of Returning a card or assembly in the United States of America



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Procedure 1-58 describes how to return the card or assembly to Nortel Networks for repair or replacement in the United States.

Procedure 1-58
Returning a card or assembly in the United States of America

Step	Action
1	At your current location, put the card or assembly that you return into an protective bag for electrostatic discharge (ESD)
2	Complete one return label (form 24-115) for each card or assembly that you return. Ensure that you include the following information: • return authorization number from customer service • NT product engineering code (PEC) • serial number • release number • BCS software release used at the time of replacement • if necessary, include peripheral module (PM) software load name • description of the failure and action taken for repairs • the code that describes the fault • name of your company • office identifier code • your name • site name If you need help to complete the return label, go to step 3. If you do not need help to complete the return label, go to step 4.
3	In the USA, call 919-992-3333 or 1-800-347-4850 (repair or return service) for help to complete the return label.
4	Attach one copy of the return label for each item that you return.
5	Keep the other copies of the label for your records.
6	Pack the card or assembly in a NorthernTelecom shipping carton. Seal the carton. If a Northern Telecom carton is available, go to step 8. If a Northern Telecom carton is not available, go to step 7.

—sheet 1 of 2—

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Procedure 1-58
Returning a card or assembly in the United States of America (continued)

Step	Action
7	Use any acceptable carton. Ensure that • packing paper encloses each card or assembly • bubble pack or foam surrounds each card or assembly • the carton secures each card or assembly to prevent movement of the contents during shipment
8	Address the carton to: Northern Telecom Inc. Spare Parts Center 4600 Emperor Boulevard Morrisville, NC 27560
9	Return the carton to Northern Telecom.
10	The procedure is complete.

—sheet 2 of 2—

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Returning an LIM to service

Application

Use this procedure to return a link interface module (LIM) that is manually busy or offline to service.

If the LIM is system busy, it will have an alarm associated with one or more of its units. See the *Base/Telecom Alarm Clearing and Monitoring Procedures for Wireless Networks* (411-3001-543) to clear the alarm and return the LIM to service.

Definition

The LIM is out of service when manual busy or offline.

Common procedures

There are no common procedures.

Action

Procedure 1-59 provides steps and actions to return an LIM that is manually busy or offline to service. Figure 1-144 provides an overview of the procedure.

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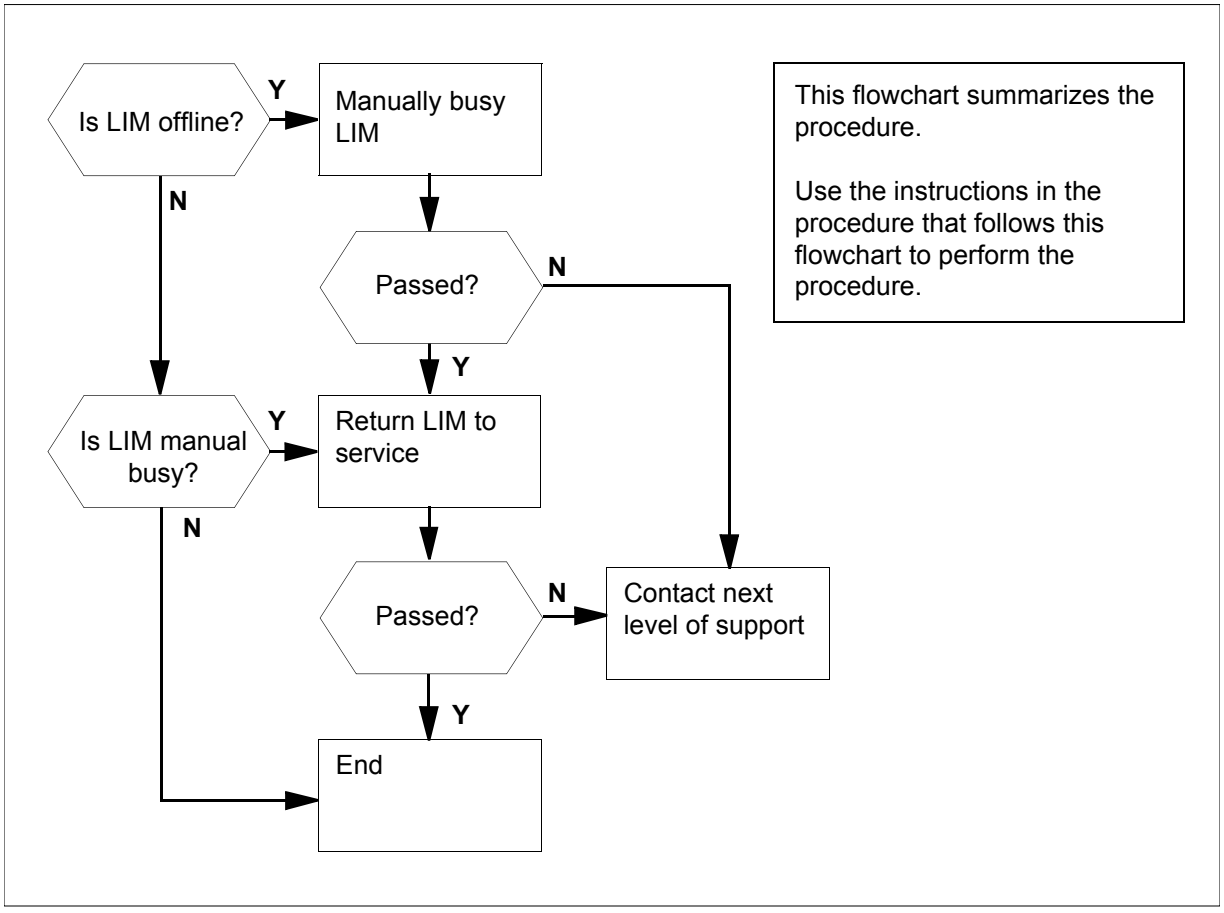
Figure 1-144
Summary of Returning a LIM to service



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Procedure 1-59 describes how to return a link interface module (LIM) that is manually busy or offline to service.

Procedure 1-59
Returning a LIM to service

Step	Action

1	At the MAP terminal, type **>MAPCI;MTC;PM** and press **Enter** to access the PM level of the MAP display.
	Example of a MAP display:
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 0 1 0 0 0 39`

2	To determine if offline LIMs are present, type **>POST LIM OFFL** and press **Enter**. If the posted set contains `OffL` LIMs, go to step 3. If the posted set is empty, go to step 7.
3	Choose an off-line LIM to work on.
4	Determine from office records or an office person the reason that the LIM is offline. When possible, continue this procedure.
5	To manually busy the offline LIM, type **>BSY PM** and press **Enter**. If the BSY command passes, go to step 6. If the BSY command fails, go to step 11.
6	To return the LIM to service, type **>RTS PM** and press **Enter**. If the RTS command passes, go to step 12. If the RTS command fails, go to step 11.
7	To determine if manual-busy LIMs are present, type **>POST LIM MANB** and press **Enter**. If the posted set contains `ManB` LIMs, go to step 8. If the posted set is empty, go to step 12.
8	Choose a manual-busy LIM on which to work.
9	Determine from office records or from an office person why the LIM is manual busy. When possible, continue with the procedure.
10	To return the manual-busy LIM to service, type **>RTS PM** and press **Enter**. If the RTS command passes, go to step 12. If the RTS command fails, go to step 11.

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Procedure 1-59
Returning a LIM to service (continued)

Step	Action
11	For additional help, contact the person responsible for the next level of support.
12	The procedure is complete.

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Running a C7BERT

Application

Use this procedure to do the following:

- local or remote loopback on an NT9X77AA, NT9X78BA, NT9X78CA, NT9X78DA or NT9X78DB card for LIUBASIC
- local or remote loopback on an NTEX26AA channelized access link
- link fault sectionalization
- CCS7 bit error rate test (C7BERT)
- inject bit errors during C7BERT

Definition

Tests of bit error rate measure the quality of a CCS7 digital transmission path.

Run a C7BERT in the following conditions:

- before a CCS7 signaling link goes into service
- when isolating faults

Common procedures

There are no common procedures.

Action

Procedure 1-60 provides steps and actions to run a C7BERT. Figure 1-145 provides an overview of the procedure.

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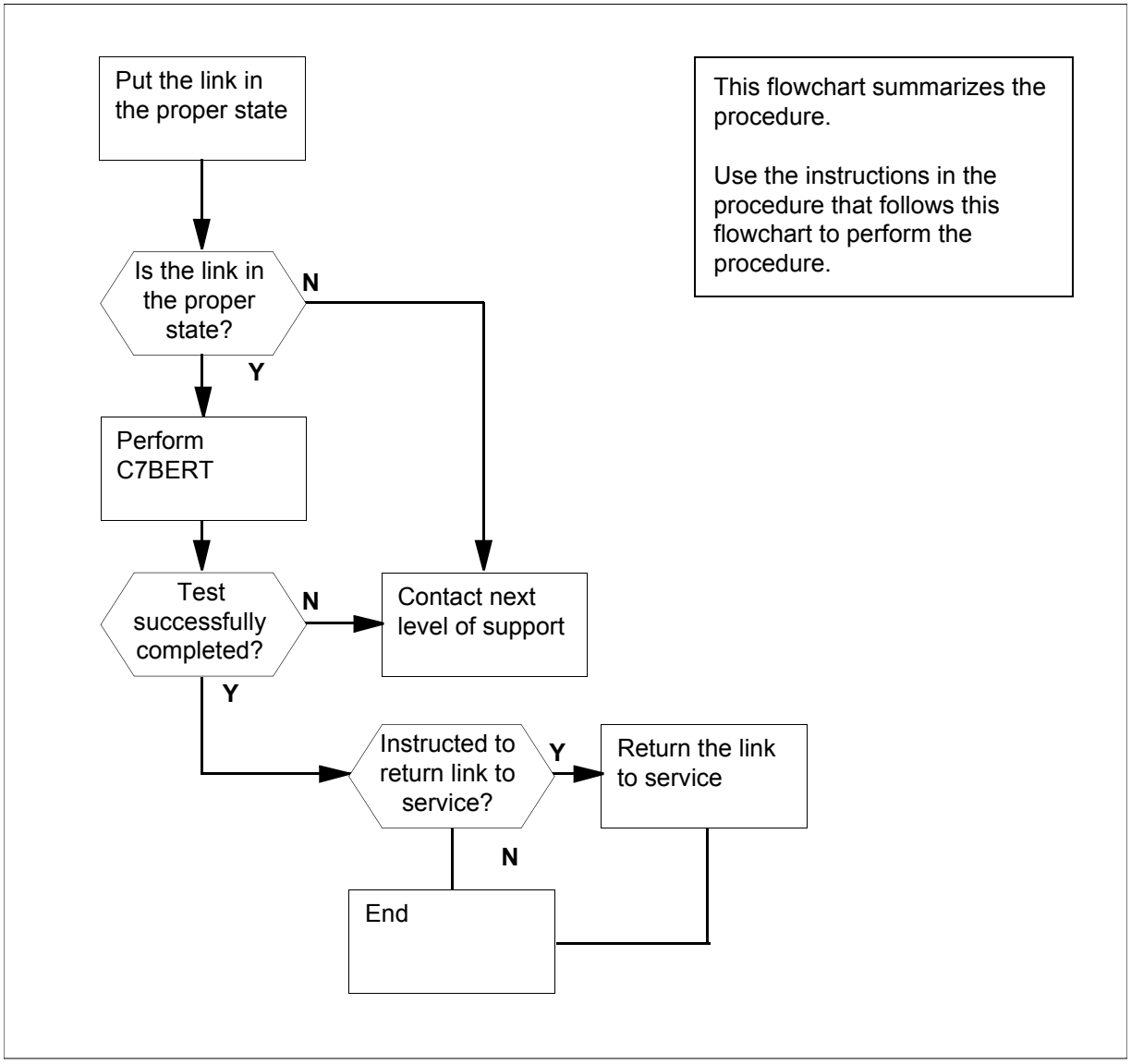
Figure 1-145
Summary of Running a C7BERT



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Procedure 1-60 describes how to measure the quality of a CCS7 digital transmission path using a bit error rate test.

Procedure 1-60
Running a C7BERT

Step	Action
1	**ATTENTION** To run link fault sectionalization (LFS) the SOC option TEL0007 must have the RTU set to "Y" and the state set to "on". **ATTENTION** If link fault sectionalization (LFS) is activated, an anomaly in the NT9X78BA and NT9X78CA cards can cause latch past to occur. When the last DS0DP is a BA or CA paddle board, LFS may latch past the last DS0DP link. For example, if the fifth and last device in a link is a BA or CA card, LFS may latch the sixth or seventh DS0DP.Before running this procedure, check the number and type of devices on a link. This information helps reduce the link diagnosis time. At the MAP terminal, contact the next level of support to obtain the following information: • how the test will stop (manually or automatically), and • if periodic reports are required, and if so, how many times each hour (1 to 12)
2	If you perform a remote loopback, inform a person at the far-end office that • you will busy and deactivate the link, and • the person must busy and deactivate the link at their end

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

3	To access the C7LKSET level of the MAP display, type **>MAPCI;MTC;CCS;CCS7;C7LKSET** and press **Enter**.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`

4	To post the linkset that includes the link you want to test, type **>POST C *linkset_name*** (where *linkset_name* is the name of the linkset, as defined in table C7LKSET) and press the **Enter** key.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`
	`0 OffL DAct LIU7 12 OffL TTC7LKS1_TL`
	`1 ManB DAct LIU7 13 InSv TTC7LKS1_TL`
	`Size of Posted Set = 2`
	If the linkset has more than 4 entries, go to step 5.
	If the linkset has 4 or less than 4 entries, go to step 6.

5	To display the rest of the links in the linkset, type **>NEXT** and press **Enter**.
6	Determine the state of the CCS7 link interface unit (LIU7) for the link you want to test. ***Note:*** The LIU7 state appears under the Stat header that is to the right of Resource. If the LIU7 state is `SysB` or `OffL`, go to step 7. If the LIU7 state is `ManB`, go to step 10. If the LIU7 state is `InSv` or `ISTb`, go to step 13. If the LIU7 state is anything else, go to step 66.

7	To access the PM level of the MAP display, type **>PM** and press **Enter**.
	Example of a MAP display:
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 1 10 12 0 6 49`

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
8	To post the LIU7, type **>POST LIU7 *liu7_no*** (where *liu7_no* is the number of the LIU7 that connects to the link you want to test) and press **Enter**. ***Note:*** The number of the LIU7 appears under the Resource header of the MAP display. In the example in step 4, the LIU7 that connects to link1 is 13. *Example of a MAP response:* `LIU7 13 InSv`
9	To force the LIU7 to busy, type **>BSY FORCE** and press **Enter**. If the BSY command passes, go to step 10. If the BSY command fails, go to step 66.
10	To reset the LIU7, type >PMRESET and press **Enter**. If the PMRESET command passes, go to step 11. If the PMRESET command fails, go to step 66.
11	To return the LIU7 to service, type **>RTS** and press **Enter**. If the RTS command passes, return to C7LKSET level of MAP. If the RTS command fails, go to step 66.

12	To access the C7LKSET level of the MAP display, type **>CCS;CCS7;C7LKSET** and press **Enter**.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`
	`0 OffL DAct LIU7 12 OffL DS0A`
	`1 ManB DAct LIU7 13 InSv DS0A`
	`Size of Posted Set = 2`

13	Determine the traffic state of the link you want to test. The traffic state of the link appears under the Traf Stat header of the MAP display. If the traffic state is `ManB`, go to step 15. Otherwise, go to step 14.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

14	To manually busy the link, type **>BSY *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`
	`1 ManB Sync LIU7 109 InSv TTC7LKS1_TL 1 SZD`
	`Size of Posted Set = 1`
	If the BSY command passes, go to step 15.
	If the BSY command fails, go to step 66.

15	To deactivate the link, type **>DEACT *link_no* FORCE** (where *link_no* is the number of the link you want to deactivate, from 0 to 15) and press **Enter**. ***Note:*** The response can take 10 minutes. Wait for the status to change InSv and confirm that the link is deactivated. If the DEACT command passes, go to step 16. If the DEACT command fails, go to step 66.
16	To access the C7BERT level of the MAP display, type **>C7BERT** and press Enter.
17	Determine the purpose of the next step. If the next step is to perform a local loopback, go to step 18. If the next step is to perform a remote loopback, go to step 19. If the next step is to perform a link fault sectionalization, go to step .

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
18	To activate a local loopback, type **>PMLOOP LOCON *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press **Enter**. If the response is `This command is not implemented`, go to step 22. If the response is `Link nn: Failed - PM not equipped with 9X78DA or 9X78DB`, go to step 22. If the response is `Link 1: Failed - C7BERT already active on this link`, go to step 23. If the response is `Link 1: Loopback Local on completed`, go to step 30. If the response is `Link 1: Failed - PMLOOP <Local> is already active`, go to step 48. If the response is `Link 1: Failed - PMLOOP <Remote> is already active`, go to step 49. If the response is `Link 1: Loopback Local on completed. WARNING: In DTE mode, the V.35 clock must be present for C7BERT to pass`, go to step 66. If the response is anything else, go to step 66.
19	If you perform a remote loopback, inform a person at the far-end office that • you will busy and deactivate the link, and • the person must busy and deactivate the link at their end
20	Before activating a remote loopback, access the C7BERT level of the MAP display at the far end office by typing **>C7BERT** and pressing **Enter**.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
21	To activate a remote loopback, at the far end office, type **>PMLOOP RMTON *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press **Enter**. If the response is `This command is not implemented`, go to step 22. If the response is `Link 1: Failed - C7BERT already active on this link`, go to step 23. If the response is `Link 1: Loopback Remote On completed`, go to step 30. If the response is `Link 1: Failed - PMLOOP <Local> is already active`, go to step 48. If the response is `Link 1: Failed - PMLOOP <Remote> is already active`, go to step 49. If the response is `Failed — Cannot seize trunk`, check the corresponding DTC, and retry the remote loopback. If the response is `Failed — Cannot install NIU connection (NIU-LIU)`, check the corresponding NIU, and retry the remote loopback. If the response is `Link 1: Loopback Remote On completed. WARNING: In DTE mode, the V.35 clock must be present for C7BERT to pass`, go to step 66. If the response is anything else, go to step 66.
22	PM loop functionality is not available on your switch. If you want to run a C7BERT, go to step 24. Otherwise, go to step 66.
23	To stop the C7BERT that exists, type **>STOP *link_no*** (where *link_no* is the number of the link that you entered in PMLOOP command) and press **Enter**. ***Note:*** The STOP command overrides a preset stop time without warning. If the response is Link 1: C7BERT stopped, repeat PMLOOP. Otherwise, go to step 66.
24	Apply manual loopbacks to the network elements that you will test.
25	To determine if a set stop time exists, type **>SETSTOP *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. If the response is Link nn: Stop time set at: is time, go to step 26. If the response is Link nn: No stop time has been set, go to step 27. If the response is anything else, go to step 66.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
26	To clear the stop time, type **>SETSTOP *link_no* CLEAR** (where *link_no* is the number of the link that the C7BERT runs on) and press **Enter**. If the response is Stop time cleared, go to step 27. Otherwise, go to step 66.
27	To set the stop time to a new value, type **>SETSTOP *link_no* SET *day hours minutes*** and press Enter. Replace variables as follows: • *link_no* is the number of the link (0 to 15) the C7BERT is running on • *day* is the day you want the test to stop automatically (MON, TUE, WED,THU, FRI, SAT, or SUN) • *hours* is the hour you want the test to stop automatically (0 to 23) • *minutes* is the minute you want the test to stop automatically (00 to 59) *Example input:* **>SETSTOP 3 SET MON 10 30** ***Note:*** The example entry sets the stop time for link 3 on every Monday at 10:30 a.m. If the response is Link nn: Stop time set at:, go to step 28. If the response is 19xx/yy/zz, go to step 28. If the response is hh:mm:00.000 ddd, go to step 28. Otherwise, go to step 66.
28	Determine if the stop time is correct. If the stop time is correct, go to step 29. If the stop time is wrong, go to step 26.
29	Wait until the C7BERT stops. Go to step 45.
30	To start the C7BERT, type **>START *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press **Enter**. If the response is Link n: C7BERT started, go to step 31. If the response is Link n:Failed - Link state is invalid for C7BERT Link must be ManB and DAct (or LFS), go to step 6. If the response is anything else, go to step 66.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

31	To display the test results of the C7BERT, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`query 1`
	`Link 1: C7BERT query`
	`Run Time : 662 Err Free Secs: 662`
	`Tx Frames : 19016 Rx Sync Errs : 0`
	`Rx Frames : 19019 Rx Bad Frames: 0`
	`Rx Bit Errors: 0 Rx Bits : 38931896`
	`Bit Err Rate : 0 x 10-15`
	If the response is a display of C7BERT statistics, go to step 32.
	Otherwise, go to step 66.

32	Determine the if any transmitted Tx frames exist. The number of frames transmitted appears to the right of the Tx Frames header of the MAP display. In the example in step 31, the number of frames transmitted is 19 016 . If Transmitted Tx Frames are present, go to step 33. If not, go to step 66.
33	The test runs correctly. The C7BERT generates test results when you request periodic reports, stop the test manually, or stop the test automatically at a preset time. Decide the action you want to take. ***Note:*** If a switch restart occurs when a C7BERT runs on a link, the test stops automatically. If the LIU7 for the link fails, the test also stops automatically. To request periodic reports, go to step 40 To stop the test manually, go to step 44. To stop the test automatically at a preset time, go to step 50. To inject bit errors (If the link connects to a NT9X78DA/DB card), go to step 34.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

34	To display C7BERT results, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1224 Err Free Secs: 1133`
	`Tx Frames : 32538 Rx Sync Errs : 0`
	`Rx Frames : 32580 Rx Bad Frames: 1`
	`Rx Bit Errors: 0 Rx Bits : 66673662`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 35.
	Otherwise, go to step 66.

