SPM Fault Management

What's new

The following sections detail what is new in SPM fault management (NN10075-911) for release 9.

Features

There were no new features added to this document.

Other changes

There were no other changes made to this document.

Fault management strategy

Alarm reporting system for SPM-based equipment

The alarm reporting system integrates event detection and alarm notification functions. An alarm becomes active when a reduced service, reliability, or test condition occurs in the network or network element. The alarm remains active until a system event or an activity performed by operating company personnel clears the alarm condition. The alarm system includes audible notification and visual display through warning lights and the Maintenance and Administration Position (MAP) terminal.

Equipment alarms and alarm severity codes indicate the effect that a fault or event has on a single piece of equipment. There are three types of alarm severities:

- Critical alarm

  A critical alarm indicates a reduced service condition or complete loss of service. A critical alarm indicates that the system can no longer perform its design function. The alarm condition requires immediate corrective action so that the performance of the system can return to its design function.

- Major alarm

  A major alarm indicates lost redundancy. The next fault of the same type can cause a reduction or complete loss of service. There is no

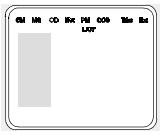
backup if another fault occurs on the active system. This alarm level can be generated when service decreases below a threshold defined by the operating company.

- Minor alarm

  A minor alarm indicates a small loss of redundancy. The next fault of the same type will not cause degradation of service.

For SPM-based equipment, the MAP terminal displays alarm codes in the banner and the subsystem status summary field (SSSF). The alarm banner displays alarm codes that indicate the effect of the alarm event on the network or network element. The SSSF displays alarm codes that indicate equipment faults of system states. The figure below, MAP alarm banner for SIMPLEX alarm, gives an example of a MAP alarm banner for a SIMPLEX alarm.

MAP alarm banner for SIMPLEX alarm



```
CM   MS   IOD  Net  PM   CCS  Lns  Trks  Ext  APPL
.    .    .    .    .    .    .    18 . P .    .
.    .    .    .    .    .    .    *C*   .    .
```

TRKS banner alarms

When no trunk or carrier faults are present, the display format under the TRKS banner appears as three dots (...). The figure below, TRKS banner with no alarms, shows an example of a TRKS banner with no alarms present.

TRKS banner with no alarms

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

If an alarm occurs, depending on the alarm condition, the three dot positions are replaced by:

- Highest level trunk group alarm (preceded by the number of affected trunk groups)
- Low speed carrier alarm
- Highest level SONET carrier in alarm

The figure below, TRKS banner with alarm, shows an example of a TRKS banner with five trunk groups in a critical alarm state, at least one

low speed carrier in an alarm condition, and at least one of the following optical carrier types in alarm condition; OC3S, STS1, or STM1. The notification enclosed with asterisks indicates that a critical alarm is the highest trunk group alarm.

TRKS banner with alarm

```
XAC  MS  IOD  Net  PM  CCS  Lns  Trks  Ext  APPL
.    .   .    .    .   .    .    5CCS  .    .
.    .   .    .    .   .    .    *C*   .    .
```

Highest level trunk group alarm

The first position under the TRKS banner indicates the highest priority alarm for a trunk group in an office. The table below, Position one - trunk group alarm, lists the possible values that appear in this position, depending on the current highest priority alarm. The alarm types are listed in order of priority, from lowest to highest.

> ***Note:*** The procedure, Locating trunk groups in alarm condition, describes the process to identify specific trunk group(s) in alarm condition.

Position one - trunk group alarm

Alarm Index	Alarm Type
B	Busy
E	External
S	System
G	Minor
M	Major
C	Critical

Low speed carrier alarm

The second position under the TRKS banner indicates if a low speed carrier alarm is present in the office. A dot appears when no such alarm is present and the letter C appears when at least one low speed carrier alarm is present.

Highest level SONET carrier in alarm

The third position under the TRKS banner indicates the highest level SONET carrier alarm in the office. The table below, Position three - high speed carrier alarm, lists the possible values that appear in this position, depending on the highest priority SONET carrier level in an alarm condition. The carrier types are listed in order of priority, from lowest to highest.

Position three - high speed carrier alarm

Alarm Index	Carrier Type
S	OC3
	STS1S
	STM1R
P	STS3L
	STS1L
	STM1M
D	STS1P
	STS3cPL
	DDS3P
	VC4P
d	DS1P
	DS1L
	VT15P
	VC12P
	E1P
	E1L

The table below, Possible SysB-causing carrier failures, provides a list of possible failures that could cause a carrier to enter a SysB condition and generate a SONET carrier alarm under the TRKS banner.

Possible SysB-causing carrier failures

Failure	Description
LOS	Loss of Signal
LOF	Loss of Frame
LOP	Loss of Pointer
AIS	Alarm Indication Signal
RFI	Remote Failure Indication
RAI	Remote Alarm Indication
PLM	Payload Label Mismatch
BER SF	Signal Fail Bit Error Rate
BER SD	Signal Degrade Bit Error Rate

Log reports

A log report is a record of a message that your system generates whenever a significant event has occurred in the switch or one of its peripherals. Log reports include status and activity reports, as well as reports on hardware or software faults, test results, changes in state, and other events or conditions likely to affect the performance of the switch. Either a system or a manual action can generate a log report. The figure below, Log report example for SPM630 log, gives an example of an information log.

Log report example for SPM630 log

```
SPM630 Feb 07 10:22:11 4700 INFO Device Protection
Location        SPM: 01 DLC 01
From:           Working
To:             Spare
```

The figure below, Log report example for SPM332 log, shows a REX failure log. The table below, Field values for the SPM332 log., lists the explanations for the fields.

Log report example for SPM332 log

```
SPM332 JAN 24 01:57:54 2112 TBL SPM REX Aborted
SPM: 0          Type: DMSCP
Reason: Stability check on CEM 0 failed
        SYSB in the past 12 hours
```

Field values for the SPM332 log.

Field	Description
SPM REX Aborted	Indicates that the REX test on the SPM node was aborted
Node type	Indicates that the node type for this log is SPM
Node Number	SPM number (range is 0-85)
Type	Indicates the variant of the SPM (valid values are DMSCP, MG4K, IW, and DPT).
Reason	Provides the reason why the REX test was aborted (limited to three lines of text).

TRNSL C command example of different CEM to ENET link states.

Link state:
OK = Available
NA = Not Available
UR = UnReliable
>TRNSL
CEM 0 Link 1: ENET 0 0 14 0; Status: OK
CEM 0 Link 2: ENET 0 0 14 1; Status: OK
CEM 0 Link 3: ENET 0 0 14 2; Status: OK
CEM 0 Link 4: ENET 0 0 14 3; Status: NA
CEM 1 Link 1: ENET 1 0 14 0; Status: OK
CEM 1 Link 2: ENET 1 0 14 1; Status: UR
CEM 1 Link 3: ENET 1 0 14 2; Status: OK
CEM 1 Link 4: ENET 1 0 14 3; Status: OK

OC3 and STM MAP level carrier OOS warnings

A warning appears on the MAP display if an attempted Manual Insv / Mate LOADMOD or Manual / Force command is executed on an OC3 or STM resource module (RM) when one of the following conditions exists:

- a section carrier is SYSB
- a line carrier is SYSB
- a path carrier is SYSB
- an INSV section carrier is in alarm
- an INSV line carrier is in alarm
- carrier datafill is missing for the corresponding RM:
  - OC3 - STS1P
  - STM - VC4P

Executing the command type and overriding the MAP warning generates an SPM686 log.

Tools and utilities

Fault management for alarms and logs is performed through the Maintenance and Administration Position (MAP) terminal.

SPM fault management indicators description

The table below, SPM fault management indicators, provides an overview of the fault management indicators generated by the SPM.

SPM fault management indicators (Sheet 1 of 11)

Log name	Probable cause	Required action
BITS300	A BITS Out of Frame (OOF) alarm has been raised.	None
BITS301	A BITS Timing Link Degradation (TLD) alarm has been set.	None
BITS500	A BITS timing link has had a state change.	None
BITS600	A BITS Out of Frame (OOF) alarm has been cleared.	None
BITS601	A BITS Timing Link Degradation (TLD) alarm has been cleared.	None
BITS610	A BITS timing reference SSM value has changed.	None
BITS612	A BITS timing reference source switch has occurred.	None
CARR300	A carrier failure event cleared.	None
CARR310	A carrier failure event.	None
CARR500	A carrier changes to an in service (InSv) state from manual busy (ManB) or system busy (SysB).	None
CARR501	A carrier changes to central-side busy (CBsy) from ManB or SysB.	Return the parent carrier to service.
CARR510	A carrier changes to ManB from InSv, SysB, or CBsy.	No immediate action is required.
CARR511	A carrier changes to SysB from InSv or CBsy.	If the carrier does not return to service on its own within a reasonable time period, manually return it to service.

SPM fault management indicators (Sheet 2 of 11)

Log name	Probable cause	Required action
CARR512	An OC-3 carrier changes to CBsy from InSv, ManB, or SysB.	Return the corresponding OC-3 RM to service.
CARR800	A threshold crossing alert (TCA) for a metered performance parameter (PP) cleared.	None
CARR810	A TCA for a metered PP occurred.	None
CARR811	A TCA for a non-metered PP occurred.	None
IOAU112	The System REX Controller noted changes to the System REX Controller operation or schedule.	None
LINK300	A DS-512 hostlink is detected as misconnected between the ENET and the SPM-CEM. ***Note:*** Refer to solution level logs to see other possible causes for the LINK300 log.	Check to find out which links are misconnected. • BSY the links from the ENET map • Connect the links from the ENET to correspond correctly with the CEM. The port on the CEM must be exactly as datafilled in table MNLINK. • RTS the MANB links from the ENET map
MTRS100 (Metering component activation log)	The ENABLE_METERING office parameter was changed from N to Y. ***Note:*** MTRS101 is the deactivation log. See below.	None ***Note:*** MTRS100 is a secret log type that is deleted only on reload restarts. MTRS100 is accessed by executing an 'OPENSECRET MTRS' command from LOGUTIL.

SPM fault management indicators (Sheet 3 of 11)

Log name	Probable cause	Required action
MTRS101 (Metering component deactivation log)	The ENABLE_METERING office parameter was changed from Y to N. ***Note:*** MTRS100 is the activation log. See above.	None ***Note:*** MTRS101 is a secret log type that is deleted only on reload restarts. MTRS101 is accessed by executing an 'OPENSECRET MTRS' command from LOGUTIL.
NODE300	A hardware fault has occurred in the RM or CEM.	Refer to log NODE303 and log NODE326 below.
NODE303	Wrong Application DataCore Core Integrated Node Maintenance (INM) detected wrong application data for one of the following reasons: • CEM restarted with wrong application data due to manually initiated Reset/Loadmod/InsvLD. • CEM restarted with wrong application data due to system initiated Reset/Loadmod. • Manual/system initiated RTS (attempt to bring CEM back into service - INSV/ISTB) with wrong application data.	• Perform ABTK followed by BSY if the CEM is in SYSB state. • Check Link300 Logs (if any) to identify misconnected DS-512 links. • Reconnect the misconnected DS-512 links correctly. • Perform Resetmod / Loadmod on the CEM and then RTS the CEM.
NODE326	A hardware fault has occurred in a unit of a node.	For a raised alarm, follow the recommended action .
NODE500	A state change has happened in any of the units of a dual-unit PM.	None

SPM fault management indicators (Sheet 4 of 11)

Log name	Probable cause	Required action
NODE600	INM recovery action log used when an alternate path is used for sending Reset to the local. Connectivity log for intermediate communication of audit failures and when there is a: State mismatch MIP mismatch Trouble mismatch Activity mismatch Available mismatch No response.	None
PRSM400	An SPM loadfile containing SPM PRSU fixes has been datafilled in table PMLOADS.	None
SPM300	Hardware faults in the RMs (clock hardware, RM hardware, or link hardware). There are three severities of problem descriptions: • Info - information only log. • Non-Critical - A Non-Critical fault reported by the active CEM causes the affected RM to change to an ISTB state. • Critical - A Critical fault reported by the active CEM causes the RM to change to a SYSB state and spare, if it is active.	1) Collect sysbuf and /aer/display all from the inactive CEM dshell. 2) Try to remlogin to the RM from the inactive CEM. If this fails, remlogin to the RM from the active CEM. Collect the footprint logs from the RM. 3) BSY/RTS the RM. 4) If the log reoccurs, BSY/RESETMOD/RTS the inactive CEM.

SPM fault management indicators (Sheet 5 of 11)

Log name	Probable cause	Required action
	Faults reported by the inactive CEM affect the RM state when that CEM becomes active, if they are not cleared prior to that CEM becoming active. The problem description field contains a text string indicating which problem occurred. The B-channel is busied or returned to service.	
SPM301	Spectrum Patching After Return To Service (SPARTS) detected a missing patch.	Manually install the missing patch or patches.
SPM310	The performance monitoring process on the CM has received performance data from the SPM as a result of the SPM-based automatic monitoring process.	None
SPM311	A software exception report (SWER) has occurred on the CEM.	Determine the cause of the SWER and take appropriate action.
SPM312	A trap has occurred on the CEM.	Contact the next level of support.
SPM313	A fault has been recorded in the Module Information Memory (MIM) of the SPM.	None
SPM330	The two CEMs have come into datasync or gone out of datasync.	None
SPM331	A device had a protection switch failure.	Follow instructions in the procedure Clearing a PROTFAIL alarm on page 123.

SPM fault management indicators (Sheet 6 of 11)

Log name	Probable cause	Required action
SPM332	The synchronization reference source was switched by manual action, switched by system action, or lost the last synchronization reference in the OC-3 protection group. SPM REX aborted. Reports stability or screening failures for REX operation.	None
SPM333	SPM REX failed. Reasons for an SPM REX failure: • RESET step failed • OOS test step failed • RTS step failed CEM • CEM drops to SYSB or does not come to Insv state during post-RTS wait period • SWACT step failed (either rejected or failed from Local Agent)	None ***Note:*** If the reason in SPM333 is RESET, OOS test, or RTS step, collect NODE500 and NODE600 logs. A SYSB alarm will be raised on the MAP and PM Alarm Banner will be highlighted.
SPM334	An alternate synchronization source is not available and the timing configuration no longer conforms to SONET specifications.	Restore the timing configuration to SONET specifications.
SPM335	A device had a protection switch failure.	Follow instructions in the procedure Clearing a PROTFAIL alarm on page 123.
SPM340	A CM warm switch of activity (SWACT) failed.	Manually busy the SPM and return it to service.
SPM341	An SRM has entered Holdover state.	None
SPM342	An SRM has entered Holdover 24 state.	Follow instructions in the procedure Clearing an LOR alarm on page 98

SPM fault management indicators (Sheet 7 of 11)

Log name	Probable cause	Required action
SPM344	The SRM Loss of BITS Redundancy (LOR) alarm has been set.	None
SPM350	There is the potential for resource exhaustion of a particular resource type. The log is also generated when the alarm is cleared.	When the alarm goes on, provision for extra capacity by adding RMs to the SPM, add another SPM to the office (if the affected SPM is fully loaded), or decrease the call rate on the node.
SPM370	A Health Monitor alarm is raised or a Health Monitor RMM action is taken.	When the status is “Alarm Raised”, investigate the cause. See SPM alarm to log correlation on page 161 for possible causes of the associated alarms. Refer to the SPMCP (SPM call processing) commands in the Security and Administration document, NN10163-611 for additional information. ***Note:*** When the status is “Info”, no action is required.
SPM399	Generates when an SPM-based node enters or leaves an overload condition caused by peak traffic levels that are in excess of the SPM engineering limit.	Follow the action listed in the log. Possible actions are: • check SPMACT and SPMOLVD OMs • contact the next level of support • none
SPM500	A device has changed state.	None
SPM501	The clock mode has changed (clock modes are sync, freerun, holdover, or acquire).	None
SPM510	Sync reference switch indicating that a clock sync source has changed.	None

SPM fault management indicators (Sheet 8 of 11)

Log name	Probable cause	Required action
SPM600	The message switch (MS) has changed modes and is unable to notify the in-service SPM of the mode change.	None
SPM605	SPMRESALIGN command excluded a particular RM protection group from alignment due to: • PWID duplication, • RM in invalid state • Sparing failure	This is an info only log with no associated alarm. Refer to the screen output for appropriate action.
SPM610	An SPM node SSM value has changed.	None
SPM611	A reference node switch has occurred.	None
SPM625	Generates if an audit detects a node that is not configured for crossover. The audit runs automatically every day at 0900 to check DS-512 connected SPM nodes for crossover message channel configuration.	It is advisable to configure any SPM nodes listed in the log for Message Channel Cross-Over Mode in order to ensure node stability.
SPM630	A successful sparing event has occurred.	None
SPM632	SPM REX Info. A log generated to record the start time of REX operation.	None
SPM633	SPM REX Success. A successful REX operation has occurred. ***Note:*** Node 500 logs report state changes on the CEM during REX tests.	None
SPM641	An SRM has exited Holdover state.	None
SPM642	An SRM has exited Holdover24 state.	None

SPM fault management indicators (Sheet 9 of 11)

Log name	Probable cause	Required action
SPM644	The SRM Loss of BITS Redundancy (LOR) alarm has been cleared.	None
SPM645	Link Protocol & Messaging Interface Controller (LPMIC) Event Report. The purpose of the SPM645 log is for collecting messaging event stats. This log is generated on every CEM and transported to the core. The log is generated periodically and whenever the number of events crosses a threshold value.	None (This is an information log)
SPM650	A successful in-service loading procedure has occurred.	None
SPM651	An in-service loading procedure has failed.	Reload the circuit pack.
SPM660	A continuous performance monitored trunk member was involved in an answered echo cancellor call. This log reports the performance data.	None
SPM661	A continuous monitoring ON/OFF command or an SPMECMON AUTO command has completed successfully.	None
SPM670	A Health Monitor event clears.	None (This is an information log)
SPM680	Low MBM Application Buffers An application is close to exceeding a limit set with Message Buffer Manager (MBM).	None (This is an information log.)
SPM681	Low MBM Buffer Pool A Message Buffer Manager (MBM) buffer pool is almost out of buffers.	None (This is an information log.)

SPM fault management indicators (Sheet 10 of 11)

Log name	Probable cause	Required action
SPM684	The Erase Flash information log indicates when the Erase Flash command: • is initiated • is completed • failed • is rejected	None (This is an information log) The log displays the CEM and SPM number on which the Erasefl command is executed, and the userid initiating the command.
SPM686	Generates when a Manual Insv / Mate LOADMOD or Manual / Force command is executed on an OC3 resource module (RM) when one of the following conditions exists: • a section carrier is SYSB • a line carrier is SYSB • a path carrier is SYSB • an INSV section carrier is in alarm • an INSV line carrier is in alarm • carrier datafill is missing for the STS1P	Follow the recommended action in the log report.
SPM700	A DDM audit has failed for an SPM subgroup.	None
SPM701	A DDM audit has successfully updated an SPM subgroup.	None
SPM702	A DDM dynamic update has failed for an SPM subgroup.	The problem is cleared during the next audit cycle. It can be cleared earlier by using the SGRPUDATE subcommand of the SPMPTSCI tool.
SPM703	A DDM audit has updated an SPM trunk member with a data entry for a trunk that failed to be added during a dynamic update.	None
SPM704	A DDM dynamic update has failed for an SPM trunk member.	None

SPM fault management indicators (Sheet 11 of 11)

Log name	Probable cause	Required action
SPM705	A trunk has been set to a lockout (LO) or SysB state.	See Actions for SPM705 log on page 28 for the list of actions.
SPM706	A trunk has returned to service from a LO state.	None
SPM707	A dynamic update has failed for the ISDNPARM table.	None
SPM708	The DDM audit has updated the ISDNPARM table.	None
SPM709	A dynamic update has failed for the ISDNPROT table.	None
SPM710	The DDM audit has updated the ISDNPROT table.	None
SPRF670	Initiated by the user in the SPERFORM process to report the data for the SPM activity (SPMACT) tool.	None
SPRF671	Initiated by the user in the SPERFORM process to report the data for the SPM usage (SPUSAGE) tool.	None

SPM Logs

Log NODE303 format

Log NODE303 reports Wrong Application Data. This means that the CEM in slot 7 of the SPM is getting application data for CEM1, and the CEM in slot 8 is getting application data for CEM 0. Node303 displays actions required in response to this. The table below, Log NODE303 fields, describes the fields and their

Note: The CEM cannot Return to Service with Wrong Application Data.

Example of Log NODE303 format

```
NODE 303 **<mmmdd hh:mm:ss> <ssdd> TBL Wrong
Application Data
Location: <NODE>
```

```
Trouble: CEM has Wrong Application Data
Action:  Check and re-connect DS-512 Links correctly
Integrated Node Maintenance Detailed Information
Trouble Reason: DS-512 Link/Links may be misconnected
Trouble Detail: CEM in Slot <slot_number(7 or 8)> has
Application Data of CEM <cem_number(0 or 1)>
```

Log NODE303 fields

Field	Description
TBL	Indicates the trouble condition with the node.
Wrong Application Data	Indicates that the information to follow is about Wrong Application Data on the node.
Location	Indicates the location of the peripheral event to which the event applies.
Trouble	Identifies the type of problem.
Action (User)	Indicates the suggested user action.
Trouble Reason	Indicates the reason for the trouble condition.
Trouble Detail	Provides more information about the trouble condition.

Log NODE600

Log NODE600 provides information about a system recovery action.

Example of Log NODE600 format

```
RSN06AUINDY1 NODE 600 NOV20 13:55:13 9100 INFO System
Recovery Action
         Location: SPM 1 Unit 0
          System recovery is in progress
           Integrated Node Maintenance Detailed
Information
                Initiating INM PMReset FSM
              Information for analysis, no immediate
action required
```

If an alternate path is used by the INM to send the Reset to the CEM, the NODE600 log displays the alternate path.

```
RSN06AUINDY1 NODE 600 NOV20 13:55:13 9100 INFO System
Recovery Action
          Location: SPM 1 Unit 0
           System recovery is in progress
            Integrated Node Maintenance Detailed
Information
                  Initiating INM PMReset Via Mate FSM
                Information for analysis, no immediate
action required
```

The following table provides failure reasons related to the NODE600 log.

NODE600 log failure reasons

Failure reason	Explanation
Activity mismatch	The Active trait is available when the architecture of the INM is not load-shared. Failure occurs when the Core's and CEM's Active traits do not match. ***Note:*** Core refers to DMS CM in legacy TDM networks and Call Server in Carrier Voice over IP networks.
Available mismatch	The Core thinks the CEM is not responding, but the CEM is actually responding to the signals from the Core.
MIP mismatch	The Core's and CEM's MIP traits do not match.
No response	The CEM is not responding to the signals from the Core. The no response case is known as a Communication (COMM) Audit failure.
State mismatch	The Core and CEM's maintenance status do not match.
Trouble mismatch	A Trouble mismatch occurs when the Core's and CEM's Trouble trait does not match

Log SPM300 Format

Log SPM300 reports a device fault.

Example of Log SPM300 format

```
SPM 300 ** <mmmdd hh:mm:ss> <ssdd> TBL Device Fault
Report
Location: <NODE> <DEVICE>
            Status      : Alarm Raised
            Problem Description: Critical
             7A: Check messaging: Inactive CEM to RM
loopback test timeout.
            Action      : Refer to NTPs for Alarm
Clearing Procedures.
            Cardlist    :
              No Cardlist Available.
```

Log SPM300 fields

Field	Description
TBL	Indicates the trouble condition with the node.
Device Fault Report	Indicates that the information to follow is a device fault report on the indicated device.
Location	Indicates the location of the peripheral event and device to which the event applies.
Status	Indicates whether the alarm is raised or cleared.
Problem Description	Indicates the type of fault (Info, Non-critical, Critical) along with the information on which CEM reported the fault and a text string indicating what fault occurred.
Action (User)	Indicates the suggested user action.
Cardlist	Indicates the cards to be replaced.

Log SPM300 Problem Descriptions

The table below, SPM300 log problem descriptions, provides details for the problem descriptions in the SPM300 log.

SPM300 log problem descriptions

Failure reason	Explanation
Check messaging: Inactive CEM to RM loopback test timeout	This log indicates that there is a problem communicated to the indicated RM from the inactive CEM. If the inactive CEM becomes active while this condition exists, the RM will go SYSB. If this log occurs: 1) Collect sysbuf and /aer/display all from the inactive CEM dshell. 2) Try to remlogin to the RM from the inactive CEM. If this fails, remlogin to the RM from the active CEM. Collect the footprint logs from the RM. 3) BSY/RTS the RM. 4) If the log recurs, BSY/RESETMOD/RTS the inactive CEM.

Log SPM332 Problem Descriptions

The table below, SPM332 log - REX test failure, provides details for the problem descriptions in the SPM332 log.

SPM332 log - REX test failure (Sheet 1 of 3)

Failure reason	Explanation
Node not in InSv/IsTb state	Stability check on node failed. <Node state> state SPM REX aborted
CEM not in InSv state, RM not in InSv/MANB/OFFL state	Stability check on <CPK type> <CPK no:> failed. <CPK state> state SPM REX aborted
CEM/RM having a non-state alarm	Stability check on <CPK type> <CPK no:> failed. <Alarmid> alarm SPM REX aborted

SPM332 log - REX test failure (Sheet 2 of 3)

Failure reason	Explanation
Protection group having an alarm	Stability check on <Prt grp type> <Prt grp id> failed. <Alarmid> alarm SPM REX aborted
Node having a non-state alarm	Stability check on node failed. <Alarmid> alarm SPM REX aborted
CM SWACT has occurred in the past 12 hours	CM SWACTed in the past 12 hours. Stability database may be stale. SPM REX aborted
CEMs do not have the same running load	CEM 0 and CEM 1 do not have the same load. SPM REX aborted
CEM/RM has been in ISTB/SYSB state in the past 12 hours	Stability check on <CPK type> <CPK no> failed. <CPK state> in the past 12 hours SPM REX aborted
CEM/RM had an alarm raised in the past 12 hours	Stability check on <CPK type> <CPK no> failed. <Alarm name> alarm in the past 12 hours SPM REX aborted
CEM/RM has been in Patched/Loaded/Provisioned within the stability period	Stability check on <CPK type> <CPK no> failed. <Event name> in the past <stability period> hours SPM REX aborted
Node had an alarm raised in the past 12 hours	Stability check on node failed. <Alarm id> alarm in the past 12 hours SPM REX aborted
Protection group had an alarm raised in the past 12 hours	Stability check on protection group failed. <Grp type> <Grp id> <Alarm id> alarm in the past 12 hours SPM REX aborted

SPM332 log - REX test failure (Sheet 3 of 3)

Failure reason	Explanation
Long duration maintenance activity in progress on RM	Long Maintenance activity on <RM type> <RM no>. SPM REX aborted
Long duration maintenance activity in progress on CEM	CEM <CEM no>. Long maintenance activity in progress. SPM REX aborted
REX test aborted by manual ABTK command from CEM MAP level	REX test aborted manually. SPM REX aborted
REX test aborted by the system REX	REX test aborted by the system. SPM REX aborted

Log SPM605 Format

Log SPM605 reports that the SPMRESALIGN command did not align an RM group.

Example of Log SPM605 format

```
a) PWID Duplication

SPM605 MAR25 05:06:48 3004 INFO RMID-PWID Alignment
     Prot group   : SPM 3 VSP
     Prot grp id  : 1
     Result       : Not Aligned
     Reason       : PWID duplication.
     Action       : Rectify the duplication and
execute SPMRESALIGN

b) Any RM in invalid state

SPM605 MAR25 05:06:48 3004 INFO RMID-PWID Alignment
     Prot group   : SPM 3 VSP
     Prot grp id  :1
     Result       : Not Aligned
     Reason       : VSP 1 not in ISV/ISTB.
     Action       : Bring this RM to INSV and execute
SPMRESALIGN

c) Sparing failure
```

```
SPM605 MAR25 05:06:48 3004 INFO RMID-PWID Alignment
     Prot group   : SPM 3 VSP
     Prot grp id  : 1
     Result       : Not Aligned
     Reason       : Unsuccessful sparing
            Action : Review the logs related to
sparing.
```

Log SPM680 format

Log SPM680 reports low MBM application buffers.

Example of Log SPM680 format

```
SPM 680 ** <mmmdd hh:mm:ss> <ssdd> INFO MBM Appl Low
SPM: 11 CEM   0:     A
Application: GTMPOOL                Buffer Size: 1024
Normal:    10   Peak:           10 Mtc Trigger:    0
In Use:     0   Hi Water:        1
-------------------------------------------------
Pool    Number   In Use   Hi Water        In Use By
Size   Buffers    Total       Mark      Application
-------------------------------------------------
  64         0        0          0                0
 128        67        0          1                0
 256        21        0          0                0
 512         0        0          0                0
1024        14        0          0                1
2048       173       39         44                4
```

The table below, SPM680 log fields, provides more information on log SPM680.

SPM680 log fields (Sheet 1 of 2)

Field	Value	Description
Location	SPM #	The SPM node number
Device	Device name (for example, CEM, ATC, OC3)	The device that is reported to have the problem
(Role)	Active / Inactive / Spare	The role of the device

SPM680 log fields (Sheet 2 of 2)

Field	Value	Description
Application	Up to 10 ASCII characters	This is the suspect application
Buffer Size	Buffer size in Bytes (64, 128, 256, 1024, 2048)	Subscribed buffer size
Normal	Integer	Subscribed normal number of buffers used
Peak	Integer	Subscribed peak number of buffers used
MTC Trigger	Integer	Buffer usage after which a maintenance action is triggered
In use (total)	Integer	The total number of buffers currently in use in the pool
Hi Water mark	Integer	The total number of buffers ever in use in the pool
Detailed record table (described below)		There is one entry per Pool Size used by the application
Pool Size	Pool size in Bytes (64, 128, 256, 1024, 2048)	The buffer size of the pool
NumBuffers	Integer	The total number of buffers in the pool
In use total	Integer	The total number of buffers in use in the pool
Hi Water mark	Integer	The total number of buffers ever in use in the pool
In Use by Application	Integer	The total number of buffers in use by the application in the pool

Log SPM681 format

Log SPM681 reports low MBM application buffers.

Example of Log SPM681 format

```
SPM 681 ** <mmmdd hh:mm:ss> <ssdd> INFO MBM Pool Low
SPM: 11 CEM   0 :     A
Pool Size: 2048   Num Buffers: 173
In Use:       10   Hi Water:      44
-------------------------------------------------
Application   In Use Normal       Peak      Mtc Trig
-------------------------------------------------
GTMPOOL             4       0          0             0
MTSNS               1       0          0             0
MBMPOOL             0       0          0             0
MTSTEST             0       0          0             0
FTSRMSM             0       0          0             0
```

The table below, SPM681 log fields, lists the fields and explanations for log SPM681.

SPM681 log fields (Sheet 1 of 2)

Field	Value	Description
Location	SPM #	The SPM node number
Device	Device name (for example, CEM, ATC, OC3)	The device that is reported to have the problem
(Role)	Active / Inactive / Spare	The role of the device
Pool Size	Pool size in Bytes (64, 128, 256, 1024, 2048)	The buffer size of the pool
NumBuffers	Integer	The total number of buffers in the pool
In use	Integer	The total number of buffers currently in use in the pool
Hi Water mark	Integer	The total number of buffers ever in use in the pool

SPM681 log fields (Sheet 2 of 2)

Field	Value	Description
Detailed record table (described below)		There are up to five detailed records for the top five users.
Application	Up to 10 ASCII characters	The suspect application
In use (total)	Integer	The total number of buffers in use in the pool
Normal	Integer	Subscribed normal number of buffers used
Peak	Integer	Subscribed peak number of buffers used
MTC Trigger	Integer	Buffer usage after which a maintenance action is triggered

Log SPM705 actions

The table below, Actions for SPM705 log, provides actions related to the SPM705 log.

Actions for SPM705 log (Sheet 1 of 3)

If the reason text is	And the trunk state is	Take this action
AB Bit Packed Slink (OC3 - DSP) not connected	LO	Unable to make the timeswitch connection between the OC3 and the DSP. Try to make this connection on every trunk RTS. If the problem persists, call Nortel's second level of support.
CM transaction pool temporarily exhausted	SB	Too many trunk RTS commands were issued simultaneously. Either BSY the trunks in SB state and RTS them, or wait for the CM audit to recover the trunks.

Actions for SPM705 log (Sheet 2 of 3)

If the reason text is	And the trunk state is	Take this action
DSP with AB Bit resources went out of service	LO	Correlate this log with an SPM500 log to determine the faulty DSP. This log is generated when a DSP goes out of service, and there is no DSP spare defined or sparing failed. In all cases, any calls using that DSP are dropped. An automatic trunk recovery is attempted. An SPM706 log is generated in case of a successful recovery; or an SPM705 log with reason set to 'Not enough DSP AB Bit resources in service' is generated in case of failure.
Internal SPM messaging failure	SB	Check for SPM SWERRs. If the problem persists, call Nortel's second level of support.
No reply from SPM	SB	Received a No reply within the time-out period (that is, 15 seconds). Either BSY and RTS all affected trunks or let the CM trunk audit (performed every 15 minutes) recover the trunks automatically.
Not enough DSP AB Bit resources in service	LO	The system configuration must allow one AB Bit resource (defined in table MNCKTPAK) defined for each DS1 with PTS trunks. However, there is no need to define AB Bit resources for DS1s without PTS trunks. This log is generated if the DSP configured with AB Bit resources is not in service during trunk RTS.
Robbed Bit Signaling not enabled in OC3 RM	LO	If the setting for Robbed Bit Signaling (RBS) is detected as not enabled, try to enable RBS in the OC3 on every trunk that is being RTS. If the problem persists, call Nortel's second level of support.
Robbed Bit Signaling not initialized in DSP RM	LO	Failed to send the initialization message to the DSP. Try to resend this message to the DSP for every trunk that is being RTS. If the problem persists, call Nortel's second level of support.