35	Record the number of Rx bit errors. ***Note:*** In the example in step 34, the number of bit errors received appears to the right of Rx Bit Errors.
36	To inject bit errors, type **>INJERR *link_no*** (where *link_no* is the number of the link you tested in step 30) and press the **Enter** key. *Example of a MAP response:* `injerr 1` If the response is Link 1: INJECT ERROR completed, go to step 37. If the response is Link n:Failed - C7BERT is not active on this link, go to step 30. If the response is anything else, go to step 66.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

37	To display the result of bit error injection, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1134 Err Free Secs: 1133`
	`Tx Frames : 32568 Rx Sync Errs : 0`
	`Rx Frames : 32570 Rx Bad Frames: 1`
	`Rx Bit Errors: 6 Rx Bits : 66670792`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 38.
	Otherwise, go to step 66.

38	Determine the result of bit error injection. ***Note:*** In the example in step 37, the number of bit errors received appears to the right of Rx Bit Errors.
39	Subtract the result of the C7BERT recorded in step 35 from the result obtained in step 38. If the difference is 6, go to step 33. Otherwise, go to step 66.
40	To determine if any requests existed for periodic reports, type **>REPORT *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. If the response is Link nn: Report interval already set at: mm times per hour, go to step 41. If the response is Link nn: Automatic query reporting is not active, go to step 42. If the response is anything else, go to step 66.
41	To clear the last report interval, type **>REPORT *link_no* OFF** (where *link_no* is the number of the link that the C7BERT runs on) and press **Enter**. *MAP response:* `Link nn: Automatic query reporting has been terminated`

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
42	To set the number of reports per hour, type **>REPORT *link_no* ON *number*** (where *link_no* is the number of the link that the C7BERT runs on, from 0 to 15, and *number* is the number of reports per hour, from 1 to 12), then press **Enter**. *Example input:* **>REPORT 1 ON 6** If the response is Link nn: Report interval set at:is nn times per hour, go to step 43. Otherwise, go to step 66.
43	Determine if the report interval is correct. If the interval is correct, go to step 33. If the interval is wrong, go to step 41.
44	Stop the C7BERT that exists, type **>STOP *link_no*** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. ***Note:*** The STOP command overrides any preset stop time without warning. If the response is Link 1: C7BERT stopped, go to step 45. If the response is a display of test statistics, go to step 45. If the response is anything else, go to step 66.
45	Give the results to the persons responsible for the next level of support. If the link stops on an NT9X77AA, NT9X78BA/CA/DA/DB, or NTEX26AA card, and you just ran a peripheral module (PM) local or remote loopback, go to step 48. If instructions required you to return the link to service, go to step 48. If the link stops on an NT9X77AA, NT9X78BA/CA/DA/DB, or NTEX26AA card, and you just ran a PM local or remote loopback, go to step 48. If instructions required you to perform more tests, go to step 48. If the link does not stop on an NT9X77AA, NT9X78BA/CA/DA/DB, or NTEX26AA card, go to step 46. For any other responses, go to step 110.
46	Remove the manual loopback across network elements.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
47	Your next step depends on the instructions received from your next level of support. If instructions required you to return the link to service, go to step 55. If instructions required you to perform more tests, go to step 24. Otherwise, go to step 110.
48	To deactivate a local loopback, type **>PMLOOP LOCOFF *link_no*** (where *link_no* is the number of the link you tested in step 18) and press **Enter**. If the response is `pmloop off 1 Link 1: Loopback Local off completed`, go to step 55. Otherwise, go to step 66.
49	To deactivate a remote loopback, type **>PMLOOP RMTOFF *link_no*** (where *link_no* is the number of the link you tested in step 18) and press **Enter**. If the response is `pmloop off 1 Link 1: Loopback Remote off completed`, go to step 55. Otherwise, go to step 66.
50	To determine if a set stop time exists, type **>SETSTOP *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. If the response is Link nn: Stop time set at:is time, go to step 51. If the response is Link nn: No set stop time, go to step 52. Otherwise, go to step 66.
51	To clear the stop time, type **>SETSTOP *link_no* CLEAR** (where *link_no* is the number of the link that the C7BERT runs on) and press **Enter**. If the response is Stop time cleared, go to step 52. Otherwise, go to step 66.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
52	To set the stop time that is new, type **>SETSTOP *link_no* SET *day hours minutes*** and press **Enter**. Replace variables as follows: • *link_no* is the number of the link (0 to 15) that the C7BERT runs on • *day* is the day you want the test to stop automatically (MON, TUE, WED, THU, FRI, SAT, or SUN) • *hours* is the hour you want the test to stop automatically (0 to 23) • *minutes* is the minute you want the test to stop automatically (00 to 59) *Example input:* **>SETSTOP 3 SET MON 10 30** ***Note:*** The example entry sets the stop time for link 3 on every Monday at 10:30 a.m. If the response is Link nn: Stop time set at:, go to step 53. If the response is 19xx/yy/zz, go to step 53. If the response is hh:mm:00.000 ddd, go to step 53. Otherwise, go to step 66.
53	Determine if the stop time is correct. If the stop time is correct, go to step 54. If the stop time is wrong, go to step 51.
54	Wait until the C7BERT stops. Go to step 45.
55	To quit the C7BERT level of the MAP display, type **>QUIT** and press **Enter**.
56	To activate the link that the C7BERT ran on, type **>ACT *link_no*** (where *link_no* is the number of the link, from 0 to 15) and press **Enter**. If the ACT command passes, go to step 57. If the ACT command fails, go to step 66.
57	Determine the synchronization state of the link. The synchronization state appears under the Sync Stat header of the MAP display. If the synchronization state is AInd, go to step 54. Otherwise, go to step 58.
58	Wait 8 minutes, then continue with the procedure.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
59	Determine the synchronization state of the link. If the synchronization state is not AInd, and you did not ask the far-end office to activate the link, go to step 60. If the synchronization state is not AInd, and you already asked the far-end office to activate the link, go to step 62.
60	Determine from office records the far-end office that connects to the linkset posted in step 4.
61	Contact the far-end office. Tell the person at that location that • you are going to busy and deactivate the link in order to realign it, and that • the person at the far end and you must activate the link after you busied and deactivated the link Go to step 57.
62	To deactivate the link, type **>DEACT *link_no* FORCE** (where *link_no* is the number of the link you activated in step 56) and press **Enter**.
63	Tell the person at the far-end office to activate the link. To activate the link from your end, type **>ACT *link_no*** (where *link_no* is the number of the link you activated in step 56) and press **Enter**. If the ACT command passes, go to step 64. If the ACT command fails, go to step 66.
64	To return the link to service, type **>RTS *link_no*** (where *link_no* is the number of the link you activated in step 56) and press **Enter**. If the RTS command passes, go to step 65. If the RTS command fails, go to step 66.
65	To uninhibit the link, type **>UINH *link_no*** (where *link_no* is the number of the link you activated in step 56) and press **Enter**. If the UINH command passes, go to step 110. If the UINH command fails, go to step 66.
66	For additional help, contact the next level of support.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
67	

ATTENTION
To run link fault sectionalization (LFS) the SOC option TEL0007 must have the RTU set to "Y" and the state set to "on".

ATTENTION
If link fault sectionalization (LFS) is activated, an anomaly in the NT9X78BA and NT9X78CA cards can cause latch past to occur. When the last DS0DP is a BA or CA paddle board, LFS may latch past the last DS0DP link.

For example, if the fifth and last device in a link is a BA or CA card, LFS may latch the sixth or seventh DS0DP.

To activate link fault sectionalization, type **>LFSLOOP START *link_no element_type loopback_type occurrence*** and press **Enter**.

Replace variables as follows:

- *link_no* is the number of the link you want to test (0 to 15)
- *element_type* is the type of network element that the loopback will use (DS0DP, OCUDP, CSU, NEI, or DSU)
- *loopback_type* is if the loopback latches or does not latch (LATCH or NONLATCH)
- *occurrence* is the occurrence of the element type where link fault sectionalization will initiate (1 to 16)

Example input:

>LFSLOOP START 1 DS0DP LATCH 1

Before running this procedure, check the number and type of devices on a link. This information helps reduce the link diagnosis time.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
68	Your next step depends on the generated response. If the response is Link nn: LFS ON complete, go to step 79. If the response is Looped back at element mm, go to step 79. If the response is Link nn: LFS ON complete Looped back at element mm WARNING: Physical loop may exist as confirmation byte not received, go to step 79. If the response is LFS non-latching sequence initiated for element mm. Run C7BERT to verify loop-back at element mm, go to step 79. If the response is Link nn: Failed - C7BERT already active on this link, go to step 72. If the response is Link 1: Failed - LFS already active on this link, go to step 70. If the response is Link nn: Has not gone into loopback, go to step 71. If the response is Element mm has not responded, go to step 71. If the response is Link nn: LFS OFF complete, go to step 71. If the response is Link nn: Has not gone into loopback, go to step 71. If the response is Link nn: LFS OFF complete, go to step 71. If the response is Link nn: Failed - PM not equipped with 9X78DA or 9X78DB, go to step 69. If the response is anything else, go to step 109.
69	PM loop functionality is not available on your switch. If you still want to run a C7BERT, go to step 73. Otherwise, go to step 109.
70	To remove the link fault sectionalization already applied, type **>LFSLOOP STOP *link_no*** (where *link_no* is the number of the link you entered in step) and press **Enter**. If the response is LFSLoop stop nLink n: LFS OFF complete, go to step . Otherwise, go to step 109.
71	Record the element type and occurrence specified in step . ***Note:*** The link fault sectionalization failed at the element type and occurrence you specified. The failure occurred for one of the following reasons: • The element type and occurrence specified is beyond the location of the link problem. • There is no element type and occurrence. Go to step 109.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
72	To stop the C7BERT that exists, type **>STOP *link_no*** (where *link_no* is the number of the link that you entered in step) and press **Enter**. ***Note:*** The STOP command overrides the preset stop time without warning. If the response is Link 1: C7BERT stopped, go to step . Otherwise, go to step 109.
73	Apply manual loopbacks to the network elements that you will test.
74	To determine if a stop time is set, type **>SETSTOP *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. If the response is Link nn: Stop time set at:, go to step 75. If the response is time, go to step 75. If the response is Link nn: No set stop time., go to step 76. If the response is anything else, go to step 109.
75	To clear the stop time, type **>SETSTOP *link_no* CLEAR** (where *link_no* is the number of the link that the C7BERT runs on) and press **Enter**. If the response is Stop time cleared, go to step 76. Otherwise, go to step 109.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
76	To set the stop time that is new, type **>SETSTOP *link_no* SET *day hours minutes*** and press **Enter**. Replace variables as follows: • *link_no* is the number of the link (0 to 15) that the C7BERT runs on • *day* is the day you want the test to stop automatically (MON, TUE, WED, THU, FRI, SAT, or SUN) • *hours* is the hour you want the test to stop automatically (0 to 23) • *minutes* is the minute you want the test to stop automatically (00 to 59) *Example input:* **>SETSTOP 3 SET MON 10 30** ***Note:*** The example entry sets the stop time for link 3 on every Monday at 10:30 a.m. If the response is Link nn: Stop time set at:, go to step 77. If the response is 19xx/yy/zz, go to step 77. If the response is hh:mm:00.000 ddd, go to step 77. Otherwise, go to step 109.
77	Determine if the stop time is correct. If the stop time is correct, go to step 78. If the stop time is wrong, go to step 75.
78	Wait until the C7BERT stops. Go to step 94.
79	To start the C7BERT, type **>START *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press **Enter**. If the response is Link n: C7BERT started, go to step 80. If the response is Link n:Failed - Link state is invalid for C7BERTLink must be ManB and DAct (or LFS), go to step 6. If the response is anything else, go to step 109.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

80	To display the test results of the C7BERT, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	
	Example of a MAP response:
	
	`query 1`
	`Link 1: C7BERT query`
	`Run Time : 662 Err Free Secs: 662`
	`Tx Frames : 19016 Rx Sync Errs : 0`
	`Rx Frames : 19019 Rx Bad Frames: 0`
	`Rx Bit Errors: 0 Rx Bits : 38931896`
	`Bit Err Rate : 0 x 10-15`
	
	If the response is a display of C7BERT statistics, go to step 81.
	
	Otherwise, go to step 109.

81	Determine if any transmitted Tx frames exist. ***Note:*** The number of frames transmitted appears to the right of the Tx Frames header of the MAP display. In the example in step 31, the number of frames transmitted is 19 016. If Transmitted Tx Frames are present, go to step 82. Otherwise, go to step 109.
82	The test runs correctly. The test generates results when you request periodic reports. The test also generates results when you stop the test manually, or when the test stops automatically at a preset time. Decide the action you want to take. ***Note:*** If a switch restart occurs when a C7BERT runs on a link, the test stops automatically. If the LIU7 for the link fails, the test also stops automatically. To request periodic reports, go to step 89. To stop the test manually, go to step 93. To stop the test automatically at a preset time, go to step 74. To inject bit errors (if the link connects to a NT9X78DA/DB card), go to step 83.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

83	To display C7BERT results, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1224 Err Free Secs: 1133`
	`Tx Frames : 32538 Rx Sync Errs : 0`
	`Rx Frames : 32580 Rx Bad Frames: 1`
	`Rx Bit Errors: 0 Rx Bits : 66673662`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 84.
	Otherwise, go to step 109.

84	Record the number of Rx bit errors. ***Note:*** In the example in step 83, the number of received bit errors appears to the right of Rx Bit Errors.
85	To inject bit errors, type **>INJERR *link_no*** (where *link_no* is the number of the link you tested in step 79) and press **Enter**. *Example of a MAP response:* `injerr 1` If the response is Link 1: INJECT ERROR completed, go to step 86. If the response is Link n:Failed - C7BERT is not active on this link, go to step 79. For any other response, go to step 109.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action

86	To display the result of bit error injection, type **>QUERY *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1134 Err Free Secs: 1133`
	`Tx Frames : 32568 Rx Sync Errs : 0`
	`Rx Frames : 32570 Rx Bad Frames: 1`
	`Rx Bit Errors: 6 Rx Bits : 66670792`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 87.
	Otherwise, go to step 109.

87	Determine the result of bit error injection. ***Note:*** In the example in step 86, the number of bit errors received appears to the right of Rx Bit Errors.
88	Subtract the result of the C7BERT recorded in step 84 from the result obtained in step 86. If the difference is 6, go to step 82. Otherwise, go to step 109.
89	To determine if any requests existed for periodic reports, type **>REPORT *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. If the response is Link nn: Report interval already set at: mm times per hour, go to step 90. If the response is Link nn: Automatic query reporting is not active, go to step 91. If the response is anything else, go to step 109
90	To clear the last report interval, type **>REPORT *link_no* OFF** (where *link_no* is the number of the link that the C7BERT runs on) and press **Enter**. *MAP response:* `Link nn: Automatic query reporting has been terminated`

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
91	To set the number of reports per hour, type **>REPORT *link_no* ON *number*** (where *link_no* is the number of the link that the C7BERT runs on, from 0 to 15, and number is the *number* of reports per hour, from 1 to 12), then press **Enter**. *Example input:* **>REPORT 1 ON 6** If the response is Link nn: Report interval set at: is nn times per hour, go to step 92. Otherwise, go to step 109.
92	Determine if the report interval is correct. If the interval is correct, go to step 82. If the interval is wrong, go to step 90.
93	To stop the C7BERT, type **>STOP *link_no*** (where *link_no* is the number of the link, from 0 to 15, that the C7BERT runs on) and press **Enter**. ***Note:*** The STOP command overrides any preset stop time without warning. If the response is Link 1: C7BERT stopped, go to step 94. If the response is a display of test statistics, go to step 94. Otherwise, go to step 109.
94	Give the results to the person responsible for the next level of support. If the link stops on an NT9X77AA or NT9X78BA/CA/DA/DB card, and you just ran a link fault sectionalization, go to step 98. If instructions required you to return the link to service, go to step 98. If the link stops on an NT9X77AA or NT9X78BA/CA/DA/DB card, and you just ran a link fault sectionalization, go to step 70. If instructions required you to perform more tests, go to step 70. If link does not stop on an NT9X77AA or NT9X78BA/CA/DA/DB card, go to step 95. Otherwise, go to step 110.
95	Remove the manual loopback across network elements.
96	The next step depends on the instructions received from the next level of support. If instructions require you to return the link to service, go to step 98. If instructions require you to perform more tests, go to step 73. Otherwise, go to step 110.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
97	To remove the link fault sectionalization, type **>LFSLOOP STOP *link_no*** (where *link_no* is the number of the tested link, from 0 to 15) and press **Enter**. If the response is LFSLoop stop n, go to step 98. If the response is Link n: LFS OFF complete, go to step 98. Otherwise, go to step 109.
98	To quit the C7BERT level of the MAP display, type **>QUIT** and press **Enter**.
99	To activate the link that the C7BERT ran on, type **>ACT *link_no*** (where *link_no* is the number of the link, from 0 to 15) and press **Enter**. If the ACT command passes, go to step 100. If the ACT command fails, go to step 109.
100	Determine the synchronization state of the link. ***Note:*** The synchronization state appears under the Sync Stat header of the MAP display. If the synchronization state is AInd, go to step 107. Otherwise, go to step 101.
101	Wait 8 minutes, and continue with this procedure.
102	Determine the synchronization state of the link. If the synchronization state is not AInd, and you did not ask the far-end office to activate the link, go to step 103. If the synchronization state is not AInd, and you already asked the far-end office to activate the link, go to step 105.
103	Determine from office records the far-end office that connects to the linkset posted in step 4.
104	Contact the far-end office. Tell the person at that location that • you are going to busy and deactivate the link in order to realign it, and that • the person and you must activate the link from both ends after you busied and deactivated the link Go to step 100.
105	To deactivate the link, type **>DEACT *link_no* FORCE** (where *link_no* is the number of the link you activated in step 99) and press **Enter**.

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Procedure 1-60
Running a C7BERT (continued)

Step	Action
106	Tell the person at the far-end office to activate the link. Activate the link from your end by typing **>ACT *link_no*** (where *link_no* is the number of the link you activated in step 99) and press **Enter**. If the ACT command passes, go to step 107. If the ACT command fails, go to step 109.
107	To return the link to service, type **>RTS *link_no*** (where *link_no* is the number of the link you activated in step 99) and press **Enter**. If the RTS command passes, go to step 110. If the RTS command fails, go to step 109.
108	To uninhibit the link, type **>UINH *link_no*** (where *link_no* is the number of the link you activated in step 99) and press **Enter**. If the UINH command passes, go to step 110. If the UINH command fails, go to step 109.
109	For additional help, contact the person responsible for the next level of support.
110	The procedure is complete.

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Running a C7BERT for high-speed links

Application

Use this procedure to do the following:

- perform local or remote loopback on an NTEX78AA card for LIUBASIC
- perform far-end DS-1 ESF loopback (CARLOOP)
- inject bit errors during HSL C7BERT
- run the CCS7 bit-error rate test for high-speed links (HSL C7BERT)

Note: Do not use CARLOOP loopback test for HSLs connected to an asynchronous transfer mode (ATM) switch. CARLOOP test for HSLs is only valid over a direct connection.

Definition

Bit error rate testing measures the quality of a CCS7 digital transmission path.

Run an HSL C7BERT in the following situations:

- before bringing a CCS7 high-speed signaling link into service
- when isolating faults

Common procedures

None

Action

Procedure 1-61 provides steps and actions to run a C7BERT for high-speed links. Figure 1-146 provides an overview for the procedure.

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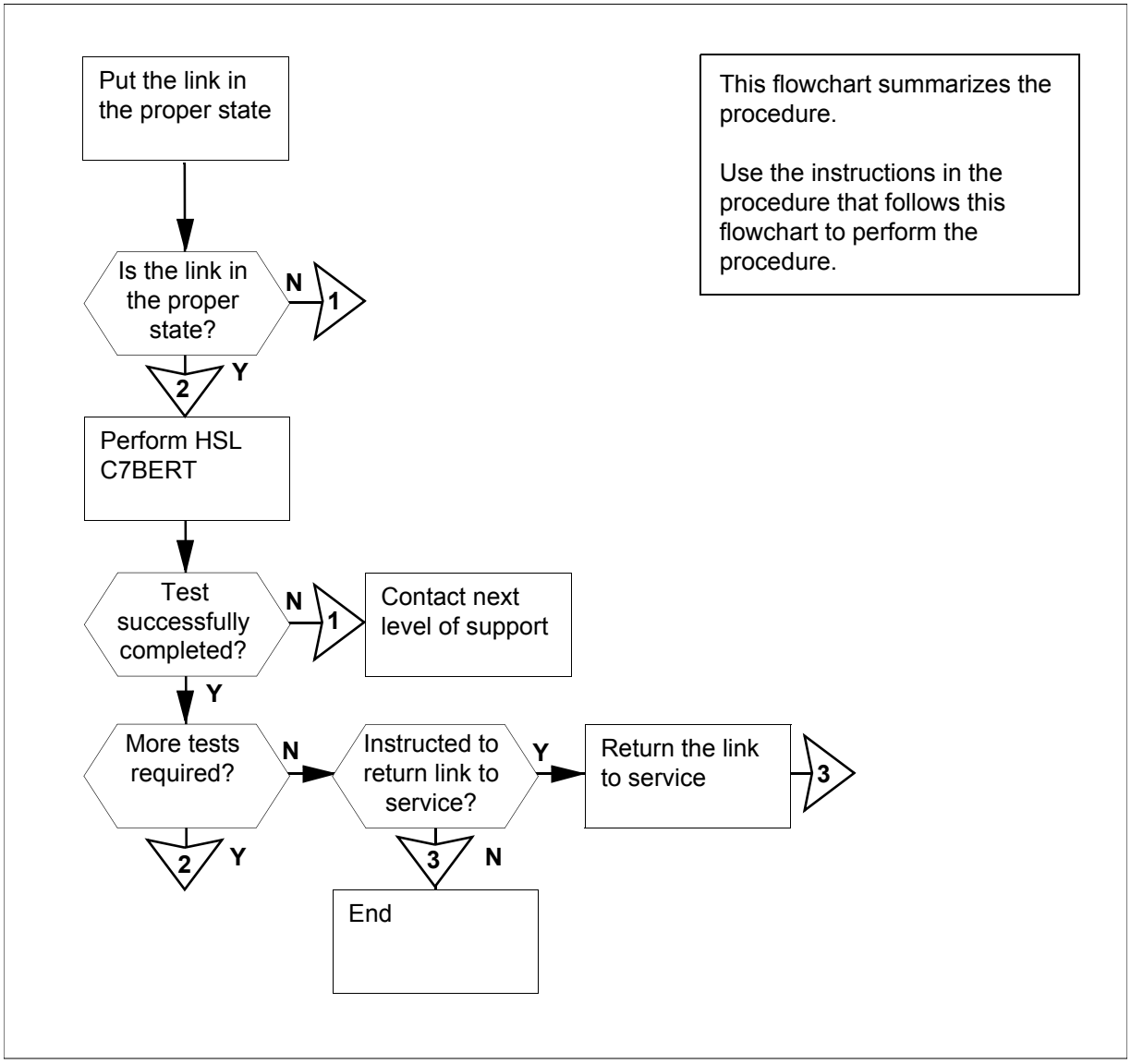
Figure 1-146
Summary of Running a C7BERT for high-speed links



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Procedure 1-61 describes how to measure the quality of a high speed CCS7 digital transmission path.using bit error rate testing.

Procedure 1-61
Running a C7BERT for high-speed links

Step	Action
1	**CAUTION** **Risk of service interruption** The following procedure takes a CCS7 link out of service. Before proceeding, consult your next level of support to ensure network impact is minimized. At the MAP terminal, contact the next level of support to obtain the following information: • how to stop the test (manually or automatically) • if periodic reports are required and how many times each hour (1 to 12)
2	If you want to perform a remote loopback, inform personnel at the far-end office that • you want to busy and return the link to service • they must busy and return the link to service at their end

3	To enter the C7LKSET level of the MAP display, type **>MAPCI;MTC;CCS;CCS7;C7LKSET** and press the **Enter** key.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`

4	To post the linkset that includes the link that you want to test type **>POST C *linkset_name*** (where *linkset_name* is the name of the linkset, as defined in table C7LKSET) and press the **Enter** key.
	Example of a MAP response:
	`Traf Sync Link`
	`LK Stat Stat Resource Stat Physical Access Stat Action`
	`0 OffL DAct DLIU 12 OffL DS1`
	`1 SysB DAct DLIU 13 InSv DS1`
	`Size of Posted Set = 2`

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
5	Determine the state of the DLIU associated with the link to be tested. The DLIU state is visible under the Stat header to the right of the Resource header. If the DLIU state is `SysB`, `ManB`, or `OffL`, go to step 6. If the DLIU state is `InSv`, or `ISTb`, go to step 16. Otherwise, go to step 78. ***Note:*** The DLIU consists of two peripherals: the high-speed link router (HSLR) and the high-speed link interface unit (HLIU).

6	To enter the PM level of the MAP display, type **>PM** and press the **Enter** key.
	Example of a MAP display:
	`SysB ManB OffL CBsy ISTb InSv`
	`PM 1 10 12 0 6 49`

7	To post the HLIU, type **>POST HLIU *dliu_no*** (where *dliu_no* is the number of the DLIU connected to the link you want to test) and press the **Enter** key. ***Note:*** The number of the DLIU is under the Resource header of the MAP display. In the example in step 4, the HLIU connected to link 1 is 13. *Example of a MAP response:* `HLIU 13 InSv` If the HLIU state is SysB, go to step 8. If the HLIU state is OffL, go to step 9. If the HLIU state is ManB, go to step 10. If the HLIU state is `InSv` or `ISTb`, go to step 11.
8	Wait 1 to 3 min for the HLIU to change from SysB to InSv. After 3 min, if the state of the HLIU is InSv, go to step 11. Otherwise, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
9	To busy the HLIU, type **>BSY** and press the **Enter** key. If the BSY command passes, go to step 10. If the BSY command fails, go to step 78.
10	To return to service the HLIU, type **>RTS** and press the **Enter** key. If the RTS command passes, go to step 11. If the RTS command fails, go to step 78.
11	To post the HSLR, type **>POST HSLR *dliu_no*** (where *dliu_no* is the number of the DLIU associated with the HSLR you want to post) and press the **Enter** key. If the state of the HSLR is `InSv` or `ISTb`, go to step 15. If the state of the HSLR is ManB, go to step 14. If the state of the HSLR is OffL, go to step 13. If the state of the HSLR is SysB, go to step 11.
12	Wait 1 to 3 min for the HSLR to change from SysB to InSv. After 3 min, if the state of the HSLR is InSv, go to step 15. Otherwise, go to step 78.
13	To busy the HSLR, type **>BSY** and press the **Enter** key. If the BSY command passes, go to step 15. If the BSY command fails, go to step 78.
14	To return the HSLR to service, type **>RTS** and press the **Enter** key. If the RTS command passes, go to step 15. If the RTS command fails, go to step 78.
15	To enter the C7LKSET level of the MAP display, type **>MAPCI;MTC;CCS;CCS7;C7LKSET** and press the **Enter** key.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
16	Determine the traffic state of the link you want to test. ***Note:*** The traffic state of the link is visible under the Traf Stat header of the MAP display. The synchronization state is visible under the Sync Stat header of the MAP display. If the traffic and synchronization states are in the sequence `Offl DAct`, go to step 17. If the traffic and synchronization states are in the sequence `Bsy DAct`, go to step 18. If the traffic and synchronization states are in the sequence `SysB DAct`, go to step 22. If the traffic and synchronization states are in the sequence `SysB SysB`, go to step 20. Otherwise, go to step 19.
17	To busy the link, type **>BSY *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. If the BSY command passes, go to step 19. If the BSY command fails, go to step 78.
18	To return the link to service, type **>RTS *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. ***Note:*** This action places the link into the SysB/DAct state. If the RTS command passes, go to step 22. If the RTS command fails, go to step 78.
19	To inhibit the link you want to test, type **>INH *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. If the INH command passes, go to step 20. If the INH command fails, go to step 78.
20	To manually busy the link, type **>BSY *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. If the BSY command passes, go to step 21. If the BSY command fails, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
21	To return the link to service, type **>RTS *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. ***Note:*** This action places the link into the SysB/DAct state. If the RTS command passes, go to step 22. If the RTS command fails, go to step 78.
22	To enter the C7BERT level of the MAP display, type **>C7BERT** and press the **Enter** key. To perform a local loopback, go to step 23. To perform a remote loopback, go to step 25. To perform a far-end DS-1 ESF loopback, go to step 33. To run C7BERT, go to step 39. To enable the high-speed signaling terminal (HST) to scan for control codes, go to step 63. To perform an intermediate loopback C7BERT test, go to step 38.
23	To activate a local loopback, type **>PMLOOP LOCON *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. If the response is Link 1: Loopback Local on completed, go to step 24. If the response is Link 1: Failed - PMLOOP <Local|Remote|Enable> is already active, go to step 27. If the response is Link 1: Failed - C7BERT already active on this link, go to step 32. If the response is Link 1: Failed - Link state is invalid for HSL PMLoop. Link must be SysB and DAct, go to step 16. If the response is anything else, go to step 78.
24	At this point you have an option to test DS-1 carrier states or to continue with this procedure. Testing DS-1 carrier states to make sure that they are in the correct states is not necessary, but it can prevent a failure of the C7BERT. If you do not want to test the DS-1 carrier states, go to step 39. If you want to test the DS-1 carrier states, perform the “Test the DS-1 carrier states” procedure in this document. After completing the procedure, go to step 39.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
25	To activate a remote loopback, type **>PMLOOP RMTON *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. ***Note:*** A remote loopback establishes a loopback for the far end. The far end must run C7BERT to test the quality of the link. If the response is Link 1: Loopback Remote On completed, go to step 26. If the response is Link 1: Failed - PMLOOP <Local|Remote|Enable> is already active, go to step 27. If the response is Link 1: Failed - C7BERT already active on this link, go to step 32. If the response is Link 1: Failed - Link state is invalid for HSL PMLoop. Link must be SysB and DAct, go to step 16. If the response is anything else, go to step 78.
26	Inform personnel at the far end that the remote loopback is active and the far-end personnel can begin their tests. After the far-end tests are finished, release the loopback. Type **>PMLOOP RMTOFF *link_no*** (where *link_no* is the number of the link you entered in PMLOOP command) and press the **Enter** key. If the PMLOOP command passed and you want to perform more C7BERT procedures, go to step 22. If the PMLOOP command passed and you do not want to perform more C7BERT procedures, go to step 68. If the PMLOOP command failed, go to step 78.
27	To enter the PM level of the MAP display, type **>PM** and press the **Enter** key.
28	To post the HLIU, type **>POST HLIU *dliu_no*** and press the **Enter** key.
29	To clear the loopback state, type **>LOOPBK C** and press the **Enter** key. If the response is LoopBk passed, go to step 30. Otherwise, go to step 78.
30	To enter the C7LKSET level of the MAP display, type **>MAPCI;MTC;CCS;CCS7;C7LKSET** and press the **Enter** key.
31	To enter the C7BERT level of the MAP display, type **>C7BERT** and press the **Enter** key. To activate a local loopback, go to step 23. To activate a remote loopback, go to step 25.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
32	To stop the existing HSL C7BERT, type **>STOP *link_no*** (where *link_no* is the number of the link you entered in step 23 or step 25) and press the **Enter** key. ***Note:*** The STOP command overrides any preset stop time without warning. To activate a local loopback, go to step 23. To activate a remote loopback, go to step 25.
33	Contact personnel at the far end to confirm that the far-end signaling terminal is able to receive control codes. If the equipment type is DMS, personnel at the far-end can determine the signaling terminal status as follows: • Type **PM** and press the **Enter** key to access the PM level of the MAP display. • Type **POST HLIU *dliu_no*** and press the **Enter** key to post the HLIU. • Type **LOOPBK S** and press the **Enter** key to display the terminal status. Users of equipment that is not DMS should contact their next level of support to obtain the procedures for their equipment.
34	To activate the far-end DS-1 ESF loopback from your end, type **>CARLOOP START *link_no loopback_type*** (where *link_no* is the number of the link you want to test, from 0 to 15, and *loopback_type* indicates if the loopback is line or payload, R or P, respectively), then press the **Enter** key. *Example input:* **>CARLOOP START 1 R**
35	Your next step depends on the response. If the response is Link nn: DS-1 EFT Loop ON complete, Carrier line loopback at far-end paddleboard, go to step 39. If the response is Link nn: Failed - C7BERT already active on this link, go to step 36. If the response is Link 1: Failed - Far-end DS-1 ESF already active on this link, go to step 37. If the response is Link nn: Failed - Has not gone into loopback, go to step 78. If the response is anything else, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
36	To stop the existing HSL C7BERT, type **>STOP *link_no*** (where *link_no* is the number of the link you entered in step 34) and press the **Enter** key. ***Note:*** The STOP command overrides any preset stop time without warning. If the response is Link 1: C7BERT stopped, go to step 34. Otherwise, go to step 78.
37	To remove the far-end DS-1 ESF loopback already applied, type **>CARLOOP STOP *link_no*** (where *link_no* is the number of the link you entered in step 34) and press the **Enter** key. If the response is CARLoop stop n Link n: DS-1 ESF OFF complete, go to step 34. Otherwise, go to step 78.
38	Contact personnel at the intermediate point and request a loopback.
39	To start the HSL C7BERT, type **>START *link_no*** (where *link_no* is the number of the link you want to test, from 0 to 15) and press the **Enter** key. If the response is Link n: C7BERT started, go to step 40. If the response is Link n:Failed - Link state is invalid for HSL C7BERT Link must be SysB/DAct or SysB/CAR, go to step 16. If the response is anything else, go to step 78.

40	To display the test results of the HSL C7BERT, type **>QUERY *link_no* PR** (where *link_no* is the number of the link being tested, from 0 to 15) and press the **Enter** key.
	
	Example of a MAP response:
	
	`query 1 pr`
	`Link 1: C7BERT query`
	`Run Time : 662 Err Free Secs: 662`
	`Tx Frames : 19016 Rx Sync Errs : 0`
	`Rx Frames : 19019 Rx Bad Frames: 0`
	`Rx Bit Errors: 0 Rx Bits : 38931896`
	`Bit Err Rate : 0 x 10-15`
	
	If the response is a display of HSL C7BERT statistics, go to step 41.
	
	Otherwise, go to step 78.

—sheet 8 of 15—

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
41	Determine if any Tx frames were transmitted. ***Note:*** The number of frames transmitted appears to the right of the Tx Frames header of the MAP display. In the example in step 40, the number of frames transmitted is 19 016. If any Tx frames were transmitted, go to step 42. If no Tx frames were transmitted, go to step 78.
42	The test is running correctly. Test results generate when: • the periodic reporting function is active • operating company personnel stop the test manually • the test stops automatically at a pre-set time • If the switch restarts when an HSL C7BERT is running on a link, the test stops automatically. The test also stops automatically if the HLIU associated with the link fails. To request periodic reports, go to step 54. To stop the test manually, go to step 58. To stop the test automatically at a pre-set time, go to step 43. To inject bit errors, go to step 48.
43	To determine if a stop time has been set, type **>SETSTOP *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, on which the HSL C7BERT is running) and press the **Enter** key. If the response is Link nn: Stop time set at: time, go to step 44. If the response is Link nn: No stop time has been set, go to step 45. If the response is anything else, go to step 78.
44	To clear the stop time, type **>SETSTOP link_no CLEAR** (where *link_no* is the number of the link on which the HSL C7BERT is running) and press the **Enter** key. If the response is “Stop time cleared,” go to step 45. Otherwise, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action

45	To set the new stop time, type **>SETSTOP *link_no* SET *day hours minutes*** and press the Enter key.
	
	Replace variables as follows:
	• *link_no* is the number of the link (0 to 15) on which the HSL C7BERT is running
	• *day* is the day on which you want the test to stop automatically (MON, TUE, WED, THU, FRI, SAT, or SUN)
	• *hours* is the hour at which you want the test to stop automatically (0 to 23)
	• *minutes* is the minute at which you want the test to stop automatically (00 to 59)
	
	Example input:
	
	>SETSTOP 3 SET MON 10 30
	
	Note: The example entry sets the stop time for link 3 on Mondays at 10:30 a.m.
	
	If the response is the following, go to step 46:
	
	`Link nn: Stop time set at:`
	`19xx/yy/zz`
	`hh:mm:00.000 ddd`
	
	Otherwise, go to step 78.

46	Determine if the stop time is correct. If the stop time is correct, go to step 47. If the stop time is incorrect, go to step 44.
47	Wait until the stop time. Go to step 59.

—sheet 10 of 15—

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action

48	To display HSL C7BERT results, type **>QUERY *link_no* PR** (where *link_no* is the number of the link that you want to test, from 0 to 15) and press the **Enter** key.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1224 Err Free Secs: 1133`
	`Tx Frames : 32538 Rx Sync Errs : 0`
	`Rx Frames : 32580 Rx Bad Frames: 1`
	`Rx Bit Errors: 0 Rx Bits : 66673662`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 49.
	Otherwise, go to step 78.

49	Record the number of Rx bit errors. ***Note:*** In the example in step 48, the number of bit errors received appears to the right of Rx bit errors.
50	To inject bit errors, type **>INJERR *link_no*** (where *link_no* is the number of the link you tested in step 39) and press the **Enter** key. *Example of a MAP response:* `injerr 1` If the response is Link 1: INJECT ERROR completed, go to step 51. If the response is Link n:Failed - C7BERT is not active on this link, go to step 39. If the response is anything else, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action

51	To display the result of injecting bit errors, type **>QUERY *link_no* PR** (where *link_no* is the number of the link that you want to test, from 0 to 15) and press the **Enter** key.
	Example of a MAP response:
	`Link 1: C7BERT query`
	`Run Time : 1134 Err Free Secs: 1133`
	`Tx Frames : 32568 Rx Sync Errs : 0`
	`Rx Frames : 32570 Rx Bad Frames: 1`
	`Rx Bit Errors: 1 Rx Bits : 66670792`
	`Bit Err Rate : 1 x 10- 8`
	If the response is a display of test statistics, go to step 52.
	Otherwise, go to step 78.

52	Determine the result of injecting bit errors. ***Note:*** In the example in step 51, the number of bit errors received appears to the right of Rx Bit Errors.
53	Subtract the result of the HSL C7BERT recorded in step 49 from the result obtained in step 51. This action checks for correct bit error rate (BER) circuit operation. If the difference is 1, go to step 42. Otherwise, go to step 78.

54	To determine if periodic reports have been requested, type **>REPORT *link_no* STATUS** (where *link_no* is the number of the link, from 0 to 15, on which the HSL C7BERT is running) and press the **Enter** key.
	If the response is as follows, go to step 55:
	`Link nn: Automatic query`
	`reporting active at: mm times per hour`
	If the response is as follows, go to step 56:
	`Link nn: Automatic query`
	`reporting is not active`
	Otherwise, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
55	To clear the previous report interval, type **>REPORT *link_no* OFF** (where *link_no* is the number of the link on which the HSL C7BERT is running) and press the **Enter** key. *MAP response:* `Link nn: Automatic query reporting has been terminated`
56	To set the number of reports per hour, type **>REPORT *link_no* ON number** (where *link_no* is the number of the link, from 0 to 15, on which the HSL C7BERT is running and *number* is the number of reports per hour, from 1 to 12), then press the **Enter** key. *Example input:* **>REPORT 1 ON 6** If the response is Link nn: Report interval set at: nn times per hour, go to step 57. Otherwise, go to step 78.
57	Determine if the report interval is correct. If the interval is correct, go to step 42. If the interval is not correct, go to step 55.
58	To stop the HSL C7BERT, type **>STOP *link_no*** (where *link_no* is the number of the link, from 0 to 15, on which the HSL C7BERT is running) and press the **Enter** key. ***Note:*** The STOP command overrides any preset stop time without warning. If the response is Link 1: C7BERT stopped, go to step 59. Otherwise, go to step 78.
59	Give the results to the personnel responsible for the next level of support. Your next step depends on the instructions received from your next level of support. If the far-end DS-1 loopback is established, go to step 61. If the local loopback is established, go to step 60. If an intermediate loopback is established, go to step 62.
60	To remove the local loopback, type **>PMLOOP LOCOFF *link_no*** (where *link_no* is the number of the link you tested, from 0 to 15) and press the **Enter** key. If the response is `pmloop off` and more tests are required, go to step 22. If the response is `pmloop off` and you want to exit from C7BERT, go to step 68. If the response is anything else, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
61	To remove the far-end DS-1 ESF loopback, type **>CARLOOP STOP *link_no*** (where *link_no* is the number of the link you tested, from 0 to 15) and press the **Enter** key. If the response is `Link n: DS-1 ESF OFF complete` and more tests are required, go to step 22. If the response is `Link n: DS-1 ESF OFF complete` and you want to exit C7BERT, go to step 68. If the response is anything else, go to step 78.
62	Tell personnel at the intermediate point to remove the intermediate loopback. To run more tests, go to step 22. To exit from C7BERT, go to step 68.
63	To enter the PM level of the MAP display, type **>PM** and press the **Enter** key.
64	To post the HLIU, type **>POST HLIU *dliu_no*** and press the **Enter** key.
65	To enable the HST to scan for control codes, type **>LOOPBK E** and press the **Enter** key. If the response is loopbk passed, go to step 66. Otherwise, go to step 78.
66	Wait for the far end to finish testing. When far-end testing is complete, clear the loopback state. Type **>LOOPBK C** and press the **Enter** key. If the response is loopbk passed, go to step 67. Otherwise, go to step 78.
67	To enter the C7LKSET level of the MAP display, type **>MAPCI;MTC;CCS;CCS7;C7LKSET** and press the **Enter** key. If more tests are required, go to step 22. To exit C7BERT, go to step 68.
68	To quit the C7BERT level of the MAP display, type **>QUIT** and press the **Enter** key.
69	To activate the link on which the HSL C7BERT was running, type **>ACT link_no** (where *link_no* is the number of the link, from 0 to 15) and press the **Enter** key. If the ACT command passes, go to step 70. If the ACT command fails, go to step 78.

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Procedure 1-61
Running a C7BERT for high-speed links (continued)

Step	Action
70	Determine the synchronization state of the link. ***Note:*** The synchronization state appears under the Sync Stat header of the MAP display. If the synchronization state is Sync, go to step 77. Otherwise, go to step 71.
71	Wait 8 minutes, then continue the procedure.
72	Determine the synchronization state of the link. If the synchronization state is `SysB`, and you have not asked the far-end office to activate the link, go to step 74. If the synchronization state is `SysB`, and you have asked the far-end office to activate the link, go to step 73.
73	Use office records to determine which far-end office connects to the linkset posted in step 4.
74	Contact the far-end office. Tell the personnel there that you will reactivate the link.
75	Tell personnel at the far-end office to activate the link.
76	To activate the link from your end, type **>ACT *link_no*** (where *link_no* is the number of the link you activated in step 69) and press the **Enter** key. If the ACT command passes, go to step 77. If the ACT command fails, go to step 78.
77	To uninhibit the link, type **>UINH *link_no*** (where *link_no* is the number of the link you activated in step 69) and press the **Enter** key. If the UINH command passes, go to step 79. If the UINH command fails, go to step 78.
78	For additional help, contact the personnel responsible for the next level of support.
79	You have completed this procedure.

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Scheduling an automatic REx test

Application

Use this procedure to schedule a routine exercise (REx) test for a link interface module (LIM).

Definition

The REx test schedule must include the LIMs that are new in the system.