Actions for SPM705 log (Sheet 3 of 3)

If the reason text is	And the trunk state is	Take this action
Trunk not provisioned in the SPM	SB	Deprovision the trunk from table TRKMEM and then reprovision it.
Trunk subgroup data not found	SB	Enter directory SPMPTSCI. Under this directory, enter the SGRPUPDATE or the SGRPBUILD command to update the SPM.

Use this procedure to view alarms on a Spectrum Peripheral Module (SPM).

Viewing alarms on the SPM

At the MAP level

1 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM          7        2        2        2        9       16
 SPM          0        2        1        0        0        0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

2 Display alarms on the RMs on the SPM:

```
>QUERYPM FLT
```

3 Display alarms on the SPM:

```
>LISTALM
```

4 Follow the instructions in the procedures in this document to clear any alarms you see.

Locating trunk groups in alarm condition

The top level MAPCI TRKS banner reports trunk groups in alarm condition for an entire office. The following example shows a TRKS banner with five trunk groups in a critical alarm state. The highest level alarm is critical.

```
XAC   MS   IOD   Net   PM   CCS   Lns   Trks   Ext   APPL
.     .    .     .     .    .     .     5CCS   .     .
.     .    .     .     .    .     .     *C*    .     .
```

This procedure describes the method to locate a trunk group in an alarm condition.

The Variable abbreviations table defines the variables used in this procedure.

Variable abbreviations (Sheet 1 of 2)

Variable	Options	Definition
trk_typ		The trunk group type consisting of one of the following:
	TWOWY	Two way trunk group
	ITG	Incoming trunk group
	OTG	Outgoing trunk group
	MISC	Miscellaneous trunk group
alrm_typ		The trunk group alarm types listed below in the order of increasing severity:
	MB	At least one trunk in the group is Man Busy
	EX	At least one trunk in the group is External Busy (RMB, CFL, LO)
	SB	At least one trunk in the group is System Busy (PMB, SB)
	G	The trunk group exceeded the minor alarm threshold

Variable abbreviations (Sheet 2 of 2)

Variable	Options	Definition
	GM	At least one trunk in the group exceeded the major alarm threshold
	GC	At least one trunk in the group exceeded the critical alarm threshold

This procedure requires you to press the Enter key after typing a command.

Locating trunk groups in alarm condition

At the MAP terminal

1 Enter the TRKS level menu:

```
>MAPCI;MTC;TRKS
```

2 Access the trunk status level:

```
>STAT
```

Example of a MAP screen

```
 XAC      MS       IOD    Net     PM     CCS     Lns     Trks     Ext      APPL
Split   02SBPT  NO AMA     .   2 SPM      .       .      5CC.   1Crit      .
                  *C*           *C*                      *C*      *C*

          TWOWY         ITG          OTG         MISC
           3GC           1GC          1GC           .

ITEM  TYPE   A      COMLANG      TOT     SB     MB     EX     %OS
 STAT:
```

3 Display the trunk groups in alarm state, based on trunk and alarm type:

```
>DISPGRP trk_typ alrm_typ
```

Example of a MAP screen

```
 XAC      MS       IOD    Net     PM     CCS     Lns     Trks     Ext      APPL
Split   02SBPT  NO AMA     .   2 SPM      .       .      5CC.   1Crit      .
                  *C*           *C*                      *C*      *C*

          TWOWY         ITG          OTG         MISC
           3GC           1GC          1GC           .

ITEM  TYPE   A      COMLANG      TOT     SB     MB     EX     %OS
 DISPGRP TWOWY GC
0     2W      GC S3D0PRI           23      0     23      0    100
1     2W      GC ISUP_TO_RTPG      24      0      0     24    100
2     2W      GC S3S3PRIOG1       119      0    119      0    100
```

4 Return to the CI level:

```
>QUIT ALL
```

5 You have completed this procedure.

Use this procedure to clear an AIS alarm.

Clearing an AIS alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Post each SPM carrier circuit with an alarm:

>POST SPM <spm_no> <ckt_no>

where

spm_no
is the number of the SPM (0 to 85)

ckt_no
is the number of the circuit (0 to 181)

Example of a MAP screen:

```
STS1P
N  CLASS   SITE SPM STS1P  DS3P VT15P  DS1P CKT STATE  MA
0  HSCARR HOST  20     2     -     -     -  33 InSv   --


SIZE OF POSTED SET  :  30                        MORE...
```

5 Test the carrier:

>TST <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

6 Determine whether the carrier signal is valid.

If the test result shows	Do
test passed	step 9
test failed	step 7

7 Troubleshoot the carrier circuit according to your company procedures. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits.

8 List the alarms on the carrier:

>LISTALM <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

If the alarm list shows	Do
None	step 18
AIS	step 9

9 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
          SysB     ManB     OffL     CBsy     ISTb     InSv
PM        1        1        1        3        2        12
```

10 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
          SysB     ManB     OffL     CBsy     ISTb     InSv
PM          7        2        2        2        9        16
SPM         0        2        1        0        0         0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

11 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act   InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10  Prot Grp : 1
Default Load: SPMLOAD                          Prot Role: Spare
```

12 Access the protection level of the MAP screen:

>PROT

13 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

14 Return to the carrier level of the MAP screen and list the alarms on the carrier:

>LISTALM <carrier_no>

15 Determine whether the alarm has cleared.

If the alarm list shows	Do
AIS	step 16
None	step 18

16 Replace the OC3 module. When you have completed the procedure, go to Step 18.

17 For further assistance, contact the personnel responsible for the next level of support.

18 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Clearing a BERSD alarm

Use this procedure to clear a BERSD alarm on a carrier.

Clearing a BERSD alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM         7       2       2       2       9      16
 SPM         0       2       1       0       0       0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10  Prot Grp : 1
Default Load: SPMLOAD                          Prot Role: Spare
```

6 Access the protection level of the MAP screen:

>PROT

7 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm.

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

8 Return to the carrier level of the MAP screen and list the alarms on the carrier:

```
>LISTALM <carrier_no>
```

where

carrier_no
is the number of the carrier (0 to 4)

9 Determine whether the alarm has cleared.

If the alarm list shows	Do
BERSD	step 12
None	step 10

10 Replace the OC3 module. When you complete the card replacement procedure, return to this point.

11 List the alarms on the carrier:

```
>LISTALM <carrier_no>
```

If the alarm list shows	Do
None	step 15
BERSD	step 14

12 Troubleshoot the carrier circuit according to your company procedures. When you complete the troubleshooting procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits.

13 List the alarms on the carrier:

```
>LISTALM <carrier_no>
```

If the alarm list shows	Do
None	step 15
BERSD	step 14

14 For further assistance, contact your next level of support.

15 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a BERSF alarm on a carrier.

Clearing a BERSF alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM         7       2       2       2       9      16
 SPM         0       2       1       0       0       0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10  Prot Grp : 1
Default Load: SPMLOAD                          Prot Role: Spare
```

6 Access the protection level of the MAP screen:

>PROT

7 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm.

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

8 Return to the carrier level of the MAP screen and list the alarms on the carrier:

>LISTALM <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

9 Determine whether the alarm has cleared.

If the alarm list shows	Do
BERSF	step 12
None	step 10

10 Replace the OC3 module. When you complete the card replacement procedure, return to this point.

11 List the alarms on the carrier:

>LISTALM <carrier_no>

If the alarm list shows	Do
None	step 15
BERSF	step 14

12 Troubleshoot the carrier circuit according to your company procedures. When you complete the troubleshooting procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits.

13 List the alarms on the carrier:

>LISTALM <carrier_no>

If the alarm list shows	Do
None	step 15

If the alarm list shows	Do
BERSF	step 14

14 For further assistance, contact the personnel responsible for the next level of support.

15 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear any of the following SRM BITS level alarms:

- AIS
- BPV
- CRC
- LOS
- MTIE
- OOF
- TLD

Clearing a BITS level alarm

At the MAP level

1 Access the Maintenance level of the MAP:

```
>MAPCI;MTC
```

Example of a MAP screen:

```
 CM        MS     IOD   Net      PM     CCS     Lns     Trks    Ext    APPL
CM Flt   Clock     .   RExSch   1 SPM    .       .      ...      .      .
  M        M                     M
```

2 Note the number of SPMs with alarms and their severity by looking under the PM column.

3 Based upon the severity of the alarmed SPMs, post all SPMs with that severity:

```
>MAPCI;MTC;PM;POST SPM <severity>
```

where

severity
is the alarm severity from step 2 (minor, major, or critical)

Example

```
>MAPCI;MTC;PM;POST SPM minor
```

Example of a MAP screen:

```
           SysB     ManB     OffL     CBsy     ISTb     InSv
  PM         0        0        2        0        0       27
 SPM         0        0        1        0        0       20

SPM   11 ISTb  Loc: Site HOST Floor  1 Row P FrPos 2

Shlf1 Sl A Stat Shlf1 Sl A Stat Shlf2 Sl A Stat Shlf2 Sl A Stat
DSP 2 1 A Insv CEM 1 8 I Insv VSP 2 1 A Insv --- - 8 - ----
DSP 4 2 A Insv OC3 0 9 A Insv --- - 2 - ---- VSP 6 9 A Insv
--- - 3 I Insv OC3 1 10 I Insv --- - 3 - ---- --- - 10 - ----
--- - 4 I Insv --- - 11 - ---- --- - 4 - ---- --- - 11 - ----
--- - 5 - ---- --- - 12 - ---- --- - 5 - ---- --- - 12 - ----
SRM 0 6 A ISTb --- - 13 A Insv --- - 6 - ---- --- - 13 - ----
CEM 0 7 A Insv VSP 4 14 A Insv --- - 7 - ---- --- - 14 - ----
```

4 List the alarms on the posted SPM:

>LISTALM

Example of a MAP screen:

```
ListAlm: SPM 11

SEVERITY    ALARM    ACTION
---------------------------
Critical    None
Major       None
Minor       ISTB       RPT
No_Alrm     None
```

5 Use the result of step 4 to trace the fault to the SRM.

If the alarm is	Do
being generated by the SRM	step 7
not being generated by the SRM	step 6

6 Post the next SPM:

>NEXT

then return to step 4.

7 Select the SRM:

>SELECT SRM 0

where

Example of a MAP screen:

```
SPM   11 SRM   0  Act    SysB
Interface :
Loc : Row A  FrPos  4 ShPos  6 ShId 0 Slot 6 Prot Grp : 1
Default Load: SYN16BF                        Prot Role: Working
```

8 List alarms on the selected SRM:

>LISTALM

Example of a MAP screen:

```
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       LOR         RPT
Minor       None
No_Alarm    None
```

9 Post the BITS MAP level of the selected SRM:

>BITS

Example of a MAP screen:

```
         SysB    ManB    OffL    CBsy    ISTb    InSv
PM          0       0       7       0       5       2
SPM         0       0       0       0       4       0
   SRM      0       0       0       0       1       0

SPM   11  SRM   0
LinkNo   BitsName    Status    State    SSM    Alarm
    0    BITSA       Act       SYSB     PRS      .
    1    BITSB       InAct     SYSB     DUS      .
    2    BITSOUT               Uneq     NIL
```

10 List alarms on the BITS links:

>QRYALM all

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 11   SRM 0
Link   : BITSA
SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major        TLD          RPT
Minor        None
No_Alarm     None
Alarm Reason(s): FREQ

Link   : BITSB
SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None

Link   : BITSOUT
SEVERITY    ALARM      ACTION
------------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None
```

11 Busy the alarmed BITS link:

>BSY <link_no>

where

link_no
is the BITS link number (0 to 2)

12 Wait until the BITS link status is MANB. Then return the link to service:

>RTS <link_no>

where

link_no
is the BITS link number (0 to 2)

13 Return to the SRM level:

>QUIT

14 List alarms on the SRM:

```
>LISTALM
```

If the alarm	Do
is cleared	step 24
is not cleared	step 15

At the MAP level

15 Access the Clock level of the MS:

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

Example of a MAP screen

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

SPM                    Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit                MS 0       .     Master         F                     . .
 2                     MS 1       .     Slave          F                     . .
 3
 4 SwCarr              Shelf 0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
 5                     Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 6 Tst_                Chain           |     |
 7                     MS 0  . . . . . I - - I - - - - - - - - . - - . . . . . .
 8                     MS 1  . . . . . I - - I - - - - - - - - F - - . . . . . .
 9
10 Sync                Card 02 Alm Stat %Adj Src | Car Stat Sp PM     RMTyp SSM
11 DpSync              MS 0  .  .  Lkg +08.6 Lk0 | Lk0 Lck   - SPM 031 SRM  PRS
12 SwMast              MS 1  .  .  Syn -00.8 Ms0 | Lk1 Smp   - SPM 030 SRM  ST3
13 Card_               Links Slipping:  NA   out of  NA
14 QueryMS             MTC:
15                     MS:
16                     SHELF:
17                     CLOCK:
18 Adjust_

   14:12 >
```

16 Determine if the SPM with the alarmed SRM is providing timing for the MS by looking at the SPM number under the PM column.

If the SPM	Do
is providing timing	step 17
is not providing timing	step 18

17 Perform a node reference switch:

```
>SWCARR
```

At the SRM level

18 Clear any faults on the Timing Signal Generator (TSG) using the appropriate procedures.

If the BITS link alarm	Do
still exists	step 19
clears	step 24

19 Swap the BITS link inputs at the wire wrap terminal of the SRM.

If the BITS link alarm	Do
still exists on the link	step 20
moves to the other link	step 21
clears	step 24

20 Swap the BITS link output connections at the TSG.

If the BITS link alarm	Do
still exists on the link	step 22
moves to the other link	step 21
clears	step 24

21 Replace the BITS link cable.

If the BITS link alarm	Do
still exists on the link	step 22
clears	step 24

22 Replace the SRM using the appropriate procedure.

If the BITS link alarm	Do
still exists on the link	step 23
clears	step 24

23 For further assistance, contact the personnel responsible for the next level of support.

24 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing a CLKOOS alarm

Use this procedure to clear a clock-out-of-service (CLKOOS) alarm.

Clearing a CLKOOS alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

2 Display all the inservice-trouble (ISTb) SPMs:

```
>DISP STATE ISTb SPM
```

3 Post each ISTb SPM:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9       16
  SPM         0        2        1        0        1        0

SPM   11 ISTb  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ISTb  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

4 Select the ISTb common equipment module (CEM):

```
>SELECT CEM <cem_no>
```

where

cem_no
is the number of the ISTb CEM (0 or 1)

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
```

5 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       CLKOOS         RPT
Minor       None
No_Alarm    None
```

6 Record the number of each SPM exhibiting the CLKOOS condition.

7 Access the MTC level of the MAP screen:

>MAPCI;MTC

8 Check the alarm banner and determine whether there is an MS clock alarm.

If there is	Do
an MS clock alarm	step 9
not an MS clock alarm	step 10

9 Clear the MS clock alarm using the appropriate alarm clearing procedures. When you have completed the procedures, go to Step 13.

10 Access the CARRIER level of the MAP screen:

```
>MAPCI;MTC;TRKS;CARRIER
```

11 Post the SPM number for the SPM that is raising the CLKOOS alarm:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM

This takes you directly to the OC3S level for the alarmed SPM.

12 Determine whether OC3 carriers are in-service.

If OC3 carriers are	Do
in-service	step 15
not in-service	step 13

13 Restore OC3 carrier signals.

Note 1: Contact your next level of support if you are not familiar with the network procedures required to restore OC3 clock signals.

Note 2: The CEM sync circuitry uses the STS3L carrier for synchronization, not the OC3. For proper clearing of the CLKOOS condition, OC3 and STS3L carriers must be in-service.

14 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 33
CLKOOS	step 15

15 Access the STS3L carriers:

```
>NEXT
```

16 Determine whether STS3L carriers are in-service

If STS3L carriers are	Do
in-service	step 19
not in-service	step 17

17 Restore the STS3L carrier signals.

Note 1: Contact your next level of support if you are not familiar with the network procedures required to restore OC3 clock signals.

Note 2: The CEM sync circuitry uses the STS3L carrier for synchronization, not the OC3. For proper clearing of the CLKOOS condition, OC3 and STS3L carriers must be in-service.

18 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 33
CLKOOS	step 19

19 Determine if sync fault condition is present on the downstream equipment driving the OC3 into the SPM.

If sync fault condition is	Do
present	step 20
not present	step 22

20 Clear sync fault condition on downstream equipment driving the OC3 into the SPM.

Note: Once a sync fault condition is corrected, the SPM clears the CLKOOS condition, but there will be a delay of between 20 and 40 minutes while the SPM evaluates the stability of the OC3 carrier frequency.

21 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 33
CLKOOS	step 22

22 Force the CEMs to switch activity:

```
>PROT;FORCE;QUIT
```

23 Select the active (A) CEM:

```
>SELECT CEM <cem_no>
```

where

cem_no
is the number of the active CEM (0 or 1)

24 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 25
CLKOOS	step 28

25 Force the CEMs to switch activity:

```
>PROT;FORCE;QUIT
```

26 Select the active (A) CEM:

```
>SELECT CEM <cem_no>
```

where

cem_no
is the number of the active CEM (0 or 1)

27 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major       CLKOOS         RPT
Minor       None
No_Alarm    None
```

If the alarm list shows	Do
None	step 33
CLKOOS	step 28

28 Select the active OC3 module:

>SELECT OC3 <oc3_no>

where

oc3_no
is the number of the active OC3

Example of a MAP screen:

```
            SysB       ManB     OffL     CBsy     ISTb      InSv
 PM            1          2        4        0        6         2
 SPM           0          2        2        0        1         1
  OC3          0          0        2        0        0         0

SPM 5      OC3 0   Act

Loc  : Row D  FrPos  6  ShPos  6  ShId 0 Slot  9 Prot Grp : 1
Default Load:  SPMLOAD                          Prot Role : Working

POST:
OC3:
```

29 List the protection status of the OC3 modules:

>PROT

Example of a MAP screen

```
 SPM   5   ISTb
Prot Grp: OC3_GRP 1     Mode: Non-revertive   Schema: one_plus_one
SH0 U R A Stat   Sh0 U R A Stat  Sh1 U R A Stat    Sh1 U R A Stat
1 -- - - ----    8 -- - - ----   1 -- - - ----     8 -- - - ----
2 -- - - ----    9 -- - - ----   2 -- - - ----     9 -- - - ----
3 -- - - ----   10 -- - - ----   3 -- - - ----    10 -- - - ----
4 -- - - ----   11 -- - - ----   4 -- - - ----    11 -- - - ----
5 -- - - ----   12 -- - - ----   5 -- - - ----    12 -- - - ----
6 -- - - ----   13 -- - - ----   6 -- - - ----    13 -- - - ----
7 -- - - ----   14 -- - - ----   7 -- - - ----    14 -- - - ----
```

30 Determine the active OC3. Force the OC3s to switch activity:

>FORCE <act_oc3_no> <inact_oc3_no>

where

act_oc3_no
is the number of an active (A) OC3 (0 or 1)

inact_oc3_no
is the number of an (I) inactive OC3

31 Return to the SPM level and list the alarms on the CEM:

>LISTALM

If the alarm list shows	Do
None	Step 33
CLKOOS	Step 32

32 For further assistance, contact the personnel responsible for the next level of support.

33 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Use this procedure to clear a COTLOW alarm.

Clearing a COTLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen:

>LOGUTIL

2 Display all the SPM350 logs:

>DUMPLOGS SPM 350

Example of a MAP screen:

```
SPM350 Nov19 20:01:33 1400 Pool Percent Free Resources
Low
ALARM_STATE = ON
POOL        = COT
SPM_NUM     = 20
NUM_FREE    = 39
NUM-INUSE   = 61
```

Note: OPEN SPM 350 can be used instead of the DUMPLOGS command. Logs can then be browsed using the LAST, FIRST, BACK, and FORWARD commands.

3 Locate an SPM350 log with `ALARM_STATE = ON` and `POOL = COT`. Record the number of the SPM.

4 Post the SPM:

>MAPCI;MTC;PM;POST SPM <spm_no>

where

spm_no
is the number of the SPM (0 to 85) shown in the log report

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM         7       2       2       2       9      16
 SPM         0       1       1       0       0       1

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 List the alarms on the SPM:

>LISTALM

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

SEVERITY    ALARM       ACTION
-------------------------------
Critical    None
Major       None
Minor       COTLOW      RPT
No_Alarm    None
```

6 Do the following substeps to determine if sparing activities are underway.

a Check the alarm list for a NOSPARE alarm.

If the alarm list indicates	Do
Major NOSPARE	Step 6b
Major None	Step 6c

b Verify that sparing activities are underway by other personnel. Otherwise, clear the NOSPARE alarm by following the SPM NOSPARE PM alarm clearing procedure.

c Check the list of posted modules for DSPs that are system busy (SysB) or manual busy (ManB). If other personnel are involved in sparing activities, check with them to make sure

the DSPs will be returned to service. Otherwise, clear any alarms and return the units to service.

d Wait until the state of the DSPs indicates InSv.

7 When the DSPs are returned to service, determine if the alarm has cleared.

If the alarm list indicates	Do
Minor COTLOW	step 8
Minor None	step 11

8 Provision additional digital signal processor (DSP) resource modules (RM). Provision additional DSP RMs. When you have completed the procedures, return to this point.

Note: Contact your next level of support if you are not familiar with the policies and procedures for provisioning DSP RMs.

9 List the alarms on the SPM:

```
>LISTALM
```

If the alarm list indicates	Do
Minor COTLOW	step 10
Minor None	step 11

10 For further assistance, contact the personnel responsible for the next level of support.

11 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a DTMFLOW alarm.

Clearing a DTMFLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen:

```
>LOGUTIL
```

2 Display all the SPM350 logs:

```
>DUMPLOGS SPM 350
```

Example of a MAP screen:

```
SPM350 Nov19 20:01:33 1400 Pool Percent Free Resources
Low
ALARM_STATE = ON
POOL        = DTMF
SPM_NUM     = 20
NUM_FREE    = 39
NUM-INUSE   = 61
```

Note: OPEN SPM 350 can be used instead of the DUMPLOGS command. Logs can then be browsed using the LAST, FIRST, BACK, and FORWARD commands.

3 Locate an SPM350 log with `ALARM_STATE = ON` and `POOL = DTMF`. Record the number of the SPM.

4 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85) shown in the log report

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM          7       2       2       2       9      16
 SPM          0       1       1       0       0       1

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 List the alarms on the SPM:

>LISTALM

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major       None
Minor       ECANLOW     RPT
No_Alarm    None
```

6 Determine whether sparing activities are underway.

a Check the alarm list for a NOSPARE alarm.

If the alarm list indicates	Do
Major NOSPARE	Step 6 b
Major None	Step 6 c

b Verify that sparing activities are underway by other personnel. Otherwise, clear the NOSPARE alarm by following the instructions in Clearing a NOSPARE alarm on page 118.

c Check the list of posted modules for DSPs that are system busy (SysB) or manual busy (ManB). If other personnel are involved in sparing activities, check with them to make sure

the DSPs will be returned to service. Otherwise, clear any alarms and return the units to service.

d Wait until the state of the DSPs indicates InSv.

7 When the DSPs are returned to service, determine whether the alarm has cleared.

If the alarm list indicates	Do
Minor DTMFLOW	step 8
Minor None	step 11

8 Provision additional DSP RMs. When you have completed the procedures, return to this point.

Note: Contact your next level of support if you are not familiar with the policies and procedures for provisioning DSP RMs.

9 List the alarms on the SPM:

```
>LISTALM
```

If the alarm list indicates	Do
Minor DTMFLOW	step 10
Minor None	step 11

10 For further assistance, contact the personnel responsible for the next level of support.

11 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

This procedure describes how to clear an SPM-based ECANLOW alarm.

The variable *spm_no* refers to the SPM number which can be an integer from 0 through 85.

This procedure uses recommended values and requires pressing the Enter key after typing a command.

Clearing an ECANLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen:

```
>LOGUTIL
```

2 Display all the SPM350 logs:

```
>DUMPLOGS  SPM  350
```

Example of a MAP screen:

```
SPM350 Nov19 20:01:33 1400 Pool Percent Free Resources
Low
ALARM_STATE = ON
POOL        = ECAN
SPM_NUM     = 20
NUM_FREE    = 39
NUM-INUSE   = 61
```

Note: OPEN SPM 350 can be used instead of the DUMPLOGS command. Logs can then be browsed using the LAST, FIRST, BACK, and FORWARD commands.

3 Locate an SPM350 log with `ALARM_STATE = ON` and `POOL = ECAN`. Record the number of the SPM.

4 Post the SPM:

```
>MAPCI;MTC;PM;POST  SPM  spm_no
```

5 List the alarms on the SPM:

```
>LISTALM
```

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

SEVERITY    ALARM       ACTION
-------------------------------
Critical    None
Major       None
Minor       ECANLOW     RPT
No_Alarm    None
```

6 Check the alarm list for a NOSPARE alarm.

If the alarm list indicates	Do
Major NOSPARE	step 7
Major None	step 8

7 Verify that sparing activities are underway by other personnel. Otherwise, clear the NOSPARE alarm by following the instructions in Clearing a NOSPARE alarm on page 118.

8 Check the list of posted modules for VSPs that are system busy (SysB) or manual busy (ManB). If other personnel are involved in sparing activities, check with them to make sure the VSPs will be returned to service. Otherwise, clear any alarms and return the units to service.

9 Wait until the state of the VSPs indicates InSv.

10 When the VSPs are returned to service, Determine whether the alarm has cleared.

If the alarm list indicates	Do
Minor ECANLOW	step 11
Minor None	step 25

11 Access the MNNODE table:

>TABLE MNNODE

12 Position on the the node where the alarm occurred:

>POS SPM spm_no

Example

>POS SPM 11

13 View the ECAN threshold settings:

>LIST

If the threshold is	Do
higher than recommended guidelines	step 14
at or lower than recommended guidelnes	step 22

Note 1: The ECAN threshold appears in the listing as a number following ECAN. For example, a 60 % threshold, the default resource threshold, appears as (ECAN 60).

Note 2: Refer to "Provisioning a VSP" in the "Configuration Management" document for recommended thresholds.

14 Begin the process to raise the ECAN threshold:

>CHA

15 At the confirmation prompt, type

>Y

16 Press the Enter key to accept existing values until reaching the RSRUTLIM ECAN threshold prompt.

Example

```
RSRUTLIM:ECAN 60
>
```

17 Raise the threshold: .

>ECAN new_thresh

Example

```
RSRUTLIM:ECAN 60
>ECAN 70
```

18 Press the Enter key to accept and retain all other MNNODE field values for the node.

19 At the confirmation prompt, type

>Y

20 Post the SPM:

>MAPCI;MTC;PM;POST SPM spm_no

21 List the alarms on the SPM:

```
>LISTALM
```

If the ECANLOW alarm has	Do
not cleared	step 22
cleared	step 25

22 Provision additional VSP RMs using the information provided in "Provisioning a VSP" in the "Configuration Management" document. When you have completed the provisioning, return to this point.

Note: Contact your next level of support if you are not familiar with the policies and procedures for provisioning VSP RMs.

23 List the alarms on the SPM:

```
>LISTALM
```

If the ECANLOW alarm has	Do
not cleared	step 24
cleared	step 25

24 For further assistance, contact the next level of support.

25 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a HLDOVR alarm on the SPM.

Clearing a HLDOVR alarm

At the MAP terminal

1 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB     ManB     OffL     CBsy     ISTb     InSv
  PM         7        2        2        2        9       16
 SPM         0        2        1        0        0        0

SPM   11 SysB  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
SRM 0  6 A ISTb  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

2 Query the faults on the SPM:

```
>QUERYPM FLT
```

Example of a MAP screen:

```
SPM 11 InSv       No Node alarms found.
SRM  0 ISTb Act   Alarm: HLDOVR   Severity: Critical Action: RPT
                  Alarm: ISTB     Severity: Major    Action: RPT
```

3 Determine whether the HLDOVR alarm is being caused by the CEM or the SRM based on the output of step 2.

If the alarm is being caused by the	Do
CEM	step 4
SRM	step 14

4 Select the system-busy CEM:

>SELECT CEM <cem_no>

where

cem_no
is the number of the CEM (0 or 1)

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
```

5 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       HLDOVR        RPT
Minor       None
No_Alarm    None
```

6 Determine whether there are any other CEM alarms.

If there are	Do
no other CEM alarms	step 8
other CEM alarms	step 7

7 Clear the other CEM alarms using the appropriate SPM alarm clearing procedures. When you have completed the procedures, return to this step.

8 List the status of the C-side links:

```
>TRNSL
```

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:             Source:             Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

9 Determine whether the C-side links are in service.

If the C-side links appear as	Do
OK	step 12
NA or UR	step 10

10 Return the C-side links to service. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore C-side links to service.

11 LIst the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 24
HLDOVR	step 12

12 Replace the CEM module. When you complete the card replacement procedure, return to this point.

13 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 24
HLDOVR	step 23

14 Select the SRM:

```
>SELECT SRM 0
```

Example of a MAP screen:

```
SPM 11 InSv       No Node alarms found.
SRM  0 ISTb Act   Alarm: HLDOVR   Severity: Minor  Action: RPT
                 Alarm: ISTB     Severity: Major  Action: RPT
```

15 List alarms on the selected SRM:

```
>LISTALM
```

Example of a MAP screen:

```
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       HLDOVR         RPT
Minor       None
No_Alarm    None
```

16 Post the BITS MAP level of the selected SRM:

```
>BITS
```

Example of a MAP screen:

```
         SysB     ManB     OffL     CBsy     ISTb     InSv
PM          0        0        7        0        5        2
SPM         0        0        0        0        4        0
   SRM      0        0        0        0        1        0

SPM   11  SRM   0
LinkNo    BitsName     Status     State     SSM     Alarm
    0     BITSA        Act        SysB      NIL       C
    1     BITSB        InAct      SysB      NIL       C
    2     BITSOUT                 Uneq      NIL
```

17 List alarms on the BITS links:

>QRYALARM all

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 11   SRM 0
Link   : BITSA
SEVERITY    ALARM       ACTION
------------------------------
Critical    LOS
Major       None          RPT
Minor        None
No_Alarm    None
Alarm Reason(s): FREQ

Link   : BITSB
SEVERITY    ALARM       ACTION
------------------------------
Critical    LOS
Major       None           RPT
Minor        None
No_Alarm    None
Alarm Reason(s): FREQ

Link   : BITSOUT
SEVERITY    ALARM      ACTION
------------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None
```

18 Determine the state of the BITS link causing the alarm by looking in the State column from step 16.

If the BITS link state is	Do
OFFL, SYSB, or CBSY	step 19
Any other state	step 23

19 Busy the alarmed BITS link:

```
>BSY <link_no>
```

where

link_no
is the BITS link number (0 to 2)

20 Wait until the BITS link status is MANB. Then return the link to service:

```
>RTS <link_no>
```

where

link_no
is the BITS link number (0 to 2)

21 Return to the SRM level:

```
>QUIT
```

22 List alarms on the SRM:

```
>LISTALM
```

If the HLDOVR alarm	Do
is not cleared	step 23
is cleared	step 24

23 For further assistance, contact the personnel responsible for the next level of support.

24 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a HLDOVR24 alarm on a CEM or an SRM.

Clearing a HLDOVR24 alarm

At the MAP terminal

1 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
   PM         7       2       2       2       9      16
  SPM         0       2       1       0       0       0

SPM   11  SysB  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I ISTb  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
SRM 0  6 A ISTb  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

2 Query the faults on the SPM:

```
>QUERYPM FLT
```

Example of a MAP screen:

```
SPM 11 SysB       Alarm: SYSBNA   Severity: Critical Action: RPT
SRM  0 ManB InAct Alarm: HLDOVR24 Severity: Critical Action: RPT
                  Alarm: MANB     Severity: Major    Action: RPT
                  Alarm: HLDOVR   Severity: Major    Action: RPT
                  Alarm: LOR      Severity: Major    Action: RPT
```

3 Determine whether the HLDOVR24 alarm is being caused by the CEM or the SRM based on the output of step 2.

If the alarm is being caused by the	Do
CEM	step 4
SRM	step 14

4 Select the system-busy CEM:

>SELECT CEM <cem_no>

where

cem_no
is the number of the CEM (0 or 1)

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
```

5 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       HLDOVR24      RPT
Minor       None
No_Alarm    None
```

6 Determine whether there are any other CEM alarms.

If there are	Do
no other CEM alarms	step 8
other CEM alarms	step 7

7 Clear the other CEM alarms using the appropriate SPM alarm clearing procedures, When you have completed the procedures, return to this step.

8 List the status of the C-side links:

```
>TRNSL
```

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

9 Determine whether the C-side links are in service.

If the C-side links appear as	Do
OK	step 12
NA or UR	step 10

10 Return the C-side links to service. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore C-side links to service.

11 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 31
HLDOVR24	step 12

12 Replace the CEM module. When you complete the card replacement procedure, return to this point.

13 List the alarms on the CEM:

>LISTALM

If the alarm list shows	Do
None	step 31
HLDOVR24	step 30

14 Select the SRM:

>SELECT SRM 0

Example of a MAP screen:

```
SPM   11 1SRM   0  Act    SysB
Interface :
Loc : Row A  FrPos  4 ShPos  6 ShId 0 Slot  6   Prot Grp : 1
Default Load: SYN16BF                           Prot Role: Working
```

15 List alarms on the selected SRM:

>LISTALM

Example of a MAP screen:

```
SEVERITY    ALARM        ACTION
-------------------------------
Critical    None
Major       HLDOVR24       RPT
Minor       None
No_Alarm    None
```

16 Post the BITS MAP level of the selected SRM:

>BITS

Example of a MAP screen:

```
          SysB     ManB     OffL     CBsy     ISTb     InSv
PM           0        0        7        0        5        2
SPM          0        0        0        0        4        0
   SRM       0        0        0        0        1        0

SPM   11  SRM   0
LinkNo    BitsName     Status     State     SSM     Alarm
    0     BITSA        Act        SysB      DUS       C
    1     BITSB        InAct      SysB      DUS       C
    2     BITSOUT                 Uneq      NIL
```

17 List alarms on the BITS links:

>QRYALARM all

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 11   SRM 0
Link   : BITSA
SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major        TLD          RPT
Minor        None
No_Alarm     None
Alarm Reason(s): FREQ

Link   : BITSB
SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major       TLD          RPT
Minor       None
No_Alarm    None
Alarm Reason(s): FREQ

Link   : BITSOUT
SEVERITY    ALARM      ACTION
------------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None
```

18 Determine the state of the BITS link causing the alarm by looking in the State column from step 16.

If the BITS link state is	Do
OFFL, SYSB, or CBSY	step 19
Any other state	step 30

19 Busy the alarmed BITS link:

```
>BSY <link_no>
```

where

link_no
is the BITS link number (0 to 2)

20 Wait until the BITS link status is MANB. Then return the link to service:

```
>RTS <link_no>
```

where

link_no
is the BITS link number (0 to 2)

21 Determine the SSM values on the BITS links. If the SSM value is ST3E or better, the alarm should clear.

Note: The hierarchy of SSM values, from best to worst, is:

- PRS
- STU
- ST2
- ST3E
- ST3
- SMC
- ST4E
- ST4
- DNU

22 Return to the SRM level:

```
>QUIT
```

23 List the alarms on the SRM:

```
>LISTALM
```

24

If the alarm	Do
clears	step 21
does not clear	step 25

25 Replace the SRM using the appropriate procedure.

If the alarm	Do
does not clear	step 26
clears	step 31

26 Swap the BITS link output connections at the TSG.

If the BITS link alarm	Do
still exists on the link	step 29
moves to the other link	step 27
clears	step 31

27 Swap the BITS link inputs at the wire wrap terminal of the SRM.

If the BITS link alarm	Do
still exists on the link	step 29
moves to the other link	step 28
clears	step 31

28 Replace the BITS link cable.

If the alarm	Do
still exists on the link	step 29
clears	step 31

29 Clear any faults on the Timing Signal Generator (TSG) using the appropriate procedures.

If the alarm	Do
still exists	step 30
clears	step 31

30 For further assistance, contact the personnel responsible for the next level of support.

31 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing an SRM HLDOVR alarm

Use this procedure to clear a HLDOVR alarm on the SRM.