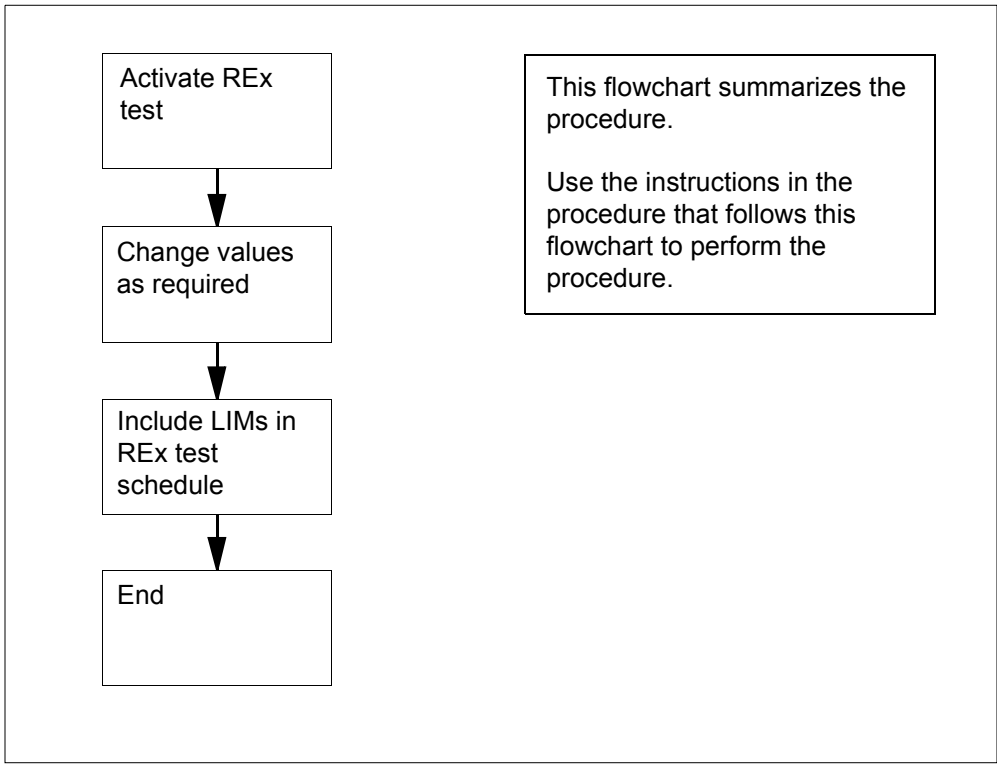
Common procedures

There are no common procedures.

Action

Procedure 1-62 provides steps and actions to schedule a REx test for an LIM. Figure 1-147 provides an overview for the procedure.

Figure 1-147
Summary of Scheduling an automatic REx test



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Procedure 1-62 describes how to schedule a routine exercise (REx) test for a link interface module (LIM).

Procedure 1-62
Scheduling an automatic REx test

Step	Action
1	At the MAP terminal, type **>TABLE OFCVAR** and press **Enter** to access table OFCVAR.
2	To position on office parameter NODEREXCONTROL, type **>POSITION NODEREXCONTROL** and press **Enter**. *Example of a MAP response:* `NODEREXCONTROL Y 1 30 3 30` ***Note:*** In the example, Y indicates the activation of the REx test. 1 30 is the start time of the REx test on the 24-h clock. 3 30 is the end time of the REx test on the 24-h clock.

3	To display the fields and tuples, type **>LIST** and press **Enter**.
	Example of a MAP response:
	`PARMNAME PARMVAL`
	`NODEREXCONTROL Y 1 30 3 30`

4	To specify that you want to change office parameter NODEREXCONTROL, type **>CHANGE** and press **Enter**.
	MAP response:
	`ENTER Y TO`
	`CONTINUE PROCESSING`
	`OR N TO QUIT`

5	To continue to process, type **>Y** and press **Enter**. *Example of a MAP response:* `PARMVAL: Y 1 30 3 30`

—sheet 1 of 3—

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Procedure 1-62
Scheduling an automatic REx test (continued)

Step	Action

6	To activate automatic REx testing, and enter a new value for office parameter NODEREXCONTROL, type **>Y *h1 m1 h2 m2*** and press **Enter**.
	
	Replace the variables as follows:
	• ***h1 m1*** is the start time of the REx test on the 24 h clock, for example, 02 30
	• ***h2 m2*** is the end time of the REx test on the 24 h clock, for example, 04 30
	
	Note: The value in NODEREXCONTROL must allow enough time to test all the LIMs that you want to test. Add 30 minutes to the parameter of all LIMs.
	
	Example input:
	>Y 02 30 04 30
	
	Example of a MAP response:
	`TUPLE TO BE CHANGED:`
	`NODEREXCONTROL Y 02 30 04 30`
	`ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT.`

7	To confirm the change, type **>Y** and press **Enter**. *Example of a MAP response:* `TUPLE CHANGED`
8	To quit from the table editor and return to the CI level of the MAP display, type **>QUIT** and press **Enter**.
9	**CAUTION** **Possible loss of service** Do not isolate nodes on the F-bus of the LIM you are testing. If you isolate any of the nodes on the F-bus of the LIM you are testing, the REx test will not proceed. To post the LIM that you want to include in the REx test, type **>MAPCI;MTC;PM;POST LIM *lim_no*** (where *lim_no* is the number of the first LIM that you will post, from 0 to 16) and press **Enter**.

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Procedure 1-62
Scheduling an automatic REx test (continued)

Step	Action
10	To include the posted LIM in the REx test schedule, type **>REX ON** and press **Enter**. *Example of a MAP response:* `LIM x UNIT y has been included in the REX Schedule.`
11	The procedure is complete.

—sheet 3 of 3—

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Scheduling ISUP trunk audits

Application

Use the following procedure to schedule ISDN user part (ISUP) trunk audits.

Definition

ISUP trunk audits switch units with CCS7 and trunk test position (TTP) improvements for trunks that use CCS7 signaling (ISUP trunks). To correct state mismatches, the trunk audit runs on all ISUP trunks one time a day. In table OFCENG, office parameter CIRCUIT_QUERY_AUDIT_START_TIME specifies ISUP trunk audit time.

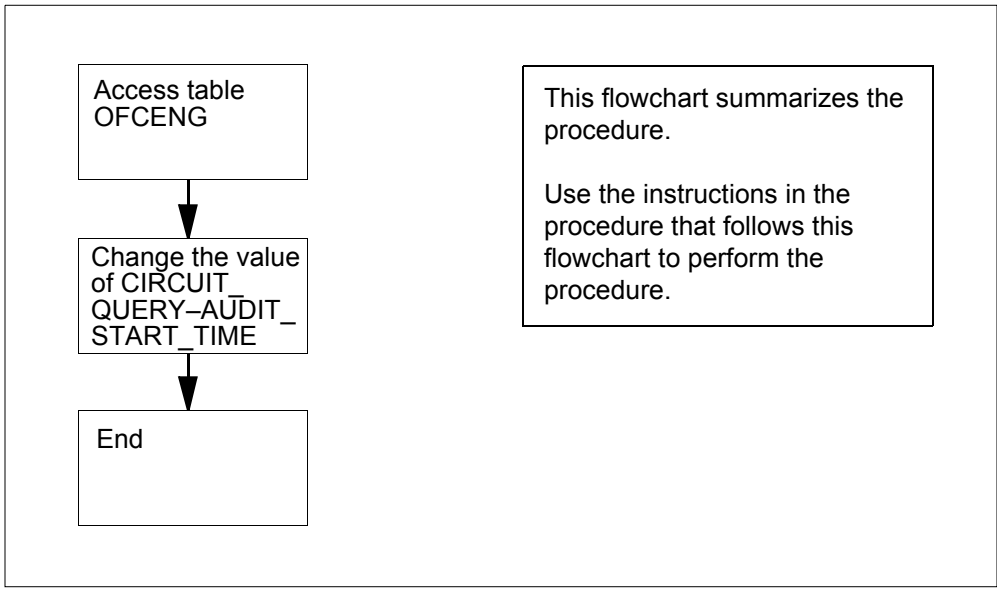
Common procedures

There are no common procedures.

Action

Procedure 1-63 provides steps and actions to schedule ISDN user part (ISUP) trunk audits. Figure 1-148 provides an overview of the procedure.

Figure 1-148
Summary of Scheduling ISUP trunk audits



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Procedure 1-63 describes how to schedule ISDN user part (ISUP) trunk audits.

Procedure 1-63
Scheduling ISUP trunk audits

Step	Action

1

CAUTION
Possible loss of service
Ensure table TRKSGRP is datafilled to include the ISUP trunks on which you want to perform the audit before you run the ISUP audit. For more information on table TRKSGRP, refer to the *DMS-MTX CDMA/TDMA Customer Data Schema Reference Manual* (411-2131-455).

At the MAP terminal, type **>TABLE OFCENG** and press **Enter** to access table OFCENG.

Example of a MAP response:

```
TABLE: OFCENG
```

Note: Access to table OFCENG is restricted. If access is denied, contact your next level of support.

2 To position on office parameter CIRCUIT_QUERY_AUDIT_START_TIME, type **>POSITION CIRCUIT_QUERY_AUDIT_START_TIME** and press **Enter**.

Example of a MAP response:

```
CIRCUIT_QUERY_AUDIT_START_TIME  2 0
```

3 To display the tuple with headers, type **>LIST** and press **Enter**.

Example of a MAP response:

```
PARMNAME                    PARMVAL
CIRCUIT_QUERY_AUDIT_START_TIME  2 0
```

Note: In the MAP example, 2 0 is the current ISUP trunk audit start time in hours (0 to 23) and minutes (0 to 59).

—sheet 1 of 2—

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Procedure 1-63
Scheduling ISUP trunk audits (continued)

Step	Action
4	Decide if you want to change the ISUP trunk audit start time. If the ISUP trunk audit start time does not require change, go to step 8. If the ISUP trunk audit start time requires change, go to step .

5	
	CAUTION
	Possible loss of service or system degradation
	Ensure the new ISUP trunk audit start time is set during off-peak hours. The audit can generate many CCS7 messages that can result in degraded service.
	
	To enter a new ISUP trunk audit start time, type **>CHANGE 2 *new_value*** (where *new_value* is the time you want the ISUP trunk audit to start) and press **Enter**.
	
	Note: For *new_value*, use the format *hh mm* (hours and minutes), where *hh* is a number from 0 to 23 and *mm* is a number from 0 to 59.
	
	Example of a MAP response:
	`TUPLE TO BE CHANGED:`
	`CIRCUIT_QUERY_AUDIT_START_TIME 2 15`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

6	To confirm the change, type **>Y** and press **Enter**. *Example of a MAP response:* `TUPLE CHANGED` ***Note:*** The value will apply when the audit that uses the old value runs one time. In other words, the next audit will run at the old time; the new time is for the audit of the next day.
7	To quit from the table, type **>QUIT** and press **Enter**.
8	The procedure is complete.

—sheet 2 of 2—

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Setting up an ISUP per-call continuity test

Application

Use this procedure to install an ISDN user part (ISUP) per-call continuity test.

Definition

A per-call continuity test validates the speech part of a trunk that has CCS7 signaling.

> ***Note:*** The change to table TRKSGRP does not occur until the trunk busies and returns to service.

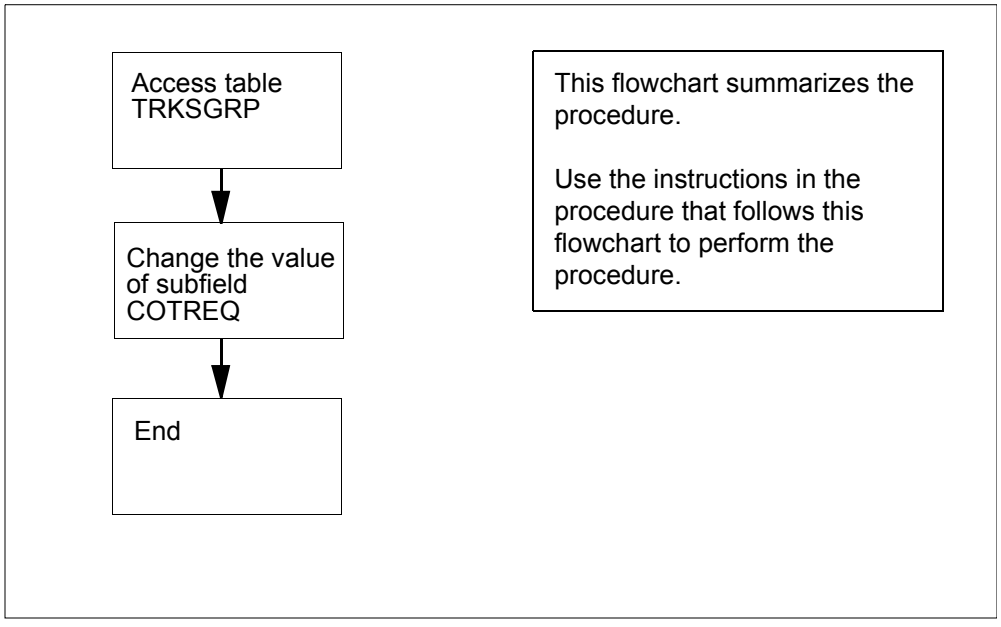
Common procedures

There are no common procedures.

Action

Procedure 1-64 provides steps and actions to install an ISDN user part (ISUP) per-call continuity test. Figure 1-149 provides an overview of the procedure.

Figure 1-149
Summary of Setting up an ISUP per-call continuity test



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Procedure 1-64 describes how to install an ISDN user part (ISUP) per-call continuity test.

Procedure 1-64
Setting up an ISUP per-call continuity test

Step	Action
1	**CAUTION** **Possible loss of service** Ensure that table TRKSGRP is datafilled to include the ISUP trunks needed to perform the audit. Run the ISUP audit. For more information on table TRKSGRP, refer to the data schema section of the *Translations Guide*. At the MAP terminal, type **>TABLE TRKSGRP** and press **Enter** to access table TRKSGRP.

2	To position on the trunk subgroup that you want to install the ISUP per-call continuity test, type **>POSITION *subgroup_name subgroup_no*** and press **Enter**.
	
	Replace variables as follows:
	• *subgroup_name* is the common-language location identifier (CLLI) name of the subgroup
	• *subgroup_no* is the number of the subgroup (0 or 1)
	
	Example of a MAP response:
	`BRABRAEOIS 0 DS1SIG`
	`C7UP OG N N UNEQ NONE Q764 THRH 100 DMSNODE NIL $`

3	To indicate that you want to change the tuple, type **>CHANGE** and press **Enter**. *Example of a MAP response:* `CARDCODE: DS1SIG`
4	Press **Enter** until the MAP response is COTREQ. *Example of a MAP response:* `COTREQ: 0`

—sheet 1 of 2—

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Procedure 1-64
Setting up an ISUP per-call continuity test (continued)

Step	Action
5	To specify the percentage of calls that you want performed for the per-call continuity test, type **>*new_value*** and press **Enter**. Replace variables as follows: • *new_value* is the percentage of calls on this trunk that the ISUPper-call continuity test will perform (0 to 100)
6	Press **Enter** until the MAP response is OPTION. *MAP response:* `OPTION:`

7	To indicate that you changed the tuple, type **>$** and press **Enter**.
	
	Example of a MAP response:
	
	`TUPLE TO BE CHANGED:`
	`BRABRAEOIS 0 DS1SIG`
	`C7UP OG N N UNEQ NONE Q764 THRL 50 DMSNODE NIL $`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

8	To confirm the change, type **>Y** and press **Enter**.
9	To quit from the table, type **>QUIT** and press **Enter**.
10	The procedure is complete.

—sheet 2 of 2—

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Setting up the signaling link marginal performance report

Application

The signaling link marginal performance report (SLMPR) is present in offices that have the CCS7-MTP/SCCP feature (functionality group NTX041AB).

Definition

The SLMPR identifies signaling links in which the following faults occurred in the last hour:

- signaling unit errors
- negative acknowledgements
- automatic changeovers to alternate signaling links

This report also lists links with faults that exceed the threshold set in table OFCVAR.

To produce the SLMPR, the system software obtains peg counts from registers C7SUERR, C7NACKRX, and C7AUTOCO. The peg counts are in operational measurements (OM) group C7LINK1. The software prints the peg counts in log report CCS198.

The report indicates if faults exceed one of the thresholds set in table OFCVAR. If office parameter C7_SLMPR_ALARM_ON of table OFCVAR is ON, a linkset small alarm raises for the link. The location of the link is the CCS level of the MAP display.

> ***Note:*** If the report will include a signaling link, the link must assign option SLMPR through datafill in table C7LINK, field LINKOPT. See the *Base/Telecom Translations Guide for Wireless Networks* (411-3001-220) for more information.

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Figure 1-150 provides example data from the SLMPR. In the example, the numbers under the SU header are the signaling unit errors. he numbers under NACK are the negative acknowledgements. The numbers under AUTOCOV are the changeovers to alternate signaling links. The numbers with an asterisk (*) exceeded the threshold set in table OFCVAR.

Figure 1-150
Example Data from the SLMPR

```
CCS198  Apr 10  19:00:00  2636  INFO
   Signaling Link Marginal Performance Report
   Link             SU      NACK    AUTOCOV
   C7LKSET1 1       120     403*    2
   C7LKSET1 3       570*    169     1
   C7LKSET2 2       168     65      1
```

Common procedures

There are no common procedures.

Action

Procedure 1-65 provides steps and actions to install an ISUP per-call continuity test. Figure 1-151 provides an overview of the procedure.

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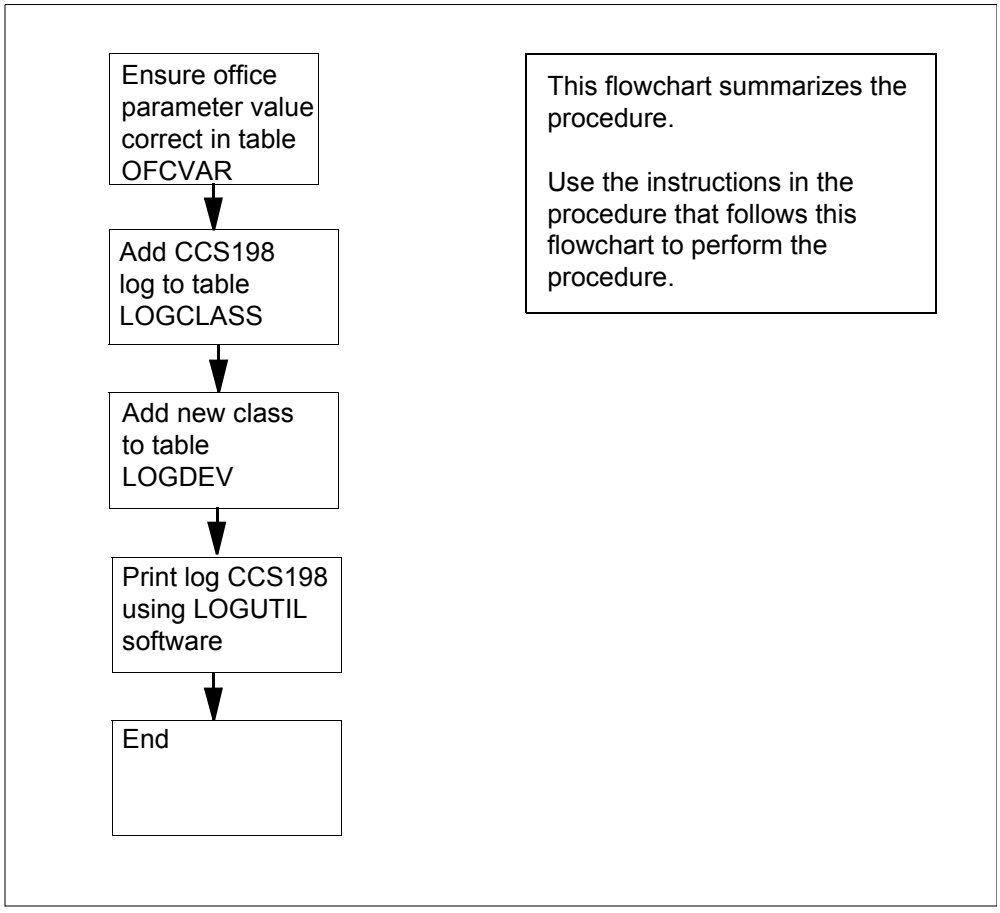
Figure 1-151
Summary of Setting up the signaling link marginal performance report



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Procedure 1-65 describes how to set up the signaling link marginal performance report (SLMPR).

Procedure 1-65
Setting up the signaling link marginal performance report

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;CM** and press **Enter** to access the CM level of the MAP display.
2	Determine if the computing modules (CM) have a synchronized status.
3	To quit from the CM level of the MAP, type **>QUIT ALL** and press **Enter**.
4	To access table OFCVAR, type **>TABLE OFCVAR** and press **Enter**.
5	To position on the office parameter C7_SLMPR_ALARM_ON, type **>POSITION C7_SLMPR_ALARM_ON** and press **Enter**. *Example of a MAP response:* `C7_SLMPR_ALARM_ON N`
6	Determine the value of the office parameter. If the value is Y, go to step 9. If the value is N, go to step 7.

7	To change the value of the field to Y, type **>CHANGE 2 Y** and press **Enter**.
	Example of a MAP response:
	`TUPLE TO BE CHANGED:`
	`C7_SLMPR_ALARM_ON Y`
	`ENTER Y TO CONFIRM, N TO REJECT or E TO EDIT.`

8	To confirm the command, type **>Y** and press **Enter**. *Example of a MAP response:* `TUPLE CHANGED`
9	To quit from table OFCVAR, type **>QUIT** and press **Enter**.
10	To create OM class C7SLMPR, type **>OMCLASS C7SLMPR SINGLE** and press **Enter**.
11	To add group C7LINK1 to class C7SLMPR, type **>OMACCGRP C7SLMPR ADD GROUP C7LINK1** and press **Enter**.

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action
12	To delete all registers from group C7LINK1, type **>OMACCFLD C7SLMPR C7LINK1 DELETE ALL** and press **Enter**.
13	To add field C7SUERR, type **>OMACCFLD C7SLMPR C7LINK1 ADD FIELD C7SUERR** and press **Enter**.
14	To add field C7NACKRX, type **>OMACCFLD C7SLMPR C7LINK1 ADD FIELD C7NACKRX** and press **Enter**.
15	To add field C7AUTOCO, type **>OMACCFLD C7SLMPR C7LINK1 ADD FIELD C7AUTOCO** and press **Enter**.
16	To access table OMACC, type **>TABLE OMACC** and press **Enter**.
17	To position on tuple C7SLMPR to read the class schedule, type **>POSITION C7SLMPR** and press **Enter**.

18	To display the tuple with headers, type **>LIST** and press **Enter**.
	Example of a MAP response:
	`CLASS ENABLED WHEN`
	`---------- ---------- ----------`
	`C7SLMPR N AUTO`

19	Determine the value of field ENABLED. If the value of field ENABLED is Y, go to step 20. If the value of field ENABLED is N, go to step 21.

—sheet 2 of 7—

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action
20	If each hour CCS198 log reports are necessary, then the WHEN field needs to change. Change the REP subfield from AUTO to HOURLY. The STARTUP subfield will be C00. *Example of a MAP response:* CLASS ENABLED WHEN --- C7SLMPR Y HOURLY COO To confirm the editing of the tuple, type **>Y** and press **Enter**. *Example of a MAP response:* TUPLE CHANGED: Go to step 24.
21	To change the value to Y, type **>CHANGE 2 Y** and press **Enter**. *Example of a MAP response:* ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
22	To confirm the command, type **>Y** and press **Enter**. *Example of a MAP response:* TUPLE CHANGED:
23	To quit from table OMACC, type **>QUIT** and press **Enter**.
24	To access table LOGCLASS, type **>TABLE LOGCLASS** and press **Enter**.
25	To go to the end of the table LOGCLASS, type **>BOTTOM** and press **Enter**. *Example of a MAP response:* DPAC 102 0 0 N -1 Y

—sheet 3 of 7—

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action

26	To determine the number of the last class in the table, type **>LIST** and press **Enter**.
	Example of a MAP response:
	`REPNAME CLASS THRESHLD SUPPRESS TUNITS SYSLOG`
	`DPAC 102 0 0 N -1 Y`
	Note: In the MAP response, the number of the last class is the last number in the CLASS column.

27	To add the CCS198 log to a new class in the table, type **>ADD** and press **Enter**. *Example of a MAP response:* `REPNAME:`
28	To enter the log name and report number, type **>CCS198 0** and press **Enter**. *Example of a MAP response:* `CLASS:`
29	To enter the new class number (1 greater than the last class listed in the table, as noted in step 26), type ***>new_class_number*** and press **Enter**. Replace variables as follows: • *new_class_number* is the number of a new class *Example of a MAP response:* `THRESHLD:`
30	To enter the threshold number for the messages that will print, type **>0** and press **Enter**. *Example of a MAP response:* `SUPPRESS:`

—sheet 4 of 7—

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action
31	To specify that the log or report output is free from suppression, type **>N** and press **Enter**. *Example of a MAP response:* `TUNITS:`
32	To enter the time units for a threshold report, type **>0** and press **Enter**. *Example of a MAP response:* `SYSLOG:`

33	To respond to the MAP prompt, type **>N** and press **Enter**.
	Example of a MAP response:
	`TUPLE TO BE ADDED:`
	` CCS 198 1 0 N 0 N`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

34	To confirm the changes, type **>Y** and press **Enter**.
35	To quit from the table, type **>QUIT** and press **Enter**.
36	To access table LOGDEV, type **>TABLE LOGDEV** and press **Enter**. *Example of a MAP response:* `TABLE: LOGDEV`
37	To specify that you want to add a new class to a printer, type **>ADD** and press **Enter**. *Example of a MAP display:* `DEV:`

—sheet 5 of 7—

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action
38	To specify the printer that the log will travel to, type ***>printer*** and press **Enter**. Replace variables as follows: • *printer* is the name of the printer that will print the log. ***Note:*** The name assigned in table TERMDEV must identify the printer. *Example of a MAP response:* `ALT:`
39	To specify an alternate printer in case the printer specified in step 38 fails, type ***>printer2*** and press **Enter**. Replace variables as follows: • *printer2* is the name of an alternate printer that will print the log ***Note:*** If an alternate printer is not available, enter NIL. *Example of a MAP response:* `CLASSES:`
40	To specify a new class (1 greater than the last class listed in the table as noted in step 26), type **>`(*new_class_number*)'** and press **Enter**. Replace variables as follows: • *new_class_number* is the number of a new class  Example input: **`(1)'** *Example of a MAP display:* `FORMAT:`

—sheet 6 of 7—

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Procedure 1-65
Setting up the signaling link marginal performance report (continued)

Step	Action
41	To specify standard log format, type >STD and press Enter. *Example of a MAP response:* `PRIORITY:`
42	To specify that message priority is not important, type **>N** and press **Enter**. *Example of a MAP response:* `GUAR:`

43	To specify that a guaranteed device is not necessary, type **>N** and press **Enter**.
	Example of a MAP response:
	`TUPLE TO BE ADDED:`
	`STD N N RP061 NIL (1)`
	`ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.`

44	To confirm the changes, type **>Y** and press **Enter**.
45	To quit from table LOGDEV, type **>QUIT** and press **Enter**.
46	To access the LOGUTIL software, type **>LOGUTIL** and press **Enter**.
47	To start to print log CCS198 on the printer, type **>STARTDEV *printer_name*** and press Enter. Replace variables as follows: • *printer_name* is the printer you specified in table LOGDEV in step 38 or step 39
48	To quit from the LOGUTIL software, type **>QUIT** and press **Enter**. Go to step 49.
49	The procedure is complete.

—sheet 7 of 7—

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Softkey information does not download to the ADSI set

Application

Use this procedure to determine why softkey information does not download to the subscriber set.

Definition

A complaint indicates that the Analog Display Services Interface (ADSI) set of the subscriber does not contain downloaded softkey definitions. As a result, the softkeys on the set do not function correctly.

Common procedures

There are no common procedures.

Action

Procedure 1-66 provides steps and actions to determine why softkey information does not download to the subscriber set. Figure 1-152 and Figure 1-153 provide an overview of the procedure.

Note: The CLASS modem resource (CMR) card NT6X78 can go out of service in the active unit. If the card goes out of service, the operating company personnel can busy, replace, load, and return the card to service. The operating company personnel do not need to execute these operations on the whole unit.

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Figure 1-152
Summary of how Softkey information does not download to the ADSI set

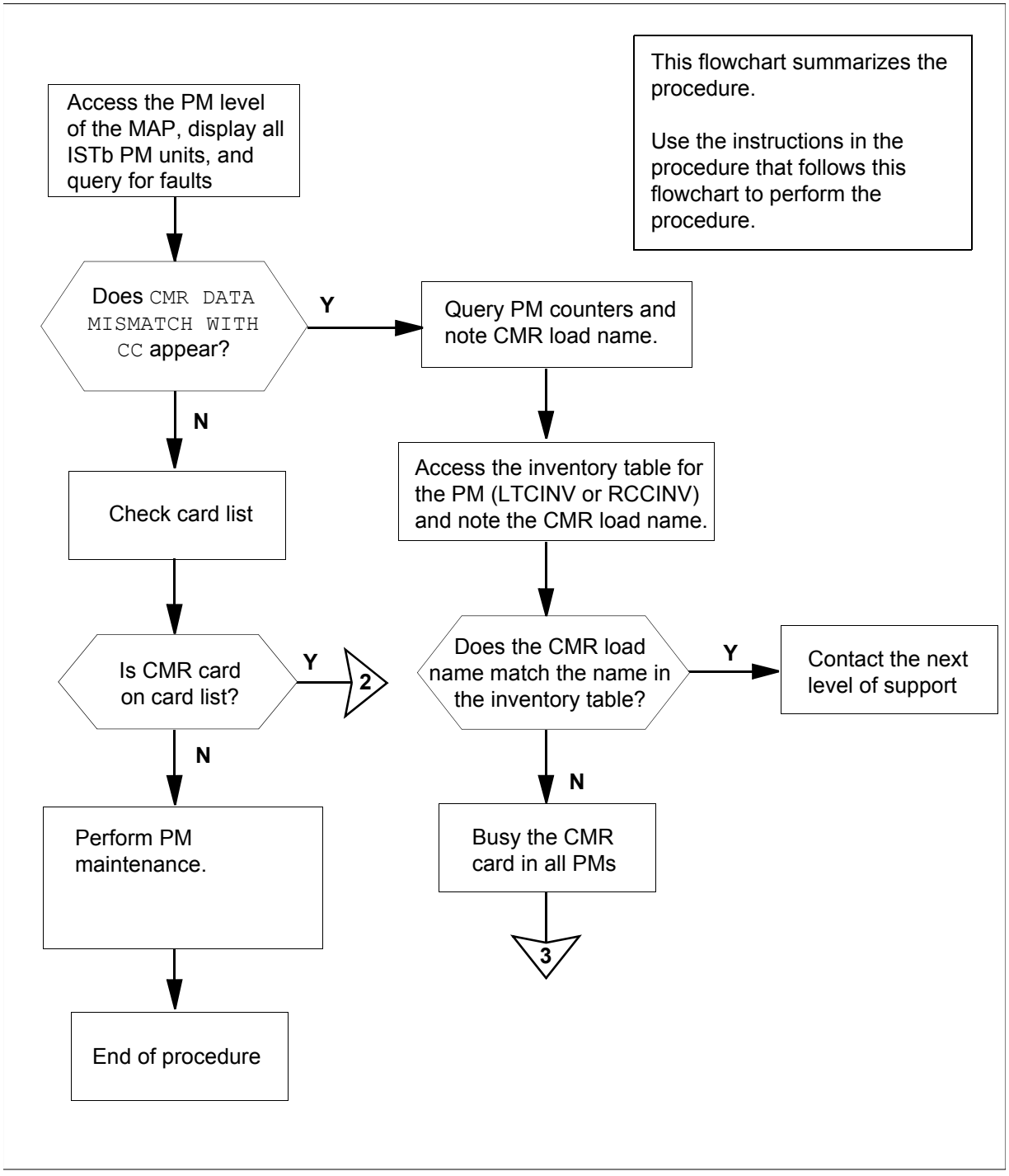

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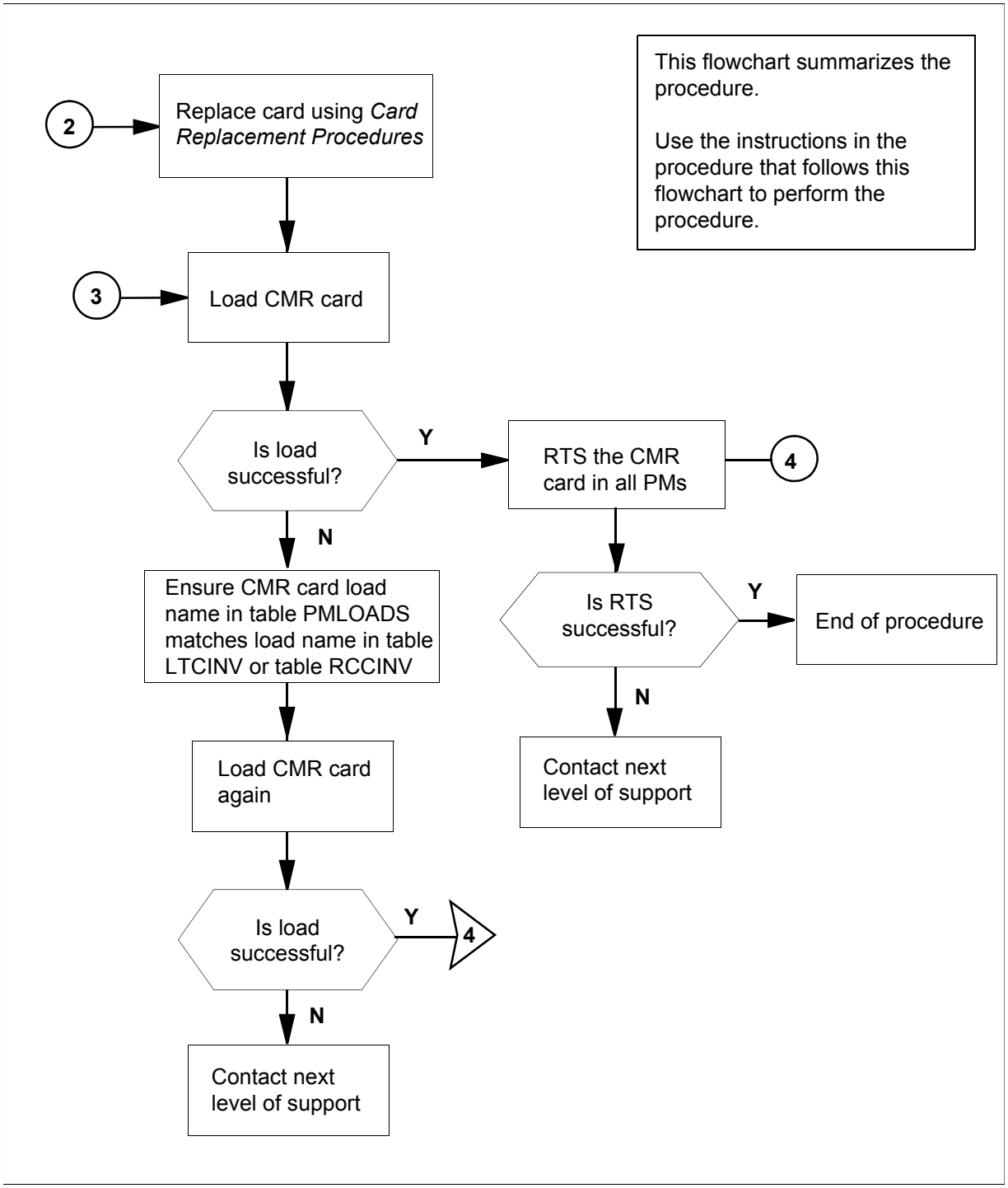
Figure 1-153
Summary of Softkey information does not download to the ADSI set (continued)



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Procedure 1-66 describes how to determine why softkey information does not download to the subscriber set.

Procedure 1-66
Softkey information does not download to the ADSI set

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;PM** and press **Enter** to access the PM level of the MAP display.
2	To display all the ISTb PMs, type **>POST ISTB** and press **Enter**.
3	To check for fault indicators, type **>QUERYPM FLT** and press **Enter**. If the response is CLASS MODEM RESOURCE CARD NT6X78 OUT OF SERVICE, go to step 4. If the response is CMR DATA MISMATCH WITH CC, go to step 8. If the response is CMR LOAD MISMATCH WITH INVENTORY TABLE, go to step . If the response is anything else, go to step 18.

4	Check the card list for the CMR card.
	The following card list is a standard message that refers to a CMR card that is out of service.
	`QUERYPM FLT`
	`CLASS MODEM RESOURCE CARD NT6X78`
	`OUT OF SERVICE`
	`Replace the Cards in the Card List`
	`and applicable Paddleboards (i.e. 6X12) :`
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 01 D02 LGE 00 18 LGC : 000 13 6X78`

5	Check the card list for the CMR card. If the CMR card is on card list, go to step 6. If the CMR card is not on card list, go to step 7.
6	Use the *Card Replacement Procedures* manual to replace the CMR card.
7	Perform PM maintenance.

—sheet 1 of 5—

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Procedure 1-66
Softkey information does not download to the ADSI set (continued)

Step	Action

8	Use the QUERYPM CNTRS command to determine the CMR load name. Type >**querypm CNTRS** and press **Enter**.
	Example of a MAP response:
	`Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0.`
	`Unit 0:`
	`RAM Load: ECL05AY`
	`EEPRom Version: AC01`
	`EEPRom Load: Loadable: MX77NF02, Executable: MX77NF02`
	`CMR LOAD: CMR03A`
	`UP: MX77AA`
	`Unit 1:`
	`RAM Load: ECL05AY`
	`EEPRom Version: AC01`
	`EEPRom Load: Loadable: MX77nf02, Executable: MX77NF02`
	`CMR LOAD: CMR03A`
	`UP: MX77AA`
	Note: In this example, the CMR load name is CMR03A.

9	To access the inventory table for the PM (LTCINV or RCCINV), type **>Table LTCINV** and press **Enter**.
10	Compare the CMR load name in the PM and the CMR load name in the inventory table. If CMR load name in PM matches the CMR load name in the inventory table, go to step 18. If CMR load name in PM does not match the CMR load name in the inventory table, go to step .

—sheet 2 of 5—

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Procedure 1-66
Softkey information does not download to the ADSI set (continued)

Step	Action
11	 **CAUTION** **Loss of Service** A BSY of the CMR card on the active unit of the PM affects CLASS services. CLASS services that use the card cannot function. To busy the CMR card, type **>bsy UNIT *unit_no* CMR** and press the **Enter** key. Replace variables as follows: • *unit_no* is the number of the PM unit (0 or 1) ***Note:*** CMR is an optional parameter that means to busy only the CMR card.
12	To load the CMR card, type **>LOADPM UNIT *unit_no* CC CMR** and press **Enter**. Replace variables as follows: • *unit_no* is the number of the PM unit (0 or 1) ***Note:*** CMR is an optional parameter that means to load only the CMR card.

—sheet 3 of 5—

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Procedure 1-66
Softkey information does not download to the ADSI set (continued)

Step	Action

13	Verify that the CMR card can load. To use the QUERYPM CNTRS command to determine the CMR load name, type **>QUERYPM CNTRS** and press **Enter**.
	Example of a MAP response:
	`Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0.`
	`Unit 0:`
	`RAM Load: ECL05AY`
	`EEPRom Version: AC01`
	`EEPRom Load: Loadable: MX77NF02, Executable: MX77NF02`
	`CMR LOAD: CMR03A`
	`UP: MX77AA`
	`Unit 1:`
	`RAM Load: ECL05AY`
	`EEPRom Version: AC01`
	`EEPRom Load: Loadable: MX77nf02, Executable: MX77NF02`
	`CMR LOAD: CMR03A`
	`UP: MX77AA`
	Note: In this example, the CMR load name is CMR03A.

14	Ensure that the CMR card load name in table PMLOADS matches the load name in table LTCINV or table RCCINV.
15	To load the CMR card again, type >LOADPM UNIT unit_no CC CMR and press Enter. Replace variables as follows: • *unit_no* is the number of the PM unit (0 or 1) ***Note:*** CMR is an optional parameter that means to load only the CMR card. If the load passes, go to step 16. If the load fails, go to step 18.

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Procedure 1-66
Softkey information does not download to the ADSI set (continued)

Step	Action

16	To return the CMR card to service, type **>RTS UNIT *unit_no* CMR** and press **Enter**.
	Replace variables as follows:
	• *unit_no* is the number of the PM (0 or 1)
	
	Note: CMR is an optional parameter that means to return to service only the CMR card.
	
	The following card list is a standard message for a CMR card failure.
	`RTS Failed, TESTALL`
	`Diagnostic TESTALL failed.`
	`Fail message received from PM`
	`Replace the Cards in the Card List`
	`and applicable Paddleboards (i.e. 6X12) :`
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 01 D02 LGE 00 18 LGC : 000 13 6X78`
	
	If the RTS passes, go to step 19.
	If the RTS fails, go to step 17.

17	Use the following information to determine the next step in this procedure. If a first-time replacement of the CMR card, go to step 6. If you have replaced CMR card already, go to step 18.
18	For additional help, contact the person responsible for the next level of support.
19	The procedure is complete.

—sheet 5 of 5—

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Testing an SPM carrier

Application

Use this procedure to test the DMS-Spectrum Peripheral Module (SPM) carrier connection using the MAP procedures.

Definition

Perform the specific steps located in the action section to test a faulty SPM carrier.

Common procedures

None

Action

Procedure 1-67 provides steps and actions to test the SPM carrier connection using the MAP procedures. Figure 1-154 provides an overview of the procedure.

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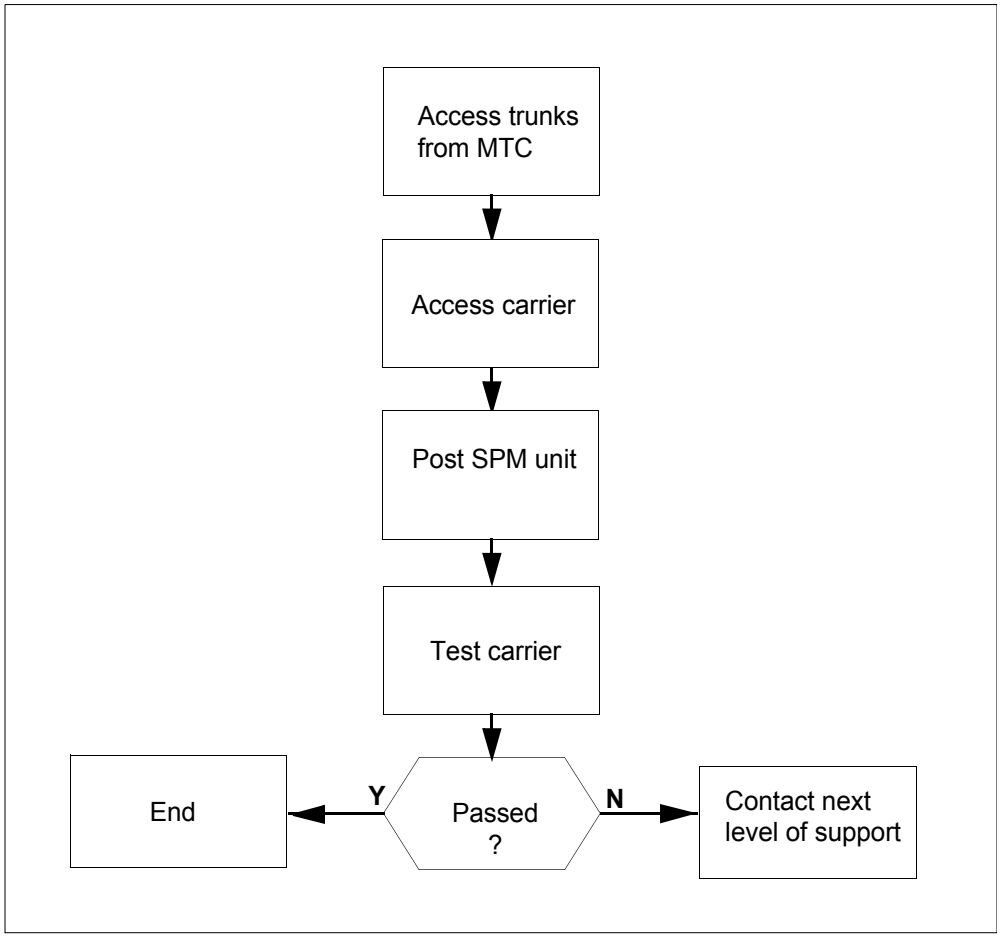
Figure 1-154
Summary of how to activate a test of the SPM carrier



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Procedure 1-67 describes how to test the DMS-Spectrum Peripheral Module (SPM) carrier connection using the MAP procedures.