Clearing an SRM HLDOVR alarm

At the MAP terminal

1 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9       16
  SPM         0        2        1        0        0        0

 SPM   11 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

 Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 -----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
 -----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
 DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
 -----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
 -----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
 SRM 0  6 A ISTb  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
 CEM 0  7 A InSv  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

2 Query the faults on the SPM:

```
>QUERYPM FLT
```

Example of a MAP screen:

```
SPM 11 InSv       Alarm: HLDOVR   Severity: Minor  Action: RPT
SRM  0 ISTb Act     Alarm: ISTB     Severity: Major  Action: RPT
```

3 Select the SRM:

```
>SELECT SRM <srm_no>
```

where

srm_no
is the number of the RSM (0 or 1)

Example of a MAP screen:

```
SPM   11 SRM   0  Act    ISTb

Loc : Row A FrPos 4 ShPos 6 ShId 0 Slot 6  Prot GRP: 1
```

4 List the alarms on the SRM:

>LISTALM

Example of a MAP screen:

```
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       HLDOVR        RPT
Minor       None
No_Alarm    None
```

5 Post the BITS MAP level of the selected SRM:

>BITS

Example of a MAP screen:

```
         SysB    ManB    OffL    CBsy    ISTb    InSv
PM          0       0       7       0       5       2
SPM         0       0       0       0       4       0
   SRM      0       0       0       0       1       0

SPM   11  SRM   0
LinkNo   BitsName    Status    State    SSM    Alarm
    0    BITSA       Act       SysB     NIL      C
    1    BITSB       InAct     SysB     NIL      C
    2    BITSOUT               Uneq     NIL
```

6 List alarms on the BITS links:

>QRYALARM all

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 11   SRM 0
Link   : BITSA
SEVERITY    ALARM       ACTION
------------------------------
Critical     LOS          RPT
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): FREQ

Link   : BITSB
SEVERITY    ALARM       ACTION
------------------------------
Critical     LOS          RPT
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): FREQ

Link   : BITSOUT
SEVERITY    ALARM      ACTION
------------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None
```

7 Determine the state of the BITS link causing the alarm by looking in the State column from step 5.

If the BITS link state is	Do
OFFL, SYSB, or CBSY	step 8
Any other state	step 12

8 Busy the alarmed BITS link:

>BSY <link_no>

where

link_no
is the BITS link number (0 to 2)

9 Wait until the BITS link status is MANB. Then return the link to service:

>RTS <link_no>

where

link_no
is the BITS link number (0 to 2)

10 Return to the SRM level:

```
>QUIT
```

11 List alarms on the SRM:

```
>LISTALM
```

If the HLDOVR alarm	Do
has not cleared	step 12
has cleared	step 13

12 For further assistance, contact the personnel responsible for the next level of support.

13 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing an ISTB alarm

Use this procedure to clear an In-service trouble (ISTB) alarm.

Clearing an ISTB alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2        12
```

2 Show the state of all PMs:

>STATUS

3 Display the SPMs that are in-service trouble:

>DISP STATE ISTB SPM

4 Record the number of the SPMs.

5 Post each in-service trouble SPM:

>POST SPM <spm_no>

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM         7        2        2        2        9        16
 SPM         0        2        1        0        1         0

SPM   11 ISTb  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ISTb  VSP14 14 A ----  -----  7 - ----  ----- 14 - ----
```

6 Determine which of the modules is in-service trouble (ISTb) and select the modules:

>SELECT <module_type> <module_no>

where

module_type
is the type of module (CEM, OC3, DSP, VSP, or DLC)

module_no
is the number of the module (0 to 27)

Example of a MAP screen:

```
SPM 3    OC3 1    Act  ISTb

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Working
```

7 Show the actual software load:

>QUERYMOD

Example of a MAP screen:

```
SPM 3    OC3 1    Act  ISTb

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Working
QueryMod
SPM 12 OC3 0 Query: Request has been submitted.
OC3  0 ISTb Act    Loc: Row D  FrPos 64 ShPos  6 ShId 0 Slot  9
Default Load: SPMLOAD              Actual Load: SPMLOAD
```

8 Access the PROT level:

>PROT

9 Perform a manual protection switch:

>MANUAL <active_cpk> <spare_cpk>

where

active_cpk
is the number of the active circuit pack

spare_cpk
is the number of the spare circuit pack

Note: For CEMs, the active_cpk and spare_cpk parameters are not required.

10

If the circuit pack is	Do
a CEM	step 11
any other circuit pack	step 12

11 Load the CEM with its software load:

```
>LOADMOD INSVLD
```

Go to step 13.

12 Download matching software for the circuit pack:

```
>LOADMOD MATE <active_cpk>
```

where

active_cpk
is the number of the previously inactive circuit pack

13 Protection switch back to the original circuit pack:

```
>MANUAL <active_cpk> <inactive_cpk>
```

where

active_cpk
is the number of the previously inactive circuit pack

inactive_cpk
is the number of the previously active circuit pack

Note: For CEMs, the active_cpk and spare_cpk parameters are not required.

14 Return to the posted circuit pack:

```
>QUIT
```

15 List the alarms on the module:

```
>LISTALM
```

16 Determine whether the alarm has cleared.

17 Perform an in-service test on the module:

>TST

Example of a MAP screen:

```
SPM 3    OC3 1    Act  ISTb

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
Clock:Input Ref: Internal     Source: C Side 0   Current Mode:
Acquire
Tst
SPM 3 CEM 0 Test : Request has been submitted.
SPM 3 CEM 0 Test : Test passed.
```

18 Determine the test condition of the module.

19 Access the PROT level:

>PROT

20 Perform a manual protection switch:

>MANUAL <active_cpk> <spare_cpk>

where

active_cpk
is the number of the active circuit pack

spare_cpk
is the number of the spare circuit pack

Note: For CEMs, the active_cpk and spare_cpk parameters are not required.

21 Return to the posted circuit pack:

>QUIT

22 Manual busy the module:

>BSY

23 Perform an out-of-service test on the module:

>TST

24 Determine the test condition of the module.

25 Return the module to service:

>RTS

26 Determine the state of the module.

27 Replace the module, as appropriate. When you have completed the procedure, return to this point.

28 List the alarms on the module:

```
>LISTALM
```

29 Determine whether the alarm has cleared.

30 For further assistance, contact the personnel responsible for the next level of support.

31 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing an LOP alarm

Use this procedure to clear an LOP alarm on a carrier.

Clearing an LOP alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Determine whether the carrier provisioning is correct. Confirm that the carrier has been provisioned with STS-1P or VT15P signal types by verifying the datafill for the carrier in table MNHSCARR and related tables. For more information about table MNHSCARR, refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate.

If the signal type is	Do
STS-1P or VT15P	step 8
not STS-1P or VT15P	step 5

5 Datafill the correct carrier signal types in table MNHSCARR. For datafill information, refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate.

6 Post each SPM carrier circuit with an alarm:

>POST SPM <spm_no> <ckt_no>

where

spm_no
is the number of the SPM (0 to 85)

ckt_no
is the number of the circuit (0 to 181)

Example of a MAP screen:

```
STS1P
N  CLASS  SITE SPM STS1P  DS3P VT15P  DS1P CKT STATE  MA
0  HSCARR HOST  20     2     -     -     -  33 InSv   --


SIZE OF POSTED SET  :  30                        MORE...
```

7 List the alarms on the carrier:

>LISTALM <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

If the alarm list shows	Do
None	step 21

If the alarm list shows	Do
LOP	step 8

8 Test the carrier:

>TST <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

9 Determine whether the carrier signal is valid.

If the test result is	Do
OK	step 12
Test failed.	step 10

10 Troubleshoot the carrier circuit according to your company procedures. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits.

11 List the alarms on the carrier:

>LISTALM <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

If the alarm list shows	Do
None	step 21
LOP	step 12

12 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2        12
```

13 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB    ManB    OffL    CBsy    ISTb    InSv
  PM          7       2       2       2       9      16
 SPM          0       2       1       0       0       0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

14 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

15 Access the protection level of the MAP screen:

>PROT

16 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm.

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

17 Return to the carrier level of the MAP screen and list the alarms on the carrier:

```
> LISTALM carrier_no
```

18 Determine whether the alarm has cleared.

If the alarm list shows	Do
LOP	step 20
None	step 19

19 Replace the OC3 module. When you have completed the procedure, go to Step 21.

20 For further assistance, contact the personnel responsible for the next level of support.

21 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear an LOR alarm.

Clearing an LOR alarm

At the MAP level

1 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB    ManB    OffL    CBsy    ISTb    InSv
  PM          0       0       2       0       0      27
 SPM          0       0       1       0       0      20

SPM   11 InSv  Loc: Site HOST Floor  1 Row P FrPos 2

Shlf1 Sl A Stat Shlf1 Sl A Stat Shlf2 Sl A Stat Shlf2 Sl A Stat
DSP 2 1 A Insv CEM 1  8  I Insv VSP 2  1 A Insv --- - 8  - ----
DSP 4 2 A Insv OC3 0  9  A Insv --- -  2 - ---- VSP 6 9  A Insv
--- - 3 I Insv OC3 1 10  I Insv --- -  3 - ---- --- - 10 - ----
--- - 4 I Insv --- - 11  - ---- --- -  4 - ---- --- - 11 - ----
--- - 5 - ---- --- - 12  - ---- --- -  5 - ---- --- - 12 - ----
SRM 0 6 A Insv --- - 13  A Insv --- -  6 - ---- --- - 13 - ----
CEM 0 7 A Insv VSP 4 14  A Insv --- -  7 - ---- --- - 14 - ----
```

2 Select the SRM:

```
>SELECT SRM 0
```

Example of a MAP screen:

```
SPM   11 SRM   0  Act    SysB
Interface :
Loc : Row A  FrPos  4 ShPos  6 ShId 0 Slot  6   Prot Grp : 1
Default Load: SYN16BF                           Prot Role: Working
```

3 List alarms on the selected SRM:

>LISTALM

Example of a MAP screen:

```
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       LOR         RPT
Minor       ISTB        RPT
No_Alarm    None
```

4 Post the BITS MAP level of the selected SRM:

>BITS

Example of a MAP screen:

```
         SysB    ManB    OffL    CBsy    ISTb    InSv
PM          0       0       7       0       5       2
SPM         0       0       0       0       4       0
   SRM      0       0       0       0       1       0
SPM   11  SRM   0
LinkNo   BitsName    Status    State    SSM    Alarm
    0    BITSA       InAct     SYSB     DUS      C
    1    BITSB         Act     InSv     DUS      .
    2    BITSOUT               Uneq     NIL
```

5 List alarms on the BITS links:

>QRYALM all

Example of a MAP screen:

```
QryAlm all
QueryAlm: SPM 11   SRM 0
Link   : BITSA
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major        TLD          RPT
Minor        None
No_Alarm     None
Alarm Reason(s): FREQ

Link   : BITSB
SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None

Link   : BITSOUT
SEVERITY    ALARM      ACTION
-----------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
Alarm Reason(s): None
```

6 Determine the state of the BITS link causing the alarm by looking in the State column from step 4.

If the BITS link state is	Do
OFFL, SYSB, or CBSY	step 7
Any other state	step 11

7 Busy the alarmed BITS link:

`>BSY <link_no>`

where

link_no
is the BITS link number (0 to 2)

8 Wait until the BITS link status is MANB. Then return the link to service:

`>RTS <link_no>`

where

link_no
is the BITS link number (0 to 2)

9 Return to the SRM level:

```
>QUIT
```

10 List alarms on the SRM:

```
>LISTALM
```

If the LOR alarm	Do
is not cleared	step 11
is cleared	step 12

11 For further assistance, contact the personnel responsible for the next level of support.

12 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear an LOS alarm.

Clearing an LOS alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

5 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM         7       2       2       2       9      16
 SPM         0       2       1       0       0       0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

6 Use the SPM shelf and slot numbers to locate the OC3 module with the LOS alarm. Locate the OC3 module with the illuminated LOS alarm indicator (yellow circle).

7 Remove the fiber connector from the receiver socket on the OC3 module. Clean the socket and the connector with compressed air. Use an optical power meter to measure the power at the receiver connector.

If the power is	Do
above -34 dBm (for example, -30 dBm)	step 10
below -34 dBm	step 8

8 Troubleshoot the fiber optic cable according to your company procedures. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot fiber optic cables.

9 Use an optical power meter to measure the power at the receiver connector.

If the power is	Do
above -34 dBm (for example, -30 dBm)	step 10
below -34 dBm	step 17

10 Plug the fiber optic connector into the receiver socket. Check to see if the alarm has cleared.

If the alarm lamp on the module is	Do
off	step 18
illuminated	step 11

11 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                          Prot Role: Spare
```

12 Access the protection level of the MAP screen:

>PROT

13 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm.

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

14 List the alarms on the module:

```
>LISTALM
```

15 Determine whether the alarm has cleared.

If the alarm list indicates	Do
LOS	step 17
None	step 16

16 Replace the OC3 module. When you complete the card replacement procedure, go to step 18 of this procedure.

17 For further assistance, contact the personnel responsible for the next level of support.

18 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a ManualBusy (MANB) alarm.

Clearing a MANB alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

2 Show the state of all PMs:

```
>STATUS
```

3 Display the SPMs that are manual busy:

```
>DISP STATE MANB SPM
```

4 Record the number of the SPMs.

5 Post each manual busy SPM:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
           SysB     ManB     OffL     CBsy     ISTb     InSv
  PM         7        2        2        2        9       16
 SPM         0        2        1        0        0        0

SPM   11 SysB  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ManB  VSP14 14 A ----  -----  7 - ----  ----- 14 - ----
```

6 Determine which of the modules is manual busy (ManB) and select the modules:

>SELECT <module_type> <module_no>

where

module_type
is the type of module (CEM, OC3, DSP, VSP, or DLC).

module_no
is the number of the module (0 to 27).

Example of a MAP screen:

```
SPM 3    OC3 1 Act mANb

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

7 If the status of the module is ManB, determine why the module was manual busied. Continue with Step 8 as soon as possible.

8 Return the module to service:

>RTS

9 Determine the state of the module.

If the module is	Do
InSv	step 16
SysB or IstB	step 10
any other state	step 12

10 Perform the alarm clearing procedures for SysB (see Clearing a SYSB alarm on page 140) or IstB (see Clearing an ISTB alarm on page 88), as appropriate.

11 Determine the state of the module.

If the module is	Do
InSv	step 16
any other state	step 12

12 Replace the module as appropriate. When you have completed the card replacement procedure, return to this point.

13 List the alarms on the module:

>LISTALM

14 Determine whether the alarm has cleared.

If the alarm list indicates	Do
MANB	step 15
None	step 16

15 For further assistance, contact the personnel responsible for the next level of support.

16 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a ManualBusyNotAvailable (MANBNA) alarm.

Clearing a MANBNA alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

2 Display all the manual-busy SPMs:

>DISP STATE MANB SPM

3 Record the number of the SPMs.

4 Post each manual-busy-not-available SPM:

>POST SPM <spm_no>

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM          7        2        2        2        9       16
 SPM          1        2        1        0        0        0

SPM   11 ManB Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ManB  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

5 List the status of the ENET links:

>TRNSL

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB (NA)

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

6 Determine whether the ENET links are in service.

If the status of the ENET links is	Do
OK	step 9b
NA or UR	step 7

7 If the status of the ENET links is NA (not available), determine whether they were manual busied and why. Return the ENET links to service as soon as possible. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore ENET links to service.

8 List the alarms on the SPM:

>LISTALM

If the alarm list shows	Do
None	step 10
MANBNA	step 9

9 Record ENET information:

a List the status of the ENET links:

>TRNSL

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB (NA)

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

b Record the ENET shelf number (`30` in the example above)

10 Determine the MS card numbers:

a At the CI level of the MAP screen, locate the MS card that the ENET is connected to:

>TABLE ENINV

b Create a heading for the tuple:

>HEADING

c Position on the tuple for the ENET shelf:

>POS <enet_shelf_no>

where

enet_shelf_no
is the number of the ENET shelf

Example of a MAP screen:

```
CI:
>table eninv
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ENINV
>heading
ENKEY ENCLASS FRTYPE FRNO    FRPEC    SHPEC MSCARD0 MSLINK0 MSPORT0 F
ROW0 FRPOS0 SHELF0                          LOAD0 MSCARD1 MSLINK1 M
FLOOR1 ROW1 FRPOS1 SHELF1                         LOAD1
-------------------------------------------------------------------
>pos 0
    0     PRI    ENC    0 NT9X05AB NT9X0801       6       0       0
   F      2     39                          ENX08AX      10       0
     1    F      1     39                          ENX08AX
```

d Record the MS card numbers under MSCARD0 and MSCARD1 (6 and 10 in the example above).

11 Locate the MS cards:

>MAPCI;MTC;MS;SHELF 0;CARD <ms_card_no>

where

ms_card_no
is the number of the MS card

Example of a MAP screen:

```
Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0     .        Master        F                    R R
MS 1     S         Slave         C                    C C

Shelf 0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain           < > < > < > < > |   | | |
MS 0  . . . . . F . . . F . . . . . . . . - . . . . . F .
MS 1  C C C C C C C C C C C C C C C C C C - C C C C C C C

Card 06 Protocol Port  0_____3  4_____7  8____11  12___15
MS 0  .  DS512   64  . . . . . . . . . . . P P  . . . .
MS 1  C   DS512   64  C P P P  P P P P  P P P P  P P P P
```

12 Check the status of both ports (0 and 1) on both MS cards (MSCARD0 and MSCARD1).

a Determine the state of each MS card port that connects to the SPM with the MANBNA alarm,:

>TRNSL <ms_card_port>

where

ms_card_port
is the number of the MS card port (0 or 1)

Example of a MAP screen:

```
PORT  20=SPM  10 (OK  ,P:NA SYST ACC NP MSRR ^PSRR)
PORT  21=SPM  10 (OK  ,P:NA SYST ACC NP MSRR ^PSRR)
PORT  22=SPM  11 (OK  :UR SYST ACC NP MSRR PSRR)
PORT  23=SPM  11 (OK  :UR SYST ACC NP MSRR PSRR)
PORT  24=SPM  12 (OK  :AV SYST ACC NCP MSRR PSRR)
```

b Repeat Step 12a. for the second MS port.

c Repeat Step 11 for the other MS card and repeat Steps 12a. and 12b. to check the MS ports on that card.

If the status of the MS ports shows	Do
OK for all four ports	step 15
NA or UR for any port	step 13

13 Return the MS ports to service. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore MS ports to service.

14 List the alarms on the SPM:

>LISTALM

If the alarm list shows	Do
None	step 16
MANBNA	step 15

15 For further assistance, contact your next level of support.

16 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear an MFLOW alarm.

Clearing an MFLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen:

```
>LOGUTIL
```

2 Display all the SPM350 logs:

```
>DUMPLOGS SPM 350
```

Example of a MAP screen:

```
SPM350 Nov19 20:01:33 1400 Pool Percent Free Resources
Low
ALARM_STATE = ON
POOL        = MF
SPM_NUM     = 20
NUM_FREE    = 39
NUM-INUSE   = 61
```

Note: OPEN SPM 350 can be used instead of the DUMPLOGS command. Logs can then be browsed using the LAST, FIRST, BACK, and FORWARD commands.

3 Locate an SPM350 log with `ALARM_STATE = ON` and `POOL = MF`. Record the number of the SPM.

4 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85) shown in the log report

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM           7        2        2        2        9       16
 SPM           0        1        1        0        0        1

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 List the alarms on the SPM:

>LISTALM

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11

SEVERITY     ALARM        ACTION
-------------------------------
Critical     None
Major        None
Minor        MFLOW        RPT
No_Alarm     None
```

6 Determine whether sparing activities are underway.

a Check the alarm list for a NOSPARE alarm.

If the alarm list indicates	Do
NOSPARE	step 6 b
None	step 6 c

b Verify that sparing activities are underway by other personnel. Otherwise, clear the NOSPARE alarm by following the SPM NOSPARE alarm clearing procedure (see Clearing a NOSPARE alarm on page 118).

c Check the list of posted modules for DSPs that are system busy (SysB) or manual busy (ManB). If other personnel are involved in sparing activities, check with them to make sure the DSPs will be returned to service. Otherwise, clear any alarms and return the units to service.

d Wait until the state of the DSPs indicates InSv.

7 When the DSPs are returned to service, determine whether the alarm has cleared.

If the alarm list indicates	Do
MFLOW	step 8
None	step 11

8 Provision additional DSP RMs. When you have completed the procedures, return to this point.

Note: Contact your next level of support if you are not familiar with the policies and procedures for provisioning DSP RMs.

9 List the alarms on the SPM:

```
>LISTALM
```

If the alarm list indicates	Do
MFLOW	step 10
None	step 11

10 For further assistance, contact the personnel responsible for the next level of support.

11 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing a NOSPARE alarm

Use this procedure to clear an SPM-based NOSPARE alarm.

Clearing a NOSPARE alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

2 Post all SPM nodes:

```
>POST SPM all
```

where

all
refers to all SPM nodes (0 to 85)

3 Check fault indicators to determine the node that raised the alarm:

```
>QUERYPM FLT ALL
```

Example of a querypm flt all screen response:

```
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
SPM 9 InSv           No Node alarms found.
ATM_GRP      1       Alarm:  NOSPARE Severity: Major Action RPT
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
No faults exist on the posted SPM.
End of post set.
PM:
>
```

4 Post the node with a NOSPARE alarm:

```
> POST SPM spm_no
```

where

spm_no
refers to the number of the SPM with the NOSPARE alarm

Example of a MAP screen:

```
 XAC     MS    IOD     Net     PM      CCS    Lns      Trks       Ext     AAPL
   .      .   2CkEr     .     2 SPM     .      .      3CCP      1 FSP     .
                             M                          *C*        M
                            SysB     ManB     OffL     CBsy     ISTb     InSv
 0 Quit          PM                   0        4        6        0        47
 2 Post_         SPM                  0        0        5        0        28
 3 ListSet
 4 ListRes    SPM     9  InSv Class: SMG4
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL
 7 ATMConn    -----  1 I InSv  CEM 1  8 I InSv  -----  1 - ----  -----  8
 8            -----  2 A InSv  ATM 0  9 I InSv  -----  2 - ----  -----  9
 9            -----  3 - ----  ATM 1 10 A InSv -----   3 - ----  ----- 10
10            -----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11
11 Disp_      -----  5 - ----  ----- 12 - ----  -----  5 - ----  ----- 12
12 Next       -----  6 - ----  ----- 13 - ----  -----  6 - ----  ----- 13
13 Select_    CEM 0  7 A InSv  ----- 14 - ----  -----  7 - ----  ----- 14
14 QueryPM
15 ListAlm
16 PSLink
17 SPERFORM
18 Upgrade_
 USER
>
```

5 Access the circuit pack which is raising the alarm and select the circuit pack:

`>SELECT pack_type unit_number`

where

pack_type
is the type of circuit pack (OC3, DSP, VSP, or ATM).

unit_no
is the number of the circuit pack (0 to 27)

6 Locate the NOSPARE alarms on each circuit pack:

`>LISTALM`

7 Determine the state from the LISTALM display.

Example of a MAP screen:

```
 SPM   9 InSv
Prot Grp: ATM_GRP 1    Mode: Non-revertive    Schema: m_for_n
Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 1 0 W A Insv    8 -- - - ----   1 -- - - ----  8 -- - - ----
 2 1 W I Insv    9 -- - - ----   2 -- - - ----  9 -- - - ----
 3 -- - - ----  10 -- - - ----   3 -- - - ----  10 -- - - ----
 4 -- - - ----  11 -- - - ----   4 -- - - ----  11 -- - - ----
 5 -- - - ----  12 -- - - ----   5 -- - - ----  12 -- - - ----
 6 -- - - ----  13 -- - - ----   6 -- - - ----  13 -- - - ----
 7 -- - - ----  14 -- - - ----   7 -- - - ----  14 -- - - ----
ListAlm

ListAlm: ATM_GRP 1

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       NOSPARE       RPT
Minor       None
No_Alarm    None
```

If the circuit pack is	Do
OffL	step 8
ManB	step 9
in any other state	step 12

8 Busy the circuit pack:

```
>BSY
```

9 Return the circuit pack to service:

```
>RTS
```

10 List the alarms on the circuit pack at the protection level:

```
>LISTALM
```

Example of a MAP screen:

```
ListAlm

ListAlm: ATM_GRP 1

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       None
Minor       None
No_Alarm    None
```

11 Determine whether the NOSPARE alarm has cleared.

If the alarm list indicates	Do
NOSPARE	step 12
None	step 24

12 Determine the state of the circuit pack.

If the circuit pack is	Do
SysB	step 13
Insv	step 18
in any other state	step 23

13 Monitor the on-screen maintenance.

If the circuit pack	Do
does not return to service within 10 minutes	step 14
returns to service	step 20

14 Busy the circuit pack:

```
>BSY
```

15 Perform an in-service test on the circuit pack:

```
>TST
```

Example of a MAP test result screen:

```
Tst
SPM 9 ATM 0 Test : Request has been submitted.
SPM 9 ATM 0 Test : Test passed.
```

16 Determine the test condition of the circuit pack.

If the test results show	Do
Test passed.	step 17
Test failed.	step 22

17 Return the circuit pack to service:

```
>RTS
```

and go to step 20.

18 Busy the inactive circuit pack:

```
>BSY (inactive)
```

19 Return the inactive circuit pack to service:

```
>RTS (inactive)
```

20 List the alarms on the circuit pack:

```
>LISTALM
```

21 Determine whether the NOSPARE alarm has cleared.

If the alarm list indicates	Do
NOSPARE	step 23
None	step 24

22 Replace the circuit pack, as appropriate.

23 For further assistance, contact the personnel responsible for the next level of support.

24 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a ProtectionFailure (PROTFAIL) alarm.

Clearing a PROTFAIL alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2        12
```

2 Show the state of all PMs:

```
>STATUS
```

3 Post all of the SPMs:

```
>POST SPM all
```

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9        16
  SPM         0        2        1        0        0         0

SPM   11 SysB  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  VSP14 14 A ----  -----  7 - ----  ----- 14 - ----
```

4 Record the number of each SPM with a PROTFAIL alarm.

5 Determine which of the modules are not in service (InSv, CBsy, or ISTb) and select the modules:

```
>SELECT <module_type> <module_no>
```

where

module_type
is the type of module (OC3, DSP, VSP, or DLC)

module_no
is the number of the module (0 to 27)

Example of a MAP screen:

```
SPM 3    OC3 1    InAct  OffL

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

6 Locate the PROTFAIL alarms on each module:

>LISTALM

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11   OC3

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       PROTFAIL       RPT
Minor       None
No_Alarm    None
```

7 Determine the state of the module from the SELECT display.

If the module is	Do
SysB	step 8
in any other state	step 11

8 Perform an in-service test on the module:

>TST

Example of a MAP screen:

```
SPM 11    OC3 1    Act  ISTb

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
Clock:Input Ref: Internal     Source: C Side 0   Current Mode:
Acquire
Tst
SPM 3 CEM 0 Test : Request has been submitted.
SPM 3 CEM 0 Test : Test passed.
```

9 Determine the test condition of the module.

If the test results show	Do
Test passed.	step 10
Test failed.	step 12

10 Return the module to service:

```
>RTS
```

11 Determine the state of the module.

If the module is	Do
InSv	step 13
in any other state	step 17

12 Replace the module identified in step 5. When you complete the card replacement procedure, go to step 13 of this procedure.

13 Access the protection level of the MAP screen:

```
>PROT
```

14 Do a manual protection switch with a module in the same protection group:

```
>MANUAL <from_unit_no> <to_unit_no>
```

where

from_unit_no
is the number (0 to 27) of the module with the alarm.

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 0 DSP 1 Manual: Request has been submitted.
SPM 0 DSP 0 Manual: Command completed.
```

15 List the alarms on the module:

```
>LISTALM
```

16 Determine whether the alarm has cleared.

If the alarm list indicates	Do
PROTFAIL	step 17
None	step 18

17 For further assistance, contact the personnel responsible for the next level of support.

18 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Clearing an RAI alarm

Use this procedure to clear an RAI alarm.

Clearing an RAI alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM     NO CKT      PM     NO CKT      PM     NO CKT      PM     NO CKT
DTC     0  13      DTC     0  14      DTC     0  15      DTC     0  18
SPM    20  29      SPM    20  30      SPM    20  31      SPM    20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Post each SPM carrier circuit with an alarm:

>POST SPM <spm_no> <ckt_no>

where

spm_no
is the number of the SPM (0 to 85)

ckt_no
is the number of the circuit (0 to 181)

Example of a MAP screen:

```
STS1P
N  CLASS  SITE SPM STS1P  DS3P VT15P  DS1P CKT STATE  MA
0  HSCARR HOST  20     2     -     -     -  33 InSv   --


SIZE OF POSTED SET  :  30                        MORE...
```

5 Troubleshoot the carrier circuit according to your company procedures.

Determine whether there is an alarm on the far-end device.

If there is an alarm on the far-end device?	Do
YES	Clear the alarm according to your company's procedures. When you have completed the procedure, return to this point.
NO	step 7

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits and clear alarms at the far end.