Procedure 1-67
Activating a test of the SPM carrier

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM screen level of the MAP display.
2	Access the trunks level by typing **>TRKS** and pressing the **Enter** key. *The following is an example of an TRKS screen.*

```
   CM        MS       IOD       Net      PM       CCS       Trks     Ext        APPL
 CM Flt    Clock    OM  B      LOAD     2DTC        .        33CC      .        SBS AF


TRKS              Trks
 0 Quit           TRKS
 2 STAT
 3 TTP
 4 ATT
 5
 6 CARRIER
 7 TRKSTRBL
 8
 9
10
11
12
13
14
15
16
```

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Procedure 1-67
Activating a test of the SPM carrier (continued)

Step	Action
3	Select the carrier by typing **>CARRIER** and pressing the **Enter** key. *The following is an example of a Carrier screen.*

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


CARRIER          CLASS  ML  OS  ALM  SYSB  MANB  UNEQ  OFFL  CBSY  PBSY  INSV
 0 Quit          TRUNKS  4   0   17   13    22    0    100     9     0    38
 2 Post          TIMING  2   0   2    0     0     0      0     0     0     2
 3
 4
 5               CARRIER
 6
 7
 8
 9
10
11 Disp
12
13
14
15
16
17
18

    14:12 >
```

—sheet 2 of 4—

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Procedure 1-67
Activating a test of the SPM carrier (continued)

Step	Action
4	Access the SPM screen by typing **>POST SPM *spm_no*** and pressing the *Enter* key. Replace variables as follows: • *spm_no* is the number of the SPM (0 to 63) *The following is an example of a posted screen.*

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


POST            CLASS  ML  OS  ALRM  SysB  ManB  UNEQ  OFFL  CBSY  PBSY  INSV
 0 Quit         TRUNKS  0   0   0     0     0     0     0     0     0     1254
 2 Post         TIMING  2   0   2     0     0     0     0     0     0        2
 3              HSCARR  0   0   0     0     0     0     0     0     0      358
 4               OC3S
 5 Loop          N  CLASS   SITE  SPM  OC3RM  OC3S  STS3L  CKT  STATE  TR  MA
 6 Tst_          0  HSCARR  HOST    0    0      0      -     1   INSV   ..  ..
 7 Bsy_          1  HSCARR  HOST    0    1      0      -     2   INSV   ..  ..
 8 RTS_
 9 Offl_          SIZE OF POSTED SET  :  94              MORE...
10
11 Disp
12 Next
13
14 Detail
15 ListAlm_
16
17 Perfmon
18

    14:17 >
```

Alternatively, if you know the SPM carrier circuit number, you can post it directly by typing **>POST SPM *spm_no ckt_no*** and pressing the **Enter** key.

Replace variables as follows:

- *spm_no* is the number of the SPM (0 to 63)
- *ckt_no* is the number of the circuit (0 to 181)

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Procedure 1-67
Activating a test of the SPM carrier (continued)

Step	Action
5	Test the carrier by typing **>TST *carrier_no*** and pressing the **Enter** key. Replace variables as follows: • *carrier_no* is the number of the carrier (0 to 4) *The following is an example of a posted screen with the test results.*

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


POST              CLASS  ML  OS  ALRM  SysB  ManB  UNEQ  OFFL  CBSY  PBSY  INSV
 0 Quit           TRUNKS  0   0   0     0     0     0     0     0     0     1254
 2 Post           TIMING  2   0   2     0     0     0     0     0     0        2
 3                HSCARR  0   0   0     0     0     0     0     0     0      358
 4                 OC3S
 5 Loop            N  CLASS   SITE  SPM  OC3RM  OC3S  STS3L  CKT  STATE  TR  MA
 6 Tst_            0  HSCARR  HOST    0    0      0      -     1   INSV   ..  ..
 7 Bsy_            1  HSCARR  HOST    0    1      0      -     2   INSV   ..  ..
 8 RTS_
 9 Offl_            SIZE OF POSTED SET  : 4
10
11 Disp
12 Next
13                Tst
14 Detail         HSCARR 0 Test : Request has been submitted
15 ListAlm_       HSCARR 0 Test : Test passed.
16
17 Perfmon
18

    14:17 >
```

6	If the carrier did not pass the test, contact the personnel responsible for the next level of support.
7	You have completed this procedure. Return to the CI level of the MAP screen by typing **>QUIT ALL** and pressing the **Enter** key.

—sheet 4 of 4—

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Testing an SPM CEM

Application

Use this procedure to test the NTLX82BA common equipment module (CEM) for the DMS-Spectrum Peripheral Module (SPM) using the MAP procedures.

Definition

Perform the specific steps located in the action section to test a faulty CEM.

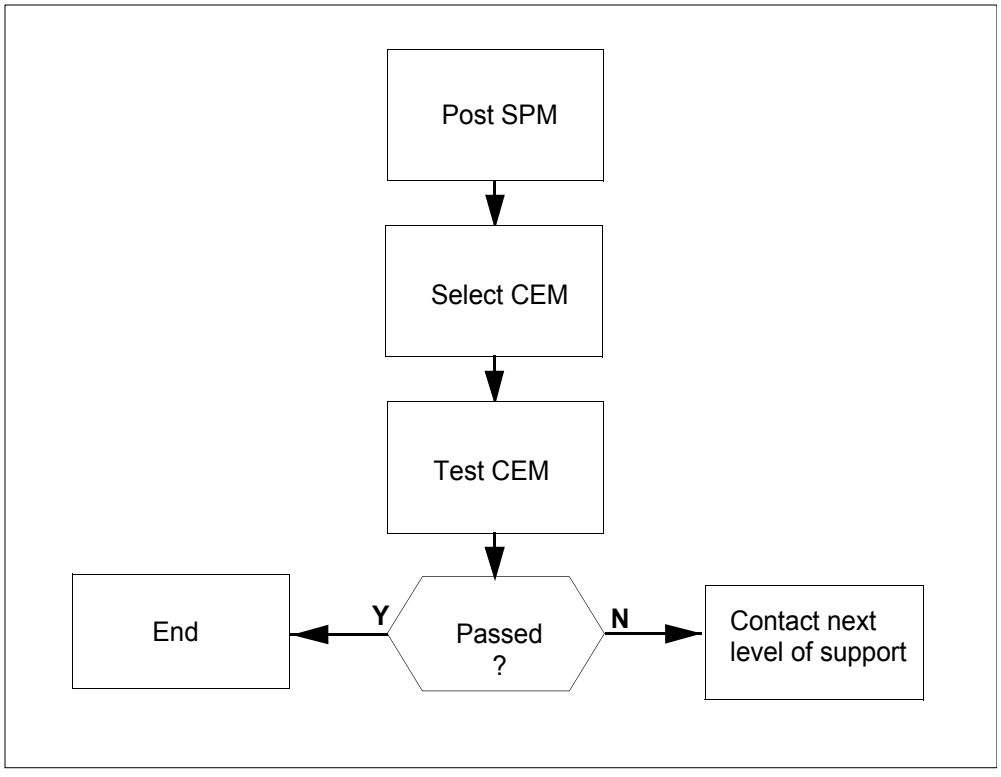
Common procedures

None

Action

Procedure 1-68 provides steps and actions to test the NTLX82BA CEM for the SPM using the MAP. Figure 1-155 provides an overview of the procedure.

Figure 1-155
Summary of how to test the SPM CEM



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Procedure 1-68 describes how to test the NTLX82BA common equipment module (CEM) for the DMS-Spectrum Peripheral Module (SPM) using the MAP procedures.

Procedure 1-68
Testing the SPM CEM

Step	Action
1	At the MAP terminal, type >MAPCI;MTC;PM and press the Enter key to access the PM screen level of the MAP display.
2	Access the SPM screen by typing **>POST SPM *spm_no*** and pressing the **Enter** key. Replace variables as follows: • *spm_no* is the number of the SPM (0 to 63) *The following is an example of an SPM screen. This example may not reflect your SPM screen.*

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


SPM                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit            PM                 0        0        0        0        0        1
 2 Post_           SPM                0        0        0        0        0        1
 3 ListSet
 4 ListRes     SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6             Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7             DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8             DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9             DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10             DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_       --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next        --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_     CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18
   14:12 >
```

—sheet 1 of 3—

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Procedure 1-68
Testing the SPM CEM (continued)

Step	Action
3	Access the CEM card by typing **>SELECT *cem_no*** and pressing the *Enter* key. Replace variables as follows: • *cem_no* is the number of the CEM card (0 or 1) *The following is an example of a CEM screen:*

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


CEM                                    SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                      0        0        0        0        0        1
 2               SPM                     0        0        0        0        0        1
 3 Listset        CEM                    0        0        0        0        0        1
 4
 5 Trnsl       SPM 11    CEM 0  Act  INSV
 6 Tst
 7 Bsy         Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS         Default Load: SPMLOAD
 9 Offl        Clock:
10 LoadMod     Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

—sheet 2 of 3—

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Procedure 1-68
Testing the SPM CEM (continued)

Step	Action
4	Start the CEM test by typing **>TST** and pressing the **Enter** key. *The following example shows a CEM screen with the test results.*

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


CEM                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                    0        0        0        0        0        1
 2               SPM                   0        0        0        0        0        1
 3 Listset        CEM                  0        0        0        0        0        1
 4
 5 Trnsl       SPM 11    CEM 0  Act  INSV
 6 Tst
 7 Bsy         Loc : Row C FrPos 4 ShPos 6 ShId 0 Slot 7
 8 RTS         Default Load: SPMLOAD
 9 Offl        Clock:
10 LoadMod     Input Ref: Internal     Source: C Side 0   Current Mode: Acquire
11             Tst
12 Next        SPM 11 CEM 0 Test :  Request has been submitted.
13 Select_     SPM 11 CEM 0 Test :  Test passed.
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

5	If the CEM did not pass the test, contact the personnel responsible for the next level of support.
6	You have completed this procedure. Return to the CI level of the MAP screen by typing **>QUIT ALL** and pressing the **Enter** key.

—sheet 3 of 3—

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Testing an SPM DSP RM

Application

Use this procedure to test the NTLX63BA digital signal processor (DSP) resource module (RM) for the DMS-Spectrum Peripheral Module (SPM) using the MAP procedures.

Definition

Perform the specific steps located in the action section to test a faulty DSP RM.

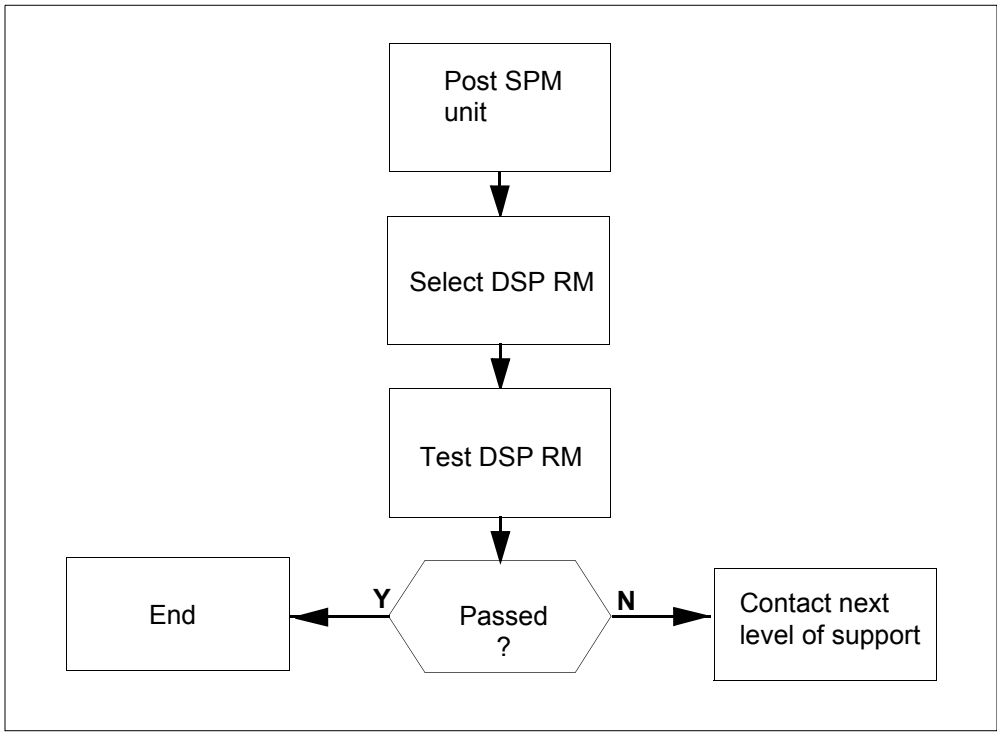
Common procedures

None

Action

Procedure 1-69 provides steps and actions to test the NTLX63BA DSP RM for the SPM using the MAP. Figure 1-156 provides an overview of the procedure.

Figure 1-156
Summary of how to activate a test of the SPM DSP RM



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Procedure 1-69 describes how to test the NTLX63BA digital signal processor (DSP) resource module (RM) for the DMS-Spectrum Peripheral Module (SPM) using the MAP procedures.

Procedure 1-69
Activating a test of the SPM DSP RM

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM screen level of the MAP display.
2	Access the SPM screen by typing **>POST SPM *spm_no*** and pressing the **Enter** key. Replace variables as follows: • *spm_no* is the number of the SPM (0 to 63) *The following is an example of an SPM screen. This example may not reflect your SPM screen.*

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


SPM                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                    0        0        0        0        0        1
 2 Post_         SPM                   0        0        0        0        0        1
 3 ListSet
 4 ListRes    SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7            DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8            DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9            DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10            DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_      --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next       --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_    CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18

   14:12 >
```

—sheet 1 of 3—

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Procedure 1-69
Activating a test of the SPM DSP RM (continued)

Step	Action
3	Access the DSP card by typing **>SELECT DSP *dsp_no*** and pressing the **Enter** key. Replace variables as follows: • *dsp_no* is the number of the DSP (0 to 27) *The following is an example of a DSP screen:*

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


DSP                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                    0        0        0        0        0        1
 2               SPM                   0        0        0        0        0        1
 3 ListSet         DSP                 0        0        0        0        0        1
 4 ListRes
 5               SPM 11    DSP 0  Act  INSV
 6 Tst
 7 Bsy           Loc : Row A FrPos 0 ShPos 20 ShId 0 Slot 2  Prot Grp : 1
 8 RTS           Default Load: DSPLOAD                       Prot Role: Working
 9 Offl
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

—sheet 2 of 3—

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Procedure 1-69
Activating a test of the SPM DSP RM (continued)

Step	Action
4	Test the DSP by typing **>TST** and pressing the **Enter** key. *The following is an example of a DSP RM screen with the test submitted.*

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


DSP                                  SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                    0        0        0        0        0        1
 2               SPM                   0        0        0        0        0        1
 3 ListSet         DSP                 0        0        0        0        0        1
 4 ListRes
 5              SPM 11    DSP 0  Act  INSV
 6 Tst
 7 Bsy          Loc : Row A FrPos 0 ShPos 20 ShId 0 Slot 2  Prot Grp : 1
 8 RTS          Default Load: DSPLOAD                       Prot Role: Working
 9 Offl        Tst
10 LoadMod
11              SPM 11 DSP 0 Test   :  Request has been submitted.
12 Next         SPM 11 DSP 0 Test   :  Test passed.
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

5	If the DSP RM did not pass the test, contact the personnel responsible for the next level of support.
6	You have completed this procedure. Return to the CI level of the MAP screen by typing **>QUIT ALL** and pressing the **Enter** key.

—sheet 3 of 3—

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Testing an SPM OC3 interface module

Application

Use this procedure to test the DMS-Spectrum Peripheral Module (SPM) NTLX71BA OC3 interface module using the MAP procedures.

Definition

Perform the specific steps located in the action section to test a faulty OC3 interface module.

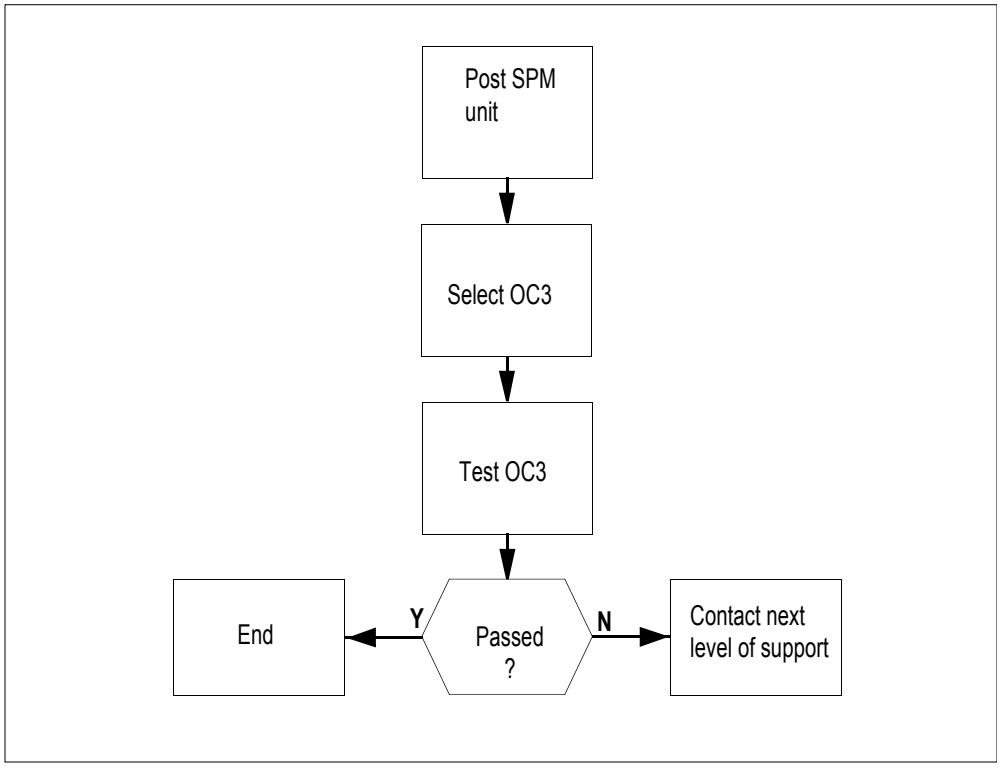
Common procedures

None

Action

Procedure 1-70 provides steps and actions to test the SPM NTLX71BA OC3 interface module using the MAP. Figure 1-157 provides an overview of the procedure.

Figure 1-157
Summary of testing an SPM OC3 interface module



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Procedure 1-70 describes how to test the DMS-Spectrum Peripheral Module (SPM) NTLX71BA OC3 interface module using the MAP procedures.

Procedure 1-70
Testing an SPM OC3 interface module

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;PM** and press the **Enter** key to access the PM screen level of the MAP display.
2	Access the SPM screen by typing **>POST SPM *spm_no*** and pressing the **Enter** key. Replace variables as follows: • *spm_no* is the number of the SPM (0 to 63) *The following is an example of an SPM screen. This example may not reflect your SPM screen.*

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


SPM                                    SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                       0        0        0        0        0        1
 2 Post_         SPM                      0        0        0        0        0        1
 3 ListSet
 4 ListRes     SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6             Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7             DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8             DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9             DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10             DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_       --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next        --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_     CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18

    14:12 >
```