At the MAP terminal

6 List the alarms on the carrier:

>LISTALM <carrier_no>

where

carrier_no
is the number of the carrier (0 to 4)

If the alarm list shows	Do
None	step 16
RAI	step 7

7 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
    SysB    ManB    OffL    CBsy    ISTb    InSv
PM   1       1       1       3       2       12
```

8 Post the SPMs:

>POST SPM <spm_no>

where

spm_no
refers to number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB    ManB    OffL    CBsy    ISTb    InSv
  PM           7       2       2       2       9      16
 SPM           0       2       1       0       0       0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

9 Select the active OC3 module:

>SELECT OC3 <module_no>

where

module_no
is the number of the OC3 module (0 to 27)

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

10 Access the protection level of the MAP screen:

>PROT

11 Do a manual protection switch with a module in the same protection group:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number (0 to 27) of the module with the alarm

to_unit_no
is the number (0 to 27) of the inactive module in the same protection group

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

12 Return to the carrier level of the MAP screen and list the alarms on the carrier:

>LISTALM <carrier_no>

13 Determine whether the alarm has cleared.

If the alarm list shows	Do
RAI	step 15
None	step 14

14 Replace the OC3 module. When you have completed the procedure, go to Step 16.

15 For further assistance, contact the personnel responsible for the next level of support.

16 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Clearing an RFI alarm

Use this procedure to clear a Remote Failure Indicator (RFI) alarm.

The following table, Variable abbreviations, describes the variables used in this procedure.

Variable abbreviations

Variable	Description
spm_no	The number of the SPM (0 through 85)
ckt_no	The number of the circuit (0 through 181)
carr_no	The number of the carrier (0 through 4)
oc3_no	The number of the OC3 RM (0 or 1)
from_unit_no	The number (0 or 1) of the OC3 with the alarm
to_unit_no	The number (0 or 1) of the inactive OC3 in the same protection group

This procedure requires you to press the Enter key for each command typed on the MAP display.

Clearing an RFI alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

```
>MAPCI;MTC;TRKS;CARRIER
```

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>DISP ALARM

Example of a MAP screen:

```
PM    NO CKT     PM    NO CKT     PM    NO CKT     PM    NO CKT
DTC    0  13     DTC    0  14     DTC    0  15     DTC    0  18
SPM   20  29     SPM   20  30     SPM   20  31     SPM   20  32


DISPLAYED BY CONDITION : ALARM
DISP:
MORE...
```

3 Record the SPM number (NO) and circuit (CKT) number combinations.

4 Post each SPM carrier circuit with an alarm:

>POST SPM spm_no ckt_no

Example of a MAP screen:

```
STS1P
N  CLASS  SITE SPM STS1P  DS3P VT15P  DS1P CKT STATE  MA
0  HSCARR HOST  20     2     -     -     -  33 InSv   --


SIZE OF POSTED SET  :  30                        MORE...
```

5 Troubleshoot the carrier circuit according to your company procedures.

Determine if there is a failure of the far-end device.

If there is a failure at the far-end	Do
YES	Repair the failure of the far-end device according to your company procedures. When you have completed the procedure, return to this point.
NO	step 7

Note: Contact your next level of support if you are not familiar with the procedures required to troubleshoot carrier circuits and repair far-end devices.

6 List the alarms on the carrier:

>LISTALM carr_no

If the alarm list shows	Do
None	Step
RFI	step 7

7 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

8 Post the SPMs:

>POST SPM spm_no

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9       16
  SPM         0        2        1        0        0        0

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv  -----  2 - ----  -----  9 - ----
DSP 3  3 I InSv  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

9 Select the active OC3 module:

>SELECT OC3 oc3_no

Example of a MAP screen:

```
SPM 20    OC3 1      Act  InSv

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

10 Access the protection level of the MAP screen:

>PROT

11 Do a manual protection switch with a module in the same protection group:

>MANUAL from_unit_no to_unit_no

Example of a MAP screen:

```
SPM 20 OC3 1 Manual: Request has been submitted.
SPM 20 OC3 0 Manual: Command completed.
```

12 Return to the carrier level of the MAP screen and list the alarms on the carrier:

>MAPCI;MTC;TRKS;CARRIER;LISTALM carr_no

13 Determine whether the alarm has cleared.

If the alarm list shows	Do
RFI	step 14
None	step 17

14 Replace the OC3 module using the procedure Replacing an OC3 circuit pack on page 214. When you have completed the procedure, go to step 16.

15 Determine if the alarm has cleared:

>MAPCI;MTC;TRKS;CARRIER;LISTALM carr_no

If the alarm list shows	Do
RFI	step 16
None	step 17

16 For further assistance, contact the personnel responsible for the next level of support.

17 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Use this procedure to clear a SIMPLEX alarm.

Clearing a SIMPLEX alarm

At the MAP terminal

1 Access the carrier level of the MAP screen:

>MAPCI;MTC;TRKS;CARRIER

Example of a MAP screen:

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

MTC:
TRKS:
CARRIER:
```

2 Display all carrier alarms:

>POST ALRM

Example of a MAP screen:

```
 OC3S
N  CLASS  SITE SPM RM OC3S CKT STATE  TR MA
0  HSCARR HOST   8  0    0   1 SYSB-T ** mC
```

3 Proceed to STS3L carrier alarms:

>NEXT

Example of a MAP screen:

```
 STS3L
N  CLASS  SITE SPM RM OC3S STS3L CKT STATE  TR MA
0  HSCARR HOST   8  0    0    0    3 INSV   .. .C
1  HSCARR HOST   8  0    0    0  178 CBSY   ** .C
2  HSCARR HOST   9  0    0    0  178 CBSY   ** .C
3  HSCARR HOST   10 0    0    0    3 CBSY   ** .C
4  HSCARR HOST   10 0    0    0  178 CBSY   ** .C
```

4 List the alarms on each carrier:

>LISTALM carrier_no

where

carrier_no
is the number of the carrier under the 'N' column (0 to 4)

Example of a MAP screen:

```
ALARM     SEVERITY    REPORTABILITY
RFI        Minor       NRPT
SIMPLEX    Critical    RPT
```

5

If	Do
A SIMPLEX alarm appears	step 6
No SIMPLEX alarms appear for the given carrier number	step 4
No SIMPLEX alarms appear for all listed carrier numbers on the STS3L screen	step 3
No SIMPLEX alarms appear for all STS3L carriers	step 21

Note: STS3L carriers are only shown five at a time, so it may be necessary to repeat Step 3.

6 Post the STS3L carriers on the SPM node:

>POST SPM <spm_no> STS3L

where

spm_no
is the SPM number corresponding to the STS3L carrier from Step 4 (listed under the SPM column in Step 3).

Example of a MAP screen:

```
 STS3L
N  CLASS  SITE SPM RM OC3S STS3L CKT STATE  TR MA
0  HSCARR HOST   8  0    0     0   3 INSV   .. .C
1  HSCARR HOST   8  0    0     0 178 CBSY   ** .C

SIZE OF POSTED SET  :  2
```

7 Determine the carrier causing the SIMPLEX alarm by looking at the STATE column.

If the carrier state is	Do
OFFL	step 8
MANB	step 9
SYSB	step 12
CBSY	step 15
Any other state	step 20

8 Busy the carrier:

>BSY carrier_no

where

carrier_no
is the number of the carrier used in Step 4.

9 Return the carrier to service:

>RTS carrier_no

where

carrier_no
is the number of the carrier used in Step 4.

10 List the carrier alarms:

>LISTALM carrier_no

where

carrier_no
is the number of the carrier used in Step 4.

Example of MAP screen:

```
ALARM     SEVERITY    REPORTABILITY
RFI         Minor       NRPT
```

11

If	Do
A SIMPLEX alarm still appears for the given carrier	step 20
No SIMPLEX alarms are present for the given carrier	step 2

If	Do
No SIMPLEX alarms are present for all carriers	step 21

Note: Multiple SIMPLEX alarms may be present on an SPM.

12 Clear the SYSB alarm (see Clearing a SYSB alarm on page 140), then return to the Carrier level.

13 List the carrier alarms:

```
>LISTALM carrier_no
```

where

carrier_no
is the number of the carrier used in Step 4.

Example of MAP screen:

```
ALARM     SEVERITY    REPORTABILITY
RFI        Minor       NRPT
```

14

If	Do
A SIMPLEX alarm still appears for the given carrier	step 20
No SIMPLEX alarms are present for the given carrier	step 2
No SIMPLEX alarms are present for all carriers	step 21

Note: Multiple SIMPLEX alarms may be present on an SPM.

15 For a CBSY alarm, display OC3S carriers with alarms:

```
>POST ALRM
```

Example of a MAP screen:

```
 OC3S
N  CLASS   SITE SPM RM OC3S CKT STATE   TR MA
0  HSCARR HOST   0  0    0   1 SYSB-T ** mC
```

16 List the alarms on the OC3S carrier:

>LISTALM carrier_no

where

carrier_no
is the OC3S carrier with the alarm(s)

Example of a MAP screen:

```
ALARM     SEVERITY    REPORTABILITY
LOS        Critical     NRPT
LOF        Critical     NRPT
```

17 Refer to the appropriate procedure to clear each OC3S carrier alarm, and return to the Carrier level.

18 List the carrier alarms:

>LISTALM carrier_no

where

carrier_no
is the number of the carrier used in Step 4.

Example of MAP screen:

```
ALARM     SEVERITY    REPORTABILITY
RFI        Minor       NRPT
```

19

If	Do
A SIMPLEX alarm still appears for the given carrier	step 20
No SIMPLEX alarms are present for the given carrier	step 2
No SIMPLEX alarms are present for all carriers	step 21

Note: Multiple SIMPLEX alarms may be present on an SPM.

20 For further assistance, contact the personnel responsible for the next level of support.

21 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Use this procedure to clear a SystemBusy (SYSB) alarm.

Clearing a SYSB alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2        12
```

2 Show the state of all PMs:

>STATUS

3 Display the SPMs that are system busy:

>DISP STATE SYSB SPM

4 Record the number of the SPMs.

5 Post each system busy SPM:

>POST SPM <spm_no>

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM          7        2        2        2        9        16
 SPM          0        2        1        0        0         0

SPM   11 SysB  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  VSP14 14 A ----  -----  7 - ----  ----- 14 - ----
```

6 Determine which of the modules is system-busy and select the modules:

>SELECT <module_type> <module_no>

where

module_type
is the type of module (CEM, OC3, DSP, VSP, or DLC).

module_no
is the number of the module (0 to 27)

Example of a MAP screen:

```
SPM 3    OC3 1    InAct  OffL

Loc : Row E  FrPos  8 ShPos 24 ShId 0 Slot 10   Prot Grp : 1
Default Load: SPMLOAD                           Prot Role: Spare
```

7 Test the module:

>TST

8 Determine the test condition of the module.

If the module test is	Do
OK	step 9
not OK	step 11

9 Return the module to service:

>RTS

10 Determine the state of the module.

If the module is	Do
InSv	step 15
any other state	step 14

11 Replace the module identified in Step 6. For detailed instructions, see the SPM section of the *Card Replacement Procedures*. When you complete the card replacement procedure, go to Step 12 of this procedure.

12 List the alarms on the module:

>LISTALM

13 Determine whether the alarm has cleared.

If the alarm list indicates	Do
SYSB	step 14
None	step 15

14 For further assistance, contact the personnel responsible for the next level of support.

15 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a SystemBusyNotAvailable(SYSBNA) alarm.

Clearing a SYSBNA alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

2 Display all the system-busy SPMs:

```
>DISP STATE SYSB SPM
```

3 Record the number of the SPMs.

4 Post each system-busy-not-available SPM:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
  PM          7        2        2        2        9       16
 SPM          1        2        1        0        0        0

SPM   11 SysB Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A SysB  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

5 List the status of the ENET links:

>TRNSL

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB (NA)

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

6 Determine whether the ENET links are in service.

If the status of the ENET links is	Do
OK	step 9
NA or UR	step 7

7 Return the ENET links to service. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore ENET links to service.

8 List the alarms on the SPM unit:

>LISTALM

If the alarm list shows	Do
None	step 10
SYSBNA	step 9

9 Record ENET information:

a List the status of the ENET links:

>TRNSL

Example of a MAP screen:

```
SPM   11 CEM   0  Act    SysB (NA)

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  30  0; Status: OK
Link 2: ENET 1  0  30  1; Status: NA
Link 3: ENET 0  0  30  2; Status: OK
Link 4: ENET 1  0  30  3; Status: OK
```

b Record the ENET shelf number (`30` in the example above).

10 Determine the MS card numbers:

a At the CI level of MAP screen, locate the MS card that the ENET is connected to:

>TABLE ENINV

b Create a heading for the tuple:

>HEADING

c Position on the tuple for the ENET shelf:

>POS <enet_shelf_no>

where

enet_shelf_no
is the number of the ENET shelf

Example of a MAP screen:

```
CI:
>table eninv
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: ENINV
>heading
ENKEY ENCLASS FRTYPE FRNO    FRPEC    SHPEC MSCARD0 MSLINK0 MSPORT0 FLOOR0
ROW0 FRPOS0 SHELF0                          LOAD0 MSCARD1 MSLINK1 MSPORT1
FLOOR1 ROW1 FRPOS1 SHELF1                         LOAD1
------------------------------------------------------------------------------
>pos 0
    0     PRI    ENC    0 NT9X05AB NT9X0801       6       0       0      1
   F      2     39                          ENX08AX      10       0       0
     1    F      1     39                          ENX08AX
```

d Record the MS card numbers under `MSCARD0` and `MSCARD1` (`6` and `10` in the previous example).

11 Locate the MS cards:

`>MAPCI;MTC;MS;SHELF 0;CARD <ms_card_no>`

where

ms_card_no
is the number of the MS card

Example of a MAP screen:

```
Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
MS 0     .        Master        F                   R R
MS 1     S         Slave         C                   C C

Shelf 0                 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain           < > < > < > < > |   | | |
MS 0 . . . . . F . . . F . . . . . . . . - . . . . . F .
MS 1 C C C C C C C C C C C C C C C C C C - C C C C C C C

Card 06 Protocol Port  0_____3  4_____7  8____11  12___15
MS 0 .  DS512   64 . . . . . . . . . . . P P  . . . .
MS 1 C   DS512   64 C P P P  P P P P  P P P P  P P P P
```

12 Check the status of both ports (0 and 1) on both MS cards (MSCARD0 and MSCARD1).

a Determine the state of each MS card port that connects to the SPM with the SYSBNA alarm,:

>TRNSL <ms_card_port>

where

ms_card_port
is the number of the MS card port (0 or 1)

Example of a MAP screen:

```
PORT  20=SPM  10 (OK  ,P:NA SYST ACC NP MSRR ^PSRR)
PORT  21=SPM  10 (OK  ,P:NA SYST ACC NP MSRR ^PSRR)
PORT  22=SPM  11 (OK  :UR SYST ACC NP MSRR PSRR)
PORT  23=SPM  11 (OK  :UR SYST ACC NP MSRR PSRR)
PORT  24=SPM  12 (OK  :AV SYST ACC NCP MSRR PSRR)
```

b Repeat step 12a for the second MS port.

c Repeat step 11 for the other MS card, then repeat step 12 to check the MS ports on that card.

If the status of the MS ports shows	Do
OK for all four ports	step 15
NA or UR for any port	step 13

13 Return the MS ports to service. When you have completed the procedure, return to this point.

Note: Contact your next level of support if you are not familiar with the procedures required to restore MS ports to service.

14 List the alarms on the SPM unit:

>LISTALM

If the alarm list shows	Do
None	step 16
SYSBNA	step 15

15 For further assistance, contact your next level of support.

16 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Use this procedure to clear a TONESLOW alarm.

Clearing a TONESLOW alarm

At the MAP terminal

1 Access the log utility level of the MAP screen:

```
>LOGUTIL
```

2 Display all the SPM350 logs:

```
>DUMPLOGS SPM 350
```

Example of a MAP screen:

```
SPM350 Nov19 20:01:33 1400 Pool Percent Free Resources
Low
ALARM_STATE = ON
POOL        = TONESYN
SPM_NUM     = 20
NUM_FREE    = 39
NUM-INUSE   = 61
```

Note: OPEN SPM 350 can be used instead of the DUMPLOGS command. Logs can then be browsed using the LAST, FIRST, BACK, and FORWARD commands.

3 Locate an SPM350 log with `ALARM_STATE = ON` and `POOL = TONESYN`. Record the number of the SPM.

4 Post the SPM:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85) shown in the log report

Example of a MAP screen:

```
           SysB    ManB    OffL    CBsy    ISTb    InSv
  PM          7       2       2       2       9      16
 SPM          0       1       1       0       0       1

SPM   20 InSv  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I InSv  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A InSv -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I InSv  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A InSv  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A InSv  -----  6 - ----  ----- 13 - ----
CEM 0  7 A InSv  ----- 14 A InSv  -----  7 - ----  ----- 14 - ----
```

5 List the alarms on the SPM:

>LISTALM

Example of a MAP screen:

```
ListAlm
ListAlm: SPM 11  OC3 0

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       None
Minor       TONESLOW    RPT
No_Alarm    None
```

6 Determine whether sparing activities are underway.

a Check the alarm list for a NOSPARE alarm.

If the alarm list indicates	Do
NOSPARE	step 6 b
None	step 6 c

b Verify that sparing activities are underway by other personnel. Otherwise, clear the NOSPARE alarm (see Clearing a NOSPARE alarm on page 118).

c Check the list of posted modules for DSPs that are system busy (SysB) or manual busy (ManB). If other personnel are involved in sparing activities, check with them to make sure the DSPs will be returned to service. Otherwise, clear any alarms and return the units to service.

d Wait until the state of the DSPs indicates InSv.

7 When the DSPs are returned to service, determine if the alarm has cleared.

If the alarm list indicates	Do
TONESLOW	step 8
None	step 11

8 Provision additional DSP RMs. When you have completed the procedures, return to this point.

Note: Contact your next level of support if you are not familiar with the policies and procedures for provisioning DSP RMs.

9 List the alarms on the SPM unit:

```
>LISTALM
```

If the alarm list indicates	Do
TONESLOW	step 10
None	step 11

10 For further assistance, contact the personnel responsible for the next level of support.

11 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to clear a VCXO70 alarm.

Clearing a VCXO70 alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

>MAPCI;MTC;PM

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        1       12
```

2 Display all the inservice-trouble (ISTb) SPMs:

>DISP STATE ISTb SPM

3 Record the number of the SPMs.

4 Post each ISTb SPM:

>POST SPM <spm_no>

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9       16
  SPM         0        2        1        0        1        0

SPM   11 ISTb  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ISTb  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

5 Select the ISTb CEM:

>SELECT CEM <cem_no>

where

cem_no
is the number of the CEM (0 or 1)

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
```

6 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
-----------------------------
Critical    None
Major       None
Minor       VCX070         RPT
No_Alarm    None
```

7 Determine whether there are any other CEM alarms.

If there are	Do
no other CEM alarms	step 10
other CEM alarms	step 8

8 Clear the other CEM alarms using the appropriate SPM alarm clearing procedures. When you have completed the procedures, return to this step.

At the MAP terminal

9 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 13
VCXO70	step 10

10 Replace the CEM module (see Replacing a CEM circuit pack on page 184). When you complete the card replacement procedure, return to this point.

11 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 13
VCXO70	step 12

12 For further assistance, contact the personnel responsible for the next level of support.

13 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Alarm reporting is configured via datafill. Datafilling an alarm with a “RPT” option allows alarm reporting. The “NRPT” option inhibits alarm reporting. The procedure that follows shows an example of datafilling the COTLOW and MFLOW alarms in table MNNODE. The COTLOW alarm is configured to be reported, while the MFLOW alarm is configured not to be reported.

Configuring alarm reporting

At the MAP level

1 Access table MNNODE:

```
>TABLE MNNODE
```

2 Begin the table addition:

```
>ADD
```

3 Answer each of the prompts with the required datafill provided by the table range.

This is an example of datafilling table MNNODE.

```
>ADD
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>Y
NODEKEY:
>SPM 1
ALIAS:
>ALARMREPORTS
CLASS:
>DMSCP
FLOOR:
>0
CLKMODE:
>SYNC
CLKREF:
>INTERNAL
LEDTIMER:
>15
```

```
RSRUTLIM:
>COT 75
RSRUTLIM:
>MF 75
RSRUTLIM:
>$
ALRMCTRL:
>COTLOW MJ RPT
ALRMCTRL:
>MFLOW MN NRPT
ALRMCTRL:
>PATCHFAIL MN RPT
ALARMCTRL:
>$
EXECTAB:
>$
CAPINDX:
>ENHANCED
TUPLE TO BE ADDED:
SPM 1 ALARMREPORTS DMSCP 0 SYNC INTERNAL 15 (COT
75) (MF 75) $ (COTLOW MJ RPT) (MFLOW MN NRPT)
(PATCHFAIL MN RPT) $ ENHANCED
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y
TUPLE ADDED
JOURNAL FILE INACTIVE
```

4 You have completed this procedure. Exit table MNNODE:

```
>QUIT
```

Use this procedure to clear a VCXO90 alarm.

Clearing a VCXO90 alarm

At the MAP terminal

1 Access the PM level of the MAP screen:

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

Example of a MAP screen:

```
     SysB     ManB     OffL     CBsy     ISTb     InSv
PM    1        1        1        3        2       12
```

2 Display all the inservice-trouble (ISTb) SPMs:

```
>DISP STATE ISTb SPM
```

3 Record the number of the SPMs.

4 Post each ISTb SPM:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen:

```
            SysB     ManB     OffL     CBsy     ISTb     InSv
   PM         7        2        2        2        9       16
  SPM         0        2        1        0        2        0

SPM   11 ISTb  Loc: Site HOST Floor  1 Row A  FrPos 13

Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
-----  1 - ----  CEM 1  8 I SysB  -----  1 - ----  -----  8 - ----
-----  2 - ----  OC3 0  9 A ----  -----  2 - ----  -----  9 - ----
DSP 3  3 I OffL  OC3 1 10 I ----  -----  3 - ----  ----- 10 - ----
-----  4 - ----  ----- 11 - ----  -----  4 - ----  ----- 11 - ----
-----  5 - ----  DSP12 12 A ----  -----  5 - ----  ----- 12 - ----
-----  6 - ----  DSP13 13 A ----  -----  6 - ----  ----- 13 - ----
CEM 0  7 A ISTb  ----- 14 A ----  -----  7 - ----  ----- 14 - ----
```

5 Select the ISTb CEM:

```
>SELECT CEM <cem_no>
```

where

cem_no
is the number of the CEM (0 or 1)

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
```

6 List the alarms on the CEM:

>LISTALM

Example of a MAP screen:

```
SPM   11 CEM   0  Act    ISTb

Loc : Row F  FrPos 64 ShPos  6 ShId 0 Slot  7
Default Load: SPMLOAD
Clock:
Input Ref:            Source:            Current Mode:
ListAlm
ListAlm: SPM 11  CEM 0

SEVERITY    ALARM       ACTION
------------------------------
Critical    None
Major       None
Minor       VCX090         RPT
No_Alarm    None
```

7 Determine whether there are any other CEM alarms.

If there are	Do
no other CEM alarms	step 10
other CEM alarms	step 8

8 Clear the other CEM alarms using the appropriate SPM alarm clearing procedures. When you have completed the procedures, return to this step.

9 List the alarms on the CEM:

>LISTALM

If the alarm list shows	Do
None	step 13
VCX090	step 10

10 Replace the CEM module (see Replacing a CEM circuit pack on page 184). When you complete the card replacement procedure, return to this point.

11 List the alarms on the CEM:

```
>LISTALM
```

If the alarm list shows	Do
None	step 13
VCX090	step 12

12 For further assistance, contact the personnel responsible for the next level of support.

13 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Configuring alarm severity profiles

Resource module (RM) alarm severity is configured using the MNCKTPAK table. There are four alarm severities that can be datafilled:

- No action (NA)
- Minor (MN)
- Major (MJ)
- Critical (CR)

This procedure shows the process to change alarm severity for an existing DLC resource module (RM) datafill. The same procedure applies to all RMs in the MNCKTPAK table.

Alarm severity is configured during initial RM datafill. This procedure describes the process to change alarm severity levels for an RM previously datafilled in the MNCKTPAK table. If adding a new RM, the ADD command is used in step 3 and all fields require datafill.

The table below, Variable abbreviations, defines the variables used in this procedure.

Variable abbreviations

Abbreviation	Definition
spm_no	the number of the SPM node
shlf_no	the shelf number (0 or 1)
slt_no	the slot number (1 through 14)
rm_type	the RM type listed in the MNCKTPAK table (CEM, DLC, OC3, VSP, etc.)
rm_no	the DLC resource module (RM) number

This procedure requires you to press the Enter key after each command.

Configuring alarm severity profiles

At the MAP level

1 Access the MNCKTPAK table:

```
>TABLE MNCKTPAK
```

2 Position on the RM for change:

```
>POS SPM  spm_no  shlf_no slt_no rm_type rm_no
```

Example

```
>POS SPM  8 1 1 DLC 0
```

3 Begin the alarm severity change:

```
>CHA
```

4 Until reaching the ALRMCTRL field to be modified, press the Enter key to retain values of each field.

5 At the designated alarm field, type in the alarm with the new severity level.

Note: The following change of the In Service Trouble alarm from Minor to Major is provided as an example, not as a recommendation.

Example

```
ALRMCTRL:ISTB MN RPT
```

```
>ISTB MJ RPT
```

6 After making the necessary modifications, continue to press the Enter key to retain the existing configuration.

```
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

7 At the confirmation prompt, accept the change:

```
>Y
```

```
TUPLE ADDED
```

8 You have completed this procedure. Exit table MNCKTPAK:

```
>QUIT
```

Correlating logs and alarms

Alarms and logs are often related to each other when a particular fault condition exists. The table below, SPM alarm to log correlation, correlates alarms and logs together to help isolate faults.

SPM alarm to log correlation (Sheet 1 of 7)

Alarm	Related logs	Probable cause
AIS (Alarm Indication Signal)	BITS300 BITS600 CARR300 CARR310	Two possible causes: 1. The Sync RM has detected an AIS on an incoming BITS timing reference signal from either the BITS or the crossover from the alternate SPM reference node. 2. An unbroken sequence of frames with alarm indication signals (AISs) has been detected for a duration of 2.5 seconds.
APSAM (Architecture Mismatch)	CARR300	Multiplex Section Protection (MSP) Architecture Mismatch - the local multiplexer and the remote multiplexer are working in different modes.
APSCHMM (Selector Channel Mismatch)	CARR300	Multiplex Section Protection (MSP) Selector Channel Mismatch - the transmitted and received Primary section channel numbers differ by more than 50ms.
APSFC (Automatic Protection Forced Command)	CARR310	Multiplex Section Protection (MSP) Forced switch from protection section or working section.
APSFEPLF (Automatic Protection Switching Far End Line Failure)	CARR310	Multiplex Section Protection (MSP) of the Far End Protection Line Failure.
APSIC (Invalid Code)	CARR300	Multiplex Section Protection (MSP) Invalid Command - the received bytes are invalid or contain inappropriate responses to requests for more than 50ms.

SPM alarm to log correlation (Sheet 2 of 7)

Alarm	Related logs	Probable cause
APSLCK (Automatic Protection Lockout)	CARR310	Multiplex Section Protection (MSP) Lockout of protection.
APSMAN (Automatic Protection Manual Command)	CARR310	Multiplex Section Protection (MSP) Manual switch from protection section or working section.
APSMM (Mode Mismatch)	CARR300	Multiplex Section Protection (MSP) Operation Mode Mismatch - one multiplexar is configured for unidirectional operation while the other is configured for bidirectional operation.
BERSD (Bit Error Rate Signal Degrade)	CARR300 CARR310	The bit-error-rate signal degradation (BERSD) has exceeded the datafilled value for a duration of 2.5 seconds.
BERSF (Bit Error Rate Signal Fail)	CARR300 CARR310	The bit-error-rate signal failure (BERSF) has exceeded the datafilled value for a duration of 2.5 seconds.
BPV	BITS301 BITS601	The incoming signal has a BPV alarm indicating a degraded signal.
CALLP FAIL	SPM370 SPM670	The spm callp task is not responding to pings.
CLKOOS	SPM334	The MS clock is not synchronized, a SONET synchronization reference of acceptable quality is not available, or the SPM has lost frequency traceability between the MS clock and the OC3, or the TSG.
COTLOW	SPM350	The low water mark threshold was exceeded for COT resources.
CRC	BITS301 BITS601	The SyncRM detected a CRC from the incoming signal, indicating a degraded signal.
DCH LOCKOUT	SPM370 SPM670	A significant quantity of d-channels (more than 70%) are in lockout.

SPM alarm to log correlation (Sheet 3 of 7)

Alarm	Related logs	Probable cause
DDM DATA CORRUPTION	SPM370, SPM670	PTS trunks could not be fully Returned To Service (RTS) because of missing DDM data.
DTMFLOW	SPM350	The low water mark threshold was exceeded for DTMF resources.
ECANLOW	SPM350	The low water mark threshold was exceeded for ECAN resources.
EXCESSIVE OVERLOAD TIME	SPM370, SPM670	The SPM has spent one hour or more in level 2 overload.
EXCESSIVE TOSSED ORIGINATIONS	SPM370 SPM670	The SPM has exceeded the tossed origination threshold during a 15-minute interval.
HLDOVR	SPM341 SPM501 SPM641	Two possible causes: 1. The CEM clocks have lost network synchronization. 2. The SRM has gone into holdover mode as a result of loss of reference signals. The alarm clears when holdover mode is exited.
HLDOVR24	SPM342 SPM501 SPM642	Two possible causes: 1. The CEM clocks have not be synchronized with the network for 24 hours or more 2. The SRM has gone into the holdover mode as a result of loss of reference signals for 24 hours or more. The alarm clears when holdover is exited.
ISTB	ENET308 SPM300 SPM331 SPM500 SPM630	The SPM is in service, but is experiencing non-service-affecting faults.
ISUP CCNOANSWER	SPM370 SPM670	Calls using ISUP trunks are being setup but not answered.
ISUP CCNOCLEANUP	SPM370 SPM670	Calls using ISUP trunks are not transitioning from answered, seized, etc. to idle.

SPM alarm to log correlation (Sheet 4 of 7)

Alarm	Related logs	Probable cause
ISUP CCNOSETUP	SPM370 SPM670	Calls using ISUP trunks are not being setup.
ISUP TRUNKS LOCKOUT	SPM370 SPM670	A significant quantity of ISUP trunks (more than 50%) are in lockout.
LOF (Loss of Frame)	CARR300 CARR310	An unbroken sequence of frames with invalid pointers was detected.
LOP (Loss of Pointer)	CARR300 CARR310	An unbroken sequence of frames with invalid pointers was detected for a duration of 2.5 seconds.
LOR (Loss of BITS Link Redundancy)	SPM311 SPM344, SPM644	Two possible causes: 1. One of the BITS links for the SRM is out of service, causing the SRM to lose BITS link redundancy. 2. A software exception report (SWER) has occurred.
LOS (Loss of Signal)	BITS300 BITS600 CARR300 CARR310	Two possible causes: 1. The SRM cannot detect a signal from the BITS timing link. 2. There was a continuous absence of any detectable transmission pulses at the receiving end for a duration of 2.5 seconds.
MANB	CARR500, CARR501, CARR510, CARR512, SPM300, SPM331, SPM500, SPM630	A device on the SPM is in a manual busy state.
MANBNA	SPM600	The SPM is in ManB state and is isolated from the ENET links or the MS ports.
MFLOW	SPM350	The low water mark threshold was exceeded for MF resources.
MISSING EXECS	SPM370, SPM670	Execs which should be datafilled in table MNNODE have been detected as missing.

SPM alarm to log correlation (Sheet 5 of 7)

Alarm	Related logs	Probable cause
MTIE2	BITS300, BITS600	The MTIE performance for the input signal has exceeded the GR-253 requirement mask threshold indicating an unusable signal.
NOSPARE	SPM300 SPM331	The last spare module in a protection group is not available for service.
OOF (Out of Frame)	BITS300 BITS600	The SRM cannot detect a DS1frame for a given BITS Timing link.
PATCHFAIL	SPM301	SPARTS (Spectrum Patching After Return To Service) failed to install one or more patches.
PLM (Payload Label Mismatch)	CARR300 CARR310	
PRI CCNOANSWER	SPM370 SPM670	Calls using PRI trunks are being setup but not answered.
PRI CCNOCLEANUP	SPM370 SPM670	Calls using PRI trunks are not transitioning from answered, seized, etc. to idle.
PRI CCNOSETUP	SPM370 SPM670	Calls using PRI trunks are not being set up.
PROTFAIL	SPM300 SPM331 SPM500	Protection switching failed for an RM.
PTS CCNOANSWER	SPM370 SPM670	Calls using PTS trunks are being set up but not answered.
PTS CCNOCLEANUP	SPM370 SPM670	Calls using PTS trunks are not transitioning from answered, seized, etc. to idle.
PTS CCNOSETUP	SPM370 SPM670	Calls using PTS trunks are not being setup.
PTS TRUNK LOCKOUT	SPM370 SPM670	A significant quantity of PTS trunks (more than 50%) are either in lockout state or remote make busy.

SPM alarm to log correlation (Sheet 6 of 7)

Alarm	Related logs	Probable cause
RAI (Remote Alarm Indication)	CARR300 CARR310	An unbroken sequence of remote alarm indication (RAI) signals was detected for a duration of 2.5 seconds.
RFI (Remote Failure Indication)	CARR300 CARR310	An unbroken sequence of remote failure indication (RFI) signals was detected for a duration of 2.5 seconds.
SIMPLEX	CARR300 CARR310	Protection switching is unavailable.
SYSB	CARR500 CARR501 CARR510 CARR511 CARR512 NODE500 SPM300 SPM331 SPM500 SPM630	A device on the SPM is in a system busy state.
SYSBNA	ENET311	The SPM node is system busy and not accessible, and a network error has caused it to be isolated from the ENET links or the MS ports.
TIM (Trace Identifier Mismatch)	CARR300 CARR310	Trace Identifier Mismatch for STS-1 Path (TIM-P). Allows a signal to be traced back to its source for connectivity troubleshooting. The TIM alarm is provisioned in table MNHSCARR. Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate. ***Note:*** TIM is supported for STS-1 carriers only. It is not supported for OC3.
TLD (Timing Link Degradation)	BITS301 BITS601	The MTIE performance for the input signal has exceeded the GR-253 objective mask threshold, indicating a degraded signal.
TONESLOW	SPM350	The low water mark threshold was exceeded for TONESYN resources.

SPM alarm to log correlation (Sheet 7 of 7)

Alarm	Related logs	Probable cause
TOO FEW CONTEXTS	SPM370 SPM670	Call processing contexts are not being created as they should.
TOO MANY BAD CONTEXTS	SPM370 SPM670	An excessive amount of pts contexts (30% or more) have been detected in nullPhase.
VCXO70	SPM301	The voltage controlled oscillator (VCXO) has exceeded the 70% threshold of its range to keep the CEM synchronized as a timing reference.
VCXO90	SPM301	The voltage controlled oscillator (VCXO) has exceeded the 90% threshold of its range to keep the CEM synchronized as a timing reference.

Use this procedure to view logs on the MAP screen.

Viewing logs

At the MAP level

1 Access the logutil level:

```
>LOGUTIL
```

2 Display logs on the MAP screen:

```
>START
```

3 You have completed this procedure.

Stopping display of logs

Use this procedure to stop the display of logs on the MAP screen.

Stopping display of logs

At the MAP level

1 Access the logutil level:

```
>LOGUTIL
```

2 Stop the display of logs on your MAP screen:

```
>STOP
```

3 You have completed this procedure.

Retrieving the most recent log

Use this procedure to retrieve the most recent occurrence of a specific log.