—sheet 1 of 3—

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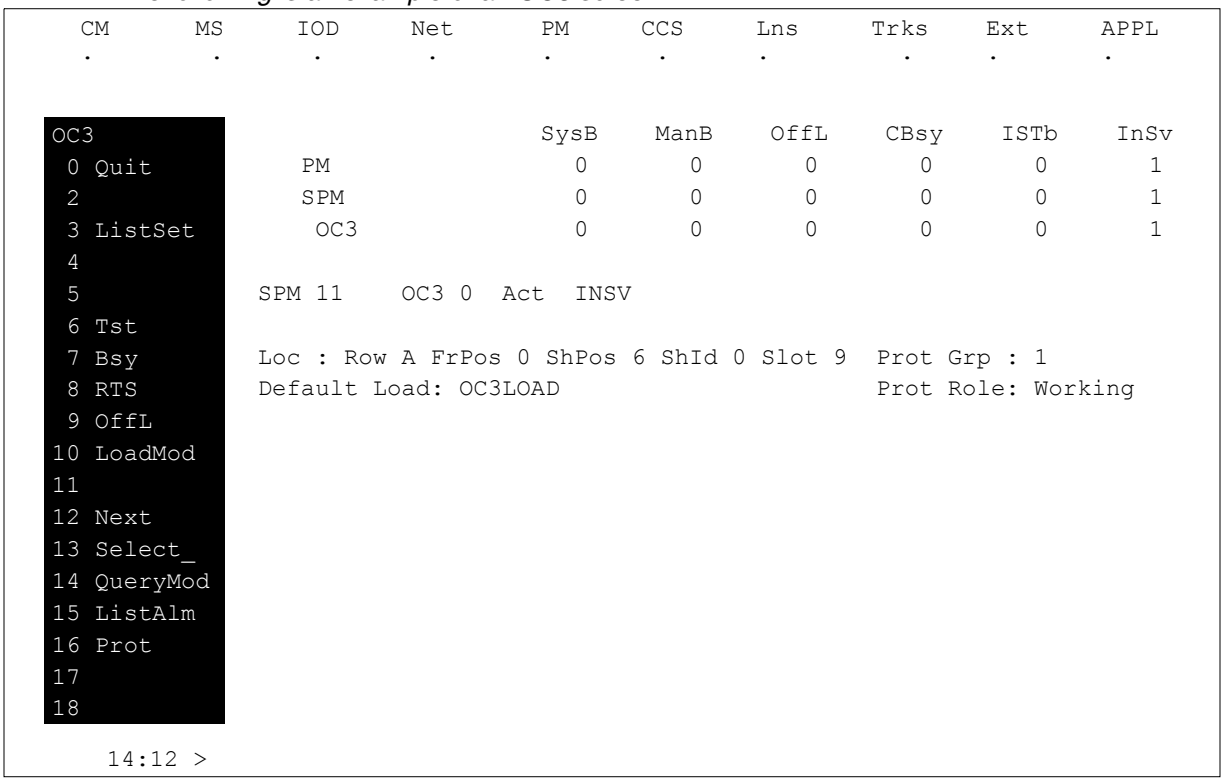
Procedure 1-70
Testing an SPM OC3 interface module (continued)

Step	Action
3	Access the OC3 card by typing **>SELECT *oc3_no*** and pressing the **Enter** key. Replace variables as follows: • *oc3_no* is the number of the OC3 card (0 or 1) *The following is an example of an OC3 screen.*  CM MS IOD Net PM CCS Lns Trks Ext APPL OC3 0 Quit 2 3 ListSet 4 5 6 Tst 7 Bsy 8 RTS 9 OffL 10 LoadMod 11 12 Next 13 Select_ 14 QueryMod 15 ListAlm 16 Prot 17 18 PM SysB ManB OffL CBsy ISTb InSv PM 0 0 0 0 0 1 SPM 0 0 0 0 0 1 OC3 0 0 0 0 0 1 SPM 11 OC3 0 Act INSV Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9 Prot Grp : 1 Default Load: OC3LOAD Prot Role: Working 14:12 >

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Procedure 1-70
Testing an SPM OC3 interface module (continued)

Step	Action
4	Test the OC3 by typing **>TST** and pressing the **Enter** key. *The following example shows an OC3 interface module screen with the test results.*

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


OC3                                    SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                      0        0        0        0        0        1
 2               SPM                     0        0        0        0        0        1
 3 ListSet        OC3                    0        0        0        0        0        1
 4
 5              SPM 11    OC3 0  Act  INSV
 6 Tst
 7 Bsy          Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9  Prot Grp : 1
 8 RTS          Default Load: OC3LOAD                      Prot Role: Working
 9 OffL         Tst
10 LoadMod      SPM 11 OC3 0 Test : Request has been submitted.
11              SPM 11 OC3 0 Test : Test passed.
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

5	If the OC3 interface module did not pass the test, contact the personnel responsible for the next level of support.
6	You have completed this procedure. Return to the CI level of the MAP screen by typing **>QUIT ALL** and pressing the **Enter** key.

—sheet 3 of 3—

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Testing the DS-1 carrier states

Application

Use this procedure to test the DS-1 carrier states during the Common Channel Signaling 7 (CCS7) bit error rate test (C7BERT) for high-speed links (HSL).

Perform this procedure when you run C7BERT.

Definition

Test the DS-1 carrier transmit and receive ports on the HSL DS-1 paddle board (NTEX78AA) to check the carrier states at the local and remote office.

The DS-1 carrier can be in one of the following states:

- InSv (in service), which indicates that the carrier is not broken, the framing of the signal is correct, and the DS-1 cards receive idle asynchronous transfer mode (ATM) cells
- LOS (loss of signal), which indicates that the cards do not receive the DS-1 carrier signal
- LOF (loss of framing), which indicates that the cards receive the DS-1 carrier signal, but the framing of the signal is corrupted
- LCD (loss of cell delineation), which indicates that the DS-1 cards do not receive any ATM cells
- AIS (alarm indication signal), which indicates that a DS-1 carrier failure occurred
- RAI (remote alarm indication), which indicates that a DS-1 carrier failure occurred
- OOS (out of service), which indicates that a DS-1 carrier is not in service because of peripheral module (PM) failure or because the PM is not configured to bring the carrier into service

Common procedures

None

Action

Procedure 1-71 provides steps and actions to test the DS-1 carrier states during the C7BERT for HSL. Figure 1-158 provides an overview of the procedure.

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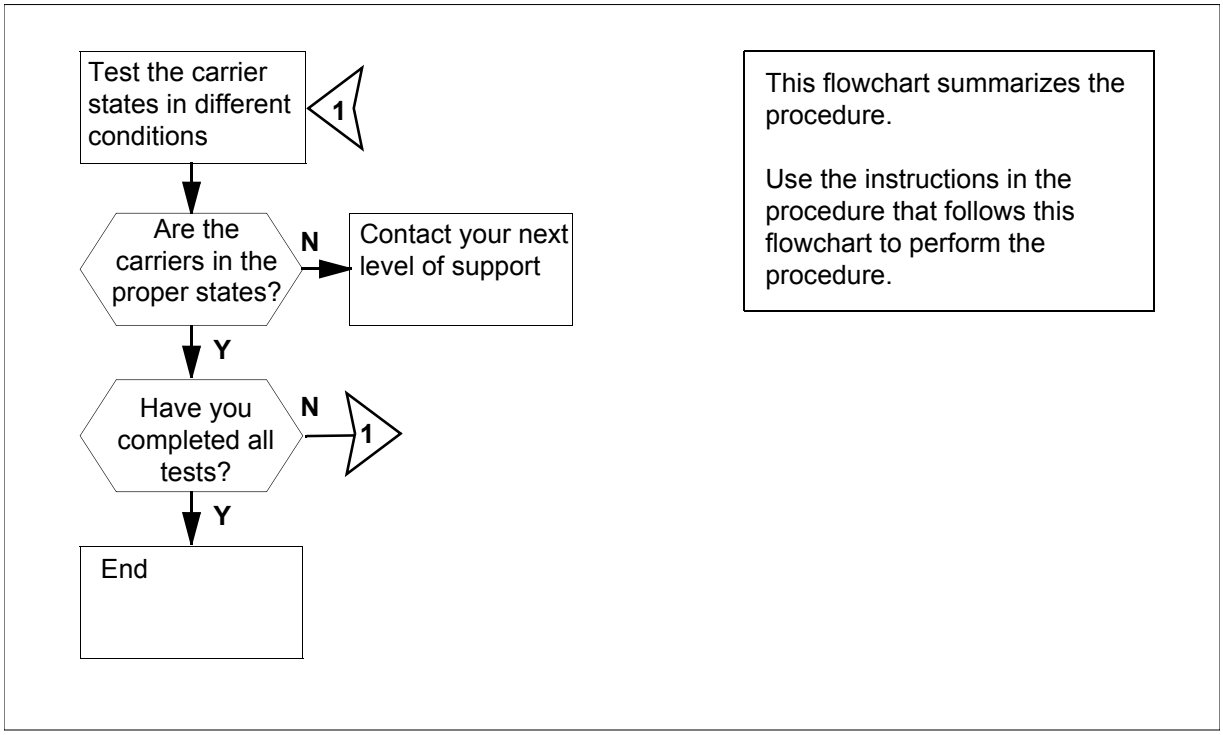
Figure 1-158
Summary of Test the DS-1 carrier states



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Procedure 1-71 describes how to test the DS-1 carrier states during the Common Channel Signaling 7 (CCS7) bit error rate test (C7BERT) for high-speed links (HSL).

Procedure 1-71
Testing the DS-1 carrier states

Step	Action
1	At the MAP display, monitor the DS-1 carrier states at the C7BERT level. If the transmit (Tx) and receive (Rx) cables connect correctly to the DS-1 paddle board at the local and remote end, the carrier state for both cards should be InSv. If the carrier states are `InSv` at the local end and `InSv` at the remote end, go to step 2. Otherwise, go to step 7.
2	Pull the Tx cable at the local end and check the carrier states. If the carrier states are `RAI` at the local end and `LOS` at the remote end, go to step 3. Otherwise, go to step 7.
3	Pull the Rx cable at the local end and check the carrier states. If the carrier states are `LOS` at the local end and `LOS` at the remote end, go to step 4. Otherwise, go to step 7.
4	Plug in the Rx and Tx cables and pull out the Tx cable at the outgoing channel bank at the local end. Check the carrier states. If the carrier states are `RAI` or any other alarm indicator for the local end and `LCD` at the remote end, go to step 5. Otherwise, go to step 7.
5	Pull out the Rx cable at the incoming channel bank at the local end. Check the carrier states. If the carrier states are `LCD` at the local end and `LCD` at the remote end, go to step 6. Otherwise, go to step 7.
6	Plug in the cables and check the carrier states. If the carrier states are `InSv` at the local end and `InSv` at the remote end, go to step 8. Otherwise, go to step 7.
7	For help, contact your next level of support.
8	You have completed this procedure. Return to the “Running a C7BERT for high-speed links” procedure.
	—end—

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Troubleshooting a customer-reported failure: No FRIU alarms

Application

Use this procedure to clear faults when the following two conditions occur.

- The customer reports a service interruption.
- Frame relay interface unit (FRIU) alarms are not under the alarm banner on the MAP display.

Definition

FRIU alarms are not on the MAP banner. Post the FRIU and clear any alarms. Query traffic and perform loopback tests when no alarm exists for the posted FRIU.

Common procedures

There are no common procedures.

Action

Procedure 1-72 provides steps and actions to troubleshoot a customer reported failure (with no FRIU alarms). Figure 1-159 provides an overview of the procedure.

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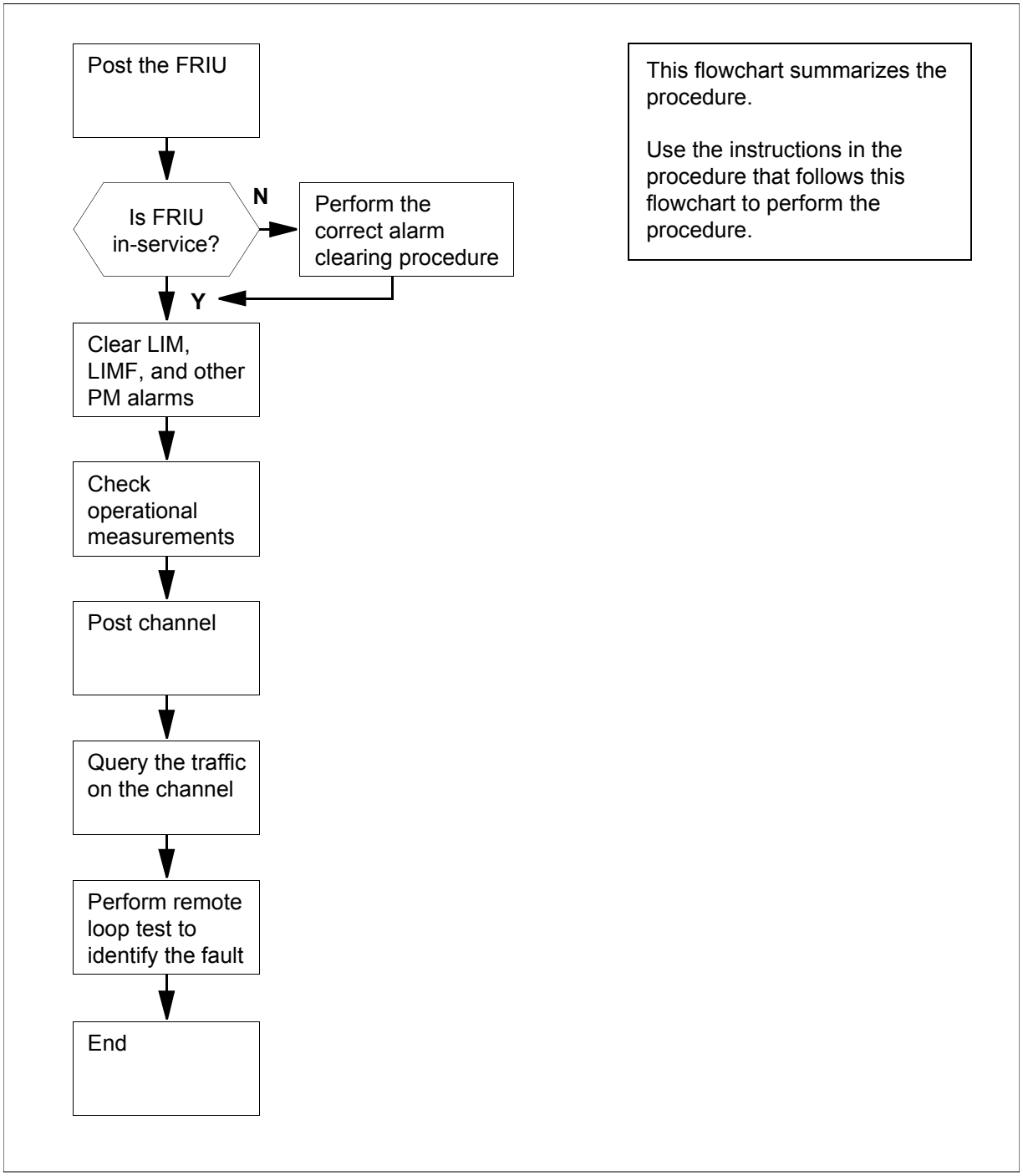
Figure 1-159
Summary of Troubleshooting a customer reported failure - no FRIU alarms



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Procedure 1-72 describes how to clear faults when a customer reports a service interruption and the frame relay interface unit (FRIU) alarms are not under the alarm banner on the MAP display.

Procedure 1-72
Troubleshooting a customer-reported failure: No FRIU alarms

Step	Action
1	At the MAP terminal, obtain the directory number (DN) from the fault report.
2	To access the PVDNCI level of the MAP display, type **>PVDNCI** and press **Enter**. *Example of a MAP response:* `PVDNCI:`

3	To identify the agent ID for the DN obtained from the fault report, type **>FRSDISP DN NO *dir_no*** and press **Enter**.
	Replace variables as follows:
	• *dir_no* is the DN obtained from the fault report
	Example of a MAP response
	`PVDNCI:`
	`DN 6132263770 belongs to FRS Agent 1`
	Note: The agent ID appears at the end of the response. In the example, the agent ID is 1.

4	To locate the FRIU and channel for the agent ID, type **>FRSDISP AGENT ID *agent_no*** and press **Enter**.
	Replace variables as follows:
	• *agent_no* is the agent ID obtained in step 3
	Example of a MAP response
	`AGENT DN NP SPEED CONDEV AB CUSTOMER CONNECT TO`
	`1 6132263770 NATL LS_1536KBS NIL N1 FRIU 5 7`
	Note: The FRIU number and channel assigned to this agent appear under the CONNECT TO header in the MAP response. In the example, the FRIU is 5 and the channel number is 7.

5	To return to the CI level of the MAP display, type **>QUIT** and press **Enter**.

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Procedure 1-72
Troubleshooting a customer-reported failure: No FRIU alarms (continued)

Step	Action
6	To access the PM level of the MAP display, type **>MAPCI;MTC;PM** and press **Enter**.
7	To post the FRIU identified in step 4, type **>POST FRIU *friu_no*** and press **Enter**. Replace variables as follows: • friu_no is the FRIU number obtained in step 4 If the FRIU is `SysB`, go to step 8. If the FRIU is `SysB (NA)`, go to step 8. If the FRIU is `ManB`, go to step 9. If the FRIU is `ManB (NA)`, go to step 9. If the FRIU is `ISTb`, go to step 10. If the FRIU is `ISTb (NA)`, go to step 8. If the FRIU is `InSv (NA)`, go to step 11. If the FRIU is `InSv`, go to step 13.
8	Perform the procedure *Clearing a PM FRIU critical alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.
9	Perform the procedure *Clearing a PM FRIU major alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.
10	Perform the procedure *Clearing a PM FRIU minor alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.
11	Determine from the MAP banner if any alarms are present under the PM header. If alarms are present, go to step 12. If alarms are not present, go to step 13.
12	Perform the correct alarm clearing procedures. Refer to *Alarm and Performance Monitoring Procedures*.

—sheet 2 of 4—

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Procedure 1-72
Troubleshooting a customer-reported failure: No FRIU alarms (continued)

Step	Action

13	Check the operational measurements (OM) that apply to DataSPAN.
	Look for high counts of cyclic redundancy test (CRC) errors in:
	• OM group FRSAGENT, register PTERR for each involved agent
	• OM group FRSPM, register PORTERR for each involved device
	• OM group FRT1, register FRT1CRC for the involved carrier
	
	For example, to check register FRT1CRC for OM group FRT1, type **>OMSHOW FRT1 ACTIVE 3** and press **Enter**.
	Example of a MAP response
	`CLASS: ACTIVE`
	`START:1997/08/21 21:15:00 THU; STOP:1997/08/21 21:16:10 THU;`
	`SLOWSAMPLES: 1; FASTSAMPLES 7;`
	
	`INFO (FRT1OMINF)`
	`FRT1LCGA FRT1RCGA FRT1LOF FRT1SBU`
	`FRT1MBU FRT1CBU FRT1BER FRT1ES`
	`FRT1SES FRT1UAS FRT1AIS FRT1CRC`
	
	`3 FRIU 29`
	`0 0 0 0`
	`0 0 0 0`
	`0 0 0 0`
	
	Note: For more information on OMs, refer to *Operational Measurements Reference Manual*.

14	To post the access channel, type **>CARR;CHAN;POST *chan_no*** and press **Enter**.
	Replace variables as follows:
	• *chan_no* is the channel number that appeared in response to the PVDNCI command
	
	Example of a MAP display
	`CARRIER Alarm BER ES SES UAS`
	`InSv <-9. 0 0 211`
	
	`CHANNEL 1`
	`N`
	
	`CHANNEL 1 ( 24 x DS0)`
	`InSv /NoLMI`

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Procedure 1-72
Troubleshooting a customer-reported failure: No FRIU alarms (continued)

Step	Action

15	To check the traffic level on the access channel, type **>QTRAFFIC** and press **Enter**.
	Example of a MAP response
	`CHANNEL 1 (24 x DS0)`
	`InSv /NoLMI`
	`qtraffic`
	`Traffic from 15:30:00 to 15:36:32`
	`Frames Tx: 30 Frames Rx: 0 Abort Rx: 0`
	`Port errors: 0 Invalid msg length: 0 Invalid DLCI: 0`

16	Perform remote loop tests to identify the fault. Refer to *Routine Maintenance Procedures* to install and remove loops required for carrier and channel remote loopback tests.
17	The procedure is complete.

—sheet 4 of 4—

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Troubleshooting a customer-reported failure: No PM alarms

Application

Use this procedure to troubleshoot a customer-reported failure with the following conditions:

- The customer reports service disruption.
- Peripheral module (PM) alarms are not under the alarm banner on the MAP display.

Definition

PM alarms are not on the MAP banner. Post the FRIU and clear any alarms. Instructions can require you to return channels to service. Query traffic and perform loopback tests when no alarms exist for the posted FRIU.

Common procedures

There are no common procedures.

Action

Procedure 1-73 provides steps and actions to troubleshoot a failure without PM alarms reported by a customer. Figure 1-160 provides an overview of the procedure.

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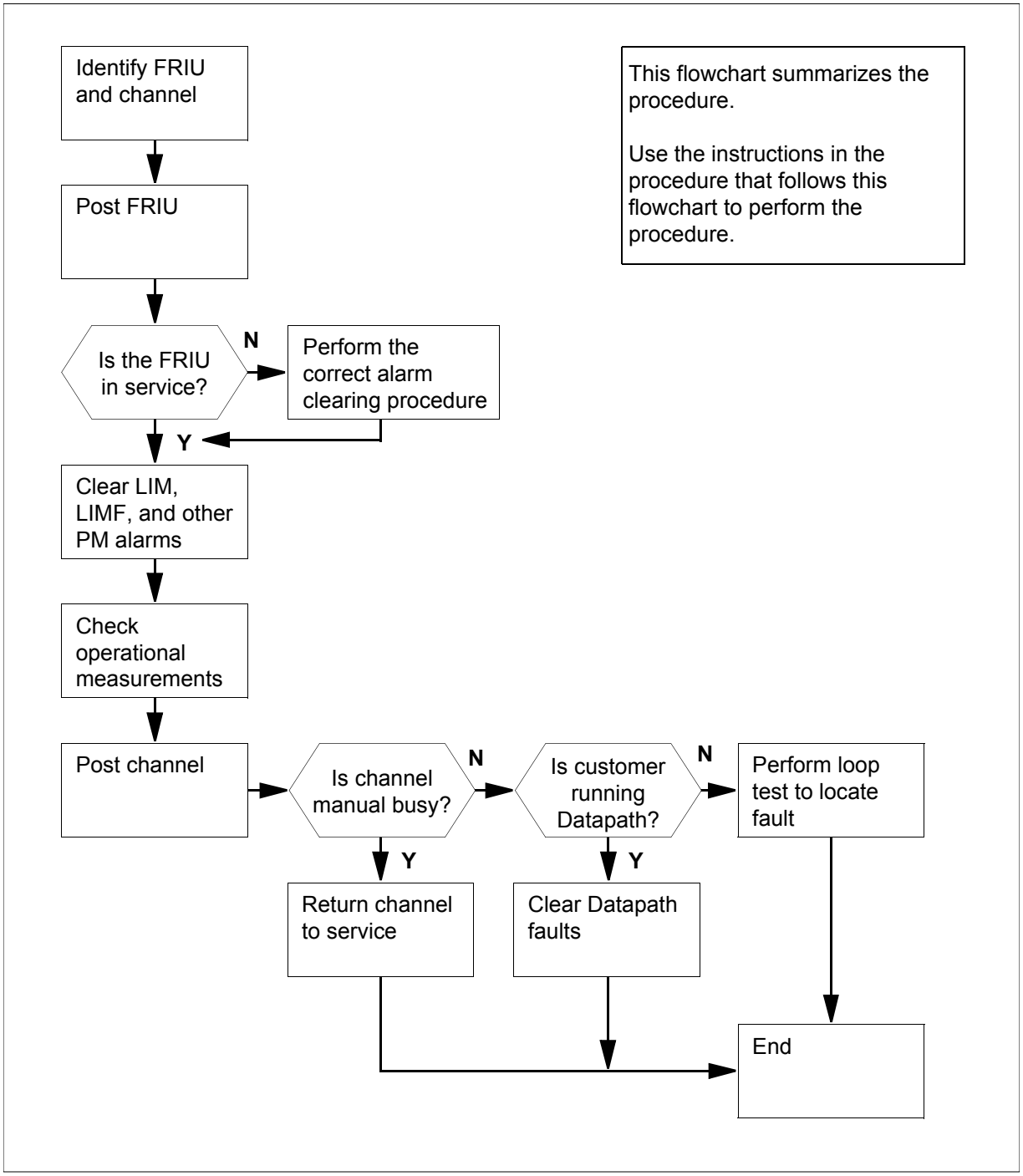
Figure 1-160
Summary of Troubleshooting a customer-reported failure: No PM alarms



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Procedure 1-73 describes how to troubleshoot a problem when a customer reports a service interruption and Peripheral module (PM) alarms are not under the alarm banner on the MAP display.