Retrieving the most recent log

At the MAP terminal

1 Access the log utility level of the MAP screen:

```
>LOGUTIL
```

2 Display the log:

```
>OPEN <logname> <lognumber>
```

where

logname
is the name of the log (SPM, CARR, BITS, ENET, SPRF)

lognumber
is the number of the log

Example

```
>OPEN SPM 350
```

Note: Omitting a log number displays the most recent entry for all of the log numbers associated with a log name.

3 You have completed this procedure.

Use this procedure to add a log to a MAP display.

Adding a log to a display

At the MAP level

1 Access the logutil level:

```
>LOGUTIL
```

2 Add the report of the log to display:

```
>ADDREP <device> <rep name>
```

where

device
is the device the logs are running on

rep name
is the name of the report (log) you wish to display (e.g., PM, CM, IOD, etc.)

3 You have completed this procedure.

Deleting a log from a display

Use this procedure to delete a log from your display.

Deleting a log from a display

At the MAP level

1 Access the logutil level:

```
>LOGUTIL
```

2 Delete selected logs:

```
>DELREP <device> <rep name>
```

where

device
is the device the logs are running on

rep name
is the name of the report (log) you wish to delete (e.g., PM, CM, IOD, etc.)

3 You have completed this procedure.

Replacing a DLC resource module

This procedure describes the process to replace a DLC resource module (RM). Before replacing a DLC, ensure that the proper load for the replacement DLC is installed on the disk volume. If the replacement DLC has a different PEC or requires a different load than the DLC being replaced, step 7 requires an update to the MNKCKTPK table to reflect those changes.

Loads vary depending on the DLC PEC code:

- NTLX72AA - DLC load
- NTLX72BA - DL2 load

The table below, SPM release and load requirements, lists required NTLX72BA loads for specific SPM releases.

SPM release and load requirements

SPM release	NTLX72BA required load
SP17.0.3A	DL217VA 010047A1 (PPSL)
SP17.1.2	DL271AZ 010025A1 (PPSL)
SP17.2.1	DL271BA 010026

The table below, Variable abbreviations, following variables are used in this procedure.

Variable abbreviations

Variable	Description
spm_no	The number of the SPM (0 through 85)
rm_no	The number of the DLC (0 through 27)
act_rm	The number of the active DLC (0 through 27)
inact_rm	The number of the inactive DLC (0 through 27)
prsu_id	The PRSU name

This procedure requires you to press the Enter key after each command.

Replacing a DLC resource module

At the MAP terminal

1 Select the DLC scheduled for replacement:

```
>MAPCI;MTC;PM;POST SPM spm_no SELECT DLC rm_no
```

Example

```
>MAPCI;MTC;PM;POST SPM 5 SELECT DLC 1
```

2 Access the MAP protection level:

```
>PROT
```

If the DLC to replace is	Do
ACTIVE	step 3
INACTIVE	step 6

3 Switch activities between the DLC units:

```
>MANUAL act_rm inact_rm
```

Example

```
>MANUAL 0 1
```

4 At the confirmation prompt, continue:

```
>Y
```

Note: Observe that the activity has changed from Active (A) to Inactive (I).

5 Exit the PROT level:

```
>QUIT
```

6 With the DLC for replacement still selected, busy the DLC:

```
>BSY
```

7 Take the DLC card to be replaced off line:

```
>OFFL
```

If	Do
there is a PEC code change	Update the MNCKTPAK table to match the replacement card and appropriate load. For more information, refer to the introduction to this procedure.

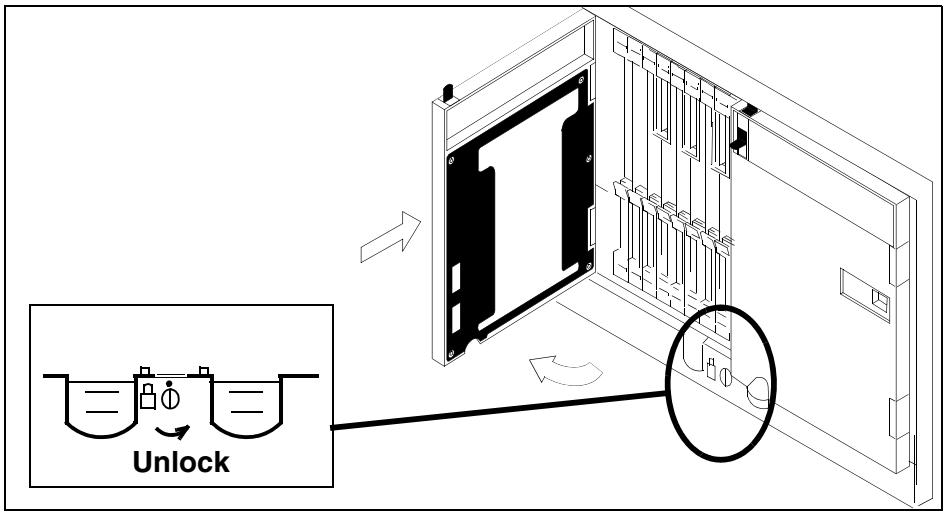
8

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame to protect the cards against static electricity damage.

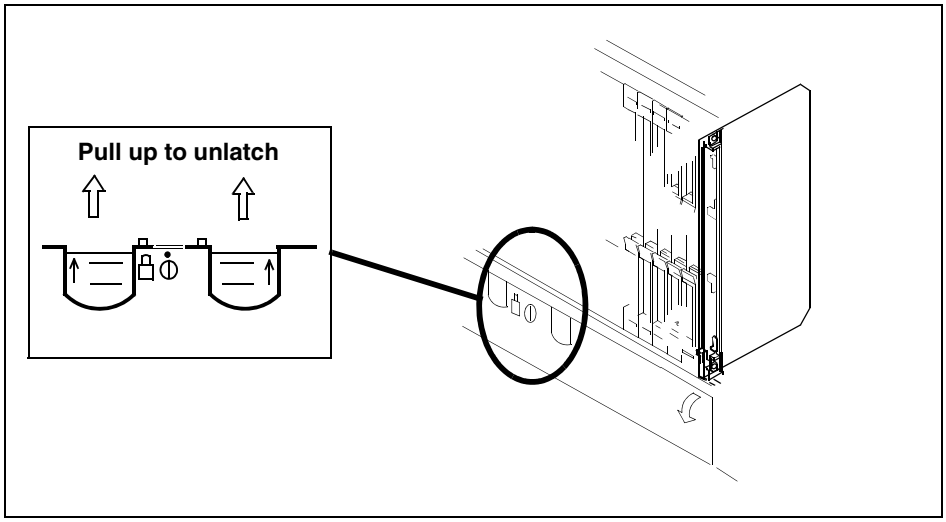
Return to the SPM screen and wait for the module state to change.

Note: The state change from ManB (manual busy) to OffL (offline) can take several minutes to complete. After the state change is complete, remove the DLC card.

9 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter-turn counter-clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



10 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



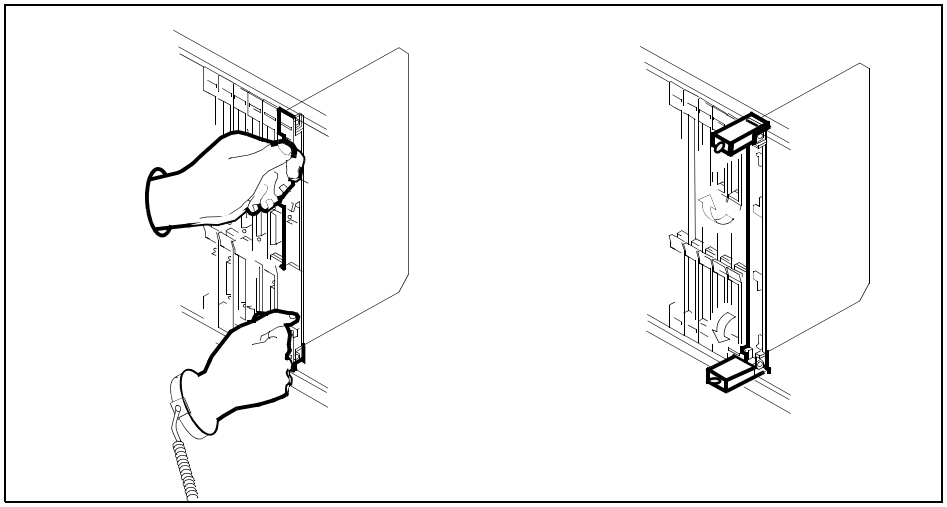
11

CAUTION

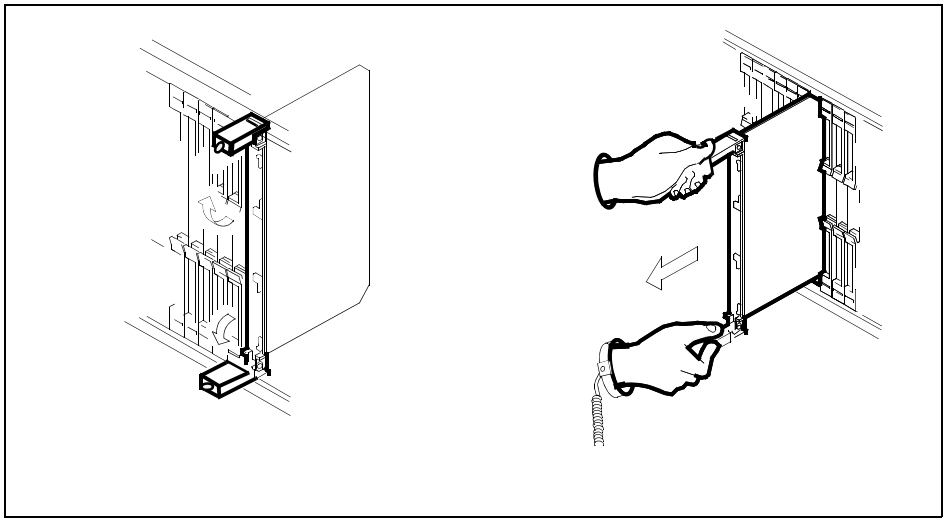
Card lever breakage

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

As shown in the following figure, open the locking levers on the card to be replaced.



12 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5 cm) from the equipment shelf.

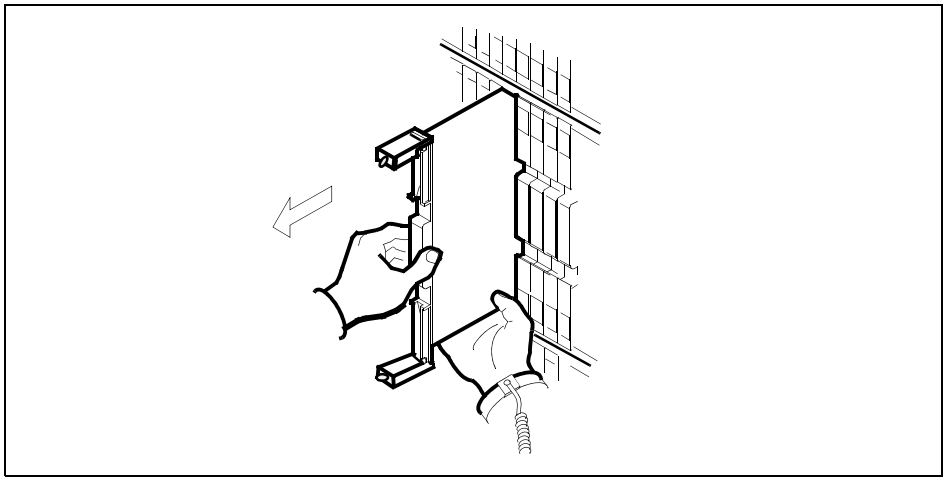


13

ATTENTION

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

As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



14

DANGER

Equipment malfunction

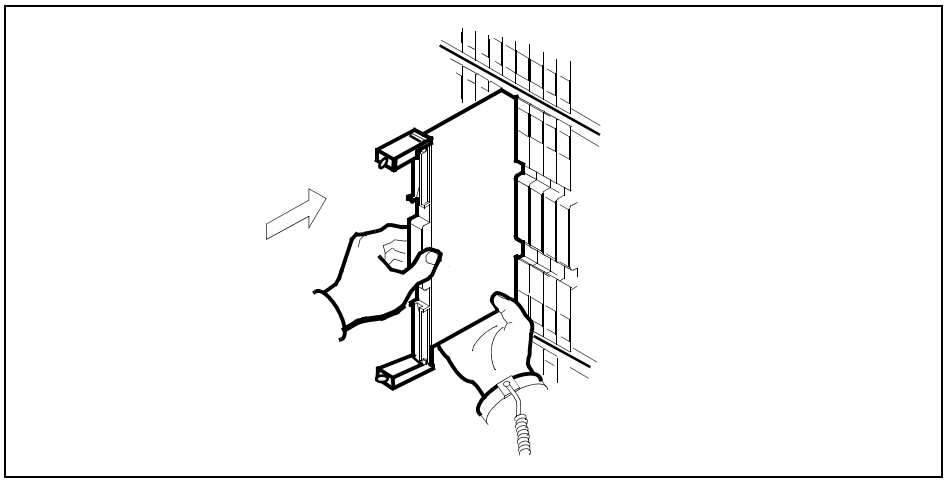
Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in the MNCKTPAK table to match the replacement card before inserting it in the slot.

Place the card in an electrostatic discharge (ESD) protective container.

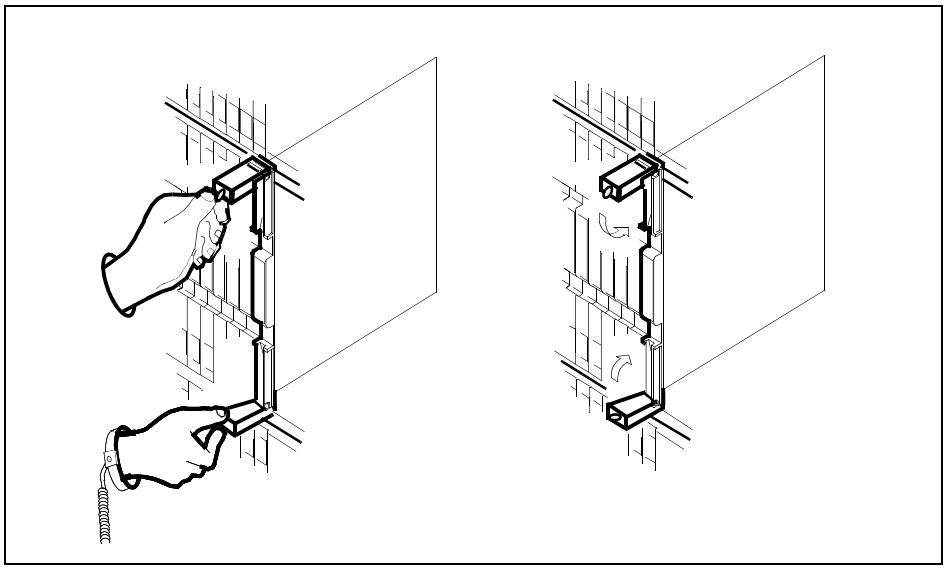
15 Insert the replacement DLC card into the shelf. If a replacement card is not available, insert an NTLX60BA filler module in the slot until a replacement card is available.

16 Open the locking levers on the card.

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



18 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



19 Close the locking levers to secure the card.

20 Wait until the card performs a self-test (less than one minute). The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement RM card is defective; remove the card and replace it with another RM replacement card of the same type. If both LEDs remain on with the second replacement card, contact your next level of support.

21 Close and lock the access door.

22

CAUTION

Mixing activity states and service states

RMs can be busy and active at the same time. To avoid this situation, do not busy (BSY) an active RM and do not attempt a protection switch to a BSY RM.

Ensure the replacement module is inactive before setting it to manual busy. Change the DLC card from the OffL state to ManB state:

```
>BSY
```

23 Load the new inactive DLC with the default software load:

```
>LOADMOD
```

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

Example of MAP display

```
RTS is recommended to load an RM device from Flash memory.
LOADMOD reloads devices from the un-patched core disk load.
Applicable patches will not be applied following LOADMOD.
Relevant patches will be automatically queued for application
as part of device RTS.

Do you wish to proceed with LOADMOD?
Please confirm ("YES", "Y", "NO", or "N"):
```

24 At the confirmation prompt, continue:

```
>Y
```

Example of MAP response

```
SPM 5   DLC  1   Load: Request has been submitted.
SPM 5  DLC  1   Load: Command completed. Command passed.
```

25 Open a second window and access the PRSM tool:

```
>PRSM
```

26 Ensure that PRSM recognizes any pre-applied PRSUs and has found all applied PRSU files:

```
>DBAUDIT SPM spm_no DLC inact_rm
```

Example

```
>DBAUDIT SPM 5 DLC 1
```

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 5  DLC 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

27 Identify if PRSM found all patch files built into the PPSL:

```
>SELECT PRSUID CATEGORY STATUS BUILTIN FROM
DESTSET SPM spm_no DLC inact_rm
```

Example of MAP response

```
>select prsuid category status builtin from destset spm 5 dlc 1
PRSUID     CAT     ST    BUILTIN
---------- -----   ---   -----------
TAB51S0P    GEN    A      Y
BUZ80S0P    GEN    A      Y
CTC51S0P    GEN    A      Y
DXH62S0P    GEN    A      Y
DXH63S0P    GEN    A      Y
JXM65S0P    GEN    A      Y
KAA01S0P    GEN    A      Y
KRI62S0P    GEN    A      Y
LLH11S0P    GEN    A      Y
SBF80S0P    GEN    A      Y
SBF90S0P    GEN    A      Y
TAV54S0P    GEN    A      Y
```

Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume.

If this situation should occur, use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 5 DLC 1**

Before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume.

28 If required, patch the DLC load file.

If patches	Do
are required for the load file	step 29
are not required for the load file	step 31

29 Apply the patches:

```
>APPLY 'prsu_id | prsu_id | prsu_id IN SPM
spm_no DLC inact_rm
```

Example

```
>APPLY 'ABC05S13 | DEF10S13 | GHI45S13 IN SPM 5
DLC 1
```

Note: Repeat the command as necessary to apply additional patches.

30 Ensure that the inactive DLC is correctly patched:

```
>REPORT DEST SPM spm_no DLC inact_rm
```

Example

```
>REPORT DEST SPM 5 DLC 1
```

Note: The output should be the combination of the PSRUs applied in step 29 and the pre-applied PRSUs displayed in step 27.

Example of MAP response

```
REPORT DEST SPM 5 DLC 1
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
--------------- -------- ----- --- --- -- -------- - --------------------
ABC05S13      20020915 23:29 GEN A DL217BA N SPM 5 DLC 1
DEF10S13      20020915 23:33 GEN A DL217BA N SPM 5 DLC 1
GHI45S13      20020915 23:36 GEN A DL217BA N SPM 5 DLC 1
TAB51S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
CTC51S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
BUZ80S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
DXH63S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
DXH62S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
JXM65S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
KAA01S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
KRI62S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
LLH11S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
SBF80S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
SBF90S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
TAV54S0P      20020915 23:10 GEN A DL217BA N SPM 5 DLC 1
```

31 Exit the PRSM tool:

```
>QUIT
```

32 From the original window with the replacement DLC selected, return the new DLC card to service:

```
>RTS
```

Note: The state change from ManB to Insv can take up to one minute to complete.

If the Prot Role is:	Do
Working	step 33
Spare	step 36

33 Enter the protection level:

```
>PROT
```

34 Switch activities to make the new DLC active:

```
>MANUAL act_rm inact_rm
```

35 At the confirmation prompt, continue:

```
>Y
```

36 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Replacing a CEM circuit pack

Use the following procedure to replace a CEM circuit pack.

The table below, Variable abbreviations, defines the variables used in this procedure.

Variable abbreviations

Abbreviation	Definition
spm_no	The number of the SPM (0 through 85)
cem_no	The CEM number (0 or 1)
shelf_no	The ENET shelf number (0 through 3)
slot_no	The ENET slot number (1 through 38)
plane_no	The ENET plane number (0 or 1)
link_no	The ENET link number (0 through 4)

This procedures requires you to press the Enter key after each command.

Replacing a CEM circuit pack

At the MAP terminal

1 Access the SPM screen at the PM screen level of the MAP display:

```
>MAPCI;MTC;PM:POST SPM spm_no
```

2 Access the CEM card targeted for replacement:

```
>SELECT CEM cem_no
```

At the CEM screen

3 The CEM targeted for replacement must be inactive.

If the CEM is	Do
active	step 4
inactive or SysB	step 8
ManB	step 10

4 Go to the MAP protection (PROT) level:

```
>PROT
```

5 Perform a manual switch of activity:

```
>MANUAL
```

6 When prompted, confirm the switch of activity:

```
>Y
```

7 Exit the PROT screen:

```
>QUIT
```

8 Take the CEM card out of service:

```
>BSY
```

9 Wait for the CEM to change to the manual busy (ManB) state.

10 Write down the CEM location (SPM number, shelf ID, slot number) for later reference.

The following example highlights the required information in bold type.

Example
SPM 31 CEM 0 InAct Manb

Loc : Row D FrPos 57 ShPos 43 **Shld 0 Slot 7**

11 Begin the process to erase the flash memory:

```
>ERASEFL
```

Note: This command requires that the CEM be in a ManB state.

The command produces the following message:

```
This command erases the flash memory of the CEM
Execution of this command is recommended only
when the card is being relocated or
decommissioned. Execution of this command in
other instances may result in service
degradation. Do you wish to continue?

Please confirm ("YES", "Y", "NO" or "N")
```

12 Execute the command:

```
>Y
```

EraseFl: Request has been submitted

EraseFl: Command completed

Note: An SPM684 log is generated every time the ERASEFL command is initiated or completed, or if it fails.

13 List the ENET links:

>TRNSL

Example of a MAP screen:

```
SPM   31 CEM   0  InAct    ManB          /

Loc : Row D  FrPos  57 ShPos  43 ShId 0 Slot  7
Default Load: CEM17BQ
Clock:
Input Ref:            Source:            Current Mode:
Trnsl
Link 1: ENET 0  0  11  0; Status: OK
Link 2: ENET 0  0  11  1; Status: OK
Link 3: ENET 0  0  11  2; Status: OK
Link 4: ENET 0  0  11  3; Status: OK
```

14 Record the ENET plane, shelf, and slot number.

Example
0, 0, 11

15 Go to the ENET level of the MAP:

>MTC;NET

At the ENET level

16 Go to the ENET-shelf level of the MAP:

>SHELF shelf_no

Example of a MAP screen:

```
SHELF 00  Slot        1111111 11122222 22222333 333333
          123456 78 90123456 78901234 56789012 345678
 Plane 0   .  .   .F ..OO.F-- -------- ..OO.F.. .  .
 Plane 1   .  .   .F ..OO..-- -------- ..OO.F.. .  .

SHELF:
```

17 Go to the card level of the ENET:

>CARD slot_no

Example of a MAP screen:

```
SHELF00  Slot          1111111 11122222 22222333 333333
            123456 78 90123456 78901234 56789012 345678
 Plane 0 .  .   .F ......F. -------- ...S.... .  .
 Plane 1 .  .   .F ......F. -------- ..FS.... .  .

CARD11   Front:     Back:   DS-512 Links
         Xpt        I/F 0 1 2 3
 Plane 0 .           .     . . . .
 Plane 1 .           .     . . . .
CARD:
```

18 For that shelf and card, translate an ENET peripheral-side link assigned to the CEM being replaced:

>TRNSL P plane_no link_no

Example

>TRNSL P 0 0

Example of a MAP screen:

```
Request to TRNSL ENET Plane:0 Shelf:00 Slot:11 Link:00 submitted.
Request to TRNSL ENET Plane:0 Shelf:00 Slot:11 Link:00 passed.
ENET Plane:0 Shelf:00 Slot:11 Link:00 :
  SPM 31 CEM 0 Lnk 1
```

19

CAUTION

Loss of service

A temporary interruption of service occurs when ENET links are busied. The interruption can affect data calls.

Only busy the links to the CEM being replaced. Do not busy links to the active CEM, in service.

Busy the ENET P-side link translated in step 18:

>BSY plane_no LINK link_no

Example

>BSY 0 LINK 0

20 All of the ENET P-side links on the selected shelf and card that are assigned to the CEM scheduled for replacement must be busied.

If all links to the CEM are	Do
not busied	step 18
busied	step 21

21 Although rare, some configurations may choose to split the CEM connected DS-512 links across ENET shelves or cards. The most common configuration is a single ENET shelf and a single card for each CEM.

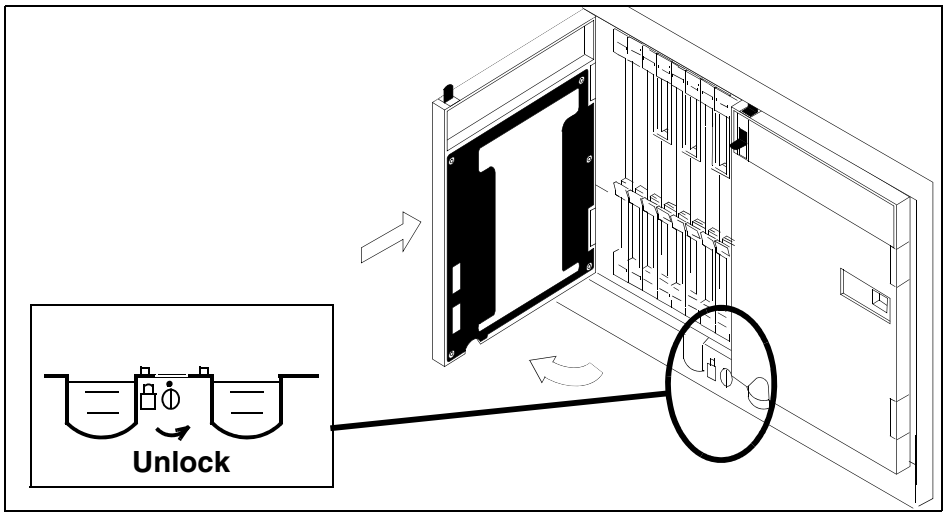
If the configuration is	Do
split shelf and split card	step 16 through step 19
single shelf, split card	step 17 through step 19
single shelf, single card	step 22

At the equipment frame

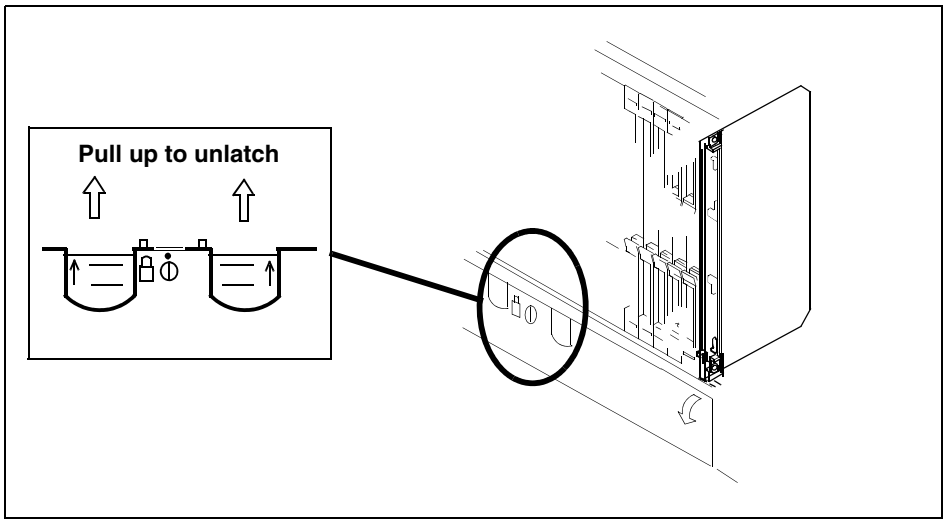
22

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

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter-turn counter-clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



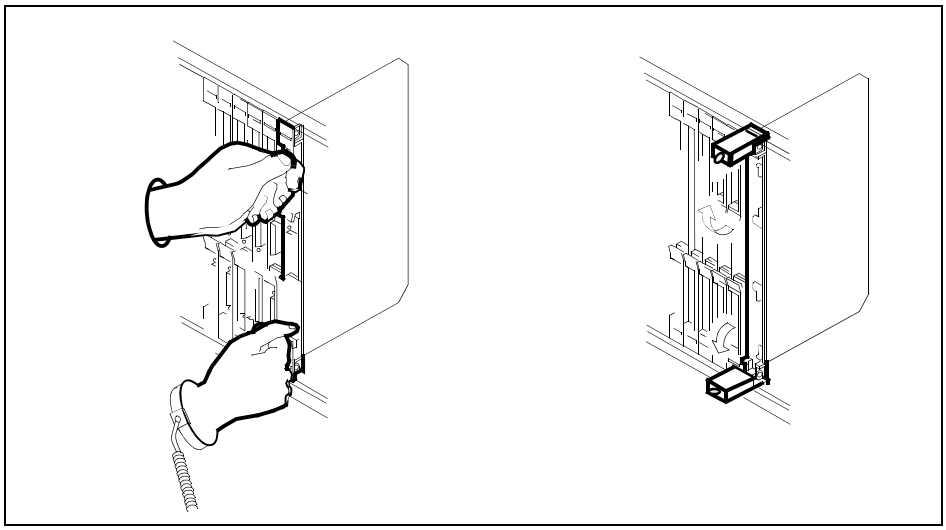
23 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



24

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

As shown in the following figure, open the locking levers on the card to be replaced.



25

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label the DS-512 fiber cables to ensure that they are reconnected in the original order.

26

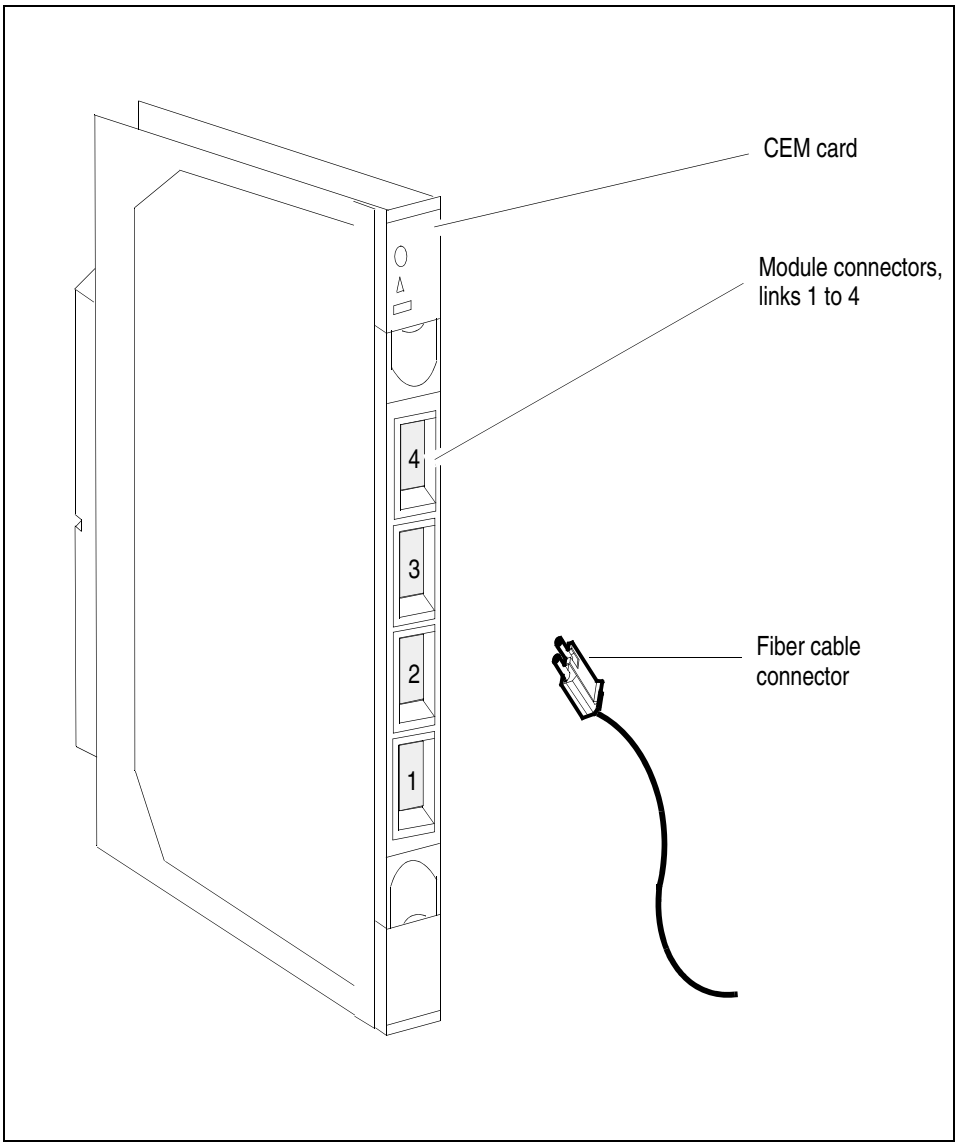
DANGER

Laser radiation exposure

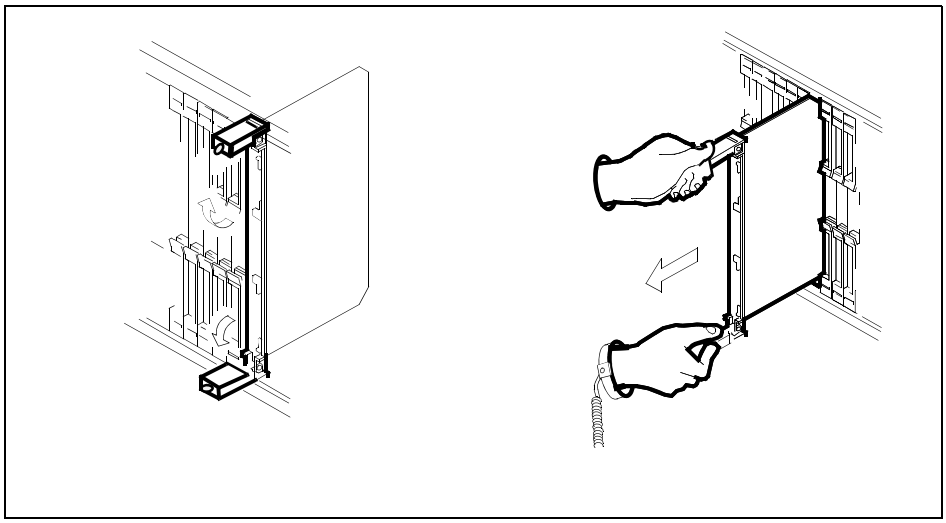
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

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

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



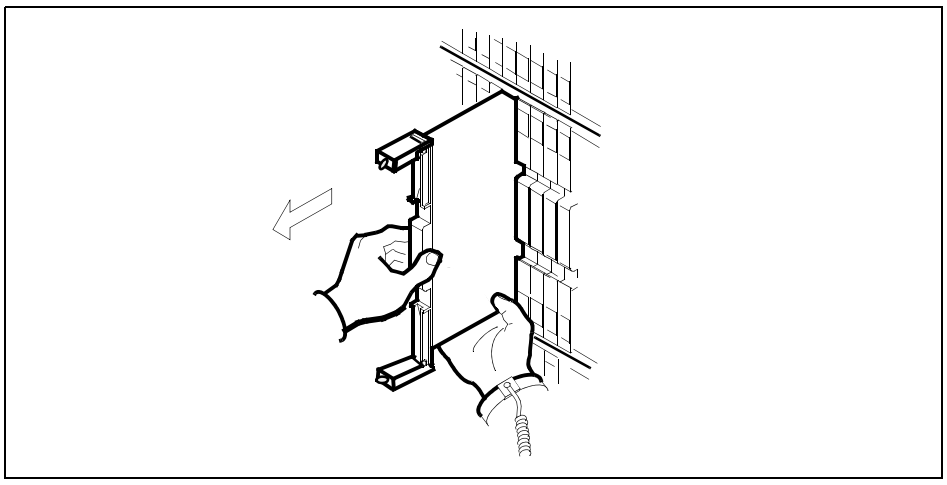
27 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5 cm) from the equipment shelf.



28

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

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



29 Place the card you have removed in an electrostatic discharge (ESD) protective container.

30

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC, contact the next level of support.

If the PEC is the same, but the release code is different, update the release code in the MNCKTPAK table before securing the replacement card in the shelf as instructed in step 32.

The release number is a 2-character code following the PEC (NTLX82BA) printed on the replacement CEM faceplate.

Insert the replacement CEM card into the shelf.

31 Open the locking levers on the card.

32 Before securing the card into the slot, proceed as follows:

If the release number is	Do
different from the original release number	step 33
the same as the original release number	step 41

At the MAP terminal:

33 From a second window, access the MNCKTPAK table:

```
>TABLE MNCKTPAK
```

34 Position on the tuple that defines the location of the CEM card that was selected in step 10:

```
>POS SPM spm_no shelf_no slot_no
```

Example
pos spm 31 0 7

35 Initiate the tuple change command:

```
>CHA
```

CPKTYPE: CEM

36 Continue to press the Enter key until reaching the RELEASE prompt.

Note: If the CEM is not configured for the maximum number of alarms, end the ALRMCTRL prompt: a dollar sign ($).

37 At the RELEASE prompt, type in the release number of the replacement card and press the Enter key.

38 Respond to all remaining field change prompts by pressing the Enter key.

After the last field change prompt, the modified tuple appears on the screen with the following message

```
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

39 Accept the release change:

```
>Y
```

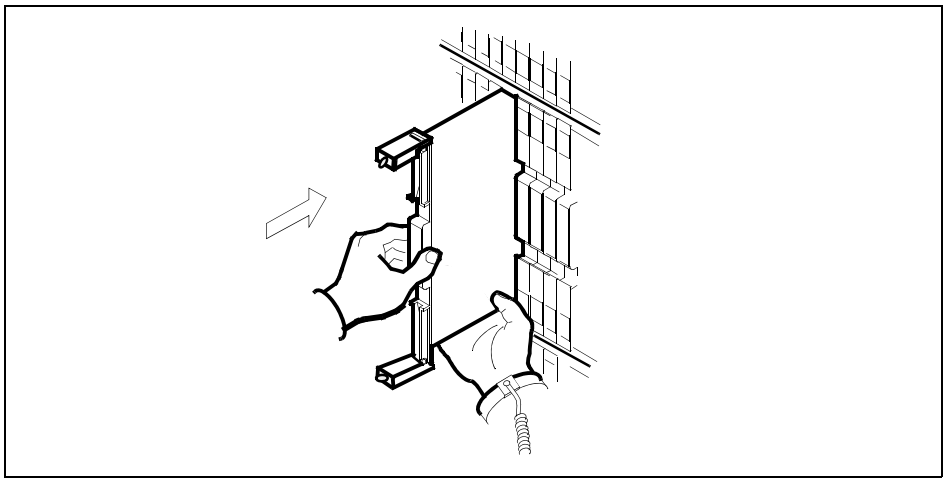
TUPLE CHANGED

40 Exit the MNCKTPAK table:

```
>QUIT
```

At the equipment frame

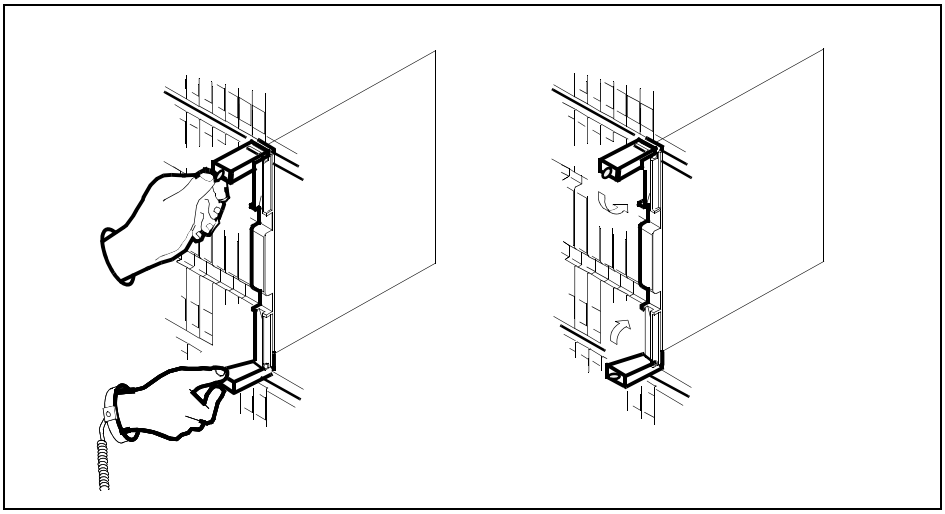
41 As shown in the following figure, hold the card by the face plate with one hand while supporting the bottom edge with the other hand. Gently slide the card into the shelf.



42

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

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



43 Close the locking levers to secure the card.

44 Wait until the card performs a self-test. The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, the replacement CEM card may be defective; remove the card and replace it with another replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

45

DANGER

Laser radiation exposure

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

Reconnect the DS-512 fiber cables as follows:

- Remove the caps on the module and cable connectors.
- Gently guide the cable connector into its receptacle notches.
- Squeeze the locking clip and gently push the connector into the receptacle until it clicks into place.

46 Close the cable-trough door. Close and lock the card-access door.

At the MAP terminal

47 From the first window, return-to-service (RTS) the all ENET links assigned to the replacement CEM:

```
>RTS plane_no LINK link_no
```

Repeat the RTS command for each link assigned to the replacement CEM.

Note: If split configurations, do so for appropriate shelves and cards.

Wait until the MS ports clear and the maintenance activity is complete.

48 Post the SPM and select the CEM:

```
>MAPCI;MTC;PM;POST SPM spm_no;SELECT cem_no
```

49 At the CEM screen, reset the replacement CEM card:

```
>RESETMOD FW
```

50 Load the replacement CEM card software:

```
>LOADMOD
```

Note: The LOADMOD process can take up to 15 minutes to complete. Monitor the progress at the `/Load:` indicator at the end of the SPM line on the CEM MAP display.

51 Return the replacement CEM card to service:

```
>RTS
```

Note 1: The state change from ManB to InSv may take several minutes to complete.

Note 2: Allow the automatic SPM Patching after RTS (SPARTS) program to complete the patching process. To ensure that the process has successfully completed, wait 5 minutes after the patch application messages have completed before proceeding.

If patching was	Do
not successful	contact the next level of support
successful	step 52

52 If the replacement CEM card must be the active CEM, go to the protection (PROT) screen and type

```
>MANUAL
```

53 When prompted, confirm the switch of activity:

```
>Y
```

Monitor the MAP screen to ensure the change of status occurs.

54 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Replacing DSP or VSP resource module

This procedure describes how to replace a DSP or VSP resource module (RM) circuit pack. The procedure uses the VSP RM as an example. To replace a DSP, follow the same procedure using “DSP” in place of “VSP”.

Use this procedure to configure the following VSP circuit cards:

- NTLX66AA, Voice Signal Processor
- NTLX66AB, Voice Signal Processor
- NTLX85AA, 64ms Tail Delay Echo Cancellor RM
- NTLX86AA, 128ms Tail Delay Echo Cancellor RM
- NTLX86VA, IECAN RM

Unless noted otherwise, by substituting “VSP” for “DSP”, this procedure also applies to the following DSP circuit cards:

- NTLX65AA, Digital Signal Processor
- NTLX65BA, Digital Signal Processor

The table below, Variable abbreviations, defines the variables used in this procedure.

Variable abbreviations

Abbreviation	Definition
spm_no	The number of the SPM-based node
rm_type	VSP or DSP
rm_no	The VSP or DSP number (0 through 27)
inact_rm	The inactive VSP or DSP number (0 through 27)
mis_rm	A misaligned VSP or DSP (the RMID and ProtWhomID values do not match)
act_rm	The number of the active VSP or DSP to be replaced
prsu_id	The PRSU name

This procedure requires you to press the Enter key after each command.

Replacing a DSP or VSP circuit pack

At the MAP terminal

1 Verify that all VSPs and DSPs are protecting their own resources (the RMID and the ProtWhomID fields are the same):

```
>SPMRESMAN SPM spm_no rm_type rm_no
```

Example

```
>SPMRESMAN SPM 0 VSP 1
```

Note: The resource modules should be aligned before replacing a DSP or VSP RM. The process to align RMs requires a switch of activity (SWACT) several times between a misaligned RM and the inactive RM. This process is explained in step 4.

If the RM to be replaced is MANB or SYSB, a SWACT cannot occur and the alignment should occur after the card has been replaced.

Example of an aligned protection group

SPM 0
ProtGroup: 1

RMID		Activity	ProtWhomID	ProtGrp	Safe to Change?
VSP 1	11	ACTIVE	11	1	NO
VSP 2	12	ACTIVE	12	1	NO
VSP 3	13	ACTIVE	13	1	NO
VSP 4	14	ACTIVE	14	1	NO
VSP 0	18	INACTIVE	18	1	NO

Note: In this example the RMID and ProtWhomID values are identical for each VSP.

Example of a misaligned protection group

SPM 0
ProtGroup: 1

RMID		Activity	ProtWhomID	ProtGrp	Safe to Change?
VSP 1	11	ACTIVE	12	1	NO
VSP 2	12	ACTIVE	11	1	NO
VSP 3	13	ACTIVE	13	1	NO
VSP 4	14	ACTIVE	14	1	NO
VSP 0	18	INACTIVE	18	1	NO

Note: In this example the RMID and ProtWhomID values are not aligned for VSP 1 and VSP 2.

2 From a second window, post the node and select the RM to be replaced:

```
>MAPCI;MTC;PM;POST SPM spm_no;SELECT rm_type rm_no
```

Example

```
>MAPCI;MTC;PM;POST SPM 0;SELECT VSP 1
```

3 Enter the MAP protection level:

```
>PROT
```

Example of MAP display

```
SPM  0  InSv
Prot Grp: VSP_GRP 1    Mode: Non-revertive    Schema: m_for_n
Sh0 U R A Stat   Sh0 U R A   Stat   Sh1 U R A Stat   Sh1 U R A Stat
  1 -- - -  ----    8  -- -  -  ----    1 -- -  -  ----    8  --  - -  ----
  2 -- - -  ----    9  -- -  -  ----    2 -- -  -  ----    9  -- - -  ----
  3 -- - -  ----   10  -- - -  ----    3 -- -  -  ----   10  -- -  -  ----
  4 -- - -  ----   11   1 W A  InSv   4  0 S  I  InSv   11  -- -  -  ----
  5 -- - -  ----   12   2 W A  InSv   5 -- -  -  ----   12  -- -  -  ----
  6 -- - -  ----   13   3 W A  InSv   6 -- -  -  ----   13  -- -  -  ----
  7 -- - -  ----   14   4 W A  InSv   7 -- -  -  ----   14  -- -  -  ----
```

Note: VSP 0, located in slot 4 of the second shelf, is designated as the spare VSP ("S" under the 'R' column) and inactive "I".

If the VSP to be replaced is	Do
INSV or ISTB	step 4
SYSB or MANB	step 16

4 Based on the results from the SPMRESMAN command in step 1 determine if alignment is required.

If alignment is	Do
required	step 5
not required	step 16

Note: The process of aligning the RMs requires a series of SWACTS between the inactive RM and a misaligned RM. The number of SWACTs depends on the number of misaligned RMs. This procedure uses the example of two misaligned RMs and requires a total of three SWACTs.

5 Switch activities between one of the misaligned RMs and the Inactive RM:

```
>MANUAL mis_rm inact_rm
```

Example

```
>MANUAL 1 0
```

6 Confirm the activity switch:

```
>Y
```

7 From the first window, verify that the PROTWHOMID changed between the two switched RMS:

```
>SPMRESMAN SPM spm_no rm_type rm_no
```

Example of SPMRESMAN output

SPM 0
ProtGroup: 1

RMID		Activity	ProtWhomID	ProtGrp	Safe to Change?
VSP 1	11	INACTIVE	18	1	NO
VSP 2	12	ACTIVE	12	1	NO
VSP 3	13	ACTIVE	13	1	NO
VSP 4	14	ACTIVE	14	1	NO
VSP 0	18	ACTIVE	1	1	NO

Note: In this example, VSP 1 and VSP 0 have exchanged activity levels and ProtWhomID values.

8 From the second window, switch the new inactive RM and the other original misaligned RM:

```
>MANUAL mis_rm inact_rm
```

Example

```
>MANUAL 2 1
```

9 Confirm the activity switch:

```
>Y
```

10 From the first window, verify that the PROTWHOMID changed between the two switched RMS:

```
>SPMRESMAN SPM spm_no rm_type rm_no
```

Example of SPMRESMAN output

SPM 0
ProtGroup: 1

RMID		Activity	ProtWhomID	ProtGrp	Safe to Change?
VSP 1	11	INACTIVE	11	1	NO
VSP 2	12	ACTIVE	18	1	NO
VSP 3	13	ACTIVE	13	1	NO
VSP 4	14	ACTIVE	14	1	NO
VSP 0	18	ACTIVE	12	1	NO

Note: In this example, VSP 1 and VSP 2 have exchanged activity levels and ProtWhomID values. VSP 1 is now aligned.

11 From the second window, switch activities between the original spare RM and the remaining original misaligned RM (which is now inactive):

```
>MANUAL mis_rm inact_rm
```

Example

```
>MANUAL 2 0
```

12 Confirm the activity switch:

```
>Y
```

13 From the first window, verify that the PROTWHOMID changed between the two switched RMS:

```
>SPMRESMAN SPM spm_no rm_type rm_no
```

Example of SPMRESMAN output

SPM 0
ProtGroup: 1

RMID		Activity	ProtWhomID	ProtGrp	Safe to Change?
VSP 1	11	ACTIVE	11	1	NO
VSP 2	12	ACTIVE	12	1	NO
VSP 3	13	ACTIVE	13	1	NO
VSP 4	14	ACTIVE	14	1	NO
VSP 0	18	INACTIVE	18	1	NO

Note: The alignment is complete. VSP 1 and VSP 2 are aligned and the designated spare VSP is inactive.

14 From the second window, switch the RM to be replaced to inactive:

```
>MANUAL act_rm inact_rm
```

Example

```
>MANUAL 1 0
```

15 Confirm the activity switch:

```
>Y
```

16 Exit the protection level:

```
>QUIT
```

If the RM to be replaced is	Do
SYSB	step 17

If the RM to be replaced is	Do
MANB	step 18

17 Busy the RM to be replaced:

```
>BSY
```

Note: If invoking the SPMRESMAN command from the first window, the RM status for “safe to change” becomes YES.

18 Take the RM to be replaced off line:

```
>OFFL
```

If	Do
there is a PEC code change	Update the MNCKTPAK table to match the replacement card

Note: Other fields in the RM’s data tuple besides PEC code may be changed, such as resource type or the number of resources of each type. These fields should be updated at this point in the replacement procedure.

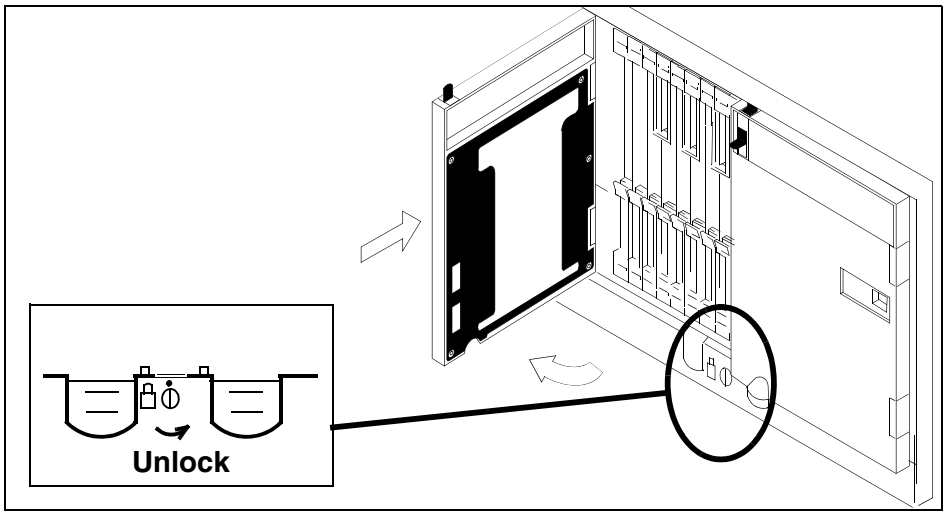
19

CAUTION
Static electricity damage
While handling circuit cards or cables, wear a wrist strap connected to the wrist-strap grounding point on the frame to protect the cards against static electricity damage.

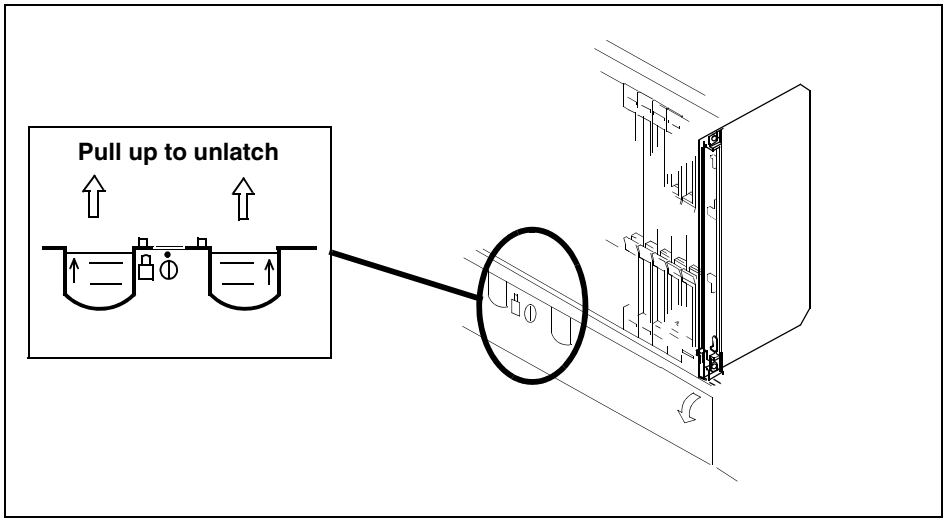
Return to the SPM screen and wait for the module state to change.

Note: The state change from ManB (manual busy) to OffL (offline) can take several minutes to complete. After the state change is complete, remove the RM.

20 As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter-turn counter-clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



21 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



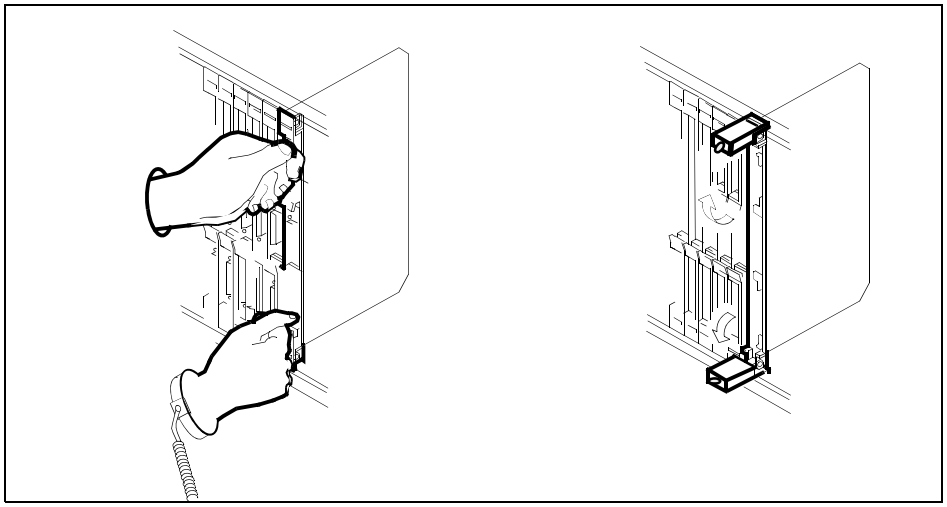
22

CAUTION

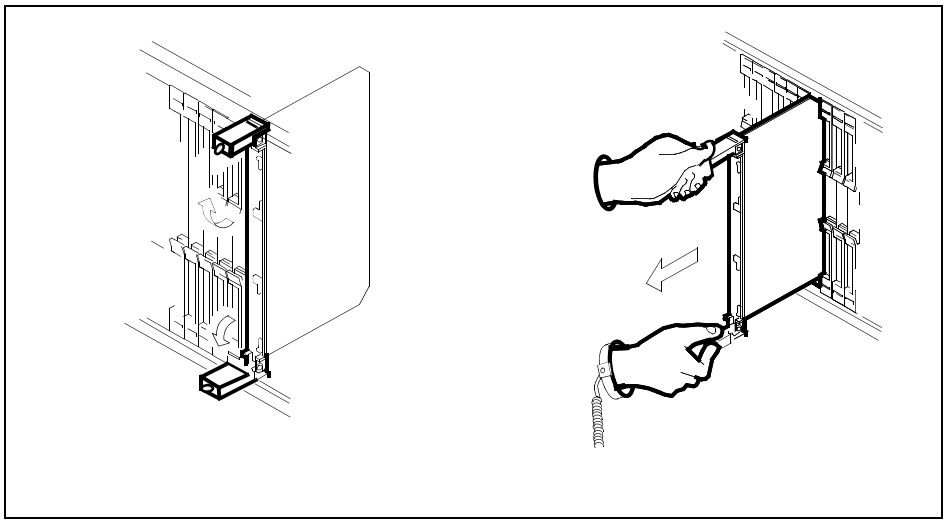
Card lever breakage

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

As shown in the following figure, open the locking levers on the card to be replaced.



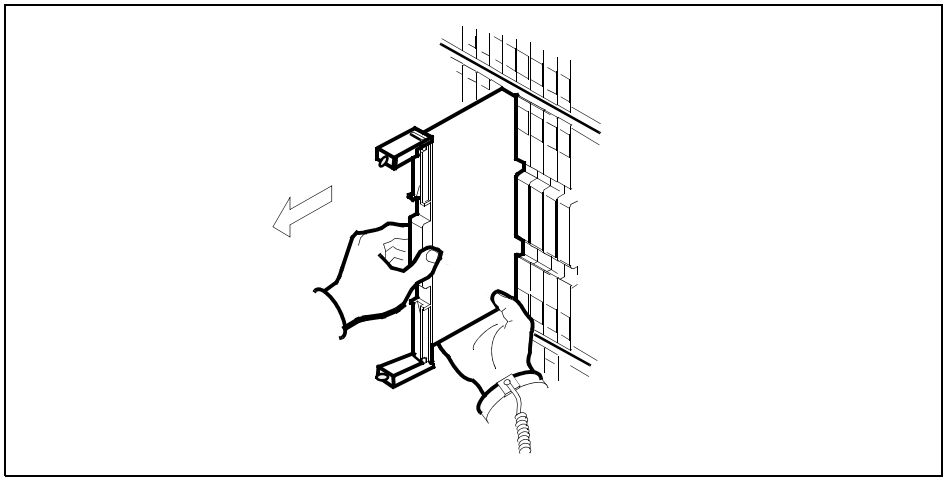
23 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5 cm) from the equipment shelf.



24

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

As shown in the following figure, hold the card by the faceplate with one hand while supporting the bottom edge with the other hand. Gently pull the card toward you until it clears the shelf.



25

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in the MNCKTPAK table to match the replacement card before inserting it in the slot.

Place the card in an electrostatic discharge (ESD) protective container.

26

CAUTION

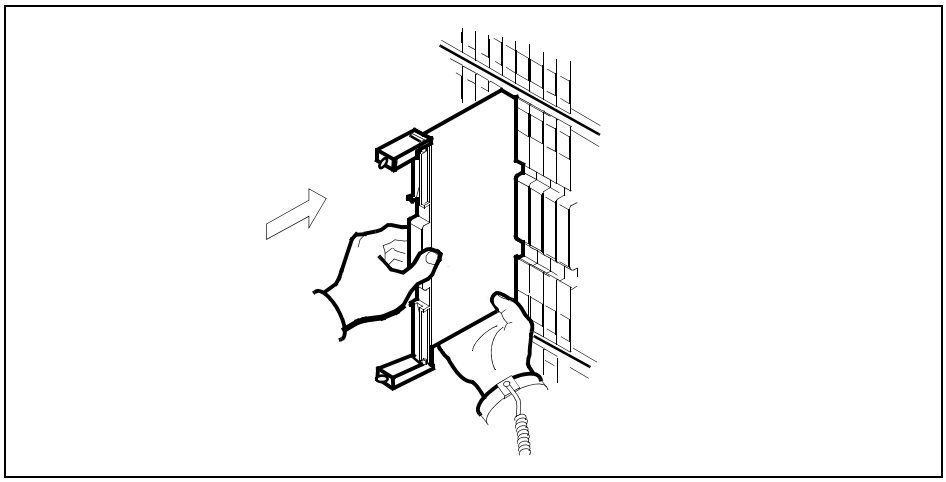
Equipment damage due to empty slots

Equip all unused slots on a powered shelf with NTLX60BA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

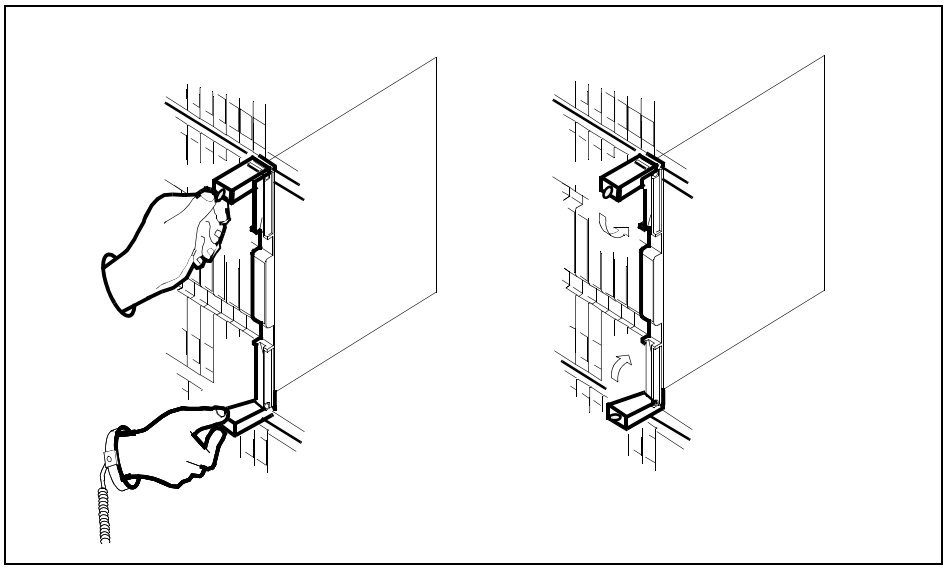
Insert the replacement RM into the shelf. If a replacement card is not available, insert an NTLX60BA filler module in the slot until a replacement card is available.

27 Open the locking levers on the card.

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



29 As shown in the following figure, using your fingers or thumbs, push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the shelf.



30 Close the locking levers to secure the card.

31 Wait until the card performs a self-test (less than one minute). The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement RM card is defective; remove the card and replace it with another RM replacement card of the same type. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Close and lock the access door.

33

CAUTION

Mixing activity states and service states

RMs can be busy and active at the same time. To avoid this situation, do not busy (BSY) an active RM and do not attempt a protection switch to a BSY RM.

Ensure that the replacement module is inactive before setting it to manual busy. Change the RM from the OffL state to ManB state:

```
>BSY
```

34 Load the new inactive RM with the default software load:

```
>LOADMOD
```

During execution of the command, the RM automatically goes to a SysB state and then returns to service.

Example of MAP display

```
RTS is recommended to load an RM device from Flash memory.
LOADMOD reloads devices from the un-patched core disk load.
Applicable patches will not be applied following LOADMOD.
Relevant patches will be automatically queued for application
as part of device RTS.