Procedure 1-73
Troubleshooting a customer-reported failure: no PM alarms

Step	Action
1	At your current location, determine the state of the channel. If the channel state is not manual-busy, go to step 2. If the channel state is manual-busy, go to step 22.
2	At the MAP terminal, type **>PVDNCI** and press **Enter** to access the PVDNCI level of the MAP display. *Example of a MAP response:* `PVDNCI:`

3	To identify the agent ID for the DN obtained from the fault report, type **>FRSDISP DN NO *dir_no*** and press **Enter**.
	Replace variables as follows:
	• *dir_no* is the DN obtained from the fault report
	Example of a MAP response:
	`PVDNCI:`
	`DN 6132263770 belongs to FRS Agent 1`
	Note: The agent ID appears at the end of the response. In the example, the agent ID is 1.

—sheet 1 of 5—

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Procedure 1-73
Troubleshooting a customer-reported failure: no PM alarms (continued)

Step	Action

4	To locate the FRIU and channel for the agent ID, type **>FRSDISP AGENT ID *agent_no*** and press **Enter**.
	Replace variables as follows:
	• *agent_no* is the agent ID obtained in step 3
	
	Example of a MAP response:
	`AGENT DN NP SPEED CONDEV AB CUSTOMER CONNECT TO`
	`1 6132263770 NATL LS_1536KBS NIL N1 FRIU 5 7`
	
	Note: The FRIU number and channel assigned to this agent appear under the CONNECT TO header in the MAP response. In the example, the FRIU is 5 and the channel number is 7.

5	To return to the CI level of the MAP display, type **>QUIT** and press **Enter**.
6	To access the PM level of the MAP display, type **>MAPCI;MTC;PM** and press **Enter**.
7	To post the FRIU identified in step 4, type **POST FRIU *friu_no*** and press **Enter**. Replace variables as follows: • friu_no is the FRIU number obtained in step 4 If the FRIU is `SysB`, go to step 8. If the FRIU is `SysB (NA)`, go to step 8. If the FRIU is `ManB`, go to step 9. If the FRIU is `ManB (NA)`, go to step 9. If the FRIU is `ISTb`, go to step 10. If the FRIU is `ISTb (NA)`, go to step 8. If the FRIU is `InSv (NA)`, go to step 11. If the FRIU is `InSv`, go to step 11.
8	Perform the procedure *Clearing a PM FRIU critical alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.
9	Perform the procedure *Clearing a PM FRIU major alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.
10	Perform the procedure *Clearing a PM FRIU minor alarm (on an LPP)* in *Alarm and Performance Monitoring Procedures*. Do not return to this procedure.

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Procedure 1-73
Troubleshooting a customer-reported failure: no PM alarms (continued)

Step	Action
11	Determine from the MAP banner if any alarms are present under the PM header. If alarms are present, go to step 12. If alarms are not present, go to step 13.
12	Perform the correct procedures to clear the alarm. Refer to *Alarm and Performance Monitoring Procedures*.

13	Check the operational measurements (OM) that apply to DataSPAN.
	Look for high counts of cyclic redundancy check (CRC) errors in:
	• OM group FRSAGENT, register PTERR for each involved agent
	• OM group FRSPM, register PORTERR for each involved device
	• OM group FRT1, register FRT1CRC for the involved carrier
	
	For example, to check register FRT1CRC for OM group FRT1, type **>OMSHOW FRT1 ACTIVE 3** and press **Enter**.
	Example of a MAP response:
	`CLASS: ACTIVE`
	`START:1997/08/21 21:15:00 THU; STOP:1997/08/21 21:16:10 THU;`
	`SLOWSAMPLES: 1; FASTSAMPLES 7;`
	
	`INFO (FRT1OMINF)`
	`FRT1LCGA FRT1RCGA FRT1LOF FRT1SBU`
	`FRT1MBU FRT1CBU FRT1BER FRT1ES`
	`FRT1SES FRT1UAS FRT1AIS FRT1CRC`
	
	`3 FRIU 29`
	`0 0 0 0`
	`0 0 0 0`
	`0 0 0 0`
	
	For more information on OMs, refer to *Operational Measurements Reference Manual*.

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Procedure 1-73
Troubleshooting a customer-reported failure: no PM alarms (continued)

Step	Action

14	To post the access channel, type **>CARR;CHAN;POST *chan_no*** and press **Enter**.
	Replace variables as follows:
	• *chan_no* is the channel number that appears in response to the PVDNCI command
	
	Example of a MAP display:
	`CARRIER Alarm BER ES SES UAS`
	`InSv <-9. 0 0 211`
	
	`CHANNEL 1`
	`N`
	
	`CHANNEL 1 ( 24 x DS0)`
	`InSv /NoLMI`

15	Determine the state of each channel. If the channel state is `ManB`, go to step 16. If the channel state is any other item, and the customer uses Datapath, go to step 22. If the channel state is any other item, and the customer uses DDS, go to step 23.
16	Select a manual-busy channel to return to service.
17	To post the channel, type **>POST *chan_no*** and press **Enter**. Replace variables as follows: • *chan_no* is the number of the channel that will return to service
18	To return the channel to service, type **>RTS** and press **Enter**.
19	Repeat step 17 and step 18 for each manual-busy channel. Go to step 20.
20	Determine if the channels are in service. If one or more channels are dot (.) (in service), go to step 24. Otherwise, go to step 21.
21	Perform the correct procedure to clear the alarm. *Alarm and Performance Monitoring Procedures* describe alarm clearing procedures.

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Procedure 1-73
Troubleshooting a customer-reported failure: no PM alarms (continued)

Step	Action
22	Perform Datapath procedures to clear faults. Refer to *DMS-100 DATAPATH Maintenance and Installation Guide*, 297-2121-223. Do not return to this procedure
23	Perform remote loop tests to identify the fault. Refer to *Routine Maintenance Procedures* for procedures to install and remove loops required for carrier and channel remote loopback tests.
24	The procedure is complete.

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VSLE session defaults to audio SLE

Application

Use this procedure to determine why the Visual Screen List Editing (VSLE) session defaults to audio Screening List Editing (SLE).

Definition

A subscriber complaint indicates that during a VSLE session, the subscriber receives audio announcements of feature status information. The subscriber receives the announcements rather than the visual display on the Analog Display Services Interface (ADSI) set.

Common procedures

There are no common procedures.

Action

Procedure 1-74 provides steps and actions to determine why the VSLE session defaults to audio SLE. Figure 1-161 and Figure 1-162 provide an overview of the procedure.

Note: The CLASS modem resource (CMR) card NT6X78 can go out of service in the active unit. If the card goes out of service, the operating company personnel can busy, replace, load, and return the card to service. The operating company personnel do not need to execute these operations on the whole unit.

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Figure 1-161
Summary of VSLE session defaults to audio SLE

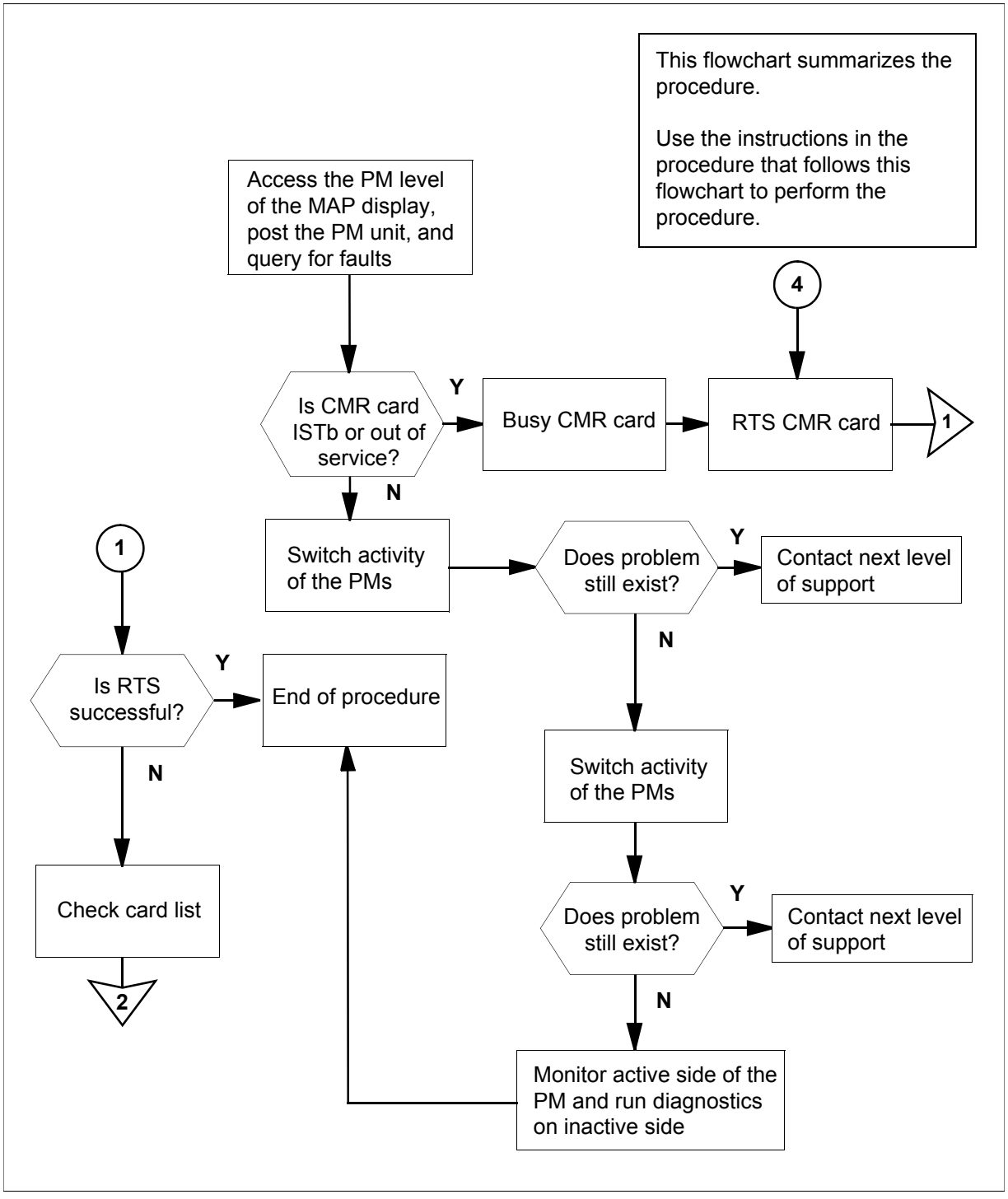

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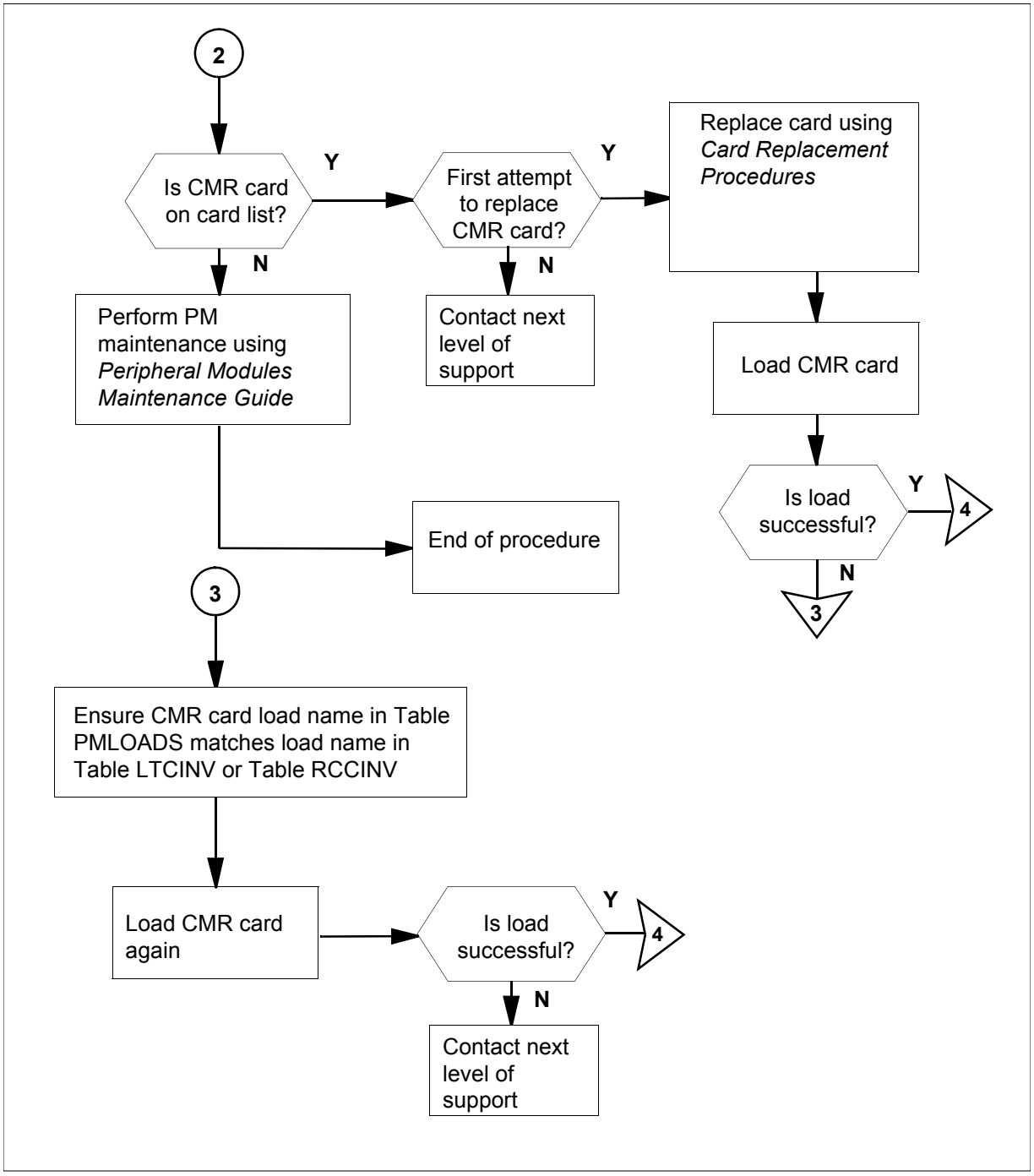
Figure 1-162
Summary of VSLE session defaults to audio SLE (continued)



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Procedure 1-74 describes how to determine why the Visual Screen List Editing (VSLE) session defaults to audio Screening List Editing (SLE).

Procedure 1-74
VSLE session defaults to audio SLE

Step	Action
1	At the MAP terminal, type **>MAPCI;MTC;PM** and press **Enter** to access the PM level of the MAP display.
2	To post the peripheral module (PM) unit, type **>POST *pm_type pm_number*** and press **Enter**. Replace variables as follows: • *pm_type* is the PM type (LGC, LTC, RCC, SMS, or SMU) • *pm_number* is the number of the PM (0 through 127)
3	To check for fault indicators in the CLASS modem resource (CMR) card, type **>QUERYPM FLT** and press **Enter**. If CMR card is in-service trouble (ISTb) or out of service, go to step . If CMR card is not ISTb or out of service, go to step 4.
4	To switch activity of the unit in order to restore service quickly, type **>SWACT** and press **Enter**. If the SWACT passes and the problem is present, go to step 22. If the SWACT passes and the problem is not present, go to step 5.
5	To switch activity back to the original unit, type **>SWACT** and press **Enter**. If the SWACT passes and the problem is present, go to step 22. If the SWACT passes and the problem is not present, go to step 20.

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Procedure 1-74
VSLE session defaults to audio SLE (continued)

Step	Action
6	**CAUTION** **Loss of Service** A BSY of the CMR card on the active unit of the PM affects CLASS services. CLASS services that use the card can not function. To busy the CMR card, type **>BSY UNIT *unit_no* CMR** and press **Enter**. Replace variables as follows: • *unit_no* is the number of the PM (0 or 1) ***Note:*** CMR is an optional parameter that means to busy only the CMR card.
7	To return the CMR card to service, type **>RTS UNIT unit_no CMR** and press **Enter**. Replace variables as follows: • *unit_no* is the number of the PM unit (0 or 1) ***Note:*** CMR is an optional parameter that means to return the CMR card to service. If the RTS passes, go to step 23. If the RTS fails, go to step 8.

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Procedure 1-74
VSLE session defaults to audio SLE (continued)

Step	Action
8	Examine the generated card list. The performance of one of the following steps depends on the card list. *The following card list is a standard message of a CMR card failure.* RTS Failed, TESTALL Diagnostic TESTALL failed. Fail message received from PM Replace the Cards in the Card List and applicable Paddleboards (i.e. 6X12) : Site Flr RPos Bay_id Shf Description Slot EqPEC HOST 01 D02 LGE 00 18 LGC : 000 13 6X78 If the CMR card is on the card list, go to step 11. If the CMR card is not on the card list, go to step 9.
9	Perform PM maintenance on the PM currently posted and return to this point.
10	Go to step 23.
11	Use the following information to determine the next step in this procedure. If a first-time replacement of the CMR card, go to step 12. If you have replaced the CMR card already, go to step 22.
12	See *Card Replacement Procedures* and return to this point.
13	To load the CMR card in the PM, type **>LOADPM UNIT *unit_no* CC CMR** and press **Enter**. Replace variables as follows: • unit_no is the number of the PM (0 or 1) ***Note:*** Use the LOADPM command to load the CMR card separate from the PM. If loading completes correctly, go to step 17. Otherwise, go to step 14.

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Procedure 1-74
VSLE session defaults to audio SLE (continued)

Step	Action

14	Verify that the CMR card can load. To use the QUERYPM command to determine the CMR load name, type **>querypm CNTRS** and press **Enter**.
	Example of a MAP response:
	`Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0.`
	`Unit 0:`
	`RAM Load: NLG32BU`
	`ROM Load: XPMRKA02`
	`CMR LOAD: CMR33AI5`
	`CMR DEFINERS: 12`
	`MP: 6X45BA/BB`
	`SP: 6X45BA/BB`
	`Unit 1:`
	`RAM Load: NLG32BU`
	`ROM Load: XPMRKA02`
	`CMR LOAD: CMR33AI5`
	`CMR DEFINERS: 12`
	`MP: 6X45BA/BB`
	`SP: 6X45BA/BB`
	Note: In this example, the CMR load name is CMR33AI5.

15	Ensure that the CMR card load name in Table PMLOADS matches the load name in Table LTCINV or Table RCCINV.
16	To load the CMR card again, type **>LOADPM UNIT *unit_no* CC CMR** and press **Enter**. Replaces variables as follows: • *unit_no* is the number of the PM unit (0 or 1) ***Note:*** CMR is an optional parameter that means to load only the CMR card. If the load passes, go to step 17. If the load fails, go to step 22.

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Procedure 1-74
VSLE session defaults to audio SLE (continued)

Step	Action

17	To return the CMR card to service, type **>RTS UNIT *unit_no* CMR** and press **Enter**.
	Replace variables as follows:
	• *unit_no* is the number of the PM (0 or 1)
	
	Note: CMR is an optional parameter that means to return only the CMR card to service.
	
	The following card list is a standard message that refers to a CMR card failure.
	`RTS Failed, TESTALL`
	`Diagnostic TESTALL failed.`
	`Fail message received from PM`
	`Replace the Cards in the Card List`
	`and applicable Paddleboards (i.e. 6X12) :`
	`Site Flr RPos Bay_id Shf Description Slot EqPEC`
	`HOST 01 D02 LGE 00 18 LGC : 000 13 6X78`
	
	If the RTS passes, go to step 23.
	If the RTS fails but the CMR card is not on the card list, go to step 18.
	If the RTS fails and the CMR card is on the card list, go to step 19.

18	Perform PM maintenance on the PM currently posted. Go to step 23.
19	Go to step 23.
20	Use the following information to determine the next step in this procedure. If replacing the CMR card for the first time, go to step 12. If not, go to step 22.
21	Monitor the active side of the PM and run diagnostics on the inactive side.
22	Go to step 23.
23	For additional help, contact the person responsible for the next level of support.
24	The procedure is complete.

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