Do you wish to proceed with LOADMOD?
Please confirm ("YES", "Y", "NO", or "N"):
```

35 At the confirmation prompt, continue:

```
>Y
```

Example of MAP response

```
SPM 0   DSP  1   Load: Request has been submitted.
SPM 0  DSP  1   Load: Command completed. Command passed.
```

36 Open a second window and access the PRSM tool:

```
>PRSM
```

37 Ensure that PRSM recognizes any pre-applied PRSUs and has found all applied PRSU files:

```
>DBAUDIT SPM spm_no rm_type inact_rm
```

Example

```
>DBAUDIT SPM 0 VSP 1
```

Example of MAP response

```
Database audit submitted for 1 DESTs
Auditing destination SPM 0  VSP 1....
Database audit completed for 1 DEST
Database audit completed for 1 DEST
Database discrepancy found in 0 DESTs
```

38 Determine whether PRSM found all patch files built into the PPSL:

```
>SELECT PRSUID CATEGORY STATUS BUILTIN FROM
DESTSET SPM spm_no rm_type inact_rm
```

Example of MAP response

```
>select prsuid category status builtin from destset spm 0 vsp 1
PRSUID     CAT     ST    BUILTIN
------------ -----  ---  ------------
TAB51S0P    GEN   A     Y
BUZ80S0P    GEN   A     Y
CTC51S0P    GEN   A     Y
DXH62S0P    GEN   A     Y
DXH63S0P  GEN     A     Y
JXM65S0P    GEN   A      Y
KAA01S0P    GEN   A      Y
KRI62S0P    GEN   A      Y
LLH11S0P    GEN   A      Y
SBF80S0P    GEN   A      Y
SBF90S0P    GEN   A     Y
TAV54S0P    GEN  A     Y
```

Note: An empty list appears for a non-PPSL load (the load is not pre-patched).

An unknown category displayed as question marks (???) appears if PRSM cannot locate PRSU files in a PPSL during the first dbaudit of a newly loaded SPM device. This situation does not occur if all PRSU files have been placed in a PADNDEV table defined volume.

If this situation should occur, use the validate command in PRSM for each PRSU with a category of ??? in at least one applicable DEST. For example: **VALIDATE ABC30S0Q IN SPM 0 VSP 1**

Before proceeding to the next device type, ensure that all patch files are placed in the PADNDEV table defined volume.

39 If required, patch the RM load file.

If patches	Do
are required for the load file	step 40
are not required for the load file	step 42

40 Apply the patches:

```
>APPLY 'prsu_id | prsu_id | prsu_id IN SPM
spm_no  rm_type inact_rm
```

Example

```
>APPLY 'ABC05S13 | DEF10S13 | GHI45S13 IN SPM 0
VSP 1
```

Note: Repeat the command as necessary to apply additional patches.

41 Ensure that the inactive RM is correctly patched:

```
>REPORT DEST SPM spm_no rm_type inact_rm
```

Example

```
>REPORT DEST SPM 0 VSP 1
```

Note: The output should be the combination of the PSRUs applied in step 40 and the pre-applied PRSUs displayed in step 38.

Example of MAP response

```
REPORT DEST SPM 0 VSP 1
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
--------------- -------- ----- --- --- -- -------- - --------------------
ABC05S13       20020915 23:29 GEN A DSPSP17BA N SPM 0 VSP 1
DEF10S13       20020915 23:33 GEN A DSP17BA N SPM 0 VSP 1
GHI45S13       20020915 23:36 GEN A DSP17BA N SPM 0 VSP 1
TAB51S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
CTC51S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
BUZ80S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
DXH63S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
DXH62S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
JXM65S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
KAA01S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
KRI62S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
LLH11S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
SBF80S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
SBF90S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
TAV54S0P       20020915 23:10 GEN A DSP17BA N SPM 0 VSP 1
```

42 Exit the PRSM tool:

```
>QUIT
```

43 From the original window with the replacement RM selected, return the new RM card to service:

```
>RTS
```

Note: The state change from ManB to Insv can take up to one minute to complete.

If the RMID and ProtWhomIds are:	Do
aligned	step 44
misaligned	step 48

44 Proceed based on the required Activity level of the replacement card.

If the Prot Role is:	Do
Working	step 45
Spare	step 49

45 Enter the protection level:

```
>PROT
```

46 Switch activities to make the new RM active:

```
>MANUAL act_rm inact_rm
```

47 At the confirmation prompt, continue:

```
>Y
```

When the SWACT is complete, continue to step 49

48 Perform step 5 through step 13 to align the RMIDs and ProtWhomIDs.

When alignment is complete, continue to step 49

49 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to replace an OC3 circuit pack module.

Replacing an OC3 circuit pack

At the MAP terminal

1 Access the PM screen level of the MAP display:

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

2 Access the SPM screen:

```
>POST SPM <spm_no>
```

where

spm_no
is the number of the SPM (0 to 85)

Example of an SPM screen

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

SPM                                SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                   0       0       0       0       0       1
 2 Post_         SPM                  0       0       0       0       0       1
 3 ListSet
 4 ListRes    SPM 11 INSV  Loc: Site HOST Floor 2 Row A  FrPos 0
 5 Trnsl
 6            Shlf0 SL A Stat  Shlf0 SL A Stat  Shlf1 SL A Stat  Shlf1 SL A Stat
 7            DSP 2  1 A Insv  CEM 1  8 I Insv  VSP 2  1 A Insv  --- -  8 - ----
 8            DSP 0  2 A Insv  OC3 0  9 A Insv  --- -  2 - ----  VSP 6  9 A Insv
 9            DSP 1  3 I Insv  OC3 1 10 I Insv  --- -  3 - ----  --- - 10 - ----
10            DSP 3  4 I Insv  --- - 11 - ----  --- -  4 - ----  --- - 11 - ----
11 Disp_      --- -  5 - ----  --- - 12 - ----  --- -  5 - ----  --- - 12 - ----
12 Next       --- -  6 - ----  VSP 4 13 A Insv  --- -  6 - ----  --- - 13 - ----
13 Select_    CEM 0  7 A Insv  VSP 5 14 A Insv  --- -  7 - ----  --- - 14 - ----
14 QueryPM
15 ListAlm_
16
17
18

   14:12 >
```

3 Access the OC3 card:

```
>SELECT OC3 <oc3_no>
```

where

oc3_no
is the number of the OC3 card (0 or 1)

Example of an OC3 screen

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

OC3                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                    0       0       0       0       0       1
 2               SPM                   0       0       0       0       0       1
 3 ListSet       OC3                   0       0       0       0       0       2
 4
 5             SPM 11    OC3 0  Act  InSv
 6 Tst
 7 Bsy         Loc : Row A FrPos 0 ShPos 6 ShId 0 Slot 9  Prot Grp : 1
 8 RTS         Default Load: OC3LOAD                      Prot Role: Working
 9 OffL
10 LoadMod
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16 Prot
17
18

    14:12 >
```

4 From the OC3 screen, access the protection level:

>PROT

Example of a protection screen

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

Protectn                          SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                 0       0       0       0       0       1
 2               SPM                0       0       0       0       0       1
 3               OC3                0       0       0       0       0       2
 4
 5             SPM   11  InSv
 6             Prot Grp: OC3_GRP 1    Mode: Non-revertive   Schema: one_plus_one
 7 Force       Sh0 U R A Stat   Sh0 U R A Stat   Sh1 U R A Stat   Sh1 U R A Stat
 8 Manual      1 -- - - ----    8 -- - - ----    1 -- - - ----    8 -- - - ----
 9             2 -- - - ----    9  0 W A InSv    2 -- - - ----    9 -- - - ----
10             3 -- - - ----   10  1 S I InSv    3 -- - - ----   10 -- - - ----
11             4 -- - - ----   11 -- - - ----    4 -- - - ----   11 -- - - ----
12             5 -- - - ----   12 -- - - ----    5 -- - - ----   12 -- - - ----
13 Select_     6 -- - - ----   13 -- - - ----    6 -- - - ----   13 -- - - ----
14             7 -- - - ----   14 -- - - ----    7 -- - - ----   14 -- - - ----
15 ListAlm
16
17
18

    14:10 >
```

5 At the protection (PROT) screen, determine if the OC3 being replaced is active (A) or inactive (I). If the card is active, set it to the inactive state:

>MANUAL <from_unit_no> <to_unit_no>

where

from_unit_no
is the number of the active unit (0 or 1)

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

Note: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

6 Access the carrier maintenance screen and post the STS3L line carriers:

>MAPCI;MTC;TRKS;CARRIER;POST SPM <spm_no> STS3L

where

spm_no
is the number of the SPM (0 to 85)

Example of a carrier screen showing posted STS3L carriers

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

POST              CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
 0 Quit           TRUNKS    1    0   28    28     0    0    0     0    0    50
 2 Post_          TIMING    0    0    0     0     0    0    0     0    0     2
 3                HSCARR    0    0    0     1     3    0    1     0    0   180
 4                 STS3L
 5 Loop_          N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
 6 Tst_           0  HSCARR HOST   11    0     0     0   3 InSv   .S --
 7 Bsy_           1  HSCARR HOST   11    1     0     0   4 InSv   -- --
 8 RTS_           SIZE OF POSTED SET  :  2
 9 Offl_          MTC:
10                TRKS:
11 Disp_          CARRIER:
12 Next           POST:
13
14 Detail_
15 ListAlm_
16
17 Perfmon_
18

    14:12 >
```

7 Record the STS3L line carrier number associated with the OC3 card being replaced. Record the state of the carrier.

8 Manual busy (ManB) the STS3L line carrier:

>BSY <carrier_no>

where

carrier_no
is the carrier identification (N) number (0 to 4)

9 Post the SPM OC3 section carriers:

>POST SPM <spm_no> OC3S

where

spm_no
is the number of the SPM (0 to 85)

Example of a MAP screen

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180
 OC3S
N  CLASS  SITE SPM OC3RM  OC3S STS3L CKT STATE  TR MA
0  HSCARR HOST  11     0     0     -   1 InSv   .S --
1  HSCARR HOST  11     1     0     -   2 InSv   -- --
SIZE OF POSTED SET  :  2
POST:
```

10 Record the OC3 Section carrier number associated with the OC3 card being replaced. Record the state of the carrier.

11 Manual busy (ManB) the OC3 Section carrier:

>BSY <carrier_no>

where

carrier_no
is the carrier identification (N) number (0 to 4)

At the OC3 RM card level of the SPM

12 Take the OC3 card to be replaced out-of-service:

>BSY

13 Set the OC3 card offline (OffL):

>OFFL

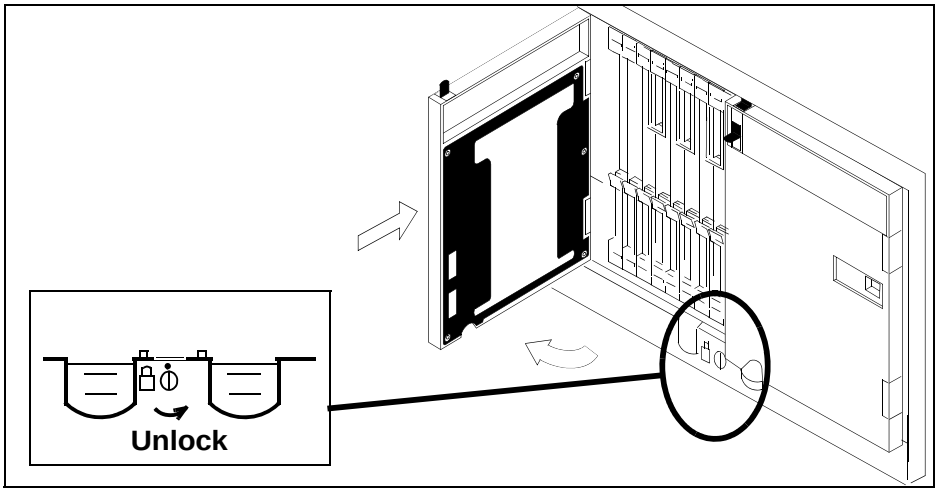
14 Return to the SPM screen and wait for the module to change state.

Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change is complete, remove the OC3 card.

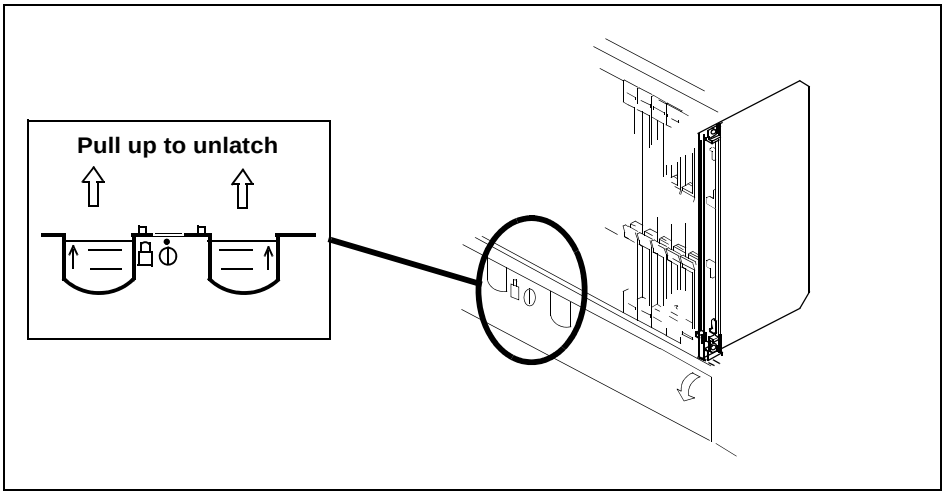
15

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

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter-turn counter-clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



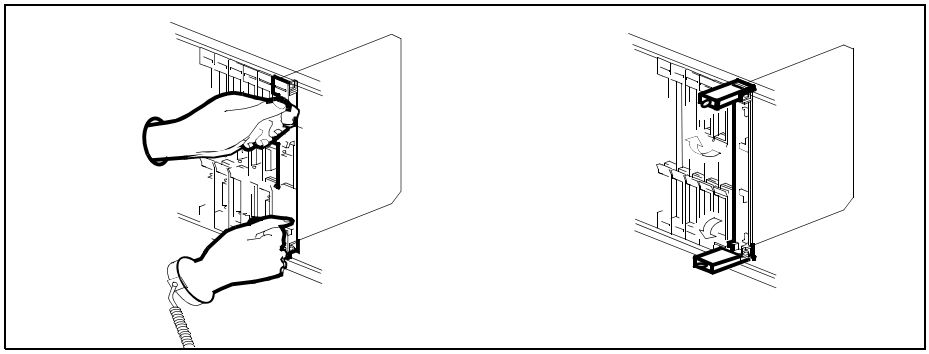
16 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



17

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

As shown in the following figure, open the locking levers on the card to be replaced.



18

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

Label each fiber cable. Use *transmit* for the top cable and *receive* for the bottom cable.

19

DANGER

Laser radiation exposure

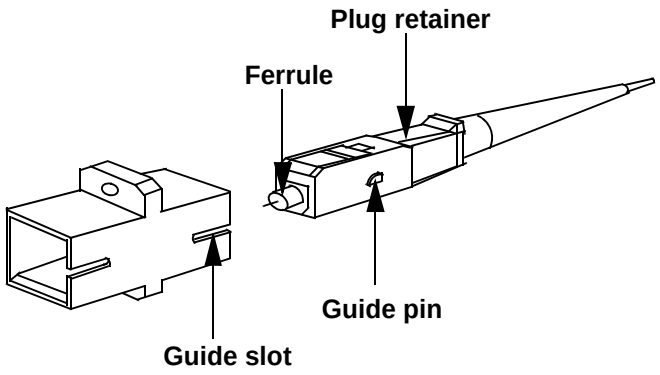
The exposed ends of fiber optic cables can emit harmful laser radiation. Do not look at the ends of fiber optic cables unless protector caps are in place. Disconnect all laser sources when personnel are working with fiber-optic cables.

Determine which type of fiber optic adapter you have before disconnecting the cables from the faceplate of the card. The following three types of fiber optic adapters are used for securing the equipment:

- SC to SC fiber optic adapter
- FC fiber optic adapter
- ST fiber optic adapter

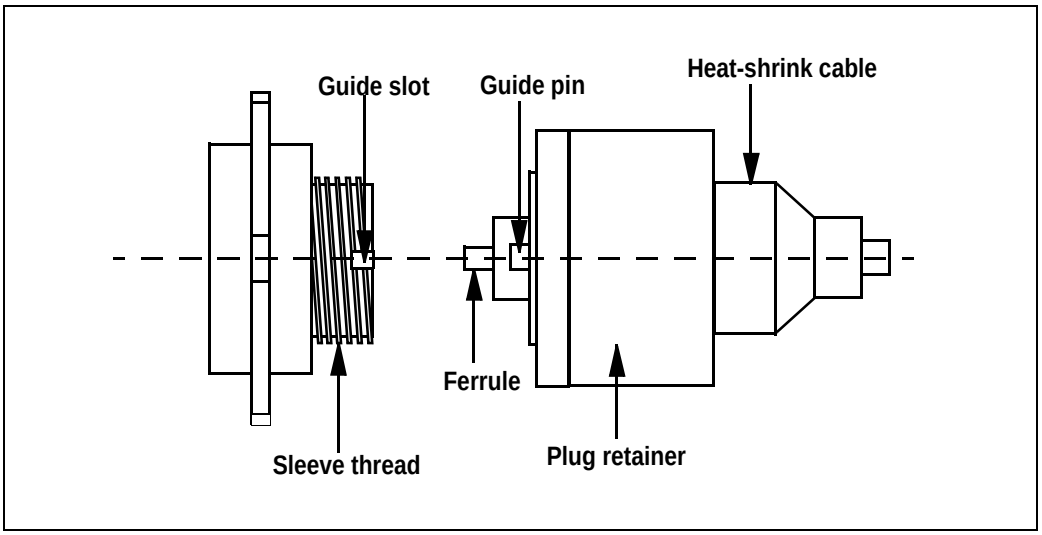
Refer to the following figures for each type of adapter.

SC to SC fiber optic adapter

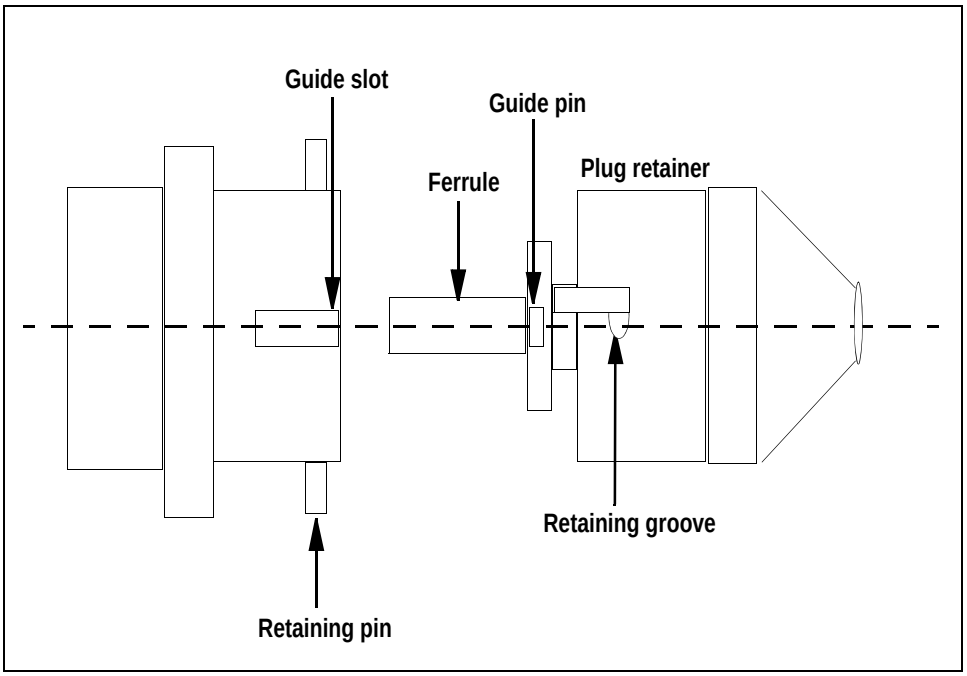


Note: A connector extender is installed on all SC connectors mating on the inside of the faceplate to facilitate connector removal.

FC fiber optic adapter



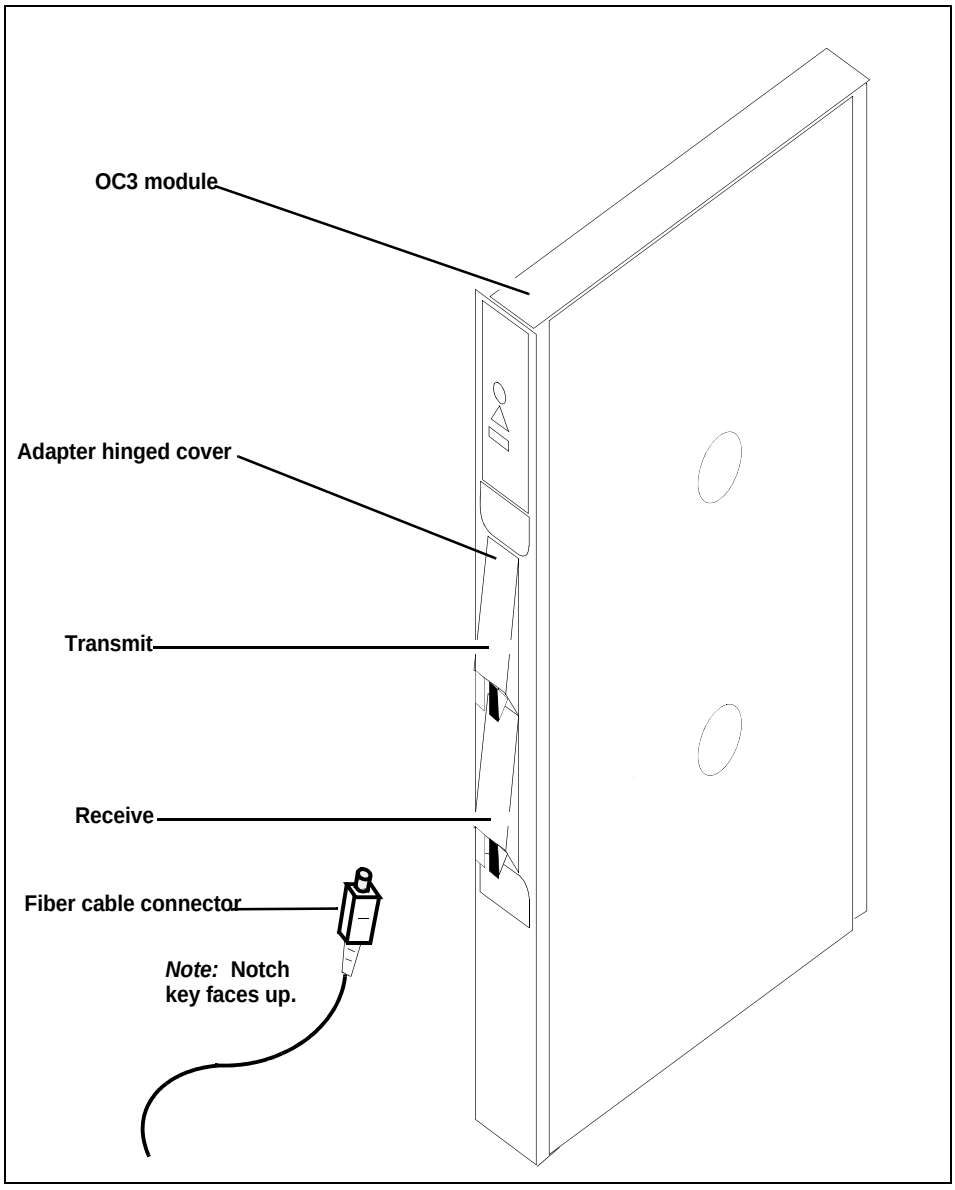
ST fiber optic adapter



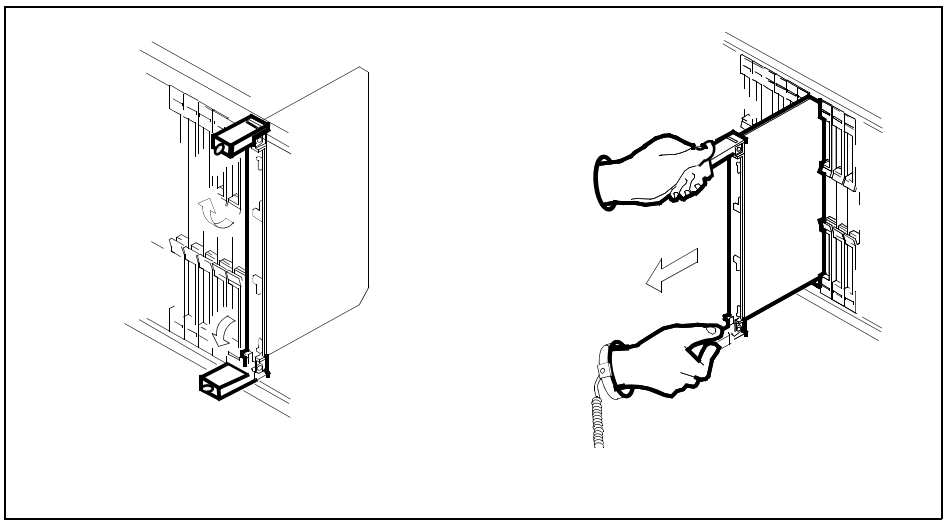
20 Disconnect the fiber cables from the faceplate of the card.

21 After the cables have been removed, cap the connectors on the module and the fiber cable. Store the cables in the cable trough.

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


OC3 module
Adapter hinged cover
Transmit
Receive
Fiber cable connector
Note: Notch key faces up.

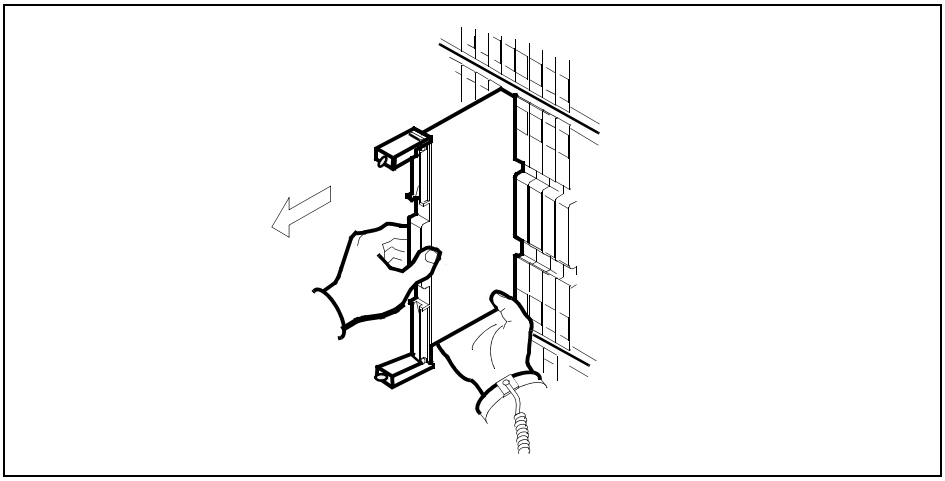
22 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5 cm) from the equipment shelf.



23

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

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



24 Place the card you have removed in an electrostatic discharge (ESD) protective container.

25

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement card with the same PEC and the same release.

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

26

ATTENTION

Examine the fiber connectors on the replacement NTLX71AA OC3 card and connectors on the OC3 fiber cables. To prevent eye damage, do not look directly into the end of the fiber cables. If the fiber connectors and the cable connectors do not mate, replace the fiber connectors on the replacement card. Each NTLX71AA replacement card is shipped with two pairs of spare fiber connectors. To select the correct fiber connectors, compare the spare fiber connectors with the fiber connectors on the card you removed. Also check the spare fiber connectors against the connectors on the OC3 fiber cables. Do not connect the OC3 fiber cables until instructed to do so.

CAUTION

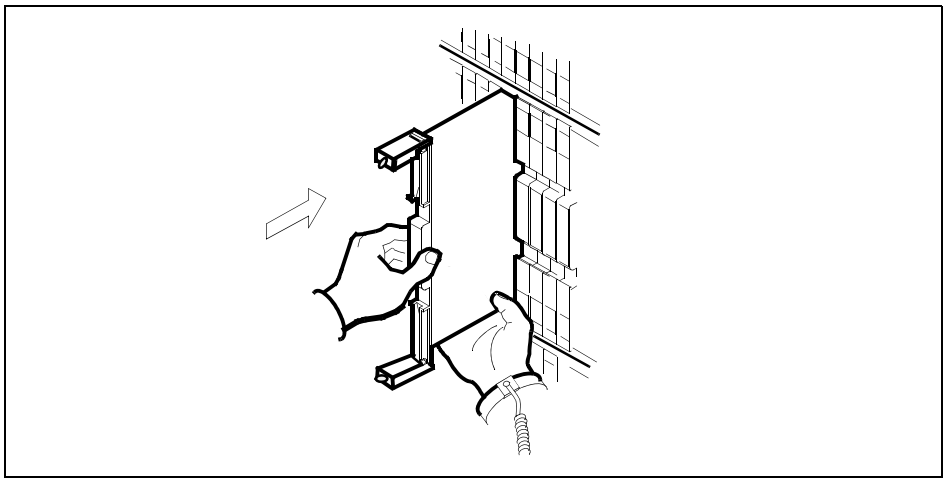
Equipment damage due to empty slots

Equip all unused slots on a powered shelf with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

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

27 Open the locking levers on the card.

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

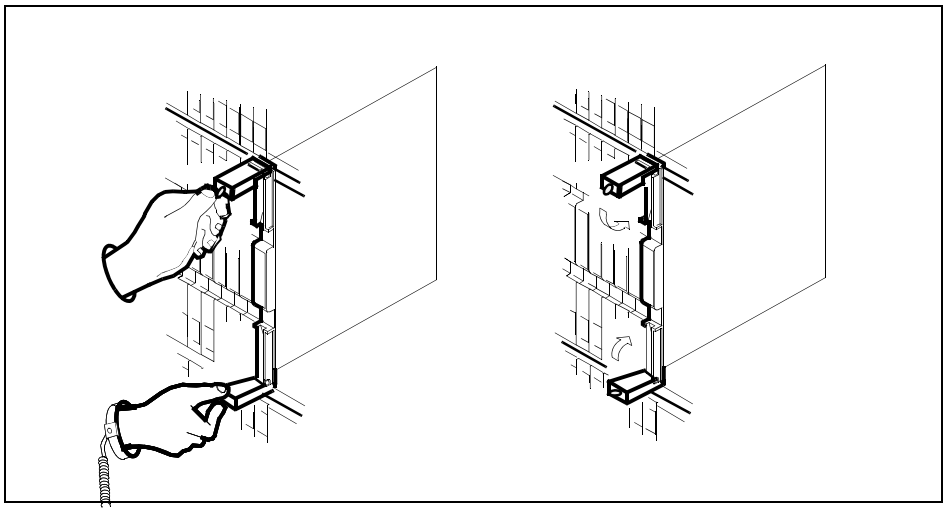


29

CAUTION
Damage to fiber cables
Take care when handling fiber cables. Do not crimp or bend fiber cables to a radius of less than 1 in. (25 mm).

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

30 As shown in the following figure, close the locking levers to secure the card.



31 Wait until the card performs a self-test (less than one minute). The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement OC3 card is defective; remove the card and replace it with another OC3 replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

32 Determine which type of fiber optic adapter you have before reconnecting the cables from the faceplate of the card. Refer to figures under Step 19 for an illustration of different adapters.

33 Reconnect the cables from the faceplate of the card.

34 Close the cable trough door. Close and lock the card-access door.

At the MAP terminal

35 Return to the OC3 screen and take the OC3 card from the OffL state to ManB state:

```
>BSY
```

36 Load the new OC3 card with the default software load:

```
>LOADMOD
```

Monitor the progress of the loading activity on the SPM line of the OC3 screen.

37 Return the new OC3 card to Insv state:

```
>RTS
```

Note: The state change from ManB to Insv can take up to seven minutes to complete.

38 Access the performance monitoring (PERFMON) screen and post the OC3 carrier:

```
>MTC;TRKS;CARRIER;POST SPM <spm_no>
OC3S;PERFMON <car_no>
```

where

spm_no
is the number of the SPM (0 to 85)

car_no
is the number of the OC3 carrier (0 or 1)

Example of a MAP screen

```
CLASS     ML    OS ALRM   SYSB   MANB UNEQ OFFL   CBSY PBSY   INSV
TRUNKS     1     0   28     28      0    0    0      0    0     50
TIMING     0     0    0      0      0    0    0      0    0      2
HSCARR     0     0    0      1      3    0    1      0    0    180

 PERFMON 0  SPM 11  OC3RM 0  OC3S 0
Interval:              Status:
Parm    Count  M D     Parm    Count M D      Parm     Count M D
SEFS-N    10           CV-N      35           ES-N         5
SES-N      9           LBC-N      0           OPT-N        7
OPR-N UNSET
PERFMON:
```

Note: The initial value of the optical power received (OPR) must be recorded for the OC3 Section carrier terminating on the replacement OC3. This initial reading is OPR0 (OPR zero). If the OPR0 value has not been recorded for the replacement OC3 card, the count for the PERFMON parameter OPR-N appears as UNSET (see the previous example).

39 Record the value for OPR0:

```
>METERPP RECORDOPR0
```

where

RECORDOPR0
means Record OPR 0 (zero)

If an OPR0 value has already been recorded for the replacement OC3 card, confirm the reset confirmation request:

```
>YES
```

40 At the carrier screen, restore the OC3S carrier and the STS3L carrier to their original state as recorded in Step 10 and Step 7. Restore the OC3S carrier first.

41 To ensure sparing capability of the new OC3 RM, set the new OC3 card to working (W). To do this, access the Protection (PROT) screen from the OC3 screen and type

```
>MANUAL <from_unit_no> <to_unit_no>
```

where

from_unit_no
is the number of the active unit (0 or 1)

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

Note 1: Protection switching an OC3 normally requires protection switching of the network devices connected to the OC3 on the external network. Refer to the appropriate manufacturer's documentation for the connected equipment.

Note 2: The MANUAL command without options and the FORCE command can be used only with a CEM card.

42 To ensure that the new RM can release activity, repeat Step 41.

43 You have completed this procedure. Return to the CI level of the MAP screen:

```
>QUIT ALL
```

Use this procedure to replace an Synchronous Resource Module (SRM) circuit pack.

Replacing an SRM circuit pack

At the MAP terminal

1 If the SRM to replace is the Active node reference for the Message Switch (MS), a Node Reference Switch must occur before it is replaced.

Note: A status of “Lck” on the Clock screen identifies the active node reference. A status of “Smp” identifies the standby node reference.

If the SRM is	Do
ACTIVE	step 2
STANDBY	step 4

2 Access the clock level of the message switch MS:

>MAPCI;MTC;MS;CLOCK

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

SPM                    Message Switch   Clock   Shelf  0       Inter-MS Link 0 1
 0 Quit                  MS 0       .          Master         F                    . .
 2                       MS 1       .          Slave          F                    . .
 3
 4 SwCarr        Shelf 0                 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
 5               Card  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 6 Tst_          Chain           |     |
 7               MS 0  . . . . . I - - I - - - - - - - - . - - . . . . . .
 8               MS 1  . . . . . I - - I - - - - - - - - F - - . . . . . .
 9
10 Sync          Card 02 Alm Stat %Adj Src | Car Stat Sp PM     RMTyp SSM
11 DpSync        MS 0  .  .  Syn +08.6 Lk0 | Lk0 Lck   - SPM 031 SRM  PRS
12 SwMast        MS 1  .  .  Syn -00.8 Ms0 | Lk1 Smp   - SPM 030 SRM  PRS
13 Card_         Links Slipping:  NA   out of  NA
14 QueryMS       MTC:
15               MS:
16               SHELF:
17               CLOCK:
18 Adjust_

   14:12 >
```

3 Switch the SRM from ACTIVE to STANDBY:

>SwCarr

If the swcarr	Do
is successful	step 4
failed	refer to the SRM fault clearing procedure to clear any faults before continuing

4 Access the PM screen level of the MAP display:

>MAPCI;MTC;PM

5 Access the SPM screen:

>POST SPM spm_no

where

spm_no
is the number of the SPM (0 to 85)

Example of an 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       SRM 0  6 A Insv  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 >
```

6 Access the SRM card:

>SELECT SRM 0

Example of an SRM screen

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

OC3                                    SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                      0       0       0       0       0       1
 2               SPM                     0       0       0       0       0       1
 3 ListSet       SRM                     0       0       0       0       0       1
 4
 5               SPM 11    SRM 0  Act  InSv
 6 Tst           Interface:
 7 Bsy           Loc : Row A FrPos 4 ShPos 6 ShId 0 Slot 6  Prot Grp : 1
 8 RTS           Default Load: SPMLOAD                      Prot Role: Working
 9 OffL          clock:
10 LoadMod       Input Ref: BITSA SSM: PRS TMGNODE: MASTER Holdover Mode:N
11
12 Next
13 Select_
14 QueryMod
15 ListAlm
16
17
18 Bits

    14:12 >
```

7 Access the BITS link level:

>Bits

Example of a BITS screen

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

OC3                                  SysB    ManB    OffL    CBsy    ISTb    InSv
 0 Quit          PM                    0       0       0       0       0       1
 2               SPM                   0       0       0       0       0       1
 3               SRM                   0       0       0       0       0       2
 4
 5             SPM 11    SRM 0
 6 Tst_           LinkNo   BitsName   Status  State   SSM   AlmSev
 7 Bsy_             0      BITSA       Act    InSv    PRS
 8 RTS_             1      BITSB       InAct  InSv    PRS
 9 OffL_            2      BITSOUT             Uneq    NIL
10 Swbits      BITS:
11
12
13
14
15 QryALM_
16
17
18 Bits

    14:12 >
```

8 Record the BITS link numbers associated with the SRM and the state of each link.

9 Manual busy (ManB) the BITS links:

>BSY link_no FORCE

for each link number

where

link_no
is the BITS link number (0 to 2)

At the SRM card level of the SPM

10 Take the SRM card to be replaced out-of-service:

>BSY FORCE

11 Set the SRM card offline (OffL):

>OFFL

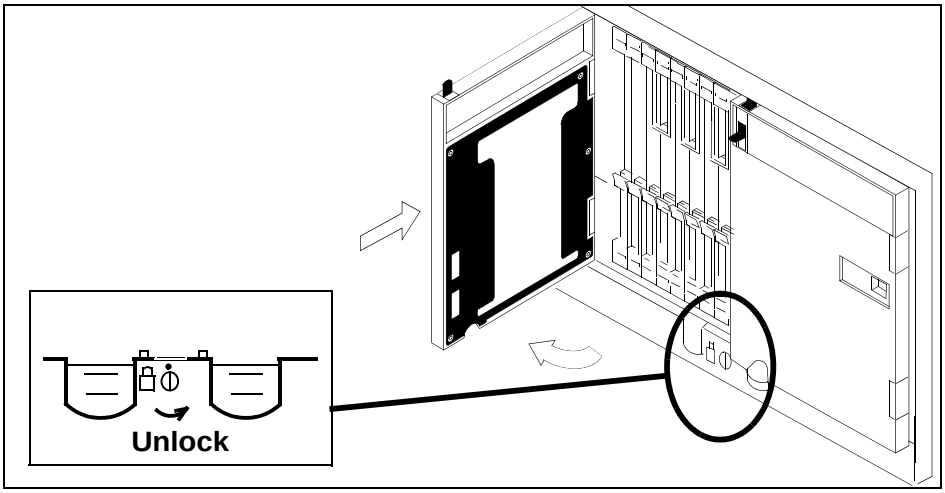
12 Return to the SPM screen and wait for the module to change state.

Note: The state change from ManB to OffL (offline) can take up to one minute to complete. After the state change is complete, remove the SRM card.

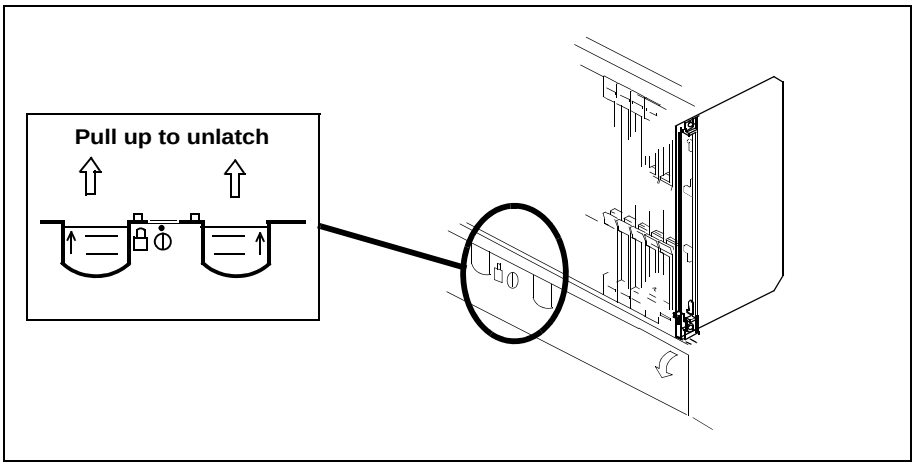
13

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

As shown in the following figure, unlock the access doors to shelf 0 by turning the locking screw one quarter-turn counter-clockwise. The doors are unlocked when the slot in the locking screw is in the vertical position. Open the access doors by carefully pulling down on the spring lock at the top of each door. At the same time, carefully pull each door toward you using the finger grip at the bottom of the door. Slide the doors back into the retracted position.



14 As shown in the following figure, unlatch the cable-trough door by grasping the thumb grips and pulling up. Rotate the cable-trough door to the open position.



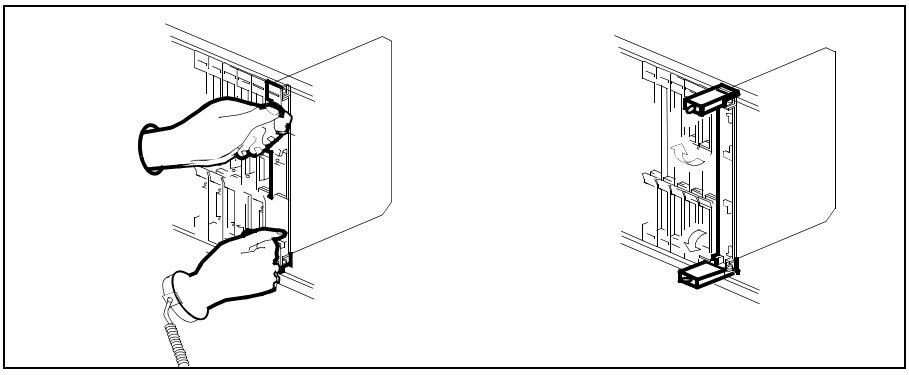
15

CAUTION

Card lever breakage

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

As shown in the following figure, open the locking levers on the card to be replaced.

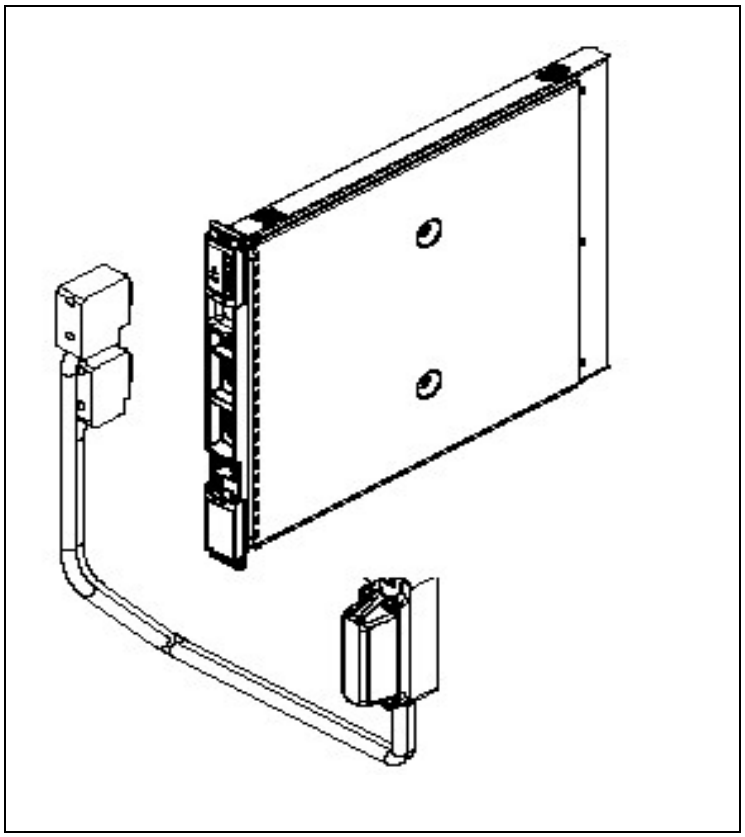


16 Disconnect the cable and 15-pin connector from the faceplate of the card.

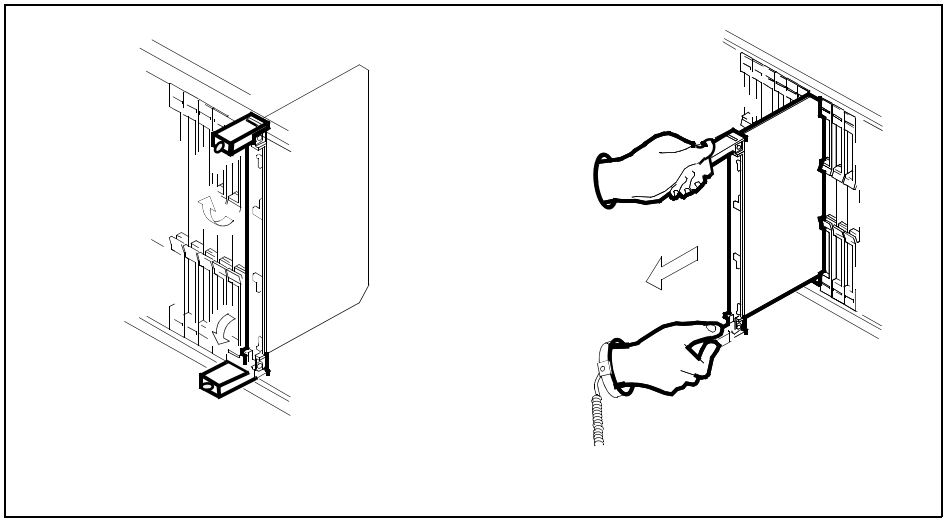
17 After the cable has been removed, cap the connectors on the module and the cable. Store the cables in the cable trough.

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

SRM with cable



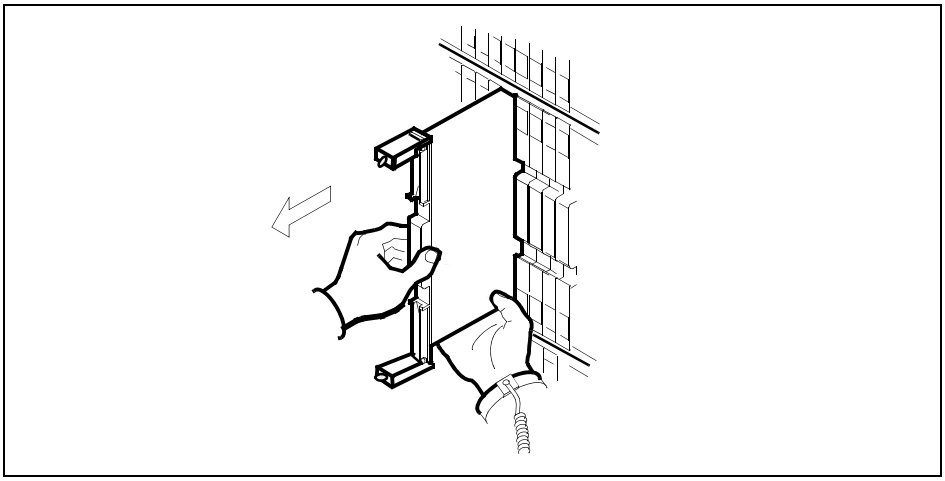
18 As shown in the following figure, while grasping the locking levers, gently pull the card towards you until it protrudes about 2 in. (5 cm) from the equipment shelf.



19

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

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



20 Place the card you have removed in an electrostatic discharge (ESD) protective container.

21

DANGER

Equipment malfunction

Use a replacement card with the same PEC and release to avoid equipment malfunction. If the replacement card has a different PEC or release, change the datafill in Table MNCKTPAK to match the replacement card before inserting it in the slot.

Use a replacement card with the same PEC and the same release.

22

CAUTION

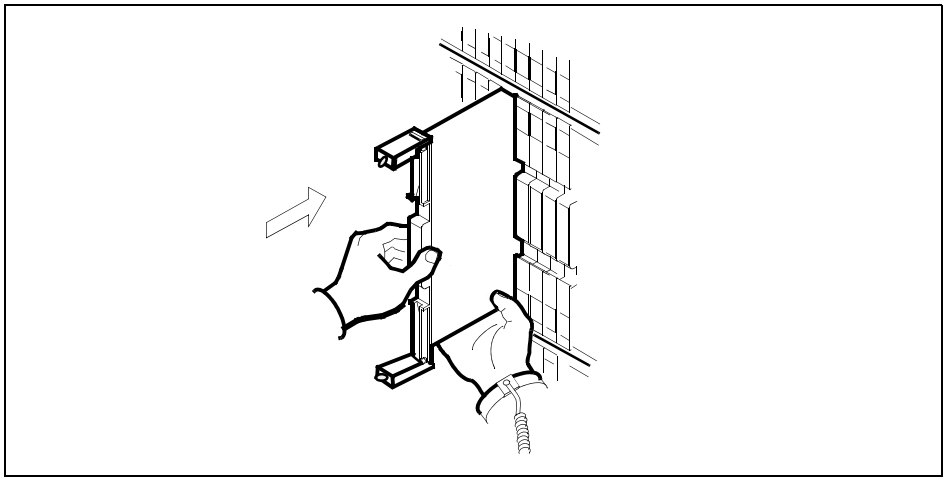
Equipment damage due to empty slots

Equip all unused slots on a powered shelf with NTLX60AA filler modules. Filler modules maintain electromagnetic interference (EMI) integrity, and they maintain shelf airflow patterns to ensure proper cooling.

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

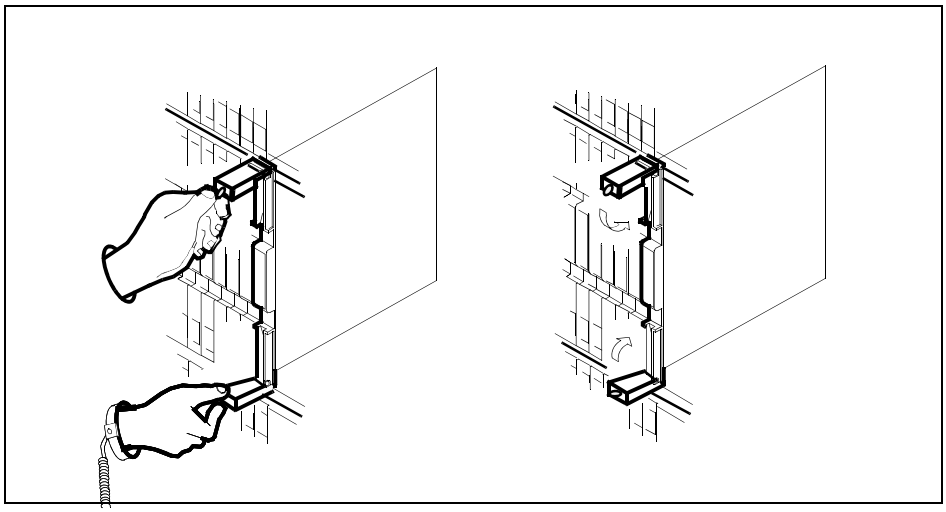
23 Open the locking levers on the card.

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



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

26 As shown in the following figure, close the locking levers to secure the card.



27 Wait until the card performs a self-test (less than one minute). The self-test is complete when the green LED remains on and the red LED remains off. If both LEDs stay on for an extended period of time, it means the replacement SRM card is defective; remove the card and replace it with another SRM replacement card. If both LEDs remain on with the second replacement card, contact your next level of support.

28 Reconnect the cable to the faceplate of the card.

29 Close the cable trough door. Close and lock the card-access door.

At the MAP terminal

30 Return to the SRM screen and take the SRM card from the OffL state to ManB state:

```
>BSY
```

31 Load the new SRM card with the default software load:

```
>LOADMOD
```

Monitor the progress of the loading activity on the SPM line of the SRM screen.

32 Return the new SRM card to Insv state:

```
>RTS
```

Note: The state change from ManB to Insv can take up to seven minutes to complete.

33 Access the BITS level:

```
>BITS
```

34 At the BITS screen, restore the BITS links to their original state as recorded in step 8.

35 If the SRM was originally the Active node reference, return it to ACTIVE status.

If the SRM was originally	Do
ACTIVE	step 36
STANDBY	step 37

36 Switch the SRM from ACTIVE to STANDBY:

>SwCarr

```
   CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
   RExSCH   RExByp   3MPCOS        6CcPr   1   SPM  21  RS    .    8CC.    1Crit .
             M      *C*  *C*        *C*         *C*    *C*

SRM                    SysB     ManB     Offl     CBsy     ISTb     InSv
 0 Quit          PM     6        0        0        0        8        0
 2               SPM    0        0        0        0        4        0
 3 LostSet       SRM    0        0        0        0        0        1
 4
 5               SPM   30   SRM   0   Act   InSv
 6 Tst          Interface
 7 Bsy           Loc:  Row A  FrPos  4ShPos  6 Shld 0 Slot 6 Prot Grp: 1
 8 RTS           Default Load SYN0000                 Prot Role: Working
 9 Offl
10 LoadMod        SRM:
11
12 Next
13 Select__
14 QueryMod
15 ListAlm
16 Prot
17
18 Bits_

   06:41 >
```

37 You have completed this procedure. Return to the CI level of the MAP screen:

>QUIT ALL

Replacing an alarm card assembly (ALM)

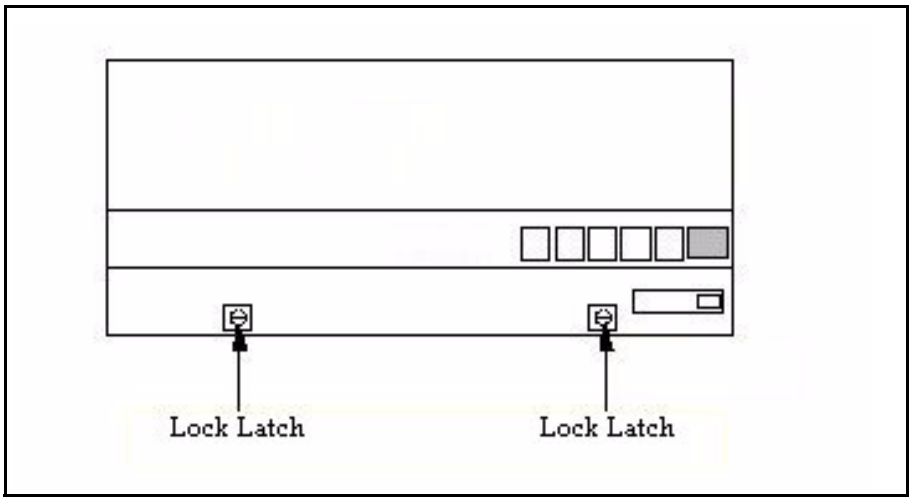
Use this procedure to replace an alarm card assembly (ALM).

Replacing an alarm card assembly (ALM)

At the front of the equipment frame

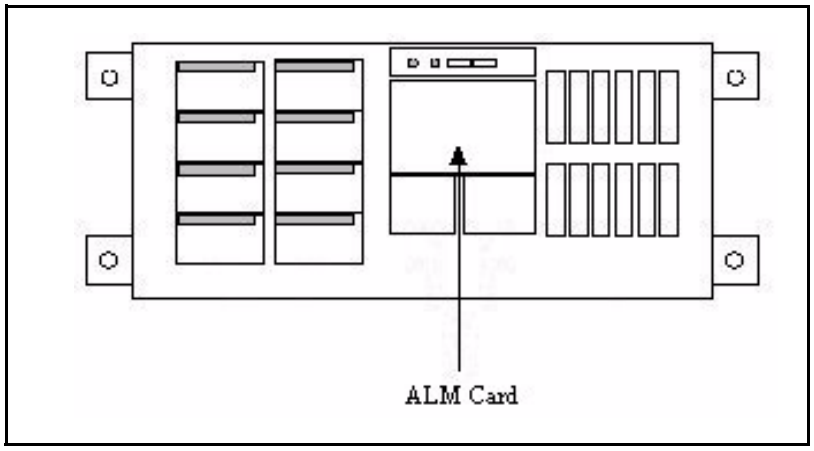
1 Move the lock latches of the power cabling interface unit (PCIU) to the unlocked position as indicated on the cover.

Lock latches of the PCIU



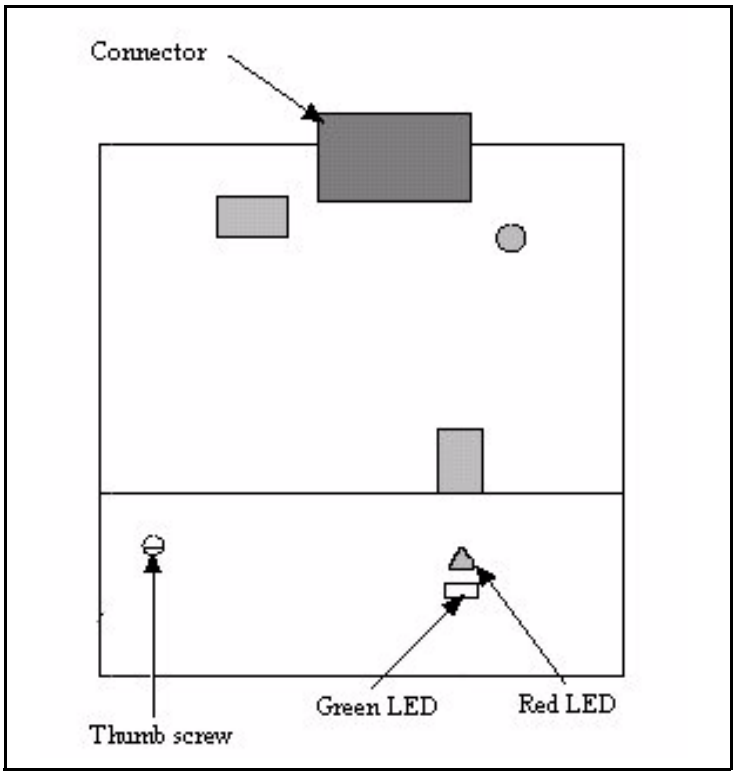
2 Lift the cover of the PCIU to gain access to the NTLX58 ALM.

Front view of PCIU



3 Unscrew the thumbscrew on the front of the ALM.

ALM with thumbscrew



4 Remove the card from the shelf.

5 Using the right and left edges of the ALM faceplate, remove the card from the shelf. This may require rocking the card slightly from side to side.

Note: When pack is removed, the green LEDs on all the fan units will go out, but the operation of the fans is not affected.

6 Make a clean, direct insertion, and be sure to seat the card fully.

Once the pack is inserted, the green LEDs on the fan units will light up. The amber SPME frame alarm indicator on the cover of the PCIU will light up temporarily, then go out.

Note: Do not rely on the thumb screw to seat the card.

7 TIghten the thumb screw.

8 Lower the cover of the PCIU shelf and move the latches to the locked position, as indicated on the cover.

9 You have completed this procedure.

Replacing a fan management unit (FMU)

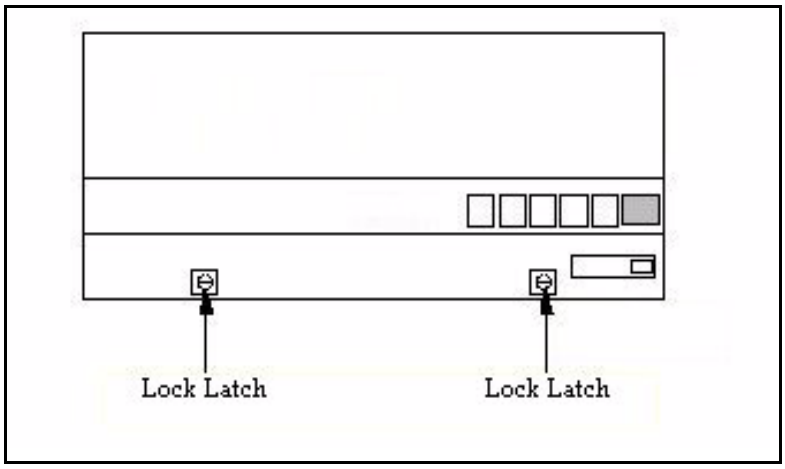
Use this procedure to replace a fan management unit (FMU).

Replacing a fan management unit (FMU)

At the front of the equipment frame

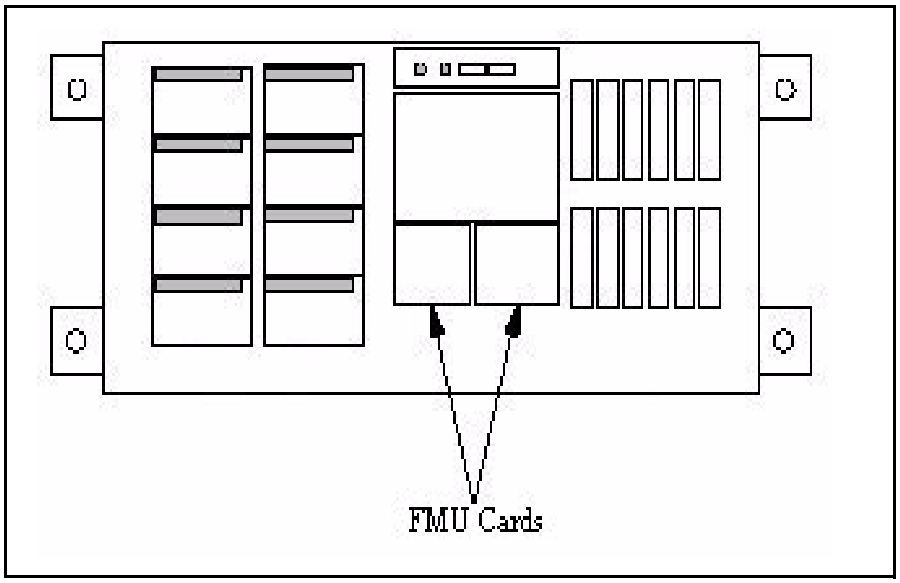
1 Move the lock latches of the power cabling interface unit (PCIU) to the unlocked position as indicated on the cover.

Lock latches of the PCIU



2 Raise the cover on the PCIU shelf.

Top view of PCIU



3

DANGER

If the fans are not powered down, they will try to conduct current when the new card is inserted, resulting in possible sparks and damage to the new card.

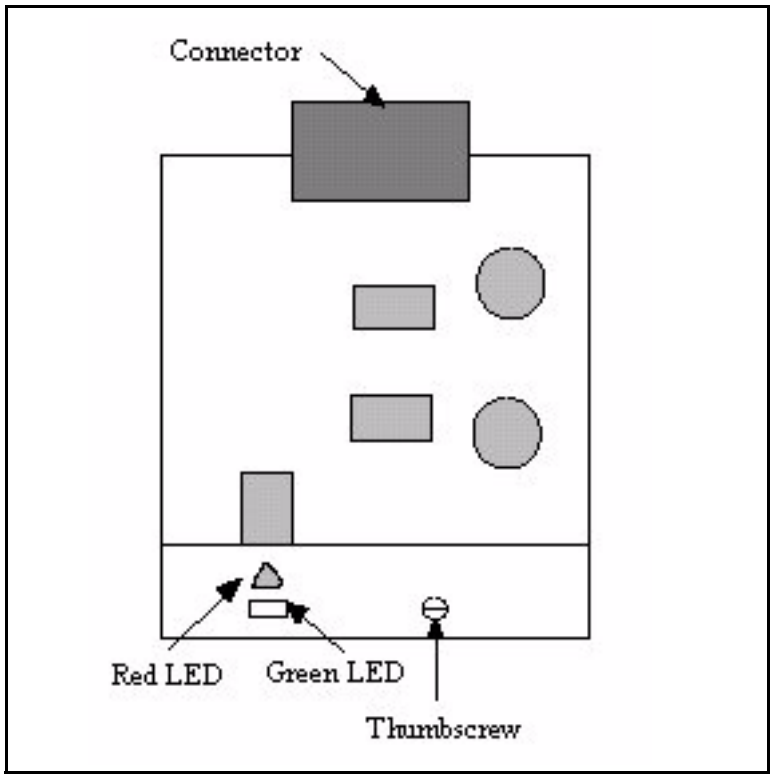
Move the lock latches on each of the eight fan units to the unlocked position as indicated on the faceplate of the fans.

4 Reaching inside the faceplate of the fans, depress the latch and slide fan units out a few inches to unseat them from the NTLX55 cooling units in shelf positions XX and YY.

5 Wait two to three minutes to allow the fan blades to come to a complete stop. Then completely remove the two fan units, in the upper cooling unit, directly below the FMUs.

6 Unscrew the thumbscrew on the front of the FMU.

FMU with thumbscrew



7 Using the right and left edges of the FMU faceplate, remove the appropriate card from the PCIU.

8 Align the new card with the card guides.

9 Make a clean, direct insertion, and make sure the card is fully seated.

Note: Do not rely on the thumbscrew to seat the card.

10 TIghten the thumbscrew.

11 Re-insert the two fan units removed by holding onto the faceplate of the fan in one hand and folding the fan assembly flat (align with the bar on the fan unit), then inserting it into the slot of the cooling unit. Once the fan starts sliding into the slot of the cooling unit, release the fan and allow it to return to its upright position.

12 Pushing on the faceplate of the fan units, carefully re-seat them into the NTLX55 cooling units in shelf positions XX and YY.

13 Ensure that the green LEDs on the faceplates of the fan units are lit and the fans are running.

14 Move the lock latches on the fan units to the locked position as indicated on the faceplate of the fans.

15 Lower the cover of the PCIU shelf and move the latches to the locked position, as indicated on the cover.

16 You have completed this procedure.

Use this procedure to run a diagnostic test on a circuit pack.

Testing a circuit pack

At the MAP level

1 Post the SPM containing the circuit pack to test:

```
>MAPCI;MTC;PM;POST SPM <spm_no>
```

where

spm_no
is the SPM number (0 to 85)

2 Select the circuit pack to test:

```
>SELECT <rm> <rm_no>
```

where

rm
is the type of circuit pack (CEM, DLC, DSP, OC3, SRM, or VSP)

rm_no
is the RM number

3 Test the circuit pack:

```
>TST
```

4 The test results are displayed on the MAP screen.

Example of test results for passing test

```
SPM 3 CEM  0 Test: Request has been submitted.
SPM 3 Test: Command passed.
```

Example of test results for failed test

```
Command rejected. The CEM is offline.
```

5 You have completed this procedure.

Managing the SPM 625 log

The two Common Equipment Module (CEM) planes of DMSCP and IW SPM nodes connect to the Enhanced Network (ENET) shelf through DS-512 fiber links. Crossover message configuration allows each CEM to communicate through both ENET planes. If a major failure occurs on one ENET shelf, the CEM in the same plane is able to send messages through the other ENET plane.

An audit automatically runs every day at 0900 to check DS-512 connected SPM nodes for crossover message channel configuration. An SPM 625 log is generated if the audit detects a node that is not configured for cross over.

This procedure requires you to press the Enter key after typing a command.

Managing the SPM 625 log

At the MAP terminal

1 Access the SPM Message Channel Crossover tool:

```
>SPMXMSG
```

2 Display SPM 625 log generation status:

```
>XAUDIT_LOG STATUS
```

MAP Response

```
Generation of SPM625 log is on
```

or

```
Generation of SPM625 log is off
```

If turning the SPM 625 log	Do
off	step 3
on	step 4

3 Display SPM 625 log generation status:

```
>XAUDIT_LOG OFF
```

MAP Response

```
Generation of SPM625 log is stopped
```

4 Display SPM 625 log generation status:

```
>XAUDIT_LOG ON
```

MAP Response

```
Generation of SPM625 log is started
```

5 Exit the SPM Message Channel Crossover tool:

```
>QUIT
```

6 You have completed this procedure.

Clearing an SPM UR or NA link state

At the DS512 cable connections

1 Clean the DS512 cables at both ends.

2 Verify the DS512 link cables are connected properly. Two ways to do this are:

- The easiest and most accurate way to check the cables is to physically pull the fiber connection off a port on the CEM, then pull the other end of that fiber at the ENET. Check that the cable is not emitting light. (Do not look directly into the fiber at the light when you have it disconnected. Let the light reflect off the frame.) If you see a light, the other end is not connected according to table MNLINK and is still connected to another port. Pull the fibers until the light goes out, and you know you have both ends of the same cable. Reconnect the ends of the cables back according to table MNLINK.

  Note: Ensure that the fibers are clean before reconnecting them.

- Another way to tell if cables are on the correct port is to pull a cable from a CEM port or ENET port and verify that the correct port drops sysb. (You may have to TST the port for it to drop.)

3 Verify the Nailed Up Connection path.

Three important things to remember about the ENET are:

- Card 8 in each ENET shelf is the interface to the MS shelves.
- Card 9 in each ENET shelf is a cornerstone card. All messaging is buffered through card 9 for odd numbered slots. Card 10 in each ENET shelf is also a cornerstone card. All messaging is buffered through card 10 for even-numbered slots. Inside the ENET there is a NUC. (The NUC is all the way from the CEM to the MS, but it usually gets disconnected up in the ENET.)
- If you suspect the NUC is bad, BSY and RTS the crosspoint card the SPM is tied to. In addition to the crosspoint card and paddleboard the SPM is physically connected to, keep in mind card 9, 10 and card 8 of an ENET shelf as possible source of trouble too. Troubleshoot these cards accordingly. The MS End: Card 8 of each ENET shelf is where the MS's

are physically tied to the ENET. After doing a TRNSL on card 8 of ENET shelf, go to the MS level and post the MS chain card indicated. Translate this MS card and see what actual MS port the SPM message channels are tied to. You can then troubleshoot the MS end by TST;BSY;RTS of ports, replacing chain cards, reloading chain cards, and cleaning fibers.